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USACE / NAVFAC / AFCESA | **UFGS-09 97 13.15 (January 2007)**

Preparing Activity: NAVFAC | **Superseding UFGS-09 97 13.15 (July 2006)**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

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DIVISION 09 - FINISHES

SECTION 09 97 13.15

EPOXY/FLUOROPOLYURETHANE INTERIOR COATING OF WELDED STEEL PETROLEUM FUEL TANKS

01/07

3.8 SURFACES TO BE COATED

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NOTE: See MIL-HDBK 1022 for guidance on which interior tank surfaces should be coated.
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Prepare and coat interior tank surfaces, including[FLOOR][, SHELL][, CEILING][spot repair of [____] spots of [_____] square meters square feet]. Remove interior piping to ensure complete coverage of floor and underside of pipe supports. [Do not coat aluminum floating pan.]

3.9 SURFACE PREPARATION

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NOTE: When editing this specification for maintenance coating work for which SSPC SP 12 Water Cleaning or Jetting surface preparation is to be allowed, include note for the contractor to use potable water, monitor the quality of the water, and adjust water quality to assure appropriate surface preparation and final surface requirements. There are many problems that might arise from both dissolved and suspended material. A common occurrence is water with high-chlorides, even in potable water, which may leave unacceptable contamination on cleaned surfaces, and may not be suitable for water jetting.
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3.9.1 Abrasive Blasting Equipment

Use abrasive blasting equipment of conventional air, force-feed, or pressure type. Maintain a minimum pressure of 650 kPa 95 psig at nozzle. Confirm that air supply for abrasive blasting is free of oil and moisture when tested in accordance with ASTM D 4285. Test air quality at each startup, but in no case less often than every five operating hours.

3.9.2 Operational Evaluation of Abrasive

Test abrasive for salt contamination and oil contamination as required by the appropriate abrasive specification daily at startup and every five operating hours thereafter.

3.9.3 Surface Standard

Inspect surfaces to be coated, and select plate with similar properties and surface characteristics for use as a surface standard. Blast clean one or more 300 mm 1 foot square steel panels as specified in paragraph SURFACE PREPARATION. Record blast nozzle type and size, air pressure at nozzle and compressor, distance of nozzle from panel, and angle of blast to establish procedures for blast cleaning. Measure surface profile in accordance with ASTM D 7127. When the surface standard complies with all specified requirements, seal with a clearcoat protectant. Use the surface standard for comparison to abrasive blasted surfaces throughout the course of work.

3.9.4 Pre-Preparation Testing for Surface Contamination

Perform testing, abrasive blasting, and testing in the prescribed order.

3.9.4.1 Pre-Preparation Testing for Oil and Grease Contamination

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NOTE: When specifying maintenance painting, use a water based pH neutral degreaser to avoid damaging existing coating.
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Inspect all surfaces for oil and/or grease contamination using two or more of the following inspection techniques: 1) Visual inspection, 2) WATER BREAK TEST, 3) BLACK LIGHT TEST, and 4) CLOTH RUB TEST. Reject oil and/or grease contaminated surfaces, clean [using a water based pH neutral degreaser]in accordance with SSPC SP 1, and recheck for contamination until surfaces are free of oil and grease.

WATER BREAK TEST - Spray atomized mist of distilled water onto surface, and observe for water beading. If water "wets" surface rather than beading up, surface can be considered free of oil or grease contamination. Beading of water (water forms droplets) is evidence of oil or grease contamination.

BLACK LIGHT TEST - Inspect surfaces for oil and grease contamination using the light specified in the paragraph BLACK LIGHT. Use light no more than 381 mm 15 inches from surface unless testing indicates that the specific oil or grease found in tank fluoresce at a greater distance. Use light in tank that is completely sealed from light infiltration, under a hood, or at night. Any fluorescing on steel surfaces is indication of petroleum oil/grease contamination. Use either WATER BREAK TEST or CLOTH RUB TEST to confirm both contaminated and non-contaminated areas detected by BLACK LIGHT TEST. The BLACK LIGHT TEST may not be used during inspection of prepared surfaces for oil and grease contamination unless proven to fluoresce the oil and/or grease found in the specific tank and documented during testing prior to abrasive blasting. Generally, only petroleum oil/grease will fluoresce, however, some may not fluoresce sufficiently to be recognized and other methods, such as the WATER BREAK TEST or CLOTH RUB TEST, must be used to confirm findings of the BLACK LIGHT TEST.

CLOTH RUB TEST - Rub a clean, white, lint free, cotton cloth onto surface and observe for discoloration. To confirm oil or grease contamination in lightly stained areas, a non-staining solvent may be used to aid in oil or grease extraction. Any visible discoloration is evidence of oil or grease contamination.

3.9.4.2 Pre-Preparation Testing for Soluble Salts Contamination

Test surfaces for soluble salts, and wash as required, prior to abrasive blasting. Soluble salt testing is also required in paragraph PRE-APPLICATION TESTING FOR SOLUBLE SALTS CONTAMINATION as a final acceptance test of prepared surfaces after abrasive blasting, and successful completion of this phase does not negate that requirement. This phase is recommended since pre-preparation testing and washing are generally more advantageous than attempting to remove soluble salt contamination after abrasive blasting. Effective removal of soluble salts will require removal of any barrier to the steel surface, including rust. This procedure may necessitate combinations of wet abrasive blasting, high pressure water rinsing, and cleaning using a solution of water washing and

soluble salts remover. The soluble salts remover shall be acidic, biodegradable, nontoxic, noncorrosive, and after application, will not interfere with primer adhesion. Delays between testing and preparation, or testing and coating application, may allow for the formation of new contamination. Use potable water, or potable water modified with a soluble salt remover, for all washing or wet abrasive blasting. Test methods and equipment used in this phase are selected at the Contractor's discretion.

3.9.5 Abrasive Blasting

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NOTE: The issue of maximum profile on new structures is an important one. Once a profile is established, it is nearly impossible to reduce it, therefore, the initial profile will dictate the profile for the life of the structure.

The specified 2-3 mil surface profile is the preferred depth for preparing for the primer. On steel that was previously prepared to a deeper depth and coated, a depth of 4 mils can be tolerated with an additional mil of primer thickness.

To validate contractor claims of pre-existing profile greater than allowed, test an appropriate number of representative spots with abrasive that removes paint but does not affect profile, such as bicarbonate of soda, or other soft abrasive, or waterblasting, etc.

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Abrasive blast steel surfaces to near-white metal in accordance with SSPC SP 10. Prepared surfaces shall conform to SSPC VIS 1 and shall match the prepared test-panels. Provide a 50 to 75 micron 2 to 3 mil surface profile. Reject profile greater than 75 microns 3 mils, discontinue abrasive blasting, and modify processes and materials to provide the specified profile. Measure surface profile in accordance with ASTM D 7127, using Rmax as the measure of profile height. Record all measurements required in this standard. Measure profile at rate of three test areas for the first 100 square meters 1000 square feet plus one test area for each additional 100 square meters 1000 square feet or part thereof. When surfaces are reblasted for any reason, retest profile as specified. Following abrasive blasting, remove dust and debris by vacuum cleaning. Do not attempt to wipe surface clean.

