

Special Specification 5116

Amphibian and Reptile Exclusion Fence



1. DESCRIPTION

Furnish, install, maintain, replace and remove Amphibian and Reptile Exclusion Fence (AREF) to prevent harm to state and federally listed threatened and endangered species during construction activities. Actions resulting in harm to a threatened and endangered species can result in serious consequences for the Department and the Contractor. This Item will govern the furnishing of all labor, equipment and materials necessary to complete this work at the locations as shown on the plans, or as approved by the Engineer. The AREF will be installed in accordance with the Engineer's specifications. Perform work in a manner to prevent unpermitted impacts to threatened and endangered species to facilitate project construction, and to comply with additional applicable federal, state, and local regulations.

2. MATERIALS

- 2.1. **Filter Fabric.** Provide woven geo-textile fabric materials in accordance with DMS-6230, "Temporary Sediment Control Fence Fabric." Logos visible to the traveling public will not be allowed. Filter fabric width must be a minimum of 3 ft. Used filter fabric will not be allowed.
- 2.2. **Steel Posts.** Provide 4ft. (minimum) steel T-posts with minimum weight of 1.25 lb. per foot
- 2.3. **Net Reinforcement.** Provide 12.5 GA. SWG Min. galvanized welded wire mesh with maximum opening size of 2 in. by 4 in. Net reinforcement will be at least 30 in. wide, unless otherwise shown on the plans.

Alternatively, provide 12.5 GA. SWG Min. Hinge Joint Knot Woven Mesh. Horizontal wires required to be spaced a maximum of 12 in. apart, and vertical wires spaced a maximum of 12 in. apart.

3. QUALIFICATIONS, TRAINING, AND EMPLOYEE REQUIREMENTS

Contractors will take training as directed by the Department, in conjunction with the preconstruction meeting or before starting work. Training will be offered as needed, thereafter. Training will be administered by a qualified biologist.

4. CONSTRUCTION

- 4.1. **Contractor Responsibility.** Take reasonable actions to protect the species listed on the plans by following all the Department's requirements as outlined in this Item and the Engineer's specifications on the plans.
- 4.2. **Implementation.** The Contractor Responsible Person for environmental compliance (CRPE) or alternate CRPE must be accessible by phone and able to respond to project-related environmental emergencies 24 hr. per day.
- 4.3. **Commencement.** The AREF must be installed before the commencement of any construction work and within the specific timeframe based on the species (e.g. outside of breeding season), including, but not limited to clearing and grubbing, grading, excavating, small structure work, large structure work, and storage of materials on PSLs within the Department's right of way. Any adjustments to the AREF to meet field conditions must be approved by the Engineer and incorporated into the plans before implementation.
- 4.4. **Phasing.** AREF must be installed in accordance with phasing requirements as shown on the plans and within the specific timeframe based on the species (e.g. outside of breeding season.)

