

INVITATION TO BID
FOR
LONG CREEK No. 5 FENCE PROJECT
CONTRACT

OCTOBER, 2021

GRANT SOIL AND WATER CONSERVATION DISTRICT
721 SOUTH CANYON BOULEVARD
JOHN DAY, OREGON 97845

DISTRICT DIRECTORS

Pat Voigt, Chair
Phil St. Clair, Vice Chair
Roger Ediger, Secretary/Treasurer
Joanne Keerins
Rick Henslee

Kyle Sullivan, District Manager
Pat Holliday, Programs Assistant

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SECTION B – INVITATION TO BID

INVITATION TO BID LONG CREEK NO. 5 FENCE PROJECT

Individually sealed bids will be received from qualified vendors by Grant Soil and Water Conservation District (hereinafter called DISTRICT), at 721 South Canyon Boulevard, John Day, Oregon 97845 until **3:00 PM PDT, October 28, 2021** for the construction of approximately 1.7 miles of wire fence, in Grant County, Oregon. Immediately thereafter, Bids will be publicly opened. The full Invitation To Bid package, including all Addenda may be obtained through the project point of contact, Kyle Sullivan at 541-575-0135 ext. 111 or e-mail sullivank@ortelco.net, by visiting the DISTRICT Office at above address, or at the DISTRICT'S website www.grantswcd.net.

The Project location is approximately 9 miles southeast of Long Creek, Oregon. All work associated with this Invitation To Bid must be completed within a 60 day performance period. Liquidated damages of \$100 per day will apply to the contract resulting from this Invitation To Bid, upon the contractor's failure to complete the work within the specified time.

This Invitation to Bid and the resulting Contract are subject to the provisions of the Federal Davis-Bacon Act (40 U.S.C. 3141 et seq.) and Oregon Revised Statutes 279C.800 through 279C.870 relative to Oregon Prevailing Wage Rate Law.

A voluntary pre-bid conference and tour of the work area will be conducted **October 26, 2021 at 9:00 AM (PDT)**. The tour will initiate in at the General Store in Long Creek at the intersection of Hwy 395 and Main Street. Bidders must provide their own transportation.

Bidders are not required to attend this voluntary pre-bid conference and tour, but with the complexity of this project it is strongly recommended that bidders or their representatives attend.

Individually sealed envelopes or packages containing bids and supporting data as stipulated in the instructions to Bidders shall be clearly marked with the vendor's name and the fence project name, **LONG CREEK NO. 5 FENCE PROJECT**. Bids sent by mail should be forwarded by certified mail, return receipt requested, addressed to the DISTRICT as shown above, in care of Pat Holliday, and likewise shall be clearly marked or endorsed as stated herein.

Bids received after the time established for receipt of bids will not be considered. Bids may be withdrawn or modified in writing at any time prior to bid opening, following the guidelines established in the Invitation to Bid.

The DISTRICT may reject any Bid not in compliance with all prescribed public bidding procedures and requirements and reserves the right to reject for good cause any or all Bids in whole or in part upon the finding of the DISTRICT that it is in the public interest to do so, to waive irregularities not affecting substantial rights, and to postpone the award of the work as necessary for a period of time not to extend beyond thirty (30) days from the Bid Opening Date.

Bid prices quoted shall remain firm for a period of thirty (30) days from the date of Bid Opening.

The apparent successful Bidder shall provide all required proofs of insurance, furnish all applicable security bonds, and other specified deliverables to the DISTRICT within twelve (12) calendar days from date the Intent-to-Award Announcement is issued by the DISTRICT. Failure to present the required documents within this period may result in Bid rejection.

Grant Soil and Water Conservation District

By: Kyle Sullivan, District Manager

SECTION C - INSTRUCTIONS TO BIDDERS

C.1 BID PREPARATION:

C.1.1 Compliance: All Bids must be sealed, clearly labeled, and presented to the Grant Soil and Water Conservation DISTRICT (herein called "DISTRICT") prior to the stated Bid Opening time. All Bids shall be typed or prepared in ink and signed in ink by an authorized representative of the Bidder. The supplied Bid proposal forms shall be used to ensure identification and proper presentation.

C.1.2 Product Quality: Brand names, when used, indicate quality and type desired. Other brands or equipment of equal quality, merit, and utility will be subject to DISTRICT approval.

C.1.3 Unit and Total Price: Unless otherwise indicated, the price of each item must be clearly shown in the space provided. The price of each item shall be extended to show the total when required. In cases of errors in extensions, the unit price shall prevail. The written unit price shall prevail over the numerical unit price.

C.1.4 This Invitation To Bid and the resulting Contract are governed by Oregon Law. Specific laws and rules that govern the solicitation process are found in Chapters 279A and 279C of the Oregon Revised Statute and Grant Soil and Water Conservation District Public Contracting Rules.

C.1.5 Bidder is bound by and will comply with all requirements, specifications, plans, terms and conditions contained in this Invitation To Bid (including all listed attachments and Addenda, if issued).

C.2 INFORMATION TO BE SUBMITTED WITH BID:

- **Construction Contractors Board (CCB) Registration Requirements; & Joint Venture - Partnership Declaration, Section N;**
- **Addenda Acknowledgement; Section O;**
- **Signature of Bidder's Duly Authorized Representative, Section Q;**
- **Bid Pricing Form, Exhibit 1; and**
- **Issued Addenda (If required).**

THE FOLLOWING SHALL BE SUBMITTED EITHER WITH THE BID SUBMISSION OR WITHIN TWO (2) WORKING HOURS AFTER THE CLOSING:

- **First Tier Subcontractor Disclosure Information, Section G.**

C.3 BID EVALUATION:

Bids will be evaluated to identify the lowest Responsive Bid submitted by a Responsible Bidder and not otherwise disqualified. The DISTRICT reserves the right to reject any and all Bids or to accept the Bid deemed to be in the best interest of the DISTRICT and the State of Oregon.

C.3.1 Responsiveness: To be considered responsive, the Bidder must substantially comply in all material respects with applicable solicitation procedures and requirements and the solicitation documents. In making such evaluation, the DISTRICT may waive minor informalities and irregularities.

C.3.2 Responsibility: Prior to award of a Contract, the DISTRICT will evaluate whether the apparent successful Bidder meets the applicable standards of responsibility identified in ORS 279C.375. In doing so, the DISTRICT may investigate Bidder and request information in addition to that already required in the Invitation To Bid, when the DISTRICT, in its sole discretion, considers it necessary or advisable.

C.4 BID READING:

At the prescribed time, date and place bids will be publicly opened and read, and Bidders are invited to be present to witness results. Award decisions will not be made at Bid Opening.

C.5 BID INFORMATION:

A tabulation of Bids received and considered prior to award will be publicly posted at the DISTRICT Office and copies may be obtained by request. The request may be included with the Bid or mailed separately to the DISTRICT.

SECTION D – GENERAL BIDDING INFORMATION

D.1 DEFINITIONS:

D.1.1 “DISTRICT” means the Grant Soil and Water Conservation DISTRICT, acting through its Board Chair or designated Contracting Officer.

D.1.2 “Invitation To Bid” means all contracting documents, whether attached or incorporated by reference, and any Addenda thereto, used for soliciting and bids.

D.1.3 “Addenda” are written or graphic instruments issued by the DISTRICT representative prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

D.1.4 “Bid” is a complete and properly signed proposal to do the work or designated portion thereof for the sums stipulated therein, submitted in accordance with the Bidding Documents.

D.1.5 “Bidder” is one who submits a bid for a prime contract with the DISTRICT for the work described in the proposed contract documents.

D.1.6 "Opening" means the date/time set to read the Bid submittals.

D.1.7 "Closing" means the date and time set in the Invitation To Bid for Bid submission, after which Bids may not be submitted, modified, or withdrawn by Bidder.

D.2 SCOPE OF WORK:

The DISTRICT is inviting Bids from qualified vendors to furnish all labor, tools, machinery, materials, transportation, equipment and services necessary, and reasonably incidental to the completion of the project described in the Invitation To Bid.

D.3 PROJECT PRICE ESTIMATE:

The following range is the project cost estimate for bonding purposes: \$16,000 - \$25,000

D.4. PROJECT COMPLETION SCHEDULE:

Performance of the contracted services shall be completed within a 60 day performance period.

D.5 LIQUIDATED DAMAGES:

Liquidated damages of \$100 per calendar day will apply to the Contract resulting from this Invitation To Bid for failure of the contractor to complete the work within the specified

performance period.

D.6 VOLUNTARY PRE-BID CONFERENCE:

D.6.1 A voluntary pre-bid conference and tour of the work area will be conducted **October 26, 2021 at 9:00 AM (PDT)**. The tour will initiate in at the General Store in Long Creek at the intersection of Hwy 395 and Main Street. Bidders must provide their own transportation.

BIDDERS ARE NOT REQUIRED TO ATTEND THIS VOLUNTARY PRE-BID CONFERENCE AND TOUR, BUT WITH THE COMPLEXITY OF THIS PROJECT IT IS STRONGLY RECOMMENDED THAT BIDDERS OR THEIR REPRESENTATIVES ATTEND.

D.6.2 The work area for the Long Creek No. 5 Fence Project is located entirely on public property.

D.6.3 Any statements made at this conference will not change the Plans, Specifications or other Contract Documents unless an Addendum has been issued by the DISTRICT.

D.7 POINT OF CONTACT:

The single contact point for questions regarding the Invitation To Bid, Specifications, Plans, Bidding process, change, clarification, the award process, protests and any other issues that may arise, is Kyle Sullivan at (541) 575-0135 ext. 111 and e-mail sullivan@ortelco.net.

D.8 INVITATION TO BID DOCUMENTS AVAILABILITY:

D.8.1 Bidders may obtain a hard or electronic copy of the full Invitation To Bid package from the Point of Contact identified in Section D.7. Hardcopies of the Invitation To Bid will be available to interested vendors in attendance at the pre-bid conference and tour and at the DISTRICT Office located at 721 S. Canyon Blvd., John Day, OR 97845, during regular business hours (Monday-Friday; 7:00am-5:00pm) or may be downloaded from the DISTRICT'S web site www.grantswcd.net. Upon request, the DISTRICT will provide or mail one (1) free hardcopy of the Invitation To Bid, including Addenda to each interested Bidder. Additional hardcopies can be ordered from the DISTRICT for a fee in accordance with the DISTRICT's Public Records Information Request Policy.

D.8.2 Attachments: Some exhibits and attachments may not allow for them to be downloaded or electronically mailed to interested Bidders. In these cases, the solicitation contains instructions on how to obtain hardcopies of these documents.

D.9 TRADE SECRETS:

Any information Bidder submits in response to the Invitation To Bid that Bidder considers a trade secret under ORS 192.501(2) or confidential proprietary information, and that Bidder wishes to protect from public disclosure, must be clearly labeled with the following: "This information constitutes a trade secret under ORS 192.501(2) or confidential proprietary information, and is not to be disclosed except in accordance with the Oregon Public Records Law, ORS Chapter 192." Bidders are cautioned that price information submitted in response to an Invitation To Bid is generally not considered a trade secret under the Oregon Public Records Law. Further, information submitted by Bidders that is already in the public domain is not protected. The State shall not be liable for disclosure or release of information when authorized or required by law or court order to do so. The State shall also be immune from liability for disclosure or release of information under the circumstances set out in ORS 646.473(3).

D.10 SOLICITATION LAW, RULES AND GENERAL CONDITIONS:

This Invitation To Bid and the resulting Contract are governed by Oregon Law. Specific laws and rules that govern the solicitation process are found in Chapters 279A and 279C of the Oregon Revised Statutes, and DISTRICT Public Contracting Rules. The Invitation To Bid and resulting Contract may be subject to other laws and rules. Bidders should obtain and become acquainted with the applicable provisions of the above laws and rules. Copies may be obtained as follows:

D.10.1 OREGON REVISED STATUTES (ORS Chapters 279A and 279C) - Can be obtained from Legislative Counsel Committee, S101 State Capitol, Salem, OR 97310-0630. Phone (503) 378-8146, or on line at: <http://www.leg.state.or.us/ors/home.html>

D.10.2 Grant Soil and Water Conservation District Public Contracting Rules – Can be obtained from the Point of Contact identified in Section D.4.

D.11 EXAMINATION OF DRAWINGS, SPECIFICATIONS, AND WORK SITE:

It is understood that the Bidder, before submitting the Bid, has made a careful examination of the Invitation To Bid, Plans, Specifications, Addenda, and Attachments; that the Bidder has been fully informed as to the quality and quantity of materials and character of the work required; and that the Bidder has made a careful examination of the location and conditions of the work. The State of Oregon, its Legislative Assembly or DISTRICT will in no case be responsible for any loss or for any unanticipated costs that may be suffered by contractor as a result of contractor's failure to acquire full information in advance and in regard to all conditions pertaining to the work.

D.12 SOLICITATION PROTEST; REQUEST FOR INTERPRETATION OF PROPOSED CONTRACT DOCUMENTS:

D.12.1 If a Bidder finds discrepancies, in, or omissions from, the Contract Documents, or if the Bidder is in doubt as to their meaning, the Bidder shall at once notify the DISTRICT. If applicable corrections or clarifications are necessary, the DISTRICT will issue written directives in the form of Addenda. Any clarifications or protests to the specifications should be detailed in official written correspondence to the Point of Contact and be received seven (7) calendar days or more prior to the bid opening date. It shall be the sole responsibility of the Bidder to understand all of the provisions of the bid invitation and contract specifications.

D.12.2 All issued Addenda will become a part of the Invitation to Bid and Contract.

D.12.3 Informal responses to Bidder questions regarding the project or Contract do not affect the provisions of the Invitation To Bid. Plans, Specifications, Contractual Terms, and Procurement Requirements can only be changed via Addenda issued by the DISTRICT.

D.12.4 Any Bid response that includes non-approved alternative product brands where approval is required, or that takes exception to the Specifications, Plans, or Contractual Terms of the Invitation To Bid may be deemed non-responsive and rejected from consideration.

D.13 PREPARATION OF BID PROPOSAL:

D.13.1 The Bidder shall submit their proposal upon the form(s) furnished by the DISTRICT. The Bidder shall specify the Bid item unit price; both written out in words and in figures, in addition to providing the total item amount (unit price multiplied by the approximate quantity) and total extended amount (sum of all total item amounts) in figures. All words and figures shall be in ink or typed.

D.13.2 If an amount entered by the Bidder on the proposal form is to be altered it should be crossed out with ink, the new Bid amount entered above or below it, and initialed by the Bidder, also with ink. In a case of discrepancy between the prices written out in words and those written in figures, the prices written in words shall govern.

D.13.3 The Bidder's proposal must be signed with ink by the individual, by one or more members of the partnership, by one or more members or officers of each firm representing a joint venture, by one or more officers of a corporation, or by an agent of the contractor legally qualified and acceptable to the DISTRICT.

D.13.4 Bid proposals shall be submitted in sealed packages or envelopes. To ensure proper identification and handling, all packages and envelopes shall be clearly marked with the name or number of the project, the Bidder's name and contact information, and addressed to the Grant Soil and Water Conservation DISTRICT at 721 South Canyon Boulevard, John Day, Oregon 97845. Bids sent by mail should be forwarded by certified mail, return receipt requested, addressed to the DISTRICT as shown above, in care of Pat Holliday, and likewise shall be clearly

marked or endorsed as stated herein.

D.13.5 Sealed Bids must be received by the DISTRICT prior to the designated Closing date/time. Bids received after the date/time for Closing will not be considered for award.

D.14 IRREGULAR PROPOSALS:

Bid proposals will be considered irregular and may be rejected for any of the following reasons:

D.14.1 If the proposal is on a form other than furnished by the DISTRICT, or otherwise specified, or if the form is altered or any thereof is detached.

D.14.2 If there are unauthorized additions, conditional or alternated bids, or irregularities of any kind which may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.

D.14.3 If the Bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

D.14.4 If the proposal does not contain the Bid price amount both; written out in words and in figures for each item listed, the total item amount in figures and the total extended amount of all items in figures.

D.14 MODIFICATION OF BIDS; OFFER WITHDRAWALS:

D.14.1 A Bidder may not modify any Bid after it has been deposited with the DISTRICT. A Bidder may rescind a Bid and deposit a new sealed Bid with the DISTRICT prior to the time set for Opening Bids. No oral, electronic, faxed or telephone Bids or modifications of Bids will be considered.

D.14.2 Qualified sealed Bids may be withdrawn by the Offeror in writing when submitted to the DISTRICT on the Offeror's letterhead, signed by the authorized representative, and received prior to the Bid Closing. Offeror withdrawals submitted in writing must be labeled as such and contain the associated Invitation to Bid number or name.

D.14.3 Qualified sealed Bids may also be withdrawn in person before the Bid Closing upon presentation of appropriate identification and evidence of authorization to act for Offeror. Signature confirmation of withdrawal may also be required.

D.15 WITHDRAWAL OF BID ITEMS:

The DISTRICT reserves the right to delete Bid items. The delete of one or more Bid items will

not affect the method of award.

D.16 SUBSTITUTIONS:

Any request for approval of equipment or product, when certain manufacturer's equipment, product brand or its approved equal is called for, shall be presented to the DISTRICT in writing at least seven (7) calendar days previous to the date on which Bids are to be opened. Requests for approval of substitutes must include complete specifications and descriptive literature.

D.17 PRELIMINARY BID RESULTS

Prior to the Intent to Award Announcement, the DISTRICT may post preliminary bid results. Such postings may not be correct and are not final.

D.18 TIME FOR OFFER ACCEPTANCE AND EXTENTIONS:

D.18.1 A Bidder's Bid is a firm offer, irrevocable, valid and binding on the Bidder for not less than thirty (30) calendar days from the Closing date.

D.18.2 The DISTRICT may request, orally or in writing that Bidders extend, in writing, the time during which the DISTRICT may consider their Bids. If a Bidder agrees to such extension, the Bid shall continue as a firm Offer, irrevocable, valid and binding on the Bidder for the agreed-upon extension period.

D.19 METHOD OF AWARD:

The responsiveness and responsibility of Bidders and of their proposed subcontractors will be considered in making the award. The DISTRICT shall have the right to accept alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Bid and the alternates accepted. The DISTRICT reserves the right to reject any Bid that does not comply with all prescribed public bidding procedures and requirements, and may reject for good cause any Bid or all Bids upon a finding by the DISTRICT that it is in the public interest to do so.

D.20 SUBSTANTIAL COMPLIANCE REQUIRED:

Bidders not in substantial compliance with Invitation To Bid requirements cannot be considered, and cannot be supplemented by submissions delivered after Closing. However, the DISTRICT may waive minor informalities and irregularities, and may seek clarification of any response that, in its sole discretion, it deems necessary or advisable.

D.21 OFFER EVALUATION CRITERIA:

Bidders will be evaluated to identify the lowest responsive Bid submitted by a responsible Bidder and not otherwise disqualified.

D.21.1 RESPONSIVENESS: To be considered responsive, the Bidder must substantially comply in all material respects with applicable solicitation procedures and requirements and the solicitation documents. In making such evaluation, the DISTRICT may waive minor informalities and irregularities.

D.21.2 RESPONSIBILITY: Prior to award of a Contract, the DISTRICT will evaluate whether the apparent successful Bidder meets the applicable standards of responsibility identified in ORS 279C.375. In doing so, the DISTRICT may investigate Bidder and request information in addition to that already required in the Invitation To Bid, when the DISTRICT, in its sole discretion, considers it necessary or advisable.

D.22 PROCESSING OF BIDS

Neither the release of a Bid Security, nor acknowledgment that the selection process is complete (whether by posting of a Bid tabulation sheet, issuance of notice intent to award, or otherwise), shall operate as a representation by the DISTRICT that any Bid submitted was complete, sufficient, lawful in any respect, or otherwise in substantial compliance with the Invitation To Bid requirements.

D.23 INTENT-TO-AWARD ANNOUNCEMENT

The DISTRICT reserves the right to announce its intent to award prior to formal Contract award by publically posting the tabulation sheet of Bid results at DISTRICT Office, or by letter. The Intent-to-Award Announcement shall serve as notice to all Bidders that the DISTRICT intends to make an award.

D.24 PROTEST OF INTENT TO AWARD

Adversely-affected or aggrieved Bidders shall have seven (7) calendar days from the date of the Intent-to-Award Announcement within which to file a written protest. Protests submitted after that date will not be considered. Protests must specify the grounds upon which the protest is based.

D.24.1 In order to be an adversely affected or aggrieved Bidder, the Bidder must claim to be eligible for award of the Contract as the responsible Bidder submitting the lowest responsive Bid and that any and all lower Bidders are ineligible to receive the Contract award.

D.24.2 An actual Bidder who is adversely affected or aggrieved by the award of the Contract to

another Bidder may protest award, in writing, within the timeline established. The written protest shall state the grounds upon which the protest is based. No protest of award shall be considered after the deadline.

D.25 AWARD

After expiration of the Intent-to-award protest period, and resolution of all protests, the DISTRICT will proceed with final award.

D.26 COMMENCEMENT OF WORK

Contractor shall not commence Work under the Contract until the Notice to Proceed has been issued by the DISTRICT.

D.27 INFORMATION TO BE SUBMITTED BY THE APPARENT SUCCESSFUL BIDDER:

D.27.1 INSURANCE: The apparent successful Bidder shall provide all required proofs of insurance to the DISTRICT within twelve (12) calendar days of notification of Intent-to-Award. Failure to present the required documents within the designated time period may result in Bid rejection. Bidders are encouraged to consult their insurance agent(s) about the required insurance coverage's listed below.

- **Workers' Compensation:** All employers, including the apparent successful Bidder, that employ subject workers who work under this contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. Contractors who perform the Work without the assistance or labor of any employee need not obtain such coverage. The apparent successful Bidder shall ensure that each of its Subcontractors complies with these requirements and shall require proof of such Workers' Compensation by receiving and keeping on file a certificate of insurance from each Subcontractor or anyone else directly employed by either the apparent successful Bidder or its Subcontractors.
- **Commercial General Liability:** The apparent successful Bidder shall obtain, at Bidder's expense, and keep in effect during the term of this Contract, Commercial General Liability Insurance covering bodily injury and property damage in a form and with coverages that are satisfactory to the State. This insurance shall include personal injury liability, products and completed operations, and contractual liability coverage for the indemnity provided under this Contract, and shall be issued on an occurrence basis. The apparent successful Bidder shall provide proof of insurance of not less than the amounts listed in the following schedules:

Per Occurrence Limit for any single claimant:

From commencement of the Contract term to July 1, 2022: \$782,600.

July 1, 2022 and thereafter the adjusted limitation as determined by the State Court Administrator pursuant to ORS 30.271(4), 30.272(4) and 30.273(3), as amended by 2019 SB 186 (effective March 27, 2019).

Per Occurrence Limit for multiple claimants:

From commencement of the Contract term to July 1, 2022: \$1,565,100.

July 1, 2022 and thereafter the adjusted limitation as determined by the State Court Administrator pursuant to ORS 30.271(4), 30.272(4) and 30.273(3), as amended by 2019 SB 186 (effective March 27, 2019).

- **Automobile Liability:** The apparent successful Bidder shall obtain, at Bidder's expense, and keep in effect during the term of this Contract, Automobile Liability Insurance covering owned, non-owned and/or hired vehicles, as applicable. The coverage may be written in combination with the Commercial General Liability Insurance. The apparent successful Bidder shall provide proof of insurance of not less than the amounts listed in the following schedules:

Per Occurrence Limit for any single claimant:

From commencement of the Contract term to July 1, 2021: \$782,600.

July 1, 2021 and thereafter the adjusted limitation as determined by the State Court Administrator pursuant to ORS 30.271(4), 30.272(4) and 30.273(3), as amended by 2019 SB 186 (effective March 27, 2019).

Per Occurrence Limit for multiple claimants:

From commencement of the Contract term to July 1, 2021: \$1,565,100.

July 1, 2021 and thereafter the adjusted limitation as determined by the State Court Administrator pursuant to ORS 30.271(4), 30.272(4) and 30.273(3), as amended by 2019 SB 186 (effective March 27, 2019).

- **Excess/Umbrella Insurance:** A combination of primary and excess/umbrella insurance is acceptable to meet the minimum coverage requirements for Commercial General Liability and Automobile Liability Insurance. In such case, the insurance certificate must include a list of the policies that fall under the excess/umbrella insurance. Sample wording is "The Excess/Umbrella policy is excess over primary Commercial General Liability and primary Automobile Liability Insurance."
- **Additional Insured:** The liability insurance coverage, except Professional Liability if included, required for performance of this Contract shall include the State of Oregon, its

departments, divisions, officers, and employees, as Additional Insureds but only with respect to the successful Bidder's activities to be performed under this Contract.

- Certificate(s) of Insurance: As evidence of the insurance coverage required by this Contract, the apparent successful Bidder shall furnish certificate(s) of insurance to the DISTRICT prior to execution of the Contract. The certificate(s) will specify all of the parties who are Additional Insureds or Loss Payees. Insurance coverage required under this Contract shall be obtained from insurance companies or entities acceptable to the DISTRICT that are allowed to provide such insurance under Oregon law.

D.27.2 PERFORMANCE BOND and PAYMENT BOND: No surety bonds are required for this Contract.

D.27.3 JOINT VENTURE/PARTNERSHIP INFORMATION: The apparent successful Bidder, if a Joint Venture/Partnership shall provide a copy of the joint venture agreement or partnership agreement evidencing authority to Bid and to enter into the resulting Contract that may be awarded, together with corporate resolutions (if applicable) evidencing corporate authority to participate as a joint venturer or partner. A contact person must also be designated for purposes of receiving all notices and communications under the Contract. All partners and joint venturers will be required to sign the Contract awarded.

SECTION E - BID SECURITY REQUIREMENTS

No bid security is required for this Contract.

SECTION F – PREVAILING WAGE RATES (BOLI & Davis-Bacon Requirements)

F.1 The Contractor and all subcontractors shall comply with the provisions of ORS 279C.800 through 279C.870, relative to Oregon Prevailing Wage Law and the Federal Davis-Bacon Act (40 U.S.C. 3141 et seq.).

Before starting Work the Contractor shall file with the Construction Contractors Board, and maintain in full force and effect, the separate public works bond required by ORS 279C.836, unless otherwise exempt under those provisions. The Contractor shall also include in every subcontract a provision requiring the Subcontractor to have a public works bond filed with the Construction Contractors Board before starting Work, unless otherwise exempt, and shall verify that the Subcontractor has filed a public works bond before permitting the Subcontractor to start Work.

F.2 This Invitation To Bid and the resulting Contract are subject to the following Bureau of

Labor and Industries (BOLI) wage requirements and the prevailing wages rates set forth in the following booklet, as amended, which is incorporated herein by reference with the same force and effect as though fully set forth herein, and is available at the following web link:

Prevailing Wage Rates for Public Works Contracts in Oregon – 2021

- Effective July 1, 2021

Prevailing Wage Rates State Apprenticeship Rates - 2021

- Effective January 1, 2021

These BOLI wage rates are available on line at:

<https://www.oregon.gov/boli/employers/Pages/prevailing-wage-rates.aspx>

F.3 Because the project involves federal funds, this Invitation To Bid and the resulting Contract are subject to federal Davis-Bacon Act requirements in addition to BOLI requirements. The Contractor shall pay the higher of the BOLI wage rates and fringe benefits, as identified in the above BOLI wage rate booklet, or the federal wage rates and fringe benefits listed in the publication “General Wage Determinations Issued Under the Davis-Bacon and Related Acts” that is last published prior to the Bid Closing date set forth in this Invitation To Bid. The following U.S. Secretary of Labor Wage Determination Wage Requirements, are incorporated herein by reference, and are available at the web link below: <https://beta.sam.gov/>

Federal Davis-Bacon Act Wage Rates General Decision Number: OR20210067 – Modification 3, Heavy Construction, 06/17/2021.