3.9.6 Disposal of Used Abrasive

Dispose of used abrasive off Government property in accordance with Federal, State and Local mandated regulations.

3.9.7 Pre-Application Testing For Surface Contamination

3.9.7.1 Pre-Application Testing for Oil and Grease Contamination

Ensure tank surfaces are free of contamination as described in paragraph PRE-PREPARATION TESTING FOR OIL AND GREASE CONTAMINATION.

3.9.7.2 Pre-Application Testing for Soluble Salts Contamination

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NOTE: In new tanks, require 30% of tests to be accomplished at welds. In tanks that have been in service, corroded areas should be tested for high chlorides.

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Test surfaces for chloride contamination using the Test Kit described in paragraph TEST KIT FOR MEASURING CHLORIDE, SULFATE AND NITRATE IONS ON STEEL SURFACES. Test all surfaces at rate of three tests for the first 100 square meters 1000 square feet plus one test for each additional 200 square meters 2000 square feet or part thereof. [Concentrate testing of bare steel at areas of coating failure to bare steel and areas of corrosion pitting.][Perform 30% of tests on bare steel at welds, divided equally between horizontal and vertical welds.]One or more readings greater than nondetectable for chlorides, sulfates, or nitrates is evidence of soluble salt contamination. Reject contaminated surfaces, wash as discussed in paragraph PRE-PREPARATION TESTING FOR SOLUBLE SALTS CONTAMINATION, allow to dry, and re-test until all required tests show allowable results. Reblast tested areas using vacuum equipped blast equipment. Label all test tubes and retain for test verification.

3.9.7.3 Pre-Application Testing for Surface Cleanliness

Apply coatings to dust free surfaces. To test surfaces, apply strip of clear adhesive tape to surface and rub onto surface with finger. When removed, the tape should show little or no dust, blast abrasive, or other contaminant. Reject contaminated surfaces, clean by vacuum cleaning, and retest. Test surfaces at rate of three tests for the first 100 square meters 1000 square feet plus one test for each additional 100 square meters 1000 square feet or part thereof. Provide two additional tests for each failed test or questionable test. Attach test tapes to Daily Inspection Reports.

3.10 MIXING AND APPLICATION OF SEALANT AND COATING SYSTEM

Mix, thin, and apply in accordance with approved procedures, which may differ for each product. Do not mix partial kits or alter mix ratios.

3.10.1 Preparation of Sealant and Coating Materials for Application

Each of the different products, sealant, epoxy primer, epoxy intermediate, and fluoropolyurethane topcoat, is a two-component material supplied in separate containers.

3.10.1.1 Mixing Sealant, Primer and Intermediate Coat Materials

Mix materials in same temperature and humidity conditions specified in paragraph DELIVERY AND STORAGE. Allow mixed material to stand for the required induction time based on its temperature.

3.10.1.2 Mixing Topcoat Material

Mix fluoropolyurethane coating materials in same temperature and humidity conditions specified in paragraph HUMIDITY CONTROL FOR APPLICATION OF INTERMEDIATE AND TOPCOATS AND INITIAL CURING. The Component A (base) material should be thoroughly mixed with mechanical agitation and the Component B (activator) should be lightly shaken prior to mixing. Do not "box" (pour from can to can) except one time to examine the bottom of Component A can to ensure pigment has been mixed. After Component A has

INITIAL REPORT

STOPPING CREVICE CORROSION

On a Pennsylvania Turnpike bridge
on I-476 (the Northeast Extension) at Mile Post 88.59
By High Pressure (5,000 psi) Water Wash Cleaning (with C*R)
and Overcoating
With the Termarust RAVCS® coating system

For the Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

Cleaning & Coating by
Titan Industrial Painting, Baltimore, Maryland

Coating Materials from
Termarust Technologies, Vienna, Virginia

Project Painting Date: April, 2006

INITIAL REPORT

By: Craig A. Ballinger, P.E.
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OVERVIEW

This report provides some background information and information and pictures on the cleaning and painting portion of work that was done on this bridge, in April 2006, for the Pennsylvania Turnpike Commission.

The bridge, which was built in the 1970's, was found to have a severe problem with crevice corrosion and pack rust – that has developed on almost all of the steel box members; as well as between layers of steel plates of the large gusset plate assemblies above the piers.

The project involved:

- Removal and replacement of some small secondary steel members, by the General Contractor
- Pressure wash cleaning (with Chlor*Rid in the water) of the lower steel box members and selected other members and application of the Termarust (RAVCS) coating system, by a painting subcontractor.

It is important to note:

1. The contract required use of the Termarust coating system – to stop further development of the crevice corrosion and pack rust; which has:
   - Severely bent the webs and flanges of the box members (and thereby reduced their buckling strength)
   - Overstressed many of the rivets that connect steel plates.

2. The bridge was painted within the past 10 years, and as may be seen from the photos below, that coating did not stop development of crevice corrosion and pack rust.

3. Regarding inspection and rating of the bridge – the rating for the pack rust is clearly PONTIS Condition State 3; i.e. significant bending of structural members but there are no broken fasteners (rivets).

A copy of page 12 of the project specifications, that shows that Termarust (only) was specified, is shown at the back of this report.

Shown below are references and procedures for cleaning and painting, and pictures of the bridge and the cleaning and painting operations.

REFERENCES

Pennsylvania Turnpike Commission
Contact Person: Gary Graham, Chief Bridge Engineer – Phone: 717-939-9551

Painting Subcontractor
Titan Industrial Painting, Baltimore, MD – Phone: 410-477-1857
Contact Person: Pete Forakis

CLEANING AND APPLICATION PROCEDURES

The following Termarust standard procedures were specified and followed:

1. Pressure wash clean the bridge with a 5,000 psi pressure washer (at a 6" standoff distance) with clean water with an additive of Chlor*Rid to remove non-visible salts; e.g. chlorides. (For more information on Chlor*Rid – see www.chlor-rid.com)

2. With dry compressed air – blow dry all connections

3. Apply Termarust TR2200 Penetrant into all 'open' connections; where there is crevice corrosion and pack rust.

4. Apply a caulk (or stripe) coat of Termarust TR2100 Topcoat onto open connections; where there is crevice corrosion and pack rust – minimum 10 mils dry film thickness (DFT).

5. Spot prime areas of bare steel and tightly adhered (contaminant free) rust with 5 mils DFT of Termarust TR2100 Topcoat

6. Overcoat the entire area with another 5 mils DFT of TR2100 Topcoat.

It is important to note that steps 3 through 6 are usually done immediately after each other; i.e. wet-on-wet; which is why the Termarust system is considered to be a "One Coat" system.

The final result was:

- 5 mils DFT on tight paint,
- 10 mils DFT on bare steel and tight rust, and
- 20 mils DFT over connections.

PICTORIAL OVERVIEW

The following pictures provide a pictorial overview of the project.

