

REQUEST FOR PROPOSAL – US6 BRIDGES DESIGN BUILD PROJECT
BR 0061-083, SUB ACCOUNT 18838 (CN)
BOOK 2 – TECHNICAL REQUIREMENTS
SECTION 17 –LANDSCAPING (APPENDIX A – BARNUM PARK EAST)

SECTION 02831

FENCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS: The Book 1 Contract requirements apply to Work of this section.

1.2 SUMMARY:

- A. Work Includes: Furnishing and installing entire fence system, including fence framework, fabric and accessories, manual gates and all related hardware.
- B. Related Work:
 - 1. Layout of Work and Surveying – Section 01050
 - 2. Submittals – Section 01300
 - 3. Tree Retention and Protection – Section 02150
 - 4. Earthwork – Section 02200
 - 5. Concrete Walks, Curbs and Miscellaneous Flatwork - Section 02520
 - 6. Sodding – Section 02935
 - 7. Cast-In-Place Concrete - Section 03300

1.3 REFERENCES:

- A. Comply with the following standards unless noted otherwise. If conflict between specifications occur, the most stringent shall apply.
 - 1. ASTM A116 – Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric
 - 2. ASTM A53/A53M – Pipe, steel, Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless, for Ordinary Use.
 - 3. ASTM A123 – Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.
 - 4. ASTM A153 – Zinc-Coated (Hot-Dip) on Iron and Steel Hardware.
 - 5. ASTM A392 – Zinc-Coated Steel Chain-Link Fence Fabric.
 - 6. ASTM A392-11a – Top and Bottom Knuckled Selvage Chain Link Fabric.
 - 7. ASTM F668 – PVC Coated Steel Chain Link Fence Fabric.
 - 8. ASTM F934 – Colors for PVC Fence Coatings

1.4 SUBMITTALS

- A. Submit manufacturer’s specifications and literature for acceptance prior to installation.
- B. Contractor shall submit product sheets on materials to be used including but not limited to fittings, hardware, fabric, colors, coatings, paints and concrete as specified.

1.5 QUALITY CONTROL

- A. The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

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1.6 PRODUCT HANDLING AND STORAGE

- A. Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling.
- B. Materials shall be stored in such a manner to ensure proper ventilation and drainage and to protect against damage, weather, vandalism and theft.

1.7 SITE CONDITIONS

- A. Protection of Monuments: Locate, protect and maintain benchmarks, monuments, control points and project engineering reference points.
- B. Site Drainage and Dust: The Contractor shall maintain positive drainage into all existing drainage ways. The project area shall be graded to smooth all uneven areas prior to installation of fencing materials and at the completion of fence installation. Control dust caused by the work. Dampen surfaces as required.
- C. Site Access: The Contractor shall access each project site at locations designated by the Project Manager. No heavy trucks are allowed on turf areas. Should the work be for the installation of a ball field fence access for fence installation will only be allowed from outside the ball field area.

PART 2 - PRODUCTS

2.1 GENERAL

All fence materials shall meet the minimum requirements established by the Chain Link Fence Manufacturers Institute.

2.2 FENCE FABRIC

- A. Vinyl Coated Fabric: Nine gauge (9) gauge wire, two inch (2") mesh. Knuckled selvage top and bottom. Polyvinyl Chloride (PVC) coating to be Class 2B (thermally fused and bonded to metallic coated steel wire). Color in accordance with ASTM F934, to be selected by the Denver Parks Representative.

2.3 FENCE FRAMEWORK

- A. Finish: Polyester Powder Coated Posts and Rails: For use in conjunction with vinyl coated fabric. Min. thickness of finish polyester powder coat shall be two to three mils (2-3) over two mil (2) mil zinc epoxy. Color to match fabric.
- B. Posts
 - 1. Fencing higher than 8' – Schedule 40, 4" O.D.
 - 2. Fencing 8' high or less

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- a. Schedule 40, 2.875" O.D. for end, corner, and pull posts
- b. Schedule 40, 2.375" O.D. for line posts
- 3. Gate Posts
 - a. Single Gates – Schedule 40, 2.875" O.D.
 - b. Double Gates – Schedule 40, 3.5" O.D.
- C. Rails – Schedule 40, 1.625" O.D.
- D. Fencing Accessories
 - 1. Truss rods: 3/8" diameter w/ turnbuckle and post anchors
 - 2. Tension bar: full height, 1/4" x 3/4" (min.)
 - 3. Tension clamps: 14 ga. X 1" (min.)
 - 4. Tension wire: 9 ga. (min)
 - 5. Tie wires: 12 ga. (min.)

