

工程管理 专业英语

ENGLISH FOR ENGINEERING
PROJECT MANAGEMENT

周鸣放 郭 斌 主编



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内容提要

本书包括20个单元,共40篇文章,内容涉及钢筋混凝土结构、建筑学、建筑规划、房地产、建设项目管理、建筑施工、建筑经济、计算机应用、科技写作等方面。本书选材广泛、内容新颖、针对性强、难度适中,有助于提高读者阅读相关专业的英语书刊和文献的能力,以获取专业信息和掌握学科发展动态。

本书为高等院校工程管理专业本科学生学习专业英语而编写,亦可作为土木工程专业英语教材,同时也可供广大从事工程管理、土木工程,且具备一定英语基础的工程技术人员及自学者学习参考。

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前 言

近年来,我国建筑行业迅猛发展,为适应这种发展,科技人员除了应具备坚实的专业知识外,还应具有良好的外语水平。专业英语作为基础英语的后续课程,重点是培养科技人员阅读和翻译工程管理专业及其相关专业英文资料的能力,培养以专业英语为交流工具,获取专业信息和掌握学科发展动态的能力,促进科技人员完成从英语学习到实际应用的过渡。为此,我们组织力量编写了本书。

本书涉及建设项目管理、房地产、建筑学、建筑规划、建筑施工、建筑经济、计算机应用、科技写作等方面,内容新颖,选材广泛,难度适中,针对性强。通过学习,科技人员可达到以下几个目的:

(1) 了解和掌握专业英语的特点、翻译和写作技巧。

(2) 增加专业词汇量,丰富和扩展专业知识,为阅读专业文献打下良好的基础。

(3) 具备运用专业英语的能力。

为了便于读者使用,每篇文章后附有生词及注释,书末附有专业英语基础知识、专业英语常用词缀、常用数学符号的英文表达方式、土木工程中常用的度量衡和单位换算以及课文的参考译文。

本书由西安武警工程学院训练部副部长周鸣放教授、西安建筑科技大学管理学院郭斌博士担任主编,西安武警工程学院赵芬妮硕士、袁燕硕士担任副主编,武警工程学院李志刚学士、刘捷硕士、潘洁硕士参加了编写,西安武警工程学院建筑工程系营房管理教研室主任、副教授姬海君硕士担任主审。

本书编写过程中参考了有关文献,在此表示衷心感谢!由于

时间仓促，水平有限，书中难免有不足之处，恳望读者不吝赐教，以便今后改进和提高。

编 者

2003年7月于西安

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Unit 1

Text

High-Rise Buildings

Introduction

High-rise buildings are closely related to the city; they are a natural response to dense population concentration, scarcity of land, and high land costs. The massing^① of the high-rise building evolves out of the designer's interpretation of the environmental context and his response to the purpose of the building. A high-rise building may be free standing—that is, vertical and slender or horizontal and bulky—or it may be placed directly adjacent to other tall buildings, thus forming a solid building block. In both approaches the building is basically an isolated object. However the tall building of the future may very well be^② an integral part of one large building organism, the city, where the buildings or activity cells are interconnected by multilevel movement systems.

High-rise buildings range in height from below 10 to more than 100 stories. A rather complex planning process is necessary to determine the height or the massing of a building. Some of the factors to be considered are the client's needs versus the land available and the location of the land as related to the facets of the environmental context, for example necessary services to support the building and its inhabitants or the ecological impact of the building or the scenic character istic of the landscape.

The Tall Building in the Urban Context

The development of the high-rise buildings follows closely the growth of the city. The process of urbanization which started with the age of industrialization is still in progress in many parts of the world. In the United States this process began in the nineteenth century; people migrated from rural to urban areas, thereby forcing an increase in the density of cities. Technology responded to this pressure with the lightweight steel cage structure, the elevator, and the energy supply systems necessitated by the high density vertical city^③.

At the beginning of this century building blocks about 20 stories high were set opposite each other, separated only by dark narrow streets, forming urban canyons. Primary concern was the placement of maximum number of people on a minimum area of land. The resulting congestion and its impact on people and the city as an organic interaction system^④ was hardly a design consideration. The needs for light, air, and open ground level for public activity spaces led to the evolution of the free-standing skyscraper. It is much taller, since it must provide a density at least equivalent to the building block it is replacing. Present technology is far enough advanced to allow construction of the single skyscraper at an economically feasible cost.

From a technological or material space point of view^⑤, the design of tall buildings is relatively well understood, however consideration of the behavioral space, that is, identification of human needs and space adaptibility, is still in an early developmental stage^⑥. The isolation and lack of contact between people within the building, and the loss of contact with street life, are some of the problems designers are trying to overcome.

