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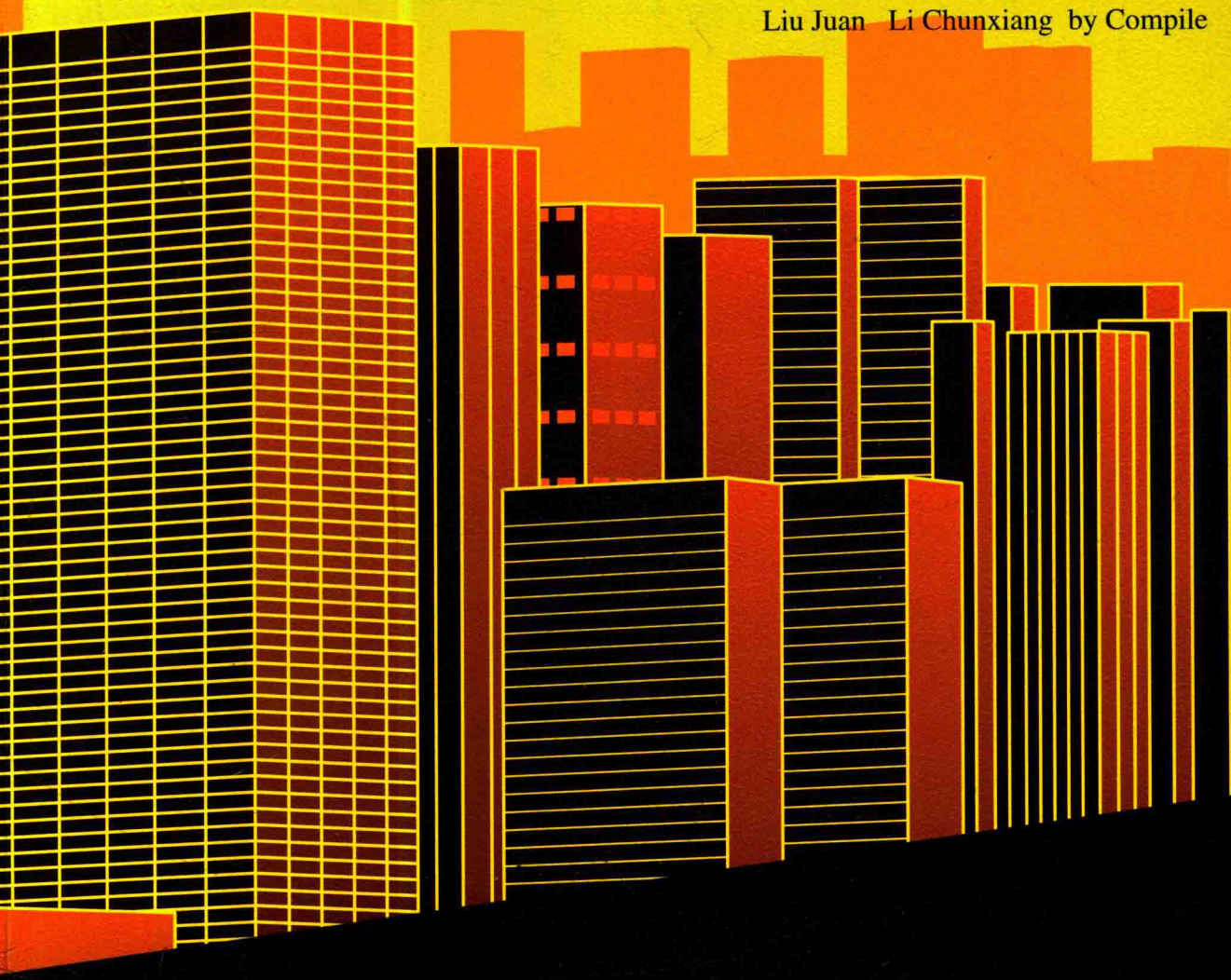

转型发展系列教材

PRACTICAL ENGLISH FOR CIVIL ENGINEERING

土木工程实用英语

西南交通大学出版社

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Practical English for Civil Engineering

刘 娟 李春香 编著

西南交通大学出版社
·成都·

图书在版编目（CIP）数据

土木工程实用英语 = Practical English for Civil Engineering / 刘娟，李春香编著. —成都：西南交通大学出版社，2017.7
转型发展系列教材
ISBN 978-7-5643-5600-2

