SPECIFICATIONS FOR WORK

SPECIAL PROVISIONS

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1. PROJECT DESCRIPTION

The Project involves construction work associated with 2016 Spotted Dog Wildlife Management Area Boundary Fencing Project, Fish, Wildlife & Parks (FWP) project # 7115701, located in Powell County, MT as identified in the project drawings. The project generally includes the removal, salvage, and/or disposal of existing wire fencing, installation of new four-wire boundary fence, new brace panels, new jack leg fence, new gate, and incidentals.

2. PROJECT RELATED CONTACTS

Project contacts are designated as follows:

Owner:	Montana FWP 1420 E. Sixth Ave. PO Box 200701 Helena, MT 59620-0701	**Project Representative:**	Jamie Mongoven FWP Project Manager 1522 9th Ave. Helena, MT 59620-0701 406-841-4011 (wk) 406-439-4502 (cell) 406-841-4004 (fax)

3. SITE INSPECTION

All Bidders should satisfy themselves as to the construction conditions by personal examination of the site described in this document. Bidders are encouraged to make any investigation necessary to assess the nature of the construction and the difficulties to be encountered.

4. SOILS INFORMATION

Geotechnical investigation work has not been done for this Project. It is the responsibility of the Contractor to conduct all investigations and determine the soil type and digging conditions that may be encountered with this Project prior to bid preparation.

5. ENGINEERING, INSPECTIONS, AND TESTING

The Contractor's work will be periodically tested and observed to insure compliance with the Contract Documents. Complete payment will not be made until the Contractor has demonstrated that the work is complete and has been performed as required. If the Engineer detects a discrepancy between the work and the requirements of the Contract Documents at any time, up to and including final inspection, such work will not be completely paid for until the Contractor has corrected the deficiency.

The Engineer will periodically monitor the construction of work to determine if the work is being performed in accordance with the contract requirements. The Engineer does not have the authority or means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, manpower, and other means

necessary to assure that the work is installed in compliance with the Drawings and Specifications, and laws and regulations applicable to the work. Any discrepancies noted shall be brought to the Contractor's attention, who shall immediately correct the discrepancy. Failure of the Engineer to detect a discrepancy will not relieve the Contractor of his ultimate responsibility to perform the work as required.

The Contractor shall inspect the work as it is being performed. Any deviation from the Contract requirements shall be immediately corrected. Prior to any scheduled observation by the Engineer, the Contractor shall again inspect the work and certify to the Engineer that he has inspected the work and it meets the requirements of the Contract Documents. All buried work items shall be inspected by the Engineer prior to backfilling, or may not be considered for payment.

The work will be subject to review by the Owner, whose findings shall be as valid as those of the Engineer. The results of all such observations shall be directed to the Contractor through the Engineer.

5.1 Services Provided by the Contractor. The Contractor shall provide the following services:

a. Any field surveys to establish locations, elevations, and alignments as stipulated on the Plans. FWP reserves the right to set preliminary construction staking for the project. The Contractor is responsible to notify FWP for any construction staking discrepancies.
b. Preparation and certification of all required shop drawings and submittals as described in the General Conditions.
c. All tests requiring the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the Engineer. The laboratory shall be staffed with experienced technicians properly equipped, and fully qualified to perform the tests in accordance with the specified standards.
f. The Contractor shall provide the Engineer with a written schedule indicating dates for specific testing and inspection services to be performed. The schedule shall be updated as required to give the Engineer at least one week's advance notice. The Contractor shall notify the Engineer immediately of any change or shall be subject to pay engineering fees as herein defined.

5.2 Services Provided by the Owner. The Owner shall provide the following services at no cost to the Contractor except as required for retests as defined in the Contract Documents.

a. The Engineer may check compaction of backfill and surfacing courses using Proctor information supplied by the Contractor. These tests are to determine if compaction requirements are being fulfilled in accordance with the Contract Documents. It is ultimately the responsibility of the Contractor to insure that this level of compaction is constant and met in all locations.

6. ENGINEERING INTERPRETATIONS

Timely engineering decisions on construction activities or results have an important bearing on the Contractor's schedule. When engineering interpretation affects a plan design or specifications change, it should be realized that more than 24 hours may be required to gain the necessary Owner participation in the decision process including time for formal change order preparation as required.

7. REJECTED WORK

Any defective work or nonconforming materials or equipment that may be discovered at any time prior to the expiration of the warranty period, shall be removed and replaced with work or materials which shall conform to the provisions of the Contract Documents. Any material condemned or rejected shall be removed at once from the project site. Failure on the part of the Engineer to condemn or reject bad or inferior work or to note nonconforming materials or equipment on the Contractors submittals shall not be construed to imply acceptance of such work. The Owner shall reserve and retain all its rights and remedies at law against the Contractor and its Surety for correction of any and all latent defects discovered after the guarantee period.