Bidders are advised that federal Davis-Bacon rates may be amended at any time prior to Bid Closing and that contractors remain responsible for meeting federal Davis-Bacon Act requirements and State of Oregon prevailing wage rate requirements.

F.4 The Work will take place in Grant County, Oregon.

SECTION G – FIRST-TIER SUBCONTRACTOR DISCLOSURE INSTRUCTIONS AND FORM

G.1 Pursuant to ORS 279C.370, Offerors are required to disclose information about certain first-tier subcontractors when the DISTRICT estimates the Contract value for a Public Improvement to be greater than \$100,000. Specifically, when the Contract amount of a first-tier subcontractor furnishing labor, or labor and materials, would be greater than or equal to: (i) 5% of the project Bid, but at least \$15,000, or (ii) \$350,000 regardless of the percentage, the

Bidder must disclose the following information about that Subcontract in its Bid submission or within two (2) working hours after Closing:

- (a) The subcontractor's name,
- (b) Dollar value and,
- (c) The category of work that the subcontractor would be performing.

DISTRICT MUST REJECT AN OFFER IF THE OFFEROR FAILS TO SUBMIT THE SPECIFIED DISCLOSURE INFORMATION BY THE STATED DEADLINE.

G.2 An Offeror shall submit the disclosure information either in its Offer submission or within two (2) working hours after Closing.

Compliance with the disclosure and submittal requirements is a matter of responsiveness. Offers which are submitted by Closing, but for which the disclosure submittal has not been made by the specified deadline, are not responsive and shall not be considered for Contract award.

G.3 The DISTRICT shall obtain, and make available for public inspection, the disclosure information. The DISTRICT shall also provide copies of the disclosed information to the Bureau of Labor and Industries as required by ORS 279C.835. The DISTRICT is not required to determine the accuracy or completeness of the information submitted. Substitution of affected first-tier subcontractors shall be made only in accordance with ORS 279C.585.

SECTION H – RESPONSIBILITY INQUIRY/CONTRACTOR REFERENCES

The DISTRICT reserves the right, pursuant to ORS 279C.375 to investigate and evaluate, at any time prior to award and execution of the Contract, the apparent successful Bidder's responsibility to perform the Contract. Submission of a signed Bid shall constitute approval for the DISTRICT to obtain any information the DISTRICT deems necessary to conduct the evaluation. The DISTRICT shall notify the apparent successful Bidder, in writing, of any other documentation required, which may include, but is not limited to, recent profit-and-loss history; current balance statements; assets-to-liabilities ratio, including number and amount of secured versus unsecured creditor claims; availability of short and long-term financing; bonding capacity; credit information; material; equipment; facility and personnel information; performance record of Contract performance; etc. Failure to promptly provide this information shall result in Bid rejection. The DISTRICT may postpone the award of the Contract after announcement of the apparent successful Bidder in order to complete its investigation and evaluation. Failure of the apparent successful Bidder to demonstrate Responsibility, as required under ORS 279C.375, shall render the Bidder non-responsible and shall constitute grounds for Bid rejection.

The DISTRICT also reserves the right to choose and investigate any reference whether or not furnished by the Bidder, and to investigate past performance of any Bidder with respect to its successful performance of similar projects, compliance with specifications and contractual obligations, its completion or delivery of service on schedule, and its lawful payment of suppliers, subcontractors, and employees. The DISTRICT may postpone the award or execution of the Contract after the announcement of the apparent successful Bidder in order to complete its investigation. The DISTRICT may reject a bid if, the opinion of the DISTRICT, overall reference responses indicate inadequate performance.

SECTION I - RECYCLED PRODUCTS

Vendors shall use recyclable materials to the maximum extent economically feasible in the performance of the Contract Work set forth in this document. ORS 279A.010(ii) provides as follows: "'Recycled product' means all materials, goods and supplies, not less than 50 percent of the total weight of which consists of secondary and post-consumer waste with not less than 10 percent of total weight consisting of post-consumer waste. 'Recycled product' also includes any product that could have been disposed of as a solid waste, having completed its life cycle as a consumer item, but otherwise is refurbished for reuse without substantial alteration of the product's form."

By my signature in Section Q, I, the undersigned duly authorized representative of the Bidder, hereby affirm that Bidder will comply with the above recycled products provisions.

SECTION J - CERTIFICATION OF COMPLIANCE WITH TAX LAWS

By my signature in Section Q of this Contract, I, hereby attest or affirm under penalty of perjury: That I am authorized to act on behalf of the Contractor in this matter, that I have authority and knowledge regarding the payment of taxes, and that Contractor is, to the best of my knowledge, not in violation of any Oregon Tax Laws.

SECTION K - CERTIFICATION OF DRUG-TESTING LAW REQUIREMENTS

(1) Pursuant to ORS 279C.505, the Bidder certifies by its signature on these solicitation document forms that it has a Qualifying Drug Testing Program in place for its employees that includes, at a minimum, the following:

(a) A written employee drug testing policy, (b) Required drug testing for all new Subject Employees or, alternatively, required testing of all Subject Employees every 12 months on a random selection basis, and (c) Required testing of a Subject Employee when the Bidder has reasonable cause to believe the Subject Employee is under the influence of drugs.

(2) A drug testing program that meets the above requirements will be deemed a "Qualifying Employee Drug Testing Program." An employee is a "Subject Employee" only if that employee will be working on the Project job site.

(3) If awarded a Public Improvement Contract as a result of this solicitation, Offeror agrees that at the time of Contract execution it shall represent and warrant to the Agency that its Qualifying Employee Drug Testing Program is in place and will continue in full force and effect for the duration of the Public Improvement Contract. The Agency's performance obligation (which includes, without limitation, the Agency's obligation to make payment) shall be contingent on Contractor's compliance with this representation and warranty.

(4) If awarded a Public Improvement Contract as a result of this solicitation, Offeror also agrees that at the time of Contract execution, and as a condition to Agency's performance obligation (which includes, without limitation, the Agency's obligation to make payment), it shall require each subcontractor providing labor for the Project to:

(a) Demonstrate to the Contractor that it has a Qualifying Employee Drug Testing Program for the subcontractor's Subject Employees, and represent and warrant to the Contractor that the Qualifying Employee Drug Testing Program is in place at the time of subcontract execution and will continue in full force and effect for the duration of the subcontract; or (b) Require that the subcontractor's Subject Employees participate in the Contractor's Qualifying Employee Drug Testing Program for the duration of the subcontract.

SECTION L - CERTIFICATION OF COMPLIANCE WITH NON-DISCRIMINATION LAWS

By my signature in Section Q, I certify that I am authorized to act on behalf of Bidder in this matter and that Bidder has not discriminated and will not discriminate against any disadvantaged business enterprise, minority-owned business, women-owned business, emerging small business, or business that a service-disabled veteran owns, in obtaining any required subcontracts. Failure to do so shall be grounds for disqualification.

SECTION M – DEBARMENT AND SUSPENSIONS

The Bidder hereby certifies that the Bidder is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in this Contract by any Federal department or agency, or by a State or Tribal Agency. If requested by the DISTRICT, the Bidder shall complete a Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion form, certifying this information. Any such form shall be incorporated into this Invitation to Bid by reference.

Bidder accepts the responsibility to ensure that it does not enter into a contract with a value of \$25,000 or more, with an individual or entity which is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in this Contract by any Federal department or agency, or by a State or Tribal Agency.

SECTION N - CONSTRUCTION CONTRACTORS BOARD (CCB) REGISTRATION REQUIREMENTS / JOINT VENTURE - PARTNERSHIP DISCLOSURE

N.1 CCB REQUIREMENTS:

Bidders are not required to be licensed with the State of Oregon Construction Contractors Board (CCB) by ORS 701.010(19).

N.2 JOINT VENTURE/PARTNERSHIP DISCLOSURE:

The Bidder shall disclose whether the Bid is submitted by either a partnership or joint venture.

NO: _____ **YES:** _____

If yes, the Bidder shall provide the name of the contact person for the partnership or joint venturer.

Name: _____

SECTION O - ADDENDA ACKNOWLEDGEMENT

O.1 The DISTRICT reserves the right to make changes to the Invitation to Bid and the resulting Contract, by written Addenda, prior to the closing time and date. Issued Addenda will be publically posted in the DISTRICT Office and available to interested Bidders upon request. The District is not responsible for a Bidders failure to receive notice of Addenda if such are posted in the foregoing manner. Addenda shall only be issued by the DISTRICT and upon issuance are incorporated into the Invitation to Bid or the resulting Contract.

O.2 By Bidder's signature in Section Q it acknowledges, agrees, and certifies to the following:

If any Addenda are issued in connection with this Invitation To Bid, Bidder has received and duly considered such Addenda, and has completed the blanks below identifying all Addenda issued, and acknowledging and agreeing to the terms of all such Addenda as those terms revise the terms, conditions, Plans and Specifications of this Invitation To Bid.

Check one: Addenda Received () Number _____ to Number _____

 None Received ()

SECTION P – RESIDENCY INFORMATION

Section Not Used

SECTION Q - SIGNATURE OF BIDDER'S DULY AUTHORIZED REPRESENTATIVE

THIS BID MUST BE SIGNED IN INK BY AN AUTHORIZED REPRESENTATIVE OF THE BIDDER; ANY ALTERATIONS OR ERASURES TO THE BID MUST BE INITIALED IN INK BY THE UNDERSIGNED AUTHORIZED REPRESENTATIVE.

The undersigned acknowledges, attests and certifies individually and on behalf of the Bidder that:

(1) S/he is a duly authorized representative of the Bidder, has been authorized by Bidder to make all representations, attestations, and certifications contained in this Bid and all Addenda, if any, issued.

(2) Bidder, acting through its authorized representatives, has read and understands all Bid instructions, Specifications, Plans, terms and conditions contained in this Bid Document (including all listed attachments and Addenda, if any, issued);

(3) The Bid submitted is in response to the specific language contained in the Invitation To Bid, and Bidder has made no assumptions based upon either (a) verbal or written statements not contained in the Invitation To Bid, or (b) any previously-issued Invitation To Bid, if any.

(4) The DISTRICT shall not be liable for any claims or be subject to any defenses asserted by Bidder based upon, resulting from, or related to, Bidders failure to comprehend all requirements of the Invitation To Bid.

(5) The DISTRICT shall not be liable for any expenses incurred by Bidder in preparing and submitting its Bid or in participating in the Bid evaluation/selection process.

(6) The Bidder agrees to be bound by and comply with all applicable requirements of ORS 279C.800 through ORS 279C.870 and the administrative rules of the Bureau of Labor and Industries (BOLI) regarding prevailing wage rates.

(7) The Bid was prepared independently from all other Bidders, and without collusion, fraud, or other dishonesty.

(8) Bidder is bound by and will comply with all requirements, Specifications, Plans, terms and conditions contained in this Bid (including all listed attachments and Addenda, if any, issued);

(9) Bidder will furnish the designated item(s) and/or service(s) in accordance with the Bid Specifications, Plans and requirements, and will comply in all respects with the terms of the resulting Contract upon award;

(10) Bidder represents and warrants that Bidder has the power and authority to enter into and perform the Contract and that the Contract, when executed and delivered, shall be a valid and binding obligation of Contractor enforceable in accordance with its terms; and

(11) All affirmations and certifications contained in aforementioned sections are true and correct.

Authorized Signature: _____

Title: _____

FEIN ID# or SSN# (required): _____

Contact Person (Type or Print): _____

Telephone Number: _____ Fax Number: _____
(____)_____ (____)_____

E-Mail Address: _____

EXHIBIT #1 - BID PRICING FORM

LONG CREEK NO. 5 FENCE PROJECT						
BID PRICING FORM						
Item #	Description	Quantity	Unit	Unit Price		Total Amount
				Amt. in Figures	Unit Price Written Out In Words	
1	4-Strand Wire Fencing	1.7	Per Mile	\$ _____	Dollars	\$ _____
2	Water Gap	1	Per Each	\$ _____	Dollars	\$ _____
3	Stream Crossing	1	Per Each	\$ _____	Dollars	\$ _____
4	Metal Gates	2	Per Each	\$ _____	Dollars	\$ _____
5	Wire Gates	3	Per Each	\$ _____	Dollars	\$ _____

BIDDER NAME : _____

TOTAL BID PRICE \$ _____

ADDRESS: _____

TELEPHONE NO.: _____

E-MAIL ADDRESS: _____

SIGNATURE: _____

EXAMPLE ON HOW TO FILL IN BID PRICING:

1	WORK ITEM DESCRIPTION	10	Per Each	\$2.99	TWO AND 99/100 or TWO DOLLARS, NINETY NINE CENTS	\$29.99
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ATTACHMENT - A

USFS Long Creek No. 5 Fence Specifications and Drawings October, 2021

Contracting Agency:

**Grant Soil and Water Conservation District
721 South Canyon Boulevard
John Day, OR 97845**

TABLE OF CONTENTS

SECTION A	GENERAL REQUIREMENTS
SECTION B	SUMMARY OF WORK
SECTION C	DRAWINGS
SECTION D	SITE WORK
ATTACHMENTS	DRAWINGS AND PROJECT MAP (See Section C)

SECTION A – GENERAL REQUIREMENTS

A.1 All Work shall conform to the requirements of the Contract, Bidding Documents, Plans, Specifications, Drawings, and Professional and Industrial Standards. Questions regarding the Work should be directed to the Grant Soil and Water Conservation District (District). The Contractor shall notify the District at least 24 hours prior to commencement of the job.

A.2 Construction Plan:

A.2.1 Contractor shall have a set of approved construction plans available on site during all phases of construction. The drawings are a visual representation to supplement construction and material specifications. The drawings include location, profiles, sections, details and notes necessary to describe the Work.

A.2.2 No changes are to be made in the drawings or specifications without prior approval of District.

A.3 Extra Work:

No claim for extra Work shall be considered or allowed unless such Work is approved by the District, in writing prior to commencement of such Work.

A.4 Legal:

All Work shall be performed in compliance with local, state and federal laws, regulations, and safety requirements.

A.5 Permitting:

A.5.1 All Work is to be performed in compliance with all applicable permit conditions and measures identified by the specific permit or clearance documents and compliance with such is considered incidental to the Work if not specifically identified in a contract bid item.

A.5.2 Any submittals required by any permit that is part of this Project shall be provided to the requesting regulatory agency within the time specified by the agency.

A.5.3 Any specific permits and/or clearances required to be obtained by the Contractor for this Project will be identified within the corresponding Contract Bid Item description.

A.6 Equipment:

A.6.1 All equipment shall be kept clean and free of oil leaks. All leaks developed during construction, shall be repaired immediately. Equipment operators shall be prepared to contain spilled fuel or oil to prevent entry into stream.

A.6.2 Contractor equipment and vehicles shall be clean and free of noxious weed seed or organic matter prior to entering the construction area. The District may inspect equipment and vehicles prior to authorizing their access into the work site.

A.6.3 Contractor shall provide adequate equipment and tools to install fence structures in accordance with the Contract Specifications. Required equipment is described as follows:

- Installation of driven Wood Posts – Mechanized post pounder capable of driving a 6 inch diameter pointed wood post to a depth of 3 feet into unconsolidated and undisturbed soil materials in remote locations.
- Installation of driven Steel Posts – Pneumatic or hydraulic hand held post driver capable of driving a 2.5 inch diameter steel pipe post to a depth of 3 feet, into unconsolidated and undisturbed soil materials in remote locations.
- Installation of drilled Steel Tee Posts and Steel Structure Posts – Mechanized rotary hammer drill capable of drilling 2.5 inch diameter hole into consolidated rock material to a depth of 3 feet in remote locations.

Determination of adequate equipment and tools will be made by the District's Authorized Representative. Failure of the Contractor to supply qualified post driving or drilling equipment and tools will result in Contract termination.

A.7 Safety:

The Contractor is responsible for the compliance with all state and local laws, ordinances, codes, and/or regulations applicable for the installation.

A.8 Environmental Considerations and Restoration

A.8.1 The Contractor shall, at all times, direct his/her activities in such a manner as to minimize adverse impacts to the environment. Contractor shall confine their Work activities to the

minimum area necessary to complete the Project.

A.8.2 Any damage to trails, roads, fences, ditches, fields, existing structures, or creek banks shall be promptly repaired by the Contractor to near the condition which existed near prior to the damage, or replaced at the Contractor's expense prior to final approval of the Work by the District's Authorized Representative.

A.8.3 All toilet placements will require the approval of the District and/or property owner.

A.8.4 Any release of contaminants into the environment will require immediate corrective action by the Contractor in accordance with applicable state and federal regulations.

A.8.5 Staging, refueling, and petroleum storage areas for vehicles and equipment shall be located a minimum of 150 feet away from a stream or wetland.

A.8.6 Equipment used in the wetted channel will be inspected by the District's Authorized Representative each day and when fueling occurs, to ensure there are no petroleum leaks from hydraulic lines or other locations on the equipment. Any leaks will be repaired prior to equipment entering the wetted area.

A.8.7 Emergency spill containment equipment/material will be available at all times to manage any potential petroleum product spills or leaks. If a spill or leak occurs, it will be cleaned up immediately and appropriate officials shall be notified.

A.8.8 Riparian vegetation to be disturbed or removed will be performed as directed by the District's Authorized Representative.

A.8.9 Preserve and protect existing wetlands to the greatest extent possible.

END OF SECTION

SECTION B - SUMMARY OF WORK

B.1 REQUIREMENT

Construct and complete in accordance with Contract Provisions, these Specifications and Drawings, the USFS Long Creek No. 5 Fence Project.

B.2 LOCATION

All Work is to be performed along Long Creek, approximately 9 miles southeast of Long Creek, Oregon.

B.3 INTENT

B.3.1 The intent of this Work is to construct new wire fencing and associated structures as shown on the drawings and described in these specifications. Construction of the fence shall improve fish habitat and riparian conditions by controlling livestock access in certain stream areas, thereby enabling establishment and growth of riparian vegetation that will enhance water quality and habitat conditions for fish.

B.3.2 Grant Soil and Water Conservation District (District) will enter into a Contract with a qualified vendor to construct the above Work and will administer the Contract and finances of the Project.

B.4 SEQUENCE OF WORK

It is understood that time is of the essence in the execution of this Contract. All Work shall be completed within 60 days from the issuance of Notice to Proceed.

B.5 PRINCIPLE COMPONENTS OF WORK

B.5.1 Contractor shall be responsible for transportation of all supplied fence materials from the stockpile yard located in John Day, Oregon to the Project site.

B.5.2 Installation of approximately one and seven-tenths (1.7) miles of new 4-Strand Wire Fencing and all associated structures along Long Creek.

B.5.3 Installation of designated gate(s): Two (2) metal gates and three (3) wire gates.

B.5.4 Installation of one (1) Water Gap and (1) Water Crossing.

B.5.5 Installation of four (4) designated wildlife crossings.

B.5.6 Cleanup and disposal of all construction debris and restoration of all ground disturbed as a result of the specified Project activities to near original condition. Returning unused fence materials to stockpile yard in John Day, Oregon.

B.6 MINIMUM AREA

Construction impacts will be confined to the minimum area necessary to complete the Project.

B.7 USFS PROJECT REQUIREMENTS

The Malheur National Forest has released criteria that will apply to this project. Those criteria include:

- Any snags in riparian areas or uplands will be protected from disturbance, removal or use instream restoration activities unless deemed a safety hazard at the work site.
- Avoid heavy machinery travel on slopes steeper than 35%, where feasible.
- No heavy equipment shall be allowed on highly erodible soil. "Highly erodible soil" generally means areas larger than 50 feet diameter, and either: (1) steeper than 30 percent, with less than 75 percent ground cover, (2) 20 to 30 percent slope with less than 50 percent ground cover, (3) 10 to 19 percent slope with less than 25 ground cover, or (4) with signs of current erosion, such as pedestaling or rilling.
- On areas where existing skid trails spaced 100 to 140 feet apart can reused, reuse the old skid trails. Otherwise, space heavy machinery travel ways ("trails") about 120 feet apart where practical, using existing skid trails where possible and appropriate. Trails should average less than 14-feet wide.
- Fossil occurrence is likely in parts of the proposed project area. If paleontological resources are uncovered during project activities, contact Forest Geologist.
- Four designated wildlife crossings have been flagged for this project and are located on the map. The top wire in these locations will be dropped to the height of the 3rd wire (effectively making the fence three strand) for a length of 16 feet.

END OF SECTION

SECTION C – DRAWINGS

C.1 QUALITY ASSURANCE

Inform the District of any discrepancies, errors, or omissions discovered on the drawings.

C.2 PROJECT CONDITIONS

C.2.1 Where there are differences, as determined by the District's Authorized Representative, between details and dimensions shown on the drawings and details and dimensions of existing features at the jobsite, use details and dimensions of existing features at jobsite.

C.2.3 It is understood that the Contractor, prior to executing the Contract, has made careful examination of the plans, specifications and Contract; has been fully informed as to the quality and quantity of materials and the character of the Work required; and has made careful examination of the location and conditions of the Work and sources of supply for materials. It is further understood that the District will in no case be responsible for any loss or for any unanticipated costs that may be suffered by the Contractor as a result of the Contractor's failure to acquire full information in advance in regard to all conditions pertaining to the Work.

C.3 COPIES OF DRAWINGS AND SPECIFICATIONS

Copies of all drawings and specifications will be furnished free of charge to the Contractor for construction purposes.

C.4 LIST OF DRAWINGS

The drawings listed below are made a part of these specifications.

- Barbed Wire Fence Details, Sheets C1 – C10
- Easy Fence Panel and Brace Details, Sheets 1-3
- Buck and Pole Fence Detail
- Project Plan Map

END OF SECTION

SECTION D – SITE WORK

D.1 GENERAL

D.1.1 Wire Fencing:

Work item shall consist of installing wire fencing and associated structures according to the Project design, specifications, drawings or as directed by the District's Authorized Representative. Work item shall include, but not be limited to:

- mobilization and demobilization;
- District supplied material transport from stockpile site in John Day, Oregon;
- furnishing any materials not supplied by the District;
- new fence construction in accordance with the Contract specifications;
- installation of all associated fence structure installations such as H-braces, rock jacks, tree nailers, wood posts, barbed wire, smooth wire, steel posts, depression structures and other appurtenances (**NOTE: All fence corner/termination and in-line structures shall be included in this Work item**);
- removing and replacing existing fence sufficiently to make way for the new fence while maintaining the function of the existing fence; and
- any vegetation and tree removal, earthwork, or other work needed to allow construction or accomplishment of the fencing components, movement of equipment to and from Work sites, as well as disposal of debris and site cleanup after accomplishment, and return of excess fencing materials to stockpile site in John Day, Oregon, are included in this Work item.

****Since it is not feasible to illustrate each conceivable fence situation, structure types and quantities, and other associated fence details are not established on the drawings or described in these specifications. The structure quantities and type identified on the associated Project Map are approximations generated for planning purposes and final determination of appropriate type and placement of fence structures and other associated fence details will be determined as Work progresses and governed by the standards herein described. The Contractor shall consult with and receive authorization from the District's Authorized Representative at the Project site prior to implementing any variation from these specifications and drawings. The District's Authorized Representative will make the final determination of the appropriate types and placement of structures, as well as the fence alignment, as the work progresses. **No additional compensation will be provided to the Contractor because of these adjustments.****

D.1.2 Gates:

Work items shall consist of installing specified access gates and associated structures according to the Project design, specifications, drawings or as directed by the District's Authorized Representative. Work items shall include, but not be limited to:

- Furnishing any materials not supplied by the District; and
- new gate and associated structure installation in accordance with the Contract specifications.

D.1.3 Water Gap:

Work items shall consist of installing specified water crossings, access gates and associated structures according to the Project design, specifications, drawings or as directed by the District's Authorized Representative. Work items shall include, but not be limited to:

- Furnishing any materials not supplied by the District; and
- water gap and associated structure installation in accordance with the Contract specifications.

D.1.4 Stream Crossings:

Work items shall consist of installing a specified fence water crossings and associated structures according to the Project design, specifications, drawings or as directed by the District's Authorized Representative. Work items shall include, but not be limited to:

- Furnishing any materials not supplied by the District; and
- fence water crossing and associated structure installation in accordance with the Contract specifications.

D.1.5 Fence Removal:

Work items shall consist of removing designated sections of existing wire and wood fence as directed by the District's Authorized Representative. Work item shall include, but not be limited to:

- Completely disassemble designated sections of existing fence;
- stockpile at a designated location, all removed wire, metal posts, staples or other non-combustible fence residue; and
- stockpile at a designated location or piling of all wood fence material residues on approximately 200 foot spacing along the removed fence alignment for burning by others.

D.1.6 Board Fencing:

Work item shall consist of constructing wood rail and post style fence according to the Project design, specifications, drawings or as directed by the District's Authorized Representative. Work items shall include, but not be limited to:

- Furnishing any materials not supplied by the District;
- new rail fence construction in accordance with the Contract specifications; and
- removing and replacing existing fence sufficiently to make way for the new fence while maintaining the function of the existing fence.

D.1.7 Fence Reconstruction

Work item shall consist of performing necessary maintenance and modifications to restore and refurbish designated sections of existing fence as herein described or as directed by the District's Authorized Representative. Work item shall include, but not be limited to:

- Furnishing any materials not supplied by the District;
- repairing all broken wires, tightening loose wires, and realigning wires to correspond with the existing fence construction specifications (e.g. number of wires, wire spacing, etc.);
- restoring all missing, broken, and loose wire clips, staples, wood stays, and steel posts to replicate the existing fence construction specifications (e.g. wood stay spacing, steel post spacing, etc.);
- vertically straightening fence sections that are not perpendicular to the ground;
- repairing or reconstructing existing fence fixtures (e.g. H-Braces, rock jacks, gates, water crossings, etc.) as necessary to restore them to their original construction specifications or functionality; and
- installing new solid fence structures in accordance with Section D.6.4 to support the existing fence.

D.1.8 Buck and Pole Fencing

Work item shall consist of constructing buck and pole style fence according to the Project design, specifications, drawings or as directed by the District's Authorized Representative. Work items shall include, but not be limited to:

- Furnishing any materials not supplied by the District;
- New buck and pole fence construction in accordance with the Contract specifications; and
- removing and replacing existing fence sufficiently to make way for the new fence while maintaining the function of the existing fence.

D.2 MEASUREMENT AND PAYMENT

D.2.1 Wire Fencing:

- Measurement: Wire Fencing will be measured for distance in the field after construction is completed to the nearest foot. Gates will not be included in the measurement.
- Payment: Price per mile of Wire Fencing type offered in the pricing schedule. Payment will only be issued for fully completed and District approved portions of fence.

