NOTE TO CONSULTANTS: Edit with Track Changes turned on, any text in this section that appears in bold and italics then turn off the bold and italics for the final approved version. The SPR Standard for chain link backstops is Galvanized materials throughout. The Color-coated version can only be done as approved by the Parks Engineer in advance. (Remove this Note).

PART 1 - GENERAL

1.01 Description: Furnish all labor, materials, and equipment required to construct Ballfield Backstops as indicated on the drawings or specified herein. Said work shall include any incidentals required to provide a finished job.

1.02 Existing Conditions: The Contractor/Installer shall examine the site to determine existing conditions, extent of work and clearing operations required. Failure of the Contractor to visit the site and familiarize themselves with the existing conditions shall in no way relieve them from obligations with respect to their bid or contract.

1.03 Related Sections:

Section 31 00 00 - Earthwork

1.04 Quality Assurance:

A. The Contractor/Installer must be experienced in backstop and fencing installations. The Contractor/Installer shall provide at least three (3) representative backstop projects for the Engineer's review.

B. The Contractor/Installer must thoroughly inspect the site(s), other related work, and Owner-supplied materials (where applicable). Notify the Engineer prior to commencing installation, of any conditions adversely affecting the performance of fencing installation.

C. The Contractor/Installer shall provide a warranty stating that the fencing is secure and stable, tight, corrosion-fee, in proper alignment, complete in detail and finish, and free of hazardous conditions. Any defects that develop within one year from the date of Physical Completion shall be replaced at the expense of the Contractor/Installer.

D. Standard Specifications: All work shall conform to all applicable requirements of the following Specifications, whether specifically referred to or not, except as specifically modified herein.

1. Comply with the requirements of the American Society for Testing and Materials (ASTM) especially the ASTM Committee F-14 Standards on Fences (latest edition).
2. Perform all shop and field welding in accordance with the pertinent recommendations of the American Welding Society.
3. Pipe ASTM A 53.
4. ASTM A 392.

5. ASTM F 626-89a.
6. ASTM F 668-88

1.05 Submittals:

A. The Contractor shall make all product submittals and submit Shop Drawings, for approval, prior to manufacturing, describing and detailing typical line post, terminal post, gate, fabric, materials, hardware assemblies, and all proposed fence/gate alignment sections in accordance with Division 1 Specifications.

B. The Contractor shall provide certified letters from manufacturers indicating conformance with specifications, manufacturing date and lot number for all materials used on the site.

1.06 Substitutions and Product Options: (Note: Comply with this paragraph, unless specified otherwise in Division 1 of the Project Manual).

A. During bidding, all bidders shall bid on the specified products.

B. Refer to Division 1 for information about substitutions.

1.07 Product Handling: All materials shall be new and delivered to the site in an undamaged condition. Store materials off the ground and protect from damage. In the event of damage, immediately make repairs and/or replace as necessary to the approval of the Engineer and at no additional cost to the Owner.

PART 2 - MATERIALS

2.01 General:

A. All piping for fence and gates shall be Schedule 40, hot-dipped galvanized steel, or approved equal, for size, finish, material composition, strength, appearance, performance and ease of maintainability.

B. Galvanizing shall be in accordance with ASTM F 668-88. All fence fittings shall comply with ASTM F 626-89a.

2.02 Chain Link Fence Fabric: Chain link fabric shall be constructed of woven 6-guage (for backstops and wing fence fabric up to 10’-0”), 9-gauge (for backstop fabric above 10’-0”, for dugout fence fabric). All fabric shall be W & M steel wire as specified on plans and details, in a continuous 2 inch mesh. Mesh shall be as specified on plans and details, with knuckled top and bottom selvage. Fabric shall not be hot-dipped galvanized after weaving, per ASTM A-392. Weight of the coating shall be 1.2 oz. per square foot of actual surface. Coating shall be smooth, of uniform thickness, and free from dross, uncoated spots and adhered particles of foreign material. Height of fabric shall be as shown on the drawings. Fabric shall be installed on playing side of posts (except on dugouts outside fencing which is installed on the outside of the dugouts). Lower edge of fabric shall be no greater than 1-1/2” above concrete mow strip or infield finished grade as specified on plans and details.

