



# SQS Supplement C

MnDOT  
Supplier  
Qualification  
Standard

## Galvanizers



**Supplier  
Qualification  
Standard for  
Suppliers of  
Fabricated  
Structural  
Metal Products**

Standard supports the Department's Approved Supplier Program for Structural Metals Suppliers as described in the current Standard Specification for Construction



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# MnDOT Supplier Qualification Standard



## Documentation Requirements

### Supplier Quality Management System

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### 1 General Information

The purpose of this Supplement to the Supplier Qualification Standard is to outline the criteria for qualification to the Minnesota Department of Transportation (MnDOT) Metals Supplier Qualification Program for Galvanizers.

Several sections of MnDOT SQS address requirements for aspects of supplier Quality Management Systems that differ greatly amid the listed Supplier Category Processes. These sections have been omitted from the main Supplier Qualification Standard and included in this supplier-specific Supplement. The omitted sections include:

- Section 6: Contract Review
- Section 7: Communicating Project Requirements to Production
- Section 11: Material Identification
- Section 12: Manufacturing Process Control

### 3 References/Library

This is a list of required and recommended references for MnDOT Suppliers.

Keep reference documents, standards, codes, and other applicable documents readily accessible to the individuals who need them to perform their work. Keep revisions required by existing contracts available.

The list of required references may increase to cover the products, materials, and services that the Supplier provides.

#### Required references-general:

- MnDOT Standard Specification for Construction
- MnDOT Special Provisions
- ASTM Standards for materials used by the company

#### Required references-specific:

- ASTM A123
- ASTM A153
- SSPC SP6
- ASTM A780
- ASTM A385
- ASTM A384
- ASTM B6
- MnDOT Standard Specification for Construction
- MnDOT Special Provisions
- ASTM Standards for materials used by the company

#### Suggested References:

- ASTM D 6386: Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting

- AASHTO/NSBA S4.1 - Steel Bridge Fabrication QC/QA Guide Specification

### 6 Order Review

#### 6.1 Review of documentation and verbal direction

Document a method to assure that specific information has been received from clients to assure a successful galvanized product. Describe the method to determine and document these minimum job requirements in advance of commencing work:

- Required schedule information for receiving material and completion of work. Identify staged work to prioritize processing of particular elements.
- State specification that will govern the work (determine if there is an existing instruction or method in the plant to assure compliance during the galvanizing process and at inspection)
- Confirm with the Client/Fabricator, any special provisions that will govern the order.
- Required DFT of galvanized work
- Allowed touch up method per ASTM A 780
- Required marking and recording of product if required by Owner
- Steel CMTR for max allowable detrimental element content of the base material.
- Requirements for preblast of the product must be included in the router for receipt of customer material
- Confirm base materials are not reactive by review of MTR or confirmation with the customer.
- Finish requirements (fitness for use related to the product application)
- Inspection requirement

If the specific information described above is not received, it is the Galvanizer's responsibility to contact their customer to determine whether the project is MnDOT work or for any Owner with specific requirements.

#### MnDOT Specific Requirement

MnDOT projects require a certificate of conformance from the Galvanizer per ASTM A123, clause 10.1.

Information received in writing is reviewed. If information is received verbally it is documented and copied for the customer for potential comment. Identify the position responsible for review.

#### 6.2 Notification to the Owner

Describe the plans for transmitting project documentation to the Engineer or the QAI as appropriate, including recording the transmittal of purchasing data (purchase orders, MTRs and other documentation) to assure that the information is furnished.

Identify the personnel positions responsible for assembling and transmitting these records and establishing appropriate time targets.





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Describe how the Supplier assures that the owner's Engineer is provided with a start date at least five working days in advance.

Describe the internal controls to prevent material processing until the Engineer approves the fabricator's shop drawings; or describe the methods to prevent improper materials, processing and schedule delays from affecting the project.

### 6.3 Review of received product

Document the receipt inspection of received fabricated product for proper venting, and the existence of detrimental coatings or any contamination that will affect the galvanizing process and end quality, per ASTM A385 and ASTM A384. Inform the Client/Fabricator if conditions exist that will likely affect the quality of the galvanizing process.

Document the direction received from the Client/Fabricator and how it is communicated to the plant if handling, work or planning that is not currently part of documented process control is required.

### 6.4 Order Review Record

The order review record must show how these items were reviewed. The Supplier's quality manual or procedures must also describe the method that conveys this information to the responsible planning, production or quality functions.

