岩土工程丛书

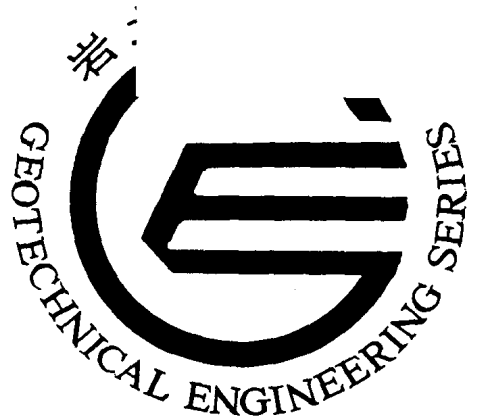
GEOTECHNICAL ENGINEERING SERIES

岩土工程监理手册

GEOTECHNICAL SUPERVISION MANUAL

林宗元　主编

辽宁科学技术出版社



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内 容 提 要

本书共分5篇49章。第1篇总论，包括监理、工程建设监理和岩土工程监理的概念、特点、对象、业务范围与工作方法等，共6章。第2篇岩土工程监理的基本内容与要求，包括岩土工程的勘察监理、设计监理、施工监理、监测监理等共4章。第3篇各种岩土工程施工方法的监理，包括换(填)土处理、土桩、灰土桩、石灰桩、砂桩、干法碎石桩、振动水冲、深层搅拌、高压喷射注浆、灌浆、预压排水固结、强夯、钻(冲)孔灌注桩、挖孔桩、沉管灌注桩、废渣混凝土桩、预制桩、沉井沉箱、地下连续墙、板桩墙、锚固、土钉和降水工程等的施工监理，共20章。第4篇各类工程岩土工程监理的基本内容与特殊要求，包括房屋建筑、铁路、地铁、公路、机场、矿山井巷、油气管道、核电、电力、水利水电、港口、船厂、填海、地下工程、边坡与滑坡治理、桥涵等岩土工程监理，共16章。第5篇工程建设监理文件汇编，包括国家主管部门、行业主管部门和地方主管部门发布的文件。尚有附录和索引。

本书以国家法规、政府文件为指导，以工程建设标准为依据，是我国实行工程建设监理以来，首次对各行业、各地方在各类工程中开展各种岩土工程监理的经验总结。具有先进性、指导性、可靠性、实用性和简明性。

本书可作为从事各种岩土工程的勘察监理、设计监理、施工监理和监测监理等监理工程师的必备工具书。也可作为岩土工程、工程勘察、工民建、水工、港工、道桥、地下工程等土木工程专业科技工作者和大专院校师生的重要参考书。

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主 编 简 介

林宗元，1929 年 9 月生，福建莆田人。1945 年毕业于莆田砺青中学，1948 年毕业于哲理中学，1953 年 3 月毕业于上海同济大学结构系，从事工程勘察（及工程结构设计）已 43 年。中国北方工业公司勘察设计研究院原副总工程师、教授级高级工程师。历任原第二机械工业部设计处见习技术员、勘测处助理工程师、原第一、三、五机械工业部勘测公司副科长、工程师、大队长兼主任工程师、副总工程师、高级工程师、原兵器工业部、国家机械委、机械电子工业部勘察研究院副总工程师、教授级高级工程师。主持过国内外各类型（如国防工业工厂、机械工业工厂、化工厂、造纸厂、冷冻厂、机场、海上工程、天然洞室利用、人工洞室、市政工程、线路工程、高层、超高层建筑等）、各种地层（如一般岩土，湿陷性黄土与砂土、软土、膨胀土、盐渍土和红土等特殊性土）、各种地质环境条件（如平原地区、山区、滨海地区、半沙漠地区等）、各种环境工程地质问题（如边坡和滑坡问题、隐伏岩溶地表塌陷问题、地下矿层采空问题、泥石流问题、地震工程问题等）的大中型工程勘察项目一百多项，曾获得国家级优质工程勘察银质奖 2 项，部级优质工程勘察奖或优秀论文奖 5 项。在国内外各种学术会议上及国家级刊物上发表过论著 30 多篇，对红土、膨胀土等特殊性土、超高层建筑场地的岩土工程勘察、环境工程地质与环境岩土工程等有独特的研究。主编《岩土工程丛书》一套，计 5 本，近 1000 万字。1989 年被评为首批的中国工程勘察大师；1992 年被国务院授予有突出贡献的享受政府特殊津贴的科技专家；1986 年起担任首届中国工程勘察协会副理事长，1989 年 11 月起兼任秘书长，协助政府主管部门搞好行业管理，推动工程勘察技术的发展，参与工程勘察收费标准改革及原状取土器标准化、系列化等方面的工作。1980 年起为国际地科联工程地质协会（I. A. E. G）会员。1979 年起为中国兵工学会基本建设学会第一、二、三届的委员。