ILLINOIS DEPARTMENT OF TRANSPORTATION
CLEANING AND PAINTING EXISTING STEEL STRUCTURES
Effective: October 2, 2001
Revised: January 14, 2002

Description. This work shall consist of the preparation of all designated metal surfaces by the method(s) specified on the plans. This work also includes the painting of those designated surfaces with the paint system(s) specified on the plans. The Contractor shall furnish all materials, equipment, labor, and other essentials necessary to accomplish this work and all other work described herein and as directed by the Engineer.

Materials. All materials to be used on an individual structure shall be produced by the same manufacturer.

The Bureau of Materials and Physical Research has established a list of all products that have met preliminary requirements. Each batch of material, except for the penetrating sealer, must be tested and approved before use. The specified colors shall be produced in the coating manufacturer's facility. Tinting of the coating after it leaves the manufacturer's facility is not allowed.

The paint materials shall meet the following requirements of the Standard Specification and as noted below:

Item	Article
(a) Waterborne Acrylic	1008.24
(b) Aluminum Epoxy Mastic	1008.25
(c) Organic Zinc Rich Primer (Note 1)	
(d) Epoxy/ Aliphatic Urethane (Note 1)	
(e) Penetrating Sealer (Note 2)	

Note 1: These material requirements shall be according to the Special Provision for the Organic Zinc-Rich Paint System.

Note 2: The Epoxy Penetrating Sealer shall be a cross-linked multi component sealer. The sealer shall have the following properties:

(a) The volume solids shall be 98%(plus or minus 2%).
(b) Shall be clear or slightly tinted color.

Submittals. The Contractor shall submit for Engineer review and acceptance, the following plans and information for completing the work. The timing and process for issuing the submittals shall be according to Section 105.04. Work can not proceed until the submittals are accepted by the Engineer. Details for each of the plans are presented within the body of this specification.

Contractor QC inspections shall include, but not be limited to the following:

- Suitability of protective coverings and the means employed to control project debris and paint spills, overspray, etc.
- Ambient conditions
- Surface preparation (solvent cleaning, pressure washing including chalk tests, hand/power tool or abrasive blast cleaning, etc.)
- Chloride remediation
- Coating application (specified materials, mixing, thinning, and wet/dry film thickness)
- Recoat times and cleanliness between coats
- Coating continuity and coverage (freedom from runs, sags, overspray, dryspray, pinholes, shadow-through, skips, misses, etc.)

The personnel managing the Contractor's QC Program shall possess a minimum classification as a National Association of Corrosion Engineers (NACE) Coating Inspector Technician, or shall provide evidence of successful inspection of 3 projects of similar or greater complexity and scope that have been completed in the last 2 years. References shall include the name, address, and telephone number of a contact person employed by the bridge owner.

The personnel performing the QC tests shall be trained in coatings inspection and the use of the testing instruments. Documentation of training shall be provided. The QC personnel shall not perform hands on surface preparation or painting activities. Painters shall perform wet film thickness measurements, with QC personnel conducting random spot checks of the wet film.

The Contractor shall supply all necessary equipment to perform the QC inspections. Equipment shall include the following at a minimum:

- Psychrometer or comparable equipment for the measurement of dew point and relative humidity, together with all necessary weather bureau tables or psychrometric charts.
- Surface temperature thermometer
- Hypodermic Needle Pressure Gage for determining blasting pressure at the nozzle
- SSPC Visual Standards VIS 1 for abrasive blast cleaning, VIS 3 for hand/power tool cleaning, VIS 4 for water jetting, and/or VIS 5 for wet abrasive blast cleaning, as applicable.
- Commercially available putty knife of a minimum thickness of 1mm (40 mils) and a width between 25 and 75 mm (1 and 3 in.) Note that the putty knife is only required for projects in which the existing coating is being feathered and must be tested with a dull putty knife.
- Testex Press-O-Film Replica Tape and Spring Micrometer
- Bresle Cell Kits or CHLOR*TEST kits for chloride determinations, or equivalent
- Wet Film Thickness Gage
- Blotter paper and plate glass for compressed air cleanliness checks
- Type 2 Magnetic Dry Film Thickness Gage per SSPC - PA2
- Calibration standards for dry film thickness gage

Power Tool Cleaning of Shop Primed Steel. When steel coated with only a prime coat of inorganic zinc is specified to be cleaned, this work shall be accomplished as follows. After cleaning the surface as specified under "Water Cleaning of Non-Lead Coatings Prior to Overcoating," damaged and rusted areas shall be spot cleaned according Power Tool Cleaning -Modified SSPC-SP3. The edges of the coating surrounding the spot repairs shall be feathered.

Abrasives. When abrasive blast cleaning is specified, it shall be performed using either expendable abrasives (other than silica sand) or recyclable steel grit abrasives. Abrasive suppliers shall certify that the expendable abrasives meet the requirements of SSPC-AB1 and that recyclable steel grit abrasives meet AB3. The Contractor shall verify that recycled abrasives meet the requirements of SSPC-AB2 during use. All surfaces prepared with abrasives not meeting the SSPC-AB1, AB2, or AB3 requirements, as applicable, shall be solvent cleaned or low pressure water cleaned as directed by the Engineer, and reblast cleaned at the Contractor's expense.

Surface Profile (HOLD POINT). The abrasives used for blast cleaning shall have a gradation such that the abrasive will produce a uniform surface profile of 38 to 90 microns (1.5 to 3.5 mils). If the profile requirements of the coating manufacturer are more restrictive, advise the Engineer and comply with the more restrictive requirements. For recycled abrasives, an appropriate operating mix shall be maintained in order to control the profile within these limits.

The surface profile for the Power Tool Cleaning - Commercial Grade shall be within the range specified by the coating manufacturer, but not less than 50 microns (2.0 mils), even if the manufacturer permits a lesser profile.

The surface profile produced by the Contractor's surface preparation procedures shall be determined by replica tape and spring micrometer at the beginning of the work, and each day that blast cleaning is performed. Areas having unacceptable measurements shall be further tested to determine the limits of the deficient area.

When unacceptable profiles are produced, work shall be suspended. The Contractor shall submit a plan for the necessary adjustments to insure that the correct surface profile is achieved on all surfaces. The Contractor shall not resume work until the new profile is verified by the QA observations, and the Engineer confirms, in writing, that the profile is acceptable.

Soluble Salt Remediation (HOLD POINT). The Contractor shall implement surface preparation procedures and processes that will remove chloride from the surfaces. Surfaces that may be contaminated with chloride include, but are not limited to, expansion joints and all areas that are subject to roadway splash or run off such as fascia beams and stringers.

Methods of chloride removal may include, but are not limited to, steam cleaning or pressure washing with or without the addition of a chemical soluble salt remover as approved by the coating manufacturer, and scrubbing before or after initial paint removal. The contractor may also elect to clean the steel and allow it to rust overnight followed by recleaning, or by utilizing blends of fine and coarse abrasives during blast cleaning, wet abrasive/water jetting methods of preparation, or combinations of the above. If steam or water cleaning methods of chloride

removal are utilized over surfaces where the coating has been completely removed, and the water will not contact any lead containing coatings, the water does not have to be collected. The Contractor shall provide the proposed procedures for chloride remediation in the Surface Preparation/Painting Plan.

