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企业文化



科技团队 Technology Team

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中交四航工程研究院有限公司(中交四航局研发中心)创建于1965年,隶属于中交第四航务工程局有限公司,是中国交通建设股份有限公司的三级子公司,是一家为港航、公路、铁路、水利、市政、工民建等基础设施和工程提供科技研发、技术咨询与支持、工程质量检测的科技型企业,已获得"高新技术企业"认证。

四航研究院科技力量雄厚,拥有水工构造物耐久性技术交通运输行业重点实验室、中国交建建筑材料重点实验室、中交交通基础工程环保与安全重点实验室等多个科研平台,设有博士后科研工作站,是广东省港口工程技术研究开发中心挂靠建设单位,参与组建疏浚技术装备国家工程研究中心(疏浚土处理分中心)、粤港澳大湾区交通建设智能维养与安全运营工程技术研究中心、南方海洋科学与工程广东省实验室(珠海),并与中山大学、天津大学、河海大学、大连理工大学、华南理工大学、武汉理工大学、解放军后勤学院、重庆交通大学、清华大学、同济大学、广西大学等多所高等院校开展博士和硕士研究生的联合培养与科研合作。

四航研究院科研成果丰硕,有力地推动了行业技术的发展。获省部级以上及中国交建科技奖励136项,其中,国家科技进步一等奖和二等奖各1项;获批国家专利157项(发明专利71项),其中获中国专利优秀奖1项;主编国家标准1部,主编和参编45项国家及行业标准规范;获得国家级工法5项,省部级和中国交建工法20项;获得软件著作权18项;在国内外核心期刊、国际学术会议上发表论文已达900余篇,其中SCI收录17篇,EI收录189篇,ISTP收录17篇。

四航研究院在软基处理技术、环境生态岩土工程技术、高性能混凝土及耐久性技术、工程腐蚀与防护、混凝土结构裂缝控制、桩基工程 承载特性及施工质量控制、海上施工的水动力分析、码头及桥梁检测评估与维修加固、建筑材料检测及桥梁施工监控技术等多个领域取得了 令人瞩目的成果,不少成果处于国际领先或国际先进水平,并成功转化应用于工程实践,业务范围涵盖华南、华北、华东、华中、西南、东 北、港澳等国内地区,并扩展至南亚、东南亚、中东、东非、西非、北非、南欧等海外区域,创造了巨大的社会、经济和环境效益。

四航研究院长期坚持科研与实践相结合的方针,秉承"诚信守诺、质量保证、优质服务、顾客满意"的原则,积极为国内外客户提供优质的服务,在取得跨越式发展的同时,也赢得了良好的社会信誉,先后被授予"全国文明单位"、广东省"文明单位"、广东省"先进集体"、"中央企业先进集体"、"全国交通运输企业文化建设卓越单位"、"全国诚信企业"、广东省"五一劳动奖状"、"广东省十项工程劳动竞赛模范集体"、"第一届水运工程建设标准突出贡献单位奖"、"广东省自主创新标杆企业"、水运建设行业科技奖"获奖先进单位"等荣誉称号。四航研究院党委荣获国资委"中央企业先进基层党组织"、中国交建"先进基层党组织标杆"等荣誉称号。

CCCC Fourth Harbor Engineering Institute Co., Ltd. (CCCC Fourth Harbor Engineering Co., Ltd R&D, hereinafter referred to as CCCC 4th Harbor Institute), established in 1965, is affiliated with CCCC Fourth Harbor Engineering Co., Ltd. and is a third grade subsidiary of China Communications Construction Company Ltd.. CCCC 4th Harbor Institute is a sci-tech enterprise engaging in providing technical research & development, technical consultation & support, , engineering quality testing & detection, new materials research & development for infrastructure and engineering such as waterway, road, railway, irrigation engineering, municipal engineering, civil engineering and so on. The institute has been issued `High-tech Enterprise` Certification.

CCCC 4th Harbor Institute has strong scientific research strength, possessing many scientific research platforms including Key Laboratory of Harbor & Marine Structure Durability Technology of Transport Industry, CCCC Key Laboratory of Construction Materials, CCCC Key Laboratory of Environmental Protection and Safety in Foundation Engineering of Transportation and so on. Besides, CCCC 4th Harbor Institute has set up its own Post-doctoral Scientific Research Workstation. It is also an affiliated construction unit of Harbor Engineering Technology Research and Development Center in Guangdong Province and it participated in setting up National Engineering Research Center of Dredging Technology & Equipment (Dredged Soil Treatment Center), Guangdong-Hong Kong-Macao Greater Bay Area Transportation Construction Smart Maintenance and Safe Operation Engineering Technology Research Center and Guangdong Laboratory of Southern Marine Science and Engineering (Zhuhai) In addition, the institute has went into cooperation with many top universities in China such as Sun Yat-sen University, Tianjin University, Hohai University, Dalian University of Technology, South China University of Technology, Wuhan University of Technology, PLA Logistic Engineering University and Chongqing Jiaotong University, Tsinghua University, Tongji University, Guangxi University, etc. to jointly educate doctorate and master degree students and carry out scientific research cooperation.

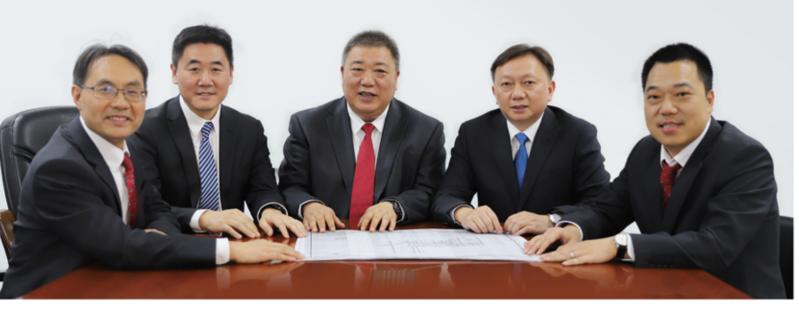
CCCC 4th Harbor Institute has made great research achievements which had promoted the development of industrial technology in China. CCCC 4th Harbor Institute has won more than 136 different scientific and technological awards, in the level of province (ministry) or above and the CCCC Group level, including a first prize and a second prize of National Scientific and Technological Progress Award. In addition, CCCC 4th Harbor Institute has 157 national patents including 71 patents of invention and won 1 Chinese Patent Excellence Award. It is editor—in—Chief of one national standard and has participated in 45 national industry standard specification (as chief editorial unit or participating unit). It also has 5 Construction Methods of national level and 20 Construction Methods of provincial (ministerial) level and CCCC level. What is more, CCCC 4th Harbor Institute has 18 software copyrights. As for the paper, CCCC 4th Harbor Institute has published more than 900 papers in core journals and international academic conference at home and abroad, of which 17 papers were indexed by SCI (Science Citation Index), 189 papers were indexed by EI (The Engineering Index) and 17 papers were indexed by ISTP.

CCCC 4th Harbor Institute has gained great achievement in the fields of soft ground improvement, eco-environmental geotechnical engineering, high performance concrete and durability technology, engineering anti-corrosion and protection, crack control of concrete structures, load bearing & construction quality control for foundation pile engineering, hydrodynamic analysis of marine construction, detection, evaluation, maintenance & reinforcement of harbor and bridges, detection of construction materials, construction and monitoring of bridges engineering, etc. The majority of these technologies are of international leading level or international advanced level, and many have been successfully applied to construction. CCCC 4th Houbor Institute has undertaken business in South China, North China, East China, Central China, Southwest Region, Northeast Region, Macao, Hong Kong and other regions in China, and it has expanded its business to Southern Asia, Southeast Asia, Middle East, East Africa, West Africa, North Africa, Southern Europe and other overseas regions. It has achieved good social, economic and environmental benefits.

For a long time, CCCC 4th Harbor Institute has been providing high quality service for clients in China and foreign countries, sticking to its strategy of combining the scientific researches with practicing and its principle of "keeping promise, quality guaranteed, first-rate service and clients satisfied". CCCC 4th Harbor Institute gains striding development as well as sound reputation. It has been issued many awards, such as "State-level Civilized Unit", "Guangdong Civilized Unit", "Guangdong Advanced Collective", "Advanced Collective of Central Enterprise", "National Outstanding Enterprise of Cultural Building of Transportation Unit", "National Credit-worthy Enterprise", "Guangdong May One Labor Award", "Guangdong Labor Competition Model of Ten Projects", "Outstanding Contribution Prize of 1ST Port and Waterway Engineering Standard Award", "Guangdong Independent Innovation Benchmarking Enterprise", "Advanced Award Winning Unit of Science and Technology Award of Marine Construction Industry", etc. Moreover, Party Organization of CCCC 4th Harbor Institute has been cited as Advanced Basic-level Party Organization by CCCC ect.

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左起依次为:

胡利文:研究院总经理副总经理、总法律顾问,四航局研发中心副主任兼技术中心副总经理

任德杨: 研究院党委副书记、纪委书记、工会主席

董志良: 研究院党委书记、执行董事, 四航局副总工程师、研发中心执行董事 **苏林王**: 研究院总经理、党委副书记,四航局研发中心主任兼技术中心执行总经理

陈平山: 研究院副总经理, 四航局研发中心副主任

From left to right:

Hu Liwen: Vice General Manager and General Legal Counsel of CCCC 4th Harbor Institute, Vice Director of CCCC Fourth Harbor Engineering Co., Ltd R&D and Vice General Manager of Technical Research Center

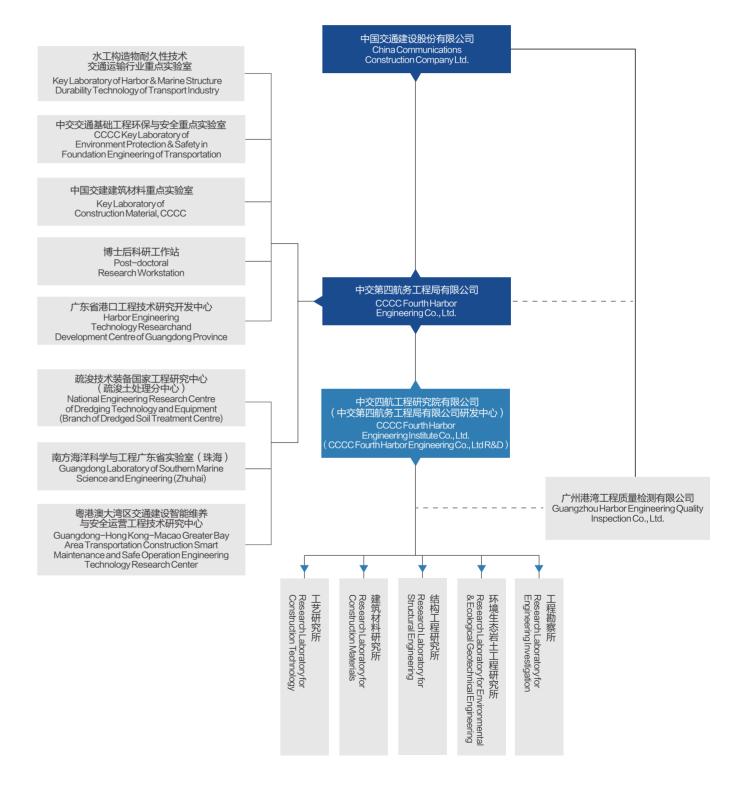
Ren Deyang: Deputy Party Secretary, Secretary of Committee for Discipline Inspection and Union President of CCCC 4th Harbor Institute