Introduction To The Chief Editor

Lin Zongyuan, born in September, 1929 at Putian in Fujian Province, China. In 1945, graduated from Liqing Middle School and in 1948 graduated from Zheli Middle school, Putian. Graduated from the Department of Structure, Tongji University in Shanghai in 1953. As deputy engineer—in—chief and professor senior engineer of the Engineering Institute of Investigation and Surveying and Design Company of NORINCO of China, he has engaged in geotechnical investigation and survey as well as civil engineering for more than 43 years.

He has successively held the posts of technican on probation at the Department of Design, assistant engineer at the Department of Investigation and Surveying of the late Second Ministry of Machinery Industry, Vice section Chief, engineer, team leader and concurrent chief resident engineer, vice engineer—in—chief, senior engineer of the Investigation and Surveying Company of the late First, Third and Fifth Ministry of Machinery Industry, Vice engineer—in—chief, Professor senior engineer at the Research Institute of Investigation and Surveying of the late Ministry of ordnance, the Commission of Machinery Industry, the Ministry of Machinery and Electronics Industry of the People's Republic of China.

Among more than a hundreds of varieties of projects under his direction. e. g. factories of defence industry, machinery industry, chemical industry and paper mill, cold storage, airport, marine projects, usage of natural caves, man—made chambers, municipal engineering, pipelines, high rise buildings, in variety of forms of rock and soil like common rock, collapsible loess and sand, soft clay, expansive soil, saline soil and laterite, etc. in many kinds of geological environments like plain, mountaineous area, sea shore semidesert area, etc. in various sorts of environmental engineering geologic condition e. g. slide and slopes, ground subsidence at underlaid karst area, mining subsidence, debris flow, earthquake, etc. two of them were silver medals of the national prize in investigation and survey, five of them were Ministry Awards of investigation and surveying or Best Paper Awards. More than 30 papers have been published in interntional conference and national symposium. His unique devotion to special soils like laterite and expansive soil, research to geotechnical investigation of high rise building, environmental engineering geology and environmental geotechnology has won extensive recognition from the whole expertise and compilation of such a set of Geotechnical Engineering Series including five books, ten million chinese letters. Led to his highest reputation as the Master in Geotechnical Investigation and Survey of the People's Republic of China in 1989. In 1992, he was awarded The National Outstanding Scientist by the state concil of P. R. C and began to enjoy the top grade Goverments Paritcular Subsidy.

In 1986, Mr Lin Zongyuan began to hold the post of the first deputy President and in November 1989 held the concurrent post of General Secretary of the Chinese Association of Geotechnical investigation and surveying and helps the organization responsible for the profession to fix the standards of fee collecting, to promote the standarization and seriation in soil sampling, etc. He has been the member of International Association of Engineering Geology (I. A. E. G) from 1980, and also the committee member of the first, second and third Capital Construction Committee of the Chinese Association of Ordnance Industry from 1979.