Upon completion of the chloride remediation steps, the Contractor shall use cell methods of field chloride extraction and test procedures (e.g., silver dichromate) accepted by the Engineer, to test representative surfaces that were previously rusted (e.g., pitted steel) for the presence of remaining chlorides. Remaining chloride levels shall be no greater than 7µg/sq cm as read directly from the surface without any multiplier applied to the results. The testing must be performed, and the results must be acceptable, prior to painting each day.

A minimum of 5 tests per 93 sq m (1000 sq ft) or fraction thereof completed in a given day, shall be conducted at project start up. If results greater than 7 µg/sq cm are detected, the surfaces shall be recleaned and retested at the same frequency. If acceptable results are achieved on three consecutive days in which testing is conducted, the test frequency may be reduced to 1 test per 93 sq m (1000 sq ft) prepared each day provided the chloride remediation process remains unchanged. If unacceptable results are encountered, or the methods of chloride remediation are changed, the Contractor shall resume testing at a frequency of 5 tests per 93 sq m (1000 sq ft).

Following successful chloride testing the chloride test areas shall be cleaned. Power Tool Cleaning - Commercial Grade can be used to clean the test locations when the specified degree of cleaning is SSPC-SP10.

Surface Condition Prior to Painting (HOLD POINT). Prepared surfaces, shall meet the requirements of the respective degrees of cleaning immediately prior to painting, and shall be painted before rusting appears on the surface. If rust appears or bare steel remains unpainted for more than 12 hours, the affected area shall be prepared again at the expense of the Contractor.

All loose paint and surface preparation cleaning residue on bridge steel surfaces, scaffolding and platforms, containment materials, and tops of abutments and pier caps shall be removed prior to painting. When lead paint is being disturbed, cleaning shall be accomplished by HEPA vacuuming unless it is conducted within a containment that is designed with a ventilation system capable of collecting the airborne dust and debris created by sweeping and blowing with compressed air.

The quality of surface preparation and cleaning of surface dust and debris must be accepted by the Engineer prior to painting. The Engineer has the right to reject any work that was performed without adequate provision for QA observations to accept the degree of cleaning. Rejected coating work shall be removed and replaced at the Contractor's expense.

General Paint Requirements. Paint storage, mixing, and application shall be accomplished according to these specifications and as specified in the paint manufacturer's written instructions and product data sheets for the paint system used. In the event of a conflict

STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction", adopted January 1, 1997, the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highway, and the *Manual of Test Procedures for Materiel in effect on the date of Invitation for bids, and the Supplemental Specifications and Recurring Special Provisions Indicated on the Check Sheet included herein which apply to and govern the construction of FAP Route 693 (IL 9). Section 12(B)I. in Peoria & Tazewell Counties. and in case of conflict with any part, or parts, of said Specifications, the said Special Provisions shall take precedence and shall govern.

Location of Project

McNaughton Bridge carrying IL Route 9 over the Illinois River at Pekin.

Description of Project

Rehabilitation of the McNaughton Bridge including resurfacing of the main river span's de ck (involves removal of existing bituminous concrete wearing surface. blast clean preparation and metalizing of steel orthotropic dock plate, and placement of composite steel-fiber-reinforced concrete dock), modifications to the approach span's deck and miscellaneous modifications associated with the preceding. Also includes replacement of modular expansion joint.

Bridge Wearlng Surface Removal (2-31411)

This work shall consist of removal of the existing bituminous concrete wearing surface in preparation for blast cleaning the steel orthotropic dock plate. This work is intended to remove only the existing bituminous concrete; the removal of all other existing layers of materials as shown in the plans (see Shoot Number 6 of plans) shall be removed according to the blast cleaning steel dock plate special provision. In areas of the bridge where removal of the existing bituminous concrete Is difficult, the Contractor has the option to complete the wearing surface removal in these areas according to the procedures specified In the blast cleaning steel dock plate special provision.

Equipment:

The equipment used shall be subject to the approval of the Engineer and shall comply with the applicable portions of Section 1100 of the Standard Specifications and the following:

6. least 5°F greater than the dew point temperature of the surrounding air. Metallizing Contractor shall provide a daily log documenting the atmospheric dew point and the surface temperature of the steel for each shift to the Engineer.

7. **Abrasives shall conform to the following** :

a) For each now shipment of abrasive, a random sample shall be tested by the Metallizing Contractor for the presence of Ionic contamination by determining total concentrations of water-soluble Ionic contaminants in accordance with ASTM D4940 Standard Test Method for Conductimetric Analysis of Water-Soluble Ionic Contamination of Blasting Abrasive".

b) SSPC-ABI specifies that conductivity levels shall not exceed 1,000 microsiemens (µS). Conductivity levels above 1,000 µS will not be immediate cause for rejection of the abrasive, but conductivity test results will be used as a factor in determining whether the abrasive is contaminating the steel. The conductivity Instrument shall

be calibrated daily, using 700 µS and 1413 µS standard NaCI solutions that are NIST traceable. If the Metallizing Contractor and the Engineer determine that the abrasive is contaminating the steel, it shag be cause for rejection of the abrasive.

c) This lost shall be performed on the abrasive work mix at the beginning of each work day that abrasive blast cleaning is scheduled, unless otherwise ordered by the Engineer. Refer to ASTM D4940 for approximate length of time involved with performing conductivity test

7. Reduction of Residual Chlorides and Sulfates

a) Chlorides, sulfates and other Ions are present on the surfaces of the existing organic coatings, primers, or bituminous sealers. Residual Ions are also on or lodged in the steel surfaces of the dock.

b) In order to remove all traces of the chlorides and sulfates from the organic coatings or stool. high pressure or ultra-high pressure water jelling is specified, using Jetin Systems, Inc. equipment, or approved equivalent(s).

c) A chloride and sulfate removal solution shall be added to water used for pressure jetting. and shall be applied in accordance with manufacturer recommendations, using Chlor*Rid", solution or an approved equivalent.

d) Upon completion of water jetting, representative areas Of ft stool dock plate, as directed by the Engineer, shall be tested for the presence of remaining chlorides and Sulfates. Testing shall be according to SSPC-TU4, using the Chlor*Test^{tm} or other approved equivalent test. A minimum of one residual Ion test sample per every 1,000 square treat shall be completed by the Metallizing Contractor

.

e) If chlorides are detected at levels g reater than 10 µg/cm^2 or sulfate levels greater than 20µg/cm^2, the affected areas shall be re-cleaned until acceptable results are achieved.

f) Following successful chloride and sulfate testing and surface drying, the steel surface should be blasted with grit 10 meet the required surface preparation criteria.

