22.1 Painting - General

Cleaning and painting a bridge structure has become an expensive operation. There is glowing emphasis on environmental, health and safety related issues. Consequently, it is more important now than ever to obtain the longest possible life from bridge coatings. Like all quality products, bridge coatings require adequate specifications, high quality materials, proper usage, maintenance of equipment, and effective inspection.

Most of the premature coating failures are caused by either deficient surface preparation or coating application. This makes it clear that the Bridge Coating Inspector is a vital part of the bridge painting process. The Bridge Coating Inspector diligently carrying out his/her duties can help assure that the painting project that he/she inspects will perform throughout its expected service life.

22.2 Environmental Constraints

The following emission levels are specified in the Special Provisions and detailed in the SSPC-Guide 6:

- Minimum percentage (%) of blasting spoil must be recovered.
- Class of containment required.
- Method to monitor the quantity of emissions escaping the enclosure.

- The Bridge Coating Inspector should be aware of the environmental constraints governing the project and ensure that paint being removed and abrasive material used to accomplish the removal is contained and properly and safely disposed of in accordance with the applicable laws and regulations.

- The Contractor is required to comply with all Federal, Provincial and Municipal air, soil and water pollution control regulations and has provision to:
  - Identify background contamination levels
  - Prevent noise, air, soil, and water pollution/contamination.
  - Contain and cleanup paint, fuel, oil and chemical leak or spill.

- When working on structures over water inhabited by fish, the Contractor shall ensure that deleterious material does not enter into waters frequented by fish.
  - Detergent used to wash bridge structures shall be biodegradable not harmful to fish.
  - Paint debris and other solids washed from the bridge structure require filtering out.
  - Deicing chemical washed from the bridge structure should be allowed to settle.
  - Siltation of water shall be avoided.

- The Contractor is responsible to obtain Alberta Environment approval to withdraw water from the stream.

- The Contractor shall take necessary precaution to fully protect the environment, the workers, traffic, parked vehicles, adjacent property and other portions of the bridge structure from damage caused by cleaning debris, blast cleaning materials, dirt, dust equipment oils, solvent, acids, burning matter and paint drifts, drops, or spray and spatter.

- If the Contractor's activities contravene the environmental permit conditions, the Bridge Coating Inspector shall require the Contractor to cease operations and he shall immediately contact the Bridge Project Engineer.

22.3 Safety

Refer to Alberta's Occupational Health and Safety Regulation, General Safety Requirements (to replace the existing General Safety Regulation) for specific approved safety requirements:

- Part 3 Health and Safety Plan
- Part 4 Hazard Assessment, Elimination and Control
- Part 5 Specifications and Certifications
- Part 7 Cranes and Hoists
- Part 9 Entrances, Walkways, Stairways and Ladders
- Part 10 Fall Protection
- Part 11 Fire and Explosion Hazards
- Part 12 Lifting and Handling Loads
- Part 15 Personal Protective Equipment
- Part 16 Powered Mobile Equipment
- Part 19 Sanitary and Washing Facilities
- Part 20 Scaffolds and Temporary Work Platforms
- Part 21 Tools, Equipment and Machinery

- The Contractor is responsible to ensure that all public and occupational health and safety requirements are met and shall:
  - Develop an appropriate traffic accommodation strategy through the work zone,
  - Develop and implement a Lead Health and Safety Program involving lead paint removal.

- The Bridge Coating Inspector is responsible to point out any safety violations that he/she is aware of to the Contractor, and to take necessary action where there is non-compliance in accordance with the Department Policies contained in "Section D - Safety" of this manual.

22.4 Bridge Coating Inspector's Record

The Bridge Coating Inspector shall keep an accurate record of the following information:

- Environmental conditions:
  - Ambient air temperature
  - Steel surface temperature
  - Dew point
  - Wind

- Record of quality control test results from Contractor and any independent quality assurance testing pertaining to:
  - Abrasive blasting media sieve analysis, petrographic/contaminant analysis, etc
  - Material data sheets and material safety data sheets
  - Color, gloss, solids content, IR and EDXA paint testing for each batch.
  - Background contamination levels of air, soil and water
  - Chloride levels after wash cleaning
  - Surface profile (replica tape) after blast cleaning
  - Abrasive blasting spoil recovery calculation
  - Toxic Characteristic Leachate Procedure tests (TCLP)
  - Record location of each Wet Film Thickness (WFT) taken, rejected or accepted
  - Record location of each Dry Film Thickness (DFT) taken, rejected or accepted

- Agreements between the Contractor and private landowners pertaining to disposal areas for hazardous and non-hazardous materials.

