

高等学校交通运输与工程类专业规划教材

English for Highway and Bridge

专业英语

土木工程专业（路桥方向）

| 第4版 |

李 嘉 主 编
李 洁 副主编
俞同华 主 审



人民交通出版社股份有限公司
China Communications Press Co., Ltd.

道路桥梁渡河工程专业、土木工程专业 专业基础课推荐教材

道路工程制图（第五版）

谢步瀛 主编

道路工程制图习题集（第五版）

袁 果 主编

桥梁工程概论（第三版）

罗 娜 主编

道路与桥梁工程概论（第二版）

黄晓明 主编

公路工程地质（第四版）

窦明健 主编

测量学（第四版）

许娅娅 主编

道路工程材料（第六版）

李立寒 编著

道路工程材料（第二版）

申爱琴 主编

基础工程（第四版）

王晓谋 主编

结构设计原理（第4版）

叶见曙 主编

钢结构设计原理（第二版） 李国平 主编

专业英语（第二版） 袁聚云 主编

土木工程制图（第二版） 丁建梅 主编

土木工程制图习题集（第二版） 丁建梅 主编

土质学与土力学（第五版） 钱建固 主编

土工试验指导书 袁聚云 主编

土力学复习与习题 钱建固 主编

基础工程设计原理（第二版） 袁聚云 主编

预应力混凝土结构设计原理（第二版） 李国平 主编



QQ群（教师）328662128
道路工程课群教学研讨



QQ群（教师）138253421
桥梁工程课群教学研讨



QQ群（教师）185830343
交通工程课群教学研讨

教学资源 & 教学交流

咨询电话：(010) 85285865

（教师欲索取课件及了解教材和教学研讨会信息，请加教师群）

责任编辑 李 喆

封面设计 樊泰書裝
MOB:13521027010



网上购书 / www.jtbook.com.cn

定价：52.00元

高等学校交通运输与工程类专业规划教材

专业英语

[土木工程专业(路桥方向)]

English for Highway and Bridge

(第4版)

李 嘉 主 编
李 洁 副主编
俞同华 主 审



人民交通出版社股份有限公司
China Communications Press Co., Ltd.

内 容 提 要

本教材分五部分,第一部分为土木工程专业基础知识,涉及专业介绍、力学、建筑材料、测量学、工程合同、招标投标等方面的内容;第二部分为现代道路及交通工程专业知识;第三部分为桥梁工程方面的内容。所选课文和阅读材料均取自精选英文原版书刊,内容基本覆盖了道路、桥梁与交通工程设计、施工、管理各环节的常用专业词汇及新成就、新技术。第四部分为翻译方法与技巧,通过大量例句,阐述科技英语翻译的基本原则、特点和实用的翻译技巧。第五部分介绍英文摘要和致谢词写作的基本知识。

为了便于学习者使用,每课或每节后均配有一定数量的练习,书后附有疑难语句注释和参考答案以及专业英语网上学习平台。

本书为道路、桥梁及交通工程专业英语教材,面向高等院校土木工程专业学生,也可供有关专业技术人员学习参考。

图书在版编目(CIP)数据

专业英语:土木工程专业:路桥方向/李嘉主编.

—4版. —北京:人民交通出版社股份有限公司,
2019.1

ISBN 978-7-114-15211-5

I. ①专… II. ①李… III. ①英语—高等学校—教材
IV. ①H319.3

中国版本图书馆CIP数据核字(2018)第279120号

高等学校交通运输与工程类专业规划教材

书 名:专业英语[土木工程专业(路桥方向)](第4版)

著 者:李 嘉 李 洁

责任编辑:李 喆

责任校对:刘 芹

责任印制:张 凯

出版发行:人民交通出版社股份有限公司

地 址:(100011)北京市朝阳区安定门外外馆斜街3号

网 址:<http://www.ccpres.com.cn>

销售电话:(010)59757973

总 经 销:人民交通出版社股份有限公司发行部

经 销:各地新华书店

印 刷:北京鑫正大印刷有限公司

开 本:787×1092 1/16

印 张:21.5

字 数:529千

版 次:1997年7月 第1版 2003年1月 第2版

2012年4月 第3版 2019年1月 第4版

印 次:2019年1月 第1次印刷 总第30次印刷

书 号:ISBN 978-7-114-15211-5

定 价:52.00元

(有印刷、装订质量问题的图书由本公司负责调换)