序

党的十一届三中全会以来，我国工程勘察界在总结历史经验和吸收国外先进技术的基础上，应用现代化的探测技术进行了岩土工程的理论研究和实践探索，取得了可喜成绩。鉴于工程勘察单位和勘察人员最了解建设场地的岩土工程条件，而且能够充分利用岩土，把岩土做为一种结构物，从而提高了勘察工作的精度，优化了工程勘察方案，对保证工程质量、降低工程造价、缩短建设工期、提高投资效益起到了极好的作用。岩土工程的蓬勃发展，给我国建设事业带来了进步，给工程勘察界带来活力，给整个勘察事业带来兴旺发达。

这次由中国工程勘察协会组织编写的《岩土工程丛书》，集中中国勘察、设计、施工、科研、院校等三百多名专家、研究员和教授及青年工程师的智慧与经验，他们熟悉这一新兴学科的系统知识，了解这一学科国内外发展的历史和现状，不断丰富工程实践经验。这次编写出版的这套丛书，力图在体系、内容和风格等方面充分发挥自己的优势，突出岩土工程的特点，尽量避免与已出版的同类书在内容上的简单重复，从而保证了本丛书的完整性、实用性、指导性、科学性、可靠性和先进性，使其符合我国的国情，以适应从事岩土工程的广大工程技术人员、科研人员和大专院校有关师生的需要。

《岩土工程丛书》是我国勘察设计战线广大工程技术人员应用现代技术在工程实践中的结晶，它的出版发行，对我国工程勘察各级领导干部和广大技术人员正确认识和理解岩土工程，提高勘察队伍的整体素质和工程质量，使岩土工程更好地为国民经济建设服务，必将起到积极的作用。希望工程勘察设计行业的各级领导干部和技术人员认真阅读，从中汲取有益的东西，结合本地区、本部门的实际和工程实践，创造性地加以运用，并不断总结经验，逐步提高我国岩土工程技术水平，为实现具有中国特色的岩土工程，为早日赶上和超过世界先进水平而共同努力。

建设部勘察设计司司长
中国勘察设计协会常务副理事长　吴奕良[1]
中国工程勘察协会理事长

1991年8月

[1] 吴奕良同志自1995年12月起担任中国勘察设计协会第三届理事长。

Preface

Since the third session of the eleventh conference of the Communist Party of China, great achievements have been obtained in the theory and practice of mordern geotechnical engineering investigation. On the basis of history experiences and advanced technology absorbed from abroad. Having a good knowledge of site geotechnical conditions, investigation institutes and engineers can make full use of rock and subsoil as a structure, improve the work precision, optimize survey plan, ensure engineering quality, reduce cost, shorten construction period, increase investment benefit. The flourishing development of geotechnical engineering brings national construction the progress, contributes an actives and brisk aspect in engineering investigations.

The Geotechnical Engineering Series editted by Chinese Association of Geotechnical Investigation and Survey collect intellegent knowledge and precious experience from more than 300 experts, reaserchers, professors and young engineers who are familiar with the past and present of this new area to enrich their practical experience.

The publishment of this series tries to reflect its advantage in system, content andstyle indicating characters of geotechnical engineeing to ensure this series entirety, practical, conductive, scientific, reliable and advantageous in accord with the national situation, meeting the requirements of technicians, reaserchers, teachers and students.

Geotechnical Engineering Series is the result of mordern technology application on engineering investigation, It's publishment takes an positive action in people's understanding of geotechnical engineering, improving the quality of engineering and its personnal to serve for the national economy, I sincerely hope cadres and technicians from all lines of investigation and design to read and absorb the series with the combination of local practice and experiences, to utilize them to bring tie Chinese Geotechnical Engineering to catch up with and exceed advanced world level.

Wu Yiliang
Director of Investigation and Design Bureau of the Ministry of Construction
Deputy Standing President of Chinese Association of Investigation and Design[1]
President of C. A. G. I. S

August, 1991.

[1] Mr. Wu Yiliang has been the 3rd president of chinese Association of Geotechnical Investigation and Design Since December 1995.

