

Seattle Permits

— part of a multi-departmental City of Seattle series on getting a permit

Concrete Encased Grounding Electrode

Updated February 10th, 2025

This Tip is intended to provide an overview of the code requirements for concrete encased grounding electrodes (ufer). Topics covered include requirements for bonding, permitting, testing and additional grounding electrodes.

National Electrical Code (NEC)

The [NEC](#) outlines rules for installing a concrete-encased electrode (ufer) for improving the grounding of the electrical system.

You must install a 20-foot section of rebar in the lower section of concrete foundations before you pour any additional concrete. This section of rebar must be bonded to the reinforcing bars installed in the foundation (ufer ground) and stubbed out of the foundation at an accessible location for future use with the structure's electrical service. If you are building an addition with at least 20 lineal feet of new footing and a new electrical service permit, you will be required to install an ufer.

Bonding

You may accomplish the required bonding by using the industry standard procedure of tying rebar together with steel tie wires. You must identify the rebar extending out of the concrete in a manner that indicates that it is intended to be used as the grounding electrode for the service providing power to the structure.

Permitting

An electrical contractor can request the inspection on the permit, if the ufer is ready at the same time as the temporary service, or with the cover inspection for service/feeder conduit-only placement, or on a get-started permit when plans are required.

Ufer Only Permit

If you are unable to get electrical permits when the foundation is constructed, your electrical or general contractor may obtain a "ufer only permit" for the installation of the ufer ground only. This permit covers the inspection of the installation of the ufer ground.

Testing and Optional Grounding Electrodes

Per 2023 [Seattle Electrical Code](#) 250.50

Existing Buildings

In an existing building, it is not required to disturb, break, or chip out concrete to access existing rebar for the purpose of providing an ufer connection.

New Buildings

When a new addition is built onto the foundation, an ufer does not need to be installed, unless work on the building's electrical service is also part of the scope of work to the existing building.

If the ufer is installed, but not inspected by an electrical inspector, the electrode can be tested by the electrical inspector to be certain the resistance measures 25 ohms or less. If the ufer does not measure less than 25 ohms, additional electrodes acceptable per NEC must be installed and tested until the resistance level of 25 ohms or less is obtained. A ufer test fee will apply.

Grounding and/or testing must be verified before service can be energized.

Additional Questions

If you have any questions or concerns regarding the installation of ufer grounds, please contact SDCI's Electrical Technical Backup at (206) 684-5383, Monday-Friday, 7:00 a.m. - 4:30 p.m or email staff at sci_electricalplanreview@seattle.gov.