

葛耀君编著

土建 英语

THE ENGLISH
LANGUAGE
IN CIVIL
ENGINEERING

上海教育出版社

土 建 英 语

The English Language in Civil Engineering

葛耀君 编著

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内 容 提 要

本书系土建类专业的专业英语。全书共分四个单元、十八课课文。前三个单元的十五课课文，介绍了土建类专业的专业知识，每篇课文由英语课文、生词和术语、短语词组、参考译文、课文注释、课文练习等六部分组成。第四单元的三课课文，介绍了四种实用英语应用文的写作方法。前三个单元均安排了测验试卷。书后附有词汇表、练习答案和参考书目等三个附录。

本书可用作高等院校土建类专业学生的专业英语教材，也可供土建类专业技术人员自学或准备专业英语考核时学习之用，对于将要从事涉外土建项目工作的人员，本书不失为一本知识面广、专业性强和可读性好的专业英语阅读文选。

前 言

《土建英语》是作者近年来，在从事高等院校土建类专业本科生的专业英语教学过程中，编写的专业英语讲义。前三个单元的全部课文原文，选自附录三中的参考书，但是为了便于英语学习，对不少原文作了必要的删改、整理。第四单元的课文，是在参考了其他英语写作教材的基础上，自行编写的。经过连续七个学期、两个专业、四届本科生、350学时的专业英语课堂教学实践，反复修改逐步形成了这本土建类专业英语教材。

全书共分四个单元。第一单元是土建专业介绍，由“成为一名土木工程师”、“土木工程职业”和“土木工程专用术语”三篇课文组成。第二单元是土建基础知识，分四篇课文着重介绍了“测量”、“建筑材料”、“基础工程”和“结构分析”的基础知识。第三单元是土建工程项目，分八篇课文重点讨论了“现代建筑物”、“运输系统”、“桥梁结构”、“筑路”、“隧道”、“水利工程”、“给水与排水”和“交通工程”等八种土建工程。第四单元是实用英语写作，分三篇课文介绍了定义说明文、比较/对比论说文、解释说明文和摘要等四种英语应用文的写作。前三个单元中的每一篇课文，由英语课文、生词和术语、短语词组、参考译文、课文注释、课文练习等六个部分组成。其中课文练习包括阅读理解、词汇练习、词汇造句和英译中等四组练习。前三个单元的结尾安排了测验试卷，全书共有四份试卷供读者自查或督考之用。书后附有词汇表、练习答案和参考书目等三个附录。

本书可作为高等院校土建类专业学生的专业英语教材，全部教材约需80学时课堂教学，其中第一单元14学时，第二单元18学时，第三单元38学时，第四单元10学时，教师可根据实际适当筛

选；本书也可供土建类专业技术人员自学或准备专业英语考核时学习之用，前三个单元的课文学习可按下列顺序：阅读理解练习→词汇学习→词汇练习→课文学习→课文试译→造句练习→英译中练习；对于将要从事涉外土建项目的管理、设计、监理和施工人员，可按照自己的土建工程项目，有选择地阅读有关课文的内容。

通过土建英语的学习，应该力争达到这样的目标：熟悉和掌握500个单词和术语以及200个短语词组；实现从阅读基础英语文献到阅读专业英语文献的过渡，逐步提高阅读英语专业文献的速度和能力，掌握查阅和获取英语专业信息的能力；能比较熟练地翻译本专业英语文献资料，具备比较牢固的语言基础，并达到每小时准确翻译3000英语字符的速度；基本掌握四种英语应用文的写作方法，逐步适应英语应用文的写作规律，并能在30分钟里撰写一篇150个英语单词的英语应用文。

本书第一课至第十五课课文的参考译文由赵茂铨先生译校，谨表谢忱。由于作者从事专业英语教学时间不长，英语水平有限，谬误之处恳请广大读者批评指正。

作 者

于上海城建学院

一九九五年五月

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**UNIT ONE: Introduction
of Civil Engineering**

第一单元：土木工程介绍

Lesson One

Text

Becoming A Civil Engineer

Civil engineering is claimed to be [1] 'the art of directing the great sources of power in nature[2] for the use and convenience of man'. The part played by civil engineers in pioneering work and in developing wide areas of the world has been and continues to be enormous.

