

ITEM 570.8601 07 M - EPOXY PAINT SYSTEM FOR STEEL CAISSONS

DESCRIPTION

The work shall consist of applying a three coat structural steel paint system to the outside surfaces of the caissons. The three coat paint system shall consist of the following components:

- Primer Coat - Inorganic Zinc-Rich Primer
- Intermediate Coat - Dark Red Coal Tar Epoxy
- Top Coat - Black Coal Tar Epoxy

New caissons shall be painted with all three coats in the shop. No field painting, except touch-up, will be permitted.

All steel caissons painted under the terms of this item shall be previously uncoated steel. Permitted field touch-up work shall be done only to paint coatings applied under the terms of this item.

The contractor is specifically forewarned that welding locations will be present on all caissons. Refer to Construction Details for painting options at weld locations.

MATERIALS

Disapproved

Abrasive for Blast Cleaning. The contractor shall choose the abrasive. No silica sand, or material containing silicates will be permitted. The material chosen shall, when properly applied, produce a blast profile of the cleaned steel surface within the range of 38 to 64 microns.

PAINTS

Inorganic Zinc-Rich Primer. This shall meet the requirements SSPC Paint Specification No. 20, Type I-C.

Coal Tar Epoxy. This shall meet the requirements of SSPC Paint Specification No. 16. The color of the intermediate coat shall be dark red. The color of the finish (top) coat shall be black.

All paint for this project shall be supplied by a single paint manufacturer. All paint containers shall be sealed in a manner acceptable to the Engineer. All paint shall be stored in the manner required by the paint manufacturer. Containers opened prior to the Engineer’s authorization, containers which in the Engineer’s opinion show signs of tampering, or containers which in the Engineer’s opinion are improperly stored, shall be replaced by properly sealed containers at no additional cost to the State.

All paint will be accepted at the work site based upon the paint manufacturer’s certifications that the paints meet the requirements of SSPC Paint 16 and SSPC Paint 20 as applicable. Batch numbers

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shall be clearly marked on each paint container.

CONSTRUCTION DETAILS

Cleaning.

All steel surfaces to be painted shall be cleaned to bare steel in accordance with SSPC-SP10, Near White Blast Cleaning.

Before blast cleaning work begins, visible deposits of oil, grease, dirt, salt, or other contaminants shall be removed by the methods specified in SSPC-SP1, Solvent Cleaning.

No blast cleaning operations will be conducted if the humidity exceeds 85%, or if the surface temperature is less than 3°C above the dew point. Blast cleaned surfaces shall not be left uncoated (refer to Priming).

After blast cleaning operations have been completed, the Contractor shall satisfy the Engineer that the required anchor pattern will be achieved using Testex Tape or Press - O - Film Gage.

The area cleaned shall be limited to that which can be cleaned and prime coated within 16 hours (refer to Priming). Cleaned areas shall be approved by the Engineer prior to priming.

After blast cleaning is completed, cleaned surfaces shall be defined by SSPC-Visl-89, Pictorial Standards ASP-10, BSP-10, and CSP-10, as applicable.

After blast cleaning operations are completed, all surfaces shall be cleaned of blasting products and other residues in accordance with SSPC-SP10. Cleaned surfaces shall be cleared of all foreign matter by means of oil-free, water-free, compressed air, or vacuum systems only.

Painting - General.

All paint shall be thoroughly mixed in accordance with the manufacturer's instructions. Mechanical mixers shall be used. Two clearly legible copies of the manufacturer's instructions shall be delivered to the Engineer at least two weeks prior to the beginning of any painting work.

Only properly sealed paint containers will be permitted to be opened for use in the work. Containers opened prior to the Engineer's authorization, or tampered containers shall be removed from the work site. Unauthorized opening of containers, or tampering, constitutes automatic rejection of the contents. All such containers shall be replaced by properly sealed containers at no additional cost to the State.

Thinning of paint will be allowed only with the express written permission of the Engineer. All thinning shall be done in strict accordance with the manufacturer's instructions. Only the type and

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quantity of thinner recommended by the manufacturer shall be used. Unauthorized use of thinners will result in the recleaning and repainting of the affected surface in a manner satisfactory to the Engineer at no additional cost to the State.

Paint may be applied by brush, roller, or air-less spray except where otherwise required. The application requirements, responsibilities, and restrictions of subsection 740-01 shall apply.

Individual coating shall be applied in sufficient quantity so that the following minimum dry film thickness (DFT) result:

<u>PRIMER</u>	<u>INTERMEDIATE</u>	<u>FINISH</u>
63 to 88 microns	200 microns	200 microns

The wet film thickness required to obtain the required DFT is dependent upon the percent solids by volume of paint. This will vary somewhat for each system.