- Traffic disruptions or minor traffic mishaps through the work zone.

22.5 Pre-Painting Procedures

As with any assignment, the first step is to become familiar with the scope of the project by reviewing the plans, specifications and any special provisions for the project. In addition, the Bridge Coating Inspector should become familiar with the project site. The areas should be noted may be difficult for equipment access, sensitive areas such as homes, schools, playground, and other areas of public activities. Painting operations generate dust, solvent fumes, and noise. Every effort should be made to minimize the impact of these activities on the surrounding community. This can best be accomplished through the cooperative effort between the Contractor and the community itself.

The Contractor's schedule should be reviewed, noting when weather conditions could complicate the proposed work. Concerns and questions should be brought to the attention of the Bridge Project Engineer. Some issues may need to be referred to the Project Sponsor.

22.5.1 Existing Bridge Structure

The Bridge Coating Inspector should inspect the bridge structure to be painted for the existing coating type, thickness, adhesion, localized rust and presence of mill scale, for insight into effort required to remove the existing paint which could help forecast or justify various rates of paint application progress.

Localized rust areas are shown to be prone to premature coating failure. Extra effort should be made to ensure that proper surface preparation and coating thickness are achieved. The presence of mill scale under the existing paint indicates a potential need for additional surface preparation.

22.5.2 Bridge Coating Inspector's Equipment

The Bridge Coating Inspector should inventory, inspect and calibrate inspection equipment to make sure they are in good working order. Backup equipment and batteries should be readily available.

22.5.3 Contractor's Proposed Schedule and Methodology

From reviewing the Contractor's schedule and methodology, the Bridge Coating Inspector can verify that the Contractor understands the magnitude of the work is prepared to do the work in a satisfactory manner.

- The Contractor should have a health and safety plan for all projects involving lead paint removal. The Bridge Coating Inspector should discuss with the Contractor the following:

- Monitoring and sampling requirements.

- The manner in which the Contractor is planning to protect his workers and the environment from contamination including shower/washing facilities, work clothing, debris containment, and handling of emergencies.

- Proper location of the Contractor's recycling and dust collection and storage equipment out of the way of potential vehicle collisions. The Contractor should be aware that generally, the lead-contaminated waste could not be stored on site for more than 90 days.

- Any concerns with the work schedule and mitigating measures if required.

22.5.4 Bridge Coating Inspector's Safety and Proper Access

The Contractor shall provide safe and proper access for the Bridge Coating Inspector at all times. Inspection staff should not be expected to risk their safety at any time on the job site.

22.5.5 Inspection and Measurements

The Bridge Coating Inspector should discuss with the Contractor, the inspection and measurement procedures, especially those related to payment. Payment should not be made for partially completed work. This will encourage the Contractor to complete the work as he progresses and to immediately correct any deficiencies or sub-standard work. The Bridge Coating Inspector should:

- Inform the Contractor of the inspection control points, that is, the things that must be inspected and approved before he is allowed to proceed. The control points are usually:
  - After a water blast and SP-1 cleaning
  - After the completion of the surface preparation
  - After individual paint coating applications cured

- Identify potential inaccessible areas and discuss with Contractor method of acceptable treatment.

22.5.6 Product Information

The Contractor shall provide copies of the Product Data Sheet and Material Safety Data Sheet for the paint system and any solvent that will be used during the project. These sheets contain the information on the materials to be used and are necessary to complete the material inspection.

22.5.7 Visual Standard for Surface Preparation

A good practice is to have the Contractor blast a section of the bridge or a separate steel plate and seal with clear coat. This can be used as an on-site reference for the rest of the project.