第4版前言

本教材是按照原高等学校路桥与交通工程专业教学指导委员会审定的《专业英语》教材编写大纲的要求编写的。专业英语作为基础英语的后续课程,重点是培养学生阅读和翻译英文专业书刊的能力,提高阅读翻译文献资料的质量和速度。

本教材第1版于1997年出版,第2版于2003年出版,第3版于2012年出版。本次修编的第4版保留精选课文,并随原著的版本更新修改了相关内容,充分吸收了最新的科技成果,更新和增加了专业词汇,编排更趋合理。全书分五部分,第一部分为土木工程专业基础知识,涉及专业介绍、力学、建筑材料、测量学、工程合同、招投标等方面的内容;第二部分为现代道路及交通工程专业知识;第三部分为桥梁工程方面的内容;第四部分为翻译方法与技巧,阐述科技英语翻译的基本原则、方法和实用的翻译技巧。第五部分介绍英文摘要和致谢词写作的基本知识。

本书课文和阅读材料均取自高水平英文原版书刊,基本上包含了道路、桥梁与交通工程设计、施工、管理各环节的常用专业词汇。取材难度适中,既注意英语语言的训练,又重视专业领域当代知识的传递。

为了便于学习者使用,每课之后附有生词、专业词汇和形式多样的练习,目的在于帮助读者更好地掌握课文中重要的语言材料。书后附有疑难语句注释和练习答案。本书文后印有二维码,学生通过扫描二维码可以在线完成课后习题并及时得到反馈,教师能方便地了解学生学习情况及管理成绩,减少繁琐的批阅和统计工作。

本教材第1、3、4、6~15课由李嘉编写,第2、5课由邵子轩编写,第三部分由邵旭东、李嘉编写,第四部分、第五部分由鲁力达、李嘉编写。课后练习由李嘉、李洁设计。研究生刘凯和陈思远参加了教材修订工作。

本书若有差错和不当之处,敬请读者指正,并将意见寄至湖南大学土木工程学院道路系。

编者

2018年6月于岳麓山下

第3版前言

本教材是按照高等学校路桥与交通工程专业教学指导委员会审定的《专业英语》教材编写大纲的要求编写的。专业英语作为基础英语的后续课程,重点是培养学生阅读和翻译英文专业书刊的能力,提高阅读翻译文献资料的质量和速度。

本教材第1版于1997年出版,第2版于2003年出版。本次修编的第3版进一步精选教材,并随原著的版本更新修改了相关内容,充分吸收了最新的科技成就,更新和增加了专业词汇,内容更充实,编排更趋合理。全书分五大部分:第一部分为土木工程专业基础知识,涉及专业介绍、力学、建筑材料、测量、工程合同、招投标等方面内容;第二部分为现代道路及交通工程专业知识;第三部分为桥梁工程方面内容;第四部分为翻译方法与技巧,阐述科技英语翻译的基本原则、方法和实用的翻译技巧。第五部分介绍英文摘要和致谢词写作的基本知识。

本书课文和阅读材料均取自高水平英文原版书刊,基本上包含了道路、桥梁与交通工程设计、施工、管理各环节的常用专业词汇。取材时考虑难度适中,既注意英语语言的训练,又重视专业领域当代最新知识的传递。

为了便于学习者使用,每课之后附有生词、专业词汇和形式多样的练习,目的在于帮助读者更好地掌握课文中重要的语言材料。书后附有疑难语句注释和练习答案。这些练习和答案是供参考和检查用的,学生应当把主要精力放在课文的学习上。

本书的另一个特点是课文中编排了一些与文章相关的插图和表格,对正确领会课文大有益处。

本教材第一部分、第二部分7~13课由李嘉编写,第二部分14~16课由贺寒辉编写,第三部分由邵旭东、李嘉编写,第四部分、第五部分由鲁力达、李嘉编写。研究生李洪、雷薇、王懿参加了部分修订工作。

本书若有差错和不当之处,敬请读者指正,并将意见寄至湖南大学土木工程学院道路桥梁系。

编者

2012年1月于岳麓山下

第 2 版前言

专业英语是土木工程专业的一门必修课。本教材是按照高等学校路桥与交通工程专业教学指导委员会审定的《专业英语》教材编写大纲的要求编写的。专业英语作为基础英语的后续课程,重点是培养学生阅读和翻译英文专业书刊的能力,提高阅读翻译文献资料的质量和速度。

