高等职业教育土建专业系列教材

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建筑专业英语

JIANZHU ZHUANYE YINGYU

ENGLISH FOR CONSTRUCTION

中国建材工业出版社

建筑专业英语

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中国建材工业出版社

图书在版编目（CIP）数据

建筑专业英语/姜海燕主编 .—北京：中国建材工业出版社，2003.9

（高等职业教育土建专业系列教材）

ISBN 7-80159-506-8

Ⅰ.建... Ⅱ.姜... Ⅲ.建筑学—英语—高等学校：技术学校—教材 Ⅳ.H31

中国版本图书馆 CIP 数据核字（2003）第 071434 号

建筑专业英语

姜海燕 主编

出版发行：中国建材工业出版社

地　　址：北京市海淀区三里河路 11 号

邮　　编：100831

经　　销：全国各地新华书店

印　　刷：北京鑫正大印刷有限公司

开　　本：787mm × 960mm　1/16

印　　张：15.75

字　　数：288 千字

版　　次：2003 年 9 月第 1 版

印　　次：2003 年 9 月第 1 次

印　　数：1 ~ 3000 册

书　　号：ISBN 7-80159-506-8/TU·256

定　　价：24.00 元

《高等职业教育土建专业系列教材》编委会

序

大力发展高等职业教育，培养一大批具有必备的专业理论知识和较强的实践能力，适应生产、建设、管理、服务岗位等第一线急需的高等职业应用型专门人才，是实施科教兴国战略的重大决策。高等职业教育院校的专业设置、教学内容体系、课程设置和教学计划安排均应突出社会职业岗位的需要、实践能力的培养和应用型的教学特色。其中，教材建设是基础和关键。

高等职业教育土木建筑专业系列教材是根据最新颁布的国家和行业标准、规范，按照高等职业教育人才培养目标及教材建设的总体要求、课程的教学要求和大纲，由北京城市学院（原海淀走读大学）和中国建材工业出版社组织全国部分有多年高等职业教育教学体会与工程实践经验的教师编写而成。

本套教材是按照3年制（总学时1600～1800）、兼顾2年制（总学时1100～1200）的高职高专教学计划和经反复修订的各门课程大纲编写的。基础理论课程以应用为目的，以必需、够用为度，以讲清概念、强化应用为重点；专业课以最新颁布的国家和行业标准、规范为依据，反映国内外先进的工程技术和教学经验，加强实用性、针对性和可操作性，注意形象教学、实验教学和现代教学手段的应用，并加强典型工程实例分析。

本套教材适用范围广泛，努力做到一书多用。在内容的取舍上既可作为高职高专教材，又可作为电大、职大、业大和函大的教学用书，同时，也便于自学。本套教材在内容安排和体系上，各教材之间既是有机联系和相互关联的；每本教材又具有独立性和完整性。因此，各地区、各院校可根据本身的教学特点择优选用。

北京城市学院是办学较早、发展很快、高职高专办学经验丰富并受到社会好评的一所民办公助高等院校。其中，土建专业是最早设置且有较大社会影响的专业之一，有10多名教学和工程实践经验丰富的双师型教师，出版了一批受欢迎的专业教材。

可以相信，由北京城市学院组编、中国建材出版社出版发行的这套高等职业教育土建专业系列教材一定能成为受欢迎的、有特色的、高质量的系列教材。

本教材编委会

2003年2月

前　言

根据《高职高专专业英语》编写大纲，本层次学生应着重培养英语阅读、翻译的技能，并在此基础上进一步提高口语、听力和写作能力。

《建筑专业英语》作为高等职业教育土建专业系列教材之一，充分结合了土建专业特征，本着覆盖面广、知识面宽的原则进行编写。我们将此书主要分成15个单元。每一个单元有一个主题，分别涉及到建筑结构、建筑材料、建筑施工、建筑造价、建筑设备、给排水、道桥、城市规划、建筑合同、房地产开发、策划、项目管理及相关政策、法规等。

