



普通高等教育“十一五”国家级规划教材

土木工程系列丛书

土木工程专业英语



(第2版) 上册

Civil Engineering Speciality English
(Volume 1 2nd Edition)

苏小卒 主编

Edited by Su Xiaozu



同济大学出版社
TONGJI UNIVERSITY PRESS



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List of Abbreviations(缩写词表)

<i>adj.</i>	形容词(adjective)
<i>adv.</i>	副词(adverb)
<i>n.</i>	名词(noun)
<i>pl.</i>	复数(plural)
<i>prep.</i>	介词(preposition)
<i>v.</i>	动词(verb)
<i>vi.</i>	不及物动词(intransitive verb)
<i>vt.</i>	及物动词(transitive verb)

土木工程专业英语
Civil Engineering Speciality English

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序 言

本书第2版的修改的内容主要包括:改正了第1版中的一些错误,在词汇表中增加了一些词汇。对原来无练习题的单元补充了练习题,并在书后给出了各单元练习题的答案。

各单元所做的修改由相应单元的编写者完成。此外,苏小卒编写了第6单元的练习题和答案,并编写了第15单元练习题的答案,并对全书进行了统一修订。

欢迎读者提出改进意见。

苏小卒

2011年5月

于同济大学土木工程学院

Preface to Second Edition

Among the modifications made in this second edition are the following. Some errors in the first edition are corrected and some new words and expressions added. Exercises are supplied to the units previously exercises. Solutions to the exercises of each unit are added at the end of the volume.

The modifications of the units were made by their respective writers. In addition, Su Xiaozu wrote the exercises and their solutions for unit 6, wrote the solutions to exercises of unit 15, and did the overall modification the volume.

Suggestions for further modifications are welcome.

Su Xiaozu

College of Civil Engineering, Tongji University

June 2011

第 1 版序言

在土木工程类专业合并成一个土木工程专业后的大土木环境下,许多课程的设置和内容都进行了调整。原来分门别类的专业英语课程也合并成一门“土木工程专业英语阅读”课,本书就是专为该课程编写的教材。

目前我国土木工程行业与国外有许多交流,并参与国际市场的竞争,许多专业技术人员希望有系统的土木工程专业英语参考书。为此,本书的编写尽可能做到内容的系统性、知识性和实用性,使本书除可用作教材外,也可供土木工程专业的教师、研究人员和工程技术人员参考。

专业英语与普通英语并无实质的不同。因此,学习普通英语的方法仍适合于学习专业英语。听、说、读、写、译这五种语言技能是互相联系的。过去一般认为专业英语以读、写、译为主,然而现在随着国际交流和全球化市场经济的发展,需要听和说的场合也越来越多的。故也应鼓励进行听说方面的练习。经验表明,英语听力的熟练对于提高阅读能力也是大有帮助的。由于语言的技能性重于其知识性,经常使用英语以加强练习是非常重要的。除了阅读本书之外,如能结合学习和工作经常阅读专业英语文献,对提高专业英语水平是大有好处的。

本书分为上、下两册,上册为基本部分,相对应于第一个学期的“土木工程专业英语阅读I”课程;下册涉及土木工程的各个领域,相对应于第二个学期的“土木工程专业英语阅读II”课程。

上册的内容见本书的目录,共有 18 个单元,每单元分为课文和阅读材料两部分。课文配有词汇表、注释和习题;阅读材料配有注释。书后还附有总词汇索引。

本书由同济大学土木工程学院专业教师编写。上册第一、二单元由苏小卒编写;第三单元由梁穉稼编写;第四单元由薛伟辰编写;第五单元由张盛东编写;第六单元由顾祥林编写;第七、八、九单元由周克荣编写;第十、十一、十二单元由罗永峰编写;第十三单元由叶勤编写;第十四单元由祁德庆编写;第十五单元由刘前曦编写;第十六单元由叶为民编写;第十七、十八单元由韩兵康编写。全书由苏小卒统一修订定稿。

本书是同济大学土木工程学院教材编写计划项目,副院长陈以一教授对本书的编写给予了很大支持和帮助。

由于编写时间紧迫,及限于编者的学识,书中难免会有不足之处。敬请读者批评指正。

苏小卒

2000年6月

于同济大学土木工程学院

Preface to First Edition

After the transformation of the various specialities in the civil engineering field into a single civil engineering speciality, the so-called “big civil” environment has been formed under which the curriculum of many courses has been adjusted in both layout and content. As a result, the previous speciality English courses in the various civil engineering fields have also been combined into one “Civil Engineering Speciality English” course. It is for this course that this book has been compiled and written as a textbook.

