

An ACI Standard

Acceptance Criteria for Special Unbonded Post- Tensioned Precast Structural Walls Based on Validation Testing and Commentary

Reported by Innovation Task Group 5

ACI 550.6-19



American Concrete Institute
Always advancing

This is a preview. [Click here to purchase the full publication.](#)



Acceptance Criteria for Special Unbonded Post-Tensioned Precast Structural Walls Based on Validation Testing and Commentary

Copyright by the American Concrete Institute, Farmington Hills, MI. All rights reserved. This material may not be reproduced or copied, in whole or part, in any printed, mechanical, electronic, film, or other distribution and storage media, without the written consent of ACI.

The technical committees responsible for ACI committee reports and standards strive to avoid ambiguities, omissions, and errors in these documents. In spite of these efforts, the users of ACI documents occasionally find information or requirements that may be subject to more than one interpretation or may be incomplete or incorrect. Users who have suggestions for the improvement of ACI documents are requested to contact ACI via the errata website at <http://concrete.org/Publications/DocumentErrata.aspx>. Proper use of this document includes periodically checking for errata for the most up-to-date revisions.

ACI committee documents are intended for the use of individuals who are competent to evaluate the significance and limitations of its content and recommendations and who will accept responsibility for the application of the material it contains. Individuals who use this publication in any way assume all risk and accept total responsibility for the application and use of this information.

All information in this publication is provided “as is” without warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose or non-infringement.

ACI and its members disclaim liability for damages of any kind, including any special, indirect, incidental, or consequential damages, including without limitation, lost revenues or lost profits, which may result from the use of this publication.

It is the responsibility of the user of this document to establish health and safety practices appropriate to the specific circumstances involved with its use. ACI does not make any representations with regard to health and safety issues and the use of this document. The user must determine the applicability of all regulatory limitations before applying the document and must comply with all applicable laws and regulations, including but not limited to, United States Occupational Safety and Health Administration (OSHA) health and safety standards.

Participation by governmental representatives in the work of the American Concrete Institute and in the development of Institute standards does not constitute governmental endorsement of ACI or the standards that it develops.

Order information: ACI documents are available in print, by download, through electronic subscription, or reprint, and may be obtained by contacting ACI.

ACI codes, specifications, and practices are made available in the ACI Collection of Concrete Codes, Specifications, and Practices. The online subscription to the ACI Collection is always updated, and includes current and historical versions of ACI's codes and specifications (in both inch-pound and SI units) plus new titles as they are published. The ACI Collection is also available as an eight-volume set of books and a USB drive.

American Concrete Institute
38800 Country Club Drive
Farmington Hills, MI 48331
Phone: +1.248.848.3700
Fax: +1.248.848.3701

www.concrete.org

This is a preview. Click here to purchase the full publication.

Acceptance Criteria for Special Unbonded Post-Tensioned Precast Structural Walls Based on Validation Testing and Commentary

An ACI Standard

Reported by ACI Innovation Task Group 5

Charles W. Dolan
Chair

Attila B. Beres
Ned M. Cleland
Neil M. Hawkins
Ronald Klemencic

Vilas S. Mujumdar
Suzanne Dow Nakaki
Stephen P. Pessiki

Carol K. Shield
John W. Wallace
Loring A. Wyllie, Jr.

Consulting member
S. K. Ghosh

This document applies to structures in regions of high seismic risk or to structures assigned to high seismic performance or design categories. It defines the minimum experimental evidence that can be deemed to satisfy the use of unbonded post-tensioned precast structural walls (shear walls) for bearing wall and building frame special reinforced concrete shear wall systems, as defined in ASCE/SEI 7-10, when those walls do not fully satisfy the intent of the prescriptive requirements of Chapter 18 of ACI 318-14. This document includes mandatory Acceptance Criteria and nonmandatory Commentary, and has been written in such a form that its requirements can be coordinated directly with the requirements for special precast structural walls in 18.11 of ACI 318-14. Among the subjects covered are requirements for the procedures that shall be used to design unbonded post-tensioned precast test modules and their configurations, as well as requirements for testing, reporting, and assessing satisfactory performance of the test modules.

The references of the Commentary provide documentary evidence, additional to the references of Chapter 18 of ACI 318-14, that support the acceptance criteria. Consistent with the approach of ACI 318, no comparison is made, either in the body of the Acceptance Criteria or Commentary, of research results for precast test modules satisfying ACI 318 with those for modules that, although not satisfying ACI 318, do satisfy the Acceptance Criteria. Such comparisons, both experimental and analytical, are available in the Commentary references.

ACI Committee Reports, Guides, Manuals, Standard Practices, and Commentaries are intended for guidance in planning, designing, executing, and inspecting construction. This document is intended for the use of individuals who are competent to evaluate the significance and limitations of its content and recommendations and who will accept responsibility for the application of the material it contains. The American Concrete Institute disclaims any and all responsibility for the stated principles. The Institute shall not be liable for any loss or damage arising therefrom.

Reference to this document shall not be made in contract documents. If items found in this document are desired by the Architect/Engineer to be a part of the contract documents, they shall be restated in mandatory language for incorporation by the Architect/Engineer.

In this document, consistent with the format of ACI 318-14, the word "Section" is not included before a reference to a section of ACI 318-14. To more clearly designate a section in this document, however, the word "Section" is used before any reference to a section of this document.

The section numbering for the Commentary is the same as that for the Standard, with numbers preceded by an "R" and the text in italics to distinguish them from the corresponding section numbers of the Standard.

Keywords: acceptance criteria; coupling element; drift; drift angle; energy dissipation; lateral resistance; post-tensioning; precast concrete; prestressed concrete; seismic design; shear wall; structural wall; test module; toughness.

CONTENTS

Chapter 1—Introduction and scope, p. 2

Chapter 2—Notation and definitions, p. 5

Chapter 3—Design procedure, p. 8

Chapter 4—Test modules, p. 9

Chapter 5—Test method, p. 12

Chapter 6—Test report, p. 15

Chapter 7—Test module acceptance criteria, p. 16

Chapter 8—Referenced standards, p. 18

ACI 550.6-19 supersedes ITG 5.1-07, was adopted October 24, 2007, and published August 2019.

Copyright © 2019, American Concrete Institute.

All rights reserved including rights of reproduction and use in any form or by any means, including the making of copies by any photo process, or by electronic or mechanical device, printed, written, or oral, or recording for sound or visual reproduction or for use in any knowledge or retrieval system or device, unless permission in writing is obtained from the copyright proprietors.