The Engineer will have the authority to reject work which does not conform to the Contract Documents and will provide the Owner with a list of defective work and nonconforming materials or equipment. The Owner will then promptly provide the Contractor with the list of defective work on nonconforming materials or equipment.

8. UTILITIES

The exact locations of existing underground utilities that may conflict with the work are not precisely known. It shall be the Contractor's responsibility to contact the owners of the respective utilities and arrange for field location services. **One Call Locators, 1-800-424-5555**

8.1 Notification. The Contractor shall contact, in writing, all public and private utility companies that may have utilities that may be encountered during excavation. The notification includes the following information:

a. The nature of the work that the Contractor will be performing.
b. The time, date and location that the Contractor will be performing work that may conflict with the utility.
c. The nature of work that the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.
d. Requests for field location and identification of utilities.

A copy of the letter of notification shall be provided to the Engineer. During the course of construction, the Contractor shall keep the utility companies notified of any change in schedule or nature of work that differs from the original notification.

8.2 Identification. All utilities that may conflict with the work shall be the Contractor's responsibility to locate before any excavation is performed. Field markings provided by the utilities shall be preserved by the Contractor until actual excavation commences. All utility locations on the Drawings should be considered approximate and should be verified in the field by the Contractor. The Contractor shall also be responsible for locating all utilities that are not located on the Drawings.

8.3 Removal or Relocation of Utilities. All electric power, street lighting, gas, telephone, and television utilities that require relocation will be the responsibility of the utility owner. A request for extending the specified contract time will be considered if utility owners cause delays.

8.4 Public Utilities. Water, sewer, storm drainage, and other utilities owned and operated by the public entities shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All such work shall be in accordance with these Specifications, or the Owner's Standard Specifications or written instructions when the work involved is not covered by these Specifications.

8.5 Other Utilities. Utilities owned and operated by private individuals, railroads, school districts, associations, or other entities not covered in these Special Provisions shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All work shall be in accordance with the utility owner's directions, or by methods recognized as being the standard of the industry when directions are not given by the owner of the utility.

8.6 Damage to Utilities and Private Property. The Contractor shall protect all utilities and private property and shall be solely responsible for any damage resulting from his construction activities. The Contractor shall hold the Owner and Engineer harmless from all actions resulting from his failure to properly protect utilities and private property. All damage to utilities shall be repaired at the Contractor's expense to the full satisfaction of the owner of the damaged utility or property. The Contractor shall provide the Owner with a letter from the owner of the damaged utility or property stating that it has been repaired to the utility owner's full satisfaction.

8.7 Structures. The Contractor shall exercise every precaution to prevent damage to existing buildings or structures in the vicinity of his work. In the event of such damages, he shall repair them to the satisfaction of the owner of the damaged structure at no cost to the Owner.

8.8 Overhead Utilities. The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities, such as power lines, streetlights, telephone lines, television lines, poles, or other appurtenances during the course of construction of this

project.

8.9 Buried Gas Lines. The Contractor shall provide some means of overhead support for buried gas lines exposed during trenching to prevent rupture in case of trench caving.

8.10 Pavement Removal. Where trench excavation or structure excavation requires the removal of curb and gutter, concrete sidewalks, or asphalt or concrete pavement, the pavement or concrete shall be cut in a straight line parallel to the edge of the excavation by use of a spade-bitted air hammer, concrete saw, colter wheel, or similar approved equipment to obtain a straight, square clean break. Pavement cuts shall be 2 feet wider than the actual trench opening.

8.11 Survey Markers and Monuments. The Contractor shall use every care and precaution to protect and not disturb any survey marker or monuments, such as those that might be located at lot or block corners, property pins, intersection of street monuments or addition line demarcation. Such protection includes markings with flagged high lath and close supervision. No monuments shall be disturbed without prior approval of the Engineer. Any survey marker or monument disturbed by the Contractor during the construction of the project shall be replaced at no cost to the Owner by a licensed land surveyor.

8.12 Temporary Utilities. The Contractor shall provide all temporary electrical, lighting, telephone, heating, cooling, ventilating, water, sanitary, fire protection, and other utilities and services necessary for the performance of the work. All fees, charges, and other costs associated therewith shall be paid for by the Contractor.

The Contract Plans show utility locations based on limited field observation and information provided to the Engineer by others. **The Engineer cannot guarantee their accuracy.** The Contractor shall immediately notify the Engineer of any discrepancies with utility locations as shown on the Contract Drawings and/or their bury depths that may in any way affect the intent of construction as scoped in these specifications.

There will be no separate payment for exploratory excavation required to locate underground utilities.

9. CONSTRUCTION SAFETY

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees) and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, and regulations. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.

