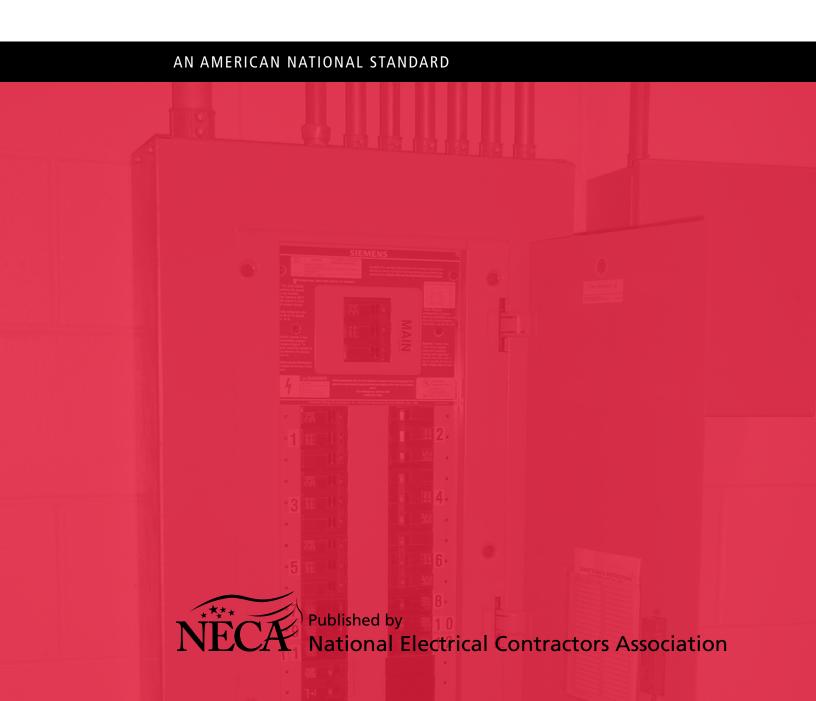
This is a preview of "NECA 407-2009". Click here to purchase the full version from the ANSI store.



NECA 407-2009

Standard for

Installing and Maintaining Panelboards



An American National Standard

NECA 407–2009 Standard for Installing and Maintaining Panelboards



Published by National Electrical Contractors Association





Table of Contents

	Foreword	٠١
1.	Scope	
1.1	Products and Applications Included	
1.2	Products and Applications Excluded	
1.3	Regulatory and Other Requirements	1
2.	Definitions	2
3.	Safety Procedures	3
3.1	General	
3.2	Safe Work Practices	3
3.3	Personal Protective Equipment (PPE)	3
3.4	De-Energizing Electrical Equipment	3
4.	Receiving, Inspection, Handling, and Storage	5
4.1	Receiving	
4.2	Inspection	
4.3	Handling	
4.4	Storage	5
5.	Installation	7
5.1	General	
5.2	Environmental Considerations	
5.3	Installation of Cabinets	
5.4	Installation of Conduits	
5.5	Installation of Panelboards	
5.6	Installation of Conductors	
5.7	Grounding and Bonding	
5.8	Accessories	
5.9	Panelboard Pre-Checks	1
6.	Cleaning, Testing, and Commissioning	
6.1	Cleaning	
6.2	Inspections	
6.3	Acceptance Testing	
6.4	Installation of the Front Cover	
6.5	Energizing Panelboards	
6.6	Balancing Loads	14

7.	Closeout	15
7.1	Test Data and Manuals	15
7.2	Training	15
7.3	Spare Parts and Special Tools	15
8.	Inspections and Maintenance	16
8.1	Frequency of Inspections and Maintenance	
8.2	Record Keeping	16
8.3	Routine Inspections	16
8.4	Cleaning	17
8.5	Infrared Scan	17
8.6	Inspections	17
8.7	Terminations, Connections, and Lugs	18
8.8	Connectors and Raceways	
8.9	Switches	18
8.10	Circuit Breakers	19
8.11	Electrical Tests	20
8.12	Re-Energizing Panelboards	20
9.	Inspection and Re-Energization After Adverse Operating Conditions	21
9.1	Inspection and Testing Following a Short-Circuit or Ground-Fault	
9.2	Panelboard Soaked By or Submersed Under Water	21
9.3	Inspecting and Re-Energizing Panelboard Sprayed or Splashed with Clean Water	22
10.	Testing Procedures	23
10.1	Insulation Resistance Testing	
10.2	Ground Resistance Testing	
10.3	Primary Current Injection Testing of Circuit Breakers (Optional)	23
10.4	Infrared Scan	
Anne	ex A: Reference Standards	25