Ⅰ. ①土… Ⅱ. ①刘… ②李… Ⅲ. ①土木工程－英语－高等学校－教材 Ⅳ. ①TU

中国版本图书馆 CIP 数据核字（2017）第 169424 号

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土木工程实用英语

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责任编辑	姜锡伟
助理编辑	张文越
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出版发行	西南交通大学出版社 （四川省成都市二环路北一段 111 号 西南交通大学创新大厦 21 楼）
发行部电话	028-87600564 028-87600533
邮政编码	610031
网址	http://www.xnjdcbs.com
印刷	成都中铁二局永经堂印务有限责任公司
成品尺寸	185 mm × 260 mm
印张	9.25
字数	253 千
版次	2017 年 7 月第 1 版
印次	2017 年 7 月第 1 次
书号	ISBN 978-7-5643-5600-2
定价	24.00 元

课件咨询电话：028-87600533
图书如有印装质量问题 本社负责退换
版权所有 盗版必究 举报电话：028-87600562

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P前 言 reface

为了适应社会现实需求，高等教育急需培养应用型人才。土木工程专业英语是土木工程专业教学中非常重要的课程，也是培养应用型人才和现场工程师不可缺少的课程。专业英语作为基础英语的拓展课程，可以扩展学生的专业词汇，培养学生现场交际能力、专业文献的阅读能力和专业文献的翻译能力。本书结合最新的工程技术、新材料的应用发展，引用了大量的工程实例，可作为广大土木工程专业学生以及土木工程技术人员提高专业英语阅读和翻译能力的教材和参考书籍。

本书的对话和课文参考了大量的英文原版书籍，包括了建筑材料、招投标、工程管理、岩土工程、道路、桥梁、高铁等常用的专业词汇。本书取材时考虑难度适中并实用等因素，既重视专业领域相关知识的传递，又注重英语语言现场交际能力的培养；既注意土木工程专业英语材料的阅读，又侧重实际施工场景的对话模拟。课文中还编排了一些与文章相关的插图，使得教材图文并茂，对学生领会课文大有益处。

本教材包括 8 个单元，主要内容有土木工程概况、建筑材料、施工合同、项目管理、岩土工程、道路工程、桥梁工程、铁路工程。本教材的对话和文章篇幅长短适中，保证 2 个对话在 2 学时内完成教学，1 篇课文在 2 学时内完成教学，适用于 32 学时的教学安排，教师在使用本教材时可根据教学要求和安排灵活把握。为了方便学生课后自学，本教材所有对话、课文的课后练习都有参考答案，课文还有对应的译文。

本教材由西南交通大学希望学院刘娟、李春香编著，本书在编写过程中得到了西南交通大学希望学院唐逸萍、王建、曾文丽、陈诗、陈荟竹、党利、冯丹、王小芳的大力支持，特此表示感谢。全书由李春香进行统稿。

本教材参考并采用了大量的英文文献资料，在此对相关作者表示真心的感谢。

本教材在编写过程中难免存在不足，恳请广大师生给予指正并将意见反馈给我们，邮箱为 vanilla@163.com。

编著者

2017 年 3 月

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目 录

Unit 1 Civil Engineering

Lead in

Identify the pictures below. Match them with the words in the box.

distillation tower	crane	casting yard

Section A

Dialogue 1

It's the first time for Mr. Gao to visit the construction site in Tanzania and Mr. Huang is going to introduce him to the other workers.

H=Mr. Huang **G=Mr. Gao** **W=Mr. Wang**

H: I'll take you to the construction site. Follow me, please.

G: Thank you.

H: Here we are.

G: Can you introduce me to the section chief on the building site?

H: Certainly. This is the section chief, Wang Lin, a Chinese builder.

W: How do you do? I'm glad to meet you.

G: How do you do? I'm glad to meet you, too.

W: Welcome to our building site. How long will you work here?

G: About two years. Would you introduce me to some of the workers?

W: Certainly. Hello, fellow workers! This is our new fellow, Mr. Gao.

All the workers: How do you do, Mr. Gao?

G: How do you do? Shall we start?

W: Yes, please. Here is the wood (red bricks, mixed **cement**).

G: Is that **hoist** made in Yemen?

W: Yes. But that **crane** over there is made in Japan.

G: I think, in Yemen there are many **prefabricated** houses like this building.

W: Yes. The prefabricated components are all made in the casting yard.

G: I think so.

H: Stop please. Now, time for rest.

New Words

cement	[sɪ'ment] n.	a fine grey powder made of a mixture of calcined lime stone and clay 水泥
hoist	[hɔɪst] n.	any apparatus or device for hoisting 卷扬机
crane	[kreɪn] n.	a device for lifting and moving heavy object 起重机
prefabricate	['pri:'fæbrɪkeɪt] v.	to manufacture sections of (a building) 预制

Phrases and Expressions

section chief 工长

casting yard 预制厂

Dialogue 2

Mr. Du is supervising the installation of the distillation tower and Mr. Wang is in charge of the installation work.