22.5.8 Documentation

Document all discussions and instructions given at the pre-construction meeting and particular any agreements that were reached that may modify the contract proposal or specifications requirements. An effective way of doing so is the signing of minutes by all attendance, including an authorized representative of the Contractor. All in attendance should receive a copy of the minutes.

22.6 Inspection of the Painting Procedures

22.6.1 Inspecting the Enclosure

A containment system, or enclosure, is needed to prevent the debris generated during surface preparation from entering the environment and to facilitate its gathering and disposal. Enclosures are generally made up of combinations of cover panels, scaffolds, supports, screens and tarps. The complexity of any given enclosure will vary depending on the method of paint removal being employed and the degree of surface preparation that is specified. For simple scraping operation ground-covering tarps may be sufficient while for a blasting operation, the enclosure could be a designed structure with a negative pressure ventilation system.

The Bridge Coating Inspector should check the adequacy of the containment system for capable of achieving its purposes:

- The work area should be clearly distinguishable from the surroundings.
- Tarps should be overlapped with seams fastened and should be in good condition and free of holes.
- During blasting operations with negative pressure, the tarps should have a concave inward appearance.

- The containment should be tightly sealed to prevent any dust from escaping. Check the ground around the containment.

- Dust collectors should be operated at the rated capacity or at a capacity consistent with the ventilation design of the containment system.

- The containment must be able to support workers, construction loads, spent abrasive loads and wind loads without placing undue stress on the bridge structure. Assure that the containment is constructed in accordance with an approved plan stamped by a professional engineer.

22.6.2 Assessment of Containment Design and Function in the Field

Containment for abrasive blast and other paint removal operations are designed to protect the surrounding environment and the public from debris and potentially hazardous material during paint removal. These containment structures are intended to help contain and collect the lead-containing debris for proper treatment and disposal.

- The standard features of containment systems are described in detail in the SSPC Guide 6

- The purpose of the containment is to do a conscientious job in containing and collecting debris. While a 100% containment is sometimes not practical. Close to 100% containment can be achieved with appropriate specifications, designs and cooperation between the Owner and the Contractor.

- Containment of abrasive blast involving lead is mandatory and is required by law.

- Although there is no specific rule governing the “fugitive emissions” of lead containing dust, the emissions can be controlled by properly designing and maintaining the containment and ventilation system.

22.6.3 Components of a Containment System

Support Structure - Containment can be a scaffold from the ground or rigged to hang from the bridge structure. The key issues to consider are structural integrity under wind load, abrasive waste load, and dynamic loads on the bridge. Access, air movement, and visibility should also be considered.

Ventilation – Proper ventilation is necessary to facilitate workers and inspectors to see within the containment structure. Ventilation also reduces the concentration of lead dust in the work environment and makes clean up operations prior to painting easier.

Lighting – Proper lighting is often neglected. Inadequate lighting poses obvious safety concerns as it makes proper surface preparation and painting almost impossible.

Debris Handling – The Manner in which spent debris is collected is a key element to the quality and timeliness of the job. It is critical to clear debris and dust prior to paint application. Debris handling is a major part of a bridge painting project.

Air Movement – For work inside an enclosure air movement is necessary to avoid a build up of dust. High dust concentrations impair visibility and increase hazardous exposure levels to workers. Air movement is dependent upon the capacity of dust collectors, the volume of air input by makeup fans and blast nozzles, and interference to airflow caused by the bridge structure itself.

Debris Storage – Lead contaminated paint debris containing more than 5 PPM of lead is classified as hazardous material. It is subjected to strict disposal requirements. This hazardous material may be temporarily stored at site in a location inaccessible to the public and not a risk of being hit by traffic.

22.6.4 Bridge Washing

Prior to the abrasive blast cleaning, the entire area to be coated shall be washed clean of road spatter, chloride and other surface contaminates using water of sufficient pressure and volume.

Inspection of wash cleaning will be done by testing for the chloride levels on the cleaned steel and runoff water at the lower extremities of the steel being cleaned. Chloride contamination of the cleaned surface shall be less than that specified in the Special Provisions (normally chloride level less than 30 mg/m^2 is acceptable).

