



普通高等教育汽车与交通类专业“十二五”规划教材

交通工程专业英语

■ 林丽 主编

中国林业出版社

普通高等教育汽车与交通类专业“十二五”规划教材

交通工程专业英语

ENGLISH IN TRAFFIC ENGINEERING

林	丽	主	编
邬	岚	副	主 编
陆	建	主	审

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内 容 提 要

本书从交通工程专业研究和应用的实际出发,介绍交通工程的研究范围、交通流特征、交通规划、交通控制、交通安全和设计等内容。本书依据专业英语学习的指导思想、基本特点和具体方法,突出讲解词汇、句法和惯用法。本书共分为12个单元,每个单元包含1~3篇课文,以及相关专业术语、翻译技巧或论文写作技法。选用的素材着重反映了交通工程的基础理论和发展特色;其中英汉翻译和英文写作作用中英文编排,为读者提供了一个对比分析、自主练习的演练平台。本书还提供了专业网址选编内容,为读者检索查询外文资料提供了信息和资源。

本书可作为高等院校交通工程专业、交通运输专业、土木工程专业、森林工程专业、测绘工程专业本科教材,也可供交通行业管理人员和工程技术人员参考使用。

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前言

近年来,我国高校不断加强对外开放的力度,国际间的学术交流活动也日渐频繁,学生们了解国外最新知识、掌握最新理论动态的需求也更为迫切。为了强化巩固学生们的英语基础,提高其应用科技英语的能力,特编写了交通工程专业英语(English in Traffic Engineering)。本书读者对象为高等院校交通工程专业、交通运输专业、土木工程专业、森林工程专业、测绘工程专业本科生,以及交通行业管理人员和工程技术人员使用。希望通过本书的学习能够使学生及相关技术人员掌握必要的专业词汇,提高外文文献的自主学习能力和专业英文论文的写作能力。

本书共分为12个单元,每个单元包含1~3篇精读文章,翻译技巧或论文写作技法。在教学过程中,教师依据需要可自行选择文章进行精讲。本书选材广泛,题材选自近期国内外正式出版物,如学术专业著作、期刊等。参考了交通领域的相关时事新闻内容,涵盖了交通工程专业各方面的基础理论,涉及交通调查、交通流理论、交通规划、交通控制、交通设施等交通工程领域的诸多内容,并在一定程度上反映了交通工程专业最新的理论动态。本书还提供了专业网址选编内容,为读者检索查询国外资源提供了平台。同时,编者在编写过程中吸取了我国相近学科其他专业英语教材的优点和基础英语教学的经验,力求使读者在有限的学习时间里,了解现代交通工程专业的主要内容。

本书由南京林业大学林丽副教授任主编,邬岚任副主编,东南大学陆建教授担任主审。南京林业大学张永强、蒋婧雯老师参

2 前 言

加了编写工作。其中第 2、4、9 单元由林丽编写，第 1、6、8 单元由邬岚编写，第 3、5、7 单元由张永强编写，第 10、11、12 单元由蒋婧雯编写，全书最后由林丽统稿。本书编写过程中，我的研究生徐轶、吕婷婷、陈道强、孙海娟在整理资料与校对方面做了大量的工作。

限于编者的水平，书中不妥之处在所难免。恳请读者对本书的内容和章节安排提出宝贵意见，并对书中存在的不当之处提出批评和修改建议，以便本书再版修订时参考。

林 丽

2012 年 5 月

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Unit 1

INTRODUCTION Of TRAFFIC ENGINEERING

[内容提要]

本单元包含 3 篇文章，主要介绍交通工程学。第 1 篇文章介绍交通工程学的学科来源、权威研究机构及专业前景。第 2 篇文章从交通调查分析、交通操作、几何设计及交通规划等几个方面介绍交通工程实践内容。第 3 篇文章介绍美国交通工程学的发展历程。最后一部分介绍了交通工程专业英语的特点。

Text 1 Traffic Engineering: Scope and Prospects

Traffic engineering is one of the specialized areas of transportation engineering which is itself a branch of civil engineering. It deals mainly with the management, operations and control of streets and highways. The traffic engineer should have a basic qualification in engineering and its related fields. He can take up an appointment with the relevant government ministries and national parastatals. He can join a team of consultants or be on his own as a consultant. He can decide to join the faculty of a polytechnic or university.

In the early years of engineering, there were only two kinds of professional engineers: military engineers who built and operated the buildings, structures and machines of the armed forces at that time and civil engineers who applied their knowledge of materials, laws of physics and energy, and of mathematics to all other needs of civilization. This, in fact, is how the name “civil engineer” emerged. As man learned more about the world around him and how to mould its resources to his needs, it became apparent that no single person was able to command all its accumulated knowledge. Specialized branches of engineering then started to emerge, and this process has continued and will continue as engineers proceed towards their goal of learning, and applying their knowledge, to

better our ways of life. Traffic engineering is one of such specialized limbs of civil engineering and it is rooted in the common knowledge of mathematics and science.

Traffic engineering, in a broad sense, is the use of engineering principles and methods to help create or bring about orderly and efficient highway transportation. It makes use of systems analysis and operations research. The profession, although modern, has precedents as old as vehicles on wheels. The Roman Empire made use of some traffic engineering tools when one-way streets were introduced in some of their “urban” settings. The first traffic engineer joined the highway engineer, planner and others in seeking safe and efficient highway transportation in the nineteen twenties. The traffic engineer now forms part of every state highway department in most large cities. His job continues to grow in importance as highway transportation increases in magnitude and complexity. The traffic engineer, with the traffic police, is responsible for the traffic management and operations of our highways as more sections are opened for travel.

