

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

SUPPLEMENTAL SPECIFICATION 845

FIELD METALLIZING OF STRUCTURAL STEEL

January 19, 2007

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845.01 Description. This work consists of cleaning and metallizing all steel surfaces.

General requirements:

Characteristic	Specification
Surface Preparation	SSPC- SP5
Sharp Angular Blast Anchor Profile	ASTM D4417, method B or C., 2.5 mils(63 µm) minimum
Metallizing Wire	ASTM B833 , Zinc, UNS (Z13005)
Metallizing Thickness	845.14, 10 mils(254 µm) or 12 mils(305 µm) within contract specified limits.
Coating Adhesion	ASTM D-4541, 500 psi [3.4MPa]

845.02 Materials. Supply metallizing wire conforming to ASTM B833 having the 99.99% Zinc – UNS (Z13005) composition. Supply, to the Engineer, certified test data

and copies of mill shipping notices or invoices showing the diameter and quantity of wire being accepted.

845.03 Quality Control. Quality control consists of designating quality control specialists to control the quality of work in each phase established by Quality Control Points (QCPs). Control quality by inspection, tests, and cooperation with inspection and testing performed by the Engineer and inspector.

A. Quality Control Specialist. Comply with the 514.04 Quality control specialist requirements with the following revisions:

1. Completion of the Bridge Painting prequalification course offered by the Department is not required.
2. An additional quality control failure is defined as two separate occurrences when the adhesion values have been approved by the quality control specialist of any one member type, such as the cross frames, webs, flanges, stiffeners, or other parts of the structure and it is later found that the surfaces of those members did not achieve the specified adhesion values. Occurrences are determined per structure.
3. In addition to the quality control specialist duties defined in 514, each quality control specialist shall also qualify operators and equipment according to 845.11.

B. Quality Control Points (QCP). QCPs are points in time when one phase of the work is complete and approved by the quality control specialist and ready for inspection by the Engineer or the inspector before commencing the next phase of the work. At a QCP, the quality control specialist shall provide quality control tests bearing his signature to the Engineer or inspector. The Contractor or fabricator shall provide the Engineer and inspectors access to inspect all affected surfaces. If inspection identifies a deficiency, correct the deficiency according to the Contract Documents before starting the next phase of work. Discovery of defective work or material after a Quality Control Point is past or failure of the final product before final acceptance, shall not, in any way, prevent the Department from rejecting the final product or obligate the Department to final acceptance.

	Quality Control Points	Purpose
1	Qualification Tests	Qualification tests of operators and equipment
2	Job Site Standards	Establish visual and reference standards
3	Solvent Cleaning	Remove visible contamination.
4	Grinding Edges	Remove sharp corners and thermally hardened edges
5	Abrasive Blasting	Blast surfaces to receive metallizing
6	Remove Fins, Tears & Slivers	Remove surface defects ,slivers and re-profile
7	Containment/Waste Disposal	Contain, collect, & dispose of abrasive blasting debris

	Quality Control Points	Purpose
8	Metallizing Coat Application	Check surface cleanliness, surface profile, apply metallized coating and check coating thickness
9	Adhesion Tests	Check adhesion of metallized coating
10	Final Review	Random acceptance checks

845.04 Testing Equipment. Comply with 514 for the Test Equipment requirements with the following addition:
Supply the following:

1. One (1), Type IV Self-Alignment Adhesion Tester per ASTM D4541.
2. Type IV Self-Alignment Adhesion Test per ASTM D4541; ½” (12mm) diameter adhesion dollies on the project at all times.
3. Two-component epoxy adhesive on the project at all times. The adhesive shall be capable of adhering ½” (12mm) diameter dollies at 500 psi [3.4 MPa] within 1 hour.

845.05 Work Limitations. Meet the substrate surface temperature and moisture conditions specified below.

A. Temperature. Metallize when the steel surface temperature is greater than 32°F (0°C) or when the steel surface temperature is less than 32°F (0°C) but greater than 0 °F (-18 °C) and the equipment operators are certified according to 845.11 at the lowest application temperature encountered.

Monitor the temperatures listed above using the recording thermometer.

The Contractor may use a heated enclosure. Uniformly and continuously heat the enclosure to maintain the required minimum steel surface temperature during all blasting and metallizing operations (SSPC-TR3/NACE -A192).

If combustion type heating units are used, vent the units away from the enclosure and do not allow exhaust fumes to enter the enclosure. Do not use open combustion in the enclosure.