D.2.2 Gates:

- Measurement: Total number of each gate type installed to specifications.
- Payment: Price per each gate type offered in the pricing schedule. Payment will only be issued for fully completed and District approved gate installations.

D.2.3 Water Gaps:

- Measurement: Total number of each complete Water Gap installed to specifications.
- Payment: Lump Sum Price for each designated Water Gap offered in the pricing schedule. Payment will only be issued for fully completed and District approved Water Gap installations.

D.2.4 Stream Crossings:

- Measurement: Total number of each complete Stream Crossing installed to specifications.
- Payment: Lump Sum Price for each Stream Crossing offered in the pricing schedule. Payment will only be issued for fully completed and District approved Stream Crossing installations.

D.2.5 Fence Removal:

- Measurement: Total measured distance in the field of fence removed to the nearest foot.
- Payment: Price per mile for fence removal offered in the pricing schedule. Payment will only be issued for fully completed and District approved portions of fence removed.

D.2.6 Board Fencing:

- Measurement: Board Fencing will be measured for distance in the field after construction is completed to the nearest foot. Gates will not be included in the measurement.
- Payment: Price per foot of Board Fencing offered in the pricing schedule. Payment will only be issued for fully completed and District approved portions of fence.

D.2.7 Fence Reconstruction:

- Measurement: Fence Reconstruction will be measured for distance in the field after reconstruction is completed to the nearest foot.
- Payment: Price per foot of Fence Reconstruction offered in the pricing schedule. Payment will only be issued for fully completed and District approved portions of fence.

D.2.8 Buck and Pole Fencing:

- Measurement: Buck and Pole Fencing will be measured for distance in the field after construction is completed to the nearest foot. Gates will not be included in the measurement.
- Payment: Price per foot of Buck and Pole Fencing offered in the pricing schedule. Payment will only be issued for fully completed and District approved portions of fence.

D.3 MATERIALS

D.3.1 Fence and gate materials to be furnished by the District:

- 12-1/2 gage barbed and/or barbless wire;
- #9 gauge wire
- wood and steel fence posts with fasteners;
- 2 x 6 and 4 x 6 lumber;

- 16 ft. half-round or 2 x 6 boards;
- 4 ft. split wood fence stays;
- 6 - 8 ft. split tamarack jack joists;
- buck and pole fence materials;
- nails and wire staples;
- cable and cable clamps;
- gate handles, end pieces, and chain;
- all materials for construction of deadmen;
- hog wire panels;
- hi-tinsel wire and inline wire strainers;
- nicopress sleeves;
- metal gates and panels;
- Easy Fence braces and panels;
- metal panels and gates;
- steel pipe and angle materials; and
- mechanical chain link style fittings.

D.3.2 Material acquisition, transportation, and responsibilities:

- Furnished materials will be available at the Malheur National Forest Compound located by the Hospital off Ford Road, John Day, Oregon 97845.
- All furnished fence materials will be available to the Contractor for loading and transport between the hours of 7:00 AM and 3:00 PM PST. Monday thru Thursday only, excluding holidays. Contractor shall coordinate all material acquisitions with the District's Authorized Representative a minimum of 24 hours prior to pick up.
- All furnished materials shall be signed for by the Contractor at the time of acquisition.
- The Contractor shall return and neatly stack all unused furnished fence materials at stockpile location in John Day, Oregon.
- The Contractor shall be liable for all loss or damage of District furnished fence materials which are received by Contractor until completion and final acceptance of the Work specified within this Contract.

D.4 EXECUTION

D.4.1 Location and Details Not Shown:

- Since it is not feasible to illustrate each conceivable fence situation, all the details of each situation are not necessarily shown on the drawings or described in these specifications. Decisions regarding each unforeseen situation will be made by the District's Authorized Representative as the Work progresses. The Contractor shall consult with and receive authorization from the District's Authorized Representative at the site prior to implementing any variation from these specifications and drawings.
- The locations of items, as indicated on the project drawings and maps, are only approximations of actual construction locations. The actual construction locations will be staked, flagged or otherwise designated by the District's Authorized Representative.
- The Contractor shall not deviate from the marked locations, specifications, or drawings unless previously ordered or authorized by the District's Authorized Representative.

D.4.2 Temporary Facilities:

The Contractor shall provide their own plant, power, telephone, job office, sanitary facilities and any other temporary facilities required to perform the Work. Contractor facilities shall be subject to District approval prior to placement at the Work location.

D.4.3 Forces and Equipment:

All solid fence structures to be constructed in association with this Project will be built with wood materials. Contractor shall provide specified post driving and drilling equipment listed in Section A.6.3.

The District, at its sole discretion, may terminate the Contract if the Contractor fails to mobilize specified equipment, an adequate work force, or make adequate progress on the Work as to jeopardize the successful completion of the Project according the provisions of the Contract Documents.

D.4.4 Access Restrictions:

- General - Permission to enter on private land or perform this Work on public land has been obtained by the District. Formal agreements between the respective property owners and the State contain various restrictions and generally require that damaged property, crops, and other related items shall be paid for. Any such damages caused by the Contractor shall be the sole responsibility of the Contractor.

The District may suspend all or any part of the Work if it is determined that the ground, stream, crop, farm or conditions render the sites unsuitable for construction.

- Waterway/Wetland Permits - If required for this Project, the District will obtain all required permits and clearances to authorized completion of this Work. The Contractor shall comply with all conditions of the permits and clearances.
- Vehicles - In order to control access and damage, vehicle use shall be kept to the minimum necessary to complete the required construction activities.
- Use of vehicles will be restricted to Project access points as designated by the District's Authorized Representative. Vehicle use may be restricted during wet periods. If roads within Work areas become inaccessible due to snow, rainfall, fallen trees, slides, washouts, crop conditions or ranch or farm operations, including irrigation schedules, the District may direct the Contractor to change Work priorities or suspend Work if necessary.
- Designated Access Roads - Designated access roads may require improvements or maintenance by the Contractor to make them adequate for the passage of the equipment needed for the Work.
- Gates And Fences - Gates and fences in areas where livestock are present will not be left open unless so directed by the District's Authorized Representative.
- Camping - Camping will not be allowed on private property without prior written consent of the landowner.
- Fire Prevention - It will be the responsibility of the Contractor to obtain any necessary permits from the US Forest Service and the Oregon Department of Forestry and to comply with all fire regulations and fire precaution regulations. The District may suspend Work during periods of high fire danger.

D.4.5 Environmental Considerations and Restoration:

- The Contractor shall, at all times, direct his activities in such a manner as to minimize adverse impacts on the environment.
- Any damage to trails, roads, fences, ditches or creek banks shall be promptly repaired by the Contractor to near the condition which existed prior to the damage, or replaced at the Contractor's expense prior to final approval of the Work by the District.
- Waste which is generated by the Contractor's operations shall be promptly removed

from the site. No waste materials whatsoever will be permitted in areas where the Work is not being actively undertaken, or where Work has been completed and the Contractor has moved to other areas.

- All toilet placements will require approval of the landowner and/or District.
- Fuel handling will be conducted so no spillage or leakage through the soil will occur that may pollute adjacent streams and become hazardous to human or aquatic life.

D.4.6 Definitions:

AWAY FROM THE STREAM: Where the horizontal fence angle changes direction away from the stream.

BARBED WIRE: 12-1/2 gauge wire with two or four point barbs regularly spaced throughout its length.

BARBED WIRE FENCES: Any fences constructed of 12-1/2 gauge barbed wire.

BARBLESS WIRE: Barbless wire is 12-1/2 gauge wire used for tensioning wires, gate loops, etc.

BUCK AND POLE FENCE: Any fence constructed utilizing two free standing jack legs joined together at a 60° minimum angle dado joint in a teepee form, connected with pole rails. See Drawings.

CRIB: See Drawings.

CUL-DE-SAC: A fence structure that allows livestock to access to the stream for water consumption, but does not allow livestock to access the opposite side of the stream.

DBH: Diameter Breast Height. Used to determine adequacy of trees for ties or nailers.

DEADMAN: A Deadman is any 4 inch diameter wood post which is driven into the ground where the fence angles away from the stream. The Deadman is connected to a Pivot Post with a tensioning wire, thereby lending horizontal support to the Pivot Post. See Drawings.

DEPRESSION STRUCTURE: Can be a single wood post or an H brace depending on the size of depression being crossed. See drawings.

DIP: Where the fence undergoes a minor vertical change in elevation which can be restrained adequately with nails and staples.

DIP NAIL: See Drawings. Dip nails are nails which are installed above the wire to give added support to the wire. Used where the fence wire exerts an upward force.

EASY FENCE PANEL AND BRACE: Pre-fabricated 16 gauge X 1" square steel tubing panels assembled incorporation with steel posts to create H-Brace and lateral support structures in remote locations.

END STRUCTURE: Any Double H-Brace, Crib, or Tree Tie to which the fence wire is solidly secured at either the end of a stretch, at a gate, or other wire termination point. Also called stretch points.

FLEXIBLE FENCE STRUCTURE: Flexible Fence Structures are wood fence structures which are attached to the fence but not imbedded in the ground (e.g. Stays, and Twitch Sticks).

GATE: See Drawings.

GLIDE STAPLE: Glide staples are placed between high tensile smooth wire and any wood surface to reduce friction. See drawings.

GROUND PIECE: The floor joists in a Rock Jack or Crib.

HALF-ROUND: Sixteen foot long by 6 inch diameter logs which have been sawed in half length-wise to provide one flat surface for nailing to posts.

H-BRACE: The preferred method of providing a wire termination or pivot point. There are several variations of this term, including "Single H-Brace", "Double H-Brace", "Triple H-Brace", and "Gateman H-Brace". See Drawings.

HIGH TENSILE WIRE: 12 ½ gauge wire used for tensioning wires.

HOG WIRE PANEL: Galvanized welded rod panels used primarily in Stream Crossing Structures.

JACK: Set Post Rock Jack and Surface Rock Jack. See Drawings.

LET-DOWN FENCE: Fence that is designed and constructed to be laid down on the ground in the winter in areas that receive heavy snow to prevent excessive damage. See Drawings.

LINE POST: An intermediate 4 inch post which does not restrain the fence wire along the axis of the wire, but does offer restraint in other directions.

NICOPRESS SLEEVES: A commercial swaged coupling used to connect sections of high tensile smooth wire.

NINE GAUGE SMOOTH WIRE: 9 gauge smooth wire used for tensioning wires, gate loops, stay let-down fastener, etc.

PIVOT POST: Any post, individually or as a part of any other structure, around which the fence wires must bend or be supported.

PRESSURE TREATED: Lumber treated with preservatives to allow improved serviceability in ground contact conditions.

RISE: Where the fence line undergoes a minor rise in elevation that can be restrained with staples and nails.

RIPARIAN FENCE: Fence constructed near a stream and intended to protect the riparian corridor from heavy damage to riparian vegetation and streambanks by domestic ungulates. Riparian fences are constructed to rigid specifications to enable fences to hold up under considerable livestock pressure with minimum maintenance over a long period of time. "All fences in the contract are riparian fences unless specifically designated otherwise by the District."

RISE NAIL: Rise Nails are nails that are installed below the wire to give added support to the wire and restrain downward force. See Drawings.

ROCK TIE DOWN: Used to lower the wire elevation at minor dips and in watergaps.

SLOPE CHANGE: Where the vertical angle of the fence changes.

SOLID FENCE STRUCTURE: A Solid Fence Structure is any structure used in a fenceline that is imbedded in the ground (e.g. Single Wood Posts, wood posts with support systems, Jacks, Cribs, and H-Braces).

SPACING: The interval between posts, stays or other items.

STAY: Wood Stays are used to maintain wire spacing along, and add rigidity to, a fenceline. Wood Stays are 48 inch long 2" x 3" lumber or split wood material. See drawings.

STEEL FENCE STRUCTURE: A Solid Fence Structure that is constructed with steel post and bracing materials.

STEEL FOOT: A 36" long steel post that is driven vertically into the ground (on the stream side of the wood post) or 2 halves of a steel post driven diagonally on each side of the wood post. Each steel foot is attached to the wood post with barbless wire, so as to add vertical and horizontal stability to the post.

STEEL H-Brace: An H-Brace or Deadman Structure constructed with steel post and brace materials.

STEEL LINE POST: A line post that is constructed with steel post materials.

STEEL TEE POST: A Steel Post is a 6' T-133 used for Riparian Fence construction or a 5 ½' T-133 used for Upland Fence construction. Steel posts are driven vertically into the ground, 24" for 6' posts and 18" for 5 ½' posts on the side of the fence away from anticipated pressure (on the stream side of the fence) and attached to the fence wires with clips. The Steel Post adds vertical and horizontal stability to the fence. See Drawings.

STEEL POST ANCHOR: 2 steel post driven into the ground at 45° angles. Posts will intersect approximately 4–8" above ground level. The cross joint of the posts will be wrapped with wire to secure it to all strands of the fence. It will be used to lower the wire elevation at minor dips and in watergaps. See Drawings.

STEEL POST RINGS: Steel rings that are welded or bolted to vertical steel posts to support and maintain wire spacing.

STILE: A stairway over a fence.

STRAINER: An in-line ratcheting device used to tension fence wires.

STREAM CROSSING STRUCTURE: A fence design adjustable to rising and falling stream flows. Structure is designed to break away during a flood event without damaging the remaining fence.

STRETCH: A continuous length of barbed wire fence extending between any two end structures.

STRETCH POINT: A point from which fence wires are attached and terminated and terminated and their tension is restrained, such as H-Brace or Crib.

SURFACE POST: 48" long pieces of pressure treated 4 or 6 inch diameter wood posts. See Drawings.

TENSIONING WIRE: Two Types - A) A tensioning wire is a double loop of high tensile smooth wire, barbless wire, or #9 gauge wire which, when twisted taut with a Twitch Stick, pulls the structures to which it is attached toward each other, (as used on a Deadman Post). B) A tensioning wire is a single loop of high tensile wire with the ends joined using an in-line strainer to pull the wire taut, (as used on H-Braces). See Drawings.

TREE NAILER: Attach fence to tree using a wood stay nailed to tree and fence wires stapled to stay. No trees will be used to end a fence in place of Double H's or Rock Jacks, unless directed by the District. Trees shall be solid live trees over 8 inches diameter breast height. Only Juniper, Western Larch, Ponderosa Pine, or Douglas Fir may be used, unless otherwise approved by the District. See Drawings.

TREE TIE: End fence by attaching wires to a qualifying tree using wood stays evenly spaced and nailed around the tree to prevent direct wire contact with the tree. Each wire tie off shall be wrapped twice around the tree and tied back on itself with six complete, tight wraps, and secured with staples to contacted stays. Trees shall be solid live trees over 8 inches diameter breast height. Only Juniper, Western Larch, Ponderosa Pine, or Douglas Fir may be used, unless otherwise approved by the District. See Drawings.

TOWARD THE STREAM: Where the horizontal fence angle changes direction toward the stream.

TWITCH STICK: A Stay or piece of lumber inserted between the tensioning wires on a Deadman which, when twisted taut pulls the structures toward each other. See Drawings.

UPLAND FENCE: Fence constructed through upland terrain to connect sections of riparian fence or where an expanded corridor includes uplands. Upland terrain is considered to be steep, rocky, shallow soil areas away from stream bottoms. Upland fence is usually not subjected to the same livestock pressure as riparian fence. Sections of fence in any fence line deemed to be upland fence will be designated by the District. The start and end points of each upland fence section will be staked or flagged on the ground.

WATERGAP FENCING UNIT: A fence design to provide watering sites for livestock.

WET OR MARSHY: Any area subject to flooding or where vegetation or topography indicate that water is present for extended periods of time. These conditions need not be present at the time of construction for an area to be considered wet or marshy. The District will determine what types of structures will be built in wet or marshy ground and the location of wet or marshy ground.

D.4.7 Corridor Clearing and Snag Removal:

- The corridor shall be cleared of all trees, brush, downed timber, rocks, and any overhanging branches up to a 6 foot clearance height from the ground to allow construction, operation, and maintenance of the of the fence.
- All fence corridor clearing shall be done using manual or powered hand tools, except as authorized by the District.
- No vegetation within 20 feet of a stream shall be damaged or removed unless directed by the District.
- Dead standing trees that could damage the fence if they fall shall be felled by the Contractor and left on the side of the fence designated by the District prior to the new fence being constructed. If left on the stream side of the fence they shall be placed such that they are not likely to be washed into the stream channel. The District's Authorized Representative will determine which trees are to be felled.
- Cleared brush is to be left on the stream side of the fence and out of the high water zone. The District's Authorized Representative will indicate to the Contractor if and how brush piles are to be made.

D.5 INSTALLATION AND USE OF FENCE MATERIALS AND STRUCTURES

D.5.1 General:

- As designated by the District, Barbed and barbless wire shall be used for all general fence construction.
- High tensile smooth wire, barbless wire, or #9 gauge wire shall be used for all tensioning wires, as specified by the District.
- Wire shall be attached to steel posts with commercial wire fasteners/clips.
- Solid Fence Structures shall be placed on the stream side of the fence wires except when needed on the opposite side to cause the wire to pull against the structure rather than away from it.
- Steel posts and stays shall always be on the stream side of the fence wires. Steel posts must be installed so the wire holding knobs face exactly perpendicular to the fence wires.

- Any wire having a nick, kink, or sharp bend shall be replaced or cut and spliced. High tensile smooth wire will be spliced with three nicopress sleeves.
- No barbed or barbless wire ends shall be left protruding from any fence structure and wire ends shall be bent down into the wood structure. High tensile wire ends shall be cut off a maximum of one inch from the last nicopress sleeve.
- All jacks and stays shall be placed vertically in the fence and located such that the wires maintain the specified spacing.
- All fence wires shall be tightened with wire stretchers. Wire shall have the spool slack removed, but not all the stretch from the wire. All barbed wire shall be tensioned to a minimum of 150 pounds tension using a fence stretcher with a minimum Working load limit of 250 pounds. The District's Authorized Representative will indicate how tight the wire is to be stretched. Short spans and long spans shall have the same tension.
- Each barbed wire tie off shall be wrapped twice around the wood tie off post and tied back on itself with six complete, tight wraps, and secured with a staple.

D.5.2 Wire Usage:

12-1/2 gauge barbed and barbless wire shall be used for all of the following purposes:

- Fence Construction
- Depression Structures
- Gates

12-1/2 gauge barbless wire shall be used for all of the following purposes:

- Gate Loops and Hitch Sticks
- Tensioning Wires
- Stay Let-Down Fastener
- Hogwire & Steel Panel Loops
- Any Braces, i.e., where Jack Braces are wired to the ground pieces.
- Rock Tie Downs
- Steel Foot Attachments

9 gauge smooth wire shall be used for all of the following purposes:

- Gate Loops and Hitch Sticks
- Tensioning Wires

- Stay Let-Down Fastener
- Hogwire & Steel Panel Loops
- Any Braces, i.e., where Jack Braces are wired to the ground pieces.
- Rock Tie Downs
- Steel Foot Attachments

High tensile smooth wire shall be used for:

- Tensioning Wires

D.5.3 Stretch Lengths:

All stretches of fence between any two stretch points or Pivot Posts shall be built straight.

Stretch length will be determined by the District's Authorized Representative and may vary considerably. Stretches may be as short as 100 feet or as long as 1,000 feet. Locations of end structures shall be determined by the District's Authorized Representative and staked, flagged or otherwise marked on the ground.

Intermediate end structures not otherwise required for other reasons (i.e. gates, for example) will be required in certain stretches to reduce stretch length as determined by the District's Authorized Representative.

D.5.4 Horizontal and Vertical Changes:

The District's Authorized Representative will specify the type of structures to be used at each horizontal angle change location, generally using the following guidelines. (In the event ground or other conditions render the listed structures unsuitable, then a more substantial structure, such as a Jack or Crib shall be used). Jacks may be used interchangeably for any structure listed herein except Crib.

Horizontal Angle Changes Toward the Stream

- 0-45 degrees: Shall be made with Single H-Braces that bisect the fence angle, Jack, or Crib.
- 45 or greater degrees: Shall be made with Triple H-Brace or (2) Double H-Braces, Jack, or Crib.

Horizontal Angle Changes Away From the Stream

- 0-45 degrees: Shall be made with a Single Pivot Post with Deadman, Jack, or Crib.

- 45 or greater degrees: Shall be made with Double H-Brace with Deadman, (2) Double H-Braces, Jack, or Crib.

Vertical Angle Changes

- 0-15 degrees: Use wood posts at top and bottom of breaks in slope or use Jacks. Steel post anchors may also be utilized at bottom of slope breaks.
- Greater than 15 degrees: Use in-line H-braces at the top and bottom of breaks in slope or use Jacks or Cribs. Add steel feet to counteract uplift forces.
- Dip and Depression structures: Steel post anchors may be used for minor depressions.

D.5.5 Construction Sequence:

All structure tensioning wires shall be taut and all solid fence structures and solid fence structure support systems shall be completed and approved by the District's Authorized Representative prior to tensioning any fence wires.

D.5.6 Wire Spacing:

For **3 wire fence stretches** the wire heights or spacing shall be the following as measured from the ground up:

- 1st wire - 16 inches (Barbed Wire)
- 2nd wire - 29 inches (Barbed Wire)
- 3rd wire - 40 inches (Barbed Wire)

For **4 wire fence stretches** the wire heights or spacing shall be the following as measured from the ground up:

- 1st wire - 18 inches (Barbless Wire)
- 2nd wire - 24 inches (Barbed Wire)
- 3rd wire - 30 inches (Barbed Wire)
- 4th wire - 42 inches (Barbed Wire)

For **5 wire fence stretches** the wire heights or spacing shall be the following as measured from the ground up:

- 1st wire - 10 inches (Barbed Wire)
- 2nd wire - 18 inches (Barbed Wire)
- 3rd wire - 25 inches (Barbed Wire)

- 4th wire - 32 inches (Barbed Wire)
- 5th wire – 42 inches (Barbed Wire)

For **wire gates** the wire heights or spacing shall be the following as measured from the ground up:

- 1st wire - 14 inches (Barbed Wire)
- 2nd wire - 22 inches (Barbed Wire)
- 3rd wire - 30 inches (Barbed Wire)
- 4th wire - 38 inches (Barbed Wire)
- 5th wire - 44 inches (Barbed Wire)

D.5.7 Splicing Wires:

Splices in barbed or barbless wire shall be made by forming a single loop and then wrapping the wire tightly back on itself with 6 complete wraps. The other wire shall then be inserted through the loop and wrapped tightly back on itself with 6 complete wraps.

D.5.8 Snubbing Wires:

A snubbing wire is a 12 ½ gauge barbless wire double looped around a solid fence structure pivot post and a stay with the barbed fence wires held between the post and stay. Snubbing wires shall be used any time the barbed wire is pulling away from the wood and would pull out the staple. The snubbing wires shall only be used on a case by case basis (i.e., if directed by the District's Authorized Representative to build a jack on an opposite side of the pull).

D.5.9 Inline Wire Strainers:

Strainers shall be attached to all high tensile tensioning wires. Strainers shall be installed in the center of each H-Brace being tensioned. Double looped 12 ½ gauge barbless or #9 gauge wire with twitch sticks may be substituted for inline wire strainers when directed by the District's Authorized Representative.

D.6 WOOD POSTS

D.6.1 General:

Six (6) inch diameter wood posts shall be used to construct all solid fence structures, including single posts in straight sections of fence (line posts) and deadman posts.

D.6.2 Installation:

All wood posts shall be driven 3 feet into the undisturbed ground with a District approved mechanized post pounder (e.g. Shaver Manufacturing Company LLC. Model HD-8 or District approved equivalent) capable of driving a 6 inch diameter wood post to a depth of 3 feet in rough terrain. A 3 inch diameter pilot hole may be created to facilitate post driving operations. In areas inaccessible to a power post driver or if ground conditions are determined by the District's Authorized Representative to be too rocky for driving wood posts, alternative structures shall be installed as directed by District's Authorized Representative.

Deadman Posts shall be machine pounded into the ground a minimum of 42 inches.

Single Posts shall be driven 3 feet into the ground. If the 3 foot minimum depth criterion is not met, the post shall be used as either a Set Post Jack or a Crib Post.

Set Post Jack and Crib Posts shall be driven as deep as possible, to a maximum of 3 feet. No posts shall extend more than 4.0 feet out of the ground. If wood posts need to be cut to achieve the criteria, shortening of the post shall be done only after the installed post has been inspected and approved by the District's Authorized Representative.

Posts that are split or mushroomed, thereby leaving less than 4.0 feet of solid post above the ground, shall be removed and replaced.

D.6.3 Alignment Tolerances:

- Vertical: Must be aligned vertically within ¼ inch per foot of post extending above the ground.
- Horizontal: Straight sections of fence shall have the posts placed within plus or minus 1 inch of true alignment, as measured from a taught wire stretched between corners or stretch points.

D.6.4 Construction of Solid Fence Structures:

Solid Fence Structures are defined as Double H-Braces, Triple H-Braces, Deadman H-Braces, Single H-Braces, Single Pivot Post with Deadman, Jacks, Cribs, Single Wood Posts, Tree Nailer, Tree Tie, and Depression Structures.

Spacing: The spacing of solid fence structures between any two corners, dip, rise slope change, and/or end structures shall be 200 feet. At the end of a stretch of fence that will not divide equally by 200 feet, the post spacing shall be divided equidistantly, with no solid fence

structure being farther apart than 200 feet (i.e. 380 feet divided by 2 equals 190 feet). For wire fences, spacing of solid fence structures may be adjusted at the District's discretion to fit the contour and/or fence line, but will not be greater than 1000 feet between any two solid fence structures.

Trimming: Wooden fence structures shall not have ends protruding into the fence right-of-way. All excessive material shall be cut off.

D.6.5 Deviations From Contract Documents:

All structures shall be constructed as shown on the drawings and as stated herein.

D.6.6 Single Wood Posts:

Single Wood Posts shall be used in all straight sections of fence on solid ground where the post depth criterion is able to be met.

A Single Wood Post shall be required at the top and bottom of all abrupt breaks in slope between 0 and 15 degrees. A Steel Foot shall be installed with Single Wood Posts placed at the bottom of all abrupt breaks in slope between 5 and 15 degrees. In line H-Braces with Steel Feet shall be used at the top and bottom of all abrupt breaks in slope over 15 degrees. Steel Anchors, Jacks, Cribs, or other approved structures shall be used if post depth criteria cannot be met or the ground shows evidence of being wet or marshy, or as determined by the District's Authorized Representative.

D.6.7 Steel Tee Posts:

Steel tee posts are to be placed at a maximum of 16 foot intervals between any two Solid Fence Structures. Steel posts are to be set in a straight line and standing vertical plumb. Posts are to be driven into the ground 24 inches with 48 inches left above the ground. In rocky conditions where steel tee posts cannot be effectively driven to specified depths, pilot holes will be drilled into the ground to allow for steel tee posts to be installed with the spade removed. The drilled holes are to be of a maximum diameter to require the driving of the steel tee post to depth and retain equivalent rigidity to a fully driven post. All steel tee posts must be installed on the stream side of the fence and have the wire holding knobs facing exactly perpendicular to the fence wires. Steel tee posts shall not be used at the top or bottom of abrupt breaks or as a substitute for any other solid fence structure. Steel tee posts shall not be installed such that the fence exerts a net upward force on the steel post. Surface Rock Jacks may be built every 50 feet with eight fence stays evenly spaced between Jacks as an alternative to installing steel tee posts in areas not inaccessible to drilling equipment as determined by the District's Authorized Representative.

