

Montana Fish, Wildlife & Parks

**SPECIFICATIONS FOR WORK
TECHNICAL PROVISIONS**

Incorporation of Montana Public Works Technical Specifications.

The Technical Specifications as found in Montana Public Works Standard Specifications (MPWSS), Seventh Edition, and/or current Addendums or Revisions; are hereby incorporated by reference and made a part of this Contract:

Incorporation of Montana Fish, Wildlife & Parks Technical Specifications and Modifications to MPWSS 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
- SECTION 01750 - Final Cleanup
- SECTION 02112 - Removal of Structures
- SECTION 02810 - Fencing
- SECTION 02836 - Cattleguard

SECTION 01010 - SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Owner and Contractor Responsibilities
- B. Contractor use of site and premises.
- C. Scope of Work

1.2 Owner and Contractor Responsibilities

- A. Owners Responsibilities:
 - 1. Responding to project questions.
 - 2. Final Acceptance and inspections.
 - 3. Submittal and material review.
 - 4. Staking fence line that deviates from current fence line.
 - 5. Measurement and Payment of Fencing.
 - 6. Furnishing Boundary Signs
- B. Contractor's Responsibilities:
 - 1. Furnishing of all equipment and material to complete work as bid.
 - 2. Quality control of work.
 - 3. Completion of project as bid.
 - 4. Coordination with FWP Personnel.

1.3 CONTRACTOR USE OF SITE

- A. **Contractor work window is -as weather permits for this project**

1.4 SCOPE OF WORK

- A. Project Objective: The project includes reconstruction, removal and replacing boundary fence through the Beavertail Pond & Erskine FAS including four wire fence, brace panels, and gates.
- B. Scope of Work:
Work includes the following but is not limited to the general description contained herein:

1. Mobilization

- ◆ General: This bid item shall include the costs associated with mobilizing to the project site, insurance, bonding, permitting, and submittals.
- ◆ Work Included:
 - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
 - Transport and set up all equipment, materials, and other items needed to complete the project;
 - All permits, coordination, and compliance inspections required for the work;
 - Installation of all BMP's and BMP plans;
 - Insurance and bonding;
 - Prepare and provide submittals, construction schedule, and all other paperwork required by the contract documents prior to construction startup.
- ◆ Measurement: No measurement shall be taken for this item.
- ◆ Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal.

2. Fence Removal

- ◆ General: This bid item shall include the costs associated with removal and disposal of all rotted and unusable existing fencing materials
- ◆ Work Included:
 - Removal of all rotted fence brace panels and non-reusable wire, posts, and braces.
 - Proper disposal of all steel fencing materials and wood fence materials
 - Salvage of steel posts that meet qualifications stated in Section 02112
- ◆ Measurement: Measurement shall be taken per linear foot of fence removed.
- ◆ Payment: Payment shall be by the price bid per linear foot "Fence Removal" as listed in the proposal.

3. Fence Reconstruction

- ◆ General: This bid item shall include the costs associated with removal and disposal of all existing non-reusable fencing materials, rotten fence posts, braces and rusted wire. If condition is satisfactory Tee posts can be straightened and reused.
- ◆ Work Included:
 - Replacing wooden posts and braces as marked by FWP Project Manager throughout the project.
 - Removal of all fence wires that cannot be reused.
 - Tighten all wires used.
 - Proper disposal of all steel fencing materials and treated wood fence materials
 - Salvage of steel posts that meet qualifications stated in Section 02112
- ◆ Measurement: Measurement shall be taken per linear foot of fence reconstructed.
- ◆ Payment: Payment shall be by the price bid per linear foot “Fence Reconstruction” as listed in the proposal.

4. 4-Wire Boundary Fence

- ◆ General: This bid item shall include the installation of 4-wire boundary fence.
- ◆ Work Included:
 - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified.
 - Transporting all materials to fence lines for installation. This work shall include incorporation of new fence line at the two ends into existing fence line.
 - Completion of fence as specified in SECTION 02810.
 - Fence installed according to plans and details.
- ◆ Measurement: Measurement shall be taken per linear foot of fence installed including braces and stream crossings, but exclusive of gates.
- ◆ Payment: Payment shall be by the price bid per linear foot “4-Wire Boundary Fence” as listed in the proposal.

