



## SUBMITTAL: CEMENT-MORTAR AND ASPHALTIC MATERIAL

(Current revisions for the noted Standards apply)

Tyler Union Waterworks Type I-II cement lining and asphaltic coating and lining provided with our ANSI/AWWA C104 cement-mortar lined ductile iron fittings are NSF-61, NSF-372 and Annex G approved. Tyler Union Waterworks lined and/or coated 2 inch through 64 inch fittings are provided in accordance with and meet all the applicable terms and requirements of ANSI/AWWA C104/A21.4, ANSI/AWWA C110/A21.10, ANSI/AWWA C111/A21.11, ANSI/AWWA C153/A21.53, ANSI/AWWA C151/A21.51, and ASTM C150.

The standard specified thicknesses for cement and asphaltic linings for ductile iron fittings 2 inch through 64 inch are as provided. Unless specified otherwise upon order placement, all cement lined **\*\*fittings provided by Tyler Union Waterworks will be provided with an asphaltic lining and coating and the minimum thickness cement lining as provided for by ANSI/AWWA C104.**

Fitting Size	Minimum AWWA Cement Lining Thickness	*Double Cement Lining Thickness	Minimum Asphaltic Thickness	Typical Tyler Union Asphaltic Thickness
2in. to 12in. or 76 to 305mm.	1/16" or 1.6mm	1/8" or 3.2mm	1 mil	2 – 4 mil
14in. to 24in. or 356 to 610mm	3/32" or 2.4mm	3/16" or 4.8mm	1 mil	2 – 4 mil
30in. to 64in. or 762 to 1600mm	1/8" or 3.2mm	1/4" or 6.4mm	1 mil	2 – 4 mil
*NOTE: You must specify double cement lining upon order placement				
**NOTE: Mechanical Joint Solid Sleeves, Caps, and Plugs are provided with asphaltic coating only as per AWWA C110/C153 Section 4.4.3				

The asphaltic coating and lining utilized on the "inside" of pipe and fittings is to aid in the proper curing of the cement mortar lining as described in the ANSI/AWWA C104 standard, Section 4.10. The Asphaltic coating and lining utilized on the "outside" of pipe and fittings is for cosmetic purposes and intended to provide some level of corrosion protection prior to being installed.

The purpose of the cement lining on the inside of ductile iron waterworks fittings is to reduce the degree of tuberculation (buildup) or corrosion on the fitting wall. Tuberculation or corrosion of the fitting wall is minimized in soft or acid water as the cement lining creates a high pH at the fitting wall. Beginning in 1995, the asphaltic lining for the inside of fittings is no longer required by the AWWA but is recommended in instances where the pH of the water is less than 6.0 or greater than 10.0.

<b>Additional Applications and Ratings for Cement-Mortar and Asphaltic Materials:</b>	
Cement without asphaltic coating: Service to *212°F max.	Cement with asphaltic coating: Service to 150°F max.
Asphaltic Only: Air Service to 150°F max.	Cement w/o asphalt: Sea water, non-septic gravity sewer, reclaim water
*NOTE: For systems designed to convey materials above 150°F, contact Tyler Union for adjusted pressure rating of the fittings	
<b>ANSI/AWWA C104/A21.4 - Approved Field Repair Method for Cement-Mortar Lined Fittings:</b>	
1.	Remove the damaged portion or area of the lining down to the metal surface, making sure any remaining lining edges are undercut slightly or perpendicular to the fitting wall.
2.	Clean the surface of loose debris and any tuberculation or corrosion where the lining was removed.
3.	Prepare a stiff mortar from a mixture of sand, cement, and water making sure the mix contains no less than one part cement to two parts sand by volume.
4.	Thoroughly wet the cut out area and the adjoining lining.
5.	Apply mortar mix and trowel smooth with the adjoining lining
6.	After any surface water has evaporated, but while the patch is still moist, cure the lining as provided.
7.	The repaired cement lining can be kept moist by seal (asphaltic) coating or with the use of <b>**wetted</b> burlap bags placed over the entire waterway opening of the fitting or access point. Once the mortar is applied to the fitting apply the seal coat by spraying or brushing on the seal coat within 5 to 15 minutes after any surface water has evaporated.
** Note:	(1 In instances where seal coat is not used, cure cement as provided for 24 hours after application. (2 In cold weather the patched area should be protected from freezing. (3 If seal coat paint is used during field repair, allow a cure time of 48 hours after the seal coat is Applied before placing fitting back in service.
<b>Tyler Union Waterworks - Approved Field Repair for Asphaltic Coating of Interior and Exterior Fitting Surfaces:</b>	
1.	Paint repair to the fitting body or mechanical joint includes use of a hand steel bristle brush to remove loose corrosion. Wipe area free of dust or debris with a cloth suitable for the task and recoat exterior areas of the fitting with the paint provided as needed using a standard paint brush sized for the task.
2.	Recoating of the cement lining is achieved by wiping the lining with a cloth to remove any loose paint or debris and then apply paint using a standard size paint brush suitable for the task applying paint to affected areas as needed.

**Note:** Pressure washing of cement linings is not recommended. However, if required contact your Tyler Union representative for instructions before proceeding. Failure to follow these instructions or provide suitable supporting documentation will void the warranty on our lining.