本教材第 1 版于 1997 年出版,目前编写的第 2 版继承了前一版的优点,并充分吸收了最新的科技成就,更新和增加了大量的专业词汇,内容更充实,编排更趋合理。全书分五大部分,第一部分为土木工程专业基础知识,涉及力学、建筑材料、测量、工程合同、招投标等方面内容;第二部分为现代道路及交通工程专业知识;第三部分为桥梁工程方面内容;第四部分为翻译方法与技巧,阐述科技英语翻译的基本原则、方法和实用的翻译技巧。第五部分介绍英文摘要和致谢词写作的基本知识。

本书课文和阅读材料均取自近期英文原版书刊,基本上包含了道路、桥梁与交通工程设计、施工、管理各环节的常用专业词汇。取材时考虑难度适中,既注意英语语言的训练,又重视专业领域当代最新知识的传递。

为了便于学习者使用,每课之后附有生词、专业词汇和形式多样的练习,目的在于帮助读者更好地掌握课文中重要的语言材料。书后附有疑难语句注释和练习答案。这些练习和答案是供参考和检查用的,学生应当把主要精力放在课文的学习上。

本书的另一个特点是课文中编排了一些与文章相关的插图和表格,对正确领会课文大有益处。

本教材第一部分、第二部分 11~16 课由李嘉编写,第二部分 7~10 课由周铁英编写,第三部分 17、18 课由邵旭东编写,19~22 课由赵华编写,第四部分由鲁力达、李嘉编写,第五部分由鲁力达编写。全书由湖南大学李嘉主编,同济大学俞同华主审。

本书若有差错和不当之处,敬请读者指正,并将意见寄湖南大学土木工程学院路桥系。

编者

2002 年 12 月

第 1 版前言

专业英语是公路、桥梁工程专业的一门必修课。本教材是根据交通部高等学校路桥本科《专业英语》教材编写大纲的要求编写的。专业英语作为基础英语的后续课程,重点是培养学生阅读和翻译英文专业书刊的能力,提高阅读翻译文献资料的质量和速度。

本教材分四大部分,第一部分为专业基础课方面的内容,共五课,涉及到建材、测量、工程合同等方面;第二部分为道路及交通工程方面的内容,共九单元;第三部分为桥梁工程方面内容,共九单元。第四部分为翻译方法与技巧,分八个单元阐述了科技英语翻译的基本原则、过程和实用的翻译技巧。第二、三部分的每个单元都配有课文及与课文相关的阅读材料各一篇,题材均选自近期原版书刊,内容基本覆盖了道路与桥梁设计、施工、管理各环节及新成就、新技术。既有丰富的专业词汇,又有一定的可读性,选材时注意英语的规范性。

为了便于英语学习者使用,每课之后附有生词、专业词汇和形式多样的练习,目的在于帮助读者更好地掌握课文中重要的语言材料,书后附有疑难语句注释和练习答案。这些注释和答案是供参考和检查用的,学生应当把主要精力放在课文的学习上。

本书的一个重要特点是书中印有一些与文章相关的插图和图表,对正确领会课文大有帮助。

本教材由湖南大学编写,其中第一部分,第三部分 15~18 课和附录 II、III 由土木系李嘉编写,第二部分由黄立葵编写,第三部分 19 课由周铁英编写,20、21、22、23 课由邵旭东编写,第四部分第 1、4 节由西语系陆魁秋编写,第 2、3、5、6、7、8 节由陈登编写。

全书承蒙同济大学俞同华教授仔细审阅,特此致谢。

本书若有差错和不当之处,敬请读者指正。

编者

1996 年 6 月

CONTENTS

Part I General Knowledge

Lesson 1	Careers in Civil Engineering	3
	Reading Material Specialties in Transportation Engineering	7
Lesson 2	Great Buildings and Structural Materials	12
	Reading Material(1) Structural Materials	17
	Reading Material(2) High Performance Concrete	19
Lesson 3	Highway Surveys	23
	Reading Material Aerial Photography	27
Lesson 4	Philosophy of Structural Design	32
	Reading Material Structural Analysis	36
Lesson 5	Civil Engineering Contracts	40
	Reading Material FIDIC Tendering Procedure	45

