

**NBS/NIOSH**

**Volume I**

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# **DEVELOPMENT OF DRAFT CONSTRUCTION SAFETY STANDARDS FOR EXCAVATIONS**

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### IMPORTANT INFORMATION

Volume II of this report contains background information on the development of the draft standards. This information includes workshop summaries, workshop depositions, source documents and miscellaneous input and information contributed by workshop participants.

Volume II is for sale by the National Technical Information Service, Springfield, Virginia 22151.

DEVELOPMENT OF DRAFT CONSTRUCTION  
SAFETY STANDARDS FOR EXCAVATIONS

VOLUME I

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## PREFACE

The Occupational Safety and Health Act of 1970, Section 22(c)(1)(d)(2) authorizes the Director of NIOSH to make recommendations concerning improved occupational safety and health standards. The purpose of this document is to recommend to OSHA revised, updated language for improving 29 CFR 1926 Subpart P on Excavations, Trenching, and Shoring.

The draft standard contained in the document represents a consolidation of technical research performed by the National Bureau of Standards (NBS) on excavations combined with analysis of the comments generated by discussions of the proposed revisions. The proposed revisions were discussed at five regional workshops at which representatives of interested parties such as organized labor, trade associations, academic institutions, and state and federal agencies participated. These workshops were held in Atlanta, GA, Boston, MA, Dallas, TX, Milwaukee, WI, and San Francisco, CA during the months of June and July of 1981.

We are pleased to acknowledge the contributions to this document made by staff of NIOSH, NBS, and the organizers of and participants in the workshops.

The views, conclusions and recommendations expressed in this document are not necessarily those of any particular reviewer, state, or federal agency. However, all comments, whether or not incorporated, were considered carefully and have been forwarded along with this document to OSHA.



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## ABSTRACT

Five regional industry workshops were held to discuss construction practice in excavations. The input document to the workshops contained suggested revisions to Subpart P of the Safety and Health Regulation for Construction<sup>1</sup> which were prepared by the National Bureau of Standards (NBS) and based on previously prepared recommendations for construction practice in excavations.<sup>2</sup> This report contains a copy of the workshop input document, workshop summaries and recommendations relating to the workshop input document.

Key words: braced excavations; construction; Federal regulations; retaining structures; safety; shoring; slope stability; soil classifications; soil pressures; standards, trenching.

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<sup>1</sup> Federal Register, Vol. 39, No. 122, Safety and Health Regulations for Construction, Subpart P, Excavation, Trenching for Shoring, June 1974.

<sup>2</sup> Yokel, F. Y., Recommended Technical Provisions for Construction Practice in Shoring and Sloping of Trenches and Excavation, NBS Building Science Series 127, June 1980.

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## 1. INTRODUCTION

Existing OSHA regulations governing excavations, trenching, and shoring practices in the construction industry (29 CFR 1926, Subpart P) were promulgated in 1971. In 1976, OSHA engaged NBS to review the technical provisions of the regulations in view of: 1) actual construction practice; and 2) the state of the knowledge in geotechnical and structural engineering.

Based on the results of that study, which was completed in 1980, a working draft of recommended revisions to Subpart P was prepared by NBS under sponsorship of OSHA and the National Institute for Occupational Safety and Health (NIOSH), and widely distributed throughout industry. In the summer of 1981, five regional industry workshops were conducted to discuss the recommendations. Industry response was encouraged, collected and evaluated carefully.

This report contains the input document to the workshops (the working draft), summaries of the workshop comments, and an analysis of the suggestions and commentary produced by the workshops. In combining NBS recommendations with industry input via the regional workshops, this document is intended to serve as groundwork for further OSHA development of recommended standards and as part of the record on which OSHA revision of Subpart P will be based. The report is also intended to serve industry as a resource document for the development of a voluntary consensus standard.

Section 2 contains a comparison of the text of the input document with comments and suggestions from the industry input, as well as resulting recommendations. The input document to the workshops is included as an appendix to Volume I of this report. Volume II of this report contains workshop summaries by the author, workshop proceedings prepared by the organizers, miscellaneous correspondence, prepared statements and background information.