B. Moisture. Do not abrasively blast or metallize:

1. If the steel surface temperature is less than 5 °F (3 °C) above the dew point.
2. If the steel surface is wet, damp, frosted, or ice-coated.
3. During periods of rain, fog, or mist unless the above moisture criteria is met.
4. If the relative humidity is 85% or greater.

If steel was abrasive blasted when the temperature of the steel was less than 5 °F (3 °C) above the dew point, re-blast the steel when the steel temperature is at least 5 °F (3 °C) above the dew point.

C. Industrial Dehumidification. The Contractor may use industrial dehumidification equipment within an enclosure. Operate the dehumidification equipment continuously to maintain the following humidity and surface temperature within all areas of the enclosure during all blasting and metallizing operations (SSPC-TR3/NACE -A192).

1. Steel surface temperature greater than 15 °F (8 °C) above the dew point.
2. Maximum Relative Humidity 54%

845.06 Protection of Persons and Property. Comply with 514 for the Protection of Persons and Property requirements

845.07 Pollution Control. Comply with 514 for the Pollution Control requirements.

845.08 Safety Requirements and Precautions. Comply with 514 for the Safety Requirements and Precautions requirements with the additional warning.

The metallizing process exposes workers to the following potential health and safety hazards: electric shock; fine particulates dusts and fumes; exposure to high-intensity noise, ultraviolet, infrared and intense visible light radiation.

845.09 Inspection Access. Comply with 514 for the Inspection Access requirements.

845.10 Quality Control Point Photographic Verification and Documentation. Take sufficient number of photographs to document the condition of the work at Quality Control Points 2, 5, 7 and 9.

845.11 Qualification Tests (QCP # 1). The quality control specialist shall witness and certify that each operator is tested per QCP # 1. Unless waived by the Engineer, perform the qualification test in the presence of the Engineer.

Each equipment operator shall demonstrate the ability at the job site to adequately set up and operate the equipment and produce an acceptable coating. The quality control specialist will certify each operator after producing adhesion and bend test plates meeting the minimum values specified below. Certify each operator by documenting a valid driver's license or other valid government issued photographic identification. If an Operator fails to meet the requirements, the Department will permit one retest. Ensure all Operators are certified before proceeding to QCP # 2. Certifications are valid for the contract for which the qualifications tests were performed. Re-Certify the operator, if an operator is not engaged in the process of metallizing for a period exceeding 60 days. The Department will disqualify the operators based upon quality control failures specified in 845.03.

A. Adhesion Test Plates. Have each operator prepare and metallize, One - 12 x 12 x 1/4 inch [300 x 300 x 6 mm] steel plate. Supply steel plates meeting 711.01. Submit certified test data for the steel plate to the Engineer per 501.06. Abrasively blast each plate according to 845.13. Record profile depth per ASTM D4417, method B or C. Metallize the plate according to 845.14. Record the coating thickness. Record the application temperature. Perform three adhesion tests according to ASTM D-4541. All three adhesion tests shall exceed a minimum value of 500 psi [3.4 MPa]. Do not certify an operator unless the specified coating thickness and adhesion values are achieved.

B. Bend Test Plates. Have each operator prepare and metallize, Three - 2 x 8 x 1/16 inch [50 x 200 x 1.5 mm] steel plates. Supply steel plates meeting 711.01. Submit certified test data for the steel plate to the Engineer per 501.06. Abrasively blast each plate according to 845.13. Record profile depth per ASTM D4417, method B or C. Metallize plates according to 845.14. Record the coating thickness. Record the application temperature. Cold bend the coupons 180 degrees around a 1/2 inch [13 mm] diameter mandrel. The metallizing must be on the outside radius of the bent coupon. No delamination of the coating is permitted. Delamination is defined as a coating that can be picked off with a knife blade. Cracking of the coating is permitted, provided the coating adheres to the face of the coupon. Do not certify an operator unless the specified coating thickness is achieved and no delamination occurs after bend testing.