D.7 H-BRACES

D.7.1 General:

H-Braces shall be used as end structures and at locations as described in Section D.5.4, “HORIZONTAL AND VERTICAL CHANGES” when post criteria is met.

H-Braces shall not be used when Post depth criteria cannot be met; Topography or wet or marshy conditions indicate that the H-Brace may not hold.

D.7.2 Single H-Braces (SHB):

Single H-Braces shall be used at the top and bottom of all abrupt breaks in slope greater than 15 degrees and on angles of less than 45 degrees towards the stream unless post depth criteria cannot be met because of local topography or the soil is wet or marshy as determined by the District’s Authorized Representative. Single H-Braces used on horizontal fence angle changes of less than 45 degrees shall bisect the angle of the fence.

There are two posts used in a Single H-Brace. The side of the posts to which the fence wires are attached shall be aligned in a straight line with each other and with the first line post in the stretch of fence.

The top of the cross member shall be 42 inches above the ground and installed level. Notches in H-Brace Posts to accommodate cross members (4 inch x 6 inch x 8 foot beams or approved alternative) shall be between ½ inch and 1 inch in depth.

For inline Single H-Braces used in breaks of slope greater than 15 degrees there are two separate tensioning wires used. The tensioning wires shall be looped around the bottom of one post 6 inches above the ground and around the other post just above the top of the cross member and vice versa. The tensioning wires shall be held in place with dip or rise nails and then secured to the posts with one staple at each end. A wire strainer or twitch stick shall be inserted in each wire loop and ratcheted or twisted until the wire is taut.

D.7.3 Single H-Brace (Bisecting H-Brace):

For Single H-Braces that bisect the angle of the fence only one tensioning wire shall be used. The tensioning wire shall be looped around the Pivot Post 6 inches above the ground and around the other post just above the cross member. The tensioning wire shall be held in place with dip or rise nails and then secured to the posts with one staple at each end. A wire strainer or twitch stick shall be inserted in each wire loop and ratcheted or twisted until the wire is taut.

D.7.4 Double H-Brace (DHB):

One Double H-Brace shall be used at the ends of all stretches; two (2) shall be used where any fence angle is greater than 45 degrees toward or away from the stream, unless post depth criteria cannot be met because of local topography or the soils are wet or marshy as determined by the District Authorized Representative.

There are three 6 inch posts used in a Double H-Brace. The side of each of the posts in a Double H-Brace to which the fence wires are attached shall be aligned in a straight line with each other and with the first line post in the stretch of fence.

The top of the cross member that is attached to the tie-off (first) post and to the middle (second) post shall be 42 inches above the ground and installed level. The cross member that is attached to the middle post and the end (third) post shall be placed diagonally, with the high end being attached to the middle post 42 inches from the ground, and the low end being attached to the end post 6 to 8 inches above the ground.

Notches in H-Brace Posts to accommodate cross members (4 inch x 6 inch x 8 foot beams or approved alternative) shall be between ½ inch and 1 inch in depth.

There are two separate tensioning wires used in a Double H-Brace. The first tensioning wire will be looped around the tie-off (first) post 6 inches above the ground and around the middle (second) post just above the cross member. The second tensioning wire will be looped around the middle (second) post 6 inches above the ground and around the end (third) post just above the top of the diagonal brace approximately 14 to 16 inches above the ground. The tensioning wires shall be held in place with dip or rise nails and then secured to the posts with one staple at each end. A wire strainer or twitch stick shall be inserted in each wire loop and ratcheted or twisted until the wire is taut.

On the side opposite the fence wires, a 2 inch x 6 inch x 16 foot long board or half round shall be attached to all three posts. The top of this board shall be 42 inches above the ground. This board shall be secured to each of the three posts with two 50d nails into each of the three posts.

D.7.5 Triple H-Braces (THB):

Triple H-Braces may be used along the fence line where the fence angle is between 45 and 90 degrees toward the stream unless post depth criteria cannot be met or because of local topography or the soil is wet or marshy as determined by the District's Authorized Representative.

There are four posts used in a Triple H-Brace. The sides of the inline posts and Pivot Post to which the fence wires are attached shall be aligned in a straight line with each other and with the first line post in each opposite direction of the stretch. The other H-Brace post shall be attached to the Pivot Post on the stream side and bisect the angle of the fence.

The top of the cross members that attach in-line posts to the Pivot Post shall be 42 inches above the ground and installed level. The top of the cross member that attaches the bisecting post to the Pivot Post shall be 36 inches above the ground and shall be installed level. Notches in H-Brace Posts to accommodate cross members (4 inches x 6 inches x 8 foot beams or approved alternative) shall be between ½ inch and 1 inch in depth.

The three separate tensioning wires shall be looped around the in-line and bisecting posts just above the top of their respective cross members and around the bottom of the Pivot Post 6 inches above the ground. The tensioning wire shall be held in place with dip or rise nails and then secured to the posts with one staple at each end. A wire strainer or twitch stick shall be inserted in each wire loop and ratcheted or twisted until the wire is taut.

D.7.6 Deadman H-Brace (DMHB):

Deadman H-Braces may be used along the fence line where the fence angle is between 45-60 degrees away from the stream, unless post depth criteria cannot be met because of local topography or the soil is wet or marshy as determined by the District's Authorized Representative.

There are four posts used in a Deadman H-Brace, three in the H-Brace and one as the Deadman. The sides of the in-line posts and Pivot Post to which the fence wires are attached shall be aligned in a straight line with each other and with the first line post in each opposite direction of the stretch. The fourth (deadman) post shall be located on the stream side, approximately 7 feet from the Pivot Post, and bisects the angle of the fence. The top of the two cross members that attach in-line posts to the Pivot Post shall be 42 inches above the ground and installed level.

Notches in H-Brace Posts to accommodate cross members (4 inch x 6 inch x 8 foot beams or approved equivalent) shall be between ½ inch and 1 inch in depth.

Two separate H-Brace tensioning wires shall be looped around the top of each post just above in-line cross members and around the bottom of the Pivot Post 6 inches above the ground. The tensioning wire shall be held in place with dip or rise nails and then secured to the posts with one staple at each end. A wire strainer or twitch stick shall be inserted in the wire loop and ratcheted or twisted until the wire is taut.

The side of each of the posts in an H-Brace to which the fence wires are attached shall be aligned in a straight line with each other and with the first line post in the stretch of fence.

The deadman tensioning wire shall be looped around the Deadman Post 6 inches above the ground and around the top of the Pivot Post just above the attached cross members. The tensioning wire shall be held in place with rise or dip nails and then be secured to the posts with one staple at each end. A wire strainer or twitch stick shall be inserted in the wire loop and ratcheted or twisted until the wire is taut.

D.7.7 Single Pivot Post With Deadman (SPDM):

A Single Pivot Post With Deadman shall be used along the fence line where the fence angle is 0 to 45 degrees away from the stream, unless post depth criteria cannot be met because of local topography or the soil is wet or marshy as determined by the District's Authorized Representative.

Two posts are used in a Single Pivot Post With Deadman. The side of the Pivot Post to which fence wires are attached shall be aligned in a straight line with the first two line posts in each direction in the stretch of fence.

A Deadman Post shall be used as an anchor post for all Single Pivot Posts with Deadman Structures. The Deadman post shall be on the stream side of the structure and shall bisect the angle of the fence. The Deadman Post shall be driven at a 30 degree angle from plumb approximately 7 feet from the pivot post.

The deadman tensioning wire shall be looped around the Deadman Post 6 inches above the ground and around the top of the Pivot Post just above the attached cross members. The tensioning wire shall be held in place with rise or dip nails and then be secured to the posts with one staple at each end. A wire strainer or twitch stick shall be inserted in the wire loop and ratcheted or twisted until the wire is taut.

D.7.8 Easy Fence Structures:

Easy Fence pre-fabricated square steel tubing panels and braces shall be installed as directed by the District's Representative to replace applicable H-Brace or other lateral support structures in remote locations. Easy Fence Panel and Brace Structures shall be installed according to the manufacturer's specifications or as directed by the District.

D.8 ROCK JACKS

D.8.1 General:

There are two types of Rock Jacks: Set Post Rock Jacks (SPJ) and Surface Rock Jacks (SRJ). Set Post Rock Jacks shall be used at horizontal fence breaks and at the end of fence stretches. Surface Rock Jacks shall be used at vertical fence breaks or to supply spacing support requirements for straight sections of fence. Jacks can be utilized when the ground is not accessible to power post driving equipment or suitable for holding wood fence posts; either in wet or marshy sites or where post depth criteria cannot be met as determined by the District's Authorized Representative.

D.8.2 Set Post Rock Jack Construction:

A Pivot Post shall be driven or dug into the ground a 12 to 36 inches and shall be aligned horizontally with the first adjacent line posts in the section of fence. Two diagonal split wood jack braces shall be nailed approximately 6 inches down from the top and on either side of the Pivot Post. The braces shall crisscross and angle towards the ground at about 60 degrees from the post and spread away from each other approximately 5 feet, forming a V-shaped support. The diagonal braces shall be oriented to brace into the post against the direction of the fence tension.

Two ground brace pieces shall then be nailed to the post, one on each side, about 4 inches above the ground. Ground pieces shall be level and extend back from the post horizontally at about a 60 degree angle to each other, crossing the diagonal support braces.

Ground pieces shall be placed on the outside of the diagonal braces and must extend beyond the diagonal braces 6 to 8 inches. Where the ground pieces intersect their respective diagonal braces, they shall be nailed to the diagonal braces so as to create a level floor. Diagonal braces shall extend beyond the ground pieces and rest on stable rock supports at ground level.

A final split wood jack brace shall be placed across and nailed to the ground pieces to tie the two diagonal braces together. This brace shall not extend more than 6 inches beyond the ground braces and becomes part of the platform to support rock ballast placement.

Split wood stay material shall be used to make up the remaining rock platform by placing them as joists across the ground braces. This joist flooring is not to be nailed to the ground pieces. All flooring will be trimmed if it extends more than 6 inches beyond ground brace members.

Prior to placing any ballast rock on the platform, support rocks shall be placed under each ground piece (one rock at each end) so that all weight rests upon the support rocks. Support rocks shall not be stacked on each other.

Jack structures shall be wired together with one loop of barbless wire twisted tight around all brace and post junctions. All wood bracing shall be secured with two 50d spikes.

At least 300 pounds of ballast rock shall be placed on the platform.

D.8.2 Surface Rock Jack Construction:

Place two split wood jack braces in a triangle with the bottom of the braces approximately 5 feet apart and the top of the braces crisscrossing at 40 inches above the ground, forming a teepee-shaped support. Nail the braces together at the crossing junction.

A third vertical support brace shall be placed and nailed in between the v-notch of the teepee-shaped support and angle toward to the ground at about 60 degrees to keep the teepee-shaped support standing vertical.

Two ground brace pieces shall be nailed to the outside of the teepee-shaped support, one on each brace, about 4 inches above the ground. Ground pieces shall be level and extend back horizontally, crossing the vertical support brace. Ground pieces shall be placed on the outside of the vertical support brace. Where the ground pieces intersect with the vertical support brace, they shall be nailed to create a level floor. The teepee-shaped braces and vertical support brace shall extend beyond the ground pieces and rest on stable rock supports at ground level.

A final split wood brace shall be placed across and nailed to the inside of the joint between the teepee braces and the ground pieces to tie the all jack braces together. This brace shall not extend more than 6 inches beyond the outside of the ground braces and becomes part of the platform to support rock ballast placement.

Split wood stays shall be used to make up the remaining rock platform by placing them as joists across the ground braces. This joist flooring is not to be nailed to the ground pieces. All flooring will be trimmed if it extends more than 6 inches beyond ground brace members.

Prior to placing any rocks on the rock platform, support rocks shall be placed under each ground piece (one rock at each end and one in the center) so that all weight rests upon the support rocks. Support rocks shall not be stacked on each other.

Jack structures shall be wired together with one loop of barbless wire twisted tight around all brace junctions. All wood bracing shall be secured with two 50d spikes.

At least 300 pounds of rock shall be placed on the platform.

D.9 CRIBS

D.9.1 General:

Cribs may be used in wet or marshy areas where an H-Brace or other Solid Fence Structures may not hold as determined by the District's Authorized Representative.

Cribs may also be used as end structures in place of any other solid fence structure when post depth criteria cannot be met or in wet or marshy areas as determined by the District's Authorized Representative.

D.9.2 Crib Construction:

Four – 6 inch posts shall be installed plumb, parallel with each other, and evenly spaced 5 feet apart so that their outside edges are square. Posts shall be driven or dug into the ground a 12 to 36 inches and shall be aligned horizontally with the first adjacent line posts in the section of fence.

Board floor joists shall be nailed at least 4 inches above the ground on the inner side of the square between two sets of posts directly across from each other to support floor joist placement. Floor joists shall be level so the Crib bottom, which is laid on top of them, will also be level, both side-to-side and front-to-back. Three support rocks (one rock on each end and one in the center) shall be evenly spaced under each floor joist so that the joists rest firmly on the rocks. Support rocks shall be wider than the joists they support. Support rocks shall not be stacked on each other. All support rocks shall be placed under the joists prior to placing any rocks in the Crib.

Lay floor board pieces on top of and perpendicular to the floor joists so that the floor pieces are no more than 2 inches apart across the entire floor of the Crib.

The two side boards which are laid directly on top of the floor pieces shall be laid flat. These side boards shall then be nailed to each floor piece with one nail. The remaining side boards will be installed on their edges, alternating sides in a log cabin fashion and then nailed to the inside of the posts to a height of approximately 42 inches.

Install two diagonal braces on all Cribs. The diagonal braces shall be attached on opposite sides of the Crib with the high end oriented towards the posts that have the wire attached to them. The diagonal braces shall be fitted flush against the side boards at an angle extending from the top of the side boards to the Crib floor. Each diagonal brace shall be nailed to each of the side boards.

Two additional board cross braces shall be crisscrossed and nailed level between opposite posts. The top of the first brace shall be approximately 36 inches above the ground and the other brace shall be approximately 42 inches above the ground.

The Crib shall be filled with rocks to a level even with the highest side board. All boards shall be attached to the corner posts with two 20d nails in each end.

D.10 FLEXIBLE FENCE STRUCTURES – STAYS

D.10.1 General:

Wood Stays shall be installed between Solid Fence Structures and Steel Posts. Stays shall be installed plumb and equally spaced no greater than 5 ½ feet apart (e.g. two stay evenly spaced between steel posts), except for 3-strand wire fencing, where stays spaced no greater than 8 feet apart (e.g. one stay between steel posts). Stays used on depression structure fences shall be independent of Stays used on the adjacent wire fence. All wires shall be stapled solidly to all Stays. Stays shall be placed on the stream side of the fence. Stays shall be used where the vertical force exerted by the fence wires is either zero or in an upward direction. Stays will not be used to hold fence wires up to the wire height specifications.

D.10.2 Depression Structures:

Depression Structures shall be used in depressions where the maximum distance between Solid Fence Structures on opposite banks of the depression is 30 feet and minimum bank height is 2 ½ feet or greater. Use wood stays and barbed wire.

0-15 Feet Across: Use three Solid Fence Structures (one placed at the top of each bank on opposite sides of the depression and one in the middle of the depression). Steel feet must be installed on the middle post in each structure.

15-30 Feet Across: Use four Solid Fence Structures (one placed at the top and bottom of each bank on opposite sides of the depression). Steel feet must be installed on each structure in the bottom of the depression.

D.11 SUPPORT SYSTEMS

Support systems are of two types:

D.11.1 Deadman Post:

A Deadman Post shall be used as the anchor post for all Single Pivot Post with Deadman and Deadman H-Brace Structures. In either structure the Deadman Post shall be on the stream side of the structure and shall bisect the angle of the fence. The Deadman Post shall be located approximately 7 feet from the Pivot Post, leaning away from the pivot post at an angle (30 degrees), and driven into the ground a minimum of 42 inches. The top will only be cut off as directed by the District's Authorized Representative.

The deadman tensioning wire shall be looped around the Deadman Post 6 inches above the ground and around the top of the Pivot Post (refer to Single Pivot Post with Deadman or Deadman H-Brace for wire location). The tensioning wire shall be held in place with rise or dip nails and then be secured to the posts with one staple at each end. A wire strainer or twitch stick shall be inserted in the wire loop and ratcheted or twisted until the wire is taut.

D.11.2 Steel Feet:

Steel Feet shall be used only on posts that have been installed to meet depth criteria. If post depth criteria cannot be met a Jack or Crib shall be installed.

Thirty six inch Steel Feet shall always be used in pairs (one Steel Foot on each side of a post), and installed parallel with the fence line.

Steel Feet are recommended to be used on:

- 1) posts placed in depressions where the bottom wire exceeds 20 inches above the ground;
- 2) single posts at the bottom of abrupt breaks (breaks greater than 10 degrees) in slope;
- 3) the post closest to the slope change of a Single H-Brace used in the bottom of dips greater than 15 degrees;
- 4) all pivot posts;
- 5) the tie-off post of all Double H-Braces; and
- 6) posts placed in wet or marshy ground (except for Crib and Jack posts).

Each Steel Foot shall have a double strand of barbless wire secured to its middle by looping the wire through the hole and then wrapping it back on itself with at least 6 complete wraps. The other end of the barbless wire shall be attached to the post with two 2 inch staples and wrapped around the post as explained below.

Each Steel Foot shall be driven into the ground at a 45 degree angle until its top is below ground level.

The wires for the first steel foot shall be stapled to the front (fence line) side of the post and wrapped in a clockwise direction around the backside of the post. This steel foot shall then be driven into the ground at the side of the post as shown in the drawings.

The second Steel Foot shall be installed in the same manner as the first Steel Foot except that:

- 1) Wires shall be wrapped in a counter-clockwise direction.
- 2) Wires shall be stapled to the opposite side of the post from the wires of the first steel foot.
- 3) It shall be driven into the ground in the opposite direction of the first Steel Foot.

D.12 ROCK FOR FENCING STRUCTURES, STEEL POST ANCHORS AND ROCK TIE DOWNS

D.12.1 General:

Determining a source of rock will be the responsibility of the Contractor. However, it is anticipated that all rock to be used for Rock Cribs and Jacks may be obtained near the Project site. It shall be the Contractor's responsibility to collect and transport all rock. Rock shall not be removed from a stream.

D.12.2 Steel Post Anchors:

Steel post anchors shall be used primarily in depressions where the bottom wire is greater than 16 inches above the ground, but less than 36 inches above the ground. Steel post anchors shall not be substituted for any other structure.

Two steel tee posts shall be driven a minimum of 36 inches deep at opposing 45 degree angles directly under and in line with the fence. The posts must intersect 4 – 8 inches above the existing ground. Barbless wire shall then be wrapped at least twice around the intersecting posts in each of two directions so as to secure the posts together into the anchor. After forming the anchor, twist one end of the barbless wire around the other protruding end at least six complete wraps. The protruding longest end of the barbless wire will then be extended vertically and secured to the fence wires in series with single wire wraps to maintain appropriate wire spacing and height. The protruding wire shall be wrapped six times around the top fence wire.

D.12.3 Rock Tie Downs:

Rock Tie Downs shall be used primarily in small depressions where the bottom wire is greater than 16 inches above the ground, but less than 20 inches above the ground. Rock Tie Downs shall not be substituted for any other structure.

Barbless wire shall be wrapped at least twice around the rock in each of two directions so as to form a "cradle" for the rock. After forming the cradle, twist one end of the barbless wire around the other protruding end, forming at least six complete wraps. The protruding longest end of the barbless wire shall then be extended up along one side of a stay and stapled. Bend the barbless wire back down on itself and, using a second staple, staple the two wires to the stay, (See Drawings).

Rocks shall not hang from the fence, they must rest on the ground and hold the bottom wire to a height of 14 to 16 inches above the ground.

Stays shall be cut off 4 inches below the bottom fence wire so that the rock tie down can be placed directly under the stay.

D.12.4 Rock Tie Downs In Water:

Rock Tie Downs associated with stream crossings, ditches, or other water will be constructed as stated above except that the cradle wires shall be snugly wrapped to the rock and then a single loop shall be made and dead ended. A separate wire shall be run through the cradle loop, wrapped back on itself, and then single wrapped around each fence wire from the bottom strand to the top strand. The wire will then be wrapped back around itself with one wrap. This will allow the rock tie down to be removed in the winter months and reused the following spring.

D.13 NAILS AND NAILING

Twenty penny (20d) nails shall be used for all end and corner structure construction. Fifty penny (50d) nails shall be used for all Rock Jacks and Half Round applications.

Twenty penny (20d) Rise nails shall be used on all structures where the wire pulls in a downward direction when the tensioned wire is held at its proper height.

Twenty penny (20d) Dip nails shall be used on all structures where the wire pulls in an upward direction when the tensioned wire is held at its proper height.

To prevent splitting lumber or stays, nails shall not be placed closer than three (3) inches to the end of any piece of lumber. A pilot hole may be drilled to prevent lumber splitting, but shall be no more than one-half the diameter and depth of the nail to be used. Any wood which is split as a result of nailing shall be replaced.

When constructing wood structures use two nails at each joint and place the nails at a binding angle. At least half of each nail shall extend into the adjoining piece. Nails which extend through a member and expose the pointed end shall be bent over flat, and parallel to the wood surface. Nailed and stapled junctions shall have sound wood against sound wood; no bark shall be in between.

D.14 STAPLES AND STAPLING

One and one half inch (1 ½") long fence staples shall be used to attach all wires to stays and shall be used to attach all wires to Solid Fence Structures and for all rise, dip, and glide staples. Staples shall be a minimum 9 gauge and treated for corrosion protection. Reverse barbed staples are preferred to improve long term staple retention.

Glide staples shall be used on all corners where tension wires are attached to protect the subject post from the wire cutting into it. All wires shall be stapled to all posts.

Staples shall be driven in all structures at an angle. Rotate the staple slightly (20 to 30 degrees off vertical) away from the flat surface of the point on the upper leg of the staple.

Staples used to attach tensioning wires to any solid fence structure shall be driven in fully, but so as to allow the wire to move back and forth freely.

All wires shall be stapled solidly to stays.

On Pivot Posts, sufficient glide staples shall be used so as to prevent wires from cutting into the posts.

For posts at the top of small rises, staples shall be driven at a downward angle into the post.

For posts in the bottom of small depressions or dips, staples shall be driven at an upward angle into the post.

On steep rises or dips, rise or dip nails shall be used in combination with staples.

D.15 WIRE GATES

D.15.1 General:

Gates shall be constructed at the locations as they are marked on the ground. All Gates shall be built as shown on the attached drawings. Gates shall contain five wires unless otherwise

specified by the District's Authorized Representative. Wires shall be taut, but allow for proper gate operation.

All gates shall be 12-1/2 gauge barbed wire.

Each gate wire shall be double wrapped around the end piece, tied back on itself with six complete tight wraps, and stapled to the end piece with 1-1/2 inch staples.

All wires will be stapled to Stays.

Stays shall be 2 inch x 3 inch x 4 foot split wood material.

Gates shall have Stays evenly spaced a maximum of 5 feet from Gate ends or another Stay. Barbed wire shall be stapled solidly to all Stays and end pieces.

Gate ends shall be 3 to 4 inch diameter by 5 foot long round wood pieces. At the stand-up (stationary) end of the gate, wrap a double loop of barbless wire around the Double-H or Set Post Rock Jack end post just below the top strand of fence wire and around the gate end and wrap the wire loop ends back on itself with three complete wraps. Staple the loop to the end structure only. Repeat this procedure just above the bottom strand of fence wire. Insert the gate end into these loops.

At the let-down (opening) end of the gate, wrap a single loop of barbless wire around the end post 4-6 inches above the ground and around the gate end and wrap the wire loop ends back on itself with four complete wraps. Staple the loop to the end structure only. The bottom of the gate end pole (let down-end) shall be inserted into this loop with approximately 4 to 6 inches of open loop between the end structure and the gate end pole. Install a gate tightener to the top of the end post. (See Drawings)

D.15.2 Gate Tighteners:

Attach a 6 to 10 inch long piece of ¼ inch sized chain to the handle (2 foot long pole, 3-4 inches in diameter) 4 inches from the end of the pole by running a double strand of wire through the last chain link and around the handle, twisted tight. Repeat the above between the end post structure and the other end link 40 inches above the ground, (the length of chain required for each handle will vary by gate). Wrap a separate double loop of barbless wire around the end post 40 inches above the ground and around the gate end and twist the wire loop back on itself with four complete wraps. This handle/tightener will bring the gate snugly tight, allowing the double wire loop to be dropped over the top of gate end pole. Staple the loop to the end structure post only. The Gate Tightener shall act as a latch. The wire loop shall be separate from the Gate Tightener and act as an additional latch on the gate.

D.16 WATERGAP FENCING UNITS (WGFU)

D.16.1 General:

Watergap Fencing Units shall be used at designated points to allow livestock access for water consumption and/or crossing of the stream. The Watergap Fencing Unit (WGFU) locations will be staked on the ground by District's Authorized Representative.

Watergap Fencing Units as a whole shall be constructed in the same manner as all other wire fences except that a wood fence shall be constructed between the riparian corridor fence and the edge of the stream bank as shown on the attached drawings.

D.16.2 Watergap Fencing Unit Construction:

Watergap Fencing Units shall be constructed as described herein and shown on the attached drawings.

Board or half round fencing shall be constructed between the stream crossing structures and the riparian fence line on both sides of the Water Gap (two stream crossings per Water Gap Unit). A gap shall be left in each crossing fence to allow the installation of an escape gate.

Wood posts will be driven on 8 foot centers and aligned horizontally with the stream crossing. Three 2" x 6" x 16' boards, or half rounds, shall be nailed onto the inside of the posts starting approximately 15 inches above the ground and be evenly spaced up to approximately 47 inches using two 50d nails per attachment point. Wood rails shall also be wired to posts with one loop of barless wire twisted tight.

The next span of boards shall be started approximately 9 inches above the ground and be overlapped in a log-cabin fashion, up to approximately 42 inches above the ground. Additional boards shall be nailed to these in-line posts and to the riparian fence in an overlapping log cabin fashion with a gate gap located somewhere between (one gate per stream crossing section). These gap locations shall be staked on the ground by the District. Only excess board ends that interfere with gate ends shall be trimmed flush to the post.

One end of a 5/16 inch cable shall be wrapped twice, about 6 inches below the top of the third post away from the stream and then secured to itself using two cable clamps. The cable will then be stretched over the top of the two in-line posts towards and across the stream to the opposite rail fence and secured in the same manner. Two 50d nails shall be driven three quarters of the way into the top of the two posts to cradle the cable and prevent it from sliding off.

Hog wire or alternative panels shall then be suspended from the cable using wire loops or steel karabiners. Hog wire panels may be over lapped or need to be cut using bolt cutters to fit the bank and stream contours when suspended. Approximately four wire loops or karabiners are needed to support 16 feet of panel. The lowest edge of the hog wire panels shall be suspended so that it is 6 inches above the surface of the water.