2.03 Ballfield Backstop Framework or Perimeter Fencing: All system components shall be galvanized steel. Sizes shall be as specified in the following table for backstop, wing fencing and dugout fencing.

For Galvanized Ballfield Backstops, Wing Fencing, & Dugout Fencing:

Type	Hoop Style Backstop	J-Style Backstop	Wing Fence (up to 10')	Dugout Fence (7')
Framework	2-3/8" O.D.	4" O.D.	N/A	N/A
Terminal / Corner Posts	N/A	N/A	2-7/8" O.D.	2-7/8" O.D.
Line Posts	N/A	N/A	2-3/8" O.D.	2-3/8" O.D.
Rails	1-5/8" O.D.	1-5/8" O.D.	1-5/8" O.D.	1-5/8" O.D.
Post Footing Size for Terminal / Corner Posts	18" W 36" D	24" W 48" D	18" W 36" D	12" W 36" D
Post Footing Size for Line Posts	18" W 30" D	24"W 48"D	18" W 36" D	12" W 36" D
Fabric Mesh Size	2"	2"	2"	2"
Fabric Finished Size	6-gauge (up to 10') 9-gauge (above 10')	6-gauge (up to 10') 9-gauge (above 10')	6-gauge	9-gauge

[1] All 6' and 8' height fencing shall have an intermediate rail.
[2] All chain link fabric shall be galvanized before weaving.
[3] All backstop & wing fence chain link fabric adjacent to the infield playing surface shall be 6 gauge fabric below 10' in height and 9 gauge fabric above 10' in height. Dugout sides and back (side away from playing surface) shall be 9 gauge fabric.
[4.] Bottom rails are not required for 6' and 8' height fencing unless otherwise specified on the plans.

2.04 Gates and Gate Posts:

A. General: Gateposts, frames, and hardware shall be hot-dipped galvanized, as noted, for framework. All fittings shall be galvanized as specified in Section 2.01. Gate frames shall be galvanized after welding or painted with "Galvicon" or other zinc enriched paint, as approved equal. Gate fabric shall match fencing fabric. Gates shall maintain a gap no greater than two (2) inches between gateposts and frames or ground.

B. Gates:

1. Gate Posts: Shall be 2-7/8 inches O.D. (min.) schedule 40 steel pipes (or larger, depending upon the size of the gate opening).
2. Gate Frames: Shall be 1-7/8 inch O.D. steel pipe with joints knotched and welded to form a rigid frame. Welds shall be coated with cold galvanized coating. Frames shall be filled with same fabric as fence and fastened in the frame by means of tension bars and tension bands at 1 foot O.C.
3. Diagonal Bracing: Shall be 3/8-inch O.D. adjustable truss rod to ensure frame rigidity without sag or twist.
4. Hinges: Shall be pressed steel to suit gate size, non-lift-off type, offset to permit 180-degree gate opening. Provide 2 hinges for each leaf. Drill, tap, and set screw or weld to frame and post to prevent rotation. Hinges shall be Bulldog Industrial hinge, or approved equal.
5. Single Gate Latch: Provide heavy-duty gate fork latch of correct size malleable iron to permit operation from either side of gate, with padlock eye as integral part of latch.
6. On the ten foot (10') high backstop wing fences, all dugout gates shall be seven feet (7') high with a three foot high panel of fence (transom) above it.

2.05 Fittings: Fittings shall be hot-dipped galvanized pressed steel in accordance with ASTM F 626-89a. All fittings shall be industrial quality.

2.06 Accessories:

A. Post tops shall be pressed steel and designed as a weather tight closure cap for tubular posts.

B. Tension bars shall be of one piece lengths equal to full height of fabric with a minimum cross section of 3/16” x 3/4”. Provide a tension bar for each gate, end post, corner and pull posts

C. Tension bar bands (vinyl or powder coated), shall be pressed steel per ASTM F 626-89a spaced not over 12 inches O.C. to secure tension bars to end, corner, pull, and gate posts.

