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November 20, 2017

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RESEARCH REPORT: RR 5565  
EFFECTIVE DATE: 12/01/2017  
EXPIRATION DATE: 12/01/2018  
Telephone: 714-564-7730

**GENERAL APPROVAL - Renewal - Epoxy Barrier Coating for internal Fire Protection Piping ( ePipe ), installed by Ace Duraflo Systems, LLC.**

## DETAILS

This research report approves Ace Duraflo Systems, LLC and contractors approved by Ace Duraflo Systems, LLC to use a proprietary process of cleaning and lining inside of fire service water pipes using a non-toxic NSF approved epoxy coating. The coating increases the corrosion resistance of metallic pipes. The insides of the pipes are first cleaned with a non-toxic abrasive process to remove corrosive buildup, burrs, solder drips, etc. and prepared for the application of the barrier material. The epoxy barrier coating material is applied in accordance with the manufacturer's specifications with thicknesses ranging from 4 to 120 mils depending on application. Once cured, the pipes are cleaned and ready for use.

The approval is subject to the following conditions:

1. This process is approved for fire protection applications as follows:
  - a. Metallic steel and copper piping systems in 1" to 4" nominal pipe sizes,
  - b. In new and existing systems,
  - c. In all types of constructions,

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2. This process is not approved as a method of repairing and concealing cracks, holes leaks, or other imperfections in the piping system.
  
3. A fire sprinkler permit shall be obtained for each installation of this product prior to beginning construction. The permit fees shall be based on the fees to replace sprinkler heads for the total number of heads installed in the lined system. The permit fees for a standpipe system shall be based on the total number of risers to flush.
  
4. Inspection:
  - a. It is the responsibility of the installer to demonstrate to the satisfaction of the fire sprinkler inspector that the system will continue to function as designed after system has been epoxy lined.
  - b. The lined piping system shall be pressure tested to the satisfaction of the fire sprinkler inspector. New and existing piping systems using factory or field lined pipe shall be hydrostatically tested at 200 psi and shall maintain that pressure without loss for 2 hours. Portions of systems normally subjected to system working pressures in excess of 150 psi shall be tested at a pressure of 50 psi in excess of system working pressure without loss for 2 hours.
  - c. All valves shall be operated to demonstrate to the inspector that they remain functional.
  - d. Additional inspections may be required at the discretion of the inspector.
  
5. Field installations shall be performed as follows:
  - a. Only Ace Duraflo Systems, LLC and contractors approved and authorized by Ace Duraflo Systems, LLC are allowed to use the process approved under this research report.
  - b. Existing systems to be lined shall be in good conditions, free from cracks, holes, leaks or other imperfections in the piping systems. Piping materials with leaks or visual signs of corrosion or damage shall be replaced prior to being lining.
  - c. The pipe cleaning and coating process shall be conducted in accordance with ANSI/AWWA Standard No. C210-2007 and the manufacturer's printed instructions. When in conflict, the latest edition of the manufacturer's printed

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instructions approved by the Mechanical Testing Laboratory shall prevail.

- d. The lining shall only be used in rigid piping systems. It shall not be applied across fittings or joints designed to allow mechanical flexibility in the system.
  - e. Pipes shall be fully cleaned and prepared prior to applying any coatings. The cleaning of pipes and piping systems and the lining process shall be performed in accordance with the printed instructions of the manufacturer. After coating, pipes shall be allowed to fully cure and then be flushed for a minimum of 1 hour.
  - f. Valves and sprinklers and other components which could be damaged or rendered nonfunctional by the cleaning or epoxy lining process shall be removed prior to cleaning and coating and reinstalled after flushing. Only new sprinklers of the same type (i.e. discharge type, orifice size, temperature rating, etc.) shall be reinstalled in the lined system.
6. Repairs to lined piping systems shall be performed as follows:
- a. Repairs shall be done in accordance with the manufacturer's written instructions.
  - b. Only Ace Duraflo Systems, LLC and contractors approved and authorized by Ace Duraflo Systems, LLC are allowed to perform field lining of pipes.
  - c. All replacement components, including pipes and fittings installed in a lined piping system, shall be factory lined or field lined by Ace Duraflo Systems, LLC or contractors approved and authorized by Ace Duraflo Systems, LLC. Unlined components shall not be used.
  - d. Replacement joints shall be joined with threaded, compression or by other approved mechanical means. Joints shall not be made with techniques utilizing heat. If heat is used in the disassembly of lined systems, any heat affected epoxy shall be removed and the pipe shall be recoated. Compression type joints shall be joined prior to lining the pipe.
7. Coated pipes shall be labeled. The labels shall indicate the name "Ace Duraflo Systems, LLC", "ADF 204 Internal Pipe Coating Process" or "ADF Internal Epoxy Barrier Coating Process", "NSF-PW" for potable water applications and include a disclaimer not to replace pipes without contacting Ace Duraflo Systems, LLC. The labels shall be either tags or decals which shall be attached to the outside of the pipe at following locations.

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- a. At all valve change outs.
- b. At water service shutoff valve.
- c. At standpipe outlets.
- d. In systems along pipes at intervals not to exceed 20 feet except for existing piping located in concealed and inaccessible areas.
- e. At piping access points.

**DISCUSSION**

Samples of copper and steel lined pipes were subjected to hydrostatic pressure tests, heat tests, and flow tests and evaluated under different conditions for a typical sprinkler system. The samples were tested and examined by the Mechanical Testing Laboratory. The materials and construction are equivalent to that prescribed by the Los Angeles Municipal Code in quality, strength, effectiveness, durability and safety.

For this General Approval to be valid on any individual construction project in the City of Los Angeles, an engineer or inspector of the Department of Building and Safety must make a determination that all conditions of the General Approval required to provide equivalency have been met in the case of each construction project under consideration.

The approval is granted under Sections 94.302 and 94.2010 of the Los Angeles Plumbing Code (LAPC), 2017 Edition.

Approved by:



William Miranda  
Mechanical Testing Laboratory