10. CONSTRUCTION LIMITS AND AREAS OF DISTURBANCE

10.1 Construction Limits. Where construction easements or property lines, are not specifically called out on the Plan Drawings, limit the construction disturbance to 10 feet when measured from the existing fence, or to the adjacent property line, whichever is less. Disturbance and equipment access beyond this limit is not allowed without the written approval of both, the Engineer and the owner of the affected property. If so approved, disturbance beyond construction limits shall meet all requirements imposed by the landowner; this includes existing roads used and/or improved as well as the construction of new access roads. Special construction, reclamation, or post-construction road ripping or other closure provisions required by the landowner on access roads beyond the construction limits shall be performed by the Contractor at no additional cost to the Owner.

10.2 Areas of Disturbances. Approved areas of disturbance are those areas disturbed by construction activities within the construction limits and along designated or approved access routes. Such areas may require reclamation and revegetation operations, including grading to the original contours, top soiling with salvaged or imported topsoil, seeding, fertilizing, and mulching as specified herein. Other areas that are disturbed by the Contractor's activities outside of the limits noted above will be considered as site damage or unapproved areas of disturbance subject to Repair and Replacement Quality as specified in the General Conditions. This includes areas selected by the Contractor outside the defined construction limits for mobilization, offices, equipment, or material storage.

11. PROTECTION OF ADJACENT IMPROVMENTS

Retain and protect all adjacent improvements not called for removal on the drawings. Restore all damaged items to pre-existing condition.

12. TREE PROTECTION AND PRESERVATION

The Contractor and the Owner shall individually inspect all trees within the project construction limits prior to construction. The Owner shall determine which trees are to be removed and which trees are to be preserved. Construction of the fence must not, in the opinion of the Engineer, significantly damage the live tree's root system or hinder it's chances for survival. Reasonable variations from the plans, as determined by the Engineer, may be employed to ensure the survival of trees. Dead trees are to be cut down and moved from the fence alignment and will be considered incidental to be included in other bid items.

13. CONSTRUCTION SURVEYS

The Contractor will be responsible for all layout and construction staking utilizing the Engineer's existing control and coordinate data for the project. Dimensions and elevations indicated in layout of work shall be verified by the Contractor. Discrepancies between Drawings,

Specifications, and existing conditions shall be referred to the Engineer for adjustment before work is performed. The Engineer may set location and grade stakes prior to construction; however, it is ultimately the responsibility of the Contractor to check and verify all construction staking for the project. New fence shall be set as close to the existing alignment as practicable.

No existing survey control (horizontal and vertical) has been set for use in the design and ultimately the construction of these improvements.

The Contractor will be responsible for preserving and protecting the survey control until proper referencing by the Contractor has been completed. Any survey control obliterated, removed, or otherwise lost during construction will be replaced at the Contractor's expense.

Contractor shall be aware of property pins and survey monuments. Damage to these pins will require replacement of such by a registered land surveyor at no cost to the owner.

The Contractor is responsible for the location and elevation of all the construction contemplated by the Contract Documents.

Prior to commencing work, the Contractor shall carefully compare and check all drawings, each with the other that in any way affects the location or elevation of the work to be executed by him, and should any discrepancy be found, he shall immediately report the same to the Engineer for verification and adjustment. Any duplication of work made necessary by failure or neglect on his part to comply with this function shall be done at his sole expense.

Original field notes, computations and other records take by the Contractor for the purpose of quantity and progress surveys shall be furnished promptly to the Engineer and shall be used to the extent necessary in determining the proper amount of payment due to the Contractor.

These field notes, computations and other records shall be neat and orderly. Field notes shall be complete and in a standard format approved by the Engineer. Unless waived in each specific case, all quantity surveys made by the Contractor shall be made under the direct supervision of the Engineer.

14. MATERIAL SOURCES AND CONSTRUCTION WATER

The Contractor shall be responsible for locating all necessary material necessary to complete the work. The Contractor shall be responsible for meeting all transportation and environmental regulations as well as paying any royalties. The Contractor shall provide the Engineer with written approvals of landowners from whom materials are to be obtained prior to approval.

The Contractor may use materials from any source, and upon request shall provide the materials test results through representative samples and meet the Specifications. Water for compaction efforts shall be supplied by the Contractor.

15. MATERIALS SALVAGE AND DISPOSAL

If the Owner requests to salvage material removed from the project, notify the Owner within 24 hours prior to delivery at a specific location approved by the Owner.

Haul and waste all material to a legal site and obey all state, county, and local disposal restrictions and regulations.

16. STORED MATERIALS

Contractor shall use an approved storage area for materials. Materials and/or equipment purchased by the Contractor may be paid for on a monthly basis providing invoices for said materials and equipment are presented to the Engineer, and such materials have been approved through the submittal process are stored and insured.