DFT determinations will be made by the Engineer in accordance with SSPC-PA2, Paint Application Specification No. 2. The Contractor shall supply all the equipment required by 740-01 as well as two fixed probe magnetic gages - Positector, or equal approved by the DCE(TS). No work shall be done until all the required equipment is supplied.

No paint shall be applied unless all of the following conditions are met:

The receiving surface shall be clean and absolutely dry; the surface temperature shall be between 4°C - 38°C; ambient air temperature shall be between 4°C - 32°C and shall be at least 3°C above the dew point; the relative humidity shall be less than 85%. No paint shall be applied if the Engineer determines that poor adhesion, or any other non-acceptable condition will result. All paint applied in violation of these requirements shall be entirely removed, and the affected surface cleaned and repainted in accordance with the stated requirements at no additional cost to the State.

All individual coating applications shall be applied as required by the manufacturer's instructions. No coat of paint shall be applied until the previous coat has cured sufficiently as determined by the manufacturer's instructions, and approved by the Engineer.

All work is subject to inspection. The contractor shall provide adequate access and suitable lighting for such inspections to be made. Work done while the Engineer has been refused, denied, or restricted access, or work exhibited in a manner that in the Engineer's opinion prevents adequate inspection will automatically be rejected. All such work shall be recleaned and repainted in accordance with these requirements at no additional cost to the State.

The Engineer will take wet and dry film readings to ensure minimum coating thicknesses and

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evenness of application. Coatings shall also be monitored for the presence of holidays, pinholing, bubbling, cratering, frothing, lack of adhesion, and other defects. Coatings have less than the required dry film thickness, or other defects unacceptable to the Engineer shall be rendered suitable in a manner satisfactory to the Engineer at no additional cost to the State.

Priming. Generally, priming work shall begin only after all fabrications and welding work has been completed and accepted. Where welds are to be field applied directly to caissons the following options are permissible.

1. Prime subsequent to welding. Mask off all weld locations. Prime weld locations after welding has been completed.
2. Prime entire caisson. Remove primer prior to welding. Reprime in accordance with the requirements of this specification. If this option is chosen, all of the primer at the weld location shall be removed such that the weld will be free of any zinc paint contamination.

Cleaned bare metal surfaces shall have all blasting products removed and shall be painted the prime coat within 16 hours of the completion of the blasting operations, and before the condition known as flash-rusting occurs. No bare steel surfaces shall be left uncoated for any time duration sufficient to allow the formation of rust. No rust formation of any nature will be permitted. Cleaned areas upon which rust has formed shall be recleaned in accordance with these cleaning requirements at no additional cost. The presence of rust shall be determined by the Engineer. Surfaces receiving primer shall be absolutely clean and dry prior to primer application.

One full prime coat shall be applied by air-less spray methods only. The requirements, responsibilities, and restrictions of 740-01 shall apply.

INTERMEDIATE COAT

The intermediate coat shall be applied within the recoating time permitted by the zinc-rich primer instructions. Under no circumstances will any material, which might prevent bond between the primer and the intermediate coat, be permitted to be present. All such material shall be removed in accordance with the requirements of SSPC SP-1, Solvent Cleaning, or other methods not detrimental to the primer, approved by the Engineer.

FINISH COAT

The terms of Intermediate Coat shall apply except that the recoating time shall be that permitted by the coal tar epoxy instructions.

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Field Touch-Up. All field touch-up work shall be done in accordance with the requirements of this specification. The Engineer, in writing, may waive those requirements he deems to be impractical.

METHOD OF MEASUREMENT

The work will be measured as the number of square meter of steel caisson shell surface painted with three coats of paint as shown in the Estimate of Quantities. No field measurements will be taken by the Engineer.

BASIS OF PAYMENT

The unit price bid per square meter shall include the cost of all labor, materials and equipment necessary to complete the work.

Progress payments will be made. Upon completion of painting of a caisson the contractor may apply for payment for that element. To be eligible for progress payments the following criteria shall apply:

1. The painted caisson shall be present at the project site.
2. The element shall be accompanied by a written determination, prepared by the contractor, which specifies by calculation the number of square meters painted with the three coat system.

Upon verification of the caisson's presence, and the accuracy of the contractor's calculations, the Engineer will authorize the verified square meters for payment.

No additional payment will be made for the cost of removing the paint system to permit welding to the caisson proper. Nor will any additional payment be made for the required recoating. These costs shall be included in the unit price bid.

If the Engineer orders additional shell lengths to be added to the ordered length, the Estimate of Quantity limit for square meters may be exceeded and will be adjusted.