Rock tie downs or other District approved anchors shall be installed to secure the panels to the stream bottom to prevent livestock from pushing under them.

D.17 STREAM CROSSING STRUCTURES (SC)

D.17.1 General:

Stream Crossing Structures shall be used at all points where a single fence is suspended across a stream to end a section of riparian corridor fencing. The Stream Crossing Structure locations will be staked on the ground by the District's Authorized Representative.

Stream Crossing Structures are separated from the riparian fence line so high water events will not affect the rest of the fence.

D.17.2 Construction:

Stream Crossing Structures shall be constructed as described in the Water Gap Fencing Unit Construction section above and as shown on the attached drawings.

D.18 UPLAND FENCE SECTIONS (UFS)

D.18.1 General:

Upland fence construction specifications are as stated in the previous sections except as provided below.

D.18.2 Construction:

Guidance in Section D.6.7 Steel Tee Posts applies as modified herein: 5 ½ foot (five and one half foot) long posts may be used and driven 18 inches with 48 inches left above ground. Achieving the desired depth for steel posts in rocky terrain will require drilling pilot holes in many cases. Some site characteristics refuse drilling and preclude the use of steel posts. In locations where steel posts cannot be driven or drilled to depth, or at the top or bottom of abrupt breaks, Surface Rock Jacks shall be built. If steel posts cannot be driven over extended lengths of the

fence, Surface Rock Jacks shall be built as suggested by the terrain (abrupt breaks). If the distance between breaks exceeds 60 feet and no steel posts can be driven, a Surface Rock Jack will be constructed midpoint between the breaks.

Solidly constructed Easy Fence Steel Panel Braces can be used in place of Solid Fence Structures where approved by the District's Authorized Representative.

Guidance in Section D.10 Flexible Fence Structures – Stays applies as modified herein: The spacing of upland stays shall be 8 feet maximum and shall be evenly spaced.

The District Authorized Representative will make the determination of what structures are appropriate when upland terrain presents specific challenges to construction.

D.19 LET-DOWN FENCE:

D.19.1 General:

Let-Down Fence construction is designed and shall be constructed to be laid down on the ground in the winter in areas that receive heavy snow to prevent excessive fence damage.

Let-Down Fence construction specifications are as stated in the previous sections of these technical specifications except as provided below and as shown on the attached drawings.

D.19.2 Clearing

Fence shall be located in the center of the cleared 12 foot wide right-of-way and all brush and large rocks shall be removed to allow the fence to be let down to the ground without interference. The other side of the fence right-of-way shall be cleared sufficiently to allow travel along the fence with an all terrain vehicle or horse. Brush shall be trimmed vertically within the established right-of-way to a 10 foot clearance height. All dead trees that may potentially fall and hit the fence shall be cut and cleared for the fence corridor.

D.19.3 Fastening Details

Barbed fence wires shall be stapled to wood stays placed at 8 foot spacing, aligned to directly overlap all steel posts, pivot posts, or other solid fence structures. Wires shall be stapled to the inside of the wood stays and next to the post or structure so when the wood stay is laid down, the wires are on the upward side. The wires shall be fastened to the wood stays with one and one-half (1 ½) inch staples. Do not directly staple wires to any Solid Fence Structure.

Where wood stays are to be supported by steel posts, they shall have a wire loop stapled at the

top and bottom, with the bottom loop being wrapped around the bottom of the post. When wood stays are support by other solid fence structures, the loops shall be secured directly to the structure with enough slack to fit over the top and bottom of the stay for removal purposes. All loops shall be of sufficient diameter to allow for the stay to be both secured and released from its support. All support loops shall be double wrapped 12.5 gauge barbless or #9 gauge wire tied back on itself with three complete tight wraps.

D.19.4 Steel Tee Posts

Steel Tee Posts shall be positioned with their holding knobs directed away from the wood stays to support the retention of the wire loops.

D.19.5 Tensioning Devices

Tensioning Devices will be constructed at all stretch points and should be located at the end of straight sections of fence to support lay-down operations. The distance between stretch points shall not exceed 1320 feet. Wire stretches shall be dead-ended on a 4 to 5 inch diameter, 5 foot long round wood piece or two wood stays nailed together to act as a gate end for the subject section of fence.

Two 1/4 inch tensioning cables shall be rigged from the bottom of the anchoring point to the gate end so that the fence can be let down flat on the ground and not hang up on the support structure. One cable shall run level from the bottom of the anchor point, approximately 4 inches above the ground to the gate end. The second cable shall be fitted for the same anchor point and extend at an angle to approximately 6 inches from the top of the gate end. Each cable shall be double wrapped and secured with two separate cable clamps at each attachment. Tension rigging shall be fitted to a Double H-Brace, Set Post Rock Jack, or Tree Tie end of fence structures.

For Double H-Braces, the tensioning cables shall be anchored to the bottom of the end post rigged so the gate end aligns with the last post in the structure. Wire loops shall be installed as described in the D.19.3 Fastening Details section above for Solid Fence Structures, to secure the gate end to the post. Wire shall be stretched across the Double H-Brace structure according to wire spacing specifications.

Where a Set Post Rock Jack or Tree Tie is utilized as an end of fence, the tensioning cables shall be rigged so the gate end aligns with a single wood post that is 8 – 12 feet away from the anchoring point. A second short gate tensioning panel shall then be fitted between the anchor point and the single wood post. Wire loops and a gate tightener shall be installed to secure the gate panel and the tensioned fence section to the single word post. When the fence is raised into the upright position, the panel should be tensioned against the gate end fence section.

The gate panel should be release when the fence is laid down for the winter.

D.19.6 Wire Stretching

Wire will not be tightened excessively. Excessive tension will weaken the barbed wire by removing the capacity for it to stretch. Selection of stretch points shall enable the fence to be readily slackened for let-down operations.

D.20 STEEL FENCE STRUCTURES:

D.20.1 General:

Steel Fence Structures shall be installed as directed by the District's Representative as a substitute to applicable wooden H-Brace, Deadman, Single Wood Post, Board or Half Round Fencing, or other associated Solid Fence Structures. Steel Fence Structure specifications are as stated in the previous sections of these technical specifications and drawings for the applicable wood structure except as provided below.

D.20.2 Materials:

All Steel Post and Steel Brace materials shall meet the minimum criteria describe in the table below and be free from decay or defect that may reduce its functional life or current durability.

Component	Material Type	Minimum Diameter/Weight	Minimum Post Depth	Minimum Lengths
Steel Posts – Used to construct H-Braces, Single Posts, Deadman Posts, & Rail Fence Posts	Steel, round	2-3/8" OD, wall thickness 0.154" (sch. 40)	3 feet	7 feet
	Steel, angle	2-1/2" X 2-1/2" X 1/4"		
Steel Braces – Used for H-Brace Cross Members, Deadman Tensioning Members, Fence Rails	Steel, round	2" OD, wall thickness 0.145" (sch. 40)	NA	7 feet
	Steel, angle	2" X 2" X 1/4"		

D.20.3 Welding:

All steel welding must comply with American Welding Society Standards.

D.20.4 Steel Posts

Steel Posts shall be used in replacement of wood posts and driven to the specified depth. In rocky conditions where posts cannot be effectively driven to specified depths, a pilot hole will be drilled into the ground to allow for post placement. Pilot holes will be of minimum diameter to allow for the installation of the supplied steel post materials with adequate tension to securely retain the post at the specified depth and alignment following attachment of the fence wires and/or application of fence tension. All Steel Posts installed as part of an H-Brace or as a Signal Post must be fitted with wire supporting rings (e.g. 1" dia. nuts, cold shut chain link, etc.) to support the alignment of the fence wires at the applicable spacing criteria. Rings must be securely welded to the posts.

D.20.5 Steel Braces

Steel Braces shall be installed as Cross Members for H-Braces, as Deadman Tensioning Members in replacement of associated tensioning wires, or as rails for Steel Rail Fencing. Cross and tensioning members must be fitted inset and centrally aligned to the Steel Post or Deadman and securely attached with saddle joints and continuous welding. Weld voids within the attachment joint will not be allowed. Pipe joints shall be welded solid and contain no openings to the pipe interior. No additional bracing or tensioning wires are required for H-Brace or Deadman Structures, unless ordered by the District's Authorized Representative.

D.20.6 Steel Rail Fencing

Steel Rail Fencing shall be installed in fence sections and structures as an alternative to Board or Half Round Fencing. Steel Posts shall be used in replacement of wood posts at 7 foot spacing. Four rails of Steel Brace Material will be fitted and welded on top and between the Steel Posts. The top rail shall be set at height of 48 inches with the other three being evenly spaced between the top rail and level in relationship to the existing topography. The top rail shall be saddle fitted to the top of the Steel Posts and welded to create a continuous rail, shaped to follow changes in the topography. Lower rails are to be evenly spaced, saddle fitted, and welded inset between the Steel Posts. All resulting pipes ends must be capped or plugged with steel, concrete, or District approved alternative.

Any section of continuous top rail constructed that exceeds 100 feet in length shall be fitted with an expansion sleeve on each rail in a central location. A 3-4 inch wide void shall be cut in the rail to allow for the metal to expand and contract freely with temperature changes. These vacant sections shall be covered with oversized fabricated sleeve that extends a minimum of 6

inches over the adjacent rail ends. One side of the sleeve will be welded solid to the rail and the other shall be left free to allow the rail to slide back and forth within the sleeve. All sleeves must be close fitting to maintain the rails rigidity.

D.20.7 Mechanical Brace Fittings

Mechanical chain link style fittings and wire clamp supports are to be used as an alternative to welding Steel Braces and wire support rings. Steel Fence Structures fitted with mechanical fittings will be require the installation of tensioning wires in accordance with the equivalent wood structure specifications.

Galvanized Metal Tubing Structures may be substituted for Steel Fence Structures as followed to support use of Mechanical Brace Fittings. 7 foot long, 2-3/8" diameter tubing sections shall be used for posts and 7 foot long, 1-5/8" diameter tubing shall be used for bracing. Posts shall be installed in an auger or excavated hole, not to exceed 4 inches in diameter, having a minimum depth of 3 feet. After placement of the post, the hole will be backfilled with concrete to the existing ground surface, along with filling the interior of the post. Braces are to be fitted and attached to posts utilizing mechanical chain link style fence fittings. Tensioning wires will be installed in accordance with the equivalent wood structure specifications. Fence wire support clamps will be used to supporting tensioning and attach fence wires to galvanized posts. District will supply associated materials.

Applicable Mechanical Brace Fitting materials will be supplied by the District.

D.21 BUCK AND POLE FENCING

D.21.1 General:

Buck and Pole Fencing Units shall be used in designated fence sections as an alternative to wire or board fencing, primarily to restrict wildlife access and in terrain that is restrictive to installing buried posts or other adequate fencing anchors. Buck and Pole Fencing sections to be constructed will be identified on the ground by District's Authorized Representative.

Buck and Pole Fencing shall be constructed in accordance with the following specifications and as shown on the attached drawings.

D.21.2 Materials:

Round timber materials to be used for buck posts, poles, or bracing may be green or dry, treated, peeled, or natural, but must be sound and free of decay and knots. Lodgepole pine is the preferred materials wood species.

- Buck Posts - The posts for the bucks should be 5 to 8 inches in diameter and 5 feet long.
- Buck Brace – The pole brace between the bottom of the buck legs to be a minimum 3 inches in diameter and 4 feet long.
- Poles – The poles between each set of bucks, including diagonal braces are to be 3 to 5 inches in diameter and 12 to 14 feet long.

D.21.3 Bucks

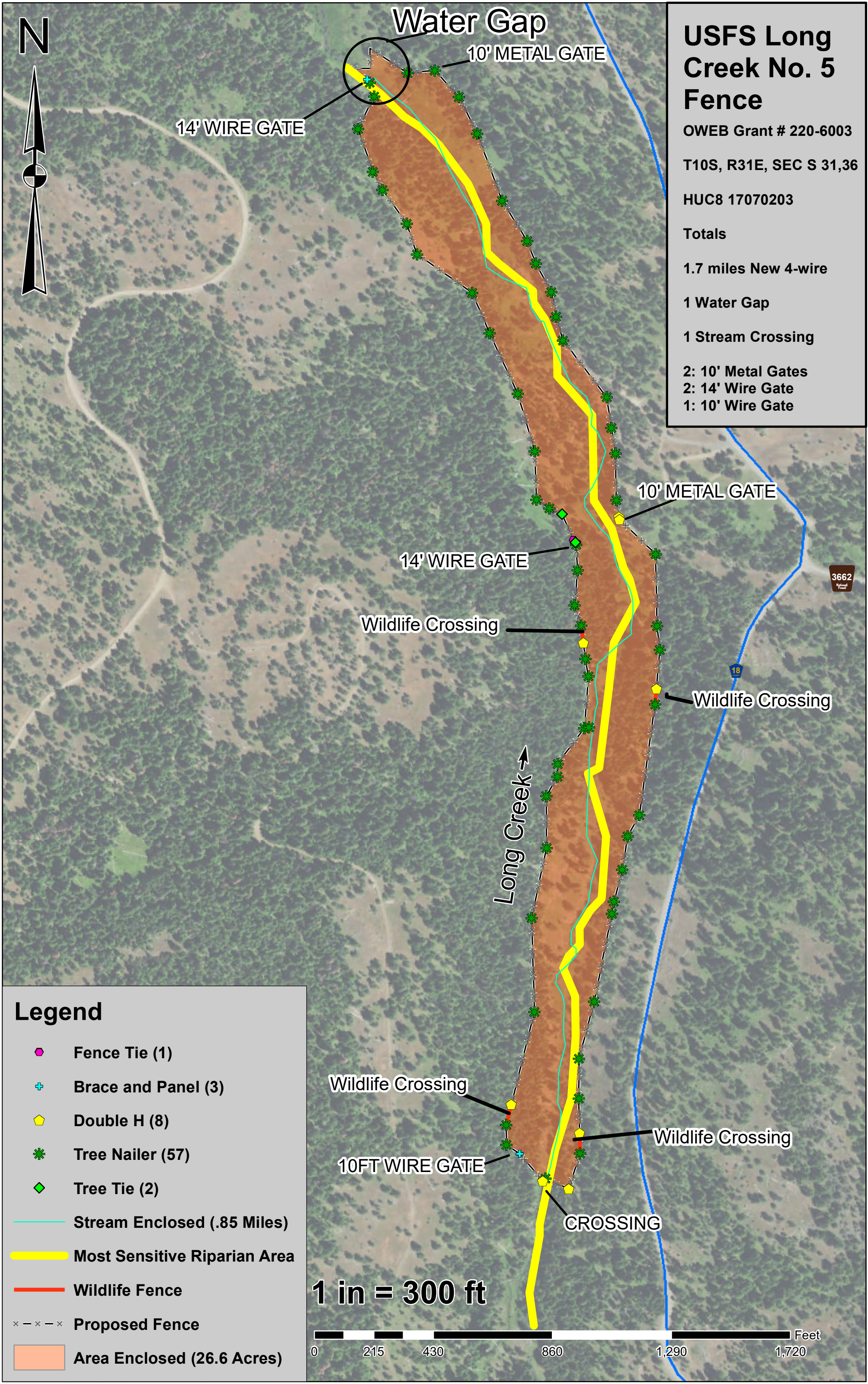
Bucks are to be placed at 10 – 11 foot spacing along the fence alignment to support the installation of the pole rails and applicable diagonal bracing. Buck posts shall be fitted together with a 30° angle double dado joint, each approximately 2 inches deep, spaced 16 inches from the top end of each post. Each notch to be a minimum width to support the placement of its paired buck post dado joint, without excessive lateral gapping. Placing the two notched faces together to form a locking joint will create a teepee shaped frame with the legs extending out at a 60° angle from each other to a width of approximately 4 feet. Secure the buck posts together at the joint location with two 50d nails. To secure the buck legs laterally, install the buck brace by nailing each end of the brace ends, 8 inches for three pole or 12 inches for 4 pole fencing above the end of the buck leg with a 50d nail. Nails shall be spaced a minimum of 3 inches for the end of the buck brace and be fitted horizontally level when the buck is standing vertically plumb.

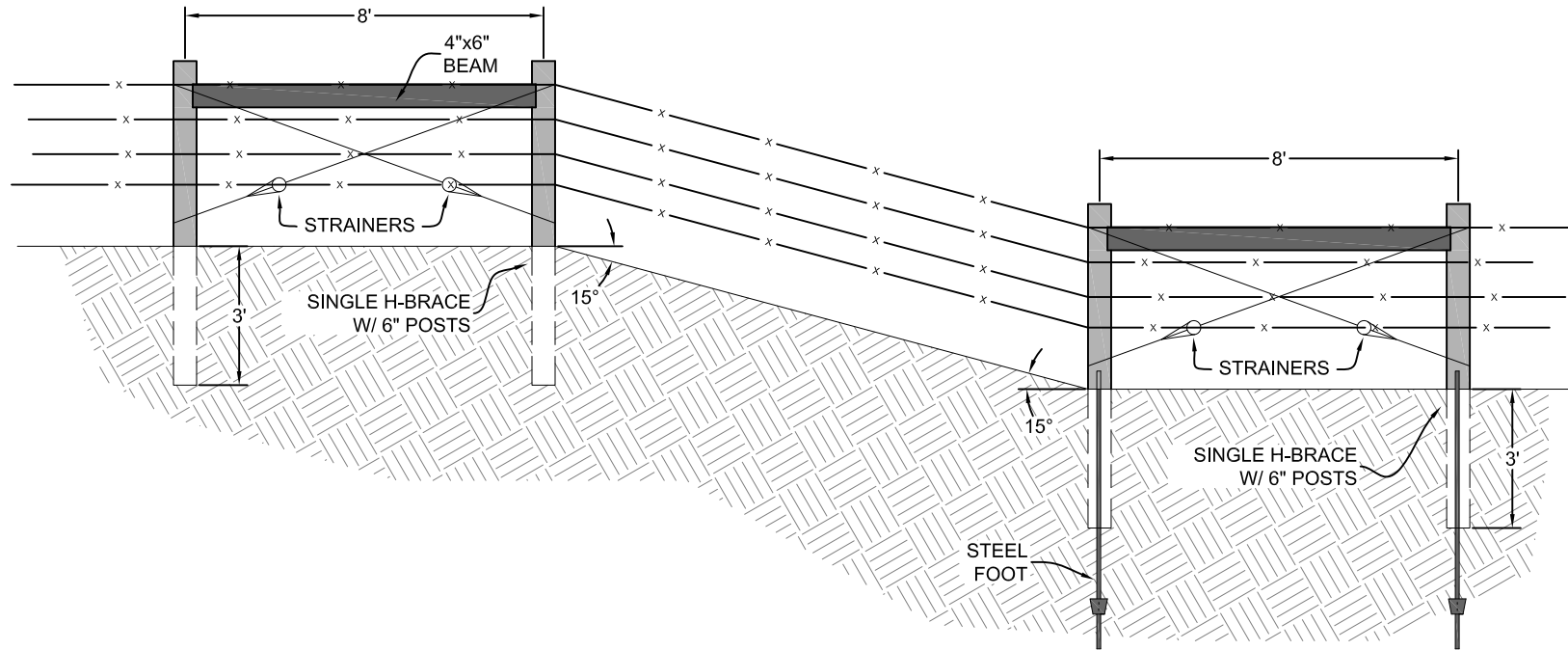
D.21.4 Poles

3 or 4 Poles are to be fitted and evenly spaced horizontally between each pair of bucks, from the top of the buck brace to the top of the buck post. Poles are to be installed on the same buck post and face towards the side of the fence anticipated to receive the most livestock or wildlife pressure. Each pole will extend a minimum of 6 inches past the each buck post and be secured tight with one 50d nail, centrally driven into the pole and post. Each set of poles between each pair of bucks will be fitted alternately above or below the adjacent pole sections. A single rub pole is to be placed on the opposite side of each pair of bucks, approximately 2 feet from the ground, with the same staggered pole arrangement.

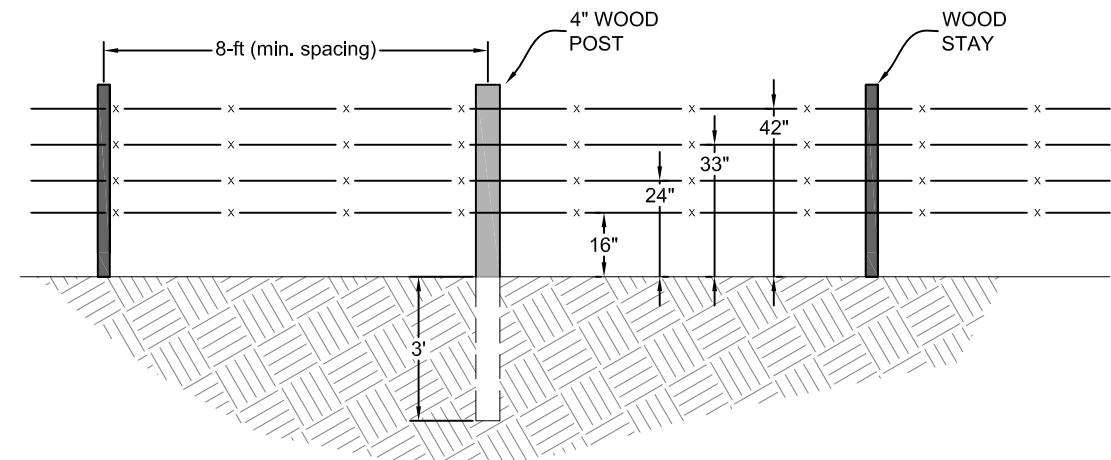
Between every 10th buck, double diagonal brace poles will be installed to secure the fence vertically. Diagonal braces are to be installed in replacement of the rub poles. Initiating at the center buck, secure each brace pole on opposite sides of post, just under the elevation of the high pole placement with 50d nails. Each brace pole shall extend in opposite and downward angles to be secure to the bottom of the adjacent buck posts on the same side with 50d nails, just above the ground.