845.12 Job Site Standards- (QCP # 2) The quality control specialist shall witness and document the establishment of Job Site Standards as specified in this section. Produce Job Site Standards in the presence of the Engineer or inspector. After the Engineer or inspector approves the specified **Job Site Standards** and the job site standards are documented by replica tape, adhesion values and photographs, the Contractor may start production work. The quality control specialists and Engineer or Inspector will use the job site standards and the contract to inspect the work. In all cases of dispute, testing specified in 845.13, 845.14 and 845.15 shall govern. If the Contractor, Engineer or inspector believes the initial test section does not establish the proper job site standard for a different structure another test section on the different structure may be performed

A. Abrasive Blast and Metalized Plate Standard. Have a certified operator prepare and metallize, one - 18 x 18 x 1/4 inch [450 x 450 x 6 mm] steel plate. Supply steel plates meeting 711.01. Submit certified test data for the steel plate to the Engineer per 501.06. Grind the plate edges and abrasively blast each plate according to 845.13. Record profile depth per ASTM D4417, method B or C. Metallize half the plate per 845.14. The other half is to remain in the blast cleaned condition. Supply a uniform surface texture that is free of lumps, dust, debris, inclusions and blisters. Record the coating thickness. Record the application temperature. Perform three adhesion tests on the coated side according to ASTM D-4541 and record the adhesion value. All three adhesion tests shall exceed a minimum value of 500 psi [3.4 MPa]. Perform a cut test on the coated side by placing the plate on a solid surface and hitting the test plate with a sharp 1.5 inch [38mm] wide mason's chisel impacted with a 3 pound [1.4 kg] drilling hammer. Cut the metallizing with the mason's chisel oriented at 60 degrees from the horizontal plane of the plate; strike the chisel with sufficient force to cut completely through the metallizing but

minimize the damage to the base steel. Cut the metallizing in three locations ½ to 1 inch [13 to 25 mm] apart. The coating must adhere to the face of the test plate after cutting. No delamination of the coating is permitted. No cracking of the coating is permitted. The cut test fails if any coating can be picked off with a knife blade. After the Engineer or Inspector and the Contractor agree the plate was prepared to the requirements of the Contract Documents, This plate becomes the **Job Site Plate Standard**.

B. Abrasive Blast- Visual Standard. Abrasively blast an approximately 20 to 30-square foot (2 to 3 m²) test section from a representative area on the first structure to be abrasively blasted. Compare the test sections against the SSPC-VIS 1 standard for blasting, white metal cleaning SSPC SP-5. Test for the proper profile depth per ASTM D4417, method B or C, 2.5 mils [63 µm] to 4.5 mils [114 µm]. Verify a sharp angular shaped profile by comparison to the **Job Site Plate Standard**. After the Engineer or Inspector and the Contractor agree the test section was blast cleaned to the requirements of the Contract Documents, photograph the test section. These photographs become the **Job Site, Abrasive Blast-Visual Standard**.

845.13 Surface Preparation (QCP # 3, 4, 5, 6 and 7)

A. Solvent Cleaning (QCP #3). Degrease areas contaminated with visible deposits of oils, greases, asphalt cement, diesel fuel deposits and other petroleum products that interfere with coating adhesion or reduce coating life. Perform degreasing per SSPC-SP 1.

B. Grinding Edges (QCP #4). Round all corners of thermally cut or sheared edges as necessary to achieve a 1/16 inch radius [1.6 mm] or equivalent flat surface at a 45 degree angle. Grind the steel surfaces that were thermally cut as necessary to prepare the flame hardened surfaces. Perform this work as necessary to produce a metallized coating on edges and thermally cut surfaces capable of meeting the **Job Site Plate Standard** cut test according to 845.12.

C. Abrasive Blasting (QCP #5). Abrasive blast all steel to be metallized according to SSPC-SP 5, white metal finish, as shown on the pictorial surface preparation standards for painting steel surfaces SSPC-VIS 1. Maintain the steel to a SSPC-SP 5 blast cleaned condition until it is metallized. The Contractor may blast clean the back side of end cross frame assemblies that are 3 inches (75 mm) or closer to backwalls according to SSPC-SP 10, near white finish.

Produce a sharp angular shaped profile with a minimum profile depth of 2.5 mils [63 µm] to 4.5 mils [114 µm] as determined according to ASTM D 4417, Method B or C. Provide a profile with a sharp angular shape that is visually comparable to the **Job Site Plate Standard**.

The quality control specialist shall control the abrasive blasting work as necessary to develop a metallized coating meeting: the adhesion test requirements of 845.15; the plate edges and areas that are not accessible to adhesion tests meeting the cut test requirements

of 845.12.

The quality control specialist shall compare the production abrasive blasting cleanliness to the **Job Site, Abrasive Blast-Visual Standard**.