5. 2 – Post Brace Panel

- ◆ General: This bid item shall include the installation of 2-Post Brace Panels.
- ◆ Work Included:
 - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified.
 - Completion of fence bracing as specified in SECTION 02810.
 - Appropriate brace based on Table 1 in Section 02810.
 - Fence bracing installed according to plans and details.
 - Ensuring Braces at end of each run, at gates, stream crossings and a minimum of 30 rods apart.
- ◆ Measurement: Measurement shall be taken per brace installed.
- ◆ Payment: Payment shall be by the price bid per “2 -Post Brace Panel” as listed in the proposal.

6. 3 - Post Brace Panel

- ◆ General: This bid item shall include the installation of 3-Post Brace Panels.
- ◆ Work Included:
 - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified.
 - Completion of fence bracing as specified in SECTION 02810.
 - Appropriate brace based on Table 1 in Section 02810.
 - Fence bracing installed according to plans and details.
 - Ensuring Braces at end of each run, at gates, stream crossings and a minimum of 30 rods apart.
 - To be used in locations where horizontal corner is less the 90 degrees and grade breaks up to 45 degrees.
- ◆ Measurement: Measurement shall be taken per brace installed.
- ◆ Payment: Payment shall be by the price bid per “3 -Post Brace Panel” as listed in the proposal.

7. 16' Wire Gate

- ◆ General: This bid item shall include the installation of 16' Wire Gates.
- ◆ Work Included:
 - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified.
 - Completion of gate installation as specified in SECTION 02810.
 - Gates installed according to plans and details.
- ◆ Measurement: Measurement shall be taken per gate installed.
 - ◆ Payment: Payment shall be by the price bid per "16' Wire Gate" as listed in the proposal.

8. Cattleguard

- ◆ General: This bid item shall include the installation of FWP supplied cattleguards. Wings and other materials are to be provided by contractor.
- ◆ Work Included:
 - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified.
 - Completion of cattleguard installation as specified in SECTION 02836.
 - Cattleguards installed according to plans and details.
- ◆ Measurement: Measurement shall be taken per cattleguard road crossing installed.
 - ◆ Payment: Payment shall be by the price bid per "Cattleguard Crossing" as listed in the proposal.

9. Wire Stream Crossing Gate

- ◆ General: This bid item shall include the installation of Wire Stream Crossing Gate.
- ◆ Work Included:
 - All labor, tools, equipment, materials, and incidentals needed to complete the work as

- specified.
- Completion of gate installation as specified in SECTION 02810.
- Gates installed according to plans and details.
- ◆ Measurement: Measurement shall be taken per gate installed.
- ◆ Payment: Payment shall be by the price bid per Wire Stream Crossing Gate” as listed in the proposal.

C. CONTRACTS:

All work shall be done under one general contract provided by the Montana Department of Fish Wildlife and Parks Design and Construction.

D. PROPOSAL:

1. Proposal shall include all costs to complete the work as described in the plans and specifications, utility locates, required insurance costs and 1% MDOR Contractor Gross Receipts Tax of 1% if contract amount exceeds \$80k.

END OF SECTION

SECTION 01450

MOBILIZATION/DEMOBILIZATION

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

- A. This item shall consist of the preparatory 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:

- 25% of the amount bid for mobilization/demobilization when the Contractor has moved on-site and begun construction activities.
- 50% of the amount bid for mobilization/demobilization when 25% of the contract amount (exclusive mobilization/demobilization) has been completed.
- 75% of the amount bid for mobilization/demobilization when 50% of the contract amount (exclusive mobilization/demobilization) has been completed.
- 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 RESPONSIBILITIES

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 matter 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 PAVEMENT, 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 and wood posts and braces as directed by the Project Representative. All removed metal fencing material becomes property of the Contractor. Dispose all removed metal fencing material off the project site and obey all state, county, and local disposal restrictions and regulations.