17. STAGING AND STOCKPILING AREA

Contractor shall use staging and stockpiling sites for temporary traffic control devices and equipment as approved by the Owner. Contract drawings may show approved staging and stockpiling locations. Notify Owner within 24 hours for approval of staging and stockpiling sites not shown on the contract drawings.

18. SECURITY

The Contractor shall provide all security measures necessary to assure the protection of equipment, materials in storage, completed work, and the project in general.

19. CLEANUP

Cleanup for each item of work shall be fully completed and accepted before the item is considered final. If the Contractor fails to perform cleanup within a timely manner the Owner reserves the right to shut down construction activities.

20. ACCESS DURING CONSTRUCTION

Provide access to all public and private roadways and approaches along the project throughout the construction period.

21. CONSTRUCTION TRAFFIC CONTROL

The contractor is responsible for providing safe construction and work zones within the project limits by implementing the rules, regulations, and practices of the Manual on Uniform Traffic Control Devices, current edition.

22. SANITARY FACILITIES

On-site toilet facilities for employees of Contractor and Subcontractors shall be provided and maintained in a sanitary condition.

23. RECORD DRAWINGS

The Contractor's Superintendent shall maintain at the project site, a "Record Set of Drawings" showing field changes, as-built elevations, unusual conditions encountered during construction, and such other data as required to provide the Owner with an accurate "as constructed" set of record drawings. The Contractor shall furnish the "Record Set" to the Engineer following the Final Inspection of the Project.

The Contractor's final estimate and final payment will not be processed until the "Record Set" of drawings are received and approved by the Engineer.

24. PROPOSAL ITEM DESCRIPTIONS AND ESTIMATED QUANTITIES

BID SCHEDULE A:

1. Mobilization/Demobilization//Bonding:
   * Description: This bid item includes all equipment, labor and associated work necessary for the transporting of equipment to and from the work site to construct the project to the lines and grades as noted in the specifications and drawings. This bid item also includes bonding costs absorbed by the Contractor.

2. Fence Removal:
   * Description: This bid item includes all equipment, labor and associated work necessary for the removal and legal disposal of existing fencing as noted in the specifications and drawings.
   * Estimated Quantity:
     - 20,400 linear feet

3. New Four-Wire Boundary Fence:
   * Description: This bid item includes all equipment, labor and associated work necessary for the installation of new four-wire boundary fencing as noted in the specifications and drawings.
   * Estimated Quantity:
     - 19,400 linear feet

4. New Jack-Leg Fence:
   * Description: This bid item includes all equipment, labor and associated work necessary for the installation of new jack-leg fencing as noted in the specifications and drawings.
   * Estimated Quantity:
     - 1000 linear feet

5. Brace Panels:
   * Description: This bid item includes all equipment, labor and associated work necessary for the installation of new brace panels including supports and hardware, as noted in the specifications and drawings.
   * Estimated Quantity:
     - 55 each

6. Gate, Single Panel, 16' Length (2"-6 Bar, 16 Gauge Tubing):
   * Description: This bid item includes all equipment, labor and associated work necessary for the installation of new panel gate including gate supports and hardware, two single panel fence braces and galvanized chain as noted in the specifications and drawings.
   * Estimated Quantity:
     - 1 each

7. Stream Crossing:
   * Description: This bid item includes all equipment, labor and associated work necessary for the installation of a stream crossing fencing as noted in the specifications and drawings.
   * Estimated Quantity:
     - 3 each

SPECIFICATIONS FOR WORK

TECHNICAL PROVISIONS

Incorporation of Montana Public Works Technical Specifications.

The Technical Specifications as found in Montana Public Works Standard Specifications (MPWSS), Sixth Edition, April 2010, are hereby incorporated by reference and made a part of this Contract:

Incorporation of Montana Fish, Wildlife & Parks Technical Specifications and Modifications to MPW Technical Specifications.

In addition to the MPWSS Technical Specifications are the following Montana Fish, Wildlife & Parks Technical Specifications (modifications to MPWSS Technical Specifications).

SECTION 01010 -	Summary of Work
SECTION 01450 -	Mobilization/Demobilization
SECTION 01750 -	Final Cleanup
SECTION 02112 -	Removal of Existing Pavement, Concrete Curb, Sidewalk, Driveway and/or Structures
SECTION 02810 -	Fencing

SECTION 01010

SUMMARY OF WORK

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.3 WORK SEQUENCE

Add the following:

E. Complete all work **on, or before, October 12, 2016** for each Bid Schedule awarded.

F. Install new fence prior to removing existing fence to accommodate potential livestock pasture on adjacent landowner parcels. At the end of each work day, assure existing fence and/or new fence is secure to maintain livestock pasture on adjacent landowner parcels.

1.4 CONTRACTOR USE OF PREMISES

Add the following:

C. Fencing Contractor may elect to camp on the Spotted Dog WMA during the duration of the project. Contractor shall follow all rules and regulations posted on the Spotted Dog WMA. No sanitary or potable water services are available.