每个单元中又主要包括8部分，分别有Text，New Words，Phrases and Expressions，Notes，Exercises，Homework，参考译文和Reading Paragraph。每篇课文都附有译文，在本书的最后还精选了几篇阅读材料（也附有译文）和单词表，供老师和学生使用。

本书可作为各类成教、大专、高职、中专的建筑类相关专业的英语教材及课外阅读材料。

由于编者水平有限，时间仓促，书中定有疏漏和不妥之处，恳请广大读者批评指正。

编　者

2003年6月

Contents

Unit 1 Civil Engineering

Part Ⅰ Text

Civil Engineering

Civil engineering is the planning, design, construction, and management of the built environment. This environment includes all structures built according to scientific principles, from irrigation and drainage systems to rocket launching facilities.

Civil engineers build roads, bridges, tunnels, dams, harbors, power plants, water and sewage systems, hospitals, schools, mass transit, and other public facilities essential to modern society and large population concentrations. They also build privately owned facilities such as airport, railroads, pipelines, skyscrapers, and other large structures designed for industrial, commercial, or residential use. In addition, civil engineers plan, design, and build complete cities and towns, and more recently have been planning and designing space platforms to self-contained communities.

The word civil derives from the Latin for citizen. In 1782, Englishman John Seaton used the term to differentiate his nonmilitary engineering work from that of the military engineers who predominated at the time. Since then, the term civil engineer has often been used to refer to engineers who build public facilities, although the field is much broader.

Scope Because it is so broad, civil engineering is subdivided into a number of technical specialties. Depending on the type of project, the skills of many kinds of civil engineer specialists may be needed. When a project begins, the site is surveyed and mapped by civil engineers who experiment to determine if the earth can bear the weight of the project. Environmental specialists study the project's impact on the local area, the potential for air and groundwater pollution, the project's impact on local animal and plant life, and how the project can be designed to meet government requirements aimed at protecting the environment. Transportation specialists determine what kind of facilities are needed to ease the burden on local roads and other transportation networks that will result from the completed project. Meanwhile, structural specialists raise preliminary data to make detailed

designs, plans, and specifications for the project. Supervising and coordinating the work of these civil engineer specialists, from beginning to end of the project, are the construction management specialists. Based on information supplied by the other specialists, construction management civil engineers estimate quantities and costs of materials and labor, schedule all work, order materials and equipment for the job, hire contractors and subcontractors, and perform other supervisory work to ensure the project is completed on time and as specified.

Throughout any given project, civil engineers make extensive use of computers. Computers are used to design the project's various elements (computer-aided design, or CAD) and to manage it. Computers are a necessity for the modern civil engineer because they permit the engineer to efficiently handle the large quantities of data needed in determining the best way to construct a project.

Structural engineering In this specialty, civil engineers plan and design structures of all types, including bridges, dams, power plants, supports for equipment, special structures for offshore projects, the United States space program, transmission towers, giant astronomical and radio telescopes, and many other kinds of projects.

Using computers, structural engineers determine the forces a structure must resist, its own weight, wind and hurricane forces, temperature changes that expand or contract construction materials, and earthquakes. They also determine the combination of appropriate materials: steel, concrete, plastic, stone, asphalt, brick, aluminum, or other construction materials.

Water resources engineering Civil engineers in this specialty deal with all aspects of the physical control of water. Their projects help prevent floods, supply water for cities and for irrigation, manage and control rivers and water runoff, and maintain beaches and other waterfront facilities. In addition, they design and maintain harbors, canals, and locks, build huge hydroelectric dams and smaller dams and water impoundments of all kinds, help design offshore structures, and determine the location of structures affecting navigation.