(This foreword is not a part of the standard)

Foreword

National Electrical Installation Standards[™] are designed to improve communication among specifiers, purchasers, and suppliers of electrical construction services. They define a minimum baseline of quality and workmanship for installing electrical products and systems. NEIS[™] are intended to be referenced in contract documents for electrical construction projects. The following language is recommended:

Panelboards shall be installed and maintained in accordance with NECA 407-2009, *Standard for Installing and Maintaining Panelboards* (ANSI).

Use of *NEIS* is voluntary, and the National Electrical Contractors Association assumes no obligation or liability to users of this publication. Existence of a standard shall not preclude any member or non-member of NECA from specifying or using alternate construction methods permitted by applicable regulations.

This publication is intended to comply with the National Electrical Code® (NEC) in effect at the time of publication. Because they are quality standards, *NEIS* may in some instances go beyond the minimum safety requirements of the NEC. It is the responsibility of users of this publication to comply with state and local electrical codes when installing electrical products and systems. Users should also comply with OSHA occupational safety regulations as well as follow manufacturer's installation instructions when installing electrical products and systems.

Suggestions for revisions and improvements to this standard are welcome. They should be addressed to:

NECA Codes and Standards
3 Bethesda Metro Center, Suite 1100
Bethesda, MD 20814
(301) 657-3110
(301) 215-4500 Fax
www.neca-neis.org
neis@necanet.org

To purchase *National Electrical Installation Standards*, contact the NECA Order Desk at (301) 215-4504 tel, (301) 215-4500 fax, or orderdesk@necanet.org. *NEIS* can also be purchased in .pdf download format from *www.neca-neis.org/standards*

Copyright © 2009, National Electrical Contractors Association. All rights reserved. Unauthorized reproduction prohibited.

National Electrical Installation Standards, NEIS, and the NEIS logo are registered trademarks of the National Electrical Contractors Association. National Electrical Code and NEC are registered trademarks of the National Fire Protection Association, Quincy, MA.



1. Scope

1.1 Products and Applications Included

This standard describes installation and maintenance procedures for panelboards, and special procedures used after adverse operating conditions such as a short-circuit, ground-fault, or immersion in water.

This standard applies to panelboards rated 600 Volts AC or less, with main disconnects or lugs rated 1600 Amperes or less, and with feeder or branch circuit overcurrent devices rated 1200 Amperes or less.

This publication applies to single panelboards, multisection panelboards, and load centers used for distributing power for commercial, institutional, and industrial loads in nonhazardous locations both indoors and outdoors.

1.2 Products and Applications Excluded

This publication does not apply to live-front panel-boards, panelboards employing cast enclosures for hazardous or special service conditions, or panel-boards designed primarily for residential or light commercial service equipment.

1.3 Regulatory and Other Requirements

All information in this publication is intended to conform to the National Electrical Code (ANSI/NFPA Standard 70). Installers should always follow the NEC, applicable state and local codes, and manufacturer's installation instructions when installing and maintaining panelboards. Install panelboards within the limits of all applicable electrical ratings including voltage, amperage, and short-circuit current ratings.

Only qualified persons familiar with the construction and operation of panelboards should perform the installations described in this publication. The term "qualified person" is defined in Article 100 of the NEC. Administrative functions receiving, handling and storing, required in Section 4 and other tasks can be performed under the supervision of a qualified person.

Other *National Electrical Installation Standards* provide additional guidance for installing particular types of electrical products and systems. A complete list of *NEIS* is provided in Annex A.