Part II Highway and Traffic Engineering

Lesson 6	Transportation Systems	53
	Reading Material Highway Functional Classification	57
Lesson 7	Highway Location	60
	Reading Material Highway Cross Section	64
Lesson 8	Alignment Design	69
	Reading Material Computer Application in Highway Design	73
Lesson 9	Grade Separations and Interchanges	77
	Reading Material Intersections	81
Lesson 10	Pavement	85
	Reading Material Pavement Design	88
Lesson 11	Bituminous Surface Courses	92
	Reading Material Soil Stabilization	96
Lesson 12	Highway Drainage	99
	Reading Material (1) Highway Drainage Structures	104
	Reading Material (2) Computer Models for Highway Drainage	106
Lesson 13	Freeways	108
	Reading Material Highway Safety Design	112
Lesson 14	Highway Construction(1)	117
	Reading Material Highway Construction(2)	121
Lesson 15	Perspectives on Intelligent Transportation Systems(ITS)	126

Reading Material	Transportation Management System	130
------------------	--	-----

Part III Bridge Engineering

Lesson 16	Bridges	137
Reading Material	Selection of Bridge Type	141
Lesson 17	Aesthetics in Bridge Design	146
Reading Material	Bridge and Alignment	151
Lesson 18	Arch Bridge	155
Reading Material	Arches and Beams	161
Lesson 19	Cable-Stayed Bridge	164
Reading Material	Suspension Bridge	168
Lesson 20	Substructure	173
Reading Material	Protection from Scour and Erosion	178
Lesson 21	Bridge Construction Techniques	182
Reading Material	Bridge Maintenance Techniques	188

Part IV 科技翻译的方法与技巧

第一节	概论	195
第二节	词义的选择、引申及词类转译	198
第三节	句子的成分转换、合译和分译	203
第四节	增译与省译	207
第五节	特殊句型的翻译	212
第六节	从句的译法	217
第七节	长句的译法	223

Part V 摘要和献词

第一节	摘要	233
第二节	献词	237
Appendix I	Notes and Key to Exercises	239
Appendix II	Vocabulary	283
Appendix III	Special Terms	303
参考文献	326
专业英语网上学习平台使用说明	327

Part I
General Knowledge

Lesson 1

Careers in Civil Engineering

Engineering is a profession, which means that an engineer must have a specialized university education^①. Many government jurisdictions also have licensing procedures which require **engineering graduates** to pass an examination, similar to the bar examinations for a lawyer, before they can actively start on their careers.

In the university, mathematics, physics, and chemistry are heavily emphasized throughout the engineering curriculum, but particularly in the first two or three years. Mathematics is very important in all branches of engineering, so it is greatly stressed. Today, mathematics includes courses in statistics, which deals with gathering, classifying, and using numerical data, or pieces of information. An important aspect of statistical mathematics is probability, which deals with what may happen when there are different factors, or variables, that can change the results of a problem^②. Before the construction of a bridge is undertaken, for example, a statistical study is made of the amount of traffic the bridge will be expected to handle^③. In the design of the bridge, variables such as water pressure on the foundations, impact, the effects of different **wind forces**, and many other factors must be considered.

Because a great deal of calculation is involved in solving these problems, computer programming is now included in almost all engineering curricula. Computers, of course, can solve many problems involving calculations with greater speed and accuracy than a human being can. But computers are useless unless they are given clear and accurate instructions and information—in other words, a good program.

In spite of the heavy emphasis on technical subjects in the engineering curriculum, a current trend is to require students to take courses in the social sciences and the language arts. We have already discussed the relationship between engineering and society; it is sufficient, therefore, to say again that the work performed by an engineer affects society in many different and important ways that he or she should be aware of^④. An engineer also needs a sufficient command of language to be able to prepare reports that are clear and, in many cases, persuasive. An engineer engaged in research will need to be able to write up his or her findings for **scientific publications**.

The last two years of an engineering program include subjects within the student's field of specialization. For the student who is preparing to become a **civil engineer**, these specialized courses may deal with such subjects as **geodetic surveying**, or hydraulics.

Active recruiting for engineers often begins before the student's last year in the university. Many different corporations and government agencies have competed for the services of engineers in recent years. In the science-oriented society of today, people who have technical training are, of

course, in demand. Young engineers may choose to go into environmental or sanitary engineering, for example, where environmental concerns have created many openings^⑤; or they may choose construction firms that specialize in highway work; or they may prefer to work with one of the government agencies that deals with water resources. Indeed, the choice is large and varied.