Geotechnical engineering Civil engineers who specialize in this field analyze the properties of soils and rocks that support structures and affect structural behavior. They evaluate and work to minimize the potential settlement of buildings and other structures that stems from the pressure of their weight on the earth. These engineers also evaluate and determine how to strengthen the stability of slopes and how to protect structures against earthquakes and the effects of groundwater.

Environmental engineering In this branch of engineering, civil engineers design,

build, and supervise systems to provide safe drinking water and to prevent and control pollution of water supplies, both on the surface and underground. They also design, build, and supervise projects to control or eliminate pollution of the land and air. These engineers build water and wastewaters treatment plants, and design air scrubbers and other devices to minimize or eliminate air pollution caused by industrial processes, incineration, or other smoke – producing activities. They also work to control toxic and hazardous wastes through the construction of special dump sites or the neutralizing of toxic and hazardous substances. In addition the engineers design and manage sanitary landfills to prevent pollution of surrounding land.

Transportation engineering Civil engineers working in this specialty build facilities to ensure safe and efficient movement of both people and goods. They specialize in designing and maintaining all types of transportation facilities, highways and streets, mass transit systems, railroads and airfields ports and harbors. Transportation engineers apply technological knowledge as well as consideration of the economic, political, and social factors in designing each project. They work closely with urban planners since the quality of the community is directly related to the quality of the transportation system.

Pipeline engineering In this branch of civil engineering, engineers build pipelines and related facilities which transport liquids, gases, or solids ranging from coal slurries (mixed coal and water) and semi liquid wastes, to water, oil and various types of highly combustible and noncombustible gases. The engineers determine pipeline design, the economic and environmental impact of a project on regions it must traverse, the type of materials to be used-steel, concrete, plastic, or combinations of various materials, installation techniques, methods for testing pipeline strength , and controls for maintaining proper pressure and rate of flow of materials being transported. When hazardous materials are being carried, safety is a major consideration as well.

Construction engineering Civil engineers in this field oversee the construction of a project from beginning to end. Sometimes called project engineers, they apply both technical and managerial skills, including knowledge of construction methods, planning, organizing, financing, and operating construction projects. They coordinate the activities of virtually everyone engaged in the work: the surveyors, workers who lay out and construct the temporary roads and ramps, excavate for the foundation, build the forms and pour the concrete; and workers who build the steel frame-work. These engineers also make regular progress reports to the owners of the structure.

Community and urban planning Those engaged in this area of civil engineering

may plan and develop communities within a city, or entire cities. Such planning involves far more than engineering considerations; environmental, social, and economic factors in the use and development of land and natural resources are also key elements. These civil engineers coordinate planning of public works along with private development. They evaluate the kinds of facilities needed, including streets and highways, public transportation systems, airports, port facilities, water-supply and wastewater-disposal systems, public buildings, parks, and recreational and other facilities to ensure social and economic as well as environmental well-being.

Photogrammetry, surveying, and mapping The civil engineers in this specialty precisely measure the Earth's surface to obtain reliable information for locating and designing engineering projects. This practice often involves high-technology methods such as satellite and aerial surveying, and computer processing of photographic imagery. Radio signals from satellites, scanned by laser and sonic beams, are converted to maps to provide very accurate measurements for boring tunnels, building highways and dams, plotting flood control and irrigation projects, locating subsurface geologic formations that may affect a construction project and a host of other building uses.

Other specialties Two additional civil engineering specialties that are not entirely within the scope of civil engineering but are essential to the discipline are engineering management and engineering teaching.

Engineering management Many civil engineers choose careers that eventually lead to management. Others are able to start their careers in management positions. The civil engineer manager combines technical knowledge with an ability to organize and coordinate worker power, materials, machinery, and money. These engineers may work in government-municipal, county, state, or federal; in the U.S. Army Corps of Engineers as military or civilian management engineers; or in semiautonomous regional or city authorities or similar organization. They may also manage private engineering firms ranging in size from a few employees to hundreds.