END OF SECTION 01010

SECTION 01450

MOBILIZATION/DEMOBILIZATION

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This item shall consist of the prepatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.

B. Contractor's cost for administration, bonding, insurance, and site documents shall be included in mobilization and shall not be paid as a separate item.

C. All equipment moved to the project sites shall be in good mechanical condition and free of fuel, oil, lubrication, or other fuel leaks. The Contractor shall immediately remove any equipment potentially or actually discharging environmentally damaging fluids.

D. All equipment moved to the project sites shall be thoroughly cleaned before it is brought to the sites to prevent the introduction of weed seeds. Equipment removed from the sites may not be returned to the sites again until it is thoroughly cleaned again.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. There will be no direct measurement of this item.

4.2 PAYMENT

B. Partial payments for mobilization/demobilization will be made based on the lump sum bid price as follows:

- 50% of the amount bid for mobilization/demobilization when the Contractor has moved on-site and begun construction activities.
- 100% of the amount bid for mobilization/demobilization when 75% of the contract amount (exclusive mobilization/demobilization) has been completed.

END OF SECTION 01450

SECTION 01750

FINAL CLEANUP

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of final cleanup of the project site prior to final acceptance.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CONTRACTOR RESPONSIBILITES

The contractor shall be responsible for final clean up at the end of the project to a level satisfactory to the owner. All construction debris, no mater how small, shall be collected and removed from the site. All wheel ruts shall be filled in and be leveled to match the adjacent grade and material. Re-seeding or re-sodding, or other re-surfacing may be necessary to repair any construction related impacts or damage.

All survey markings, stakes, temporary paint marks, flagging and other devices shall be removed regardless of who installed them. All excess pavement, concrete, gravel, soil, or other construction materials not intended for permanent use shall be removed.

For boundary fencing projects, do not disturb line-of-sight t-posts. Leave all line-of-sight t-posts in their original location.

All final slopes shall be dressed manually to remove woody debris, accumulated trash and oversized material. Any new slope or topsoil surfaces shall be hand raked to provide a uniform appearance. The contractor shall dress all gravel, pavement and concrete edges to eliminate abrupt edges and provide a smooth transition. All construction related temporary sediment control devices shall be removed as soon as practical.

PART 4 MEASUREMENT AND PAYMENT

4.1 PAYMENT

Unless specifically noted otherwise, all final cleanup work shall be incidental to other work items in the contract and no separate payment shall be made.

END OF SECTION 01750

SECTION 02112

REMOVAL OF EXISTING PAVEMENET, CONCRETE CURB, SIDEWALK, DRIVEWAY AND/OR STRUCTURES

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.1 DESCRIPTION

A. Add the following:

The work also consists of the removal, salvage, stockpile, and/or disposal of existing fence materials on private property and within, or near, the FWP WMA property boundary.

PART 3 EXECUTION

Add the following:

3.2 EXISTING FENCE WIRE REMOVAL

A. Remove and dispose all existing boundary fence wire at locations shown in the project drawings, or as directed by the Project Representative. All removed fence wire material becomes property of the Contractor. Dispose all removed fence wire material off the project site and obey all state, county, and local disposal restrictions and regulations.

3.3 EXISTING FENCE T-POST REMOVAL AND/OR SALVAGE

A. Remove and/or salvage all existing boundary fence metal T-posts at locations shown in the project drawings, or as directed by the Project Representative.

Salvage and reinstall metal T-posts, per FWP's salvage criteria, at the new boundary fence location. T-post salvage criteria includes:

- Same dimensional characteristics for new T-posts specified
- Straight and true, not bent or out of alignment (measured over entire length)
- Less than 25% rusted surface area

Non-salvaged T-posts become property of the Contractor. Dispose all non-salvageable T-posts off the project site and obey all state, county, and local disposal restrictions and regulations. Non-salvageable T-posts may be used in deadman applications.

3.4 EXISTING FENCE WOOD POST REMOVAL

A. For existing boundary fence **non-treated** wood posts *on FWP property*, remove wood posts and lay on ground, after all wire is completely removed. Assure all wood posts dropped in place are on FWP property.

For existing boundary fence **treated** wood posts *on FWP property*, remove wood posts dispose off the project site and obey all state, county, and local disposal restrictions and regulations.

For existing boundary fence wood posts *on private property*, wood posts may remain in place, after all wire is completely removed.

PART 4 MEASUREMENT AND PAYMENT

Add the following:

4.3A FENCE REMOVAL

A. Fence removal will be measured and paid for by the linear foot (LNFT).

END OF SECTION 02112

SECTION 02810

FENCING

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing, erection, and placement of new fencing per the drawings and specifications.

