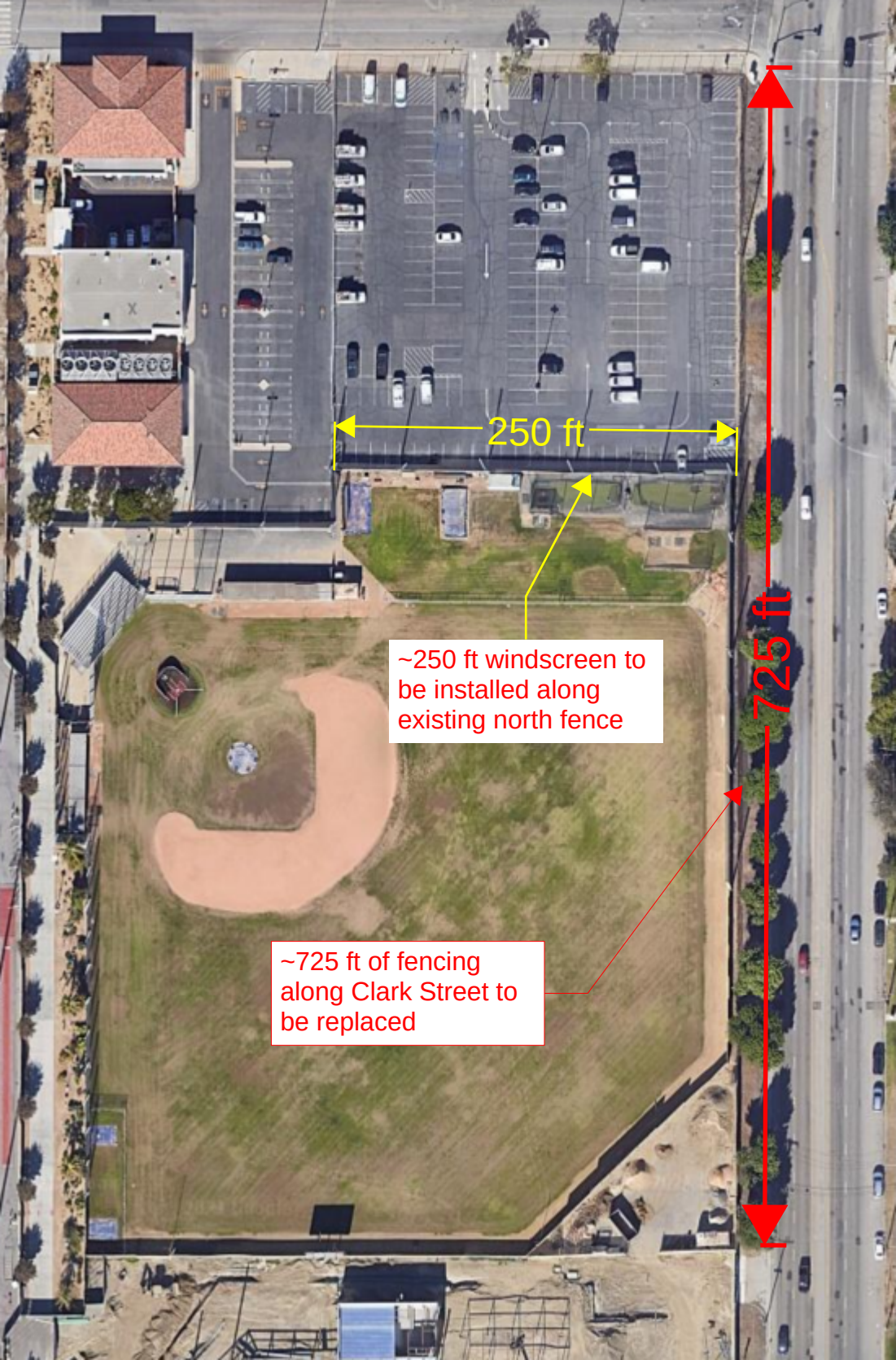

Work Site
E LEW DAVIS ST
CLARK AVE
FACULTY AVE
PARKING N
VERIZON PARKING
BUILDING X
VIKINGS
VETERANS STADIUM
BASEBALL DIAMOND
Windscreen to be installed
Fence to be replaced along Clark Ave.