Civil engineers must make use of many different branches of knowledge including mathematics, theory of structures, hydraulics, soil mechanics, surveying, hydrology, geology and economics.

Civil engineering was not distinguished from other branches of engineering until 200 years ago. Most early engineers were engaged in the construction of fortifications and were responsible for building the roads and bridges required for the movement of troops and supplies[3]. The Roman armies of occupation in Europe were served by brilliant engineers but after the collapse of the Roman Empire there was little progress in communications until the beginning of the Industrial Revolution[4], the invention of the steam engine and the realization of the potentialities in the use of iron. Roads, canals, railways, ports, harbours and bridges were then built by engineers who adopted the prefix 'civil' to distinguish them from the military

engineers[5] and to emphasize the value of their work to the community.

In the English-speaking countries[6], unlike Continental Europe, a professional engineer who wishes to be fully qualified, must join at least one engineering institution. All these institutions require candidates for admission[7] to prove that they have some years of useful practical experience as an engineer. Each institution is a learned society not unlike a club except that the candidate's strict examination for membership is based mainly on his engineering knowledge, and all institutions publish engineering literature in their own subjects, usually in their monthly journal. Each has several grades of membership, from the highest, Full Member, down through the usual grade, Associate Member, to the grades of Student or Graduate[8] for younger people up to about twenty-five or thirty years old.

In Britain it was always possible for a boy on leaving school at fifteen to start work in the drawing office of a civil engineer, whether contractor or consultant, and eventually after many years of study in his spare time[9], to become a qualified civil engineer[10]. This is becoming less easy and it may soon become impossible. The recommended method[11] of study for the ICE (Institution of Civil Engineers) examinations is now by full-time or sandwich study[12] for a degree or diploma. Sandwich study is fulltime work at a college interrupted by periods [13] of full-time work with an employer.

Modern engineering requires more and more science, and to make use of its scientific theories, a civil engineer should study full-time for some years after leaving school. Therefore a university degree in civil engineering may soon become es-

sential for membership of the ICE or any of the other civil engineering institutions (Institutions of Highway Engineers, Municipal Engineers, Public Health Engineers, Structural Engineers, Water Engineers, or the Permanent Way Institution[14], etc.).

To qualify for Associate-Membership of the ICE, a person must be at least twenty-six years old and working as a civil engineer. He must also pass certain examinations[15], satisfy the ICE that he has had several years of useful engineering experience under the supervision of qualified civil engineers, both in the drawing office and on the site[16], and finally he must pass a mainly oral examination[17] called the professional interview[18], before a group of qualified civil engineers[19]. This is generally the only part of the examination from which candidates are never excused, whatever their civil engineering degree.

In general education, the minimum requirements, before a man may be accepted even as a candidate for the ICE examinations are as follows: five passes in the General Certificate of Education, (a) at advanced level in physics, (b) at advanced level in either pure or applied mathematics, (c) at ordinary level in English, and (d) at ordinary level in two other subjects. Detailed information is issued free by the ICE on all matters including the parts of examination a candidate need not take as well as on the number of years and the types of the civil engineering experience which are accepted.

In Britain the thirteen main engineering institutions were formally joined for examination purposes in 1965 in the Council of Engineering Institutions[20] in London. A similar arrange-

ment was made a few years earlier in the United Engineering Center, 345 East 47th Street, New York, for the United States institutions. In Britain all professions[21] now take the Part 1 examination set by the Council of Engineering Institutions. This includes the five subjects of engineering drawing, mathematics, applied mechanics, principles of electricity, heat light and sound.

Abbreviation of Names of Foreign Academic Bodies and Journals:

AASHO:	American Association of State Highway Officials
AASHTO:	American Association of State Highway and Transportation Officials
ACT:	American Concrete Institute
ARRB:	Australian Road Research Board
ASA:	American Standard Association
ASCE:	American Society of Civil Engineers
ASME:	American Society of Mechanical Engineers
ASTM:	American Society for Testing and Materials
AWS:	American Welding Society
BPR:	Bureau of Public Roads
BRF:	British Road Federation
BS:	British Standard; Bachelor of Science
CCA:	Cement and Concrete Association
ECC:	European Committee for Concrete
CIRIA:	Construction Industry Research and Information Association
FHWA:	Federal Highway Administration
FIP:	International Federation for Prestressing