

**ITEM 517 RAILINGS**

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**517.01 Description.** This work consists of furnishing, constructing, coating, and erecting the type of railing specified. This work also consists of providing and galvanizing structural posts, anchors, and connections.

**517.02 Fabrication.** Fabricate railing according to Items 513. Select a fabricator that is at least prequalified at level SF. The City will base final acceptance of fabricated members on the Engineer’s approval that the fabricated items that can be successfully incorporated into the structures. Submit mill test reports for structural steel, steel castings, bronze, and sheet lead certified according to 501.06.

**517.03 Materials.** Furnish materials conforming to:

|  |                |
|--|----------------|
| Concrete, Class S or Class HP.....               | 499, 511       |
| Reinforcing steel .....                          | 509, 709       |
| Structural steel.....                            | 513            |
| Preformed fillers<br>(sponge rubber or PVC)..... | 705.03, 711.28 |
| Steel tubing .....                               | 707.10         |
| Paint .....                                      | 708            |
| Metal deep beam rail .....                       | 710.06         |
| Ductile iron casings.....                        | 711.13         |
| Aluminum .....                                   | 711.20         |
| Timber.....                                      | 711.26         |
| Stainless steel fasteners.....                   | 730.10         |
| Pipe .....                                       | 707.70         |

Submit mill test reports for structural steel and aluminum according to 501.06.

**517.04 Construction Methods, General.** Construct railings as shown on the plans. Install posts for metal railings normal to the grade line. Install the tops of railings parallel to the grade line.

Remove or release shoring or falsework supporting the superstructure before placing railing that has no expansion joints or that is on the concrete parapet.

**517.05 Steel and Iron Railings.** Unless specified to paint according to Item 514, galvanize all parts of steel and iron railings.

Erect metal deep beam rail elements according to Item 606.

**517.06 Aluminum Railings.** Use alloy conforming to 711.20 for aluminum railings.

Give the extreme outer surfaces of cast railing posts a 40-grit finish. The Contractor is not required to provide a special finish for other portions of railings. Do not scratch,

dent, or cause other damage to railings that may affect the durability or appearance of the railing.

Use galvanized steel anchor bolts and hexagon nuts conforming to 711.02. Coat the entire projecting portion of anchor bolts and fill the space between the bolts and post base with an aluminum-impregnated caulking compound.

Where aluminum contacts concrete or stone masonry, thoroughly coat the contact surfaces with an aluminum-impregnated caulking compound or with a heavy asphalt material paint pigmented with aluminum powder or paste thereby providing an aluminum appearance. Where aluminum or aluminum shims contacts different metal, thoroughly coat the contact surface with an aluminum-impregnated caulking compound or place a synthetic rubber impregnated fabric gasket between the metals.

Weld only where shown on the plans using inert gas shielded metal-arc or tungsten-arc method without flux, or by other approved methods.

**517.07 Method of Measurement.** The City will measure Railing by the number of feet (meters) of railing including end posts. If deep beam guardrail is used, the City will measure the length of railing between the first posts off the bridge excluding the first posts off the bridge. If hand rails or tubular backup rails are used, the City will not measure any portions extending beyond the first posts off the bridge. If twin steel tube bridge railing is used, the City will measure the length of the railing between the second post off the bridge including the second post.

**517.08 Basis of Payment.** The cost of hand rails or tubular backup rails extending beyond the measured limits are included for payment in the unit price bid for the measured length.

The City will pay for accepted quantities at the contract price as follows:

| <b>Item</b> | <b>Unit</b>  | <b>Description</b> |
|-------------|--------------|--------------------|
| 517         | Foot (Meter) | Railing (___)      |