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DESIGN DIRECTIVE

To: Distribution

From: Erik J. Stoothoff, P.E. *EJS*
Chief Engineer

Date: 7/18/2022

RE: Process Water Supply at Stations

This design directive is intended to consolidate, reiterate, supplement, and clarify the MBTA's design approach, preferences, and requirements for Process Water Supply at Stations.

In the event that conditions warrant deviation from this directive, a design waiver signed by the Chief Engineer and department owning the scope of work will be required of the project.

Design Consultants shall design to standards as prescribed by Code. MBTA Standards shall apply only where Code does not address a topic or the MBTA requires a standard above and beyond Code. The more stringent shall always apply.

OBJECTIVE

Process Water Supply at Stations for all new construction, repair or replacement projects shall follow standards that are consistent with MBTA's priorities to the safety of our passengers and resiliency of our stations. As such, design shall prioritize safety, functionality and ease of maintenance over time.

CODES, STANDARDS AND POLICIES

- 780 CMR – Massachusetts State Building Code
- 248 CMR – Massachusetts Plumbing Code
- NFPA 13 – Standard for the Installation of Sprinkler Systems

DESIGN PRINCIPLES

All stations shall provide a water source for the purpose of interior and exterior station cleaning and general maintenance, as well as enclosed station platform drainage plumbing that collects and discharges wash water directly into a wastewater system without contaminating the track structure (rails, ties, ballast, cables, etc.).

Stations that feature enclosed spaces, such as vestibules, flyovers and/or elevators, which are not temperature controlled, shall utilize a Non-Freeze Wall Hydrant with integral vacuum breaker, featuring commercial grade design and construction that is suitable for cold weather climates, anti-siphoning and self-draining. Water

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source to Wall Hydrant shall be heat traced and insulated to prevent against freezing. The following features shall be met:

- Concealed non-freeze key operated wall hydrant with integral vacuum breaker.
- Bronze head, seat casting, internal working parts and wall casing.
- 3/4-inch hose connection.
- 3/4-inch female by 1-inch male piping connection.
- Operating pressure reaching that of 125psi.
- Shall comply with ASME B1.20.7 and ASSE 1019-2004 and UPC/IAMPO Listed.

Stations providing a water source at an exterior location, where an enclosed station structure does not exist, shall utilize a Non-Freeze Yard Hydrant featuring commercial grade design and construction that is suitable for cold weather climates and self-draining. The following measures shall be met:

- Epoxy coated cast iron head with lift handle.
- Lock option for lift handle.
- 1-inch galvanized steel casting with bronze internal working parts and valve housing.
- 3/4-inch male hose connection, 3/4-inch female threaded inlet connection and 1/8-inch NPT drain port.
- Operating pressure reaching that of 125psi.

Spaces that are required by code to provide sprinklers, and do not feature temperature-controlled spaces or the sufficient infrastructure for a dry-pipe system, shall utilize heat trace cable to prevent against freezing. Where heat trace cable will not be sufficient to maintain the NFPA 13 required 40-degree threshold, then thermal insulation featuring a weatherproof jacket shall be provided in conjunction with the heat trace cable.

Drainage infrastructure shall conform to the requirements of the MBTA's Drainage Design Directive.