250 ft
725 ft
~250 ft windscreen to be installed along existing north fence
~725 ft of fencing along Clark Street to be replaced

Project Photos


Frontier
4558

Chain Link Fence Specs

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Chain link fencing for exterior installation, where indicated on plans.
2. Vinyl coated gate fabric, posts, and gate framing.
3. Windscreens
4. Chain Link Top Rail Padding
5. Gate hardware and related accessories.

B. Items Not Included:
1. Padlocks: Padlocks where required, will be provided by Owner.

C. Related Sections:
1. Section 03 3000: Cast-in-Place Concrete; fence post footings.
2. Section 05 5000: Metal Fabrications; custom metal fence and gates`
3. Section 08 7100: Door Hardware; exit and locking devices for gates.
4. Section 32 3111: Gate Operators; automatic operation of gates.

1.2 REFERENCES

A. California Code of Regulations (CCR), Title 24, Part 2, California Building Code (CBC), Volumes 1 and 2, 2016 edition.
1. Chapter 11B – Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing.

B. ASTM International (ASTM):
1. ASTM A 123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
2. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
3. ASTM A 392 – Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric
4. ASTM A641 – Standard Specification for Zinc–Coated (Galvanized) Carbon Steel Wire
5. ASTM A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
6. ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
7. ASTM F 567 - Standard Practice for Installation of Chain-Link Fence
8. ASTM F 668 – Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and Other Polymer-Coated Steel Chain Link Fence Fabric
9. ASTM F 1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework
10. ASTM F 1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
11. ASTM F 1184 – Standard Specification for Industrial and Commercial Horizontal Slide Gates

C. Chain Link Fence Manufacturer's Institute (CLFMI):
   1. Product Manual
   2. WLG2445 – Chain Link Fence Wind Load Guide for the Selection of Line Posts and Line Post Spacing.

D. Federal Specifications (FS):
   1. RR-F-191/3E - Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces) (Detail Specification)

1.3 QUALITY ASSURANCE

A. Comply with standards of Chain Link Fence Manufacturer's Institute (CLFMI).

B. Provide chain link fence and gates as produced by single manufacturer including necessary erection accessories, fittings, and fastenings.

PART 2 PRODUCTS

2.1 FABRIC

A. Zinc-Coated Steel Fabric:
   1. Conforming to ASTM A 392, Class 1, galvanized after weaving (GBW)
      a. Top and bottom selvages knuckled.
   2. Provide 11 gage wires in 2 inch mesh, unless noted otherwise

2.2 POSTS, RAILS, AND ASSOCIATED ITEMS

A. Posts:
   1. Round steel pipe and rails complying with ASTM F 1043.
      a. Material Design Group IA, Table 3 – Heavy Industrial Fence Framework.
   2. Schedule 40 galvanized pipe conforming to ASTM F 1083
      a. ASTM F 1043, Material Design Group IA
         1) External and internal coating Type A.
   3. Intermediate Line Posts for fabric heights:
      a. Up to and including 6 feet: 1.9 inch O.D., 2.72 lb/ft.
      b. Over 6 feet to 8 feet: 2.375 inch O.D., 3.65 lb/ft.
      c. Over 8 feet to 12 feet: 2.875 inch O.D., 5.79 lb/ft.
      d. Over 12 feet to 16 feet: 4.00 inch O.D., 9.11 lb/ft.
   4. Terminal (End Pull and Corner) Posts for fabric heights:
      a. Up to and including 6 feet: 2.375 inch O.D., 3.65 lb/ft.
      b. Over 6 feet to 8 feet: 2.875 inch O.D., 5.70 lb/ft.
      c. Over 8 feet to 12 feet: 4.00 inch O.D., 9.11 lb/ft.
      d. Over 12 feet to 16 feet: 6.625 inch O.D., 18.97 lb/ft.

B. Top and Brace Rails:
   1. FS RR-F-191/3, Type II, Class 1.
   2. Size: 1.660 inch O.D., 1.806 lb. per ft.

C. Bottom Tension Wire:
   1. Coiled spring tension wire:
   2. 7 gage.

D. Fabric Connections:

1. Tension Bars:
   a. 3/16 by 3/4 inch mild steel flats.
   b. galvanized
2. Steel Bands:
   a. Mild steel:
      1) 1/8 by 1 inch, except where otherwise indicated.
      2) Use 1/8 by 3/4 inch for gates.
   b. Vinyl coated or painted.
3. Bolts:
   a. Minimum 3/16 inch diameter.
   b. Cadmium plated.
4. Fabric Ties:
   a. No.9 or No. 11 gage wire at line posts.
   b. No.14 wire for top and brace rails.
   c. Vinyl coated or painted.