At present there has been much technological exchange between the civil engineering profession in this country and that overseas. Civil engineering companies in this country are more and more involved in the competition of the international market. In all these activities many professionals feel the need to improve their speciality English level. Therefore, this book has been written with due consideration to try to make its content systematic in knowledge and suitable for practical use. It is hoped that this book, apart from being used as a textbook, can also serve as a speciality English reference for the teachers, researchers and engineering professionals in civil engineering who feel such a need.

It is believed that there is no essential difference between speciality English and ordinary English. Therefore, the methods suitable for studying ordinary English are still suitable for studying speciality English. The five language skills, namely, listening, speaking, reading, writing, and translation/interpretation, are interconnected. Somehow it has been held that speciality English is mainly used in reading, writing and translation. However, with the present development of international exchange and globalized market economy, the situations in which English listening and speaking are required have become more frequent. It follows that the practice on aural and oral abilities should be encouraged. Previous experience has shown that listening proficiency is of much help in developing reading skills. Since English is more of a skill than a knowledge, constant exposure to speciality English is very important. It is recommen-

ded that, besides reading this book, speciality English be actually used in daily study and work especially in the form of reading. This habit is very effective for improving one's speciality English level.

This book is in two volumes: Volume One is the fundamental part which can be used for the one semester "Civil Engineering Speciality English I" course; Volume Two, which will be on the various fields of civil engineering, can be used for the one semester "Civil Engineering Speciality English II" course.

The scope of Volume One can be readily seen from the table of contents of this volume. There are altogether 18 units in Volume One, and each unit has two parts: text and reading material. The texts are followed by Vocabulary and Expressions, Explanations, and Exercises. The articles used as reading material are annotated where necessary.

The material selection and writing of the book is carried out by the academic staff of the College of Civil Engineering, Tongji University. Volume One is written by: Su Xiaozu (units 1 and 2), Liang Sejia (unit 3), Xue Weichen (unit 4), Zhang Shengdong (unit 5), Gu Xianglin (unit 6), Zhou Kerong (units 7, 8 and 9), Luo Yongfeng (units 10, 11 and 12), Ye Qin (unit 13), Qi Deqing (unit 14), Liu Qianxi (unit 15), Ye Weimin (unit 16), and Han Bingkang (units 17 and 18), where the units in the parentheses are written by the respective writers. The book is finally edited, revised and unified by Su Xiaozu.

The writing of this book has been a part of the textbook project of the College of Civil Engineering, Tongji University. Here we thank Deputy Dean Professor Chen Yiyi for his encouragement and help.

Due to tight schedule and our limited knowledge, there could be imperfections in this book. Criticisms and suggestions are welcome for future improvement.

Su Xiaozu

College of Civil Engineering, Tongji University

June 2000

Civil Engineering Speciality English

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Unit 1

Text

Civil Engineering(土木工程)

Fundamentally, engineering is an end-product-oriented discipline^[1] that is innovative, cost-conscious, and mindful of human factors. It is concerned with the creation of new entities, devices or methods of solution; a new process, a new material, an improved power source, a more efficient arrangement of tasks to accomplish a desired goal or a new structure. Engineering is also more often than not concerned with obtaining economical solutions. And, finally, human safety is always a key consideration.

Engineering is concerned with the use of abstract scientific ways of thinking and of defining real world problems. The use of idealizations and the development of procedures for establishing bounds within which behavior can be ascertained are part of that process.

Many problems, by their very nature, cannot be fully described—even after the fact, much less at the outset. Yet acceptable engineering solutions to these problems must be found which satisfy the defined needs. Engineering, then, frequently concerns the determination of possible solutions within a context of limited data. Intuition or judgment is a key factor in establishing possible alternative strategies, processes, or solutions. And this, too, is all a part of engineering.

Because of the variety and kinds of input that must be taken into account at each and every stage in the solution process, engineering problems are most often approached in what can be referred to as a hierarchically structured sequential decision process. Certain things must be known, and the influence of these ascertained before subsequent steps in the solution process can be approached.

Emphasizing one of the concepts alluded to above, engineering is most often concerned with the development of permissible alternatives—not necessarily the identification of a unique solution. True, economics, aesthetics, or other considerations may eventually dictate a particular, singular choice from among several or even many possibilities, but those acceptable ones will have been established prior to that final stage, using normal engineering methods.

Civil engineering is one of the most diverse branches of engineering. The civil engineer plans, designs, constructs, and maintains a large variety of structures and facilities for public, commercial, and industrial use. These structures include residential, office, and factory buildings; highways, railroads, airports, tunnels, bridges, harbors, channels, and pipelines. They also include many other facilities that are a part of the transportation systems of most countries, as well as sewage and waste