22.6.5 Surface Preparation

The Society for Protective Coatings (SSPC) has developed a nomenclature for the different types of surface preparation methods:

- SP-1 denotes “solvent” cleaning and can be referred to solvent wiping, water washing, or steam cleaning. The surface is cleaned to remove oil, grease, etc.

  - Lint-free clean rags and solvent will be used to assess the acceptability of the surface.

- SP-2 denotes hand tool cleaning in small areas. Hand tools are used to remove loose mill scale, loose rust, loose or otherwise defective paint, weld flux, slag and spatter. This is done either by brushing, sanding, chipping, or scraping the surface. Tightly adhering rust, mill scale and paint are allowed to remain.

- A dull putty knife shall be used to assess the acceptability of the surface.

- SP-3 denotes power tool cleaning. This is similar to SP-2 except power tools are used to clean larger areas.

  - A dull putty knife shall be used to assess the acceptability of the surface.

- SP-7 denotes abrasive brush off blast cleaning. The resulting surface should be free of oil, grease, dirt, loose mill scale, loose rusts, and loose coatings.

- SP-6 denotes abrasive commercial blast cleaning. The resulting surface should be free of oil, grease, dirt, all rust, mill scale, paint and foreign matter except for slight shadows, streaks, or discoloration caused by rust stains, mill scale stains and tight residue of previous coatings.

- SP-10 denotes abrasive near-white blast cleaning. The resulting surface should be free of oil, grease, dirt, all rust, mill scale, paint and foreign matter leaving only slight stains from rust and mill scale.

- SP-5 denotes abrasive white metal blast cleaning. The resulting surface should be free of oil, grease, dirt, all rust, mill scale, paint and foreign matter leaving only a uniform grey-white color.

Blast cleaning is a very expensive time consuming component of the painting job. Inspection and acceptance can be a source of conflict.

Visual and written standards are often interpreted differently by contractors and inspectors.

It may be difficult to achieve an absolute standard of cleanliness at area of difficult access, rivets and fasteners, and deep pitted corrosion.

Ensure that the contractor is doing a conscientious job of achieving the standards in all areas.

Establish a good working relationship with the contractor and discuss project expectations up-front avoid disputes.

The anchor pattern needs to be checked to ensure that proper paint adhesion will occur. Profile inspection requires the use of a micrometer and replica impression tape. Comparison coupons can also be used for a qualitative visual comparison of the profile.

22.6.6 Material/Pre-Painting

- Shelf life is considered as the length of time, from date of manufacture, that paint will remain usable when stored in its container. The date printed on the can should be checked to make sure the shelf life of paint has not expired. Consequences of exceeding the shelf life include:
  - Gelling
  - Odor
  - Changes in viscosity
  - Formation of lumps
  - Pigment settling
  - Colors separation
  - Liquids separation.

- Paint should be stored in a climate-controlled environment. The contractor's paint storage site should be equipped with a high/low thermometer for monitoring the required temperature range for proper paint storage ($10^{o}C – 25^{o}C$).

- Paint storage higher than the acceptable temperature range can cause changes in viscosity and shelf life.
  - Water-based paint will spoil when stored below freezing temperatures.
  - Solvent-based paint will gel or become flammable or explosive when stored at high temperatures.

- Pot life is considered as the length of time that paint is useful after opening its original package for single component systems, and for two component systems, the length of time after it has been mixed. Pot life is temperature dependent. Exceeding the pot life can result in sagging of the fresh paint along with poor performance attributed to film porosity and poor paint adhesion.

- The Bridge Coating Inspector should witness and document the mixing operation.
  - All paint must be thoroughly mixed in a clean container.
  - The bottom of the original container should be checked for evidence of unmixed pigment.
  - Unused paint should not be left in buckets or spray pots, Instead it should be placed in a clean container and re-mixed prior to use.

- Thinner is added to paint to achieve optimum viscosity for proper paint application and is not always necessary. The Product Data Sheet will indicate the specific type and maximum amount of thinner to be used.

- The Bridge Coating Inspector should witness and document any addition of thinner.
  - Adding too much thinner can prevent proper application thickness and cure of the paint may result in the mixture exceeding acceptable limits for Volatile Organic Compounds (VOC).