Although to some degree the density of tall buildings in cities is

now controlled by zoning regulations, this design is not based on the context of the total, dynamic urban fabrics^⑦. The consequences to the urban environment of close grouping of tall buildings are of utmost importance. The impact of scale of some of the super-skyscrapers on the city, such as the 109-stories Sears Tower in Chicago, more than a quarter-mile high, is apparent. The building's electrical system can serve a city of 147 000 people and its air conditioning complex can cool 6000 one-family houses. A total of 102 elevators are needed to distribute about 16 500 daily users to the different parts of the building. Visualize the many elevators as equivalent to a dead-end street system and the sky lobbies as plazas where people pass from one part of the building to another either by non-stop, doubledeck, express elevators to the next sky lobby^⑧ or by local, low speed shuttle elevators. Since the building contains all necessary services and amenities, theoretically the people have never to leave it. The support facilities, such as shopping, entertainment, recreation, health, education, security, transportation, parking, utilities, waste, and sewage services^⑨, are equivalent to the services needed for a small city. A building of this scale forms a city within a city. The design of such an intricate interaction system requires systematic programming of social, ecological, economical, and political implications exerted not just on the surrounding urban context but also on its own environment.

For many metropolitan areas, the tall building is the only answer to continuous growth of population concentration. It should not be rejected because of its dehumanizing effects of put aside as a symbol of technological achievement.^⑩ To the contrary, educational and other research institutions should take much more initiative to systematically investigate the high-rise building environment and its context to improve its living conditions.

Words and Expressions

- an integral part of ……的组成部分
scenic [ˈsi:nɪk] *a.* 天然景色的
lightweight steel cage structure 轻型钢骨架结构
canyon [ˈkænjən] *n.* 峡谷
congestion [kənˈdʒestʃən] *n.* 拥挤
material space 物质空间
behavioral space 行为空间
zoning regulation 城市规划; 条例
superskyscraper 超级摩天楼
air conditioning complex 全套空调设备
lobby [ˈlɒbi] *n.* 门厅
plaza [ˈplæzə] *n.* 广场
shuttle [ˈʃʌtl] *n.* 短程穿梭运输工具
amenity [əˈmi:nɪti] *n.* 舒适
utility [ju(:)ˈtɪlɪti] *n.* 公用事业
intricate [ˈɪntrɪkɪt] *a.* 复杂的
implication [ɪmpliˈkəɪʃən] *n.* 关系
dehumanize [diːˈhju:mənɪz] *vt.* 使失人性

Notes

- ① massing: 体量。
- ② may well + inf: (完全) 有可能。
- ③ vertical city: 向空中发展的城市, 立体城市。
- ④ 介词短语 as an organic interaction system 作定语, 修饰 city。
- ⑤ From a technological or material space point of view 意为 From a technological point of view or from a material space point of

view。

- ⑥ …但是对高层建筑行为空间问题的研究，即关于人们的各种需求与适应这些需求所需的空间问题的研究，则尚处于早期阶段。
- ⑦ 虽然城市中高层建筑的密度目前在某种程度上受到城市规划条例的控制，但是这种规划并不是以城市结构的整体性和动态性为依据来全面考虑的。
- ⑧ 介词短语 to the next sky lobby 作定语，修饰 express elevators。
- ⑨ shopping, ……waste 等和 sewage 并列，后面都省略 services。即 shopping services, entertainment services, ……waste services
- ⑩ 不应该由于高层建筑会使人情淡化而拒绝采用它，也不应该把高层建筑只作为一项技术成就的标志而搁置一旁。

Questions

1. What kind of technological difficulties will a designer of tall building meets?
2. Why are there so many high-rise buildings in modern urban?

Reading Material

The Skyscraper

It has been stated that the skyscraper and the twentieth century are synonymous and there can be no doubt that the tall building is the landmark of our generation. It is a structural marvel that reaches to the heavens and embodies human goals to build ever higher. The

skyscraper is this century's most stunning architectural accomplishment.

But the question of how to design the tall building still continues to taunt, disconcert, and confound practitioners. The swing in taste and style is as predictable as night and day, and we are at this very moment busy rewriting the rules of skyscraper design. In the process we are not sure that the right lessons we have learned are not being discarded for the wrong ones.

A successful skyscraper solution and the art of architecture itself depends on how well the structural, utilitarian, environmental, and public roles of the tall building are resolved. Style, any style, must be intrinsic to, and expressive of, these considerations. Architecture is, above all, an expressive art.

The skyscraper has totally changed the scale, appearance, and concept of our cities and the perceptions of people in them. No doubt it will continue to do so. But it is more important today than ever that the builder and architect consider all the factors associated with the design of a tall building and how it is incorporated into its urban setting.