3.3 EXISTING FENCE METAL POST REMOVAL AND/OR SALVAGE

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

Salvage and reinstallation of metal posts, per FWP's salvage criteria, at the new boundary fence location. Metal post salvage criteria includes:

- Same dimensional characteristics for new Metal posts specified
- Straight and true, not bent or out of alignment (measured over entire length)
- Less than 15% rusted surface area

Non-salvaged Metal posts become property of the Contractor. Dispose all non-salvageable Metal posts off the project site and obey all state, county, and local disposal restrictions and regulations. Non-salvageable Metal 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 as directed by the Project Representative.

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.

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 1/2 gage strands. "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 1/2 gage 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.
- C. Brace panel wire shall be barbless, smooth 9 gage **soft** wire meeting requirements of ASTM A-641 or two twisted strands of 12 1/2 gage strands. It will be used for constructing braces and panels, tying to anchors, etc.
- D. 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 gage galvanized, 1-3/4 inches long.
- E. Nails. Shall be 40 d common galvanized.
- F. Fence clips shall be not lighter than 12 1/2 gage, galvanized. They shall be used to fasten the wire to metal posts and both ends shall be bent all the way around fence wire.
- G. 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 5-1/2 feet long. The metal shall be good commercial quality steel with maximum carbon content of 0.82%. Posts shall be Tee, H, channel, or U-bar section and shall have corrugations, knobs, notches, holes, or studs so placed and constructed as to engage 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.

- H. Wood Posts and Brace Rail. Posts and brace rail shall be made from western larch, lodge pole pine, ponderosa pine, or Douglas-fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished round. **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 AWWA standards. Penetration shall be at least 1/2 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 AWWA standards. **Certification of AWWA treatment shall be provided to the Project Manager.**
- I. Metal brace panels and line posts shall be constructed with a minimum 2-7/8" diameter with a minimum length of 8'. Brace rails shall be 1-5/8" diameter pipe or as approved by the Engineer. Connections shall be mechanical as approved of by the engineer.
- J. Brace Panels. Shall be placed at corners, endpoints and when run exceeds **30 rods**. Brace panels shall be constructed as depicted in drawings and shall provide for strong anchorage points and shall aligned with fence line within a tolerance of 2 degrees.
- K. Gates and Single Panels. Gates shall be 12'- 16' wide and shall be located in the field by the Engineer. Post and brace rail shall be the same as specified for line fence panels and corners.
Where designated, wire gates shall have 4 strands of barbwire with 3 wood stays. Stays shall be minimum 3" diameter wood. Each 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.
- L. 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.

- a. Extend stays down past bottom wire attached to posts, creating a hinge point to pass debris. Thread bottom ends of stays through 1½" diameter PVC pipe suspended parallel to bottom wire. Bottom wire to be 1 foot above water surface.
 - b. Each stream crossing shall have a new single panel and mechanical over-center closure **on each side**.
- M. 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.
- N. 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.
- O. 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.

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. "Clearing" shall consist of the falling of trees greater than 3 inches diameter breast height (dwb), delimiting 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 6 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. Wooden posts may be driven when so prepared and any damaged posts shall be repaired or rejected. Post shall be plumb when set. **All fence post hole excavations shall be on FWP property or easement, 12" from the surveyed property line, marker, or monument.** Do not disturb any survey property corner monument or marker during fence installation. Leave all line-of-sight marker t-posts in place.
- B. 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 apart**. See Table 1 for brace panel installation requirements. One strand of brace wire will be used in accordance to standard drawing. Brace wire shall be tight when twisted. Barbwire fence wire shall be tied off at each brace.

Table 1. Brace Panel Installation Requirements

Panel Type	No. of Panels	Location Applications	
		Horizontal	Vertical
Single (two post panel)	1	In Line, Each side of gates	Constant Grade
Double (three post panel)	2	<90° Corners	Grade Breaks < 45°
Five post panels	4	90° Corners	

- F. All posts shall be plumb and solidly set in place after backfilling or driving has been completed.
- G. 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.
- H. Fence line shall be straight and square between corner points.
- I. Fence clips shall be bent all the way around fence wire on both ends. Fence clips shall be applied with the tools and in a manner recommended by the manufacturer.
- J. Tension shall be applied in accordance with wire manufacturer's recommendations.
- K. 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.
- L. 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.