8. Surface Profiling

The existing organic coatings and all mill scale and rust shall be properly removed from both corroded & pitted and non-corroded surfaces in accordance with SSPC-SPIO Near-White Blast Cleaning with an angular surface profile of 2.5 - 5.0 mils. The angular profile measurements will be taken on smooth, non-pitted areas. The photographs of SSPC-Vis 1 should be used for comparison to define an acceptable final surface appearance. On surfaces with rust scale build-up, the rust scale shall be removed by power tool cleaning in accordance with SSPC-SP3 before obtaining a near-white metal surface finish. The Intent of these specifications is to decrease the number of surface anomalies and soluble Ion contaminants which could lead to corrosion In the future.

Some of the existing steel surfaces may be rough due to pitting. Surface profile measurements will be made In non-pitted areas, and will meet the 2.5 - 5.0 mil angular profile requirement. The profile depth shall be measured per ASTM D4417, Methods 9 and C. Localized grinding of " pitted steel may be required N pit depths exceed 250 mils. If areas containing excessive pitting are encountered, additional thickness of zinc metalizing will be required. Surface Profile measurements shall be sampled every 250 square feet maximum.

The Engineer, without notice, can inspect the work site to ensure that surface preparation and thermal spraying are being accomplished according to specifications. The Prime Contractor and the Metallizing Contractor are responsible that all pertinent environmental, health, and safety specifications are being observed and enforced.

C. Abrasive Metering Valves end Solvent Restrictions

1. Abrasive Metering Valves

a) Prior to the start of abrasive blasting, the Metallizing Contractor shall demonstrate to the satisfaction of the Engineer that on each operating nozzle a metering valve is in place and is functioning properly. During blasting operations. each valve shall be adjusted so as to produce a minimum amount of abrasive and dust.

b) All metal surfaces to be coated shall receive a near-white metal blast cleaning as defined In SSPC-SP10/NACE-2.

c) The blast cleaned surfaces shag conform to SSPC-Vis 1. Additional hand and/or

.

Specification by SRP Utility Company

Any of the methods described in 6G 1 86 for detecting contaminated steel surfaces may be utilized as necessary by SRP inspectors. The procedure requiring white metal cleaning of the entire surface and subsequent rusting is not to be used since contamination of the entire surface is a known factor and decontamination of the entire surface is required. Spot tests with the Potassium Ferricyanide Test Paper will be used at any stage up to and including final surface preparation for cleanliness and surface profile as deemed necessary by SRP. Spot tests performed after final white metal blast cleaning will be cleaned by additional abrasive blast cleaning to white metal.

It is recommended that the contractor judiciously test typical and suspect areas using this test paper during various cleaning and decontamination stages in order to avoid re-work due to inadequate decontamination procedures or work.

DECONTAMINATION IS KNOWN TO BE SUBSTANTIALLY MORE LABOR INTENSIVE THAN JUST ABRASIVE BLAST CLEANING TO WHITE METAL. It is anticipated that the required inspection upon completion of the Initial Cleaning portion of the work will reveal the need for partial or total blast cleaning in preparation of effective decontamination of the surfaces. Abrasive blast cleaning to some degree equal 'to or better than SSPC SP6, Commercial Blast Cleaning over the entire area is probable; deeply pitted areas may require cleaning to SSPC SP 1 0, Near White Blast C!eaning or even SSPC SP5, White Metal Blast Cleaning prior to decontamination efforts.

NOTE: White Metal Blast Cleaning alone is not considered an effective decontamination method. Abrasive blast cleaning to this level prior to chemical decontamination is unduly time consuming and expensive.

See the Appendix for additional Decontamination Commentary.

Decontamination Procedure

There is no industry recognized standard for soluble ferrous and ferric salt decontamination of steel. The following material and procedure is the best known available technology. Other methods will be considered, however, contractor must be prepared to demonstrate effectiveness of any proposed method and provide suitable references.

Material to be utilized in the decontamination procedure is Chlor-rid, available from Chlor-rid International, PO Box 908, Chandler, AZ 85244, 1-800-422-3217, 602-821-0039, FAX 602-821 0364.

A Chlor-rid solution mixed with water will remove soluble ferrous and ferric salts from the surface of visibly clean metal. Visibly clean metal is a relative term. To be effective the solution must come in contact with all of the ferrous and ferric salts. The water/Chlor-rid solution will penetrate a slight amount of rust, but heavy deposits such as at the bottom of pits will act as a barrier and prevent the required chemical action. It is the contractors responsibility to assure that the method utilized will achieve the end results.

THE DECONTAMINATION PORTION OF THIS SPECIFICATION IS A PERFORMANCE SPECIFICATION: THE CONTRACTOR MUST REMOVE ALL SOLUBLE FERROUS AND FERRIC SALTS FROM THE STEEL AS DETERMINED BY THE POTASSIUM FERRICYANIDE TEST PAPER METHOD DESCRIBED IN NACE 6Gl86.

Decontamination Hold Point and Inspection

Lyondell Chemical Company

Chlor*Rid Specification
High Pressure Wash-Dry Abrasive Blast

1.0 Pressure wash with a high pressure washer at a minimum of 10,000 psi. The wash water is to be of potable quality and Chlor*Rid is to be added by means of a siphon device or pressure pump capable of overcoming the inlet line pressure, or from a pre-mixed holding tank. This is necessary to assure the introduction of the Chlor*Rid chemistry. A backflow prevention device shall be installed in the supply line prior to the chemical introduction location (check local code).

2.0 Chlor*Rid is to be introduced at the approximate dilution of 1 US gallon per 100 US gallons of wash water. The operator shall apply the wash solution at the rate of approximately 300 square feet of surface area per 100 US gallons of blast solution. The high pressure washer is to be equipped with a 0 to 15 degree nozzle and the nozzle is to be held a minimum of 4" to a maximum of 1 0" from the surface being washed.

3.0 When an area of approximately 25 square feet has been washed, the surface is to be tested for soluble salt contamination by means of the Chlor*Test method. If the contamination is below the required level of less than 5-1 0 ppm, the square foot application rate may be increased with another test performed to ensure cleanliness at that application rate. This may be done several times to determine the necessary application rate needed to remove the soluble salts is to be re-washed at a higher application rate to achieve a clean surface.

4.0 After determining that soluble salts are not in excess of the specification required maximum, (5-10 ppm) by the prescribed test method, proceed to abrasive blast the surface to SSPC SP-5,10,6 or 7 as required by the specification, for final surface preparation.

Specifications by NASA - Kennedy Space Center

6. **Surface Cleaning and Preparation**

6.1. Removal of Oil and Grease

Visible deposits of oil or grease shall be removed by methods specified in SSPC-SP 1, Solvent Cleaning, from all surfaces to be painted.

6.2. Removal of Soluble Salts

6.2.1. A surface contamination analysis test (SCAT) shall be performed every 500 square feet by means of a Bresle Cell/SCAT Kit on all surfaces to be painted. Surfaces with chloride levels exceeding 3 $\mu g/cm^2$ **.** (micrograms per square centimeter) for submerged surfaces and 5 $\mu g/cm^2$ for exposed surfaces shall be treated with a liquid soluble salt remover equal to CHLOR*RID as manufactured by CHLOR*RID International, Chandler, AZ. Because the Bresle Patch Method will extract only 45 to 60 percent of the salts on tile surface, the Bresle test results shall be multiplied by 2 in determining the surface chloride level for comparison with the specified allowable levels. Results are to be recorded.