PART 2 PRODUCTS

2.1 GENERAL

A. Barbed wire shall be zinc-coated, steel barbed wire meeting the requirements of ASTM A-121. Breaking strength of strand wire shall be not less than 950 pounds. Barbs shall be uniformly spaced from 4 to 5 inches apart. Minimum weight of zinc coating shall be Class I. Wire shall consist of two twisted strands of 12 ½ gauge wire. "Red Brand" and "OK Brand Premium" are examples of wire that meet ASTM A-121. **Wire breaking strength and coating certification shall be provided to the Project Manager.** Install all wire on non-FWP owned parcel side of posts.

B. Barbless wire shall be two smooth twisted strands of 12 ½ gauge wire: zinc coated steel meeting requirements of ASTM A-121 or equal. Breaking strength of a strand of wire shall be not less than 950 pounds, minimum weight of zinc coating shall be Class I. Install all wire on non-FWP owned parcel side of posts.

C. Woven wire shall have metallic coating Type Z, Class 1 and be No. 12 ½ Grade 60, or, have metallic coating Type Z, Class 3 and be No 14 Grade 125. All woven wire shall meet or exceed the requirements of ASTM A116. Install all wire on non-FWP owned parcel side of posts.

D. Brace panel wire shall be barbless, smooth 9 gauge **soft** wire meeting requirements of ASTM A-641. It will be used for constructing braces and panels, tying to anchors, etc.

E. Staples. Wire staples of the barbed U-shaped type shall be used to fasten the wire fencing to the wooden posts. They shall be not less than 9 gauge galvanized, 1-3/4 inches long.

F. Nails. Shall be 40 d common galvanized.

G. Fence clips shall be not lighter than 12 ½ gauge, galvanized. They shall be used to fasten the wire to metal posts.

H. Where designated, stays shall be 30" long twisted wire fence specifically manufactured for use as fence stays and made from #9 gauge galvanized smooth wire.

I. Metal Posts. Metal posts shall meet the requirements of ASTM A-702 and be American manufactured. Painting shall be in accordance with good manufacturing practice. Same paint pattern shall be used throughout project site requiring installation of new metal posts. **Posts shall be 5½ feet long.** The metal shall be good commercial quality steel with maximum carbon content of 0.82%. Posts shall be tee section and shall have corrugations, knobs, notches, holes, or studs so placed and constructed as to engauge a substantial number of fence line wires in proper position.

   Each line post shall have a steel anchor plate weighing not less than 0.67 pounds, tapered to facilitate driving and securely fastened in such a position that its top edge will be two to three inches below ground when the post is driven to the prescribed depth. **Post shall weigh 1.33 lbs. per L.F. of post.**

J. Wood Posts and Brace Rail. Posts and brace rail shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished round. **Panel posts** shall be **5** inch minimum diameter and **7** feet in length. **Line posts** shall be **5** inch minimum diameter and **7** feet in length, or as specified in the project drawings. All posts shall be treated with a solution conforming to AWPA standards. Penetration shall be at least ½ inch. Post shall be fully treated. Posts that are to be driven shall be tapered and treated. **Brace rail** shall be a minimum **4** inch diameter by **8** feet long, or as specified in the project drawings. All brace rail shall be fully treated conforming to AWPA standards. **Certification of AWPA treatment shall be provided to the Project Manager.**

K. Wood Split Rails. Wooden split rails shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished half round. **Wood rails** shall be **4½** inch minimum diameter and **8** feet in length. All rails shall be treated with a solution conforming to AWPA standards. Penetration shall be at least ½ inch. All wood rail shall be fully treated conforming to AWPA standards. **Certification of AWPA treatment shall be provided to the Project Manager.** Fasten rails to posts with 8" TimberLok® screws, or approved equal.

L. Brace Panels. Brace panels shall be placed at corners, endpoints and when run exceeds **30 rods or 500 feet**. Where the run requires a single brace, it shall be placed

to split the difference when appropriate. Brace panels shall be constructed as depicted in drawings and shall provide for strong anchorage points and shall be aligned with fence line within a tolerance of 2 degrees.

M. Gates and Steel Panels. Wire gates shall be 12' (minimum) in width, or as designated on the project drawings. Gates shall be located in the field by the Engineer.

Where designated, wire gates and associated panels shall have the same number of strands of barbed wire as the fence line they are in, with a vertical spacing the same as the fence line they are in. Wire gates 14' wide and less shall have 2 wood stays, and gates over 14' wide shall have 3 wood stays, equally spaced across the gate. Stays shall be minimum 2½" diameter treated wood, and shall be tall enough to support all the fence wires at the correct height. Each wire gate shall have a new single panel on each side and a mechanical over-center gate closer. Wire gates in jackleg fences shall have four strands of barbed wire. Posts and brace rails shall be the same as specified for line fence panels and corners.