END OF SECTION

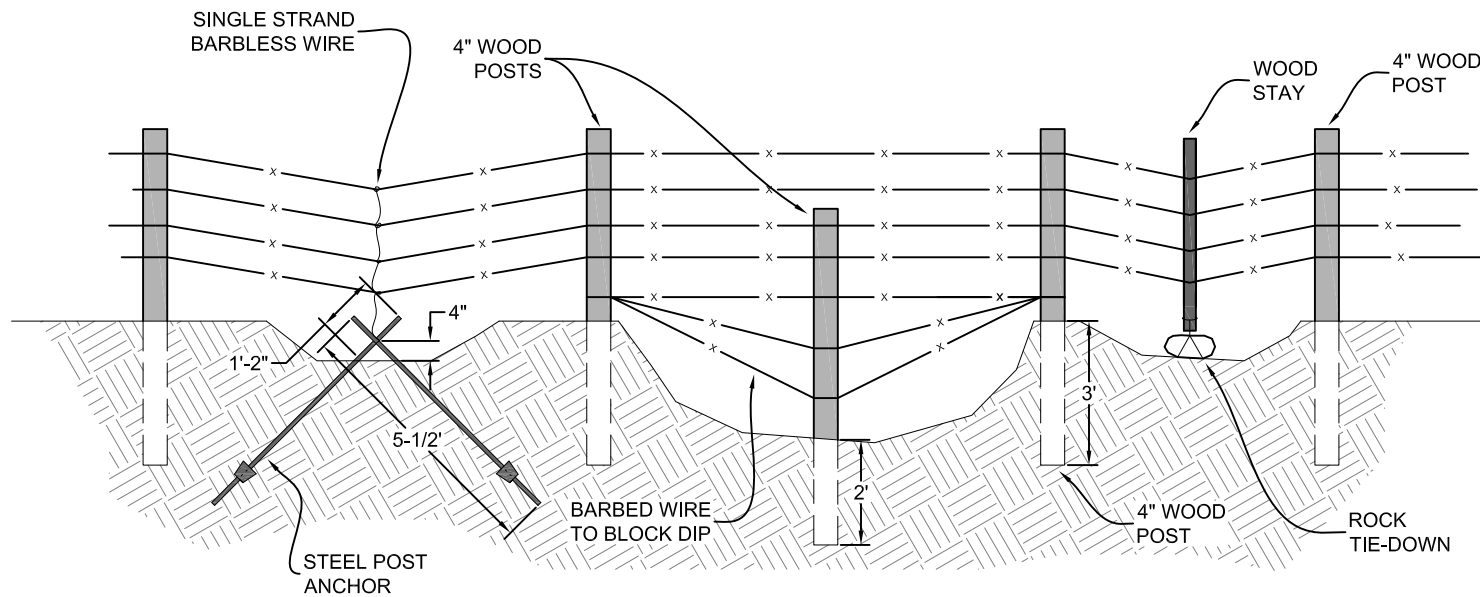




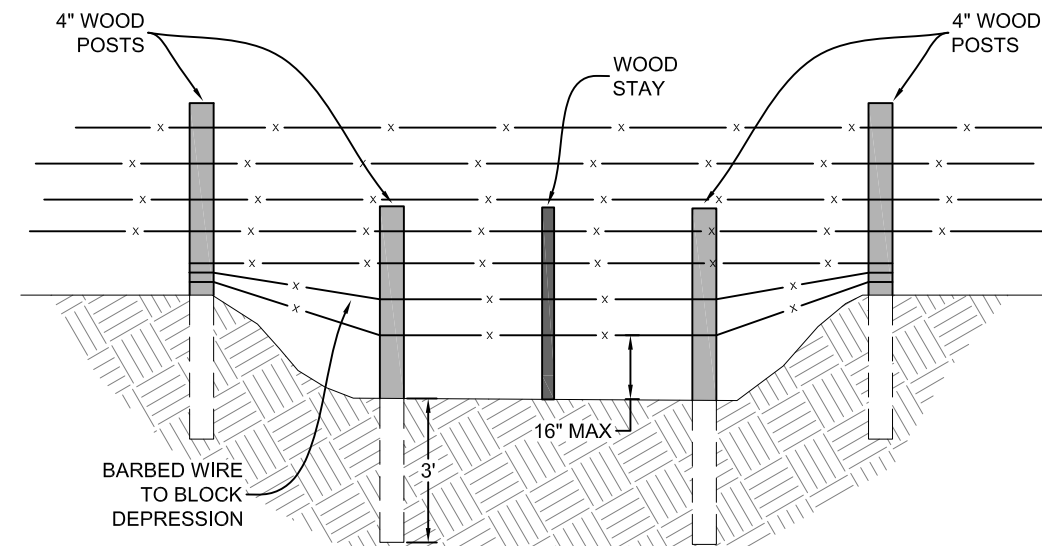
ABRUPT SLOPE STRUCTURE



STAYS, SINGLE POST & WIRE SPACING



DIP STRUCTURES



DEPRESSION STRUCTURE

REVISIONS	BY

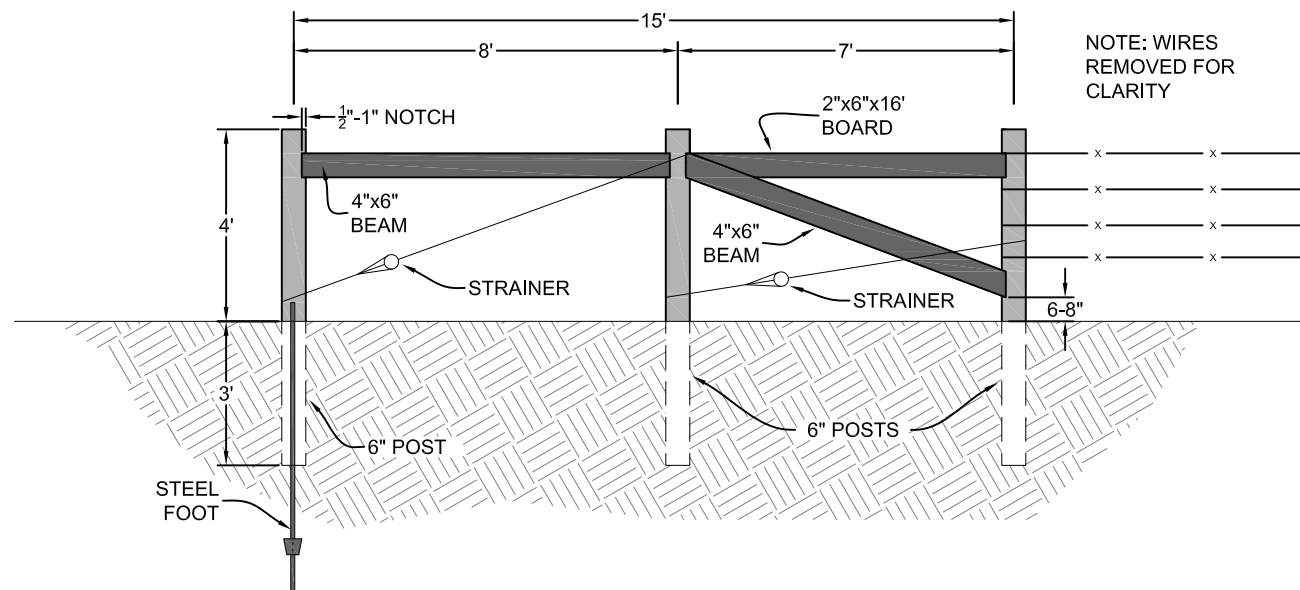
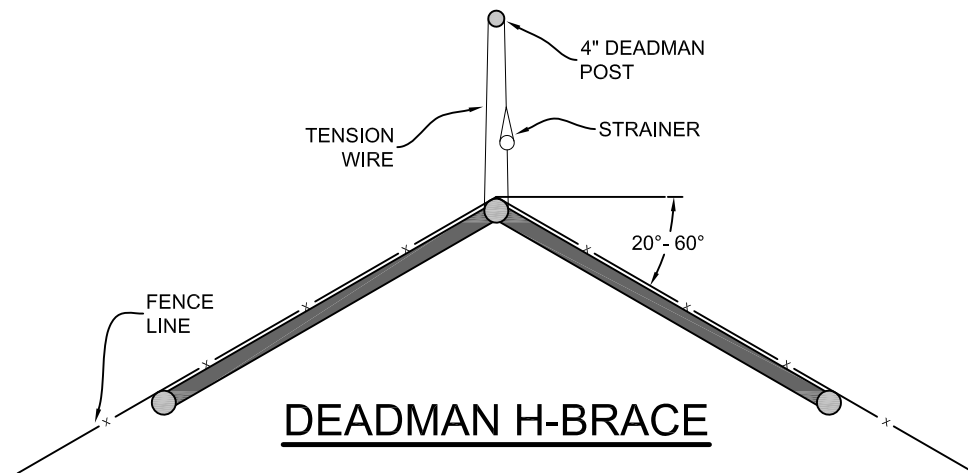
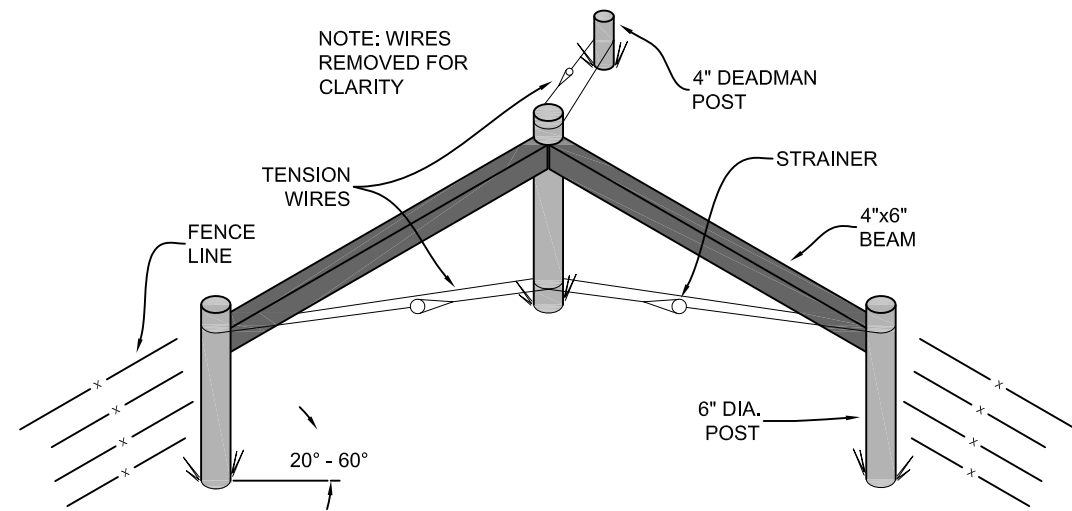
FENCE CONSTRUCTION DETAILS

GRANT SOIL AND WATER
CONSERVATION DISTRICT

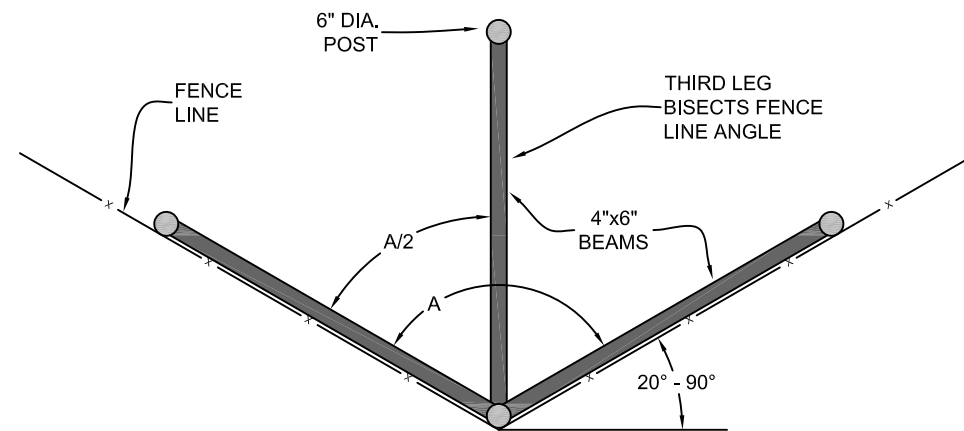
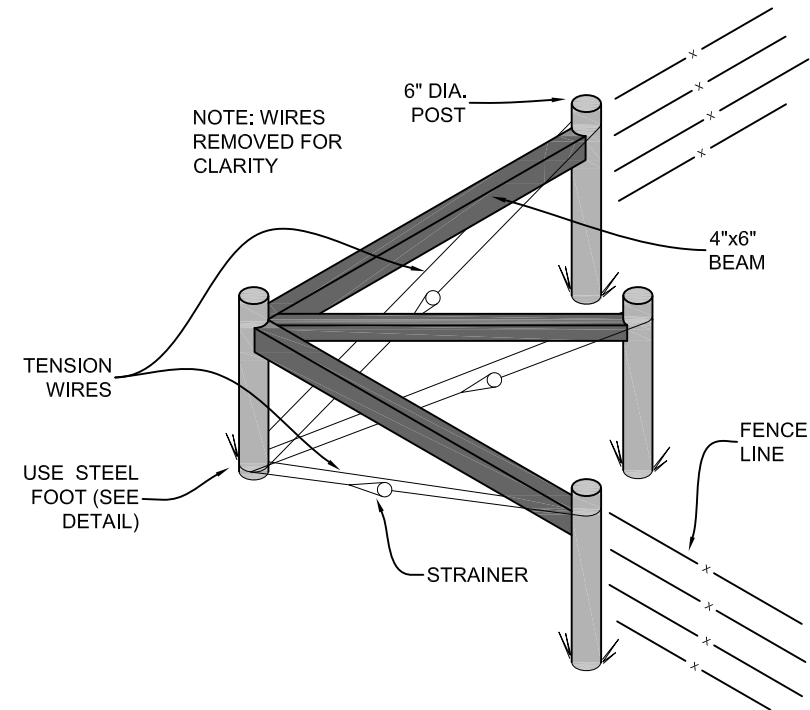


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DATE: MAR 2021
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SHEET
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OF 10 SHEETS



DOUBLE H-BRACE END STRUCTURE



TRIPLE H-BRACE

FENCE CONSTRUCTION DETAILS

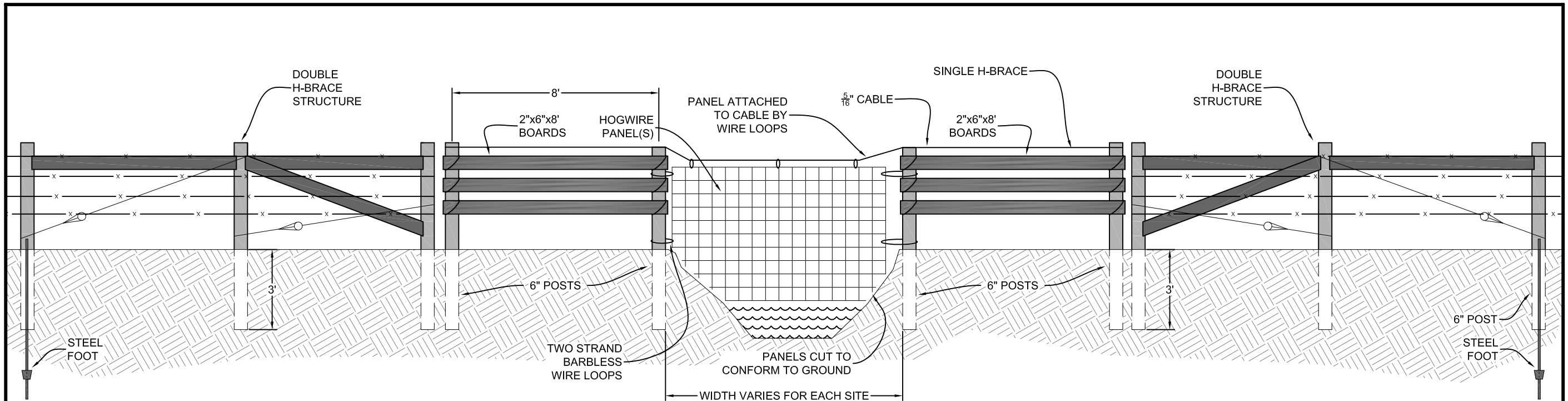
GRANT SOIL AND WATER
CONSERVATION DISTRICT



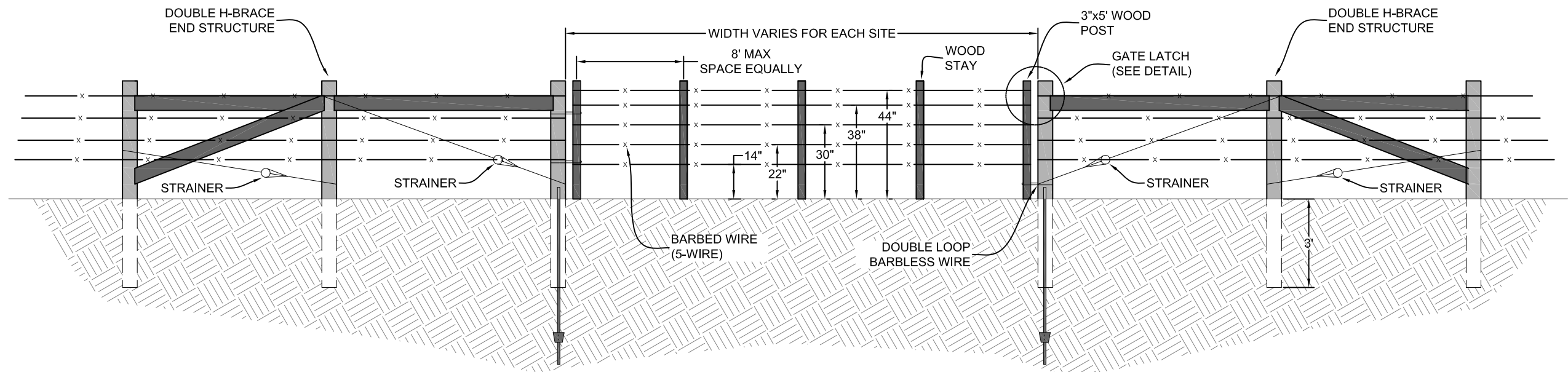
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STREAM CROSSING STRUCTURE



GATE CONSTRUCTION

REVISIONS	BY

FENCE CONSTRUCTION DETAILS

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CONSERVATION DISTRICT

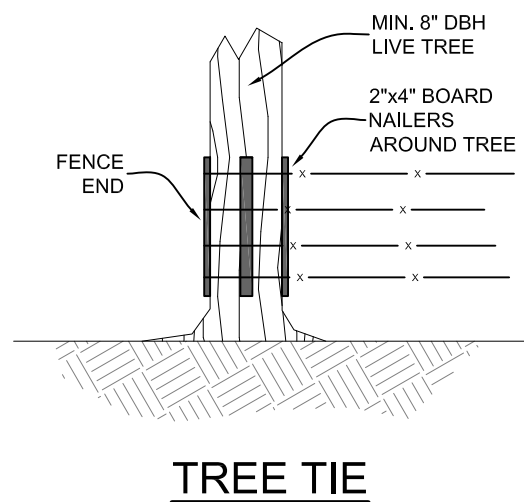
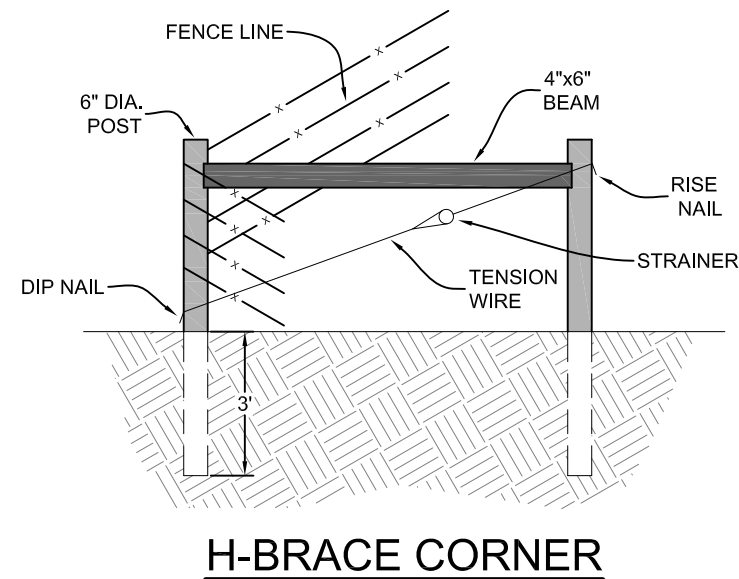
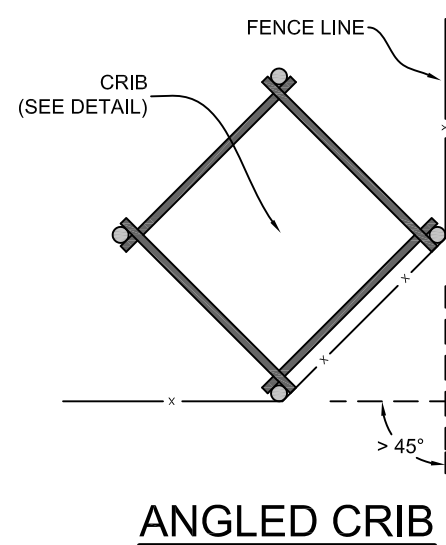
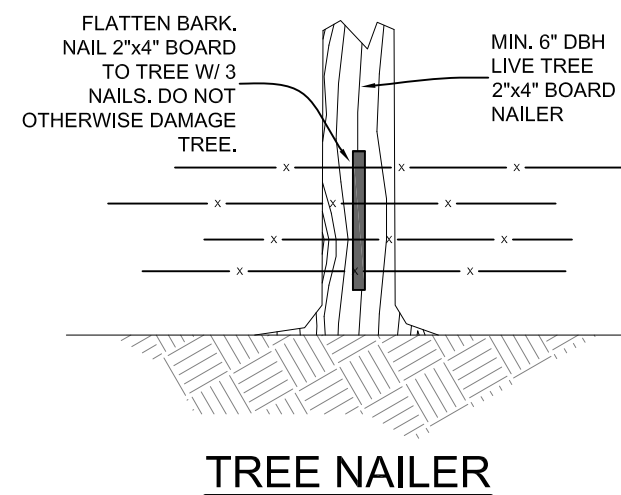
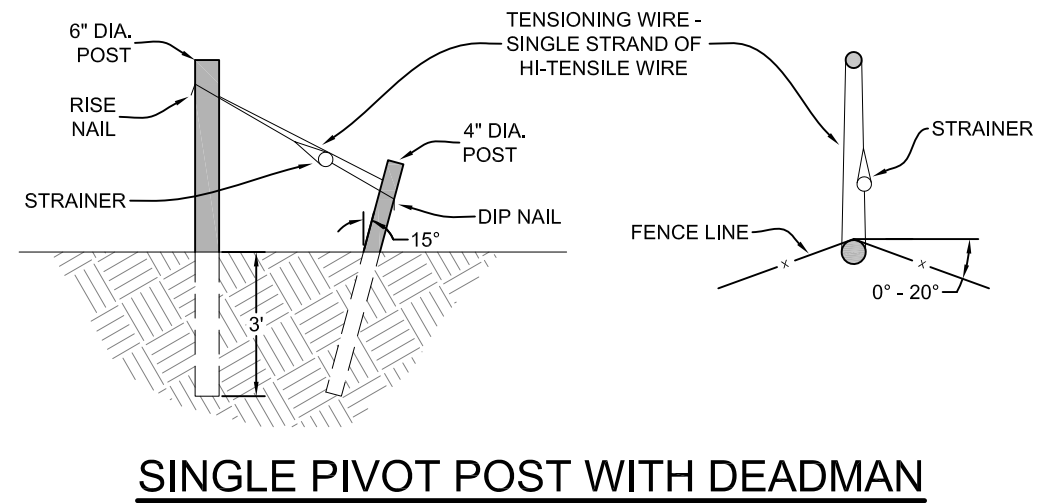
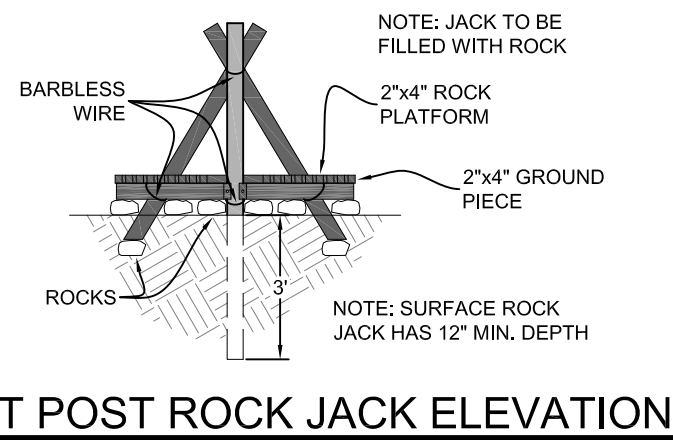
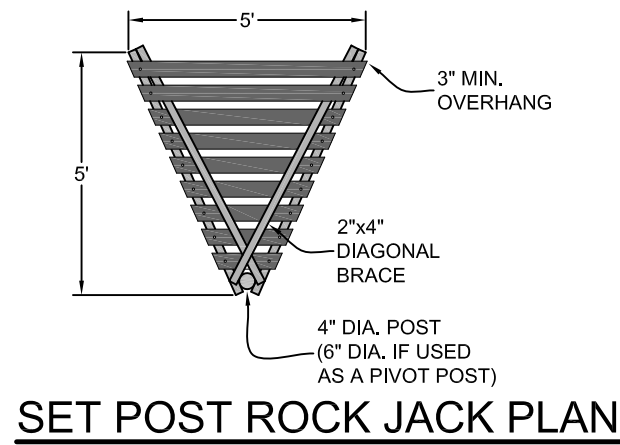
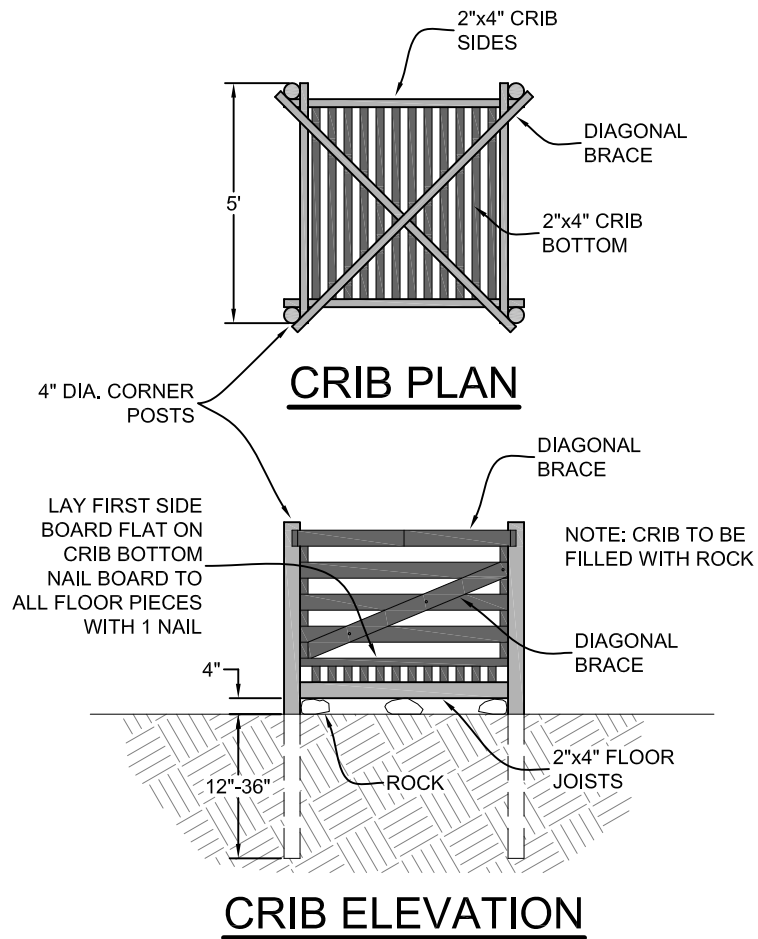


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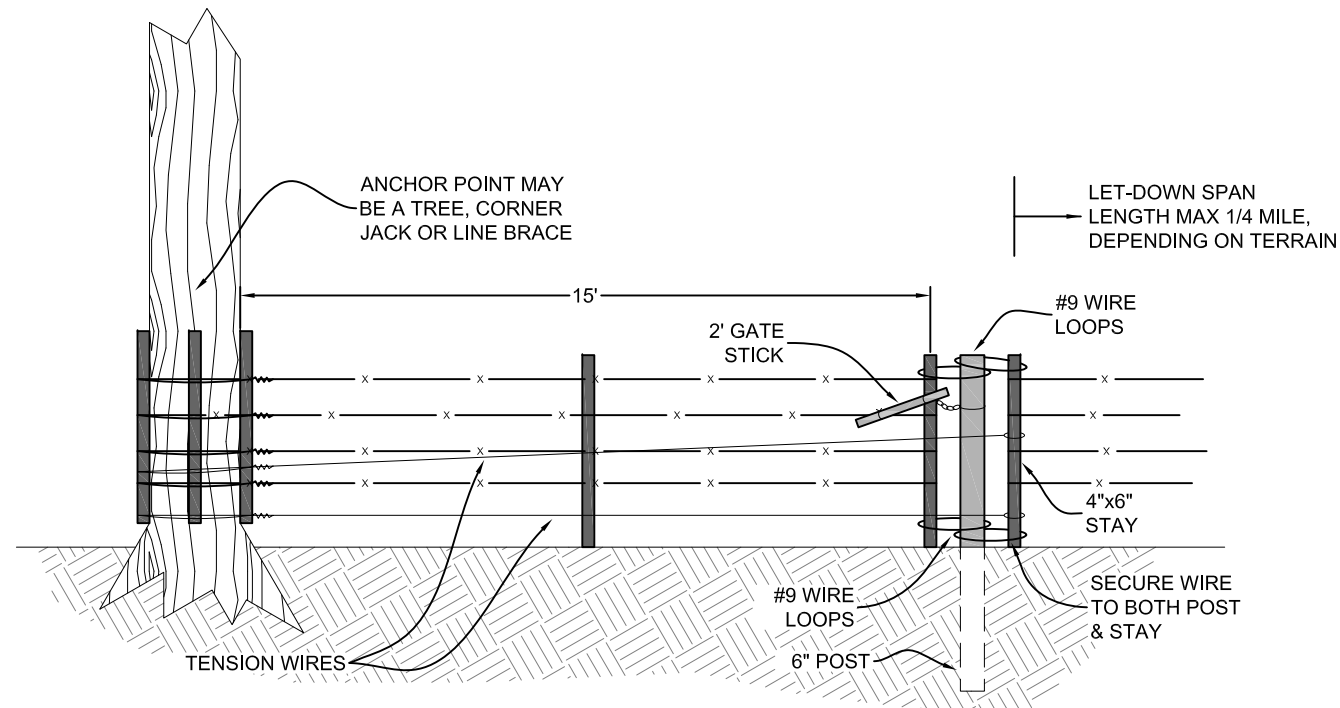


