

**INSTALLER and INSPECTOR QUICK-REFERENCE:
2022-NRCA-PRC-08-F
Electric Underslab Heating Controls**

Purpose and Scope of the Test

This test ensures that any heated slab that uses an electric resistance heating system is thermostatically controlled to prevent excess heat from entering the refrigerated space, and that its load is shed during the summer on-peak period defined by the electric utility provider, as required per the Energy Code. The test verifies that the electric resistance heater is controlled according to the underfloor temperature and is forced off during the summer on-peak period.

Test trigger

This test is required when any concrete slab that utilizes electric resistance heating is installed within a refrigerated warehouse.

Exceptions: Refrigerated warehouses smaller than 3,000 square feet.

Relevant Energy Code References and Required Compliance Documents

Title 24, Part 6 of the California Building Code, Building Energy Efficiency Standards (Energy Code) sections 120.6(a)2, 120.6(a)7A; NA7.10.1; NRCC-PRC-E Table F.

Who Can Perform the Test

There are no restrictions. The test is typically performed by the startup technician responsible for programming the setpoints in the control system.

Required Tools

Performance of this test will require measuring the amperage of the electrical circuit(s) powering the underfloor heating system. The instrumentation needed to perform the test may include, but is not limited to:

- A clamp-on amp meter.
- A device capable of accessing and manipulating the energy management system settings. (Can be a dedicated terminal at the building.)

Estimated Time to Complete Test

Construction Inspection: 2 hours (for one system)

Functional testing: 4 hours (for one system)

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Potential Issues and Cautions

Coordinate test procedures with the refrigeration or controls contractor or the facility supervisor since they may be needed to assist with manipulation of the control system.

Energizing the heating system prior to the slab completing its recommended cure time could compromise some of the intended qualities. Verify with the concrete manufacturer and/or slab designer that the slab has had adequate cure time before activating heaters.

Inspection Enforcement

Required:

- Verify that each of the functional testing items on NRCA-PRC-08-F are marked as passing, and that Step 4 is marked with "Complies."
- Verify that the contact information of the technician is complete on page 2 of the form.

Acceptance Criteria

The underfloor electric resistance heater must do the following:

- De-energize when the underfloor temperature setpoint is higher, or equal to than the underfloor temperature setting (including any dead band or offset).
- Automatically turn off (and remain off) if the date and time of the control system falls within the summer on-peak period of the electric utility provider, regardless of the underfloor temperature.