- M. 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.
- N. 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 or other large animals to pass through the fence.
- O. 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.

- P. Weed Control: All equipment used during construction shall be thoroughly washed both inside, outside, underneath, pickup boxes, trailer's, trucks, etc. before entrance to the project area. Vehicles used to commute to and from job site shall be kept clean as not to transport weed seed to project area. This cost shall be subsidiary to the project and 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 complete in place, on its actual alignment, inclusive of brace panels and corners and excluding gates. The measurement will be made on the fence line along the ground, from end post to end post, including wing fences to structures, 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, excluding brace panels.
- C. Deadmen anchors, tree anchor, and any line clearing required shall be subsidiary to the fence and considered incidental thereto.
- D. Brace panels will be measured on a per each basis with the exception of jack leg

brace panels. Jack leg brace panels will not be measured separately for payment.

E. Stream Crossing will be measured on a per each basis.

4.2 BASIS OF PAYMENT

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

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

C. Brace panels, with the exception of jack leg brace panels, will be paid on a unit price per each basis.

D. Stream Crossing will be paid on a unit price per each basis.

END OF SECTION 02810

SECTION 02836

CATTLEGUARDS

PART 1. GENERAL

1.1. SECTION INCLUDES

- A. Cattleguards placed to prevent the straying of livestock into the site, but not obstructing the free passage of vehicles.
- B. Cattleguards shall be furnished and installed by Contractor at the location shown on the Plans.
- C. Each cattleguard installation shall be equipped with two wings.
- D. Painting of cattleguard is included under Section 09900.

1.2. RELATED SECTIONS

Section 02222 - Excavation
Section 02223 – Backfilling

PART 2. PRODUCTS

2.1. MATERIALS

- A. Wings.
 - 1. Wings connecting the cattleguard to the fence shall be a standard manufacture design, constructed from angle iron.
- B. Cattleguard.
 - 1. Cattleguard shall be a standard manufacture design for H-20 loading.
 - 2. Length shall be determined as per plan with a minimum width of 12 feet.
 - 3. Shall be provided with center clean-out sections, one in each unit of double unit installation.
 - 4. Cattleguard shall be shop-primed to receive finish paint as specified under Section 09900.
 - 5. Shop drawings shall be submitted and approved prior to ordering.
- C. Wood Base.
 - 1. Wood base shall be formed from 8 x 8 wood timbers, pressure treated with ACA or CCA in accordance with AWPA standards for this type of wood use.
 - 2. Lengths shall be as shown on the Drawings.
- D. Wood Posts.
 - 1. Posts shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir.
 - 2. Shall have bark removed, be well seasoned, sound, and straight-grained.
 - 3. Posts shall be finished round.
 - 4. Posts shall be 5 inch minimum diameter.
 - 5. Posts shall be full length treated with ACA or CCA solution conforming to AWPA standards.

6. Posts that are to be driven shall be tapered on the butt end.

PART 3. EXECUTION

3.1. CONSTRUCTION METHODS

A. Wood Base.

1. The wood base shall be constructed to the lines and grades provided in conformity with the standard drawings.
2. Cuts or abrasions in the wood surfaces shall be treated with preservative.
3. Joints shall be pinned with No. 5 rebar in a drive-fit hole.

B. Cattleguard.

1. The metal structure shall be placed upon the wood base and securely fastened thereto.
2. The structure shall bear on the wood base for the full length of all bearing surfaces.

C. Wings.

1. Wings shall be affixed to the cattleguard and connected to the fence with a lag bolt.
2. Wing shall taper to attach to the fence post approximately four feet above grade and four feet from the end of the guard.
3. The wing-fence opening shall be closed with four equally spaced strands of barb wire.
4. The post shall extend 6" above the top of the wing.
 - a. Posts shall be set 3' deep in concrete.
5. 5. Painting.
 - a. Per Section 09900 metal primer.

D. Handling and Erection

1. During handling or erection, cattleguards shall be handled in such a manner as not to damage or abrade the painted surface.
2. Any damaged surfaces shall be repainted to the satisfaction of the Project Manager.

E. Backfill

1. Per Section 02223.

END OF SECTION