Dong Zhilliang: Party Secretary and Executive Director of CCCC 4th Harbor Institute, Deputy Chief Engineer of CCCC Fourth Harbor and Executive Chairman of CCCC Fourth Harbor Engineering Co., Ltd R&D

Su Linwang: General Manager and Deputy Party Secretary of CCCC 4th Harbor Institute, Director of CCCC Fourth Harbor Engineering Co., Ltd R&D an Executive General Manager of Technical Research Center

Chen Pingshan: Vice General Manager of CCCC 4th Harbor Institute and Vice Director of CCCC Fourth Harbor Engineering Co., Ltd R&D



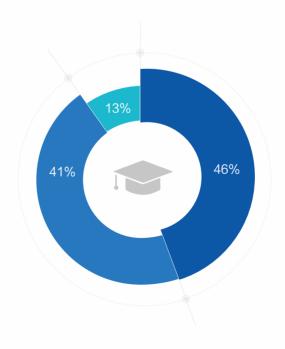






四航研究院秉承人才优先发展战略,坚持"以价值创造者为本",整体人才队伍中高级工程师及以上技术职称占比44%, 硕士研究生及以上学历占比59% ,形成了一支以教授级高级工程师和业内知名专家为学术带头人,以硕士、博士为中坚力量 的科技人才队伍,其中享受政府特殊津贴专家2人,1人入选"国家百千万人才工程",13人次和24人次入选行业或地方技术 专家库,多人被国内知名高校聘为兼职教授。

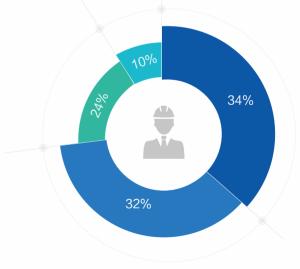
CCCC 4th Harbor Institute insists that best corporate performance comes with excellent employees and pays much attention to talents training and sticks to the strategy of value creating oriented. It has a strong technical team with professional senior engineers and famous experts in the industry as academic leaders and masters & doctors as backbone. Staff with titles of senior engineer and above account for 44% of the overall talent team, and master degree or above account for 59%. Among them, there are 2 specialists enjoying special government allowance for their excellent performance, 1 selected by National Key Talents Project, 13 person-times and 24 person-times had been respectively selected by the industrial or local technical expert database, and many are employed as part-time professors by well-known universities in China.





Dechelor Degree or Delow Master Degree

博士及博士后 Doctor degree or Postdoctoral degree



助理工程师

Assistant

Engineer

工程师 Engineer 高级工程师

Enginoor

教授级高级工程师 Senior

Professor-level Senior engineer

企业概况

学术带头人 Academic Leader

Company Profile

四航研究院建立了科学的人才管理机制,通过六大科研平台及科研与技术服务项目、工程项目、梯队活动等载体,培养并形成了以 "行业内有重大影响的技术专家为第一梯队,大型项目负责人及技术骨干为第二梯队,一线生产科研人员为第三梯队"的"金字塔"式 人才队伍,为企业的持续发展提供了强有力的智力支撑。

CCCC th Harbor Institute has established its scientific talent management mechanism. Relying on six scientific research platforms and through technical service projects, engineering projects and echelon activities, CCCC Fourth Harbor Institute has cultivated and formed its pyramid type talents team, including the first Echelon with technical experts who have great impacts on the industry, the second Echelon with large project managers and technical backbones and the third Echelon with first-line production and research talents. The talents team provides strong wisdom support to the enterprise's sustainable development.



National Water Transport Engineer

国务院政府特殊津贴专家 全国水运建造大师 茅以升科学技术奖一建造师奖 中国土木工程学会理事会理事 中国土木工程学会港口工程分会理事会副理事长 广东土木建筑学会理事会副理事长 全国建筑企业优秀总工程师 科技部国际合作计划评议专家 广东省土木建筑学会首席专家 中国施工企业管理协会科技专家 中国建筑业协会建筑工程技术专家委员会委员 中国水运建设行业学会专家库专家 交通运输部水运工程评标专家库专家 交通运输部公路水运工程安全生产应急专家组成员 中国工程建设标准化协会理事会理事 中国工程建设标准化协会水运专业委员会副主任委员 中国水运建设行业协会工程施工专业委员会副主任委员 中国水运建设行业学会团体标准技术专家委员会委员 中国建筑业协会工程建设质量管理分会副理事长

Mao Yisheng Science and Technology Award - Architect Award Director of China Civil Engineering Society Vice Director of China Civil Engineering Society - Port Engineering Branch Vice Director of The Civil Engineering and Architectural Society of Guangdong China Association of Construction Enterprise Management Evaluation Expert on International Cooperation Programs of Ministry of Science and Technology Chief Expert of The Civil Engineering and Architectural Society of Guangdong Science and technology expert of China Association of Construction Enterprise Management Member of Science and Technology Expert Committee for Construction Engineering of China Construction Industry Association Expert of expert database of China Water Transportation Construction Association Expert of bid evaluation expert database for port and waterway engineering of Ministry of Transport

Member of emergency expert group for safety production of highway and water transport engineering of Ministry of Transport Director of China Association for Engineering Construction Standardization

Vice Director of Water Transport Committee of China Association for Engineering Construction Standardization

Expert with Special Allowance of the Government of State Council

Vice Director of Engineering Construction Committee of China Water Transportation Construction Association

Member of Group Standard Technical Expert Committee of China Water Transportation Construction Association

Vice Director of Engineering Construction Quality Management Branch of China Construction Industry Association



教授级高级工程师 享受政府特殊津贴专家 全国优秀科技工作者 入选国家百千万人才工程 国家有突出贡献中青年专家 "全国五一劳动奖章"获得者 交通部交通运输青年科技英才 广东省丁颖科技奖 中交集团优秀技术专家 中交集团暨中国交建科技创新英才 武汉理工大学、大连理工大学、东南大学、华南理工大学、广西 大学、河海大学兼职教授 中国土木工程学会混凝土与预应力混凝土分会理事 中国建筑学会建材分会混凝土外加剂应用技术专委会委员 广东省土木建筑学会混凝土与预应力混凝土专业委员会主任委员 广东省表面工程与防护学会海洋工程防护专业委员会主任委员 《水运工程》第十五届编委会委员 美国混凝土协会中国分会理事 国际材料与结构研究实验联合会(RILEM)海洋暴露条件下结构 混凝土长期耐久性技术委员会(TC-DCM)委员

Professorial Senior Engineer Expert with special government allowance National Outstanding Scientific and Technological Worker Selected by National Key Talents Project National Young and Middle Aged Expert with Remarkable Contributions Winner of the National May 1st Labor Medal Young Science and Technology Talent of Transport Industry Guangdong Ding Ying Technology Award **CCCC Outstanding Technical Expert** Science and Technology Innovation Talent of CCCC Group and CCCC Part-time professor of Wuhan University of Technology, Dalian University of Technology, Southeast University, South China University of Technology, Guangxi University and Hohai University Director of Concrete and Pre-stressed Concrete Committee under China Civil Engineering Society Member of Concrete Admixture Technology Application Committee of Construction Materials Committee of The Agricultural Society of China Director of Concrete and Pre-stressed Concrete Committee under The Civil Engineering and Architectural Society of Guangdong Director of Marine Engineering Protection Professional Committee of Surface Engineering and Corrosion Protection Association of Guangdong Province Member of 15th Editorial Board of Port & Waterway Engineering Director of Chinese Branch of American Concrete Institute Member of Technology Committee of Long-term Durability of Structural Concretes in Marine Exposure Conditions (TC-DCM) of International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM)

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学术带头人 Academic Leader



管理学博士 教授级高级工程师 享受政府特殊津贴专家 国家科技核心专家库专家 中交四航局资深技术专家

中山大学、山东大学、河海大学、大连理工大学、华南理工大学、 解放军后勤工程学院、重庆交通大学兼职教授

天津大学、同济大学硕士生导师博导

中国交通建设工程学院、广东环境保护工程职业学院特聘教授

科技部国家科技评估中心评估咨询专家 科技部国家国际科技合作专项评审专家

科技部国家科学技术奖励评审专家

交通运输部水运工程建设技术与标准专家库专家

中交交通基础工程环境与安全重点实验室首席专家

四航研究院博士后科研工作站指导老师

海岸与近海工程国家重点实验室学术委员

港口水工建筑国家工程实验室岩土工程技术顾问

广东省地基处理专业委员会主任委员

广东省岩土力学与工程学会副理事长

交通运输部环境保护专家委员会委员

中国工程建设标准化协会常务理事

中国土工合成材料工程协会理事

中国航海学会理事

Doctor of Management

Professorial Senior Engineer

Expert with special government allowance

Expert of national core expert database for science and technology

Senior technical expert of CCCC Fourth Harbor

Part-time professor of Sun Yat-Sen University, Shandong University, Hohai University, Dalian University of Technology, South China University of Technology, Logistic Engineering University

of PLA and Chongging Jiaotong University

Master student supervisor and doctorate supervisor of Tianjin University and Tongji University

Special-term professor of China Transportation Engineering College and

Guangdong Polytechnic of Environmental Protection Engineering

Evaluation consulting expert of National Center for Science & Technology Evaluation of

Ministry of Science and Technology

Special evaluation expert for national international science and technology

ooperation of Ministry of Science and Technology

Evaluation expert for national science and technology award of Ministry of Science and Technology

Expert of expert database of Port and Waterway Engineering Construction

Technology & Standard of Ministry of Transport

Chief Expert of CCCC Key Laboratory of Environment Protection & Safety

in Foundation Engineering of Transportation

Supervisor of Post-doctoral Scientific Research Workstation of CCCC 4 Harbor Institute

Academic committee member of of National Key Laboratory for Coastal and Offshore Engineering

Technical consultant of geotechnical engineering of National Engineering

Laboratory of Port Hydraulic Engineering Construction

Director of Ground Treatment Committee of Guangdong Province

Vice Director of Guangdong Association of Geotechnical Mechanics and Engineering

Member of Environmental Protection Experts Committee of Ministry of Transport

Executive Director of China Association for Engineering Construction Standardization

