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## STEEL REINFORCEMENT

### GENERAL

Acceptance of steel reinforcement and wire mesh shall be on the basis of certification from an approved steel fabricator and/or distributor. Steel reinforcement shall meet the specified requirements for type and grade.

Approval to furnish steel reinforcement and wire mesh on a certification basis may be withdrawn for deficient test results on monitor samples, inadequate documentation, improper identification of the materials, or the lack of identification (Mill Test Reports).

Approved suppliers and distributors are listed in Appendices B and F. Approved manufacturers of reinforcing steel are listed in Appendix D. Approved suppliers of wire mesh reinforcement are listed in Appendix C.

### DISTRIBUTOR OR SUPPLIER APPROVAL

Prior to furnishing reinforcing steel on a certification basis, the distributor, supplier, or fabricator shall request approval by submitting the following items:

1. A written application shall be submitted to the Central Materials Office in Ames, Iowa.
2. This application shall contain the following items:
  - a. Sources of steel that would be handled by the company and fabricated and supplied to Iowa Department of Transportation (DOT) projects.
  - b. Quality control procedures the company has established to ensure material identity (as to heat numbers and inventory) from the time material arrives from a mill or a source, through fabrication process, and shipment.
  - c. A typical example of certification documents the company will furnish for Iowa DOT projects.

Upon satisfactory review of this application and satisfactory inspection of the facilities for compliance with quality control procedures submitted, the company will be placed on the approved list in Appendices B and D.

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### **DISTRIBUTORS/SUPPLIERS APPROVAL ON PROJECT-BY-PROJECT BASIS**

Prior to furnishing steel to a project, the distributor, supplier and/or fabricator shall request approval to supply steel reinforcement for a project prior to its use and/or incorporation.

The District Materials Engineer shall require the following:

1. Mill Test Certification-shall accompany each shipment
2. Proper Identification
  - a. Symbol of the producing mill
  - b. Type of steel
  - c. Grade mark
  - d. Bar size
3. Sampling Testing (at the required frequency) **NOTE:** If less than 30 tons a minimum of one sample shall be required for quality testing.

Approved manufactures, suppliers and/or distributors that can supply bar reinforcement on project-by-project are listed in Appendix F. Approval shall be based on a satisfactory inspection of the facilities and satisfactory review of the quality control procedures.

### **CERTIFICATION ACCEPTANCE PROCEDURES**

The steel fabricator, supplier, or distributor shall furnish an identification list, invoice, or bill of materials for each shipment to a project. It shall show the project and design number, the size, length, grade, heat number and number and weight of pieces in the shipment and contain a certification stating that the attached Mill Certifications are applicable to the material itemized. The fabricator, supplier, or distributor shall also provide summary quality documentation to the District Materials Office responsible for the project and the project engineer at the completion of the shipments to the project. The summary documentation shall be signed, include type, size, and grade, the total quantity of each, and the project number.

The Mill Certifications, which are to be attached as directed above, shall state the chemical, physical, or mechanical tests reported and the ASTM designation, type and grade for each heat.

One copy of the documents prescribed above shall accompany each shipment and be retained in the Project Engineer file. An additional copy shall be forwarded at time of shipment to the District Office responsible for the project administration.

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Steel shipments, which are from approved sources and are documented as outlined above, may be incorporated in the work. Personnel from the District Materials Office shall secure random verification samples at the project destination, as outlined herein.

Mill Test Reports and pertinent records shall be kept on file for a period of not less than three (3) years after production.

### **UNIDENTIFIED STEEL**

All reinforcing steel not identifiable by heat number or not accompanied by the proper Mill Certification, will be accepted only on the basis of satisfactory test results on one sample per 10 tons (10 mg) for each size bar furnished.

### **VERIFICATION SAMPLING & TESTING**

The amount of verification sampling and testing will generally depend upon the amount of steel required for the project. The District Materials Engineer Office should ensure that adequate verification samples have been secured.

1. Project Quantity Less Than 45 tons

Acceptance will be based on certification of each heat with no verification samples required.

2. Project Quantity 45 tons and Over: One sample per project

Sample one 6-ft. (2-meter) long piece of the most common bar furnished to the project. If the sample complies with the specifications, the shipment will be accepted. If the initial sample fails to comply with the specifications, two additional samples shall be taken out of the same heat number. If one or both of the additional samples fails to comply with the specifications requirements then the steel for that project will be subject to rejection, and all subsequent shipment from that mill to that project, shall be sampled at the rate of one sample per 10 tons for each size furnished. If both additional samples comply with the specifications, subsequent shipments to the project from that mill may be accepted on the basis of certification. See flow diagram for acceptance procedures in Appendix A.

### **STEEL SHIPPED FOR USE ON SEVERAL PROJECTS**

Reinforcing steel, which is shipped to a fabricator or contractor for use on several projects, shall be sampled at the rate established under verification sampling and testing.

Examples of this would be shipments to prestressed/precast and concrete pipe plants or lighting and signing contractors where the steel may be used on several projects.

**CERTIFICATION STATEMENT**

The certification statement shall read as follows:

The material itemized in this shipment is certified to meet the requirements of the ASTM and the applicable specifications of the Iowa Department of Transportation.

**NOTE:** All reinforcing steel used on State of Iowa projects shall be fabricated in the USA and shall be of domestic origin.