6.2.2. CHLOR*RID shall be applied by pressure washing at a minimum of 3,000 psi using one gallon of CHLOR*RID for each 100 gallons of potable water. A backflow preventive device shall be installed in the water supply line. The pressure washer is to be equipped with a 0 to 15 degree nozzle, which shall be held 4" to 10" from the surface.

6.2.3. The wash solution shall be applied initially at a rate of 600 to 800 square feet per.100 gallons. After an area of approximately 100 square feet has been washed, the surface shall be re-tested for chloride contamination. Based on the test result, the application rate and the dilution ratio of the wash solution may require adjustment in order to attain the specified degree of cleanliness.

6.2.4. Any test area that is in excess of the acceptable chloride level shall be re-washed at an adjusted application rate and/or dilution ratio so as to achieve a clean surface.

6.2.5. As the work progresses, soluble chloride level tests are to be performed in the prescribed manner every 500 square feet to ascertain cleanliness to meet the required level. Results are to be recorded.

6.2.6. Pressure washing shall be controlled per SSPC Class 3W. All wash solution used shall be collected, filtered, and tested to ensure that the water meets Federal, Georgia, and local limits for cleanliness and toxic metals prior to disposal, which shall be in accordance with the approved lead abatement plan. Results are to be recorded.

6.2.7. Contractor shall furnish all necessary test equipment.

Specification by US Army - Corp. of Engineers

Sector Gate Blocking Locations". The blocking method shall be such as to provide full contact of blocking with frame joints and to support the sector gates in a level configuration. Access for cleaning and painting of blocking locations shall be accomplished by jacking adjacent framing sufficiently for the removal of blocking. The centerline of jacking locations shall be not more than eight inches from the centerline of initial blocking locations. Each blocking location shall be securely jacked prior to removal of blocking at another location.

C1-6 REFERENCE DRAWINGS. A typical lock sector gate is shown on the reference drawings. Reference drawings may not accurately show actual field conditions. The Contractor will be responsible for assessing actual field conditions such as deposits of mud, shells, etc., and will not be relieved of the responsibility of performing in strict accordance with these specifications because of reference drawing inaccuracies.

C1-7 GENERAL REQUIREMENTS. Accessory items such as timbers, seals, bushings, handrails, walkway grating, and fender frames will be removed from sector gates by the Government prior to delivery to the Contractor's facility. Bushing housings will be covered by the Government with protective covers secured to the bushing housings. The protective covers shall not be removed during this contract. Approximate weight of each sector gate with accessory items removed is 120 tons.

C1-B CLEANING AND PAINTING.

C1-8.1 Sequence of Work. The surface area to be cleaned and painted shall be divided into specific areas of work by the Contractor. Cleaning and priming as specified herein of each area of work shall be completed prior to the start of cleaning of other areas. The Contract shall submit a plan for cleaning and priming to the Government for approval within ten-working-after award of this contract. After cleaning and priming of all areas has been completed, intermediate and top coats shall be applied as specified herein. After completion of topcoat application, blocking locations shall be cleaned and painted

C1-8.2 Cleaning. All surfaces of the sector gates with the exception of the face of rack gear teeth shall be cleaned in accordance with Steel Structures Painting Counsel (SSPC) - SP 10, "Near-White Metal Blast Cleaning. The face of rack gear teeth shall be cleaned in accordance With SSPC - SP 7, "Brush-Off Blast Cleaning". Prior to the application of paint, the-Face -of rack gear teeth shall be coated with grease to prevent the adhesion of paint. Care shall be exercised to prevent the application of grease to other surfaces, The existing paint was tested for total lead content and the lead content was determined to be 270 ppm. Removal of mud deposits, shells, and other foreign material shall be the responsibility of the Contractor. After completion of blast cleaning but prior to the application -of primer, all blast cleaned surfaces shall be pressure washed with a high-pressure washer at a minimum of 3000 psi. The Contractor shall notify the Government at least 48 hours prior to pressure washing. The wash water shall be of potable quality and shall have liquid soluble salt remover added by means of a siphon device or pressure pump capable of overcoming the inlet line pressure, or from a pre-mixed holding tank. The high pressure washer shall be equipped with a 0 to 15 degree nozzle and the nozzle shall be held a minimum of four inches to a maximum of 10 inches from the surface being washed. The liquid soluble salt remover shall be introduced at the approximate dilution of one US gallon per 100 US gallons of wash water. The operator shall apply the wash solution at the rate of approximately 100 US gallons of wash solution per 300 square feet of surface area. After washing a test area of approximately 25 square feet, the surface will be inspected by the Government inspector for soluble salt/chloride contaminants. The square foot application rate may be adjusted based on the test results and an additional test area inspected. This procedure may be repeated several times as required until the optimum application rate for washing of the remaining surfaces is determined by the Government inspector.

Surfaces shall not be flushed with untreated water after pressure washing. Liquid soluble salt remover shall be as manufactured by Chlor-Rid International Inc. or equal as approved by the Government. The contractor shall submit to the Government for approval within ten working days after award of this contract, specifications for the liquid soluble salt remover proposed. The liquid soluble salt remover shall be as recommended by the manufacturer of the paint furnished and shall be in accordance with the following requirements :

VOC:	None
PH:	3.3(+/-.2)
Application temperature:	33 degrees F to 250 degrees F
Components	Single Component

C108.3 Painting

C1-8.3.1 Materials. Painting shall be as manufactured by Wasser High Tech Coatings or equal as approved by the Government. The Contractor shall submit to the Government for approval within 10 working days after the award of this contract, specifications and application instructions for the paint proposed. Paint shall be in accordance with the following requirements:

Spot Primer Coat (Wasser MC-Zinc)

Generic Type:	Zinc-rich, single component, moisture-cure polyurethane
Vehicle Type:	Moisture-cured polyurethane
Volume solids:	60% minimum
Pigment Type:	Minimum 83% zinc dust in dry film
Dry film thickness	2-3 mils (50-75 microns)
VOC:	Not to exceed 2.8 lb/gal
Weight per gallon:	Minimum 23lb/gal

Full Primer Coat (Wasser MC-Zinc)

Generic Type:	Zinc-rich, single component, moisture-cure polyurethane
Vehicle Type:	Moisture-cured polyurethane
Volume solids:	60% minimum
Pigment Type:	Minimum 83% zinc dust in dry film

6. **Surface Cleaning and Preparation**

6.1. Removal of Oil and Grease

Visible deposits of oil or grease shall be removed by methods specified in SSPC-SP 1, Solvent Cleaning, from all surfaces to be painted.