D=Mr. Du Y=Mr. Yang W=Mr. Wang

D: Good Morning, everyone.

Y: Good morning, Mr. Du.

D: Today, our task is the **installation** of this distillation tower. Get ready, please.

Y: Yes. Tell us the weight, length, diameter and center of **gravity** of this tower, please.

D: The weight of this tower is thirty-four tons; length, forty-three meters; diameter, nine hundred millimeters; center of gravity, fifteen meters from the bottom of the tower.

Y: Who is the director of the installation work?

D: Engineer Wang is in charge of the installation work today. Check over the tools, such as the electrical winch, wire ropes, **pulleys**, and make sure whether all of them are in good condition. Please check the anchor bolt once more with the aid of the drawing.

W: OK. We have checked over them all.

D: Good. Begin working, please.

W: Pay attention everyone! Listen to my whistle on your post.

D: Good, the tower has been on its position, check its perpendicularity.

W: The perpendicular tolerance of the tower is less than one thousandth of its height. Acceptable!

D: OK. Tighten the anchor nuts. Have a rest, please.

New Words

installation	[ˌɪnstəˈleɪʃn] n.	the act of installing or the state of being installed 安装
gravity	[ˈgrævəti] n.	the force that causes things to drop to the ground 重心，重力
pulley	[ˈpʊli] n.	a wheel with a grooved rim in which a rope, chain, or belt can run 滑轮

Phrases and Expressions

electrical winch 电动绞车
wire rope 钢丝绳
distillation tower 蒸馏塔
anchor bolt 基础螺丝(地脚螺栓)
anchor nuts 基础螺帽
perpendicular tolerance 垂直偏差

Exercise 1

Decide whether the following statements are true (T) or false (F) according to the dialogues.

☐ 1. The Chinese builder Wang Lin has been working at the construction site for about two years.

☐ 2. Mr. Wang is the section chief.

☐ 3. The installation tower is forty-five meters long.

☐ 4. In dialogue two, it is the engineer Wang who is responsible for the installation task.

☐ 5. The perpendicular tolerance of the installation tower is one thousandth of its height and that tolerance is totally acceptable.

Exercise 2

Oral practice.

Directions: Pair work. Use the questions below to interview your partner and then change roles.

1. Can you introduce me the section chief on the building site?

_____

_____

2. How long will you work here?

_____

_____

3. Would you introduce me some of the workers?

_____

_____

4. Who is the director of the installation work?

_____

_____

5. Is that hoist made in Yemen?

_____

_____

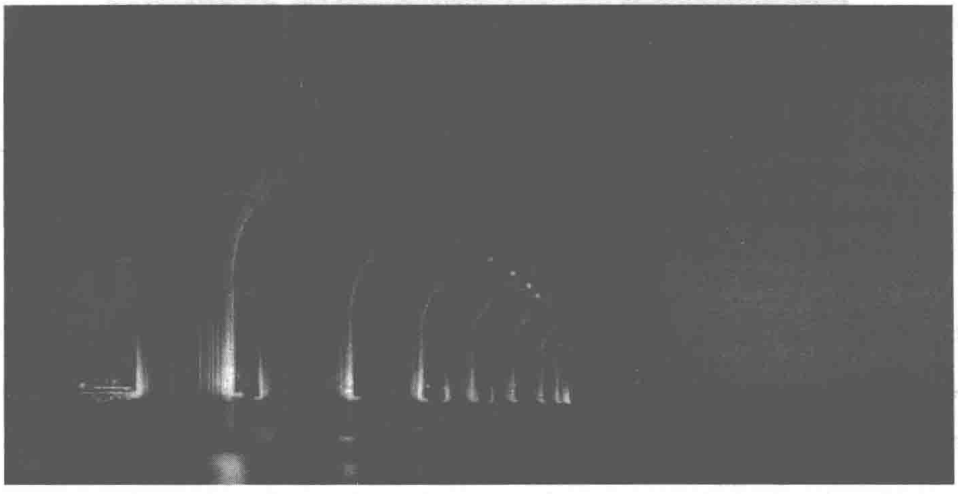
Exercise 3

Practical Activity.

Directions: Suppose you are Mr. Hu, an engineer from China State Construction Engineering Corporation and you are designated to take charge of the construction project in Kenya. It is the first time you meet the staff working at the construction site. Work in pairs and make a conversation.

Section B

Civil Engineering



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Civil engineering, which is the oldest of the engineering specialties, refers to 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 airports, 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 house **self-contained** communities.