Director of China Technical Association on Geosynthetics

Director of China Institute of Navigation



工学博士

教授级高级工程师

中交四航局资深技术专家

河海大学、广西大学硕士研究生导师 交通运输部水工构造物耐久性技术行业重点实验室主任

中国岩土力学与工程学会环境岩土工程分会理事

中国水运建设行业协会港口设施专业委员会委员

中国工程建设标准化协会水运专业委员会委员

中国交通建设监理协会试验检测工作委员会副主任委员

广东省交通建设监理检测协会常务理事

广东省科学技术厅技术专家库入库专家

广东省力学学会理事

广东省土木建筑学会专家库专家

广东省土木建筑学会理事

海洋工程科学技术奖评审专家

中国水运建设行业协会信息建设专业委员会副主任委员

中国水运建设行业协会理事

Doctor of Engineering

Professorial Senior Engineer

Senior technical expert of CCCC Fourth Harbor

Master students supervisor of Master Students Base of Hohai University and Guangxi University

Director of Key Laboratory of Harbor & Marine Structure Durability Technology of Ministry of Transport Director of Environment & Geotechnical Engineering Sub-committee of Chinese Society

for Rock Mechanics and Engineering

Member of Port Facilities Council of China Water Transportation Construction Association Member of Water Transport Committee of China Association for Engineering Construction Standardization

Deputy Director of Testing & Detection Council of China Association of Highway and Waterway

Engineering Consultants

Executive Director of Guangdong Provincial Association of Transport Engineering Consulting & Testing Expert of technical experts database of Department of Science and Technology of Guangdong Province Director of Guangdong Mechanics Society

Expert of expert database of Civil Engineering Association of Guangdong Province

Director of Civil Engineering Association of Guangdong Province

Expert of Ocean Engineering Science and Technology Awards Review

Vice Director of the Information Construction Professional Committee of China Water

Transportation Construction Association

Director of China Water Transportation Construction Association

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学术带头人 Academic Leader



土木工程学、哲学博士 教授级高级工程师 中交四航局一级技术专家 同济大学工程硕士导师 河海大学研究生培养基地基地硕士导师 国家国际科技合作专家库专家 广东省交通运输厅科技专家库专家 美国土木工程师学会会员 广东省交通建设建立协会常务理事 广东省公路学会岩土工程专业委员会理事 广东省土木建筑学会专家库专家 海洋工程科学技术奖评审专家 广东省交通运输标准化技术委员会委员

Doctor of Philosophy in Civil Engineering Professorial Senior Engineer First class technical expert of CCCC Fourth Harbor

Master students supervisor of Engineering of Tongji University

Master students supervisor of Master Students Base of Hohai University Expert of expert database of international S&T Cooperation program of China Expert of expert database of Science and Technology Department of

Transportation of Guangdong Province

Member of The American Society of Civil Engineers

Executive Director of Guangdong Provincial Association of Transport Engineering Consulting & Testing

Director of Geotechnical Engineering Council of Guangdong Highway and Transporation Society

Expert of expert database of The Civil Engineering and Architectural Society of

Expert of Ocean Engineering Science and Technology Awards Review Member of The Transportation Standardization Technical Committee of Guangdong Province

工学博士 教授级高级工程师 中交四航局二级技术专家 中交交通基础工程环保与安全重点实验室主任 广东工业大学硕士研究生校外导师 广州市科技专家库专家 广东省土木建筑学会专家库专家 广东省勘察设计行业协会理事 中国土工合成材料工程协会测试专业委员会副主任委员

《岩土工程学报》《岩石力学与工程学报》《岩土力学》审稿专家

Doctor of Engineering

Professional Senior Engineer Second-grade technical expert of CCCC Fourth Harbour Director of CCCC Key Laboratory of Environment Protection & Safety in Foundation Engineering of Transportation Off-campus supervisor for master students of Guangdong University of Technology Expert of Guangzhou Science and Technology Expert Database Expert of expert database of The Civil Engineering and Architectural Society of Guangdong

Director of Survey and Design Industry Association of Guangdong Vice Director of Testing Committee of China Technical Association on

Reviewing experts of Chinese Journal of Geotechnical Engineering, Chinese Journal of Rock Mechanics and Engineering and Rock and Soil Mechanics



工学博士后 土木工程教授 中交交通基础工程环保与安全重点实验室常务副主任 河海大学研究生培养基地硕士研究生导师 广东省公路学会岩土工程专业委员会常务理事 广东省科技厅科技咨询专家库成员 Post Doctorate of Engineering Professor of civil engineering Executive Deputy Director of CCCC Key Laboratory of Environment Protection & Safety in Foundation Engineering of Transportation Master student supervisor of Master Students Base of Hohai University Executive Director of Geotechnical Engineering Council of Guangdong Highway and Transportation Society Expert of Scientific technology consulting expert database of Department

of Science and Technology of Guangdong Province



中交四航局二级技术专家 中国交建十大优秀青年 广东省土木建筑学会专家 广东省交通建设监理检测协会评审专家 国家技术标准创新基地(广州)专家

Second-grade technical expert of CCCC Fourth Harbour CCCC Top Ten Outstanding Youth Expert of The Civil Engineering and Architectural Society of Guangdong Evaluation expert of Guangdong Provincial Association of Transport Engineering Consulting & Testing Expert of National Technical Standard Innovation Base (Guangzhou)

工学博士 教授级高级工程师 中交四航局一级技术专家 交通运输部水工构造物耐久性技术行业重点实验室常务副主任 中国交建建筑材料重点实验室主任 交通部交通运输青年科技英才 华南理工大学、广州大学、广东工业大学硕士研究生导师 广东省土木学会混凝土与预应力混凝土专业委员会副主任委员兼秘书长 中国CSTM建材领域委员会水泥技术委员会委员 广东省材料研究学会理事 广东省硅酸盐学会第九届理事会理事 Doctor of Engineering Professorial Senior Engineer

CCCC Fourth Harbor first-grade technical expert Executive Deputy Director of Key Laboratory of Harbor & Marine Structure Durability Director of Key Laboratory of Construction Material, CCCC Technology of Ministry of Transport Young Science and Technology Talent of Transport Industry Master student supervisor of South China University of Technology, Guangzhou University and Guangdong University of Technology Deputy Director and Secretary-General of Concrete and Pre-stressed Concrete Committee under Civil Engineering and Architectural Society of Guangdong Member of Cement Technical Committee of China CSTM Construction Materials Field Association Director of Guangdong Materials Research Society Director of 9TH Council of Guangdong Provincial Ceramic Society











四航研究院着力促讲科技讲步,助推行业发展,现已拥有水工 构造物、桥梁、隧道、基坑、边(岸)坡、桩基和地基处理等工程 建设多项成套关键技术,其中地基加固技术、高性能混凝土技术 桩基结构安全技术和深基坑防护技术等已处于国际领先或国际 先进水平,大体积混凝土控裂技术、码头结构维护技术、自锚式 悬索桥关键施工技术、边坡生态防护技术等已处于国内领先水 平,科研成果总体达国际领先水平11项,国际先进水平42项,国内 领先水平12项:先后荣获近200项国家、省(部)级科技进步奖、科 技创新成果奖、优秀专利奖和优秀勘察奖,获批国家专利157项 (其中发明专利71项),获得国家、省(部)级工法25项(其中国家级 工法5项),主编或参编国家及行业技术标准规范60多项,技术专著 3本:发表各类重要论文900余篇.其中SC收录17篇.E收录189篇. STP收录17篇,发表国际学术会议论文35篇。

CCCC 4th Harbor Institute strives to promote the progress of science & technology and the industry development. Now it has a number of key technologies for marine structure, bridge, tunnel, excavation, slope, foundation pit, ground treatment, etc. Its foundation reinforcement technology, high performance concrete technology, pile foundation structure safety technology and deep foundation pit protection technology have reached international leading advance level. Its crack control of mass concrete technology, harbor structure maintenance technology, key self-anchored suspension construction technology, slope ecological protection technology and so on have been ranked at the top domestic level. Among the scientific research achievements, 11 items reach international leading level, 42 items reach international advanced level and 12 items reach domestic leading level. The Institute has won 200 different awards of scientific and technological progress awards, scientific and technological innovation achievement awards, outstanding patent awards and outstanding investigation awards of national level and provincial (ministerial) level. The Institute has gained 157 national patents including 71 patents of invention. It also has 25 Construction Methods of national level and provincial (ministerial) level (including 5 Construction Methods of national level). It has participated in more than 60 national or industry standard specifications and 3 technical monographs (as chief editorial unit or participating unit). The Institute has published more than 900 important papers, of which 17 papers were indexed by SCI (Science Citation Index), 189 papers were indexed by El (The Engineering Index) and 17 papers were indexed by ISTP. It also published 35 papers in international academic conferences.

科研研究方向 Scientific Research Direction

岩土专业

地基处理技术研究 基础工程技术研究 基坑工程施工技术研究 地下工程技术研究 工程环保与安全技术研究

Geotechnical Field

- Ground treatment technology research
- Foundation technology research Foundation pit construction
- technology research Underground engineering
- technology research Engineering environmental
- protection and safety technology research

结构专业

桩基工程承载机理、试验检测与质量控制技术 水运工程全寿命周期检(监)测、评估与维护技术 水工结构施工监控与船舶水动力分析 桥梁工程施工监控、智能监测与评估技术 结构工程施工安全与信息化技术 结构工程试验与数值仿真模拟技术

Structure Field

- · Bearing mechanism, testing & detection and quality control technology of pile foundations
- Life cycle inspection & monitoring, evaluation and maintenance technology of port and waterway engineering
- Construction monitoring of hydraulic Structures and hydrodynamic analysis of ships
- · Construction monitoring, intelligent monitoring and evaluation technology of bridge engineering Construction safety and information technology of structural engineering
- Testing and numerical simulation technology of structural engineering

建材专业

高性能混凝土及特种混凝土技术 结构耐久性设计及防腐蚀设计 大体积混凝土裂缝控制技术 混凝土外观质量控制与提升技术 结构检测与耐久性评估技术 结构健康监测技术 结构耐久性修复设计与施工技术 新型环保建筑工程材料开发

Construction Materials Field

- Technology of high performance concrete and special concrete
- · Ttructure durability design and anti-corrosion design
- · Technology of mass concrete crack control
- Technology of concrete appearance quality control and improving
- Technology of structure inspection and durability assessment
- Technology of concrete health monitoring
- Design and construction technology of structural durability repair
- · Development of new environment-friendly construction materials

01 / 科研平台 Scientific Research Platform

疏浚技术装备国家工程研究中心(疏浚土处理分中心) National Engineering Research Centre of Dredging Technology and Equipment (Branch: Dredged Soil Treatment Centre)



疏浚技术装备国家工程研究中心由中交上海航道局牵头,联合中交天津航道 局、中交广州航道局、上海振华重工、四航研究院等单位共同组建,其中疏浚土 处理分中心由四航研究院负责建设和管理。疏浚技术装备国家工程研究中心围绕 国家重大工程建设和行业发展需求,建立疏浚共性技术和关键疏浚装备的研发、 试验和工程化平台,开展高效节能疏浚技术、先进疏浚机具与部件、疏浚监控系 统自动化和优化技术、疏浚土有益利用及环保疏浚技术、关键疏浚设备等的研发 和产业化,推进相关技术标准研制、重大科技成果的系统集成和推广应用,推动 国际合作与交流,为相关企业提供技术咨询服务。

The establishment of the National Engineering Research Centre of Dredging Technology and Equipment was led by CCCC Shanghai Dredging Co., Ltd., and joined hands with CCCC Tianjin Dredging Co., Ltd., CCCC Guangzhou Dredging Co., Ltd., Shanghai Zhenhua Heavy Industries Co., Ltd., CCCC 4th Harbor Institute and so on. CCCC 4th Harbor Institute is responsible for the construction and management of Dredged Soil Treatment Centre. The Centre revolves around the demand of major national construction projects and industry development, to establish a platform to research, test and enrich the dredging generic technology and critical equipment, to develop the dredging technology of high-efficiency and energy saving, the advanced dredging equipment and parts, the automation and optimization technology of dredging monitoring system, the effective use of dredged soil and environmental dredging technology, the critical dredging equipment, etc. The Centre develops and industrializes these technologies, in order to push forward the formulation of related technology standard, to accelerate the systems integration and application of major scientific and technological achievements, to enhance the international cooperation and communication, and to provide technology consultation service for interrelated enterprise.