E. Post Caps:
1. Provide following:
   a. Steel, wrought iron, or malleable iron, designed as weathertight closure cap.
   b. One cap for each post.
   c. Caps with openings to permit through passage of top rail.
2. Finish:
   a. Vinyl coated or painted, same as specified for posts.

F. Floor Flanges:
1. For mounting fence posts to concrete slab.
   a. Provide 6 inch x 6 inch x 1/4 inch thick steel plate with 5/8 inch hole at each corner and 5-1/4 inch high pipe sleeve of diameter required to accommodate post and allow for grouting, welded to plate.
   b. Provide pipe sleeve with 2 set screws to secure fence posts.
2. Galvanize after fabrication.

2.3 WINDSCREENS

A. Manufacturer:
1. Carron Net Company, Inc., Two Rivers, WI, or approved equal.

B. Construction:
1. Constructed of vinyl coated polyester mesh woven with sun and weather resistant yarn.
   a. Weight: 8 ounces per square yard.
   b. Wind Block: 80 percent
   c. Shade Block: 75 percent.
2. Edges reinforced and finished with 1-1/2 inch heavy duty vinyl binding material and sewn with two rows of stitching.
3. Gommets:
   a. Heavy-duty solid brass grommets.
   b. Located every 18 inches on four sides.
4. Heights:
   a. Baseball Field:
5. Lengths:
   a. As indicated on Drawings.
6. Material:

a. Carron Stock No. 21420:
   1) Closed Mesh Screen – Polyester.
   2) Weight: 1 lb. per 17 sq. ft. of material.
b. Printed Windscreens:
   1) Made from same material as specified for unprinted windscreens
   2) Graphics to be provided by Architect.
   3) Locations:
      a) Sand Volleyball Courts.
      b) Softball Field.

7. Air Vents:
   a. Provide Air Vents every 6 feet.
   b. Heat cut oval shape, approximately 8 inches high x 12 inches long.
   c. Carron Stock No. 21494.
8. Center Reinforcement:
   a. Permits fastening of screen's center to fence to reduce billowing.
      1) Includes grommets at 18 inches on center for use with lacing cord.
   b. Carron Stock No. 21495.
   c. Provide on 8 foot and 12 foot high screens.
9. Nylon Lacing Cord:
   a. For attachment of center reinforcement to fence.
   b. Quantity as needed for length of each installation.
      1) Supplied in 100 yard rolls:
   c. Carron Stock No. 21501.
10. Tie Wraps:
   a. For attaching windscreen to fencing
      1) 7 inches long.
   b. 50 lbs breaking strength.
      1) UV stabilized
      2) Furnish quantity necessary for complete installation.
   c. Carron Stock No. 21502.
11. Color: Black.
12. Warranty:
   a. Three years against cracking and peeling when installed with 50 lb tie wrap

2.4 MISCELLANEOUS MATERIALS

A. Concrete for Footings:
   1. Comply with requirements of Section 03 3000.

B. Nonshrink Nonmetallic Grout:
   1. Factory premixed, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.
   2. Provide one of following or grout specifically recommended by manufacturer for types of applications indicated.
      a. Masterflow 713 Plus; Master Builders Div., BASF Building Systems
      b. Five Star Grout; Five Star Products, Inc.
      c. SikaGrout 212; Sika Corporation.

2.5 GALVANIZING

A. Provide galvanized finish on steel framework and appurtenances, with not less than following weight of zinc per square foot:

1. Zinc-Coated Steel Fabric:
   a. Generally 1.2 oz. per square foot, complying with ASTM A 392, Class 1.
   b. For 6 and 9 Gage Wire: 2.0 oz. per square foot, complying with ASTM A 392, Class 2.
2. Pipe: 1.8 oz. per square foot, complying with ASTM A 392, Class 1.
3. Hardware and Accessories: Comply with Table 1 of ASTM A 153.

2.6 PERFORMANCE

A. Wind Load:
   1. General:
      a. Comply with CLFMI WLG2445 – Chain Link Fence Wind Load Guide
   2. Design of chain link fence with privacy slats is based on Wind Speed of 70 miles per hour, Exposure B.

PART 3 EXECUTION

3.1 INSTALLATION – GENERAL

A. General:
   1. Install fence to comply with ASTM F 567.
   2. Do not begin installation and erection before final grading is completed, unless otherwise permitted.

