

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: October 23, 2025

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager 

FROM: Crystal J. Yezman, Manager of Maintenance and Construction 

SUBJECT: Follow-up Joint Bonding of Ductile Iron Pipe

SUMMARY

This memorandum provides additional information requested by the Board regarding public comments related to joint bonding of ductile iron pipe (DIP) used in the water distribution system. Specifically, the commentor requested clarification on whether the removal of the zinc coating and joint bonding through cadwelding affects the integrity or useful life of the pipe. The question followed similar questions sent to the Board via email on September 23, 2025 and addressed through a Board Information Memo dated October 9, 2025 (attached).

DISCUSSION

DIP purchased by the District is coated with zinc, which acts as a sacrificial anode to reduce localized corrosion. When installed with a polyethylene encasement, the zinc coating performs effectively in soil with low to moderate corrosivity. In areas with highly corrosive soils, stray electrical currents, or brackish groundwater, the zinc coating can deplete more rapidly. In these situations, additional corrosion protection is needed.

Joint Bonding and Cadwelding

Joint bonding provides supplemental corrosion protection by connecting a wire to the pipes to create electrical continuity between pipe segments. The bonding requires the removal of a small patch of zinc coating (approximately 2 square inches) to allow for proper adhering of the cadweld. The procedure to remove the zinc coating is consistent with guidance from:

- The Ductile Iron Pipe Research Association, which provides guidance on the removal of all coatings including zinc for field welding
- McWane Ductile, which publishes standard procedures for cadwelding surface preparation on its website

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The removal of a small zinc coating patch for cadwelding is an accepted and well-established industry practice. When applied in accordance with manufacturer and industry standards, cadwelding does not compromise the structural integrity of DIP or affect water quality. The District's procedures align with recognized best practices to ensure the long-term reliability and safety of its pipeline infrastructure.

CCC:CJY:sd

Attachment: Board Information Memo dated October 9, 2025 Follow-up Public Comment
Bonding Ductile Iron Pipe

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: October 9, 2025

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager *CCC*

FROM: Crystal J. Yezman, Manager of Maintenance and Construction *CJY*

SUBJECT: Follow-up on Public Comment Regarding Ductile Iron Pipe

SUMMARY

The Board requested information in response to a public comment made at its September 23, 2025 meeting regarding construction practices related to ductile iron pipe (DIP). The commentor raised issues related to joint bonding and potential job hazards.

DISCUSSION

In 2019, the District adopted DIP as the primary material for distribution pipeline. While strong, durable, and readily available, DIP is metallic and susceptible to corrosion over time. To protect the pipe, the District purchases DIP with a protective zinc coating and requires polyethylene wrapping during installation. In areas with highly corrosive soils, stray electrical current, and/or brackish groundwater, those protective layers can deteriorate. In those conditions, joint bonding is added to provide additional corrosion protection. Joint bonding metallicity connects sections of pipe to improve corrosion resistance and allows the District to add sacrificial anodes and monitor pipe performance, helping to extend its life with little or no additional excavation.

Joint bonding is a common industry accepted practice and is used by other major water utilities including the San Francisco Public Utilities Commission, Denver Water, and Washington Suburban Sanitary Commission.

To carry out joint bonding, District crews use cadwelding, an exothermic welding process that creates a strong, permanent electrically conductive bond between DIP segments. District plumbers are trained to perform cadwelding, and the District has safely performed this work for years. Following cadwelding, the exposed surfaces of the pipe are covered with a corrosion resistant epoxy patch and polyethylene wrapping.

A Job Hazard Analysis (JHA) on cadwelding and grinding DIP was prepared on August 12, 2025 and updated September 24, 2025. Procedures to mitigate health and safety hazards include wearing proper eye protection and fire retardant personal protective equipment. An air monitoring exposure assessment performed in February 2025 during grinding and cadwelding

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indicated no exceedance of permissible exposure limits. Staff also performed laboratory analyses of the water held inside a segment of DIP for 72 hours following cadwelding to ensure water quality was not impacted. The photos included by the commentor were from a training session for cadwelding and not indicative of actual field installations.

CCC:CJY:sd

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