广东省港口工程技术研究开发中心

Development Center in Guangdong Province



广东省港口工程技术研究开发中心,成立于2009年,主要研究方向为:港 口工程大型专业化码头施工关键技术、超软弱地基处理新技术、港口工程新材 料开发及应用技术、港口水工建筑物健康诊断及维修加固技术。

广东省港口工程技术研究开发中心多项科技创新技术在工程实践中的成功 应用,不仅保证了工程的安全和质量、保护了周围的环境,还缩短工期、降低 成本,提高了工作效率,对广东省港口工程的技术进步也发挥了积极作用,获 得当地政府和社会的高度认可;还负责了多项国家、行业及广东省的技术标准 制定工作,主编了《水运工程混凝土质量控制标准》、《海港工程混凝土结构 防腐蚀技术规范》、《港口水工建筑物检测评估技术规范》等,为国家水运交 通建设做出了卓越的贡献。

Harbor Engineering Technology Research and Development Center in Guangdong Province was founded in 2009. The main research directions of the R&D Center are the following: key construction technology of large specialization wharf in harbor engineering, new technology of super soft ground treatment, new materials development and application technology of port engineering and health diagnosis and maintenance technology of harbor and marine structure.

The successful application of the innovative technology of Harbor Engineering Technology Research and Development Center in engineering practice not only ensures the safety and quality of the project and protects the environment, but also shortens the construction period, reduces the costs and improves the work efficiency. Harbor Engineering Technology Research and Development Center also plays an important and active role in the harbor engineering technology upgrading in Guangdong Province. It has gained high recognition from the local government and the community. Besides, Harbor Engineering Technology Research and Development Center is also responsible for technology standards setting of the nation, the industry and the province. It has edited several standards and specifications, for example, "Quality Control Standard of Concrete for Port and Waterway Engineering", "Corrosion Prevention Technical Specification for Concrete Structures of Marine Harbor Engineering", and "Technical Specification for Detection and Assessment of Harbor and Marine Structures", etc., which has made outstanding contribution for the national water transportation construction.

水工构造物耐久性技术交通运输行业重点实验室 Key Laboratory of Harbor & Marine Structure Durability Technology, Ministry of Transport of PRC



水工构造物耐久性技术交通运输行业重点实验室于2007年12月通过交通运输部认定,实验室以水工构造物耐久性技术为核心,以提高工程品质、保障工程全寿命周期安全耐久为目标,针对交通运输行业技术需求,解决交通基础设施在设计、施工和运行管理阶段的耐久性关键技术问题,开展从材料到结构层面的耐久性理论分析、机理探索、功能提升等方面的基础研究,积极申报国家和省部级重大科研项目,提高科研成果水平,促进耐久性技术的国内外学术交流,引领行业耐久性技术发展。

近五年来,实验室先后承担了5项国家级科研项目,35项省部级科研项目,为港珠澳大桥、深中通道、虎门二桥、浙江舟山北向通道、澳门口岸、肯尼亚蒙内铁路、纳米比亚鲸湾码头等国内外重点工程建设提供了技术服务和支持,获得国家科技进步奖1项,省部级科技奖励24项,主编参编行业标准规范17项,获国家专利63项(含发明专利34项),软件著作权9项,获国家级工法1项,出版科技专著6部(科学出版社),国内外相关期刊和学术会议上共发表研究论文200余篇。

Recognized by the Ministry of Transport of PRC in December 2007, the Key Laboratory of Harbor & Marine Structure Durability Technology keeps durability technology of harbor and marine structure as the central task and aims at improving the project quality and ensuring the safety and durability of the whole life cycle of the project. To meet the requirements in transportation industry and solve the key durability technical problems in the design, construction and operation management of transport infrastructure facilities, the laboratory has carried out a series of basic research on durability theoretical analysis, mechanism exploration and functional promotion from materials to structures. Meanwhile, the lab proactively participates in the application of national, provincial and ministerial major scientific research projects, improves its scientific research level, promotes the academic exchange of durability technology at home and abroad and leads the development of durability technology in the industry. In recent 5 years, the laboratory has undertaken 5 national level scientific research projects and 35 provincial and ministerial level scientific research projects. It has also provided technology service and support for several domestic and foreign key engineering constructions such as HongKong–Zhuhai – Macao Bridge, Shenzhen–Zhongshan Bridge, Humen Second Bridge, North Passage of Zhejiang Zhoushan, Macao Port, Kenya Monet Railway, Namibia Whale Bay Pier and so on. During this period, the laboratory has obtained 1 National Scientific and Technological Progress Award and 24 provincial and ministerial level scientific and technological awards, 17 industry standard specifications (as chief editorial unit or participating unit), 63 national patents (including 34 patents of invention), 9 software copyrights, 1 construction method of national level and 6 monographs (Science Press). Besides, more than 200 papers were published in the relevant journals and academic conferences at home and abroad.

中国交建建筑材料重点实验室

Key Laboratory of Construction Material, CCCC

中国交建建筑材料重点实验室成立于2002年,前身为中港集团建筑材料重点实验室,依托于中交第四航务工程局有限公司和中交四航工程研究院有限公司,实验室紧密结合行业和集团的需要,一直致力于建筑材料和耐久性专业的基础应用研究工作,开展恶劣侵蚀环境下混凝土耐久性基础理论、工程腐蚀防护与品质保障技术、新型环保建筑工程材料、结构耐久性检测评估及维修加固技术等方面的研究,大力承接工程材料研发与应用方面的研究课题,先后承担国家科技部、财政部、交通运输部等省部级科研项目30余项,并先后承担过深圳港盐田港、杭州湾大桥、青岛海湾大桥、港珠澳大桥、南沙大桥、深中通道、浙江舟山北向大通道等多项国家重点工程的科研与技术服务项目。

经过近20年的发展,实验室已成为我国建筑材料研究领域的重要组成部分,在高性能混凝土、海工混凝土结构耐久性以及水工结构防腐蚀技术等方面成为行业科技进步的标杆。实验室的目标是:成为建筑材料基础研究和关键共性技术研究基地,解决重大交通建设工程建筑材料问题的科技创新基地,聚集和培养人才、开展建筑材料领域高层次学术交流和促进科技成果转化的基地。



Key Laboratory of Construction Material, CCCC, which's formerly known as Key Laboratory of Construction Materials of China Harbor Engineering Company Ltd., was founded in 2002. The laboratory closely integrates the requirements of the industry and the group and devotes to the professional research in basic application of durability and construction materials, on aspects of basic theory of concrete durability in harsh corrosive environment, engineering anti-corrosion and quality assurance technology new green construction materials, detection and assessment of structure durability, maintenance & strengthening technology and so on. The laboratory has vigorously undertaken a series of research subjects concerning R&D and application of engineering materials such as more than 30 scientific research projects from Ministry of Science and Technology of PRC, Ministry of Finance of PRC, Ministry of Transportation of PRC, etc. Also, the laboratory has provided scientific and technical service to ShenzhenYantian Port, Hangzhou Bay Bridge, Qingdao Bay Bridge, HongKong-Zhuhai-Macao Bridge, Nansha Bridge, Shenzhen-Zhongshan Bridge, North Passage of Zheijang Zhoushan and other national key construction projects.

After nearly 20 years' development, the laboratory now plays an important part in the research field of construction materials in China. It has become the benchmark of scientific and technological progress in fields including high-performance concrete, durability of marine concrete structure and anti-corrosion technology of marine structures. The goal of the laboratory is to become a base for basic research and key generic technical research for construction materials, a scientific and technical innovation base for solving problems of construction materials in major transportation construction projects, and a base for gathering and training talents, conducting high-level academic exchanges in the field of construction materials and promoting the application of scientific and technical achievements.

中交交通基础工程环保与安全重点实验室

CCCC Key Laboratory of Environment Protection & Safety in Foundation Engineering of Transportation

中交交通基础工程环保与安全重点实验室以环保型陆域形成与地基处理技术、边坡与岸坡工程环保与安全技术研究、隧道与地下工程安全与环保技术研究、深基础地质环境与工程特性研究、环境友好型围海造陆技术研究、复杂水土环境下基础工程关键技术及安全保障研究、公路及港口基础工程安全监控、评估及对策研究和地下结构与空间开发环境影响与岩土技术对策研究为主要研究方向。

实验室近年来承接国际合作、国家、交通运输部、中国交建、广东省及中交四航局科研课题共计46项,制定、修订或参编各类标准规范28部,获国家专利41项(发明专利19项)、软件著作权5项、国家级工法4项,中国交建和省部级工法12项,多项科研成果水平达国际领先或国际先进水平。实验室的科研成果被广泛应用于安哥拉、斯里兰卡、埃及和澳门、天津等国内外数十项国家级、省部级重大工程,社会效益显著。



CCCC Key Laboratory of Environment Protection & Safety in Foundation Engineering of Transportation takes the research of environmental protection land formation and ground treatment technology, slope and bank slope engineering environmental protection and safety technology research, tunnel and undergroud enginnering safety and environmental protection technology research, deep foundation geological environment and engineering characteristics research, environment–friendly reclamation for land building technology research, key technology and safety guarantee of foundation engineering under complex soil and water environment, safety monitoring, evaluation and countermeasures of highway and port foundation engineering, environmental impact of underground structure and space development and countermeasures of geotechnical technology as the main research directions.