Engineering teaching The civil engineer who chooses a teaching career usually teaches both graduate and undergraduate students in technical specialties. Many teaching civil engineers engage in basic research that eventually leads to technical innovations in construction materials and methods. Many also serve as consultants on engineering projects, or on technical boards and commissions associated with major projects.

Part Ⅱ New Words

planning /plæniŋ/ *n*.	计(规)划
irrigation /iri'geiʃən/ *n*.	灌溉
drainage /'dreinidʒ/ *n*.	排水
launch /lɔ:ntʃ/ *v*. & *n*.	发射
sewage /'sju:idʒ/ *n*.	污水，排污系统
transit /'trænsit/ *n*. & *v*.	通过，运输
pipeline /'paiplain/ *n*.	管道系统
skyscraper /'skaiskreipə/ *n*.	摩天楼
residential /rezi'denʃəl/ *a*.	住宅的
house /hauz/ *v*.	容纳
predominate /pri'dɔmineit/ *v*.	占支配(地位)
specialty /'speʃəlti/ = speciality	专业
map/mæp/ *v*.	测绘
placement /'pleismənt/ *n*.	方位
sewer /'sjuə/ *n*.	污水管
geotechnical /dʒi:ɔ'teknikəl/ *a*.	土工技术的，岩土工程的
specification /spesifi'keiʃən/ *n*.	技术要求
supervise /'sju:pəvaiz/ *v*.	监督，管理
contractor /kən'træktə/ *n*.	承包商
subcontractor /'sʌbkən'træktə/ *n*.	转包商
supervisory /'sju:pəvaizəri/ *a*.	管理（监督）的
computer-aid-design	计算机辅助设计
structural engineering	结构工程
offshore /'ɔ:fʃɔ:/ *a*.	近海的
astronomical /æstrə'nɔmikəl/ *a*.	天文(学)的
hurricane/'hʌrikən/ *n*.	飓风
asphalt /'æsfælt/ *n*.	沥青
runoff /'rʌnɔ:f/ *n*.	径流，流走之物
lock /lɔk/ *n*.	水(船)闸
impoundment /im'paund'mənt/ *n*.	蓄水
settlement /'setlmənt/ *n*.	沉陷
scrubber /'skrʌbə/ *n*.	洗涤器

incineration /insinəˈreiʃən/ *n*. 焚化
toxic /ˈtɔksik/ *a*. 有毒的
hazardous /ˈhæzədəs/ *a*. 危险的
dump /dʌmp/ *n*. 垃圾堆
neutralize /ˈnju:trəlaiz/ *v*. (使)中和，(使)失效
sanitary /ˈsænitri/ *a*. (环境)卫生(清洁)的
airfield /ˈɛəfi:ld/ *n*. (飞)机场
planner /ˈplænə/ *n*. 规划人员
slurry /ˈslə:ri/ *n*. 泥浆，残渣
combustible /kəmˈbʌstəbl/ *a*. 易燃的
oversee /ˈəuvəˈsi:/ *v*. 监督，管理
managerial /ˌmænəˈdʒiəriəl/ *a*. 管理的
surveyor /sə(:)veiə/ *n*. 测量员
ramp /ræmp/ *n*. 斜坡
excavate /ˈekskəveit/ *v*. 挖掘
recreational /ˌrekriˈeiʃənl/ *a*. 消遣的
well-being /ˈwelˈbi:iŋ/ *n*. 福利，幸福
photogrammetry /ˌfəutəuˈgræmitri/ *n*. 摄影测量
surveying /səˈveiiŋ/ *n*. 测量
mapping /ˈmæpiŋ/ *n*. 绘图
aerial /ˈɛəriəl/ *a*. 空中的
photographic /ˌfəutəˈgræfic/ *a*. 摄影的
imagery /ˈimidʒəri/ *n*. 成像
bore /bɔ:/ *n*. & *v*. 钻孔
geologic /dʒiəˈlɔdʒik/ *a*. 地质的
municipal /mju(:)ˈnisipəl/ *a*. 城市的
semiautonomous /ˌseimiɔ:ˈtɔnəməs/ *a*. 半自治的
innovation /inəuˈveiʃən/ *n*. 革新
consultant /kənˈsʌltənt/ *n*. 顾问