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2.4 GATES

- A. Materials for gates shall match fence materials.
- B. Provide locking mechanisms acceptable to the Denver Parks Representative.

2.5 FENCE FITTINGS

- A. The material for fence fittings shall be manufactured to meet the requirements of ASTM F626. The coating for all fittings shall be the same as that required for the framework.

PART 3 - EXECUTION

3.1 SITE CONDITIONS

- A. Existing Conditions:
 - 1. Soil Conditions: Investigate the type of soil and conditions in which lines are to be installed and allow for same in proposal.
 - 2. Contractor is responsible for understanding the scope of related operations as specified before beginning Work under this Section.
 - 3. Report unsatisfactory conditions to CDOT.
- B. Protection of Property:
 - 1. Preserve and protect all trees, plants, monuments, structures, and paved areas from damage due to Work of this Section. In the event damage does occur, all damage to inanimate items shall be completely repaired or replaced to satisfaction of CDOT and the Denver Parks Representative, and all injury to living plants shall be repaired or replaced by the Contractor.
 - 2. Protect buildings, walks, walls, and other property from damage. Erect and maintain barricades, warning signs and lights, and provide guards as necessary or required to protect all persons on the site. Damage caused to asphalt, concrete, or other building material surfaces shall be repaired or replaced at no cost to the

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A. Safety tubing shall be installed on top of all outfield fencing or any fencing surrounding play fields. Safety tubing shall be a product specifically manufactured as a safety cap for fencing. The tubing shall be 4 1/2" diameter made of polyethylene, and shall be weather and fade resistant. Color to be selected by Denver Parks Representative. ¶

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City. Restore disturbed areas to original condition.

C. Protection of Existing Trees:

1. Consult with Parks' Forestry as requested by Denver Parks Representative prior to digging within critical root zones. All digging or work within critical root zones of any tree shall be dug by hand or by other methods as directed by the Denver Parks Representative so as to prevent damage to limbs or branches and root system. Refer to Tree Retention and Protection – Section 02150.

3.2 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with recommendations of the Chain Link Fence Manufacturers Institute.
- B. Workmanship: The complete fence shall be plumb, both in line and transverse to the fence, straight and rigid with fabric tightly stretched and held firmly in place. Install fencing with bottom of fabric flush with grade. Details of construction, not specified shall be performed in keeping with good standard fencing practice.
- C. Concrete: Set all posts in concrete, designed to have a minimum compressive strength of three-thousand PSI (3000) at twenty-eight days (28). Allow all posts to set at least forty-eight hours (48) before top rails, center rails, wire fabric and fittings are installed.
- D. Posts: Space posts not more than ten feet (10') apart. Set posts in concrete as shown on drawings or per manufactures specifications. Install mow strip per Cast in Place Concrete – Section 03300 (when applicable) where required, with control joints centered on posts.
- E. Rails: Set rails as nearly parallel to finish grade as possible and at the specified height shown on the Drawings.
- F. Fabric: Fabric shall be full height as shown on details. Where applicable, all fabric shall be attached to the ball field side of the fence with the ties spaced at one foot (1') intervals (maximum) on all posts and two foot (2') foot intervals (maximum) on all rails, with no sharp ends projecting. Selvages shall be knuckled top and bottom throughout. Fabric shall be tightly stretched and securely fastened with fittings and accessories provided by the manufacturer. Minimum width of fabric on fences over six feet (6') in height shall be eight feet (8'). Fabric on high fences shall lap or splice only at intermediate rails. All fabric shall be in contact with top of mowing strips – no gaps allowed.
- G. Fasten fabric to top rail, line post, braces and bottom tension wire/bottom rail with tie wire at maximum twelve inches (12") on center.

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- H. Attach fabric to end, corner and gate posts with tension bars and tension bar clips. The tension bars shall be of lengths two inches (2”) less than the full height of the fabric with which they are to be used. Bars shall be attached to the fabric by threading through the fabric, by bands or other mechanical means, and installed at all terminal or corner posts and gate posts.
- I. Install gate with fabric to match fence.

3.3 TOLERANCES:

- A. Variation from plumb: One-quarter inch (1/4”) in six feet (6’) (one-half inch (1/2”) maximum overall).
- B. Variation in line of posts: One-quarter inch (1/4”) in twenty feet (20’) horizontal (one-half inch (1/2”) maximum overall).

3.4 CLEAN UP

- A. Maintain a neat and orderly work site at all times.
- B. Upon completion of site work, clean up area, remove tools, equipment, materials and debris.

END OF SECTION 02831

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