The quality control specialist shall take profile readings at least every 200 square feet (9 m²) of blasted surface. Provide readings at random locations on flanges, webs, cross bracing stiffeners etc.

The quality control specialist shall check abrasives for oil content and water-soluble contamination according to SSPC-AB 2. Check abrasives used at the job site at the beginning of each shift and at 4-hour intervals. Also check each load of abrasive delivered to the job site for contamination before use.

The quality control specialist shall check the compressor for oil contamination by blowing air from the nozzle for 30 seconds onto a white cloth or blotter held in a rigid frame. If the cloth or blotter retains oil or other contaminants, suspend abrasive blasting until retests verify the problem was corrected. Perform this test at the start of each shift and at 4-hour intervals

Use recyclable steel grit meeting the requirements of SSPC-AB 3. Clean the abrasive of paint, chips, rust, mill scale, and other foreign material after each use and before each reuse according to SSPC-AB 2. Use equipment specifically designed for cleaning the abrasive.

Do not abrasive blast areas that contain asphalt cement, oil, grease, or diesel fuel deposits. Before abrasive blasting, completely remove all dirt, sand, bird nests, bird droppings, and other debris from the scuppers, bulb angles, and pier and abutment seats.

Cover and protect surfaces not intended to be metallized, from damage caused by blasting operations. Repair adjacent coatings damaged during the blasting operation. Backwalls and bottoms of decks not sealed nor specified to be sealed do not need to be covered and protected.

The Contractor may simultaneously abrasive blast and metallize the same bridge provided the abrasive blasting debris and dust does not contaminate surfaces to be metallized .

Remove abrasives and residue from all surfaces to be metallized. Keep all surfaces to be metallized dust free.

Metallize steel that was blast cleaned within the time specified by 845.14 If the steel is not metallized within the specified time, re-blast the steel before metallizing. Remove all dust or abrasives from adjacent work and from the metallized surfaces.

Provide the Engineer and Inspector with field wash facilities and adequate supply of running potable water, soap, and towels for washing face and hands during the surface preparation operation. Properly contain, test, and dispose of the wastewater. Locate a wash facility at each bridge site and in an area that will not be contaminated by the blasting debris.

D. Removing Fins, Tears, or Slivers (QCP # 6). Condition all fins, tears, slivers and burred or sharp edges that appear after the blasting operation per ASTM A6, then re-blast to meet the requirements of QCP# 5. Notify the Engineer should welding be required per ASTM A6. Perform weld repairs per 513 as directed by the Engineer.

E. Containment/Waste Disposal (QCP #7). Comply with 514 for the Containment/Waste Disposal requirements.

845.14 Metallized Coat Application and Thickness (QCP #8)

A. General. Metallize all structural steel; scuppers; expansion joints except for the traveled surface; steel railing; exposed steel piling; drain troughs; and other areas to the contract limits.

B. Surface Cleanliness. Before metallizing, remove all abrasives and residue from surfaces with a vacuum system equipped with a brush type cleaning tool, by double blowing or any other means as necessary.

Apply metallizing to surfaces meeting the cleanliness of the **Job Site, Abrasive Blast-Visual Standard** and the profile of the **Job Site Plate Standard**.

If the surface is degraded or contaminated, restore the surface to the specified surface cleanliness and profile before metallizing.

Apply metallizing to steel surfaces within 6 hours of the beginning of abrasive blasting. If the contractor elects to supply a heated and dehumidified enclosure according to 845.05(B), apply metallizing within 24 hours of the beginning of abrasive blasting.

C. Equipment and Techniques. Metallize using electric arc equipment operated in accordance with the manufacturer's latest written instructions and as qualified in 845.11 Qualification Tests. Flame spray equipment may be used on repair or limited access areas, if operated in accordance with the manufacturer's latest written instructions and qualified in accordance to 845.11 Qualification Tests.

Apply metallizing in a manner that promotes uniform coverage and prevents discontinuity of the applied coating. Supply a uniform surface texture that is free of lumps, dust, debris, inclusions and blisters. Perform spraying in a block pattern, typically two to three feet square [0.4 to 1.0 m²]. Overlap fifty percent (50%) on each pass to ensure uniform coverage. Obtain the required coating thickness in multiple layers. Do not exceed 4 mils in thickness in a single layer. Apply each layer at right angles to the previous layer. Control the spraying distance to the work to ensure the zinc is plastic

upon impact. Immediately correct any defects. Do not perform startup and adjustment of thermal spray equipment on the surface being metallized.

