TOOLBOX TALK #1

Shop Cleaning of Structural Steel

(10 minutes)

QUESTION: What is the fabricator's responsibility for preparing the surface of the structural steel?

The *Code* says…

6.4. Shop Cleaning and Painting (see also Section 3.1)

Structural steel that does not require shop paint shall be cleaned of oil and grease with solvent cleaners, and of dirt and other foreign material, by sweeping with a fiber brush or other suitable means. For *structural steel* that is required to be shop painted, the requirements in Sections 6.4.1 through 6.4.4 shall apply.

Commentary:

Extended exposure of unpainted *structural steel* that has been cleaned for the subsequent application of fire protection materials can be detrimental to the fabricated product. Most levels of cleaning require the removal of all loose mill scale but permit some amount of tightly adhering mill scale. When a piece of *structural steel* that has been cleaned to an acceptable level is left exposed to a normal environment, moisture can penetrate behind the scale, and some "lifting" of the scale by the oxidation process is to be expected. Cleanup of "lifted" mill scale is not the responsibility of the *fabricator*, but is to be assigned by contract requirement to an appropriate contractor.

Section 6.4.3 of *this Code* is not applicable to weathering steel, for which special cleaning *specifications* are always required in the *contract documents*.

TOOLBOX TALKS

If you're using structural steel, the *Code of Standard Practice for Steel Buildings and Bridges* (ANSI/AISC 303-22) applies to your contract.

Simply put, the AISC *Code* defines who's in charge of what, when, where—including before any potential conflict arises—and other members of your project team are already using it in their own contracts. Download it for free at **aisc.org/code**.

Section 6 of the *Code* provides the requirements for shop cleaning of structural steel and should be referenced during preconstruction for managing these activities with your fabricator and/or erector.

TOOLBOX TALK #1

Shop Cleaning of Structural Steel

(10 minutes)

6.4.1. Unless otherwise specified in the *contract documents*, the *fabricator* shall, as a minimum, hand clean the *structural steel* of loose rust, loose mill scale, dirt, and other foreign matter prior to painting, by means of wire brushing or by other methods elected by the *fabricator*, to meet the requirements of SSPC-SP2. If the *fabricator*'s workmanship on surface preparation is to be inspected by the *inspector*, such inspection shall be performed in a timely manner prior to the application of the shop coat.

Commentary:

The selection of a paint system is a design decision involving many factors including the following:

(a) The *owner's* preference
(b) The service life of the structure
(c) The severity of environmental exposure
(d) The cost of both initial application and future renewals
(e) The compatibility of the various components that comprise the paint system (surface preparation, shop coat, and subsequent coats)

Because the inspection of shop painting must be concerned with workmanship at each stage of the operation, the *fabricator* provides notice of the schedule of operations and affords the *inspector* access to the work site. Inspection must then be coordinated with that schedule so as to avoid delay of the scheduled operations.

Acceptance of the prepared surface must be made prior to the application of the required shop coat(s) because the degree of surface preparation cannot be readily verified after painting. Time delay between surface preparation and the application of the required shop coat(s) can result in unacceptable deterioration of a properly prepared surface, necessitating a repetition of surface preparation. This is especially true with blast-cleaned surfaces. The required shop coat(s) in any paint system is designed to maximize the wetting and adherence characteristics of the paint, usually at the expense of its weathering capabilities. Deterioration of the required shop coat(s) normally begins immediately after exposure to the elements and worsens as the duration of exposure is extended. Consequently, extended exposure of the required shop coat(s) will likely lead to its deterioration and may necessitate repair, possibly including the repetition of surface preparation and shop coat application in limited areas. With the introduction of high-performance paint systems, avoiding delay in the application of the shop coat has become more critical. High-performance paint systems generally require a greater degree of surface preparation, as well as early application of weathering protection for the required shop coat(s).

Because the *fabricator* does not control the selection of the paint system, the compatibility of the various components of the total paint system, or the length of exposure of the required shop coat(s), the *fabricator* cannot guarantee the performance of the required shop coat(s) or any other part of the system. Instead, the *fabricator* is responsible only for accomplishing the specified surface preparation and for applying the required shop coat(s) in accordance with the *contract documents*.

This Section stipulates that the *structural steel* is to be cleaned to meet the requirements in SSPC-SP2. This stipulation is not intended to represent an exclusive cleaning level, but rather the level of surface preparation that will be furnished unless otherwise specified in the *contract documents* if the *structural steel* is to be painted.