- Drying time of paint refers to the length of time a coating is sensitive to local damage. The Drying Schedule on the Product Data Sheet indicates how long the paint is:
  - Dry to touch – the paint will not collect dust.
  - Dry to tack free – the paint does not feel sticky and can be handled without damage.
  - Dry to re-coat – time the paint needs to dry until applying the next coat of paint.

- Curing time of paint refers to the length of time required to reach structural integrity and ready for service.

- Paint drying time varies significantly with temperature.
  - Re-coating before enough time has passed can seriously affect the curing and integrity of the layer being over-coated.
  - Some paint has a maximum time to re-coat. Exceeding the maximum time limit can jeopardize adherence of the topcoat.

22.7 Painting

Once the level of surface preparation has been achieved and the quality of the coating system has been verified, the contractor can proceed to paint. To prevent "rust-back" of the cleaned surface, the first coat of paint should be applied as soon as possible after blast cleaning. Painting should begin at a practical time to avoid weather changes that could cause significant changes to the surface condition of the steel.

22.7.1 Environmental Conditions

The Bridge Coating Inspector should record ambient conditions every 4 hours to ensure that the paint is applied and allowed to dry and cure under reasonable environmental conditions. Excessive high or low temperatures or the presence of surface moisture, including frost, can have a detrimental effect on the performance of the paint.

- Ambient temperature range to ensure proper curing is 4^{o}C to 38^{o}C.

- Maximum permissible relative humidity is generally limited to 85%. A sling psychrometer is used to determine the relative humidity.

- Maximum steel temperature should not exceed 52^{o}C during paint application and should be at least 3^{o}C higher than the dew point. The dew point spread is used to ensure no moisture is present on the steel prior to paint application.

- Heavy winds can cause airborne overspray to be carried onto adjacent properties and result in premature drying of the paint. If heavy winds are present, it may be prudent to delay the painting operation or restrict spray application.

22.7.2 Application

The following are "good practice scenarios" for spray applications:

- The spray pot should have two pressure regulators, one for pot pressure and one for atomization pressure. The pot pressure regulator should be high enough to provide enough material to the spray gun. The pressure regulator should be set just high enough to atomize the material. Too high a setting will result in the paint drying before it hits the surface. Too low a setting will cause the paint to clump and could clog the gun.

- The gun should be held perpendicular to the work surface and approximately 45cm away from the work surface. Angling the gun or holding it too far away could result in the paint drying before it hits the surface. The spray pattern should overlap the previous pass by approximately 50%, with the stroke length of each pass 45 to 45cm. A good paint applicator will make a pass of the spray gun by moving his arm and body rather than rotating his wrist to "fan" the gun.

- All unsightly runs, drips, or pinholes should be repaired immediately.

Brush, roller and mitt application:

- The material used in brushes or rollers should be tested with the paint to ensure that they are chemically compatible with the paint being used. In general natural bristled brushes are recommended for solvent-based paints, while synthetic bristles work better for waterborne paints. The nap of the roller should be *as* recommended by the coating manufacturer for the desired finish.

- Brushing should be done as neatly as possible to ensure a uniform coating thickness. Rolling should be done in a "W" pattern and finished by rolling in one direction. Rolling of the coating out over too large of an area should be avoided as this can cause thin spots or holidays.

- All unsightly runs, drips, or pinholes should be repaired immediately.

A good paint applicator will periodically check the wet film thickness (WFT due to variances to the spray pressure, the "load" of paint on the brush or roller, and the orientation of the surface being painted.

It is important to check the dry film thickness after application of each coat as this is the most direct measure of the contractor's work. The thickness should be checked at five locations for every 9 m^2. Three separate readings should be taken at each location. Each reading should be not less than 80% of the specific thickness nor greater than 150% of the specified thickness. The thickness at any location should be reported as the average of the three tests.

It is important to monitor thickness for areas too thin or too thick, as It is not necessarily true that “thicker is better”. Excessive thick applications can cause the coating to sag or achieve full cure.