Where designated, install pre-fabricated steel panel gates (various lengths) as shown on the project drawings. **Panel gates shall be powder coated brown or green in color, with 6-Bar, 2" diameter tubing, 16 gauge high tensile steel.** Provide 6"x8' treated posts for each single panel brace on each side of panel gate. Provide galvanized chain long enough to wrap around gate and adjacent brace panel for locking closure.

N. Stream Crossings. Stream crossings shall be minimum 20' wide and located 4' minimum on each side of the top of stream bank. Post and brace rail shall be the same as specified for line fence panels and corners. Stream crossings shall have 5 strands of smooth wire with a minimum of 6 metal stays per rod, spaced equally along the length of the PVC pipe described below. Stays shall be 30" long twisted wire specifically manufactured for use as fence stays and made from #9 gauge galvanized smooth wire.

Extend stays down past bottom wire attached to posts, creating a hinge point to pass debris. Thread bottom ends of stays though 1½" diameter PVC pipe suspended parallel to bottom wire. Bottom wire to be 1 foot above water surface.

Each stream crossing shall have a new single panel and mechanical over-center closure on each side.

O. Minor Drainage Channels are differentiated from depressions by having sandy gravel or cobble bottoms. Such channels may or may not have flowing water year round. Minor channels may be fenced over without a stream crossing gate at the discretion of the Project Manager. Such channels shall have NO POSTS placed in the channel, and posts on either side shall be equally spaced from the edge of the channel. PVC pipe

shall be hung under the fence at the channel in the same manner as described in Stream Crossings, to prevent livestock passage.

P. Deadmen anchors shall be used at grade depressions. They shall consist of a plate or disc of 10 gauge or thicker mild steel of 12-inch diameter. A No. 5 rebar shall be welded in the center and a loop formed in the other end to accept the tie wire. Rebar length shall be 30 inches after the loop is formed.

Alternately, two steel fence posts may be driven in the ground at an angle such that the ends above the ground cross at the low point. Wire shall be securely attached to the two posts and used to anchor the fence. Duckbill anchors are also approved. Other anchor types may be accepted upon approval of the Engineer or Project Manager.

Anchor wires shall be tied such that all wire is above the soil surface. No anchor wire shall be buried. If any part of the deadman projects out from the fence line above ground, it shall be cut off no more than 4" from the anchor wire attachment. No sharp edges shall remain on cut ends.

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

A. "Clearing" shall consist of the falling of trees greater than 3 inches diameter at chest height, delimbing them, and cutting into six-foot sections. Clearing shall also include the disposal of stumps, brush, windfalls, limbs, sticks, piles of sawdust, rubbish, debris, vegetation, and other objectionable material occurring within the clearing limits or which interfere with excavation or embankment.

B. "Grubbing" shall consist of the removal from the ground and the disposal of roots, stumps, together with duff, matter, roots, and debris from the grubbing limits.

C. Construction methods for clearing and grubbing operations are as follows:

1. No stumps or roots shall remain more than 4 inches above the ground along the fence line.

2. Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed as directed. Branches of trees extending over the fence line shall be trimmed to give a clear height of 8 feet above the ground along the fence line. Width of clearing for fence line shall be 4 feet.

3.2 FENCE INSTALLATION

A. Post holes and excavations for footings and anchors shall be excavated on the lines established by the Engineer to the depths and cross-sections shown on the standard drawings. **All fence post hole excavations shall be on FWP property or easement, 12" from the surveyed property boundary line, marker, or monument.** Do not disturb any survey property corner monument or marker during fence installation. Leave all line-of-sight survey marker t-posts in place.

B. Wooden posts may be driven when so prepared and any damaged posts shall be repaired or rejected at the discretion of the Project Manager. In all cases where posts are repaired, the damaged area or split shall be given **two coats of preservative material** approved by the Project Manager. Posts shall be plumb when set. All posthole filling and backfilling work shall be in six-inch layers and each layer shall be solidly tamped and compacted as it is placed.

C. Posts that are cut or trimmed for any valid reason shall be given **two coats of preservative material** approved by the Engineer. Braces shall be securely nailed to terminal and brace posts. **Brace to post joint shall be coped or notched.** No square to round joint accepted.

D. Deadmen or anchors will be used at grade depressions or other places where the vertical space from the ground to the bottom fence wire has exceeded the design value within a one rod distance.

   In such situations where the bottom of the depression is an intermittent stream channel with a sandy gravel or cobble bottom or an active ditch, the depressions shall be treated as a Minor Drainage Channel. Such channels shall have NO POSTS PLACED IN THE CHANNEL, and posts on either side shall be equally spaced from the edge of the channel. PVC pipe shall be hung under the fence at the channel in the same manner as described in Stream Crossings, to prevent livestock passage.

