



ClearCast Forms | Sample Specifications

Specifications for Stay-In-Place Transparent Formwork for Bridge Deck Construction

1.1 Description

This work consists of furnishing and installing stay-in-place transparent forms to prevent any appreciable vertical deflection of the bridge deck during the placing of concrete until the concrete has set up, in accordance with these specifications and reasonably close conformity with the dimensions shown in the plans or established by the Engineer.

1.2 Shop Drawings

Shop drawings and design calculations shall be submitted to the Engineer for review and approval before work is to begin. Submittals shall show complete details of all elements required for the proper construction of the system, including complete material specifications. Submittals shall also include other information required in the plans or special provisions or requested by the Engineer. The Contractor shall not start work until such drawings have been approved by Engineer. Approval of the Contractor's drawings shall not relieve the Contractor of any of his responsibility under the contract for the successful completion of the work.

1.2.1 Design Specifications - The design, materials and construction shall be based on the AASHTO LRFD Bridge Design Specifications, 8th Edition (with current interims), the AASHTO Guide Design Specifications for Bridge Temporary Works, 1st Edition (with current interims), AISI S100-12 (North American Specification for Cold-Formed Steel Structural Members), ACI 318-14 (Building Code Requirements for Structural Concrete), and AISC 360-10 (Specification for Structural Steel Buildings).

1.2.2 Design Load and Deflection - The maximum deflection in the form is to be limited to the permissible deflection, calculated based on the self-weight of the form and the following:

Unit Weight of Reinforced Concrete: 150 pcf

Construction Live Load: 50 psf

Design Span (L) = Clear distance between edges of girders less min. bearing length

Δ = Lesser of L/180 or 0.50 in. (For Spans \leq 10 ft.)

Δ = Lesser of L/240 or 0.75 in. (For Spans $>$ 10 ft.)

1.3 Materials

1.3.1 Transparent Plastic Sheet – The plastic shall conform to ASTM D4802-16 “Standard Specification for Poly (Methyl Methacrylate) Acrylic Plastic Sheet”. Dimensions of the sheet shall be specified in the shop drawings.

1.3.2 Structural Steel Joists and Tracks – Cold formed steel members shall conform to ASTM A653, minimum yield strength of 33ksi, galvanized.

1.3.3 Structural Steel Angles – Support angles shall conform to ASTM A653, minimum yield strength of 36ksi, galvanized.

1.3.4 Connection Components – All materials used for connections of transparent formwork to girder shall be shown in the shop drawing submittal for the Engineer's review and approval.

1.3.5 Form Dimensions – All forms shall be manufactured with the following tolerances.

Form Dimensions: ¼"

Form Squareness: The difference between the two diagonals shall not exceed ½"

1.3.6 Storage & Handling -Store pallets of stay-in-place transparent forms at least three inches off the ground with one end elevated to allow for drainage. Keep binding on stay-in-place transparent forms until they are ready for installation to reduce potential for damage.

Care shall be taken to avoid damage to the stay-in-place transparent forms during handling and installation. Do not stack materials, drop tools or run heavy equipment over the forms. Any damaged forms must be replaced by the contractor prior to continuing with deck construction. Lift stay-in-place transparent forms from beneath the steel track, do not lift from the plastic sheet.

1.4 Installation

Contractor to set the elevation of the form supports to meet the required screed elevations, deck thickness and plan profile. The contractor shall verify all dimensions and adjust supports as needed prior to installing stay-in-place transparent forms.

Welding of form supports to tension flanges is not permitted. If welds or welding is required, it must be in accordance with the project specifications and special provisions and performed by a qualified welder.

Any permanently exposed steel with damaged galvanized coating must be cleaned and repaired at the discretion of the Engineer.

Place stay-in-place transparent forms on form supports to meet the minimum bearing lengths shown in the plans. Do not set and attach forms directly on the top of beam flanges.

Joints between adjacent stay-in-place transparent forms and the support angle shall be mortar tight. Joints larger than 0.50 inches shall be sealed with an approved material (provided by contractor) to prevent leakage of the concrete.

Connect stay-in-place transparent forms to the form supports before applying any load or walking on the form, and before the end of each work shift. Connect stay-in-place transparent forms to the form supports immediately upon placement to prevent movement or uplift.

Cutting or drilling of the stay-in-place transparent form may only be done by acceptable methods with approval by the supplier and the Engineer. Cutting by torch or burning is not permitted.

The masking, provided on the top surface of the stay-in-place transparent form, should be left in place during installation operations to provide protection of the transparent surface. Use only plastic putty knives or scrapers to remove masking and take care not to scratch the surface of the stay-in-place transparent form. Remove the masking just prior to setting reinforcing steel.

All screws must be placed such that there is a minimum distance of 0.29 inches between the center of the screw and material edge.

The contractor shall protect the installed stay-in-place transparent forms from any cleaning solutions, solvents such as acetone, gasoline, alcohol or thinners as they may damage the form. Any forms that are damaged from lack of protection shall be repaired or replaced, as directed by the Engineer.

Prior to pouring concrete, remove all debris and extraneous matter from the forms. Control the placement and thickness of concrete such that the pressure applied does not exceed the design pressure.

Do not drop concrete from a height greater than 10 inches above the stay-in-place transparent form.

Minimize or avoid contact of equipment, tools, vibrators with the top of stay-in-place transparent form to prevent damage to the transparent surface. Rubber tipped vibrators are highly recommended.

Concrete with calcium chloride (or any admixture containing salts) shall not be used.

1.5 Measurement & Payment

1.5.1 Measurement – The unit of measurement for furnishing and fabricating all materials for the transparent stay-in-place forms will be the square feet of deck constructed for interior bays (net area).

1.5.2 Payment – All costs associated with furnishing and installing the transparent stay-in-place forms shall be included in the “Structural Concrete (Bridge)” pay item (CY).