22.8 Checklist

22.8.1 Bridge Coating Inspector’s Responsibilities

- Review specifications, drawings and special provisions.
- Become familiar with the project site, including the surrounding area.
- Inspect the bridge structure for existing coating type, thickness, adhesion and presence of mill scale.
- Inventory and calibrate inspection equipment.
- Attend pre-construction meeting.
- Obtain all relevant Material Safety Data Sheets and be familiar with the information they contain.
- Ensure ladders and scaffolding are in good condition and that they provide safe access to all necessary areas. Any required alternations should be immediately brought to the Contractor’s attention.
- During blasting operations, check that no dust leaks are visible outside the enclosure. If working inside the enclosure, ensure appropriate breathing apparatus has been provided.
- During blasting ensure that no lead debris is present on the ground or in any waterways.
- Ensure hazardous waste is stored away from public access and in an area where it is not vulnerable to being struck by traffic.
- Record weather conditions.
- Ensure Contractor’s work schedule and work procedure conforms to the contractual requirements.
- Ensure Contractor complies with Environmental Permit conditions and Occupational Health and Safety requirements.

- Review containment system and methods of spoil collection and acceptability of disposal areas.

- Communicate any concerns or questions to the Bridge Project Engineer and as required. Refer issues to the Project Sponsor.

22.8.2 Bridge Project Engineer's Responsibilities

- The Bridge Project Engineer will address the following issues in the pre-construction meeting:

- The nature of the work and its effects on the surroundings, including possible mitigation measures.

- Contractor's method of operation, including equipment and personnel.

- Contractor's schedule – discuss weather related concerns.

- Contractor's Traffic Accommodation Strategy.

- Contractor's Lead Health and Safety Program if lead paint is present.

- Proper storage of material and equipment.

- Location of recycling, dust collection and storage of equipment.

- Inspector safety, including provision of safe access and lead contamination.

- Inspection and measurement procedures, including control points.

- Identification and treatment of inaccessible areas.

- Product Data Sheets and Material Safety Data Sheets for all relevant materials.

- Visual standards to be met – Discuss Contractor's preparation of field reference sections.

SECTION 22

PAINTING

22-1 Dust collection unit

22-4 Moisture scrubber is used to remove moisture from air supplied by air compressor

22-2 Sand pot

22-5 Sandblasting spoil vacuum recovery units

22-3 Air compressor and fuel tank

22-6 Check concentratio n of chloride after washing

SECTION 22

PAINTING

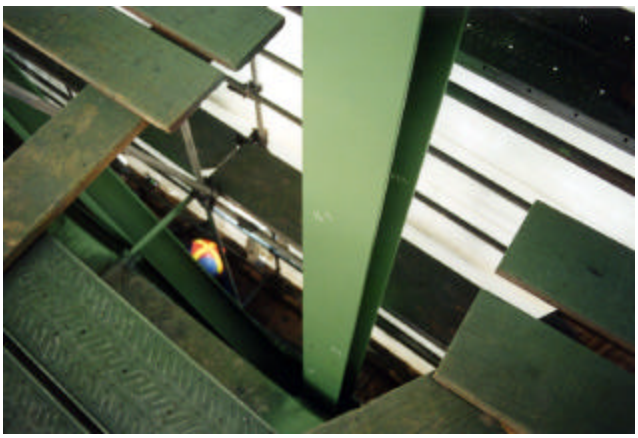
22-7 Dust collection unit parked beside shrink-wrap containment structure

22-10 Tube and clamp scaffold platform on headslope

22-8 Shrink-wrap containment structure

22-11 Inside of shrink-wrap containment structure

22-9 Shrink-wrap plastic opening for fresh air circulation



22-12 Scaffold planking provide excellent access to all steel areas

SECTION 22

PAINTING

22-13 Polyethylene sheet wrapped around 1000w light to produce softer white light to avoid blinding the oncoming traffic

22-15 Dismantle tube and clamp scaffolding

22-14 Non-paint area (curb concrete fascia) is protected against paint overspray with polyethylene sheet