D. Tension Wire: Contractor shall provide a No. 7 W & M gauge galvanized high carbon coiled tension wire (when bottom rail is not specified) stretched along the bottom of fabric and fastened to the fabric at intervals of not more than two feet (2') using steel hog rings. Tension wire shall be attached with brace band, and nut and bolt. Tension wire shall be terminated around the bolt to itself with a minimum of three complete wraps.

E. Wire ties shall be as follows: 9 gauge <u>galvanized steel</u> wire ties on backstop back panels below 10’ height, 6-gauge <u>aluminum</u> wire ties and 7-gauge hog rings on backstops panels with standard 6-gauge fabric below 10 feet elsewhere. 6-guage <u>aluminum</u> wire ties on all other backstop panels, wing fences and dugout fences (with standard 6-guage fabric below 10 feet or 9-gauge fabric in all other places). 6 guage “<u>quick ties</u>” can be used along all bottom rails on backstops.

2.07 Lumber Backstop Backboards: Backstop backboards shall be pressure treated lumber. Type of pressure treatment shall be per SPR Design Standards for Wood Use in Parks. To access the information refer to SPR Design Standards website at www.cityofseattle.gov/parks/projects/standards. Backboards shall be installed continuously, with (6) 2x10 planks bolted to framework with two galvanized carriage bolts per board, bolted at every post location (5 post locations typical). Galvanized angle iron shall be welded to each post and drilled to receive backboard bolts. Paint all exposed holes and welds, typical.

2.08 Touch-up Paint: Paint all exposed holes and welds, with a base coat of zinc enriched paint followed by two coats of silver (aluminum) matte finish paint, typical. Zinc enriched paint shall meet ASTM A780 A2 and be epoxy based with 94% minimum pure zinc dust by weight. Zinc enriched paint shall dry with a bright finish of hot-dipped-galvanizing. Zinc enriched paint shall be Devcon Z, Krylon Galvanizing Paint, Galvicon, or approved equal. Silver top coat paint shall be silver (aluminum) matte finish. Silver top coat paint shall be "COROTHANE 1, Mio-Aluminum"; Aluminum Hammerite; or approved equal.

2.09 Concrete Footings: Refer to Section 2.03 above for dimensions of all concrete post footings. Concrete for post footings shall conform to the City of Seattle Standard Specifications for Road, Bridge, and Municipal Construction (most recent edition), and shall be Class "C" concrete. Concrete footings shall be neatly and evenly crowned slightly above finished grades and all concrete shall be cleaned from all posts.

PART 3 - EXECUTION

3.01 Site Preparation:

A. Pre-construction on-site conference: Do not work until a site meeting with the Engineer and the SPR Facilities Maintenance Fence Crew is held. Call the **SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov** to make arrangements for site conference at least 2 working days in advance.

B. The Contractor is responsible for all temporary barricades, enclosures, and protection of adjacent property and existing work. These are to be in place before operations are started. Coordinate this work with other work and trades. Complete clearing and site preparation work is required prior to excavation.

3.02 Fence Construction:

A. Posts:

1. Auger holes for post footings in firm, undisturbed or compacted soil. Holes for new line post footings shall be sized as shown on plans and standard details. Holes for terminal posts and gateposts shall be sized as shown on plans and standard details.
2. Over excavate hole depths to 6 inches deeper than post bottoms.

3. Place concrete around posts in a continuous placement, tamp for consolidation, checking each post for vertical and top alignment. Support posts plumb until concrete has cured. Set and secure keepers, stops, sleeves, and other accessories into concrete as required.
4. Tops of post footings shall be flush with finished grade, trowled and sloped outward to drain. Top of footing shall appear true and circular in shape with post at center of circle.
5. Post shall be 10 feet O.C. maximum.