It is traditionally broken into several sub-disciplines including environmental engineering, geotechnical engineering, structural engineering, transportation engineering, water resources engineering, community and urban planning, pipeline engineering, **photogrammetry**, surveying, mapping, and so on. In the following paragraphs, several sub-disciplines of civil engineering will be introduced **respectively.**

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 that 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, **asphalt**, brick, aluminum, and 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 fills 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 waste-water 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 safety 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 semiliquid 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 framework. 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 community within a city, or entire cities. Such planning involves far more than engineering consideration; 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 waste water-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 signal from satellites, scans by laser and sonic beams, are **converted** to maps to provide far more accurate measurements for **boring** tunnels, building highways and dams, **plotting** flood control and irrigation project, locating subsurface geologic formations that may affect a construction project, and a host of other building uses.

New Words

drainage	['dreɪnɪdʒ] n.	the system or process by which water or other waste liquids flow away 排水
skyscraper	['skaɪskreɪpə(r)] n.	a very tall building 摩天楼，超高层大楼
platform	['plætfɔ:m] n.	a raised floor or other horizontal surface, such as a stage for speakers 平台
self-contained	[self kən'teɪnd] adj.	containing within itself all parts necessary for completeness 设备齐全的

sewage	['su:ɪdʒ] n.	the waste matter carried off by sewers or drains 污水
photogrammetry	[fəʊtə'græmətrɪ] n.	the art or process of surveying or measuring, as in map making 摄影测量学
respectively	[rɪ'spektɪvli] adv.	in the same order as the items that you have just mentioned 分别地；各自地
contract	['kɒntrækt] v.	to make or become smaller, narrower, shorter, etc. 收缩
asphalt	['æsfælt] n.	substance with gravel, used in road-surfacing and roofing materials 沥青
runoff	['rʌnˌɔ:f] n.	sth. that runs off, as rain in excess of the amount absorbed by the ground 径流
waterfront	['wɔ:təfrʌnt] n.	the area of a town or city alongside a body of water, such as a harbor 滨水地区
lock	[lɒk] n.	a section of a canal or river that may be closed off by gates to control the water level 水闸
impoundment	[ɪm'paʊndmənt] n.	the collection of (water) in a reservoir or dam, as for irrigation 蓄水
slope	[sləʊp] n.	an inclined portion of ground 斜坡
supervise	['su:pəvaɪz] v.	to be in charge of an activity or person 监督
eliminate	[ɪ'lɪmɪneɪt] v.	to remove or take out 消除；排除
scrubber	['skrʌbə(r)] n.	an apparatus for purifying a gas 洗涤器
incineration	[ɪnˌsɪnə'reɪʃn] n.	the act of burning something completely 焚化；烧成灰
toxic	['tɒksɪk] adj.	of, relating to, or caused by a toxin or poison; poisonous 有毒的
hazardous	['hæzədəs] adj.	involving great risk 有危险的；冒险的
sanitary	['sænətri] adj.	of or relating to health and measures for the protection of health 卫生的
slurry	['slʌri] n.	particles in a liquid, as in a mixture of cement, clay, etc. with water 泥浆
combustible	[kəm'bʌstəbl] adj.	capable of igniting and burning 易燃的
traverse	[trə'vɜ:s] v.	to pass or go over or back and forth over (something); cross 穿过，横穿
oversee	[ˌəʊvə'si:] v.	to watch over and direct; supervise 监督

surveyor	[sə'veɪə(r)] n.	a person whose occupation is to survey land or buildings 测量员
ramp	[ræmp] n.	a sloping floor, path, etc. that joins two surfaces at different levels 斜坡
excavate	['ekskəveɪt] v.	to remove (soil, earth, etc.) by digging; dig out 挖掘；开凿
well-being	[ˌwel'bi:ɪŋ] n.	the state of being well, happy, or prosperous; welfare 幸福；康乐
convert	[kən'vɜ:t] v.	to change or adapt the form, character, or function of; transform 使转变；转换
bore	[bɔ:(r)] v.	to produce (a hole) by use of a drill, auger, or other cutting tool 钻孔
plot	[plɒt] v.	to draw marks or a line to represent facts, numbers etc. 绘制

Phrases and Expressions

stem from 来源于，起源于
a host of 许多，一大群

Exercise 1

Choose the best answer to each of the following questions.

1. What is **NOT** mentioned in the text?

A. The definition of civil engineering.

B. The scope of civil engineering.

C. The information about the sub-disciplines of civil engineering.

D. The ancient practices of civil engineering.

2. How many sub-disciplines of civil engineering are talked about in the text?

A. Nine　　B. Seven

C. Eight　　D. Six

3. Which specialty of civil engineering is engaged in the analysis of the properties of soils and rocks that support structures and affect structural behavior?

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