When the young engineer has finally started actual practice, the theoretical knowledge acquired in the university must be applied. He or she will probably be assigned at the beginning to work with a team of engineers. Thus, **on-the-job** training can be acquired that will demonstrate his or her ability to translate theory into practice to the supervisors^⑥.

The civil engineer may work in research, design, construction supervision, maintenance, or even in sales or management. Each of these areas involves different duties, different emphases, and different uses of the engineer's knowledge and experience.

Research is one of the most important aspects of scientific and engineering practice. A researcher usually works as a member of a team with other scientists and engineers. He or she is often employed in a laboratory that is financed by government or industry. Areas of research connected with **civil engineering** include soil mechanics and **soil stabilization** techniques, and also the development and testing of new **structural materials**.

Civil engineering projects are almost always unique; that is, each has its own problems and design features. Therefore, careful study is given to each project even before design work begins. The study includes a survey both of topographical and subsoil features of the proposed site. It also includes a consideration of possible alternatives, such as a concrete gravity dam or an **earth-fill embankment dam**. The economic factors involved in each of the possible alternatives must also be weighed. Today, a study usually includes a consideration of the environmental impact of the project. Many engineers, usually working as a team that includes surveyors, specialists in soil mechanics, and experts in design and construction are involved in making these **feasibility studies**^⑦.

Many civil engineers, among them the top people in the field, work in design. As we have seen, civil engineers work on many different kinds of structures, so it is normal practice for an engineer to specialize in just one kind. In designing buildings, engineers often work as consultants to architectural or construction firms. Dams, bridges, water supply systems, and other large projects ordinarily employ several engineers whose work is coordinated by a systems engineer who is in charge of the entire project. In many cases, engineers from other disciplines are involved. In a dam project, for example, electrical and mechanical engineers work on the design of the powerhouse and its equipment. In other cases, civil engineers are assigned to work on a project in another field; in the space program, for instance, civil engineers were necessary in the design and construction of such structures as **launching pads** and **rocket storage facilities**.

Construction is a complicated process on almost all engineering projects. It involves scheduling the work and utilizing the equipment and the materials so that costs are kept as low as possible. Safety factors must also be taken into account, since construction can be very dangerous. Many civil engineers therefore specialize in the **construction phase**.

Much of the work of civil engineers is carried on outdoors, often in rugged and difficult terrain or under dangerous conditions. Surveying is an outdoor occupation, for example, and dams are often

built in wild river valleys or gorges. Bridges, tunnels, and skyscrapers under construction can also be dangerous places to work. In addition, the work must also progress under all kinds of weather conditions. The prospective civil engineer should be aware of the physical demands that will be made on him or her⑧.

From: E. J Hall "The Language of Civil Engineering in English", 1984

New Words and Expressions

- | | |
|---------------------------------------|------------------------------------|
| 1. jurisdiction [dʒʊərəsɪ'dɪkʃ(ə)n] | n. 管辖权, 权限 |
| government jurisdiction | 政府行政区 |
| 2. bar [bɑ:] | n. 法庭, 律师的职业 |
| 3. curriculum [kə'rikjʊləm] | n. ([pl.] curricula) 课程表, 课程, 学习计划 |
| 4. probability [prɒbə'bɪləti] | n. 概率论, 可能性 |
| 5. impact ['ɪmpækt] | n. 冲击(力), 影响 |
| 6. geodetic [dʒi:əʊ'de] | n. 大地测量学 |
| 7. hydraulics [hai'drɔ:liks] | n. 水力学 |
| 8. recruit [ri'krʊ:t] | v. 招聘 |
| 9. orient ['ɔ:riənt] | v. 定向, 定位 |
| science-orient | 注重科学的 |
| 10. supervision [ɪsju:pə'vɪʒən] | n. 管理, 监控 |
| 11. maintenance ['meɪntɪnəns] | n. 维修, 保养 |
| 12. construction [kən'strʌkʃ(ə)n] | n. 施工, 建设 |
| 13. topographic(al) [tɒpə'græfɪkəl] | a. 地形学(的) |
| 14. subsoil ['sʌbsɔɪl] | n. 下(亚)层土, 地基下层土 |
| 15. alternative [ɔ:l'tɜ:nə'tɪv] | n. 比较方案; a. 交替的, 比较的 |
| 16. consultant [kən'sʌltənt] | n. 顾问, 咨询者 |
| 17. architectural [ɑ:ki'tektʃərə(ə)l] | a. 建筑(学)的 |
| 18. rugged ['rʌgɪd] | a. 崎岖的, 艰难的 |
| 19. terrain ['teɪrɪn] | n. 地域, 地带, 领域 |
| 20. gorge [gɔ:dʒ] | n. 峡谷 |
| 21. engineering graduate | 工科毕业生 |
| 22. wind force | 风力 |
| 23. scientific publication | 科学刊物 |
| 24. civil engineer | 土木工程师 |
| 25. geodetic surveying | 大地测量 |
| 26. soil mechanics | 土力学 |
| 27. on-the-job | 在现场的, 在职的 |
| 28. civil engineering(project) | 土木工程 |
| 29. soil stabilization | 土壤稳定 |