B. Sleeved Posts:

1. Insert posts into sleeves provided in concrete footing for tops of walls and hoop-style backstops as specified on plans and details. Check each post for vertical (plumb) and top alignment.
2. Posts shall be 10' O.C. maximum.

C. Rails:

1. Top rail shall be securely fastened to terminal posts and pass through tops of line post fittings, forming a continuous rail for the full length of fence. Top rail shall be furnished in lengths approximately 21 feet long with standard hot dip galvanized steel expansion couplings not less than 6" in length. Lengths less than 10 feet shall not be used adjacent to terminal posts.
2. Intermediate and bottom (when specified) rails shall conform to the same specification as top rail and be joined at line posts with double-end socket clamps or brace bands and rail ends, with one inverted to maintain smooth line.

D. Brace Assemblies: All corner, terminal, and gate posts shall be furnished with complete brace assembly, including brace of same material and finish as top rail, and adjustable tightener for 3/8 inch truss rod. Corner and terminal posts shall have two brace assemblies, one in each direction. The diagonal 3/8 inch adjustable truss rod shall be attached to the first ensuing line post. Install braces so that posts are plumb and true when diagonal rod is under proper tension. No truss rod is required if the intermediate rail is continuous.

E. Fabric: Pull fabric taut and tie to posts and rails. Install fabric on interior or playing side of fences and anchor to framework so that the fabric remains in tension after pulling force is released. Lower edge of fabric shall be set level with finished grades (1-1/2” above grade typ.) except as specified on plans and details.

F. Wire Ties: Tie fabric to line posts, rails, and braces with 6-guage aluminum wire ties, spaced at **12 inches O.C.** (typ.). Tie fabric to tension wire with 9 gauge hog rings at **18 inches O.C.** (typical). Attach all wire ties per accepted industry standards and as described as follows: **Attach hooked end of tie to fabric above and close to the top or side of the rail or post and wrap the end of tie under so that the wire tie locks into place and will not come loose under normal use. Then wrap the wire tie around the rail snugly and affix to fabric below and close to the rail and**

twist the end of the wire tie <u>at least</u> one full revolution around the fabric so that the tie will not come loose under normal use. Refer to the SPR Standard Details for visual description of a proper wire tie installation. To access the information refer to SPR Design Standards website at www.cityofseattle.gov/parks/projects/standards

G. Tension Bars: Fabric shall be attached to the terminal posts by means of single piece tension bars. Thread through fabric and secure to posts with metal bands spaced not over 12 inches O.C. (typ.).

H. Welding: All field welds shall be fully filled, ground flush and smooth, and cold galvanized by brushing on "zinc enriched" paint, followed by two coats of Silver (aluminum) matte finish paint.

3.03 Gates:

A. Install gates as shown on the Details and Drawings. Openings between frame or gate members shall not exceed two (2) inches. Gaps between bottom rail and finish grade shall not exceed one and one half (1-1/2) inches.

B. Install gates plumb, level, and secure for full opening without interference. Adjust hardware for smooth operation and lubricate where necessary. After the Engineer's approval of operation, drill, tap, and setscrew or spot-weld all hinges and latch hardware to prevent rotation.

C. Set gatepost same as terminal posts.

D. **Gates shall also be installed with stoppers welded to the gates or wing fence framework so that gates cannot swing open into the field of play.**

3.04 Backstop Backboards: Boards shall be secured with 5/16 inch x length as required, galvanized carriage bolts drilled and bolted through angle irons welded to the backstop posts. Install carriage bolts with heads toward field. Cut and peen bolt ends flush with nuts. Use lock washers throughout.

3.05 Cleanup: Job site shall be cleared of all excess material (concrete, wire, rails, pipe, etc.). All areas impacted by construction shall be leveled with infield on field side or paving or topsoil on outside graded flush with concrete mow strip or dugout floors and free of all debris and rocks, and restored to as good as or better than original condition, as approved by the Engineer.

END OF SECTION