D. Record Environmental Conditions. The quality control specialist shall record the ambient temperature, the steel temperature and the dew point no more than one (1) hour before application of the metallizing. Monitor environmental conditions every four (4) hours during the metallizing operation.

E. Holding Time. A flash coat of metallizing 2 to 4 mil [50 to 102 μm] thick may be applied within the required six hours to hold the surface condition for an additional four hours. Maximum holding time is four (4) hours provided the metallized coating can be maintained free of contamination. Do not exceed the maximum holding time between each successive 2 to 4 mil [50 to 102 μm] thick metallized coat.

F. Application Approval. The Engineer or Inspector may inspect the work any time. If the Engineer or Inspector discovers defects, production may be stopped. The Engineer may require additional testing or operator re-certification as necessary to produce the thickness, adhesion or impact test results developed by the **Job Site Plate Standard**.

G. Record Coating Thickness. Determine the metallizing thickness using Type 2 magnetic gage, calibrated according to SSPC- PA 2, as follows:

The quality control specialist shall measure metallizing thickness at separate, evenly spaced, spot measurement locations over each 100-square foot (9 m^2) of area of structural steel. Locate five spot measurements on each of the following locations: top flanges; bottom flanges; webs; cross bracing; stiffeners; etc. At each spot location, take three gage thickness readings on the metallized surface. Move the probe 1 to 3 inches (25 to 75 mm) for each new gage reading. Discard an unusually high or low gage reading that is not consistently repeated. The spot thickness measurement is the average of the three gage readings.

The average of five spot measurements for each location in the 100-square foot (9 m^2) area shall not be less than the specified thickness. No single spot measurement area shall be less than 80 percent of the specified minimum thickness nor greater than 25 mils. Any one of three readings which are averaged to produce each spot measurement may under run or overrun by a greater amount.

The above procedure is the minimum specified level of contractor performed quality control. The contractor must monitor his application to the extent necessary to assure that any random spot reading meets the thickness requirements specified above.

Metallizing shall have the following thickness:

Location	Min. Spec. Thickness	Min. Spot Thickness	Max Spot Thickness
All Steel Surfaces	10.0 mils[254µm]	8.0 mils[203µm]	25.0 mils[635µm]
Plan specified limits.	12.0 mils[254µm]	10.0 mils[203µm]	25.0 mils[635µm]

Test areas of metallizing that exceed the maximum spot thickness by adhesion testing. If the values meet the requirements of 845.15, the coating is acceptable. In an area where the adhesion test can not be performed, cut test the coating according to 845.12

H. Metallizing System Identification. Stencil the Completion Date (month and year) and the identification letters on the steel in 4-inch (100 mm) letters with black urethane paint. The identification letters are as follows:

System Comprised of:	Identification Letters
Metallizing	MTL-Zn

Date and identify the coating system at four locations near the end of each outside beam on the outside web visible from the road or as directed by the Engineer.

845.15 Metallized Coat –Adhesion Tests (QCP #9) The quality control specialist shall perform and document the results of adhesion tests in accordance with ASTM D 4541 at locations randomly selected by the Engineer in each 500-square feet (46 m²) area metallized. Perform the test in the presence of the Engineer. The minimum acceptable adhesion value is 500 psi [3.4 MPa]. Make repairs as per 845.17.

At the selected areas check the plate edges and areas that are not accessible for adhesion testing by performing at least three cut tests. If the cut tests for that area do not meet the requirements of 845.12, additional measurements will be taken to determine the extent of the deficient coatings

The above procedure is the minimum specified level of contractor performed quality control. The contractor must monitor his application to the extent necessary to assure that any random spot reading meets the specified metallizing adhesion value.

845.16 Final Inspection (QCP # 10).The Department will base Final Acceptance upon the results of the adhesion tests, cut tests and dry film thickness measurements obtained during the work. Supply a report that documents and contains the raw field data demonstrating compliance to all aspects of the specification. The Department will review this report, progressive project documentation and progressive field measurements to determine the final acceptability of the metallized coating.

845.17 Repair Procedures. Repair areas of metallizing that do not have acceptable

adhesion or cut tests by removal and replacement in accordance to 845.

Repair areas of metallizing that have low coating thickness but have acceptable cut or adhesion tests by brush blasting according to SSPC-SP 7 to establish the cleanliness of the **Job Site, Abrasive Blast-Visual Standard** and the profile of the **Job Site Plate Standard** then metallize according to 845.14. Control blasting to create the cleanliness and profile standards with minimal removal of acceptable metallizing.