In recent years, the Laboratory has undertaken a total of 46 research subjects involving subjects from international cooperation, the country, Ministry of Transport of the People's Republic of China, CCCC Group, Guangdong province and CCCC Fourth Harbor. The Laboratory formulated, revised or participated in 28 standard specifications, and gained 41 national patents (including 19 patents for invention), 5 software copyrights, 4 construction methods of national level and 12 construction methods of CCCC and provincial level or ministerial level. In the meantime, a number of the research achievements reached the international leading or advanced level, and many achievements of the Laboratory have been applied to dozens of national level or provincial (ministerial) level projects both in China and abroad, in places like Angola, Sri Lanka, Egypt and Macau, Tianjin, and have brought about great social and economic benefits.

博士后科研工作站

Research Workstation

博士后科研工作站于2010年8月经国家人力资源和社会保障部专业技术人 员管理司和全国博士后管委会批准成立,发展方向定位为:基于环境和荷载耦 合作用下的海洋环境混凝土结构寿命预测研究、恶劣侵蚀环境下混凝土结构耐 久性理论及应用、水工构造物混凝土结构建造品质保障及防腐蚀技术、已建水 工构造物病害诊断和整治技术、新型环保建筑工程材料及应用、复杂环境下重 大构件施工结构模拟与仿真数字技术研究、排水固结渗流理论及其在工程中的 应用、大面积围海造陆超软弱土快速固化关键技术研究等。成立至今,本站招 收进站博士12人,目前9人完成站内科研工作,顺利出站。

Scientific Research Strength



The Post-doctoral Scientific Research Workstation was set up with approval from Professional and Technical Personnel Management Department (belonging to the Ministry of Human Resources and Social Security of the People's Republic of China) and the National Postdoctoral Management Committee in August 2010. The development orientation of the workstation is based on the following main directions: study on the lifetime prediction of concrete structure under the coupling effect of marine environment and load, the theory and application of the concrete structure durability in harsh corrosive environment, the technology of quality quarantee and anti-corrosion for Harbor and Marine concrete structure, the disease diagnosis and remediation technology for existing harbor and marine concrete structure, new environment-friendly construction materials and their application, study on the analog and digital simulation technology of construction structure for the major structural components in complex environment, drainage consolidation seepage theory and its applications in engineering, study on the key technology for fast curing of super soft soil in large-scale land reclamation project, and so on. Ever since the workstation's establishment, it has recruited 12 doctors. At present, there are 9 doctors who have completed the research work of the workstation and been out of the workstation smoothly.

粤港澳大湾区交通建设智能维养与安全运营工程技术研究中心

Smart Maintenance and Safe Operation Engineering Technology Research Center

技术中心由港珠澳大桥管理局联合香港理工大学、澳门大学、中交四航 工程研究院有限公司、澳门土木工程实验室、香港大学和珠海交通集团共建 的粤港澳三地工程技术科研机构,经广东省科学技术厅认定为省级工程技术 研究中心。技术中心工作目标:深刻把握智能技术发展趋势,自主攻关跨海 桥岛隧集群工程智能维养和安全运营核心技术,有效促进技术创新成果应用 推广,显著推动专项领域内粤港澳三地科研深度合作与技术要素互联互通, 成为具有国际影响力的工程技术研究机构。



Guangdong-Hong Kong-Macao Greater Bay Area Transportation Construction Smart Maintenance and Safe Operation Engineering Technology Research Center The center, identified as a provincial level engineering technology research center by Department of Science and Technology of Guangdong Province, is a engineering technology research institution for Guangdong,, Hong Kong and Macao jointly established by Hong Kong-Zhuhai-Macao Bridge Authority, University of Macao, CCCC Fourth Harbor Engineering Institute Co., Ltd, Civil Engineering Laboratory of Macao, The University of Hong Kong and Zhuhai Transportation Group. Work target of the center: deeply grasp the smart technology development trend, independently develop smart maintenance and safety operation core technology for cross-sea bridge island tunnel cluster project, effectively accelerate application and promotion of technology innovation achievements, significantly promote the in-depth cooperation in scientific research and technical elements interconnection among Guangdong, Hong Kong and Macao in the special field, thus to become an engineering technology research center with international influence.

南方海洋科学与工程广东省实验室(珠海) **Guangdong Laboratory of** Southern Marine is led by Zhuhai



南方海洋省实验室由珠海市人民政府主导,中山大学牵头建设和管理,四航局作为理事成员单位和共建单位之一,四航研究院代表四 航局实施该共建合作的工作。

南方海洋省实验室一直以对标最优最好最先进、集聚全球创新人才、突出原始创新导向为创建目标,布局建设具有国际领先水平的公 共实验平台和研究团队,旨在联合省内外、境内外、国内外的海洋优势单位,通过机制创新,汇聚一批具有国际一流水平的海洋科学研究 队伍,打造一批国际一流的公共共享的海洋科技创新平台,产出一批具有国际影响力的重大海洋科技成果,真正实现共建、共享、共赢。

四航研究院代表四航局参与其海洋工程领域的河口海岸与岛礁工程方向的共建,将充分发挥自身优势,依托研发项目,共同推进海洋 科技创新资源开放共享、联合培养高水平海洋技术人才,共同突破重大海洋科学与工程技术难题,助力粤港澳大湾区及周边地区建设发 展,服务国家海洋强国等重大战略。

Guangdong Laboratory of Southern Marine is led by Zhuhai Municipal People's Government and Sun Yat-sen University takes the lead in the construction and management. CCCC Fourth Harbor is one of the council member units and co-construction units, CCCC 4th Harbor Instituteimplements the work of co-construction cooperation on behalf of CCCC Fourth Harbor.

Guandong Laboratory of Southern Marine has always been aiming at making the best and most advanced achievements, gathering global innovation talents, highlighting the original innovation oriented goal, and arranging for building internationally leading public experimental platform and research team. It aims to unite marine power units in and out of the province, at home and abroad to form an international first-class marine scientific research team to create a number of world-class public shared marine technology innovation platforms through new mechanism innovation, thus to make a number of major marine scientific and technological achievements with international influence, realizing win-win results.

CCCC 4th Harbor Institute, representative of CCCC Fourth Harbor, participates in the co-construction of estuary & coasts and island reef projects in the marine engineering field. By giving full play to its own advantages and relying on research and development projects, it will jointly promote the open and sharing of marine scientific technology innovation resources, jointly cultivate high level marine technical talents, jointly break through major marine science and engineering technology difficulties, assist in construction and development of Guangdong-Hong Kong-Macao Greater Bay Area and the surroundings, and serve the country's major strategies of become a marine power and so on.

02 / 主要获奖项目

Scientific Research Strength

序号	成果名称	级别	获奖等级	评奖机构
1	离岸深水港建设关键技术研究与工程应用	国家级	科技进步一等奖	国务院
2	提高海工混凝土结构耐久性寿命成套技术及推广应用	国家级	科技进步二等奖	国务院
3	超软弱土浅表层快速加固方法	省部级	中国优秀专利奖	国家知识产权局
4	广州港南沙港区二期工程勘察	省部级	水运工程优秀勘察二等奖	交通运输部
5	腐蚀环境下钢筋混凝土结构使用寿命研究	省部级	科技进步二等奖	教育部
6	湛江港钢管桩承载力特性试验与沉桩规律研究	省部级	科技进步奖科技创新成果二等奖	中国施工企业管理协会
7	港珠澳大桥主体混凝土结构120年使用寿命耐久性对策	省部级	一等奖(2014-2015)优秀论文	《水运工程》
8	超软弱吹填土复杂地基处理关键技术研究	省部级	科学技术一等奖	中国航海学会
9	吹填造陆超软土地基加固成套技术研究及应用	省部级	科学技术一等奖	中国航海学会
10	高环保强透水条件下大型挖入式港池干施工关键技术研究	省部级	科学技术二等奖	中国航海学会
11	新吹填超软土地基真空预压加固技术创新	省部级	科学技术二等奖	中国航海学会
12	高环保强透水条件下大型挖入式港池干施工关键技术研究	省部级	科学技术二等奖	中国航海学会
13	水上浮体系泊系统锚固方式和系泊力的研究	省部级	科学技术二等奖	中国航海学会
14	基于温度应力试验的混凝土抗裂能力评价技术研究	省部级	科学技术二等奖	中国航海学会
15	超长钢管桩和预应力混凝土桩可打性及沉桩施工动测控制技术指标研究	省部级	科学技术二等奖	中国航海学会
16	疏浚土的固化与改性试验研究	省部级	科学技术二等奖	中国航海学会
17	西部港口码头结构安全性检测评估技术研究	省部级	科学技术二等奖	中国航海学会
18	浅表层超软弱土快速加固技术研究	省部级	科学技术二等奖	中国航海学会
19	广州港南沙区软基处理技术研究	省部级	科学技术二等奖	中国航海学会
20	抗盐污染高性能混凝土配制成套技术研究	省部级	科学技术二等奖	中国航海学会
21	离岸海上人工岛深基坑防护技术	省部级	科学技术二等奖	中国航海学会
22	工程边坡生态防护机制及应用研究	省部级	科学技术三等奖	中国航海学会
23	管节变形缝的水密性、耐久性试验研究	省部级	科学技术三等奖	中国航海学会
24	真空预压加固软土地基技术规程	省部级	科学技术三等奖	中国航海学会
25	高性能混凝土控裂技术研究	省部级	科学技术三等奖	中国航海学会
26	大直径混凝土管桩和组合桩的沉桩机理、动测技术及控裂方法研究	省部级	科学技术三等奖	中国航海学会
27	围海造陆形成的复杂地基的加固处理研究	省部级	科学技术三等奖	中国航海学会
28	海洋工程不锈钢钢筋应用关键技术研究	省部级	科技进步二等奖	中国海洋工程咨询协会
29	离岸深水港建设关键技术研究与工程应用	省部级	科技进步特等奖	中国水运建设行业协会
30	海港工程混凝土结构耐久性寿命预测与健康诊断研究	省部级	科技进步特等奖	中国水运建设行业协会
31	港珠澳大桥预制沉管裂缝控制施工技术研究	省部级	科技进步一等奖	中国水运建设行业协会
32	港口工程地基规范	省部级	科技进步一等奖	中国水运建设行业协会
33	深圳蛇口太子湾邮轮母港工程建设关键技术研究	省部级	科技进步一等奖	中国水运建设行业协会
34	港口工程结构性能退化研究及在结构设计中的应用研究	省部级	科技进步二等奖	中国水运建设行业协会
35	水运工程施工监控关键技术研究	省部级	科技进步二等奖	中国水运建设行业协会
36	海港工程高性能混凝土质量控制标准	省部级	科技进步二等奖	中国水运建设行业协会
37	不同腐蚀等级高桩码头构件碳纤维加固技术研究	省部级	科技进步二等奖	中国水运建设行业协会
38	港口水工建筑物修补加固技术规范	省部级	科技进步二等奖	中国水运建设行业协会
39	港口工程结构可靠性设计统一标准	省部级	科技进步二等奖	中国水运建设行业协会
40	深井降水联合强夯软基加固技术研究	省部级	科技进步二等奖	中国水运建设行业协会
41	深水厚抛石基床大分层重锤夯实关键技术研究	省部级	科技进步二等奖	中国水运建设行业协会
42	环境与荷载耦合作用下海工混凝土结构耐久性及可靠设计方法研究	省部级	科技进步二等奖	中国水运建设行业协会

