Anchorage Design for Petrochemical Facilities

Task Committee on Anchorage Design



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ANCHORAGE DESIGN FOR PETROCHEMICAL FACILITIES

PREPARED BY Task Committee on Anchorage of the Petrochemical Committee of the Energy Division of the American Society of Civil Engineers



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ASCE Petrochemical Energy Committee

This document is one of five state-of-the-practice engineering reports produced, to date, by the ASCE Petrochemical Energy Committee. These engineering reports are intended to be a summary of current engineering knowledge and design practice, and present guidelines for the design of petrochemical facilities. They represent a consensus opinion of task committee members active in their development. These five ASCE engineering reports are:

- 1. Design of Blast-Resistant Buildings in Petrochemical Facilities
- 2. Guidelines for Seismic Evaluation and Design of Petrochemical Facilities
- 3. Wind Loads for Petrochemical and Other Industrial Facilities
- 4. Anchorage Design for Petrochemical Facilities
- 5. Design of Secondary Containment in Petrochemical Facilities

The ASCE Petrochemical Energy Committee was organized by A. K. Gupta in 1991 and initially chaired by Curley Turner. Under their leadership the five task committees were formed. More recently, the Committee has been chaired by Joseph A. Bohinsky and Frank J. Hsiu. The five reports were initially published in 1997.

Building codes and standards have changed significantly since the publication of these five reports, specifically in the calculation of wind and seismic loads and analysis procedures for anchorage design. Additionally, new research in these areas and in blast resistant design has provided opportunities for improvement of the recommended guidelines. The ASCE has determined the need to update four of the original reports and publish new editions based on the latest research and for consistency with current building codes and standards.

The ASCE Petrochemical Energy Committee was reorganized by Magdy H. Hanna in 2005, and the following four task committees were formed to update their respective reports:

- Task Committee on Anchorage for Petrochemical Facilities
- Task Committee on Blast Design for Petrochemical Facilities
- Task Committee on Seismic Evaluation and Design for Petrochemical Facilities
- Task Committee for Wind Load Design for Petrochemical Facilities

Current ASCE Petrochemical Energy Committee

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The ASCE Task Committee on Anchorage Design

This updated document was prepared to evaluate the impacts of published reference data, research development and code changes that have occurred since creation of the 1997 report; and provide an updated report that will continue to serve as a source for uniformity in the design, fabrication and installation of anchorage in the petrochemical industry.

Although the makeup of the committee and the writing of this report are directed at petrochemical facility design, these guidelines are applicable to similar design situations in other industries. This report should interest engineers with responsibility for designing anchorage for equipment and structures, and operating company personnel responsible for establishing internal design, fabrication and construction practices.

This report is intended to be a State-of-the-Practice set of guidelines. The guidelines are based on published information and actual design practices. A review of current practices, internal company standards, and published documents was conducted. Also included is a list of references used by the Committee during creation of this report. The Committee acknowledges the work of Process Industry Practices (PIP) (http://www.pip.org) for providing much of the information used in this report.

In helping to create this consensus set of guidelines, the following individuals provided valuable assistance:

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Preface

The provisions of this document are written in permissive language and, as such, offer to the user a series of options or instructions, but do not prescribe a specific course of action. Significant judgment is left to the user of this document.

This document was initially prepared to provide guidance in the design, fabrication and installation of anchorage for petrochemical facilities and was issued in 1997 as *Design of Anchor Bolts in Petrochemical Facilities*. The task committee was reestablished in 2005 to update that document.

This document has been prepared in accordance with recognized engineering principles and should not be used without the user's competent knowledge for a given application. The publication of this document by ASCE is not intended to warrant that the information contained therein is suitable for any general or specific use, and ASCE takes no position respecting the validity of patent rights. The user is advised that the determination of patent rights or risk of infringement is entirely their own responsibility.

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