前　言

近十多年来，在国家主管部门的积极倡导和组织下，中国工程勘察行业一些有代表性的生产、科研单位和有关大专院校，为工程勘察向岩土工程延伸做了一系列有益的工作。中国工程勘察协会等社会团体在工程勘察技术人员（包括技术工人）知识更新与培训提高、技术经济立法、经验交流等方面，协助政府主管部门做了许多有成效的工作，为推行岩土工程起了积极的作用。为了适应进一步推行岩土工程的需要，在国家主管部门、辽宁科学技术出版社、广大参编单位和参编人员的大力支持下，中国工程勘察协会决定组织国内有关人员编写一套《岩土工程丛书》，包括《岩土工程勘察设计手册》、《岩土工程试验监测手册》、《岩土工程治理手册》、《岩土工程监理手册》和《国内外岩土工程实例和实录选编》等。从1991年3月28日在北京召开第一次编辑工作会议以来，参加编审工作的先后共有100多个工程勘察、工程设计、工程施工单位和有关的院校与科研部门，计有有代表性的有关专家、教授、研究员以及有坚实理论基础与有一定实践经验的青年工程师、老师300多名，有关的中国工程勘察大师及中国工程设计大师基本上都参加了本丛书的编审工作，可谓具有老、中、青及勘察、设计、施工和生产、教学、科研三个三综合的特点。

本丛书编写的指导思想是，要力争成为从事岩土工程的广大工程技术人员、科研人员必备的工具书；大专院校有关专业师生的主要参考书；受土建结构设计技术人员与工程施工技术人员欢迎的参考书。在内容上尽可能体现指导性、简明性、实用性、可靠性与先进性，尽可能突出岩土工程的特点，注意充分体现本丛书的特色。

在中国，岩土工程监理是岩土工程的重要组成部分之一，同时也是建设监理不可缺少的组成部分之一。建设监理是指针对某个具体的工程建设项目各环节（方面）的参与者的行为和他们的责权利，依据建设行政法规和有关技术标准，综合运用法律、经济、行政和技术手段、分别进行监督、监控、评价和协调，以使工程建设井然有序、顺畅地进行、满足好快省并使能取得最好的投资效益、环境效益和社会效益的要求。岩土工程监理通常主要是对工程建设项目中地面以下部分参与者的行为和他们的责权利，依据有关的法律、法规和技术标准，综合运用法律、经济行政和技术手段，按照业主委托的合同，进行必要的协调和约束，以保障岩土工程各环节（方面）的行为有条不紊地快速进行，以使工程能达到好、快、省并取得三大效益的目的。目前，岩土工程监理不论从机构设置或工

作制度，都还没有形成一个体系，可以说还处于萌芽状态，还有待于主管部门的大力扶持和岩土工程界同仁们的不懈努力，为开创岩土工程监理的新局面而奋斗！

按本手册所涉及的内容在本丛书中的序列来看，可以说本手册是本丛书的第四本。编写本手册的目的是：

a. 作为岩土工程师(监理工程师)在进行岩土工程监理工作时的指南；

b. 作为承担岩土工程勘察、设计、施工和监测诸环节(方面)工程技术负责人进行投资、质量、进度自控的指南；

c. 作为大专院校岩土工程专业有关岩土工程监理的参考书。

根据上述的编写目的和本丛书规定的各手册之间既要有明确的分工，自成系统的独立性、又要保证整套丛书形成一个整体，防止不必要的重复的编写原则的要求，对各篇的编写框架作如下规定：

1 对第1篇总论，着重介绍岩土工程监理的基本概念、基本特点、业务范围、工作的基本准则和监理的对象与依据；

2 对第2篇岩土工程监理的基本内容和要求，着重介绍岩土工程勘察、设计、施工和监测诸环节(方面)的共性内容，各章原则上应包括：(1) 概述；(2) 监理对象、目标与依据；(3) 监理工作程序、阶段划分及各阶段监理任务；(4)监理工作方法和内容要求：1) 监理组织；2) 监理方法与手段；3) 质量控制；4) 进度控制；5) 投资控制；6) 合同管理；7) 信息管理；8) 监理总结(监理报告)。