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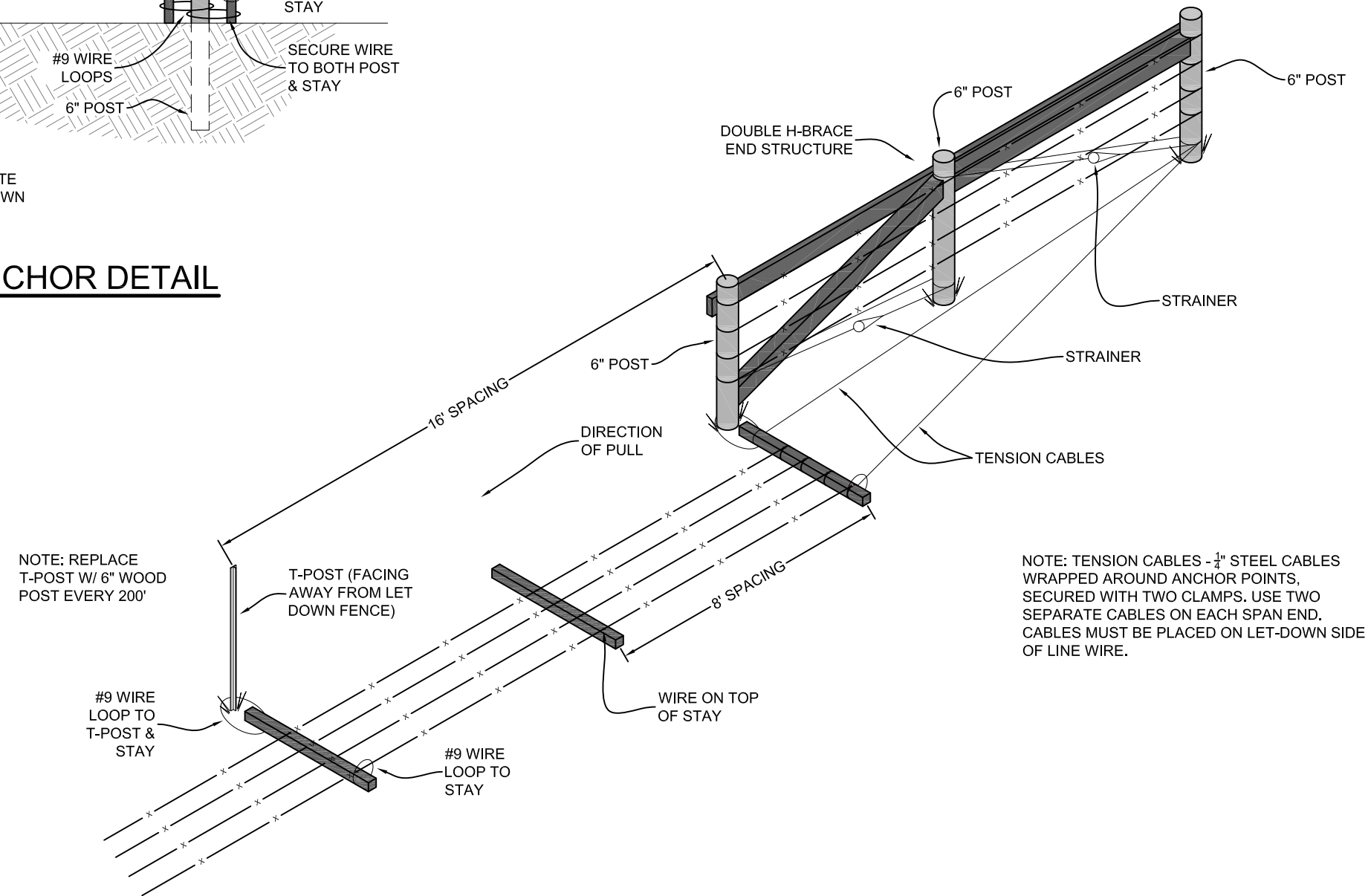
FENCE CONSTRUCTION DETAILS

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LET-DOWN ANCHOR DETAIL



LET-DOWN FENCE LINE/END DETAIL

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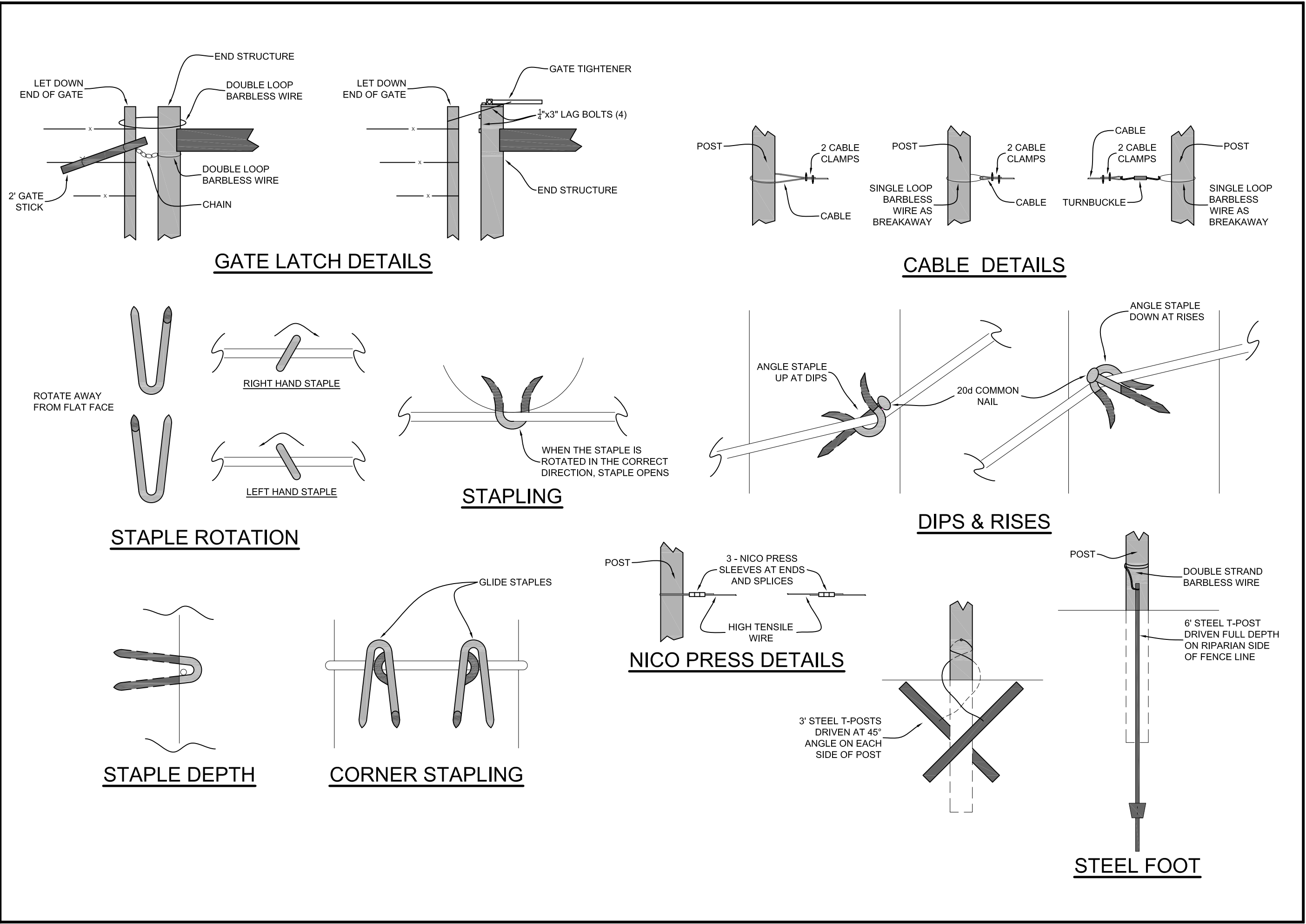
FENCE CONSTRUCTION DETAILS

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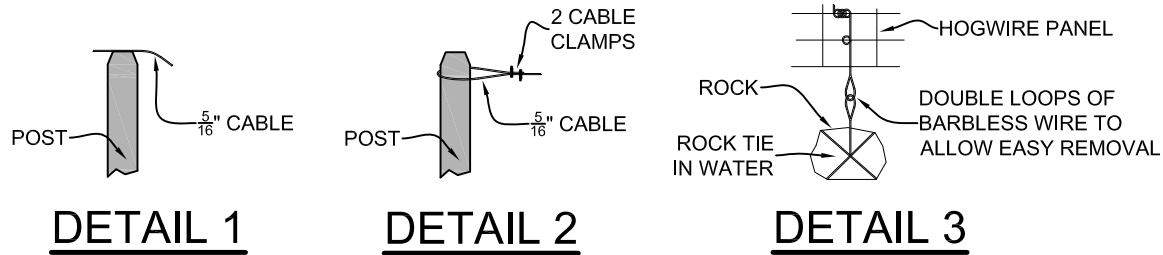
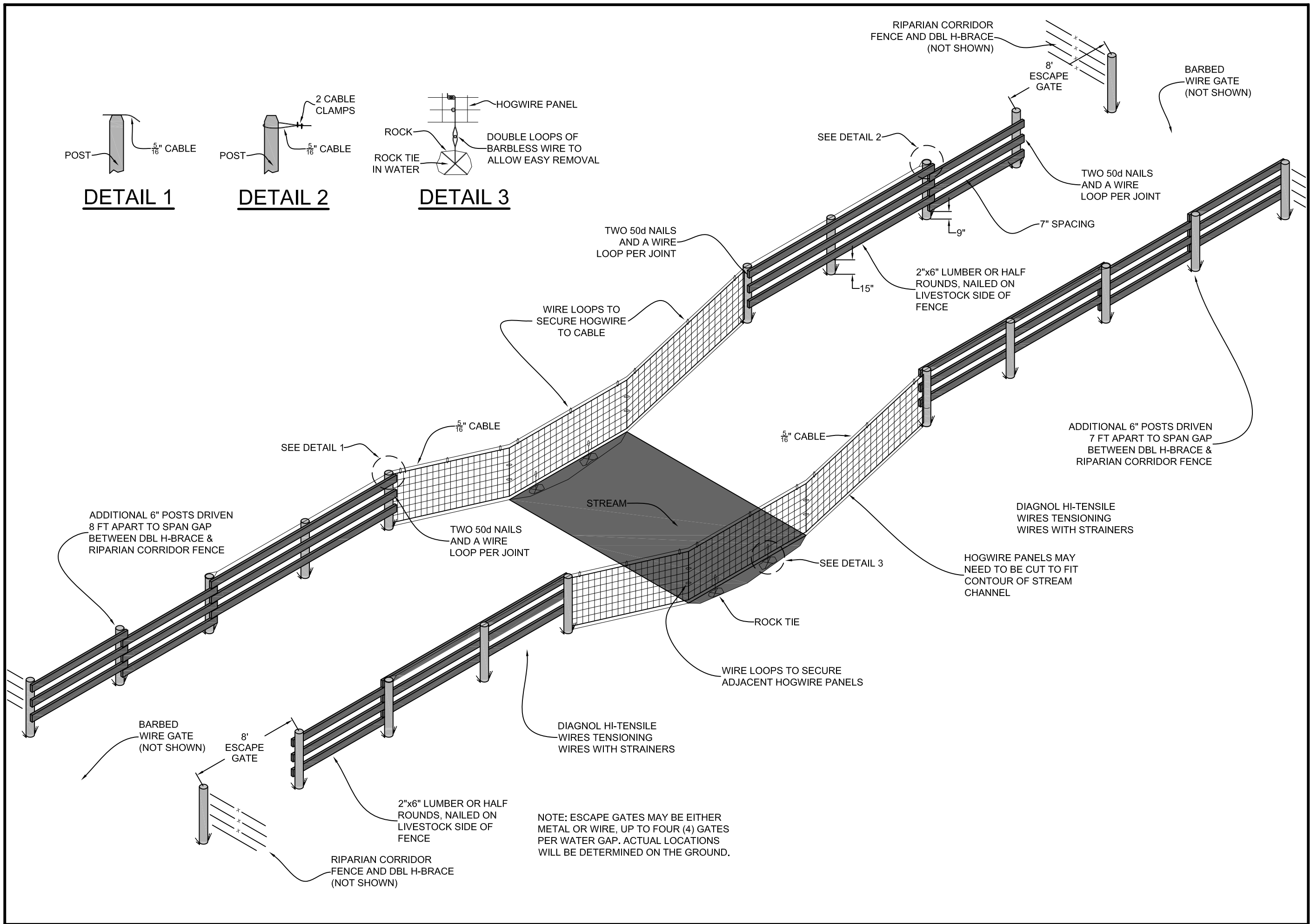


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RIPARIAN CORRIDOR FENCE AND DBL H-BRACE (NOT SHOWN)

8' ESCAPE GATE

BARBED WIRE GATE (NOT SHOWN)

SEE DETAIL 2

TWO 50d NAILS AND A WIRE LOOP PER JOINT

WIRE LOOPS TO SECURE HOGWIRE TO CABLE

SEE DETAIL 1

ADDITIONAL 6" POSTS DRIVEN 8 FT APART TO SPAN GAP BETWEEN DBL H-BRACE & RIPARIAN CORRIDOR FENCE

TWO 50d NAILS AND A WIRE LOOP PER JOINT

5/16" CABLE

SEE DETAIL 3

HOGWIRE PANELS MAY NEED TO BE CUT TO FIT CONTOUR OF STREAM CHANNEL

ROCK TIE

WIRE LOOPS TO SECURE ADJACENT HOGWIRE PANELS

DIAGNOL HI-TENSILE WIRES TENSIONING WIRES WITH STRAINERS

BARBED WIRE GATE (NOT SHOWN)

8' ESCAPE GATE

2"x6" LUMBER OR HALF ROUNDS, NAILED ON LIVESTOCK SIDE OF FENCE

RIPARIAN CORRIDOR FENCE AND DBL H-BRACE (NOT SHOWN)

NOTE: ESCAPE GATES MAY BE EITHER METAL OR WIRE, UP TO FOUR (4) GATES PER WATER GAP. ACTUAL LOCATIONS WILL BE DETERMINED ON THE GROUND.

FENCE CONSTRUCTION DETAILS

GRANT SOIL AND WATER CONSERVATION DISTRICT

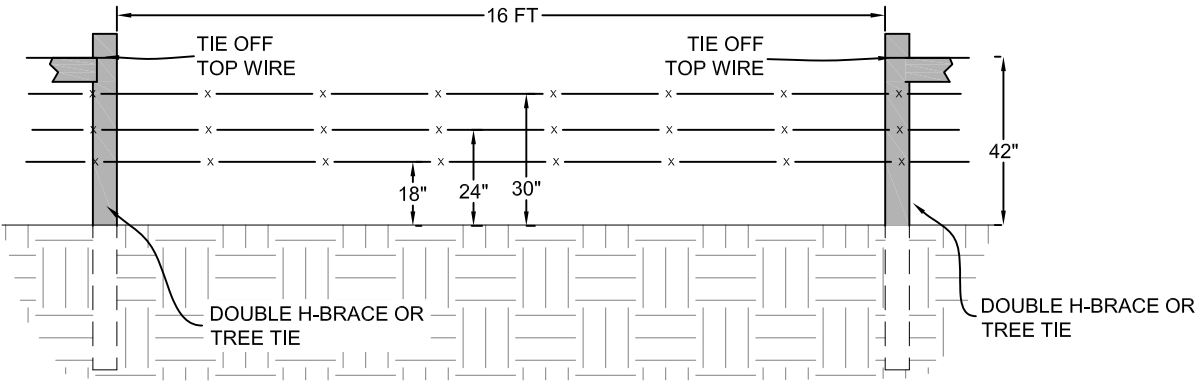


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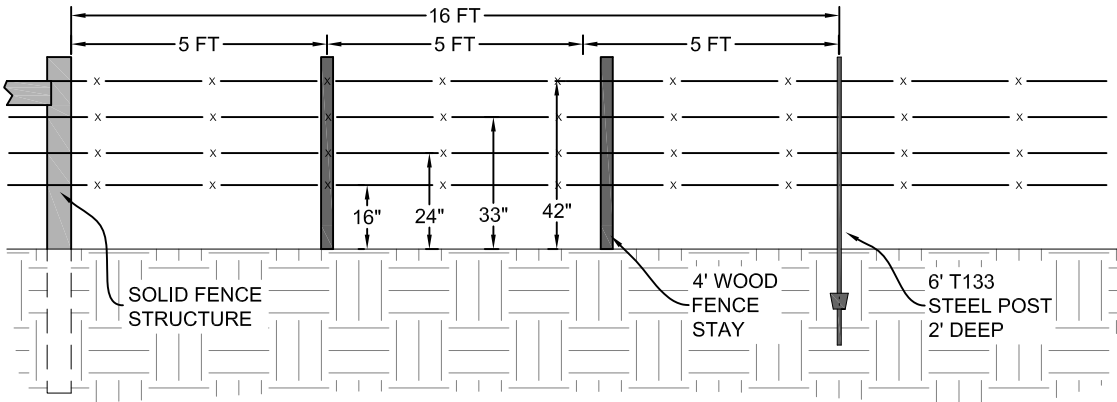
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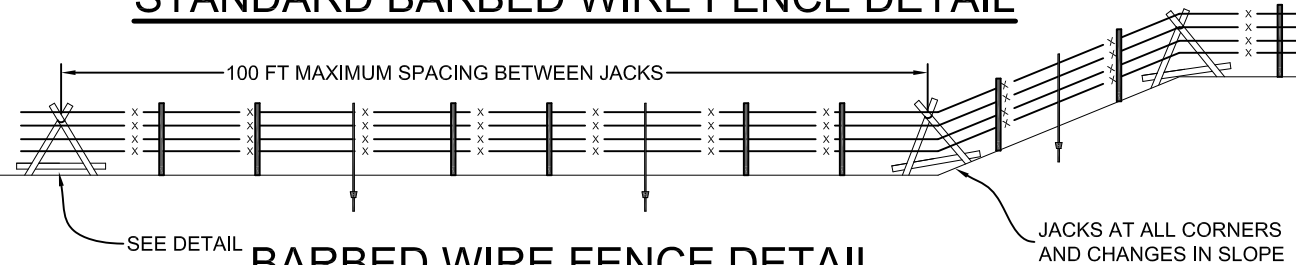
FENCE STRUCTURE TYPES		
FENCE ANGLE (IN DEGREES)	TOWARDS THE STREAM	AWAY FROM THE STREAM
	20° OR LESS	
	21° TO 45°	
	46° TO 60°	
	GREATER THAN 60°	



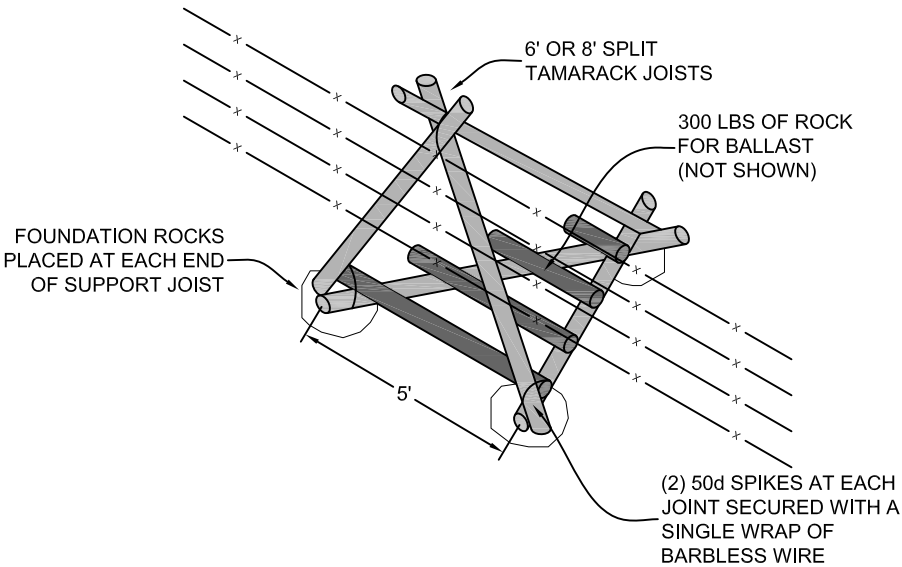
USFS WILDLIFE CROSSING FENCE DETAIL



STANDARD BARBED WIRE FENCE DETAIL



BARBED WIRE FENCE DETAIL



BARBED WIRE ROCK JACK DETAIL

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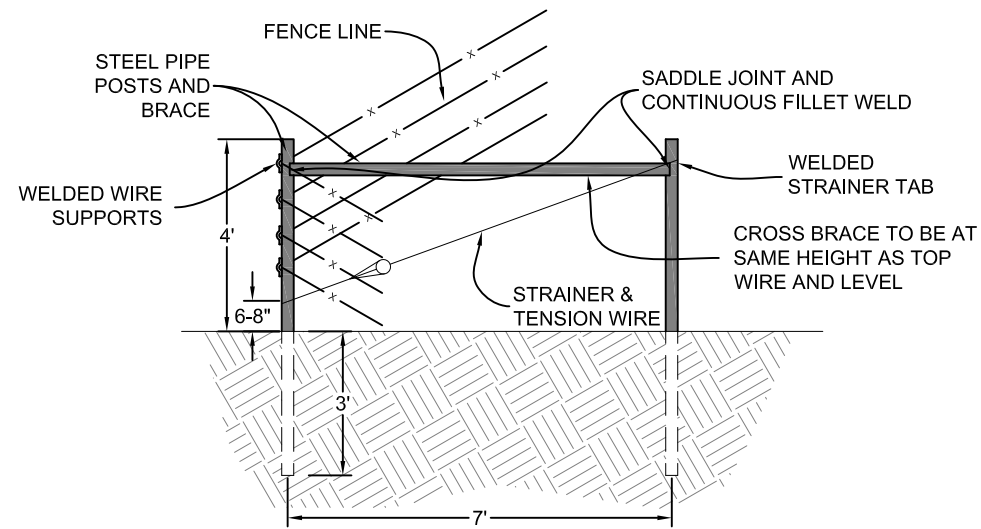
FENCE CONSTRUCTION DETAILS

GRANT SOIL AND WATER
CONSERVATION DISTRICT

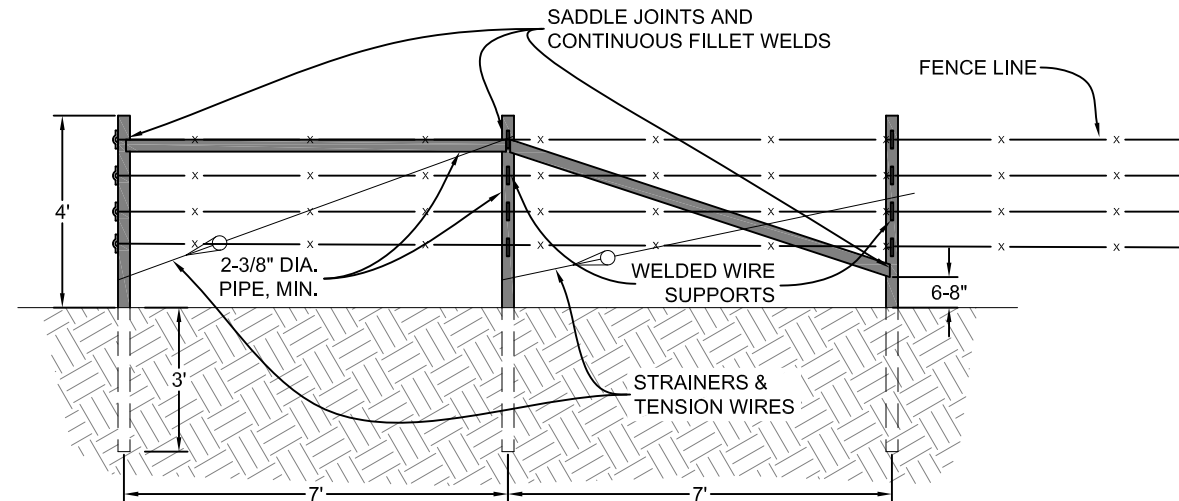
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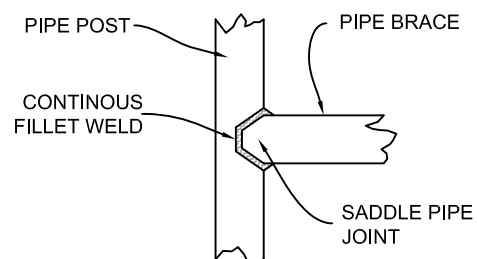
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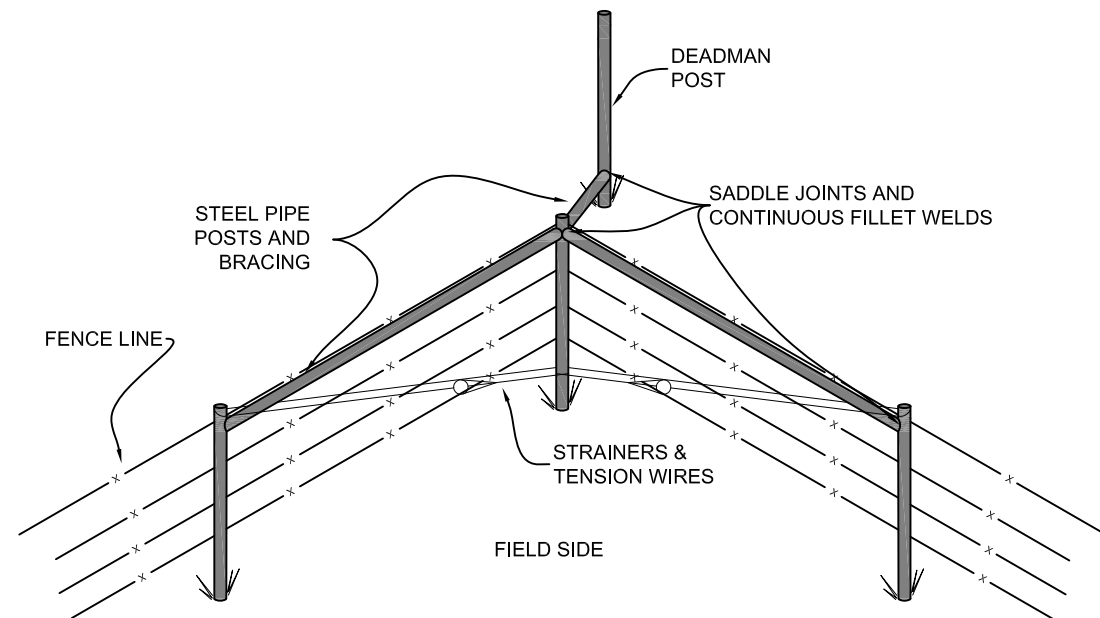
H-BRACE CORNER



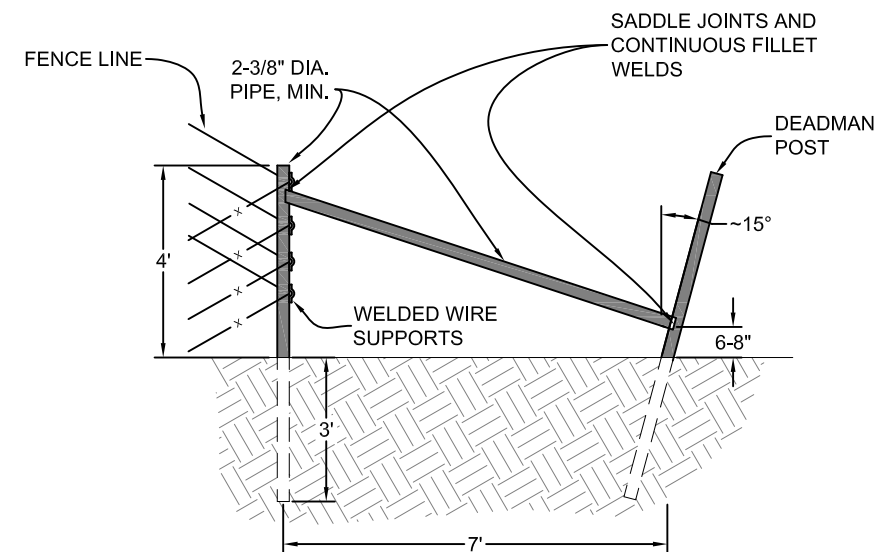
DOUBLE H-BRACE END STRUCTURE



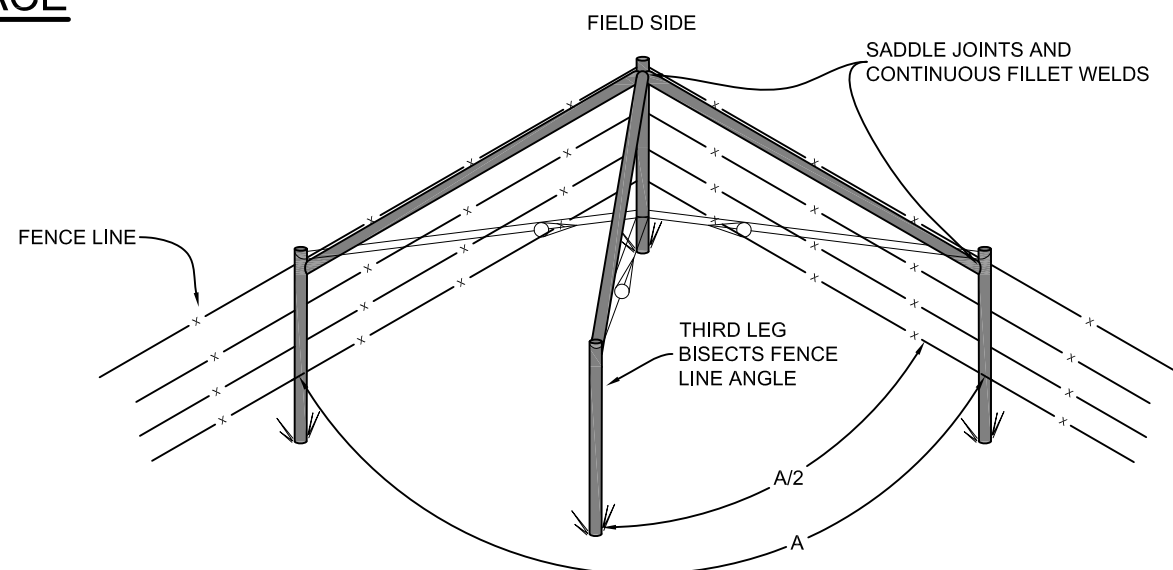
SADDLE JOINT TYPICAL



DEADMAN H-BRACE



SINGLE PIVOT POST WITH DEADMAN



TRIPLE H-BRACE

NOTE: ALL STEEL FITTING AND WELDING MUST COMPLY WITH AMERICAN WELDING SOCIETY STANDARDS.