22-16 Traffic is stopped for the dismantling of scaffolding

22-17 Profile view of freshly painted pony truss bridge

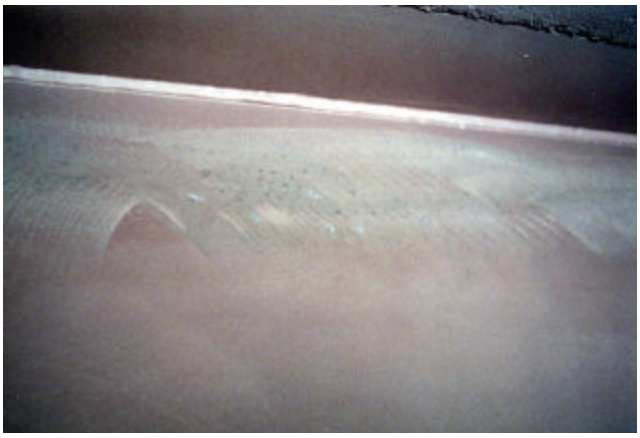
SECTION 22

PAINTING

22-18 Galvanized bridgerail brackets are separated from painted steel by a neoprene gasket

22-19 Galvanized bridgerail installed on brackets separated by neoprene gaskets

22-20 Conscientious Contractor sandblasted and painted deck drain



22-21 Blistering defects removed by grinding

22-22 Clear tarp, tube and clamp scaffolding containment structure

22-23 Multiple air hoses setup along curb for accessing various portions of the bridge

SECTION 22

PAINTING

22-24 Site setup

22-27 Air receiver and air dryer

22-25 Air compressors

22-28 Sand pot, air compressor and air dryer

22-26 Air dryer and traffic control lights

22-29 Manlift

SECTION 22

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22-30 Custom platform swing arm

22-32 Staircase access erected inside tube and clamp scaffolding

22-31 Scaffold erection

22-33 Custom platform

22-34 Inside custom platform

SECTION 22

PAINTING

22-35 Tube and clamp scaffolding at approach spans

22-37 Scaffold erection by helicopter

22-36 Tube and clamp scaffolding, reinforced tarp containment set up at lower portion of tower

22-38 Plywood end panels containment structure are also used to protect steel surfaces not require painting

SECTION 22

PAINTING

22-39 Local humidity

22-42 Washing

22-40 Heater

22-43 Scat kit used to check cleanliness after washing

22-41 Pre-wash blasting

22-44 Beam blasted to SP6. Note sandblast spoil accumulated on platform floor

SECTION 22

PAINTING

22-45 Profile meter and tape for checking anchor pattern produced by sandblasting

22-48 Vacuuming sandblast spoil from platform floor

22-46 Partial sandblasting

22-49 Pallet scale used to weigh sandblasting spoil contained in the bulk bags

22-47 Bolt/nut areas are difficult to blast clean

22-50 Paint storage in temperature control trailer

SECTION 22

PAINTING

22-51 Paint pots

22-54 Prime coat striping prior to prime coating

22-52 Painter setting up inside paint platform

22-55 Intermediate coat striping prior to intermediate coating

22-53 Protection of non-paint surfaces against paint overspray – clear polyethylene sheet wrap around main suspension cables and tarp lay on top roadway

22-56 Top coat striping prior to top coating

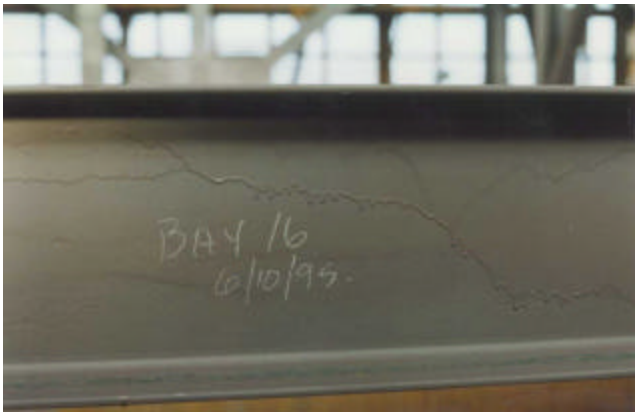
SECTION 22

PAINTING

22-57 Prime coat is gray, intermediate coat is blue or brown

22-60 Mud cracking

22-58 Caulking



22-61 Runs and sags

22-59 Blistering along edge of steel

22-62 Blistering