ANCHOR BOLTS

Acceptance of concrete anchor bolts (also known as anchor rods) shall be on the basis of mill certification and acceptable test results from an approved manufacturer and as well as sampling and testing by the Iowa DOT as required by this IM. The anchor bolts specified herein are intended for anchoring structural support to concrete foundations. Such structural support include but not limited to: High mast tower lighting, light poles, overhead sign trusses, cantilever sign supports, traffic signals and bridge swedged anchor bolts.

Anchor bolts, nuts and washers shall be melted and manufactured in the USA. The fabricator shall certify that these materials are of domestic origin.

At the time of shipment, one copy of properly identified Certified Mill Analysis shall be forwarded to the project engineer and one copy to the respective District Materials Engineer. Anchor bolts shall be of the dimension, size and grade as shown in the contract documents. Nuts and washers shall be as specified for grade, type, size and style. Galvanizing (zinc coating) requirements shall be as specified herein.

Manufacturers shall be approved on the following basis:

1. Quality Control Plan procedures
2. Qualified quality control personnel
3. Applicable certifications
4. Shop/equipment approval

Anchor bolts are available in 3 grades (Grade 36, 55, and 105)denoting minimum yield strength and two classes denoting thread class (Class 1A and 2A).

Anchor bolts cannot be installed without prior inspection and testing. Anchor bolts shall be galvanized full length in accordance with the Standard Specifications. Threads: Unless otherwise specified, anchor bolts shall be the unified coarse thread series class 2A. Nuts shall be the unified coarse thread series class 2B.

Appendix A contains a list of approved manufacturers and suppliers of anchor bolts.

Four different categories are listed in this IM. Each category is addressed and listed separately due to the difference in the requirements.

MARKINGS:

The end of each anchor bolt intended for use on Iowa DOT projects shall be color-coded to identify the grade as follows:

Specification	Grade	Color
F-1554	36	Blue
F-1554	55	Yellow
F-1554	105	Red

Bridge Swedged Anchor Bolts (Per Design Drawings)(for approved sources, see Appendix C)

Anchor Bolt Size in (mm)	Anchor Bolt Grade	Nuts Heavy Hex	Washers	Galvanizing
¼"-4" (6.4-102) (Full Length Galvanized)	ASTM F1554 Grade 36 Class 2A	ASTM A-563-DH Class 2B	ASTM F-436	ASTM A153 Class C

Overhead Sign Support Structure & Cantilever Sign Structure (4187.01C) (for approved sources, see Appendix A)

Anchor Bolt Size in. (mm)	Anchor Bolt Grade	Nuts Heavy Hex	Washers	Galvanizing
¼"-3.0" (6.4-76.2) (Full Length Galvanized)	ASTM F-1554 Grade 105 Class 2A	ASTM A-563-DH Class 2B	ASTM F-436	ASTM A-153 Class C

Tower Lighting (2522.04D) (for approved sources, see Appendix A)

Anchor Bolt Size in. (mm)	Anchor Bolt Grade	Nuts Heavy Hex	Washers	Galvanizing
1.0" – 3.0"" 25.4 – 76.2) (Full Length Galvanized)	ASTM F-1554 Grade 105 Class 2A	ASTM A-563-DH Class 2B	ASTM F-436	ASTM A-153 Class C

Lighting Poles and Traffic Signalization (including weigh station clearance poles) (4185.02A & 2525.06D) (for approved sources, see Appendix A)

Anchor Bolt Size in. (mm)	Anchor Bolt Grade	Nuts Heavy Hex	Washers	Galvanizing
¼" - 3.0" (6.4-76.2) (Full Length Galvanized)	ASTM F-1554 Grade 105 Class 2A	ASTM A-563-DH Class 2B	ASTM F-436	ASTM A-153 Class C

Miscellaneous Requirements

Anchor Bolt Size in. (mm)	Anchor Bolt Grade	Nuts Heavy Hex	Washers	Galvanizing
¼" - 4.0" (6.4-102) (Full Length Galvanized)	ASTM F-1554 Grade 55 Class 2A	ASTM A-563-DH Class 2B	ASTM F-436	ASTM A-153 Class C

Guard Rail (4155)

Anchor Bolt Size in. (mm)	Bolt Grade	Nuts Heavy Hex	Washers	Galvanizing
Per Plan Requirements	ASTM F-1554 Grade 105 Class 2A	ASTM A-563-DH Class 2B	ASTM F-436	ASTM A-153 Class C

Note: Anchor Bolts, Nuts, and Washers shall be full length galvanized sample and mill test report shall be required.

MONITOR INSPECTION:

1. Minimum sample rate frequency – one sample per project per size. (Bolt, nuts and washers)

2. Samples shall be properly identified by heat number, source, size and length and shall be accompanied with a representative Mill Test Report.

3. The contractor shall be responsible for supplying the test sample.

Acceptance: Approved Source, Test Report and Steel Mill Certifications

Anchor Bolts:
1. Test for hardness and strength (proof loading)
2. Visual Inspection
   a. Threads
   b. Deformations
3. Check/test galvanizing thickness
4. One sample per project per size

Nuts:
1. One sample per project per size
2. Visual Inspection for markings
3. Check/test galvanizing thickness
4. Check threads for zinc build-up
5. Check for over tapping

Washers:
1. One sample per project per size
2. Check/test galvanizing thickness
3. Check/test size and dimension