E. Brace panels shall be installed at angle points, corners, gates, or wherever a break in the terrain occurs. However, in no case shall brace panels be more than **30 rods or 500 feet apart**. See Table 1 for brace panel installation requirements. Brace wire shall be tight when twisted. Double wrap the wire at brace post tie-off. Cross the braces with the end of the wires to be tied off. **Barbed wire fence wire shall be tied off at each brace.**

F. Wood line posts shall be installed **every tenth post (165 feet)** or evenly spaced on **runs longer than 15 rods (247 feet).** In no case shall a line post be used as a substitute in a situation that would typically require a single, or double, brace.

Table 1. Brace Panel Installation Requirements

Panel Type	No. of Panels	Location Applications	
		Horizontal	Vertical
Single	1	In Line, Each side of gates	Constant Grade
Double	2	Angle points < 90°	Grade Breaks < 45°
Corner	4	90° Corners	Grade Breaks > 45°

G. All posts shall be plumb and solidly set in place after backfilling or driving has been completed.

H. Stretching by a motor vehicle will not be permitted; the power must be by or through a mechanical stretcher or device designed for such use.

I. Fence line shall be straight and square between corner points.

J. Fence clips shall be hooked and both ends twisted all the way around fence wire.

K. Tension shall be applied in accordance with wire manufacturer's recommendations.

L. Fence wire shall be wrapped around terminal posts and fastened to itself with at least four turns. Fence wire, in general, shall be placed on the side of the post opposite the site but on curves shall be placed so the force is against the post. At grade depressions and alignment angles, where stresses tending to pull posts from the ground are created, the wire fence shall be snubbed or guyed at the critical points by brace wire attached to each horizontal line of fence wire and the end of the combined strands being firmly attached to a "deadman" buried not less than two feet in the ground, or to an approved "anchor" at a point which will serve best to resist the pull of the wire fence. "Deadmen" also may be fastened to posts. Fence wire and brace wire shall be installed without nicks or significant abrasions. Nicks or abrasions that may lead to pre-mature wire breaks shall be rejected by the Project Manager and replaced at no cost by the Contractor.

M. U-shaped staples shall be driven diagonally across the wood grain so that both points do not enter between the same grain. In depressions where wire up-lift occurs, staples shall be sloped slightly upward, against the pull of the wire. On level ground and over knolls, staples shall be sloped slightly downward. Wire shall be stapled tightly at corner, end, and pull posts. In no case shall staples be driven so tight as to damage the wire.

N. A cross-fence, not the property of the Owner, shall **not** be fastened to the Owner's fence but shall be terminated, in a workmanlike manner, adjacent thereto.

O. Upon completion, the fence shall be true to line and grade; **all posts shall be vertical and firm** and all wire shall be taut and the completed fence shall be completely acceptable in all respects. No openings shall be left that will permit stock to pass through the fence.

P. Exterior boundary fences shall have owner-supplied 4" x 12" boundary signs attached no more than 500 feet apart and 2 at every corner panel. Signs shall be securely fastened to posts, rails or between fence wires as determined by the Project Manager.

Additional owner-supplied 12" x 18" aluminum signs shall be installed at all exterior gates and corners where designated by the Project Manager. The cost of installing such signs shall be subsidiary to the project and shall not constitute a pay item and shall be considered incidental thereto and no payment shall be made for it.

Q. Weed Control: All equipment used during construction shall be thoroughly washed both inside, outside and underneath of all pickup boxes, trailers, trucks, etc. before entrance to the project area. Vehicles used to commute to and from job site shall be kept clean so as not to transport weed seed to project area. This cost shall be subsidiary to the project and shall not constitute a pay item and shall be considered incidental thereto and no payment shall be made for it.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF MEASUREMENT

A. All types of fence will be measured by the linear foot (or rod) complete in place, on its actual alignment, **inclusive** of brace panels, and corners, and **exclusive** of gates and associated gate panels. The measurement will be made on the fence line along the ground, from end post to end post, less the length of gates and gate panels, the intent being to measure the actual length of fence in place.

If it is necessary, in crossing depressions, to install a double section of fence, vertically, this extra section will be measured for payment.

B. Gates will be measured on a per each basis, **including 2 single panels.** In the case of double wildlife gates, this shall include both gates and three single braces as a single unit.

C. Stream Crossings shall be paid as wire gates.

D. Deadmen anchors, minor drainage channels, tree anchors, and any line clearing required **shall be subsidiary to the fence and shall not constitute pay items and shall be considered incidental to fence construction.**

E. For the purpose of change orders to the contract, individual unit prices shall be provided for single (two-post) braces, double (three post) braces, two panel corners, four panel corners, and wire gates.

4.2 BASIS OF PAYMENT

A. All types of fence shall be paid for per foot (or rod) basis, measured as specified above.

B. Gates will be paid for on a unit price per each basis.

END OF SECTION 02810