3 对第3篇各种岩土工程施工方法的监理各章尽可能着重介绍以下内容：(1) 概述 简明扼要介绍该方法的基本概念、工艺流程和监理特点与重点以及需要说明的问题；(2) 监理目标与依据 目标指结合该工法的具体目标(尚应包括质量等级等内容)，依据指具体的设计文件、有关的国家标准、行业标准和地方标准等专业技术依据，至于已在第2篇中列出的共性的依据如法律、法规、政策、条例等在此不再重要列出；(3) 质量预控制措施 列表给出常见的施工事故和施工质量隐患或通病的出现部位、产生原因、预防措施与补救措施；(4) 施工准备监控；(5) 工程材料监控；(6) 施工过程监控；(7) 施工验收；(8) 监理总结(监理报告)；(9) 监理实例，有合适实例时列出：1) 工程概况；2) 监理机构；3) 监理方法及过程；4) 监理报告(摘要)；5)监理效果或其它要说明的问题。

4 对第4篇各类工程岩土工程的监理各章尽可能着重介绍以下内容

(1) 概述 简要介绍本类工程岩土工程特点及监理特点与重点(原则上各章岩土工程监理均应包括岩土工程勘察、设计、施工和监测四个环节)以及需说明的问题；(2) 监理目标与依据 要结合工程具体特点介绍具体目标；监理依据指专业技术依据(设计文件 、规程、规范、资料等)，至于已在第2篇中列

出的共性的依据在此不再重复列出；（3） 监理工作的内容与要求 1） 质量控制； 2） 进度控制与投资控制 只介绍特殊要求，在第2篇中已介绍的共性要求在此不再重复； 3） 合同管理与信息管理 只介绍特殊要求，在第2篇中已介绍的共性要求在此不再重复； 4）监理总结（监理报告）；（5） 监理实例，有合适实例时列出，要求与第3篇的相同。

由于中国开展建设监理的历史还不长，一些有关名词术语尚无统一的标准。为便于读者阅读，经与主管部门有关领导商量，在本手册中（文件汇编除外）对下列几个名词暂作如下规定

	社会上使用的	本手册暂统一采用
a.	业主、项目法人、建设单位、建设方、投资方、甲方	业主
b.	承建商、承建单位、承包商、承包人、总承包、乙方	承建商
c.	分包单位、分包商	分包单位
d.	岩土工程勘察单位、勘察方、设计单位、设计方、施工单位、施工方、监测单位、监测方	岩土工程勘察单位、设计单位、施工单位、监测单位
e.	监理单位、监理方、监造人、丙方	监理单位
f.	监理机构、监理组织、现场监理单位	监理机构
g.	政府监理	不用该词（必要时只提政府对监理的管理）
h.	社会监理	不用该词（必要时只提专业监理）

由于岩土工程在中国尚处于推行阶段，某些行业的现行勘察技术规范仍沿用“工程地质勘测”一词，但为本丛书统一用语和统一涵义起见，一律改用“岩土工程勘察”，必要时，在具体内容上也作适当的补充调整，其它某些用词也按此原则处理，特此说明。

由于各种监理项目用表既有本身的特殊性，而更主要的又是在某些方面或某些内容上可具有共同性，为了供岩土工程监理工程师在设计本监理项目所需监理用表时参考，除了在附录A～附录E中列了一批监理用表外，还将正文中所列的监理用表名单汇总于附录F中，以便查找。

由于岩土工程各环节的监理、各种岩土工程施工方法监理以及各类工程岩土工程监理的技术发展水平、成熟程度与资料的丰富程度不同等原因，各章节的篇幅有很大的差异，编写格式也不尽一致，为此，在编审中不强求统一，重点立足于尽可能体现如前所述的五性。

本手册计有5篇49章346节，插图93幅，表765个，共约150万字。

参加本手册编审工作的共有47个单位，101名专家、教授和研究员。先于1994年4月23日至27日在山东济南市召开本手册的编写工作会议。讨论修改

了编写大纲(初稿);明确落实各章编写分工;统一编写体例与要求;制定编写出版计划;1995 年 4 月 13 日至 19 日在浙江宁波市召开初稿审查会,初步互审了初稿;讨论修改各篇章的编写框架;确定进度计划;1995 年 10 月 20 日至 29 日在福建同安召开纂编工作会议,初步审阅修改稿;制定纂编工作原则、方法和应注意的问题;确定进度计划。然后修改稿由林宗元、王长科负责删改补充、王长科负责全稿的目录汇总、编索引、插图描绘的核定,林宗元负责第 5 篇和附录的编辑及全书的统一纂编,张文清、叶伟英负责主编简介、序、前言、目录等的英译,全稿最后由林宗元审定。