Looking at the whole historical spectrum of skyscraper design, four significant phases can be identified: the functional, the eclectic, the modern, and what is currently called the postmodern, a term coined more by the media, for surely our references to modernism have not changed but have merely broadened.

It is significant that all of the most important structural solutions came early in the development of tall buildings and in a very short space of time. Because these structures were concentrated in Chicago in the two decades at the end of the last century, it was quickly acknowledged and referred to as the Chicago style.

The period from 1890 to 1920 was considered the golden age of

architecture, and there have been few more masterful and original tall buildings produced than those by the architect Louis Sullivan. Running as counter current to the already emerging eclecticism, Sullivan believed that the design of the skyscraper was the translation of structure and plan into appropriate cladding and ornament and that the answers were not to be found in the rules of the past.

The eclectic phase produced some most remarkable monuments, employing many of the styles and ornamentation from the temples of Greece to the Italian Renaissance. The best examples displayed skilled academic exercises, composed with ingenuity and drama to answer the new needs and aspirations of the twentieth century. These designs so beautifully compiled by architects like Raymond Hood and Cass Gilbert culminated in the famous international competition for the Chicago Tribune Tower in 1922. This competition, which called for "The Most Beautiful and Distinctive Office Building in the World", drew more than 200 entries. The selection of the Gothic revival design by Howells and Hood prolonged the eclectic style against the concepts of the modern. For ten years modernism as pioneered by a relatively few European architects, paralleled a style that would better be termed modernistic. This style was neither pure nor revolutionary, but fused the end of the decorative eclectic style with the modernist theories and has become popularly known today as Art Deco.

The early modern or international style skyscrapers are small in number because of lack of courage on the part of the builder and a reluctance to invest in a style not yet accepted. But after the Second World War the descendants of these early modern skyscrapers, such as the McGraw-Hill Building in Manhattan, came to make up the high modern corporate style, the flat top glass boxes that have been the focal point of criticism over the past ten years.

These big buildings have taught us a hard lesson. But it is wrong that so much has been blamed on the esthetics, for such problems owe just as much to investment patterns and social upheavals. Unfortunately the minimalism of the modern esthetics let itself to the cheapest corner cutting. Since this is the most profitable route for the builder to take, it is an elegant and refined vocabulary that was quickly reduced to bottom line banality. Many are already grieving the passing; for it is structure in its purest form, enclosed in a sheer curtain of shaped and shimmering glass, that has produced some of the most innovative designs of our time.

These ideas should not be abandoned in a search for ideal answers. After all, the history of the skyscraper—which is also the history of the century—is a search for identity.

Words and Expressions

- intrinsic [in'trɪnsɪk] *a.* 内在的, 固有的
masterful ['mɑ:stəfʊl] *a.* 名家的; 巧妙的
eclecticism [ek'lektɪsɪzəm] *n.* 折衷主义
cladding ['klædɪŋ] *n.* 涂层; 敷层
Italian Renaissance 意大利复兴运动 (时期)
culminate ['kʌlmɪneɪt] *vi.* 达到顶点
modernistic [mɒdər'nɪstɪk] *a.* 现代派的; 现代主义 (者) 的
upheaval [ʌp'hi:vəl] *n.* 动乱, 剧变
minimalism ['mɪnɪməlɪzəm] *n.* 极简抽象派艺术
banality [bə'nælɪtɪ] *n.* 平庸, 陈腐
grieve [grɪ:v] *vt.* 使悲伤, 使痛心
sheer [ʃiə] *a.* 透明的; 极薄的; 纯粹的
shimmering ['ʃɪmərɪŋ] *a.* 闪闪发光的

Unit 2

Text

Civil Engineering and the Civil Engineer

Engineering is the practical application of the findings of theoretical science so that they can be put to work for the benefit of mankind^①. Engineering is one of the oldest occupations in the history of mankind. Without the skills included in the field of engineering our present-day civilization could never have evolved.

Civil engineering is a branch of engineering that deals with the design and construction of structures that are intended to be stationary, such as buildings and houses, dams, tunnels, bridges, canals, sanitation systems-highways, airports, port facilities, and road beds for railroads. Among its subdivisions are structural engineering, dealing with permanent structures; hydraulic engineering, dealing with the flow of water and other fluids; and environmental/sanitary engineering dealing with water supply, water purification, and sewer systems, as well as urban planning and design. The term "civil engineering" originally came into use to distinguish it from military engineering. Civil engineering dealt with permanent structures for civilian uses, whereas military engineering dealt with temporary structures for military uses.

Civil engineering offers a particular challenge because almost every structure or system that is designed and built by civil engineers is unique. One structure rarely duplicates another exactly. Even when