- 4.5. **Installation.** The AREF must be installed along the perimeter of the project area as shown on the plans. AREF will be the outer-most BMP on a project. Perimeter stormwater controls will be installed inside the AREF in situations where both are shown on the plans. When constructed correctly, the AREF will resemble a “backwards” sediment-control fence.
- AREF may also be installed around brush piles, rocks, and other loose materials stored onsite on the ground overnight and open pits, trenches, and excavations open overnight as directed.
- 4.5.1. **Installation of Steel Posts.** Embed posts a minimum of 18 in. deep or adequately anchor, if in rock. A minimum of 24 in. will be exposed above the ground height. Steel posts will be spaced at 6 ft. intervals. Install steel posts so the filter fabric can be installed facing away from construction activities.
- 4.5.2. **Filter Fabric and Net Reinforcement Attachment.** Attach the reinforcement to steel posts with four evenly placed T-Clips or sewn vertical pockets, unless otherwise shown on the plans. Fasten filter fabric to the top strand of wire using hog rings or cord at a maximum space of 15 in.
- 4.5.3. **Filter Fabric and Net Reinforcement Anchoring.** Filter fabric will be oriented away from the construction activities. Dig trenches so the filter fabric will be orientated away from the construction activities. Provide a minimum trench cross-section of 6 in. by 6 in. Remove all roots and other obstructions from the trench before placing the filter fabric and net reinforcement. The filter fabric and net reinforcement will extend 6 in. below ground surface and 6 in. horizontally in the direction away from construction activities. Place the filter fabric and net reinforcement against the side of the trench, backfill the trench, then hand-tamp until ground is compacted.
- 4.5.4. **Filter Fabric and Net Splices.** For successive net reinforcement sheets or rolls, connect the ends to the steel post in a minimum of six places with hog rings. Locate filter fabric splices at a steel post with a minimum of 2 ft. overlap. Spliced sections should be completely smooth and flat to prevent creating features the species could use for climbing and entering the project area. Spliced sections must be sealed with tape the full length of the seam to prevent gaps in the fabric. Do not locate splices in concentrated flow areas.
- 4.5.5. **Terminal Ends at Driveway Breaks and Roadway Intersections.** In locations where the AREF abuts driveways, roadways or other locations as directed, the terminal end must implement a J-hook. The internal diameter of the J-hook must be a minimum of 18 in. Filter fabric and net reinforcement will be installed as described in Section 5116.4.5., “Installation.”
- 4.5.6. **Culverts.** AREF must be installed to either fully encompass both ends of a culvert, or fully exclude both ends of a culvert as shown on the plans to prevent creating an unsecured pathway the species can utilize to enter the project area.
- 4.5.7. **Marking.** Spray paint the letters “AREF” on the filter fabric. Letters must be capitalized, large, and visible. Use a brightly colored paint such as yellow or orange. Mark the filter fabric every 50 ft. and at terminal ends. Letters can be free-hand or stenciled.
- 4.6. **Maintenance.** Any damage to the AREF, including small holes and large holes must be repaired the day the damage is observed. When corrections are not made within the established timeframe, all work will cease on the project and time charges will continue while the AREF is brought into compliance. When site conditions are “too wet to work” and equipment cannot access the site, repairs will be performed manually.
- 4.6.1. **Small Holes.** Holes less than 1 in. in diameter will be repaired using a tape, such as duct tape, with the Engineer’s discretion.
- 4.6.2. **Large Holes.** Sections of AREF with holes 1 in. in diameter or larger will be replaced. New filter fabric must be installed as described in Section 5116.4.5., “Installation.”
- 4.6.3. **Sediment and Debris Removal.** The 24-in. height (from ground to top of AREF) must be maintained at all times on both sides of the AREF. Sediment, vegetation, and other debris will be removed daily to prevent

accumulation, ensure stability of the AREF is not compromised, and to prevent species from climbing or jumping over the AREF into the project area.

- 4.7. **Removal.** AREF will remain installed until final stabilization has been achieved (70% vegetative cover) and temporary erosion, sedimentation, and environmental controls have been removed. Trenches must be re-filled immediately and compacted.

5. INSPECTION

AREF inspections will occur as directed by the Department based on species-specific criteria. Inspections will be documented as directed by the Department.

Inspections must occur regardless of holidays or "too wet to work" conditions. The only acceptable reason for not completing an inspection is due to weather-related emergency situations (e.g. lightning or flooding).

Inspection personnel must meet the qualifications outlined in Article 5116.3. A primary and alternate inspector must be designated for the project.

6. MEASUREMENT

Installation or removal of AREF will be measured by the foot.

7. PAYMENT

- 7.1. **Furnish and Install.** The work performed and materials furnished in accordance with furnishing and installation of this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "AREF (Install)." This price is full compensation for furnishing and operating all materials, tools, equipment, labor and all incidentals necessary to complete the work, including installation, adjustments as needed during operation, and proper disposal.

- 7.2. **Remove.** The work performed and materials furnished in accordance with removal of this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "AREF (Remove)." This price is full compensation for all materials, tools, equipment, labor and all incidentals necessary to complete the work including removal and disposal.

- 7.3. **Maintenance, Repair, and Replacement.** The work performed and materials furnished in accordance with maintenance, repair, and replacement of this Item and measured as provided under "Measurement" will be paid for under a Contractor Force Account Item from invoice provided to the Engineer.

This price is full compensation for removal of accumulated sediment, vegetation, or other debris required to maintain the specified 24 in. minimum height, and for the repair or replacement of damaged AREF.