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FENCING (OAKDALE 2557)

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes construction of wire fences.
- B. Related Sections:
 - 1. Section 2101 – Clearing and Grubbing
 - 2. Section 2104 – Removing Pavement and Miscellaneous Structures
 - 3. Section 2105 – Excavation and Embankment
- C. Method of Measurement:
 - 1. Wire Fence:
 - a. Measure by length in feet.
 - b. Measure each design separately.
 - c. Measure along fence bottom from center to center of end post.
 - d. Do not measure lengths between gate posts.
 - 2. Brace Assemblies:
 - a. Measure each assembly as a unit regardless of length, design or anchorage.
 - b. Measure each material type separately.
 - c. Assemblies include the following components as required:
 - 1) Brace(s).
 - 2) Brace plate or concrete anchor.
 - 3) Post anchorages.
 - 4) Guy wires or truss rods.
 - 3. Electrical Grounds: Measure by the number installed.
 - 4. Gates: Measure by the number installed.
 - 5. Steel Post Extensions:
 - a. Measure by length in feet.
 - b. Measure as the difference between the standard driven post length and the actual post length installed.
 - 6. Temporary Fence: Measure by length in feet along the fence bottom between end posts.
- D. Basis of Payment:
 - 1. Payment for temporary fence shall include maintenance and removal operations.
 - 2. Payment for acceptable quantities of fencing shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.

1.02 REFERENCES

- A. MnDOT 2557 – Fencing.

1.03 SYSTEM DESCRIPTION

- A. See Drawings for:
 - 1. Fence height.
 - 2. Post location and spacing.

1.04 SUBMITTALS

- A. Product Data: Provide manufacturer's information on all components.
- B. Samples: Submit 2 samples of fence fabric.
- C. Manufacturer's Instructions: Submit installation requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. _____ (fill in name and product)
- B. _____ (fill in name and product)
- C. _____ (fill in name and product)

2.02 MATERIALS

- A. All material shall be in accordance with the respective MnDOT Specifications as follows:
 - 1. MnDOT 3376 – Fence Wire
 - 2. MnDOT 3379 – Fence Gates
 - 3. Fence Posts:
 - a. MnDOT 3403 – Rolled Steel
 - b. MnDOT 3406 – Structural Steel
 - c. MnDOT 3408 – Aluminum Alloy
 - d. MnDOT 3413 – Treated Wood
 - 4. MnDOT 2461 – Concrete Grade B, Type 3
- B. Temporary Fence:
 - 1. Commercially available.
 - 2. Non-conducting.
 - 3. Subject to Engineer's approval.
- C. All fence components shall be of the same material type throughout the project.

2.03 ACCESSORIES

- A. All accessories shall be in accordance with the respective MnDOT Specifications as follows:
 - 1. Hardware and Fittings:
 - a. MnDOT 3406 – Galvanized Steel:
 - 1) Provide with zinc, aluminum or vinyl coated fence fabric.

- b. MnDOT 3408 – Aluminum Alloy
 - 1) Provide with aluminum alloy fence fabric.

B. Electrical Ground Rod:

- 1. Copper coated steel rod.
- 2. Minimum nominal diameter = 5/8 inch.
- 3. Minimum length = 8 feet.

PART 3 EXECUTION

3.01 PREPARATION

- A. Remove all brush, trees and debris along the proposed fence alignment.
- B. Provide a smooth ground profile along the proposed alignment.

3.02 INSTALLATION

- A. Install the fence bottom parallel with the ground profile.
- B. Post Installation:
 - 1. Install posts in the locations shown on the Drawings.
 - 2. Replace posts that are damaged during installation.
 - 3. Set posts plumb on flat areas.
 - 4. Set posts perpendicular to the ground on steep slopes.
 - 5. Backfill and compact the annular space in pre-bored holes in layers using excavated materials.
 - 6. Concrete Anchorage of Posts:
 - a. Prevent contamination of concrete during placement.
 - b. Thoroughly compact concrete around posts.
 - c. Allow concrete to cure for a minimum of 3 days prior to wire installation.
 - 7. Metal Post Installation:
 - a. Posts for chain-link:
 - 1) Drive a minimum of 4 feet into the ground or set in concrete.
 - b. Rolled steel posts:
 - 1) Set end, corner and pull posts in concrete or provide anchor plates and brace plates.
 - 2) Drive all line posts.
 - 3) Set gate posts in concrete.
 - 8. Wood Post Installation:
 - a. Drive or set in pre-bored holes.
 - b. Place the larger end in the ground.
 - c. Excavate postholes to provide 3 inch clearance around the post.
- C. Wire Installation:
 - 1. Install and tighten wire in accordance with the manufacturer's recommendation.
 - 2. Chain Link Fabric:
 - a. Place fabric in continuous runs between corner, end and gate posts.
 - b. Install the fabric on the outside of the line posts.

- c. Thread a stretcher bar through the loops at all fabric ends and fasten to the posts with clamps.
- 3. Barbed and Woven Wire:
 - a. Fasten wire to end, corner, and gate or pull posts before fastening to intermediate line posts.
 - b. Fasten wire to metal line posts by means of approved wire clips or clamps.
 - c. Fasten wire to wood posts by means of galvanized staples.
- D. Gate Installation:
 - 1. Install gates in the location and in accordance with the details shown on the Drawings.
 - 2. Equip each gate with a "padlock keeper".
- E. Electrical Grounds:
 - 1. Install ground rods in the locations staked by the Engineer. Ground rods shall be driven to an elevation approximately flush with the ground surface, at points directly below or adjacent to the fence wire, and each ground rod shall be connected to the fence with a solid No. 6 copper wire. The ground wire shall be attached to the ground and to the wire fence wires with approved type metal clamps in such a manner that each longitudinal fence wire is electrically grounded. Not more than one connection will be required on woven wire and chain link fabric, that being near the bottom at each ground rod.
 - 2. Electrical grounds are to be installed at locations established in accordance with the following requirements:
 - a. An electrical ground shall be installed on each fence line at the approximate point of crossing of each electric power line, and two grounds shall be installed at each pedestrian gate, one on each side of the gate opening and as close to the gate posts as practicable.
 - b. Additional grounds shall be installed on each fence line as necessary to maintain a desired maximum spacing between grounds of 450 m (1500 feet) on fences where metal posts are used and 300 m (1000 feet) on fences where wood posts are used.
 - c. A minimum of one electrical ground shall be installed on each separate section of fence. A separate section of fence shall be defined as a run on which the electrical continuity has not been broken by gates, terminal posts, etc.
 - d. On each separate section of fence, the spacing of electrical grounds shall be as uniform as practicable and such that a ground will be located within a distance from each end not greater than one-half the desired maximum spacing interval.
- F. Temporary Fence:
 - 1. Place prior to start of construction operations.
 - 2. Maintain and repair as required.

END OF SECTION