General requirements will show that the Supplier reviewed and identified issues related to these items:

#### 6.4.1 Galvanizing Process

Minimum requirement: Capability and load on equipment and work stations including the potential to run multiple shifts or subcontract work.

#### 6.4.2 Inspection

Minimum requirement: Unique inspection types, changes in frequency or documentation and reporting from standard practices, procedures and methods are also noted. Note any independent testing or witness services necessary.

#### 6.4.3 Training and qualification

Minimum requirement: Note any personnel qualifications needed beyond current levels to meet contract requirements

#### 6.4.4 Project Communication

As part of the Contract and Project review, and before work begins, the Supplier determines the means of communications with the Owner and Contractor Representatives. The review record will document contact information for the Owner and Contractor Representatives, and any specific communication requirements mandated by contract documents.

At the review or before the review, the Supplier will identify a consistent individual for all communication with the State Engineer and the State Inspector.

### 6.5 Order review Quality Records

- Order review record
- Client/Fabricator purchase order, work order or other technical information provided by the Client/Fabricator about the scope of work.

## 7 Communication of Project Requirements

Communication on work orders, routers or travelers is typical; however other methods and lists may be described.

Describe the router, traveler, weight ticket or other document created by the Supplier or the Client/Fabricator that will identify the product job number, customer and how instructions for treating and handling the specific product are referenced or communicated.

Pre-treatment condition and the requirements for initial and final part marking and identification are essential elements for the router or other method for communicating information to the production process and inspection activity.

Include in this communication: the definition of the applicable specification (usually A123); and restrictions on A780 repairs; and any specified limits on distortion after the process.

The customer products on each or rack must be identifiable at all times.

## 11 Raw Material Identification

The Supplier must develop a documented procedure for the identification and traceability of materials and products (raw materials before the process such as zinc) used in transportation projects. The procedure describes how the supplier assures appropriate identification at the purchasing process. The process must be designed to assure incorporation of the correct raw materials into the galvanizing process. This relates to records that provide a basis for raw material identification (e.g., MTRs or C of Cs for raw materials,) are filed and retained per the document control procedure.

### 11.1 Receipt Inspection

Identify the sequence of steps, checks, inspections and records that are followed by receiving personnel when galvanizing process materials arrive.

### 11.2 Release to Production

Describe how materials are made available for production after successful receipt. Include records, notification, marking, location and other suitable





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means to assure that production personnel use appropriate materials.

#### 11.3 Certificates of conformance

Certificates of conformance or manufacturer's test reports for zinc and preparation chemicals are retained for the materials (at least seven years for MnDOT Projects) after the completion of the project.

Certificates of conformance for zinc contain the lot number and chemical analysis and a written statement from the manufacturer that the product supplied meets the purity requirements of ASTM B6. Additives and chemicals need only have a Certificate of Analysis.

#### MnDOT Specific requirement

CMTRs may arrive separately from the shipment. When they arrive, the Supplier shall verify (with a legible signature or initials and date) that the material is what was ordered before processing with the received materials begins.

#### 11.4 Marking

Standard marking (Id) for zinc ingots will be by lot number at a minimum. Material that arrives in bundles or pallets may be marked by bundle. As a group is broken, the identification is transferred to pieces removed from the bundle and on the remaining bundle in storage.