Repair damage areas, including destructive test locations, of less than 1 square foot by using hand or power tools to establish the cleanliness of the **Job Site, Abrasive Blast-Visual Standard** and the profile of the **Job Site Plate Standard** then metallize according to 845.14.

Repair damage areas greater than 1 square foot by abrasive blasting according to 845.13 to establish the cleanliness of the **Job Site, Abrasive Blast-Visual Standard** and the profile of the **Job Site Plate Standard** then metallize according to 845.14

Overlap all repairs at least 2 inches (50 mm) into the accepted coating to provide a feathered-area overlay between the accepted metallized areas and the repair area. Metallize the feathered-area and the repair area so that the repair, overlay and accepted areas are a uniform coating of the thickness specified in 845.14.

845.18 Method of Measurement. The Department will measure surface preparation and metallizing by the number of square feet (square meters) of structural steel metallized.

The Department will measure grinding fins, tears, or slivers by the number of man hours expended by the workers actually doing this work and will include the time when the workers are grinding and reprofiling (i.e., the Department will include all hours of the workers when assigned to this work regardless of actual grinding time).

For rolled beam and girder bridges, the Department will determine the surface area by taking a nominal measurement of the beams (i.e., two times the beam depth plus three times the flange width). In addition to this nominal measurement, the Department will add a percentage to account for incidentals such as cross frames, bearing assemblies, stiffeners, expansion joints, scuppers, etc. It is not necessary for the Engineer or Inspector to field measure every detail of the bridge to verify quantities. If there is a quantity dispute, exact field measurements of all metallized surfaces and calculations will govern over the above percentage to account for incidentals.

For extremely complex bridges, such as trusses, the Department will pay for surface preparation and metallizing on a lump sum basis.

845.19 Basis of Payment. The Department may consider Metallizing wire as eligible for payment for material on-hand as specified in 109.10, however, only wire that the Contractor can prove to the Engineer will be used during the construction season is eligible for payment. The Contractor shall provide the Engineer calculations indicating

the total square feet (square meter) of steel to be coated during the construction season. The Contractor shall also provide calculations showing the total weight of wire (pounds) required.

If the Contractor causes damage or injury to public or private property, the Department will not pay for restoring the property to its original condition.

The Department will also not pay for the following:

- A. Repairing adjacent coatings damaged during the blasting or metallizing operations.
- B. Repairing areas of coating because of low coating thickness, low adhesion values or failing cut tests.
- C. Additional testing required by any hauler, treatment facility, disposal facility or landfill.
- D. Accessing, inspecting, and repairing areas that are not found to be in conformance with the specifications and pertinent contract documents.

If welding is required for 845.13.D, the Department will pay for this welding repair as extra work according to 109.05.

All other requirements are considered incidental to the work.

The Department will pay for accepted quantities at the Contract prices as follows:

Item	Unit	Description
845	Square Foot (Square Meter), Lump Sum	Surface Preparation of Existing Structural Steel
845	Man Hour	Grinding, Fins, Tears, Slivers on Existing Structural Steel
845	Square Foot (Square Meter), Lump Sum	Field Metallizing of Existing Structural Steel

Designer Notes:

Include all pay items.

845.14 specifies metallizing to all structural steel; scuppers; expansion joints except for the traveled surface; steel railing; exposed steel piling; drain troughs; and other areas to the contract limits. Carefully review these areas that are to be metallized and show the limits of the contract work.

Show plan limits for areas that will need the metallizing 12 mils thick as specified in 845.14. Suggested areas are as follows: all steel within 10 feet of any expansion joint devise or internal hinge assembly. All steel in the potential splash zone of a scupper, all exterior and bottom flange surfaces on bridges with over the side drainage. Fracture critical members or critical structural members that would benefit from additional corrosion protection. Areas that collect debris or have exhibited more aggressive patterns of corrosion as determined from inspection records.

When estimating the quantity for Item 845 Surface Preparation of Existing Structural Steel calculate the area to be metallized according to 845.18

When estimating the quantity for Item 845, Grinding Fins, Tears, Slivers on Existing Structural Steel, provide 1 minute for each linear foot of beam/girder to be coated.

When estimating the quantity for Item 845 Field Metallizing of Existing Structural Steel., Calculate the area to be metallized according to 845.18