全面编纂这么一套岩土工程丛书,在中国尚属首次。虽然我们尽可能特邀了对各该章节有较深造诣、有丰富的理论基础和实践经验的专家、教授、研究员负责编审工作,经过各方面的大力支持,参加编审人员的无私奉献精神,对稿件反复进行审核修改补充。亟力想把本手册编成能反映当前国内外先进水平的工具书,但由于编审时间和本人水平有限,错漏之处可能还会存在,欢迎读者批评指正,提出具体的建设性建议。来信请寄:邮编 100053,北京 573 信箱 7 分箱。

冶金部山东岩土工程勘察总公司承办了济南会议;地矿宁波工程勘察院承办、浙江有色勘察工程公司(原浙江有色勘察研究院)和宁波化工工程勘察公司协办了宁波会议;中国石油天然气总公司地球物理勘探局岩土工程公司承办、冶金部福建岩土工程勘察研究院、福建省水利水电勘测设计院和泉州市水电工程勘察院协办了同安会议,这些单位,特别是三个承办单位在人力、物力、财力上的无私支持,为会议的圆满成功提供了良好的条件;深圳市勘察研究院、东北建筑设计院岩土工程公司在承办定稿会、北京新丰印刷厂在印刷上也给予了大力的支持;天津地质工程勘察院派人完成了本手册的全部插图的清绘、植字工作;特在此表示衷心的感谢!

中国工程勘察协会副理事长兼秘书长
中国工程勘察大师、教授级高级工程师　林宗元
《岩土工程丛书》主编

1996 年 7 月 9 日

Foreword

In order to extend engineering investigation to geotechnical engineering, a series of beneficial work has been carried out in recent decade by some representatives of Chinese engineering investigation communities in production, research and relevant universities under the active promotion and orgnization of the Ministry of Construction of China. Chinese Association of Geotechnical Investigation and Serveying(C. A. G. I. S) other societies have contributed a lot of effective work to train and renew technician's knoledge, make technical economy, exchange experience as well as help to improve the development of geotechnical enineering.

With the support of national responsible institutions, Liao Ning Scientific and Technology Press, editing units and staff, C. A. G. I. S decided to compile Geotechnical Engineering Series including Geotechnical Investigation and Design Manual Geotechnical Testing and Mornitoring Manual, Geotechnical Processing Manual, Geotechnical Supervision Manual, etc. On March 28th, 1991, the first meeting of editorial staff was held in Beijing. More than a hundred institutes and companies in geotechnical investigation, design, construction, research and universities in addition to three hundred experts, professors, reseachers and excellent young engineers have involed in compilling and editing. National Masters in geotechnical investigation and serveying as well as engineering design of te People's Pepuplic of China have also taken part in this series to which three trinities i. e. old, middle and young in age, investigation, design and construction in working communities, production, teaching and research in working style are converged forming its special character.

The guiding ideology of this book is to try to become one of the required reference book to those technicians, researchers, teachers and students, civil engineers and constructors. The distinguishing feature of this series are being directive, explicit, practical, reliable and advanced.

Geotechnical engineering supervision is one of the important component part of geotechnical engineering in China and is, too, one of the indispensible component part of construction supervision which indicates that paticipator and his behaviour, rights, resposibilities and benifits in every part of a concrete construction project are under the course of examination, control, evaluation and coordination according to administrative laws and regulations, as well as technical standards by comprehensive means of lawful, economic, administrative and technical methods so that to run the engineering projects smoothly in progress, excellently in quality, economically in progress to achive the best benifit result in investment, environment and social aspects.

Geotechnical engineering supervision is usually to coordinate and restrain the behaviour, responsibilities and benefits of the project paticipators undertaking subsurface

construction depending on laws, regulations and technical standards by comprehensive use of lawful, economic, administrative and technical means as well as contracts between the owner and the contractor so that to ensure each part of geotechnical engineering to run project smoothly and systematically and reach three benifits in best qulity, fast progress and least investment.