Part Ⅲ Phrases and Expressions

civil engineering 土木(民用)工程
power plant 动力厂
water system 自来水系统

sewage system	下水道系统
mass transit	公共交通
public facilities	公共设施
population concentration	人口集中
space platform	空间站
self-contained	自给(备)的
power line	输电线
transmission tower	输电塔
water front	滨水区
groundwater	地下水
water resources engineering	水利资源工程
hydroelectric dam	水电堤坝
geotechnical engineering	岩土工程
environmental engineering	环境工程
water supply	自来水
wastewater treatment plant	污水处理厂
air scrubber	空气洗涤器，涤气器
dump site	垃圾场
sanitary landfill	卫生掩埋场
transportation engineering	交通运输工程
pipeline engineering	管道工程
construction engineering	建筑工程
project engineer	主管工程师
community and urban planning	社区与城市规划
natural resources	自然资源
public works	公共(市政)工程
private development	私人开发
transportation system	交通运输系统
wastewater-disposal system	废水处理系统
computer-processing	计算机处理
flood control	洪水控制
engineering teaching	工程教学
to be essential to	对……是必需的
to derive from	来源于

to be used to	被用于(做)
to be subdivided into	再被细分
to aim at	目的在于
to stem from	产生(起源)于
to work with	与……一道工作
to be related to	与……有关
to range from A to B	延伸在 A ~ B 的范围内
along with	与……一道
a host of	许多
within the scope of	在……范围之内
to be able to	能够
to serve as	用作，充当

Part Ⅳ Notes

1. Environmental specialists study the project's impact on the local area, the potential for air and groundwater pollution, the project's impact on local animal and plant life, and how the project can be designed to meet government requirements aimed at protecting the environment.

[译文] 环境专家研究工程项目对本地区的影响，空气与地下水被污染的可能性，工程项目对本地区动物与植物的影响，和如何设计工程项目使其能满足政府对环境保护的要求。

[分析] 此句的主语为 Environmental specialists，谓语为 study，宾语则有四个，即 the project's impact on the local area, the potential for air and groundwater pollution, the project's impact on local animal and plant life，和一宾语从句 how the project can be... at protecting the environment。在宾语从句中，requirements 后的过去分词短语 aimed at protecting the environment 用以说明 requirements。

2. Supervising and coordinating the work of these civil engineer specialists, from beginning to end of the project, are the construction management specialists.

[译文] 从工程项目的开始至终结，施工管理专家监督与协调这些土木工程师的工作。

[分析] 此句为倒装句，主语为 the construction management specialists，谓语为 are supervising and coordinating，宾语为 the work of these civil engineer specialists。

3. Based on information supplied by the other specialists, construction management civil engineers estimate quantities and costs of materials and labor, schedule all work, order

materials and equipment for the job, hire contractors and subcontractors, and perform other supervisory work to ensure the project is completed on time and as specified.

[译文] 以其他专家所提供的信息为基础，施工管理土木工程师估计材料与劳动力的数量和价格，安排全部工作计划，订购工作所需的材料与设备，雇用承包商与转包商，并进行其他监督工作以确保工程项目能按时按规定完成。

[分析] 此句的主语为 construction management civil engineers，共有五个并列的谓语及宾语，即 estimate quantities and costs of materials and labor; schedule all work; order materials and equipment for the job; hire contractors and subcontractors; perform other supervisory work... as specified。最后一个谓语与宾语短句中含有一目的状语短语，它由 to ensure 与宾语从句 the project... as specified 构成。在此句之首的过去分词短语 Based on information supplied by the other specialists 为一方式状语短语，其中 supplied by the other specialists 为一说明 information 的定语短语。

4. Using computers, structural engineers determine the forces a structure must resist, its own weight, wind and hurricane forces, temperature changes that expand or contract construction materials and earthquakes.