Major Award Items

序号	成果名称	级别	获奖等级	评奖机构
43	水运工程结构耐久性设计标准	省部级	科技进步二等奖	中国水运建设行业协会
44	大型嵌岩钢管桩码头成套施工技术	省部级	科技进步二等奖	中国水运建设行业协会
45	脱盐与裂缝积沉愈合同步的混凝土修复技术	省部级	科技进步三等奖	中国水运建设行业协会
46	带承台基桩完整性检测技术与评价方法研究	省部级	科技进步三等奖	中国水运建设行业协会
47	基于自适应算法的非自航船舶智能控制系统研究	省部级	科技进步三等奖	中国水运建设行业协会
48	水运工程混凝土施工规范	省部级	科技进步三等奖	中国水运建设行业协会
49	船闸大体积混凝土裂缝控制技术研究	省部级	科技进步三等奖	中国水运建设行业协会
50	水运工程大体积混凝土温度裂缝控制技术规程	省部级	科技进步三等奖	中国水运建设行业协会
51	钢筋混凝土结构物修复与防护电化学关键技术研究	省部级	科技进步三等奖	中国水运建设行业协会
52	海港工程钢结构防腐蚀技术规范	省部级	科技进步三等奖	中国水运建设行业协会
53	水运工程混凝土结构实体检测技术规程(JTS239-2015)	省部级	科技进步三等奖	中国水运建设行业协会
54	含粘粒吹填粉细砂土动力特性及其地基抗液化加固技术研究	省部级	科技进步三等奖	中国水运建设行业协会
55	自锚式悬索桥钢箱梁步履式多点顶推施工关键技术研究	省部级	公路工程科技创新成果奖二等奖	中国公路建设行业协会
56	浅覆盖层地质条件下承台钢板桩围堰施工关键技术研究	省部级	公路工程科技创新成果奖二等奖	中国公路建设行业协会
57	真空预压加固大面积超软弱地基及其对周边环境影响与防护技术研究	省部级	科技进步一等奖	中国港口协会
58	大直径超长嵌岩灌注桩承载特性研究	省部级	科技进步二等奖	中国港口协会
59	复杂软土地层深基坑降水围护一体化设计与安全监控关键技术研究	省部级	科技进步二等奖	中国港口协会
60	高桩码头长期安全服役结构性能评估与修复提升关键技术	省部级	科技进步二等奖	中国港口协会
61	排水板综合性能试验研究	省部级	科技进步二等奖	中国港口协会
62	海外港口建设项目风险预警管理系统研究	省部级	科技进步二等奖	中国港口协会
63	港口水工建筑物检测与评估技术规范	省部级	科技进步二等奖	中国港口协会
64	海工混凝土结构碳纤维加固成套技术研究	省部级	科技进步二等奖	中国港口协会
65	海港工程混凝土结构防腐蚀技术规范	省部级	科技进步二等奖	中国港口协会
66	船闸水工结构安全维护技术研究	省部级	科技进步三等奖	中国港口协会
67	珠江电厂煤码头改选关键技术	省部级	科技进步三等奖	中国港口协会
68	PHC桩承载力及沉桩质量控制研究	省部级	科技进步三等奖	中国港口协会
69	深圳河二期工程土工合成材料试验研究	省部级	科技进步三等奖	中国港口协会
70	冰冻海域跨海大桥耐久性保障体系建立与实现	省部级	科学技术一等奖	中国公路学会
71	机制砂在交通基础设施中的应用研究	省部级	科学技术二等奖	中国公路学会
72	水下混凝土材料及耐久性研究	省部级	科学技术二等奖	中国公路学会
73	大型基坑工程施工监控技术与安全评估研究	省部级	科学技术三等奖	中国公路学会
74	基于长期暴露试验的海工混凝土结构耐久性失效过程和寿命计算理论	省部级	科学技术奖一等奖	广东省土木建筑协会
75	跨海集群工程混凝土结构120年使用寿命保障关键技术	省部级	科学技术奖一等奖	广东省土木建筑协会
76	深圳蛇口太子湾邮轮母港工程建设关键技术研究	省部级	科学技术奖一等奖	广东省土木建筑协会
77	超大直径PHC桩在深厚砂层地基中应用的关键技术研究	省部级	科学技术奖二等奖	广东省土木建筑协会
78	防腐清水混凝土长寿命设计与施工关键技术研究	省部级	科学技术奖三等奖	广东省土木建筑协会
79	多塔长联大悬臂宽幅脊梁矮塔斜拉桥建设成套技术研究	省部级	科学技术奖一等奖	广东省公路学会
80	青岛海湾大桥耐久性保障技术	省部级	科学技术一等奖	山东省人民政府
81	青岛海湾大桥耐腐蚀混凝土及配套技术研究	省部级	科学技术三等奖	山东省人民政府
82	跨海集群工程混凝土结构120年使用寿命保障关键技术	省部级	科学技术特等奖	广东省人民政府
83	超高复杂构筑物登高作业专用装置的研制及应用	省部级	科学技术三等奖	广东省人民政府
84	深厚软土地基中超长PHC管桩承载性状研究	省部级	科学技术三等奖	广东省人民政府
85	新型浮式消波技术和配套设施新型负压式大抓力重力锚设计技术	省部级	科学技术三等奖	广东省人民政府

03 / 主编及参编标准规范

Scientific Research Strength

序号	标准规范名称	批准部门	标准号	主编或参编	状态
1	既有混凝土结构耐久性评定标准	住建部	GB/T51355-2019	主编	现行
2	水运工程地基基础试验检测技术规程	交通运输部	JTS 237-2017	主编	现行
3	水运工程结构耐久性设计标准	交通运输部	JTS153-2015	主编	现行
4	海港工程高性能混凝土质量控制标准	交通运输部	JTS257-2-2012	主编	现行
5	港口水工建筑物修补加固技术规范	交通运输部	JTS311-2011	主编	现行
6	水运工程混凝土质量控制标准	交通运输部	JTS202-2-2011	主编	现行
7	海港工程混凝土结构防腐蚀技术规范	交通运输部	JTJ275-2000	主编	现行
8	港口水工建筑物检测与评估技术规范	交通运输部	JTJ302-2006	主编	现行
9	干船坞水工结构设计规范	交通运输部	JTJ252-87	参编	现行
10	港口工程粉煤灰填筑技术规程	交通运输部	JTJ/T260-97	参编	现行
11	港口工程基桩静载荷试验规程	交通运输部	JTJ255-2002	参编	现行
12	建筑地基处理技术规范	广东省建设厅	DBJ15-38-2005	参编	现行
13	海港工程钢结构防腐蚀技术规范	交通部	JTS 153-3-2007	参编	现行
14	混凝土结构耐久性设计规范	住房和城乡建设部	GB/T 50476-2008	参编	现行
15	真空预压加固软土地基技术规程	交通运输部	JTS147-2-2009	参编	现行
16	港口工程地基规范	交通运输部	JTS147-1-2010	参编	现行
17	水运工程大体积混凝土温度裂缝控制技术规程	交通运输部	JTS202-1-2010	参编	现行
18	港口工程结构可靠性设计统一标准	住房和城乡建设部	GB50158-2010	参编	现行
19	水运工程混凝土施工规范	交通运输部	JTS 202-2011	参编	现行
20	水运工程施工通则	交通运输部	JTS201-2011	参编	现行
21	海港工程钢筋混凝土结构电化学防腐蚀技术规范	交通运输部	JTS153-2-2012	参编	现行
22	土工合成材料测试规程	水利部	SL 235-2012	参编	现行
23	港口设施维护技术规范	交通运输部	JTS310-2013	参编	现行
24	水运工程混凝土结构实体检测技术规程	交通运输部	JTS239-2015	参编	现行
25	吹填土地基处理技术规范	住建部	GB/T 51064-2015	参编	现行
26	预拌混凝土用机制砂应用技术规程	广东省住建厅	DBJ/T 15-119-2016	参编	现行
27	码头加固和改造技术指南	交通运输部	JTS/T 172-2016	参编	现行
28	水运工程地基基础施工规范	交通运输部	JTS 206-2017	参编	现行
29	水运工程水工建筑物检测与评估技术规范	交通运输部	JTS 304-2019	参编	现行
30	天然火山灰在混凝土中的应用技术规程(中英文版)(制定)	中国交建	Q/CCCCZH003-2018	参编	现行

Main Standard Specification

序号	标准规范名称	批准部门	标准号	主编或参编	状态
31	建筑地基处理技术规范	广东省住建厅	DBJ/T 15-38-2019	参编	现行
32	水运工程材料试验规程	交通运输部	JTS/T 232-2019	参编	现行
33	水运工程混凝土试验检测技术规范	交通运输部	JTS/T 236-2019	参编	现行
34	混凝土结构耐久性电化学修复技术规程	中国工程建设标准化协会	T/CECS 565-2018	参编	现行
35	海港工程混凝土材料与结构耐久性定量设计规范	广西质量技术监督局	DB45/T 1828-2018	参编	现行
36	水运工程机制砂混凝土应用技术规范	交通运输部	1	主编	在编
37	港口水工建筑物修补加固技术规范(修订)	交通运输部	1	主编	在编
38	水运工程自密实混凝土技术规范	交通运输部	1	主编	在编
39	港口水工建筑物结构健康监测技术规范	交通运输部	1	主编	在编
40	水运工程基桩试验检测技术规范	交通运输部	1	主编	在编
41	水运工程结构防腐蚀施工规范	交通运输部	1	主编	在编
42	水运工程施工监控技术规范	交通运输部	1	主编	在编
43	海洋环境混凝土结构耐久性技术规程	广东省住建厅	1	主编	在编
44	港珠澳大桥混凝土耐久性质量控制技术规程	中国公路学会	1	主编	在编
45	港珠澳大桥混凝土结构耐久性设计指南	中国公路学会	1	主编	在编
46	超软弱地基浅表层快速加固技术规程	中交集团	1	主编	在编
47	码头结构施工规范英文翻译	交通运输部	1	主编	在编
48	水下深层水泥搅拌法施工质量控制与检测标准	交通运输部	1	主编	在编
49	钢壳沉管自密实混凝土质量控制技术规程	中国水运建设行业协会	1	主编	在编
50	水运工程土工合成材料应用技术规范	交通运输部	1	参编	在编
51	建筑地基基础施工规范	广东省住建厅	1	参编	在编
52	水运工程结构试验检测技术规范	交通运输部	1	参编	在编
53	混凝土结构耐久性设计规范(修订)	住建部	1	参编	在编
54	基桩分布式光纤测试规程	中国工程建设标准化协会	1	参编	在编
55	水泥胶砂抗海水侵蚀试验方法	国家标委会	1	参编	在编
56	深基坑钢板桩支护技术规程	广东省住建厅	1	参编	在编
57	装配式人行道铺装系统技术规范	广东省住建厅	1	参编	在编
58	海洋工程不锈钢钢筋应用技术规范	广东省交通运输厅	1	参编	在编
59	水运工程自动化监测技术规范	交通运输部	1	参编	在编
60	混凝土氯离子含量控制标准	广东省住建厅	1	参编	在编

