

Section 804. CONCRETE BARRIERS AND GLARE SCREENS

804.01 Description. This work consists of constructing concrete barriers, glare screens, and related foundations for light standards and sign supports.

804.02 Materials. Materials shall meet the following requirements.

Concrete, Grade P2	601
Concrete, Grade S3	701
Mortar and Grout, Type R-2, Type H-2	702
Granular Material, Class II	902
Curing Compound	903
Dowels and Bar Reinforcement	905
Anchor Bolts and Nuts	908
Joint Materials	914
Electrical Conduit	918

804.03 Construction.

A. **Preparation of Base.** The base for concrete barrier shall be prepared according to subsection 602.03.B.

B. **Forming.**

1. **Concrete barrier and glare screen** shall be constructed by fixed-form or slip-form methods. They shall be formed so that the finished surface of the concrete presents a smooth, uniform appearance in its final position, conforming to the dimensions shown on the plans.

The top and faces of the barrier and glare screen shall not vary more than ½ inch in 10 feet when checked with a 10-foot straightedge, except at grade changes and curves, and shall be free of humps, sags and other irregularities. Minor defects shall be repaired while the concrete is still plastic using mortar obtained by screening out the coarse aggregate from the barrier or glare screen concrete.

2. **Light standard foundations and sign support foundations** shall be cast-in-place using fixed forms. The footings may be constructed without the use of forms where soil conditions permit and when approved by the Engineer.

C. **Reinforcing, Anchor Bolts and Dowels.** Holes drilled into hardened concrete to hold dowel bars or reinforcing bars shall be thoroughly cleaned with oil-free compressed air. If using hydraulic grout, wet just prior to grouting.

1. **Reinforcement.** The placement of steel reinforcement shall be according to subsection 706.03.E. Reinforcing bars for glare screen shall be drilled into the existing barrier and held in place with grout.
2. **Dowels.** When the barrier is cast separately from the base, anchor dowels shall be installed at the spacing and depth specified on the plans. The dowels shall be set in the base while the concrete is plastic or holes shall be drilled into the hardened concrete base and the dowels held in place with non-shrinking grout from the Qualified Products List.

When glare screen is cast separately from the barrier, holes shall be drilled into the hardened concrete and the dowels held in place with non-shrinking grout from the Qualified Products.

3. **Anchor Bolts.** The anchor bolts for light standards and sign supports shall be accurately positioned according to the plans and firmly held by means of a template. Improper positioning, lack of plumbness, or improper height of anchor bolts shall be corrected as directed by the Engineer prior to placing the concrete. The template shall remain in place a minimum of 24 hours after placement of the concrete.
- D. **Finishing.** Barrier surfaces exposed to traffic shall have a uniform smooth finish, similar to one resulting from a metal finishing tool or a broom with soft bristles. Brooming, to remedy blemishes and irregularities on the barrier surface, shall be minimal and fine textured.

Water shall not be added to the concrete surfaces to facilitate finishing, except when approved by the Engineer.
- E. **Stenciling.** The Contractor shall stencil survey station numbers according to subsection 602.03.L into the traffic side(s) of the barrier as shown on the plans.
- F. **Curing.** Concrete barrier and glare screen shall be cured by the application of two coats of white membrane curing compound. White membrane curing compound shall be applied at a rate of not less than one gallon per 300 square feet of surface for each coat. The first coat shall be applied immediately after the removal of the forms or, for slip-form concrete, immediately after the free water has left the surface of the concrete. The second coat shall be applied not less than 30 minutes nor more than 2 hours after the application of the first coat. The curing compound shall be applied by means of spray equipment capable of producing a continuous uniform film at the specified application rate. The spray equipment shall be approved by the Engineer. The treated surface shall be protected by an unbroken film by the Contractor for a period of at least 5 days. If the film is damaged in any way during the curing period, including rain damage, the Contractor shall apply a new coat of material to the affected areas equal in curing value to the original coat.
- G. **Joints.** Transverse joints shall be of the dimensions and spacing as shown on the plans. If the barrier is constructed on a concrete base or shoulder from which it is not separated by a sealed expansion joint, then expansion joints and plane-of-weakness joints shall be constructed in the barrier directly over the corresponding joints in the concrete base or shoulder.
- H. **Concrete Barrier Backfill.** In split barrier sections, granular material Class II, or other approved material shall be used to backfill between the barrier sections and below the concrete filler slab.

The backfill material shall be placed in layers not more than 9 inches in depth and shall be thoroughly compacted. Concrete barrier cast-in-place shall have attained a minimum of 70 percent of the design strength prior to placing backfill.
- I. **Weather and Temperature Limitations.** The requirements for the protection of the concrete shall be according to subsection 602.03.T.

804.04 Measurement and Payment.

Contract Item (Pay Item)	Pay Unit
Conc Barrier, Single Face, Type —	Foot
Conc Barrier, Double Face, Type —	Foot
Conc Barrier, Split, Type —	Foot
Conc Barrier Backfill, CIP	Cubic Yard
Glare Screen, Conc	Foot
Glare Screen, Conc, Split	Foot
Light Std Fdn, Conc Barrier	Each
Sign Support Fdn, Conc Barrier, Truss Type —	Each

- A. Concrete barrier and glare screen will be measured parallel to its centerline. **Conc Barrier, Split** and **Glare Screen, Conc, Split** will be measured from the beginning of the tapered section on one side of the structure to the end of the tapered section on the other side of the structure. No deduction will be made in these measurements for gaps for light standard foundations, sign support foundations, or pier columns.

Variable height barrier and glare screen end sections will be measured as full-height sections.

- B. All materials and labor required to construct **Conc Barrier, Double Face, Type A** using dowels and a widened base, as for **Conc Barrier, Double Face, Type B**, will be included in the contract pay item **Conc Barrier, Double Face, Type A**.

The base for **Conc Barrier, Double Face Type B** will be paid for separately. Dowels are included in the contract pay item **Conc Barrier, Double Face, Type B**.

- C. Backfill material between the split sections will be paid for as **Conc Barrier Backfill, CIP**, based on plan quantities. The concrete filler slab between the split sections will be measured and paid for as **Sidewalk, Conc, 4 inch** according to subsection 803.04. Furnishing and placing the fiber joint filler is included in the payment for **Sidewalk, Conc, 4 inch**. No deduction will be made in these quantities for gaps for light standard foundations, sign support foundations, or pier columns.

- D. Steel reinforcement, if required in a concrete glare screen, will not be paid for separately. Payment for this work is included in the payment for **Glare Screen, Conc** or **Glare Screen, Conc, Split**.

- E. If a concrete glare screen is to be cast on top of an existing concrete barrier, labor, equipment and materials for drilling into the existing barrier and grouting in the steel reinforcement will not be paid for separately; payment for this work is included in the payment for **Glare Screen, Conc** or **Glare Screen, Conc, Split**.