At present, a system of geotechnical engineering supervision has not been formed both in orgnization and regulation or it is in the embryonic stage to be supported by the government and to be continously dedicated by geotechnical colleques to create a new era of geotechnical engineering supervision.

This is the fourth book of the series. In the point of content, it is aimed at:

a. A guid book for geotechnica engineer and supervising engineer to work at geotechnical engineering supervision.

b. A guid book for engineers undertaking geotechnical enginering investigation, design, construction and mornitoring, etc. to make control on investment, quality and work progress.

c. A reference book for college students in geotechnical engineering supervision.

Based upon the above mentioned objectives and under the principle and requirement of that each manual of this set of series has definits scope and systematical independence to ensure the whole set of series integrated and avoid uneccessary repeat, compilling forms of each part are regulated as below:

1. Part One, which emphasises on elementary concepts, basic characters, work scopes, conceptual working principal, supervision target and the basis of geotechnical engineering supervision.

2. Part Two, being entitled the basic content and requirement of geotechnical engineering supervision. It focuses on the introduction of generalities of geotechnical engineering investigation,design, construction and monitoring. Each chapter of this part principlly contains (1) Introduction; (2) Supervision target, object and its basis; (3) Supervision work procesure, period division and task of each supervision period; (4) Work methods and their requirement which includs ① supervision orgnization; ② supervision method and period; ③ quality control ④ progress control; ⑤ investment control; ⑥ contract control; ⑦ information managment; (5) Supervision summary supervision report.

3. Part Three, supervision to various geotechnical engineering construction method, each chapter of which introduces (1) Introduction, giving a briefly knowledge of elementary concept, technological process, characters, important points and views to be explained; (2) Supervision target and basis. By target it is refered to as the concrete aims including quality grade regarding to a certain construction method; while by basis, it means design documents, related national standards, industry and regional criterions, professional technical requirements. As to common bass listed in Part Two, like laws, regulations, policy and rules, etc, are not repeated. (3) Quality pre—control measures are

tabulated according to case, position of construction hidden peril of common problems, their reasons, forecast and remedy measurement; (4) Supervision control of construction preparation; (5) Supervision control of construction materials; (6) Supervision control of construction duration; (7) Construction acceptance; (8) Supervision summary/report; (9) Supervision examples. fo llowing contents are listed to a suitable example ① introduction to the project; ② supervision orgnization; ③ supervision method and process; ④ supervision report/abstract; ⑤ supervision effect or things to be explained.

4. Part Four, supervision in this part is to various geotechnical construction which falls on the following points (1) Introduction. It briefly introduces project features, supervision characters, key points(In principle, each chapter should consist of four aspects in geotechnical investigation, design, construction and mornitoring) and questions to be explained. (2) Supervision target and basis. Target should be introduced depending on project features. Basis indicates professional technical regulations(including design documents, rules, standards, data, etc.). Those of which stated in Part Two are not listed here. (3) Supervision work scope and requirements: ① guality control; ② progress and investment control. Only special requirements are introduced and those listed in Part Two are not included; ③ contract management and information management which are, too, on the special points absent from Part Two. (4) Supervision summary/report; (5) Supervision examples. Requirements of which are as the same as those in Part Three.

As the short history of the development of consturction supervision in China. A number of related words and terms have no general definition in current application. Having been discussed with authorities in responsible institution, We make regulation temporarilly to the following expressions to convenience our readers of this set of series.

Used by common society	Used in this Manual
a. Owner; Project legal person; Constructing unit/Party; Investor; Party A	Owner
b. Contracting trader; Contracting unit; Contractor; Contracting person; Overall Contractor; Party B.	Contractor
c. Subcontrating unit; Subcontractor;	Subcontractor
d. Geotechnical engineering investigation unit; Investigation party; Design unit; Design party; Construction unit; Construction party; Mornitoring unit; Mornitoring party.	Geotechnical investigation unit; Geotechnical Design unit; Geotechnical Construction unit; Geotechnical Monitoring unit.
e. Supervision unit; Supervision party; Supervisor; Party c.	Supervision unit
f. Supervising organ; Supervising	Supervising organ.