[译文] 结构工程师使用计算机确定一结构所必需抵抗的力，即结构本身的重量、风力与飓风力、温度变化引起建筑材料的膨胀或收缩以及地震。

[分析] 此句中的主语为 structural engineers，谓语为 determine，宾语为 the forces，a structure must resist 为说明此宾语的定语从句，该定语从句中的宾语也是 the forces，故前面省略了用以引导定语从句的 that。its own weight, wind and hurricane forces, temperature changes that expand or contract construction materials and earthquakes 用以具体说明 the forces 。句首的现在分词短语 Using computers 为一方式状语短语。

5. Their projects help prevent floods, supply water for cities and for irrigation, manage and control rivers and water runoff, and maintain beaches and other waterfront facilities.

[译文] 他们的工程项目帮助防止洪水，供给城市和灌溉用水，管理与控制江河及水的径流量，维护海滩和其他沿岸设施。

[分析] 此句的主语为 Their projects，谓语为 help，宾语为四个并列的不定式短语，但它们的 to 在 help 之后均被省略掉，即成为 (to) prevent..., (to) supply..., (to) manage and (to) control..., 和 (to) maintain...。

6. They coordinate the activities of virtually everyone engaged in the work: the surveyors, workers who lay out and construct the temporary roads and ramps, excavate for the foundation, build the forms and pour the concrete; and workers who build the steel

frame-work.

[译文] 他们协调几乎每一参与工作的人员的活动，这些工作人员包括测量员，临时道路与斜坡的放线和修筑工人，挖掘地基、支模板和浇注混凝土的工人，以及绑扎钢筋骨架的工人。

[分析] 此句的主语为 They，谓语为 coordinate，宾语为 the activities of virtually everyone engaged in the work，其中过去分词短语 engaged in the work 是说明 everyone 的定语短语，句子的其他部分是说明宾语的具体内容，其中 workers who lay out... and pour the concrete 一段，由四个并列的定语从句组成，且在后三个定语从句中省略了关系代词 who。

7. Radio signals from satellites, scanned by laser and sonic beams, are converted to maps to provide very accurate measurements for boring tunnels, building highways and dams, plotting flood control and irrigation projects, locating subsurface geologic formations that may affect a construction project and a host of other building uses.

[译文] 可把人造卫星传来的通过激光束与声束扫描得到的无线电信号转变为图像，以便为开凿隧道、建造公路与堤坝、标绘防洪灌溉工程、确定可能影响施工计划的地下地质构造以及其他许多建筑用途提供精确的测量数据。

[分析] 此句的主语为 Radio signals，谓语为 are converted，插入主语与谓语中间的过去分词短语 scanned by laser and sonic beams 为一方式状语短语。to provide very accurate measurements for... building uses，为一目的状语短语，其中介词 for 之后共有五个并列的宾语，四个是由现在分词短语构成，即 boring...，building...，plotting... 和 locating...，另一个为 a host of other building uses。在短语 locating subsurface geologic formations that may affect a construction project 中尚有一说明 formations 的定语从句 that may affect a construction project。

Part Ⅴ Exercises

Exercise 1 Answering the following questions according to the text.

1. What does the civil engineering mean?
2. Why are construction engineers sometimes called as project engineers?
3. What are computers usually used to do throughout any given project?

Exercise 2 Filling the blanks according to the text.

In this ____ of engineering, civil engineers design, build, and superv ____ ise systems ____ provide safe drinking water and ____ prevent and control pollution of water supplies, ____ on the surface and underground. They also design, build, and supervise projects ____ control or eliminate pollution ____ the land and air. These engineers build