Every year, the population of Nigeria increases by a figure equal to another Ilorin town, and thousands of areas of new plots are developed. This increase in population and plots must be served by streets and other travel facilities that have to be planned for in order to provide amenities for the city as a place to live and work in. The traffic engineer makes important contributions in meeting some of these challenges by analyzing the transportation values of alternative plans for major street systems.

- Establishing functional designs, and
- Supervising traffic operations over these systems when completed.
- Urban re-development, off-street parking, new shopping centers, airport expansions, new towns, etc. are creating additional demands for traffic engineers.

Traffic Engineering Profession

Professional Associations: The Institute of Traffic Engineers (ITE) is the professional society of traffic engineers in the United States of America. The Institute defines traffic engineering as that phase of engineering that deals with the planning, geometric design and traffic operations of roads, streets and highways, their networks, terminals, abutting lands and relationships with other modes of transportation for the achievement of safe, efficient and convenient movement of persons and goods. The Nigerian Society of Engineers (NSE) is the sole professional body for all engineers in Nigeria. In this body there are various specializations including traffic engineering.

Education: In order to become a professional traffic engineer, one must have a university degree or equivalent in engineering, preferably in civil engineering. About 60% to 70% of practicing traffic engineers has either a diploma or masters degree in traffic/transportation engineering in addition to the first degree in engineering. That is to say one must have all the subject requirements at the secondary school certificate examination level to enter into an

engineering school. Majority of practicing traffic engineers are registered Professional engineers. Table 1-1 shows a statistical survey of the membership of the Institute of Traffic Engineers.

Activities: Traffic engineers usually work in organizations with other professionals like sociologists, economists, and town planners, and quite often supervise the work of other engineers and technicians. Table 1-2 shows the time spent by a consulting traffic engineer in percentages in a typical American city on various activities.

Duties of the Traffic Engineer. As show in Table 1-1, most traffic engineers work with the government or national organizations. A large number also work in industries developing better traffic control and research methods and devices. Quite a few are in faculties of polytechnics and universities. What they all do in common is look for answers to the important problems to be solved in traffic management and control.

Table 1-1: Field of Employment of ITE Members

Field of Employment	Percent of Members
Government Employees	62.5
Engineering Consultants	20.4
Educational Institutinos	6.8
Industrial Organizations	3.9
Others	6.4
Total	100.00

(Source: Institute of Transportation Engineers Analysis of Membership. 1967.)

Table 1-2: Time Spent by an Average Traffic Engineer in Various Activities

Activites	Percent of Time
Administration	40
Traffic Planning	17
Traffic Design	9
Traffic Signals	7
Signs & Markings	7
Research	6
Teaching,Advanced Studies	3
Others	11
Total	100.00

The traffic engineering profession is faced with the amazing growth of highway improvements. The traffic engineer must constantly seek to improve the efficiency of operations of today's overcrowded streets and highways. At the same time, he is engaged in helping to engineer a tremendous program of new roads. Some of these activities require the use or study of problem-solving techniques, higher mathematics, statistical methods, computer processing of data, human factors including capabilities and behavior of drivers and pedestrians, physics, economics

and other subjects fundamental to highway engineering. The traffic engineer is part of the team that makes instant decisions, changing the flow of traffic when a major highway accident or other emergency requires traffic to be rerouted. He works with the police and fire equipment.

And ambulance operators, directing them to areas, of conflagration through emergency routings, changes in traffic plans and operations. With more experience, the authority and scope of work of the traffic engineer increase. He may become the head of a major department and may assume many administrative duties on such traffic-related matters as public transportation, parking terminals, street construction and maintenance. Research, is an important part of the work of traffic engineers who, in addition to their regular duties, search for new knowledge to do their jobs better.

Personal and Professional Rewards

The rewards of any work well done are measured in terms of personal satisfaction and warranted recognition. One of the strong appeals of traffic engineering is the ability to contribute to saving lives and reducing the human costs of traffic accidents. The traffic engineer also sees the day-to-day results of his efforts in an improved traffic flow, better environment and living conditions. Traffic engineering offers financial and other rewards in abundance. The young traffic engineer can be assured of adequate financial rewards similar to other engineering and professional positions and often times higher than most non-engineering pursuits. Like in other professions, individual ability counts most and outstanding individuals find greater opportunities in traffic engineering in terms of increases in responsibility, services and income. In conclusion, it must be remarked that the traffic engineer and other traffic personnel must recognize their professional responsibilities—the exercise of due care and sound engineering judgment in the public interest.

Text 2 The Practice of Traffic Engineering

Traffic Studies and Analysis

In any scientific investigation the investigator, be the scientist or engineer, must take great pains to become familiar with the problem before proceeding further with the investigation. This usually involves making a thorough survey and investigation of all the relevant facts. On this factual foundation he can then plan and carry out any further work. He must not make any assumptions, even though they appear to be obvious. He must base his reasoning on an unprejudiced study of the facts. This guiding principle is one of the fundamental pillars of traffic engineering; it is, indeed, the cornerstone, the scientific beginning and basis of all