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Scientific Research Strength

04 / 主要科研论文(近4年) Major scientific papers (for recent 4 years)

序号	论文标题	收录期刊	发表时间	收录信息
			0040	_
1	Preparation of Functionalized Graphene Nano-platelets and	Journal of Wuhan University of	2018	El
2	Use for Adsorption of Pb2+ from Solution 三维离散机构在盾构隧道渗流稳定分析中的应用研究	Technology (Materials Science)	2018	EI
3	ட்≘⊯கையாள் அடையில் மான் பார்க்கியாக பார்க்கியாக Liquefaction behavior of dredged silty–fine sands under cyclic loading	鉄道学报	2018	SCI
J	for land reclamation: laboratory experiment and numerical simulation	Environmental Earth Sciences	2018	SCI
4	Estimation model of sandy soil liquefaction based on RES model	Arabian Journal of Geosciences		
5	Investigation and evaluation of contamination in dredged reclaimed land in China	Marine Georesources &	2018	SCI
6	Impact of carbonation on the chloride diffusivity in concrete:	Geotechnology	2018	SCI
	experiment, analysis and application	Materials and Structures	2018	SCI
7	Adaptive Nomoto model used in the path following problem of ships	Journal of Marine Science and	2017	SCI
8	Influence of calcium nitrite on the passive films of rebar in simulated concrete pore solution	Technology (Japan)		
9	Experimental and numerical studies on lateral bearing	Anti-Corrosion Methods	2017	SCI
40	capacity of bucket foundation in saturated sand Fractal properties of filter membrane for silt clogging	and Materials	2017	SCI
10	evaluation on PVD improved soft days	Ocean Engineering	2017	El
11	Investigation and evaluation of contamination in dredged reclaimed land in China	KSCE Journal of Civil Engineering	2017	EI
12	Application of BOTDA distributed fiber optic sensing techniques	Marine Georesources		
12	in vertical bearing test of super-long PHC pipe pile	and Geotechnology	2017	SCI
13	Effect of polymer matrix on the structure and electric properties of	European Journal of Government	2017	El
	piezoelectric lead zirconatetitanate/polymer composites	and Economics (EJGE) Materials	2017	El
14	Performance of corroded bridge piers under cyclic loading		2017	El
15	盐雾环境与交变荷载下混凝土梁的试验研究	Proceedings of the Institution of Civil		
16	竖井正方形地基固结度解答及其应用	Engineers: Bridge Engineering	2017	El
17	风力机基础环与混凝土间相互作用研究	华南理工大学学报(自然科学版) 中南大学学报(自然科学版)	2017	El
18	负压环境下新型地下水位测试装置研发 基于钙质砂土的CPT与SPT经验转换关系研究	太阳能学报	2017	EI
19	金」も成功工的と「1つる」「全型を決失が明れる。	大四能子板 岩土力学	2016	EI
20 21	Durability assessment of concrete structures in HZM sea	石エルチ 岩石力学与工程学报		
	link project for service life of 120 years	浙江大学学报(工学版)	2016	SCI
22	Three-Dimensional Element Partition Method for Fracture Simulation	Materials and Stuctures	2016	SCI
23	Laboratory model tests on water inrush in foundation pit bottom	International Journal of	2016	SCI
24	Case study of rehabilitation of a damaged underwater tunnel in the constuction phase	Geomechanics	2016	SCI
25	饱和开裂混凝土氯离子二维扩散的数值模拟	Environmental Earth Sciences	2016	EI
26	塑料排水板芯板及滤膜物理力学性能研究	Journal of Performance of		
27	土工织物有效孔径测定方法探讨 基于实测数据的港工混凝土结构环境荷载模型及耐久性分析	Constructed Facilities	2016	El
28 29	秦丁头则致防心绝上的凝土与何小说问载侯坐及则入住力们 悬浮隧道水下锚索抑振装置试验研究	天津大学学报(自然科学与工程技术版)	2016	El
30	基于应变监测的沉管隧道混凝土侧墙裂缝解析	岩土工程学报	2016	EI
31	考虑横向惯性效应时黏弹性支承桩纵向振动特性研究	岩土工程学报	2016	EI
32	Restoring force model of concrete-filled square steel tubular columns with binding bars	工程力学		
33	Numerical Research on the Waterproof Failure Mechanism	振动工程学报	2016	El
	of the Sealing Gasket of an Underwater Shield Tunnel	现代隧道技术	2016	EI
34	Coupled response models for ship manoeuvring and roll motions	振动工程学报	2016	El
35	Investigation on the flexural behavior of corroded concrete beams	Open Civil Engineering Journal	2016	EI
	repaired by CFRP sheet under differemt corrosion levels Fractal Properties of Filter Membrane for Silt Clogging	Geotechnical Special Publication		
36	Evaluation on PVD Improved Soft Clays	ISOPE2016	2016	EI
27	Preparation and properties of embeddable Ag/AgCl gelling	Open Civil Engineering Journal	2016	El
37	reference electrode for rebar corrosion monitoring in concrete	KSCE Journal of Civil Engineering	2016	SCI
38	Durability Design of the Hong Kong - Zhuhai - Macau	China Ocean Engineering	2015	SCI
	Sea-Link Project: Principle and Procedure	Journal of Bridge Engineering		
39	System identification modelling of ship manoeuvring	Journal of Hydrodynamics	2015	SCI
	motion based on ε -support vector regression	Electronic Journal of Geotechnical	2015	SCI
40	Offshore Earth–rock Cofferdam Reinforcement	Engineering	2015	El
	Optimization by Probability Analysis			

05/工法

Construction Method

序号	工法名称	年度	等 级	工法编号
1	高桩码头梁板结构整体装模现浇法修复施工工法	2018	水运工程工法	SYGF-2-09-2018
2	钢套筒泥面下包覆桩基加固施工工法	2017	中交集团	ZGJJGF-2016-028
3	钢筋混凝土基础水下修复施工工法	2017	广东省	GDGF409-2017
4	海工混凝土桩牺牲阳极阴极保护施工工法	2017	中交集团	ZGJJGF-2016-029
5	海工混凝土桩牺牲阳极阴极保护施工工法-(水运工程一级工法)	2017	水运工程工法	GGG (中企) C1002-2017
6	多线铁路大跨度斜拉桥钢桁梁安装施工工法一公路工程工法	2017	水运工程工法	ZGJJGF-2016-030
7	钢筋混凝土基础水下修复施工工法	2017	中交集团	GGG (中企) C1001-2017
8	钢拱架整体横移施工拱桥工法-公路工程工法(优秀)	2017	公路工程工法	ZJSHGF-2016-04
9	钢套筒泥面下包覆桩基加固施工工法	2016	四航局	ZJSHGF-2016-05
10	钢筋混凝土基础水下修复施工工法	2016	四航局	
11	海工混凝土桩牺牲阳极阴极保护施工工法	2016	四航局	ZJSHGF-2016-06
12	海洋环境混凝土表面硅烷浸渍防腐施工工法	2014	四航局	GJEJGF329-2012
13	海工梁、板式混凝土结构物耐久性损伤电化学修复施工工法	2013	国家级工法	GGG (中企) C2079-2013
14	跨海大桥混凝土墩柱透水模板布和表面涂装联合防护施工工法	2013	公路工程工法	SYGF-1-008-2012
15	海工梁、板式混凝土结构物耐久性损伤电化学修复施工工法	2012	交通运输部	ZJSHGF- 2012-04
16	跨海大桥墩柱透水模板布和表面涂装联合防护施工工法	2012	中交集团\公路工程	ZJSHGF-2011-09
17	超高复杂构筑物登高防腐作业施工工法	2012	中交集团	ZJSHGF-2011-10
18	海工梁、板式混凝土结构物耐久性损伤电化学修复施工工法	2011	四航局	SYGF-1-018-2010
19	深井降水联合强夯加固软土施工工法	2010	交通运输部	SYGF-1-021-2010
20	高桩码头梁板构件碳纤维布加固施工工法	2010	交通运输部	GJYJGF084-2008
21	真空预压联合强夯快速加固疏浚土施工工法	2008	国家工法	GJEJGF205-2008
22	浅表层超软弱土快速加固施工工法	2008	国家工法	GJEJGF206-2008
23	高桩码头浪溅区高性能混凝土施工工法	2008	国家工法	ZJGF-2008-45
24	水下自密实混凝土施工工法	2008	中交集团	ZJGF-2008-49
25	真空联合堆载预压施工工法	2008	中交集团	ZJSHGF-2007-08
26	水下不分散混凝土施工工法	2007	四航局	
27	气囊搬运重件工法	2007	广东省	2007–29
28	海工高性能混凝土施工工法	2007	广东省	2007–20
29	水运工程大型预制构件滑模施工工法	2006	中交集团	ZJGF-2006-33
30	水下抛石基床爆破夯实工法	2006	四航局	ZJSHGF-2006-03
31	控制加载爆炸挤淤置换施工工法	2006	国家工法	YJGF100-2006

06/主要科研项目 Key Research Projects

离岸深水港建设关键技术研究与工程应用

Key Technology Research and Engineering Application of Offshore Deep Water Harbor Construction

四航研究院承担了由中国交建主持的"离岸深水港建设关键技术研究与工程应用"科研项目的子课题"大面积超软粘土地基处理技术研究"和"海港工程砼结构耐久性寿命预测及健康诊断研究"。项目创新成果已在国内大连港、天津港、广州港等大型深水港口建设中得到应用,支撑了我国"十一五"以来的离岸深水港建设,并在海外港口建设市场竞争中发挥了关键作用。该科研项目获得国家科技进步一等奖和中国水运协会特等奖。

CCCC 4th Harbor Institute has undertaken the subproject Research on Ground Improvement Technology for Large Area Ultra-soft Clay Soil and Harbor Engineering Steel Structure Durability Lifetime Prediction & Health Diagnosis Research of the research project of Key Technology Research and Engineering Application of Deep Water Offshore Harbor Construction, which is hosted by CCCC. The innovation achievement has been applied to the construction of domestic large deep water harbors including Dalian Port, Tianjin Port, Guangzhou Port, etc. It has supported the offshore deep water harbor construction since the 11th Five-Year Plan implementation and played a key role in the international market competition of harbor construction. The research project has won the First Prize of National Scientific and Technological Progress Award and Special Award issued by China Water Transportation Construction Association.