REVISIONS	BY

**FENCE CONSTRUCTION DETAILS
STEEL FENCE STRUCTURES**

GRANT SOIL AND WATER
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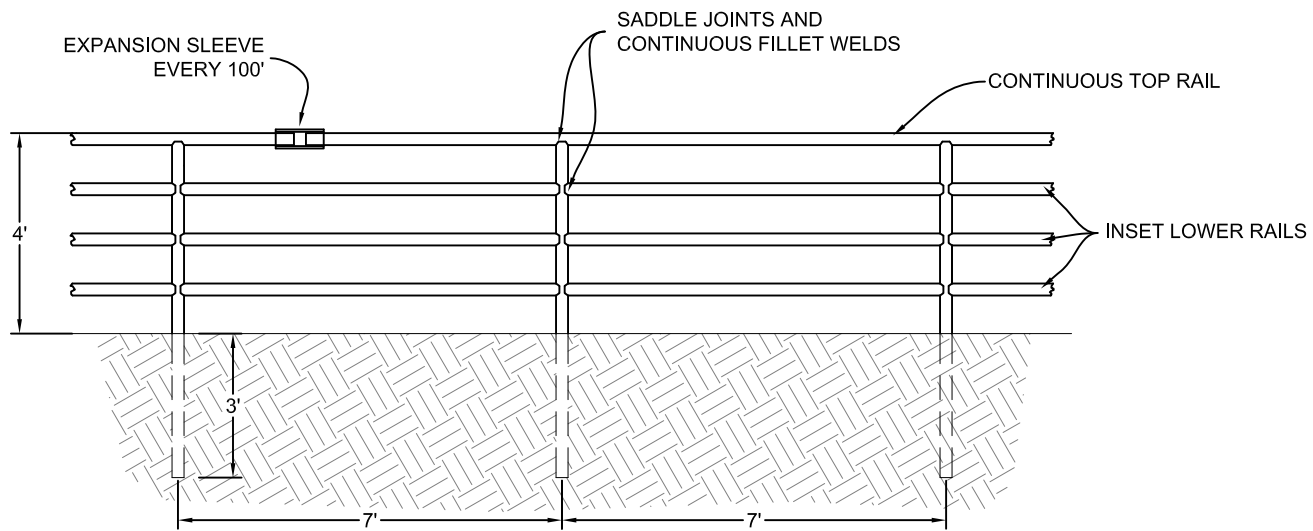
FENCE CONSTRUCTION DETAILS
STEEL FENCE STRUCTURES

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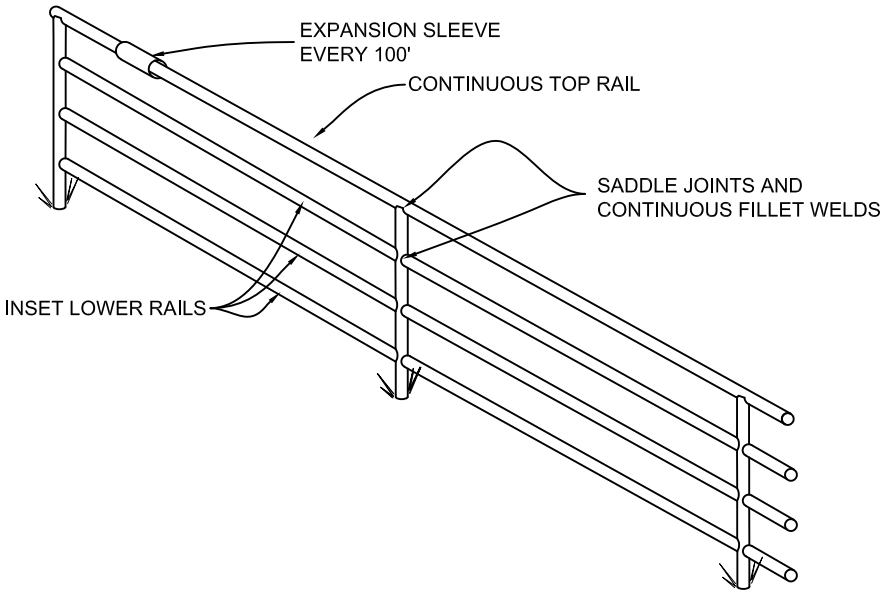
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STEEL RAIL FENCE

NOTE: ALL STEEL FITTING AND WELDING MUST COMPLY WITH AMERICAN WELDING SOCIETY STANDARDS.

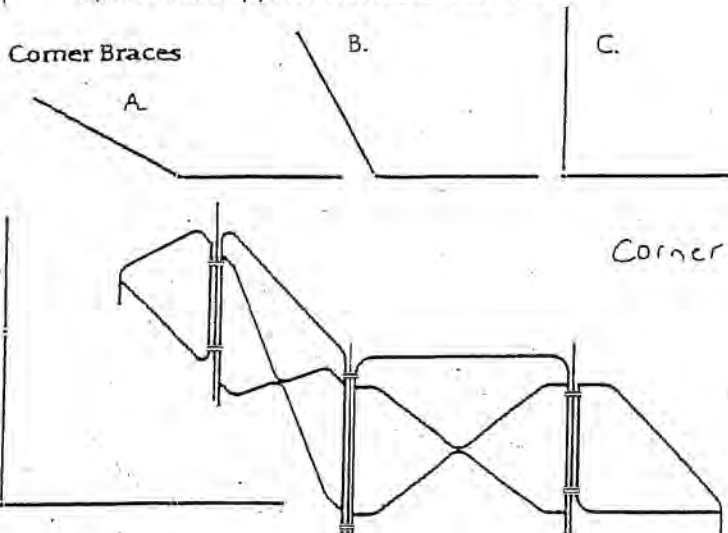


STEEL RAIL FENCE - ISOMETRIC VIEW

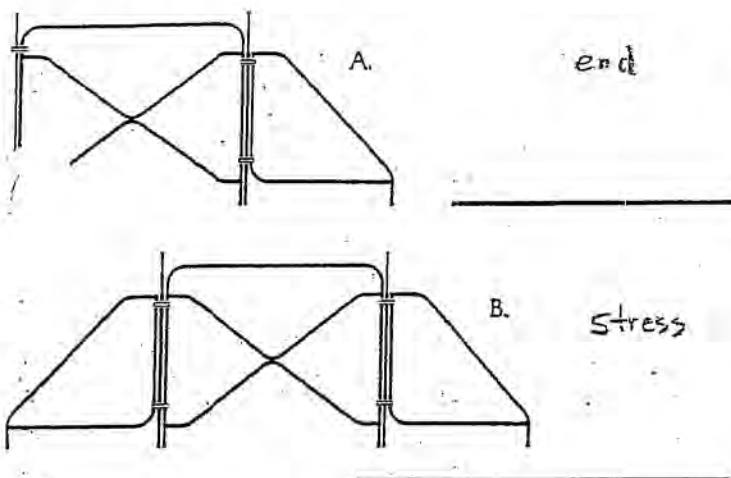
Easy Fence handles any fence configurations

Easy Fence panels and braces are for use wherever conventional of bracing is required, to reinforce corners, gates or straight. Same fence applications are also available.

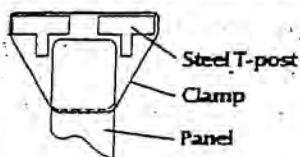
Corner Braces



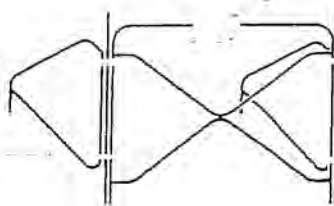
Straight Lines



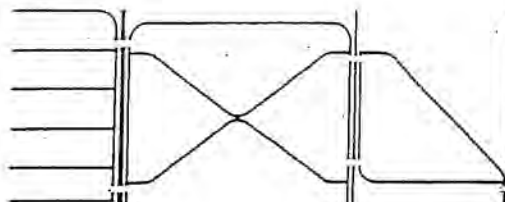
D. For single T-post gate opening double post and clamp together.



C. If desired, for greater lateral stability, add two T-posts and clamp top and bottom.



E. For maximum lateral support use two braces.



F. Swinging gate assembly.



Warranty

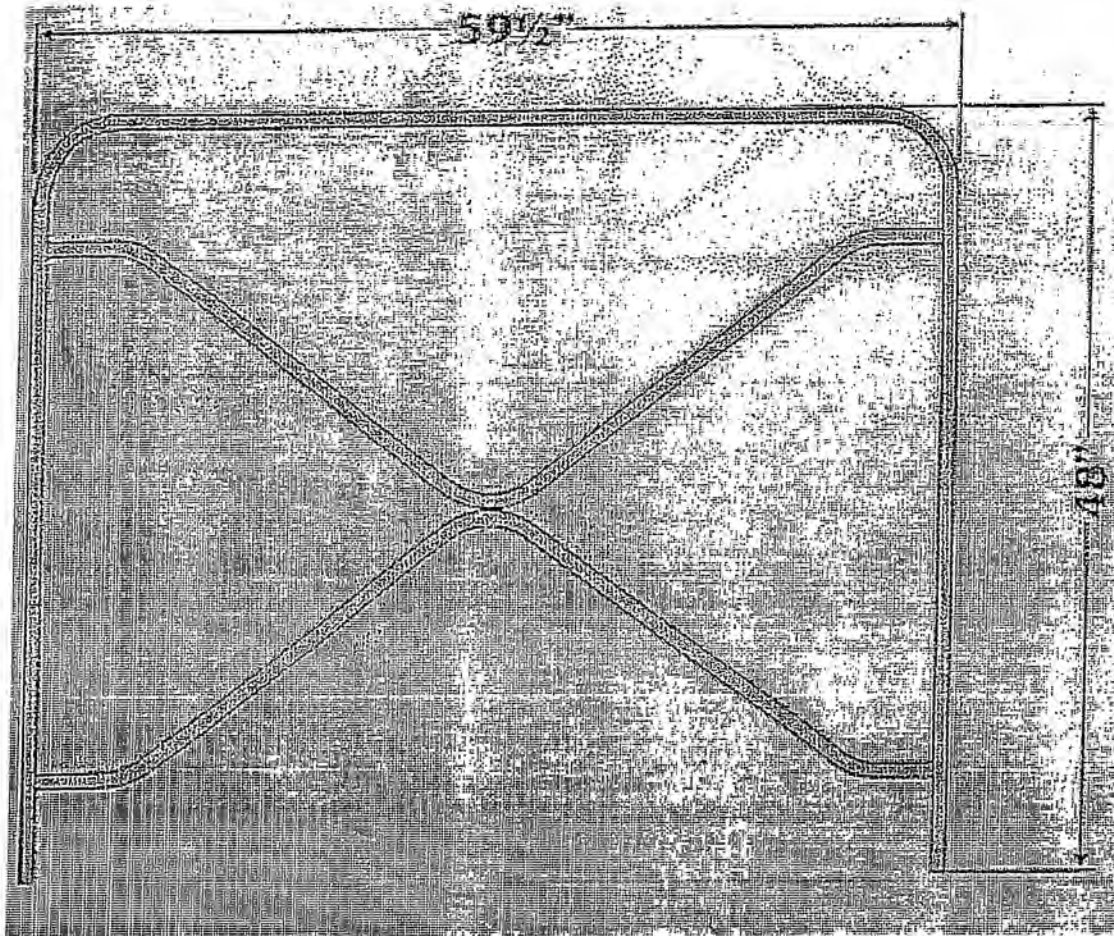
Easy Fence is warranted for 60 days from date of purchase to be free from defects in materials and workmanship, excluding misuse and abuse.

BY D-C INDUSTRIES
EASY FENCE

Patent #4-582-300

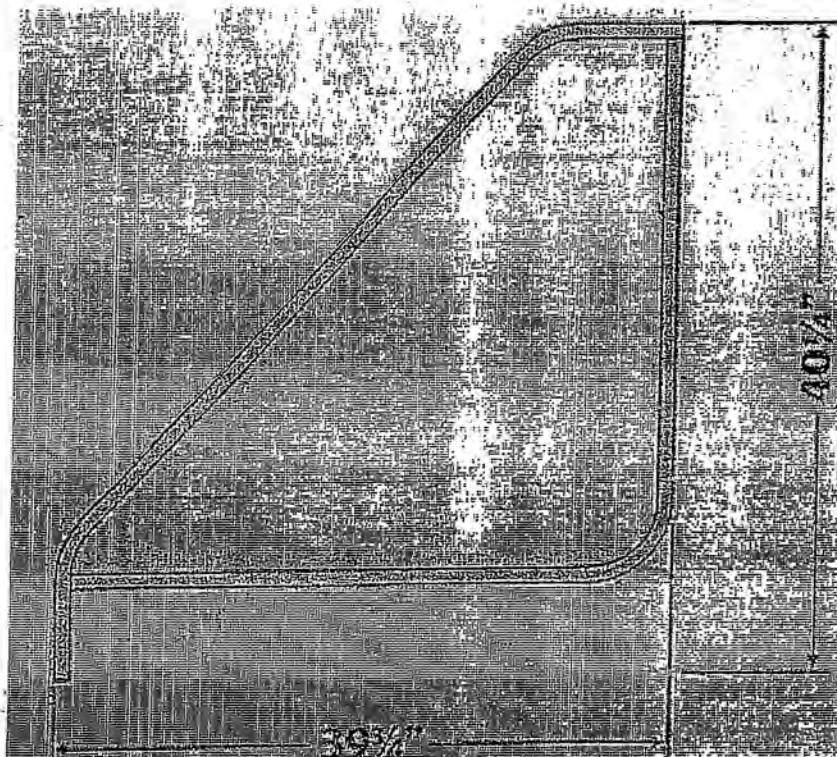
DERRALD CHAPPELL
Patent Holder and Designer

Easy Fence
Panel & Brace Detail
Sheet 1 of 3



PANEL

EASY FENCE



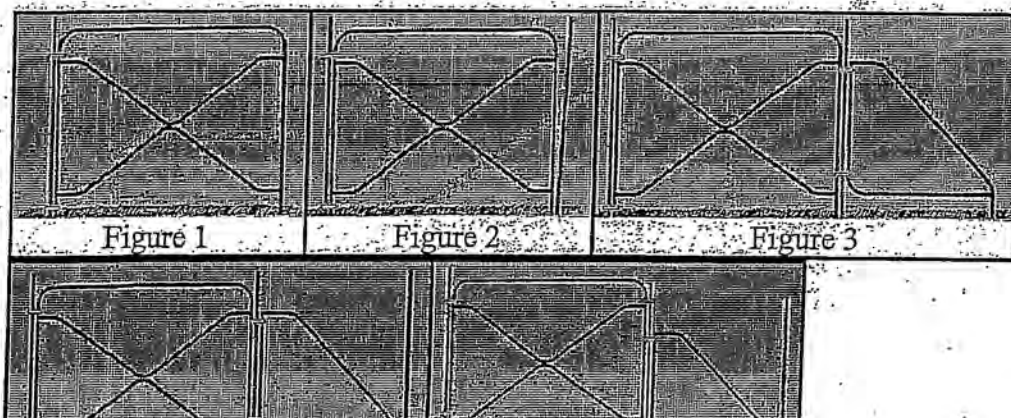
BRACE

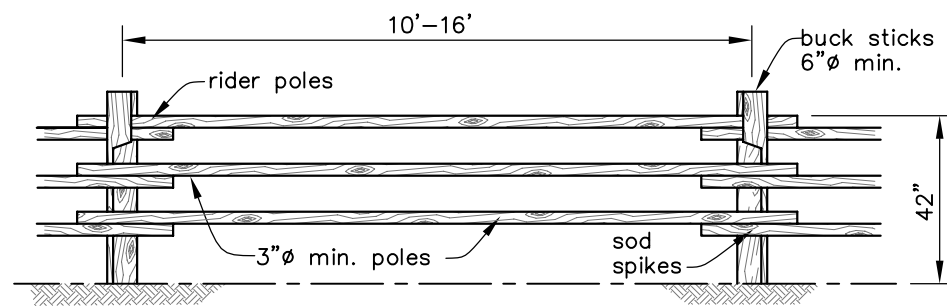
Easy Fence Steel Panel and Brace Assembly Instructions

Tools required:

Post Driver
Fence Pliers
Portable Rock Drill and Bits

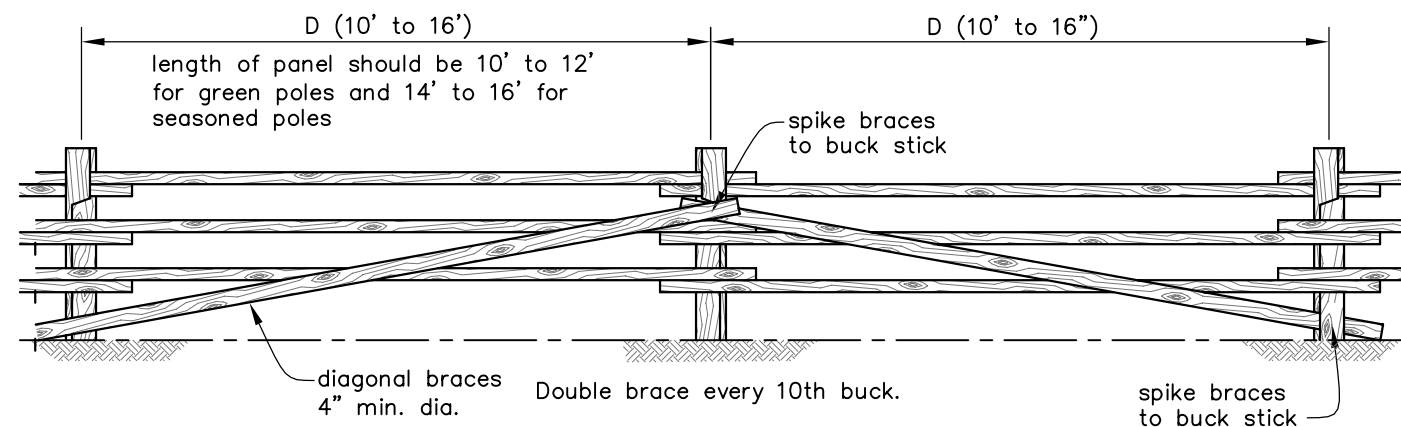
- 1) Drive Post #1 (Figure 1) NOTE – Pilot hole will be required in rock.
- 2) Using clamp or smooth wire, attach Panel to Post #1 in two places as shown. NOTE – If smooth wire is used, wrap three wraps around Post and Panel and twist tight. Do not damage wire by over-tightening.
- 3) Drive Post #2: When Panel is aligned with the fence line and the Post location is marked, the Panel can rotate sufficiently to facilitate driving Post #2.
- 4) Hold the post tightly against the Panel. Line up the Brace to the Post and Panel and secure with clamp or wire (Figure 3). Proper alignment may require bending the T Post slightly to achieve a tight fit.
- 5) Drive Post #3 and secure Brace to Post (Figure 4). NOTE: Brace can be adjusted up or down to follow natural grade (Figure 5).
- 6) For sandy soils or swampy areas, a “dead man” post may be used to provide extra support. A T Post is driven next to the original Post and Panel until only the top foot is above ground. The Post and Panel are then clamped or wired to the “dead Man.”



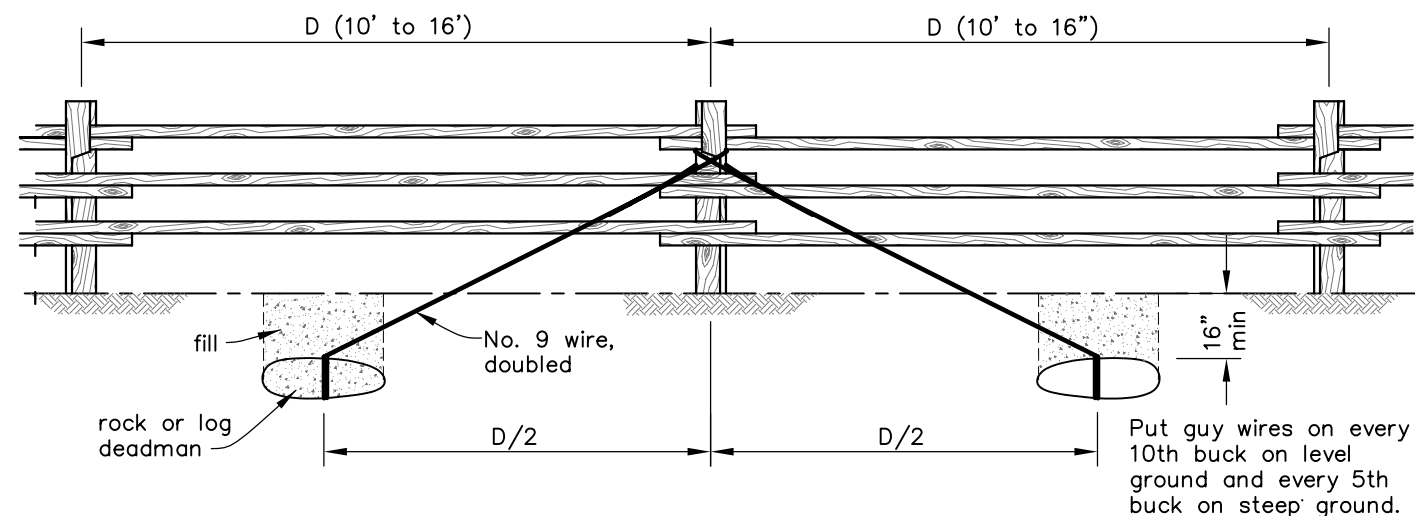


Poles and bucks to be peeled or stripped on 3 sides, be round and free of knots. Top of poles to be 3"Ø min., braces to be 4"Ø min. and buck sticks to be 6"Ø min. Buck sticks to be mortised to provide tight joint.

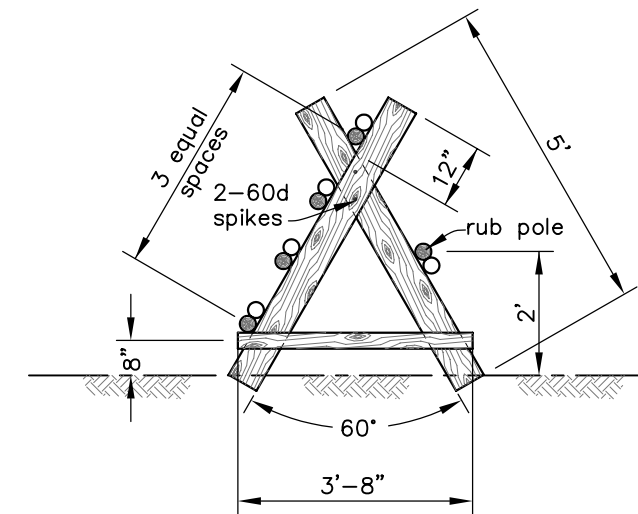
ELEVATION SHOWING POLES AND BUCKS



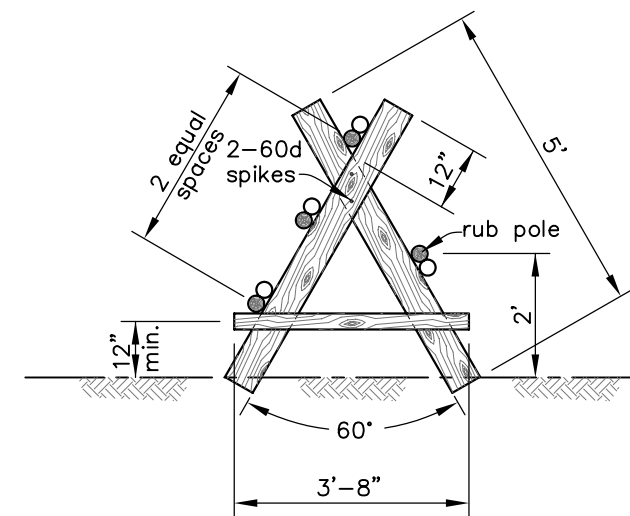
ELEVATION SHOWING DIAGONAL BRACING



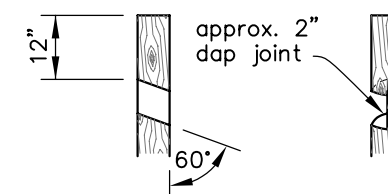
ELEVATION SHOWING GUY WIRE BRACING



BUCK AND 4-POLE FENCE



BUCK AND 3-POLE FENCE



Both buck posts to be notched as shown.

BUCK POST JOINT DETAIL

1. Spikes shall be used as fasteners. Two spikes shall be used fasten poles, braces and buck ties to buck posts.
2. Poles, braces and buck posts shall be of material as shown in the specifications.
3. Angle of buck should not be less than 60°. Angle should be 80° on untimbered terrain where fence will be subjected to high winds.

This drawing requires supporting technical documentation prior to use and must be adapted to the specific site.

Drawing not to scale.

BUCK POLE FENCE

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File Name
or_buck_fence.dwg
Drawing No.

Sheet 1 of 1

Date
7/05
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