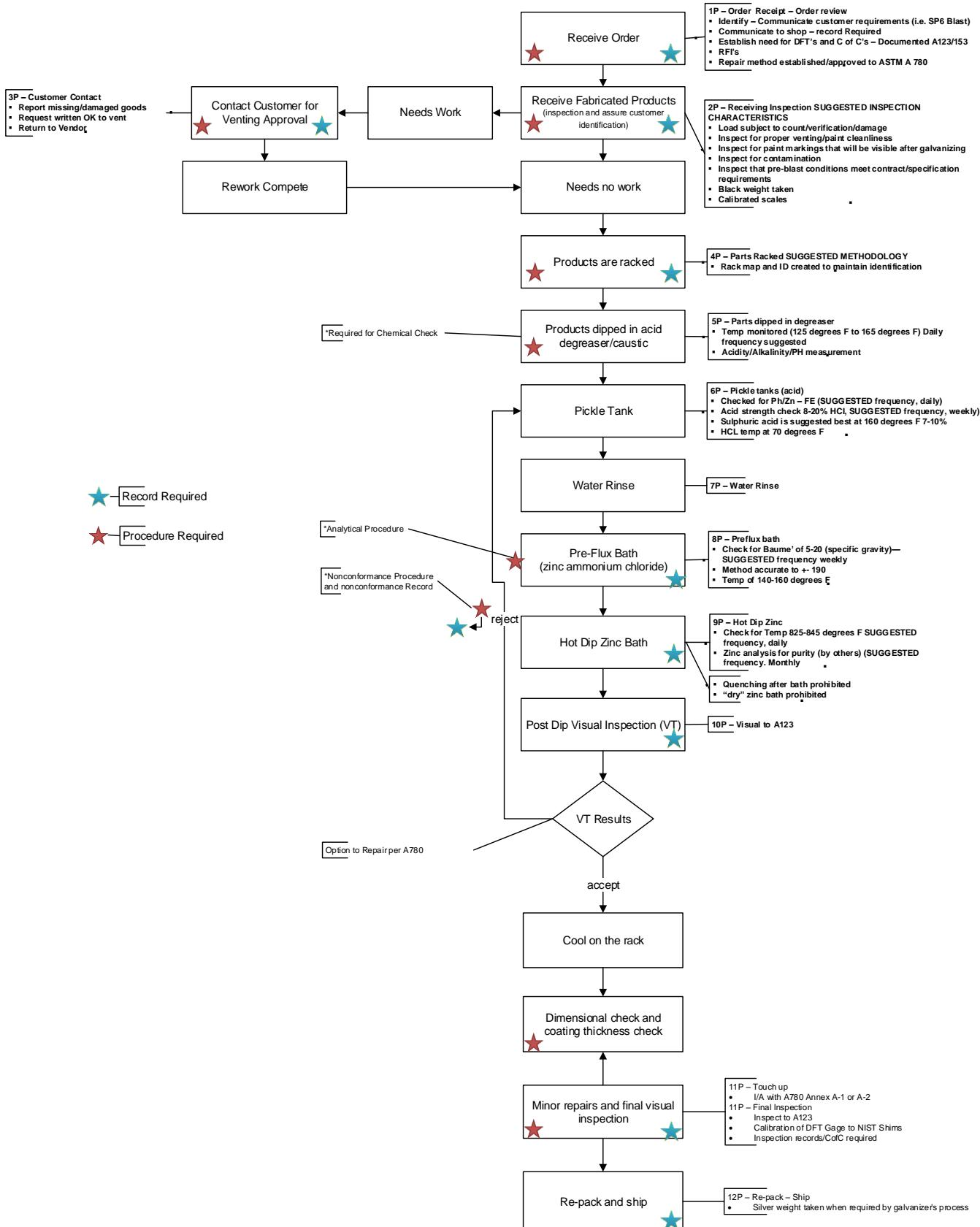


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## 12 Galvanizing Process Control

NOTE: these side notes to each process step are suggested as optimum conditions, Supplier to identify what they chose in their procedure. That is, the

Supplier must address these elements, but choose the parameters for their procedure and maintain that choice and control.





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Refer to SB Metal Railings for specific process and inspection requirements related to

- DFT measurement
- Post Galvanizing process knowledge (prohibition of quenching when galvanized production will be duplex coated).
- Coating discontinuities that will interfere with the intended use of the product.
- Limits on distortion

#### 12.1 Required Procedures

Document the procedures identified in the Galvanizers Process Control flow chart at a minimum. The procedures may be combined in a single procedure or document or may be referenced from the quality manual as work instructions or separate procedures.

Make the best choice to accommodate Supplier company processes and culture. Procedures must include the minimum parameters identified in the flow chart. Additionally the procedures will define:

- Frequency of testing tank contents including the zinc bath,
- Parameters such as acid strength, temperature, iron content and zinc purity

The procedures and work instructions must be accessible to rackers, kettle operators and other craft workers who have responsibility for the process, including appropriate translations.

#### 12.2 Required Records

Create records as identified in the flow chart at a minimum. Add customer part and contract identification to assure the right job requirements are applied.

#### 12.3 Other procedures

The Supplier will be required to document and implement control methods for processes that are critical or when a process expected to be controlled by the Supplier's regular methods is proved out of tolerance during an internal audit or an external audit.

#### 12.4 Calibration

Create a method, procedure, log or other appropriate method to calibrate these items at a minimum.

- Dry film thickness gages or shims
- Scales
- Temperature controllers including kettle controls

#### 12.5 Quality Records

- Supplier bill-of-lading, purchasing documents.
- MTRs
- Certificates of conformance
- Certificates of Analysis
- Router/traveler/ticket
- Coating thickness measurements
- Deficiencies requiring re-dipping
- Damage or excessive distortion (NCRs)



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