B. Setting Posts:
   1. General:
      a. Install posts at maximum 10 feet on centers unless otherwise indicated.
      b. Set posts so that top of eye is level with top of fabric, with twist and selvage above rail.
   2. Setting Posts in Concrete Footings:
      a. 12 inch diameter for corner, angle and terminal posts.
      b. 10 inch diameter for intermediate line posts.
      c. Overall Depth of Concrete: Minimum 36 inches.
      d. Post Embedment: Minimum 30 inches.
      e. Maintain footings minimum of 1 inch clear of property lines or as indicated.
      f. Unless otherwise indicated, extend concrete footings 2 inches above grade and trowel to crown to shed water.
   3. Setting Posts in Sleeves:
      a. Fill space between post and sleeve solid with non-metallic, non-shrink grout, mixed and placed complying with grout manufacturer's directions.
   4. Setting Posts Using Floor Flanges:
      a. Bolt flange to concrete slab.
      b. Fill space between post and pipe sleeve solid with non-metallic, non- shrink grout, mixed and placed to comply with grout manufacturer's directions.

C. Fabric:
   1. Install fabric on security side of posts unless otherwise indicated.
   2. Set bottom of fabric to clear ground or paving by *1/2* inch.
      a. Fence heights given are to top of fabric.

3. Secure fabric to posts with ties spaced at 16 inches maximum.
    a. Hook tie at both ends with 9 gage wire
    b. Wrap tie around fabric at both ends, not less than two turns with 11 gage wire.
    c. Hooked ties with links not permitted.
4. Secure fabric to top rail with 14 gage ties not more than 18 inches on center, wrapped not less than two turns.
5. Secure tie ends with not less than two full twists
    a. Turn ends so as not to be a hazard.

D. Rails:
1. Top Rail:
    a. Provide top rail for fencing.
2. Brace Rails:
    a. Provide horizontal brace rails adjacent to terminal, angle, gate and corner posts, for fencing 6 feet high or higher.
    b. Secure brace rails to posts with rail end fittings and rail end bands.
3. Center Rail:
    a. Provide center rail at mid-height for fencing over 10 feet high.
    b. Secure to posts with rail end fittings and rail end bands.

E. Top Rail Padding:
1. Attach to horizontal top rail of fencing where indicated on Drawings.
2. Use nylon zip ties, minimum 14 inches long, with 50 lb. breaking strength.
    a. Zip ties provided by installer.

3.1 COVERS AND ENCLOSURES

A. Provide as indicated with materials and installation same as for fencing except as specifically noted.

3.2 REPAIR

A. Galvanized Surfaces:
1. Clean field welds, bolted connections, and abraded areas.
    a. Repair galvanizing to comply with ASTM A 780.

B. Painted Surfaces:
1. Clean bolted connections and abraded areas.
2. Re-prime as necessary.
3. Apply specified finish coat as required.

3.3 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off Project Site.

3.4 PROTECTION

A. Protect Work until Substantial Completion

END OF SECTION

Closed Mesh Polypropylene

Colors: Green, Black

Mechanical Properties	Test Method	Unit	Typical Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D 4632	lbs	420	225
Trapezoid Tear Strength	ASTM D 4533	lbs	125	90
Shade		%	95	
Air Flow	ASTM D 737	cfm	>150	

Physical Properties	Test Method	Unit	Typical Roll Value
Weight	ASTM D 5261	oz/yd sq.	5.6
Construction		EPI/PPI	30 x 16
Fiber Content			100% PP

Thermal Properties	
Softening & Melting Temperature	Soften at 300-310 degrees Fahrenheit and melt at 325-335 degrees Fahrenheit.
Shrinkage	Shrinkage at boil, 3-9% Shrinkage at 250 degrees Fahrenheit, 5-12.5%
Flammability	Difficult to ignite and upon burning it melts to a head. Proper additives can produce flame retardancy.

Additional Properties	
Effects of Moisture	Polypropylene does not absorb moisture.
Abrasion Resistance	Polypropylene has excellent abrasion resistance.
Mildew & Insect Resistance	Insects and mildew do not attach to polypropylene.
Identification	Melting point: 325 to 335 degrees Fahrenheit.
Tensile Properties	Polypropylene monofilaments have an average tenacity range of 4-7 grams per denier. Polypropylene has an ultimate elongation of 14-30%