

MEMORANDUM

Date: [REDACTED]

To: [REDACTED]

From: [REDACTED]

RE: [REDACTED]

Introduction

This memo summarizes my findings regarding fusion bonded epoxy (FBE) coated DIP valves, fittings, and pipe. Issues researched include relevant standards, coating thickness, and availability of FBE coated valves and fittings.

Pipe

Standards

There are no AWWA standards for FBE coating of ductile iron pipe. The city of San Diego calls for ductile iron pipe to be coated according to AWWA C213 – *Fusion Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines*, although it is not written for DIP.

Thickness

City of Seattle coats DIP with a thermoplastic powder coating 20-25 mil thick. They call for plugging the ends of pipe and fittings to keep the coating from passing beyond the gasket groove at the bell end. This implies that the spigot end will be entirely coated.

However, Ductile Iron Pipes and Fittings, by AWWA, states that “bell and spigot tolerances for proper joint assembly allow an additional coating thickness of only 8-10 mil.” Thicker coatings would need to be ground off or held back during application. Additionally, AWWA says that coatings may interfere with mechanical restraints that bite into the pipe, and that coatings would need to be removed around these restraints.

Specifications for the application of Protecto 401 (a ceramic epoxy coating) on DIP require a maximum coating thickness of 10 mils at the bell socket and spigot end. They also call for care to be taken to ensure that the coating does not build up in the gasket seat

or spigot end.

It seems as if the City of Seattle standard is an anomaly, and coating thickness should not exceed 10 mils at the bell and spigot end. FBE coating may need to be removed where restraints are placed as well. The simplest solution would be to hold back the FBE coating on the spigot end and heat shrink wrap or wax tape coat the joint.

MJ Fittings

Fittings are coated per AWWA C116 – *Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings*. Epoxy coating is applied to both the interior and exterior surfaces, typically with a 4 mil minimum thickness in the joint areas.

Tyler Union

Coating: FBE, interior and exterior, conforming to AWWA C116.

Thickness: 6-8 mils

Star Pipe [REDACTED]

Coating: FBE, conforming to AWWA C116.

Thickness: 4-6 mils

Availability: Fittings are typically in stock, but if not there is a 4-6 week wait time.

US Pipe ([REDACTED])

Does not keep fusion bonded fittings in stock, but will send bare fittings to Fast Fabricators [REDACTED] to coat.

American

Does not supply fusion bonded MJ fittings.

Valves

Valves are epoxy coated per AWWA C550 – *Protective Interior Coatings for Valves and Hydrants*. Although AWWA C550 is for interior coatings, both interior and exterior surfaces are coated. Epoxy coating is typically standard for gate valves, with thickness of 9-10 mils. Epoxy coating is not typically standard for butterfly valves, but usually available as an option; thickness is approximately 4-6 mils. Coating options are outlined below by manufacturer.

Kennedy [REDACTED]

Gate Valve – C509 & C515 gate valves

Coating: FBE, interior and exterior conforming to AWWA C550.

Thickness: 9 mils

Butterfly Valve – Valve 4500, Class 150B

Coating: FBE for mechanical joint valves, conforming to AWWA C550
(Universal Primer is standard for flange joints, epoxy optional).

Thickness: Minimum 4-6 mils

Mueller [REDACTED]

Gate Valve – 2360 gate valves, AWWA C515 & C509

Coating: FBE interior and exterior, conforming to AWWA C550.

Thickness: 10 mils

Butterfly Valve – Linesal III, Class 150B

Coating: Epoxy coated interior and exterior for above ground valves.

Thickness: Minimum 4 mils, option of additional 4 mil increments.

Clow [REDACTED]

Gate Valve – C509 & C515 gate valves

Coating: FBE, interior and exterior conforming to AWWA C550.

Thickness: 9 mils

Butterfly Valve – Valve 4500, Class 150B

Coating: Universal Primer standard, option of FBE conforming to AWWA C550.

Thickness: 5 mils

American

Gate Valve – Series 2500, C515

Coating: FBE, interior and exterior, AWWA C550

Thickness: --

M&H

Gate Valve – C509 & C515

Coating: FBE, AWWA C550

Thickness: 5-8 mils

Butterfly Valve – C50 & C515

Coating: FBE, AWWA C550

Thickness: 5-8 mils

[REDACTED]