6.2. Removal of Soluble Salts

6.2.1. A surface contamination analysis test (SCAT) shall be performed every 500 square feet by means of a Bresle Cell/SCAT Kit on all surfaces to be painted. Surfaces with chloride levels exceeding 3 $\mu g/cm^2$ **.** (micrograms per square centimeter) for submerged surfaces and 5 $\mu g/cm^2$ for exposed surfaces shall be treated with a liquid soluble salt remover equal to CHLOR*RID as manufactured by CHLOR*RID International, Chandler, AZ. Because the Bresle Patch Method will extract only 45 to 60 percent of the salts on tile surface, the Bresle test results shall be multiplied by 2 in determining the surface chloride level for comparison with the specified allowable levels. Results are to be recorded.

6.2.2 CHLOR*RID shall be applied by pressure washing at a minimum of 3,000 psi using one gallon of CHLOR*RID for each 100 gallons of potable water. A backflow preventive device shall be installed in the water supply line. The pressure washer is to be equipped with a 0 to 15 degree nozzle, which shall be held 4" to 10" from the surface.

6.2.3 The wash solution shall be applied initially at a rate of 600 to 800 square feet per 100 gallons. After an area of approximately I 00 square feet has been washed, the surface shall be re-tested for chloride contamination. Based on the test result, the application rate and the dilution ratio of the wash solution may require adjustment in order to attain the specified degree of cleanliness.

6.2.4 Any test area that is in excess of the acceptable chloride level shall be re-washed at an adjusted application rate and/or dilution ratio so as to achieve a clean surface.

6.2.5 As the work progresses, soluble chloride level test are to be performed in the prescribed manner every 500 square feet to ascertain cleanliness to meet the required level. Results are to be recorded.

6.2.6 Pressure washing shall be controlled per SSPC Class 3W. All wash solution used shall be collected, filtered, and tested to ensure that the water meets Federal, Georgia, and local limits for cleanliness and toxic metals prior to disposal, which shall be in accordance with the approved lead abatement plan. Results are to be recorded.

6.2.7. Contractor shall furnish all necessary test equipment.

6.3 Raw Water Pump Station Building Exterior

6.3.1 Oil and grease deposits shall be removed in accordance with paragraph 6.1

6.3.2 The steel panels and other metal surfaces to be painted shall be lightly abraded using rotary power tools (coated abrasives, wire brushes, and/or non-woven abrasives) equipped with H.E.P.A. (High Efficiency Particulate Air) vacuum attachments. Material removed shall be tested and properly disposed of in accordance with the approved lead abatement plan. Visible corrosion and corrosion by-products and barrier deposits shall be removed using H.E.P.A – vacuum-equipped power tool cleaning (SSPC-SP3).

6.3.3. Prior to applying the specified coatings, all surfaces to be painted shall be cleaned by pressure washing at a minimum of 3,000 psi. All surfaces shall be SCAT tested and soluble salts shall be removed in accordance with paragraph 6.2.

6.4 Pipes, Valves, Fittings, Structural Members, Handrails, Light Poles, Ladders, Conduits, etc

These surfaces may be cleaned by abrasive blasting or by hydroblasting (ultrahigh-pressure water jetting) prior to recoating

6.4.1. Cleaning by Abrasive Blasting

6.4.1.1 Before abrasive blast cleaning, visible deposits of oil or grease shall be removed in accordance with paragraph 6.1.

6.4.1.2 Abrasive shall contain less than 5 percent free silica. Copper slag abrasive shall not be used.

6.4.1.3 Blastox or approved equal shall be pre-blended with the abrasive in accordance with the manufacturer's instruction so as to pre-stablize lead-containing wastes and render them permanently non-hazardous.

6.4.1.4 Surfaces to be coated shall receive a sweep blast to remove all delaminated coating, corrosion products, or other barrier materials. Surfaces, including corroded metal surfaces, shall then be SCAT tested and soluble salts shall be removed in accordance with paragraph 6.2.

6.4.1.5 Following the procedures in paragraph 6.4.1.4, surfaces shall be cleaned to achieve an SSPC-SP 6 Commercial Blast Cleaning Standard. Abrasive blast profile shall be not less than 1.0 or exceed 2.0 mils. Particular attention shall be given to edges, crevices, nuts, bolts, rivets, and weld seams.

6.4.1.6 Following blast cleaning and before applying the specified coatings, all surfaces to be painted shall be SCAT tested and soluble salts shall be removed in accordance with paragraph 6.2.

SURFACE PREPARATION AND COATING SYSTEM
FOR THE PRESIDENTIAL PLACE CONDOMINIUM
BOCA RATON, FLORIDA

Specification by Tnemec Paint Company

1.0 ***SCOPE***

The intent is to remove the marginally adhering system presently showing disbondment from aluminum surfaces- Those surfaces include aluminum handrails and stanchions of the balconies and guard gates. Also included in the scope is the preparation of the aluminum surface, and the surface of the epoxy/ urethane system found to be well adhering. After preparation, the aluminum surface will be spot primed, and the entire surface coated in a color matched to the present color on the structure. Because of the location of the project, it is important that all surfaces are clean just before priming and just prior to top coating. It must be recognized that contamination from "salt air" is likely. Areas need to be cleaned of the residue and/or protected during the painting process.

2.0 ***SURFACE PREPARATION***

2.0.1 Remove all loose/marginally adhering materials by any means of hand or power tool cleaning feasible. Clean as per the spirit of SSPC-SP2 Hand Tool Cleaning or SSPC.5113 Power Tool Cleaning.

2.0.2 Also remove insoluble contaminants, corrosion by-products, or corrosion cakes by hand or power tool cleaning.

2.0.3 Sand the entire aluminum piece to etch/provide tooth on the surface of the well adhering epoxy/urethane and the surface of the aluminum. Feather edges to a smooth transition.

Note: We cannot emphasize enough the importance of cleaning the prevent substrate, the prepared aluminum, and between coats particularly the present surface substrate. Salt air has contaminated the surfaces of the present substrates. It should be removed before commencing with 2.0.1. We do not want to limit the contractor in the methods of cleaning; we are thinking in terms of power washing with detergent power washing with a soluble salt remover, power washing supplemented with scrubbing, using stiff bristle brushes, or scrubbing with detergent and/or the soluble salt remover.

3.0 ***COATING SYSTEM***

3.0.1 Spot prime all bare aluminum with one coat of 66-color at 2.0 to 3.0 mils, Thin as necessary up to 10 percent (10%) with 41-39 Thinner.

3.0.2 Topcoat the entire aluminum piece with one coat of 73-color at 2.5 to 3.5 mils. Thin as necessary up to 10 percent (10%) with 41-39 Thinner.

WASSER
HIGH-TECH COATINGS

September 11, 1996

VIA FAX 27-21-852-7104
Mr. John Cremer
Pro-Ex International cc/TA
Wasser S.A.

Re: Vessel Atlantic Pioneer

Dear John:

Sorry for the delay, please use the following specification.