30. structural materials	建筑材料
31. earth-fill embankment dam	填土坝
32. feasibility study	可行性研究
33. launching pads	发射台
34. rocket storage facilities	火箭库
35. construction phase	施工阶段

Exercises

I. Complete each sentence. Write a T before the right ending.

- Statistics is a branch of mathematics that deals with _____.
 _____ a. what may happen when different factors can change, the results of a problem.
 _____ b. gathering, classifying, and using numerical data.
 _____ c. highway engineering, structural engineering and environmental engineering.
- Computers can't solve complicated problems unless they are given _____.
 _____ a. a good air-condition.
 _____ b. a good program.
 _____ c. a young civil engineer.
- Besides technical subjects in the engineering curriculum, an engineer needs to take courses in _____.
 _____ a. social sciences and surgery.
 _____ b. law and politics.
 _____ c. language arts and social sciences.
- A civil engineer may specialize in some of the kinds of work, for example _____.
 _____ a. research, design, construction management and maintenance.
 _____ b. electrical and mechanical equipment.
 _____ c. mathematics, physics and chemistry.
- Civil engineering projects are almost always _____.
 _____ a. distinctive.
 _____ b. the similar.
 _____ c. alike.
- The study, which must consider not only structural features, but also economic factors and possible alternatives or other choices, is called _____.
 _____ a. system engineering.
 _____ b. feasibility study.
 _____ c. structural design.

II. Find the words or phrases that fit the meaning in *italics*.

- To design a new bridge, a statistical study is made of the amount of traffic the bridge will expect to *carry* (par. 2)

2. On-the-job training will demonstrate the young engineer's ability to *apply* theory to practice. (par. 7)
3. In each of the possible alternatives, the economic factors must be *balanced*. (par. 10)
4. Many civil engineers specialize in the construction phase because construction is a *complex* process. (par. 12)
5. In civil engineering, the *outstanding* people sometimes work in design. (par. 11)

III. Discussion

1. Why is computer programming included in engineering courses? Only in what circumstances can a computer do an accurate job?
2. What are some of the areas of research connected with civil engineering? What are some others that are not mentioned in the text?
3. Why don't all civil engineers specialize in the design of all kinds of different structures?
4. What kind of physical demands may be made on a civil engineer?

Reading Material

Specialities in Transportation Engineering

Transportation engineers are typically employed by the agency responsible for building and maintaining a **transportation system**, including federal, state, or local government, railroads, or transit authorities. They also work for consulting firms that help carry out the planning and engineering tasks for these organizations. During the past century, transportation engineers have been employed to build the nation's railroads, the interstate highway system, and rapid **transit systems** in major cities, airports, and turnpikes. Each decade has seen a new national need for improved transportation services.

In the twenty-first century, there will be increased emphasis on rehabilitating the highway system, including its surfaces and bridges, as well as on devising a means to ensure improved safety and utilization of the existing system through **traffic control**, information technology, and systems management①. Highway construction will be required, particularly in suburban areas. Building of roads, highways, airports, and transit systems is likely to accelerate in less-developed countries, and the transportation engineer will be called on to furnish the services necessary to plan, design, build, and operate highway systems throughout the world. Each of the specialties within the **transportation infrastructure** engineering field is described next.

Transportation Planning

Transportation planning deals with the selection of projects for design and construction. The transportation planner begins by defining the problem, gathering and analyzing data, and evaluating