Painting specification for Atlantic Pioneer, wooden-hall & deck:

1.0 Surface Preparation: Remove all grease and oil products via degreasing and or steam cleaning methods, or use Wasser Paint-Prep Degreaser, accordingly to attached instruction sheet. Evacuate via rinse and vacuum or pump methods. Now remove existing paint via hydro-blast or sandblast or wet-abrasive blast cleaning technique. Evacuate spent abrasives, paint chips and all other deleterious materials.

Remove salt-contamination from inside wooden surfaces by tap-water rinse and Chlor-Rid™ solution starting with a ratio of 1 part Chlor-Rid™ to 100 parts water (i.e. 1 liter to 100 liters), following manufacturers recommendations, and a rate of 300-600 PT **2/** gallon. Do this twice, if salt contamination is visually apparent, or if readings taken are in excess of 3-5 micrograms per cm^2.

Allow surfaces to dry completely for 12-24 hours. Blow down surfaces prior to application to remove any surface dust or dirt.

2.0 Application:

2.1 Hull & Deck

Sealer: MC-Tar, thinned 50% to aid in penetration, at 8-10 mils WFT (2.5-3 mils DFT). Allow 3-4 hours cure. Sand any bubbles down to sound film only, do not remove.

Topcoat: MC-Tar, thinned 10% maximum. Apply at 14-18 mils WFT (8-10 mils DFT), Allow 6-8 hours cure**,** but only until **slightly tacky (this is required for antifouling).**

8041 South 228th Street o Bldg. f 1 03 9 Kent, Washington 98032 - (206) 860-2967 o Fax (206) 850-3098

A. Description of the Change: The contract is hereby modified to incorporate the following full and complete equitable adjustment for the changed contract work as described below:

(1) The Contractor shall: Provide an elastomeric texture coating for top-of-dam concrete.

(a) The areas to be treated are:
Roadway curbs (not the roadway itself)
Inside face of parapet walls
Top of parapet walls
Inside spaces of decorative features on parapet walls
Walking surface on both catwalks to the intake towers
Inside face of catwalk parapet walls
Top of catwalk parapet walls
Inside spaces of decorative features on catwalk parapet walls

(b) Prior to applying the elastomeric texture coating, treat all areas to receive the coating with a liquid soluble salt remover, equal to "CHLOR*RID" International Inc. Chandler, Arizona. Apply as per manufacturer instructions.

(c) Apply the elastomeric texture coating to the above areas. Use the same product used for the pylon restoration. Apply as per manufacturer instructions.

(d) The color of the elastomeric texture coating shall be No. 3388 of Benjamin Moore and Company Industrial Maintenance Coatings.

(2) Any and all claims, requests for equitable adjustment or other disputes associated with this contract change identified by (1) above, unless properly excepted on the release.

(3) Any and all impact costs, including costs involving delays and disruptions or other associated direct or indirect costs associated with this contract change identified by (1) above.

The Contractor shall furnish all necessary labor, equipment and materials required for completion of the work by this change.

Rocon, Inc
140 Blackwood-Barnsboro Road
Sewell, New Jersey 08080

FAX TRANSMITTAL

Date:

Total Number of Pages : 1
(including this sheet)

TO: Enviro Coat Systems

Fax Number: 602-821-0364

Attention: Jerry

From: Bud Rossi

RE: Mobil Oil Paulsboro N.J.

Step 2 – Pressure Wash
After the initial brush blast operation, continue the surface preparation by pressure washing the part's internal surfaces with a combination of CHLOR*RID and water. Follow the manufacturer's suggested mix ratio. The part shall be washed until the part's internal surfaces have soluble chloride salt levels of under 7.5 micrograms per square centimeter. The CHLOR*RID is available from Enviro Coat Systems in Chandler, AZ. There telephone number is 602-821-0039.

2.0.5 Opening on machinery, instruments, etc, shall be completely sealed before cleaning is started. Special attention shall be given to sealing of bearings housings on all rotating equipment.

2.0.6 Unless otherwise specified in this specification or by Owner, anchor profile height shall be approximately 1/3 of specified dry film thickness of prime coat.

2.0.7 Surfaces to be coated shall be cleaned in accordance with the surface preparation specified before application of coating. Oil and grease shall be removed by any solvent wiping detergent cleaning or other Owner approved methods prior to mechanical surface preparation.

2.0.8 Surfaces to be coated shall be dust free, dry and clean of oil and grease, and shall be in proper condition to receive required to finish.

2.0.9 When either acid etching or abrasive blasting is required, the Contractor shall coordinate the activities with Owner sufficiently in advance such that work schedules may be coordinate with plant operations.

2.0.10 All oil, grease, salts, chlorides, sulfides and all other contaminates shall be removed in accordance with one of the following methods:

2.0.10.1 CHLOR*RID specification using dry abrasive blast followed by pressure wash with CHLOR*RID followed by another dry abrasive blast. Abrasive blast the entire area to be coated with a near white blast per SSPC-SP-10 to remove all delaminated coating, corrosion byproducts or other barrier materials. Barrier deposits left behind will form a mask over the salts and will prevent their removal. After sweep blasting procedures are completed, pressure wash with a high pressure washer at a minimum of 3000 PSI. The wash water is to be of potable quality and CHLOR*RID is to be added by means of a siphon device or pressure pump capable of overcoming the inlet line pressure, or from a pre-mixed holding tank. This is necessary to assure the introduction of the CHLOR*RID chemistry. A backflow prevention device shall be installed in the supply line prior to the chemical introduction location. CHLOR*RID is to be introduced at the approximate dilution of 1 US gallon per 100 US gallons of wash water. The operator shall apply the wash solution at the rate of approximately 300 square feet of surface area per 100 US gallons of wash solution. The high pressure washer is to be equipped with a 0 to 15 degree nozzle and the nozzle is to be held a minimum of 4" to a maximum of 10" from the surface being washed. When an area of approximately 25 square feet has been washed, the surface is to be tested by the contractor for soluble salt contamination. If the contamination is below the required level the contractor can proceed with washing the entire work area. Any test area that is confirmed to be in excess of the acceptable level of soluble salts is to be rewashed at a higher application rate to achieve a clean surface. The acceptable level of soluble salts shall be 3 micrograms per square centimeter. After soluble salt contaminants are removed to the required specified level, proceed with the final abrasive blast to white metal per SSPC-SP-5 standards for final surface preparation. The minimum profile shall be 2 mils deep and jagged in nature.

2.0.10.2 CHLOR*RID specification using ahigh pressure wash with CHLOR*RID followed by a dry abrasive blast. Pressure wash with a high pressure washer at a minimum of 10,000 PSI. The wash water is to be of potable quality and CHLOR*RID is to be added by means of a siphon device or pressure pump capable of overcoming the inlet line pressure, or from a pre-mixed holding tank. This is necessary to assure the introduction of the CHLOR*RID chemistry. A backflow prevention device shall be installed in the supply line prior to the chemical introduction location. CHLOR*RID is to be introduced at the approximate dilution of 1 US gallon per 100 US gallons of wash water. The operator shall apply the wash solution at the rate of approximately 300 square feet of surface area per 100 US gallons of wash solution.