项目成果已应用于盐田三期集装箱码头等工程

Application of project achievement in Yantian Container Terminal Phrase III engineering and, etc.

提高海工混凝土结构耐久性寿命成套技术及推广应用 Complete Technology to Improve the Durability of Harbor and Marine Engineering Concrete Structures and Its Application

项目创立了海工混凝土结构耐久性设计、新建工程综合防护和已建工程维护维修三大技术体系,形成集理论、方法、设计、施工、材料和检测技术于一体的海工混凝土结构耐久性成套技术,对建立并完善我国海工混凝土结构耐久性国家及行业技术标准做出重大贡献,引领了行业技术发展。项目成果已在我国多个海港码头建设工程中全面应用,近年来更是应用于多座跨海大桥工程的建设,彻底改变了我国海工混凝土结构耐久性寿命普遍不足30年的技术落后面貌,并为重大海洋基础设施实现百年建设标准奠定基础,充分体现出重大的经济与社会效益。项目成果已在青岛海湾大桥、盐田港三期集装箱码头、湛江港、巴基斯坦瓜达尔港等国内外重大工程建设中应用,并获得国家科技进步二等奖。

The project established three major technique systems in durability design of marine concrete structure, comprehensive protection of newly-built projects and maintenance of finished projects. A set of durability technology, which integrates theory, method, design, construction, material and testing, was formed for marine concrete structure. The achievement, which has led the technology development of the industry, has great contributions to establish and improve the national and industrial technical standards in durability of marine concrete structures. The research results have been widely used in a number of harbor wharf construction projects of China and several cross—sea bridge projects more recently, which has thoroughly changed the technical backwardness of China's marine concrete structure whose durability life is generally less than 30 years and laid the foundation of realizing the centennial construction standard for major marine infrastructure. This project has embodied significant economic and social benefits. The project results have been applied in major projects at home and abroad, such as Qingdao Bay Bridge, Yantian Container Terminals Phrase III, the Zhanjiang Port, the Gwadar Port in Pakistan and etc. Furthermore, it won Second Prize of the National Scientific and Technological Progress Award.



科研实力

跨海集群工程混凝土结构120年使用寿命保障关键技术 Key Technology to Ensure 120-year Service Life of Concrete Structure for Cross-sea Clusters

Scientific Research Strength

项目建立了基于失效概率的耐久性设计模型,提出了满足120年服役寿命的混凝土材料与结构指标,建 立了系统的附加防腐蚀措施设计方法,开发了埋入式混凝土耐久性监测系统和沉管隧道渗漏病害快速识别装 备,建立了涵盖耐久性设计、施工与维护的耐久性保障技术体系,解决了港珠澳大桥混凝土结构120年设计 使用年限如何达到的关键问题。项目研究成果直接用于港珠澳大桥跨海集群工程的耐久性设计与施工及整个 跨海集群工程运营期的耐久性维护,对我国跨海工程混凝土结构耐久性技术发展具有重要的示范引领作用。 该科研项目获得广东省科技进步奖特等奖和广东省土木建筑协会科学技术奖一等奖。

This project established the durability design model based on failure probability and proposed the indexes of concrete materials and structures meeting 120 years' service life. The project also established systematic design method for additional anti-corrosion measures and developed embedded concrete durability monitoring system as well as rapid identification equipment for leaking disasters in immersed tube tunnels. The project has built a durability technical support system including design, construction and maintenance and solved the key problem of how to achieve 120 years' design working life for the concrete structures in Hong Kong-Zhuhai-Macao Bridge. The research results of the project have been directly applied to the durability design and construction of cross-sea clusters in Hong Kong-Zhuhai-Macao Bridge as well as the durability maintenance during the whole operation life cycle, which has played an important leading and demonstration role in the development of durability technologies of crossing-sea concrete structures in China. The research project has won the Extra Prize of Guangdong Scientific and Technological Progress Award and the First Prize of Scientific and Technological Progress Award of The Civil Engineering and Architectural Society of Guangdong.

项目成果为港珠澳大桥实现120年使用寿命提供了关键的技术支撑作用

The project achievement provides key technology support for HONG KONG-ZHUHAI-MACAO Bridge to achieve 120-year service time



环境与荷载耦合作用下海工混凝土结构耐久性及可靠设计方法研究 Study on Durability and Reliable Design Method of Marine Concrete Structures under Load and Environment Coupling Effects



项目成果应用于湛江港405、406号泊位改造工程

Application of project achievement in renovation engineering of No. 405 and 406 Berths of Zhanjiang Port.

四航研究院完成的"环境与荷载耦合作用下海工混凝土结构耐久性及可靠设计方法研究"科研项 目,利用自主研发的动荷载与氯盐耦合作用的结构耐久性试验装备开展混凝土结构耐久性试验,建立了 符合我国工程特点的荷载-环境多因素耦合作用下钢筋混凝土结构的耐久性寿命预测模型,研究成果已纳 入《水运工程结构耐久性设计标准》等相关的标准和规范,可直接指导从事海工混凝土结构耐久性设计 的工程技术人员对钢筋混凝土结构耐久性开展寿命计算和寿命预测工作,实现了我国混凝土结构耐久性 从"凭经验符合设计"到"可靠度定量设计"的技术突破。目前,该成果已成功应用于湛江港405、 406号泊位改造工程。

The durability model of service life prediction for reinforced concrete structures under load and environment coupling effects, that according with the characteristics of engineering in China, was established in the scientific research project of Study on Durability and Reliable Design Method of Marine Concrete Structures under Load and Environment Coupling Effects which was taken by CCCC 4th Harbor Institute, by making use of the self-designed dynamic load and chloride coupling durability test equipment to carry out concrete durability testing. The research results have been included in "Standard for Structure Durability Design of Port and Waterway Engineering" and relevant specifications, which can directly guide the engineering technician engaged in marine concrete structure durability design to carry out durability life calculation and prediction work for reinforced concrete structures. The technical breakthrough of concrete structural durability from "design according to experience" to "quantitative reliability in design" has been realized. Currently, the results have been successfully applied to Zhanjiang Port renovation project of No. 405 and 406 Berths.

超软弱吹填土复杂地基处理关键技术研究 Study on the Key Technologies of Improving

Scientific Research Strength

Super Ssoft Dredger Fill Complex Foundation

项目系统地研究了超软弱吹填土复杂地基处理中的关键技术,建立了分级加载下半透水边界条件成层砂井 地基的固结度计算方法和真空联合堆载预压下土体强度增长计算方法:首次在无砂垫层真空预压技术中采用了 袋装砂井,解决了塑料排水板在超软弱地基加固中发生过大变形导致真空度损失较大的技术难题。研究成果已 在珠海港高栏港区神华煤炭储运中心一期、天津港南港工业区港区、港珠澳大桥珠澳口岸人工岛和连云港海滨 新城等多项软基处理工程中应用,经济和社会效益显著。获国家授权专利1项,发表核心期刊论文6篇。该科研 项目获得中国航海学会科技进步一等奖。

This research systematically studied the key technologies of improving super soft dredger fill complex foundation. The consolidation degree calculation method has been set up for layered sand drained foundation under the condition of semi-permeable boundary. Also the formula for soil strength increasing is obtained for vacuum combined with surcharge preloading. The sand bag well was first adopted for vacuum preloading to solve the technical difficulty of loss of vacuity resulting from big deformation of plastic drain plate during the super soft foundation reinforcement process . The research achievement has been applied to many soft ground treatment projects, including Phase I of Shenhua Coal Storage and Transport Center in Zhuhai Gaolan Harbor, Nangang Industrial Zone in Tianjin Port, Artificial Island at Zhuhai-Macao Port of Hong Kong-Zhuhai-Macao Bridge, Lianyungang Seaside New Town, etc. Remarkable economic and social benefits have been achieved. The research project has won one national authorized patent and published 6 papers at core journals. Meanwhile, it won First Prize of Scientific and Technological Progress Award of China Institute of Navigation.

项目成果应用于珠海港高栏港区神华煤炭储运中心一期等工程

Application of project achievement in Phase I of Shenhua Coal Storage and Transport Center in Zhuhai Gaolan Harbor and, etc.



高桩码头长期安全服役结构性能评估与修复提升关键技术 The key technology of structural performance evaluation, repair and upgrading for long term safe service of piled berth structure



成果应用于广东惠州港泽华石化仓储码头和阳江闸坡油库码头等工程

Application of project achievement in Zehua petrochemical storage terminal of Huizhou port and Yangjiang Zha Po oil terminal, etc.

项目针对在役高桩码头结构缺陷特点,开展码头安全评估方法、码头构件缺陷修复与性能提升技术研究,形 成的基于时变可靠度的高桩码头安全性评估方法,能够对在役高桩码头结构的安全性进行更为准确的评估;研发 的气囊顶压粘贴碳纤维布、锚板组合式剪力键、模板系统整体提升、水密围笼干态施工、泥面下钢套筒缺陷修复 等系列技术,完善了高桩码头梁、板、桩典型病害修复技术,实现了构件的快速、有效修复,可显著降低修复施 工与维护运营费用。研究成果获得授权发明专利2项,实用新型专利5项。经中国海洋工程咨询协会评价,研究 成果总体上达到国际先进水平,其中在役高桩码头结构的时变可靠度研究具有国际领先水平。2018年荣获中交 集团科学技术进步奖二等奖,广东省土木建筑学会科学技术奖一等奖,中国港口协会科学技术二等奖。

Based on the structural defect characteristics of piled berth structure in service, the project carried out research on wharf safety assessment method, wharf component defect repair and performance improvement technology. The safety evaluation method of piled berth structure based on time-varying reliability formed by the project can more accurately evaluate the safety of piled berth structure in service. A series of repair technologies have been developed, such as CFRP reinforcement technology for air bag top pressing, anchor plate combined shear key reinforcement technology, reinforcement of the overall lifting of the formwork system, dry construction technology with Watertight cage, repair defects under mud surface with steel sleeve. It has improved the typical damage repair technology of piled berth structure beam, plate and pile, and achieved rapid and effective repair of components, which can significantly reduce repair construction and maintenance operation costs. Two invention patents and five utility model patents were granted. Evaluated by China ocean engineering consulting association, the research results have reached the international advanced level on the whole, among which the research on time-varying reliability of piled berth structure in service has the international leading level. The project won the second prize of science and technology progress award of China Communications Construction Company, the first prize of science and technology award of the Civil Engineering and Architectural Society of Guangdong, and the second prize of science and technology award of China Ports and Harbors Association.

海上复杂环境条件下大型预制构件安全出运与系泊关键技术研究 Study on Safety Construction Key Technologies for transporting and Installing Large Prefabricated Components under Complicated Marine Environment



项目成果已应用于虎门港沙田港区三期等工程

Application of project achievement in phase III project of Human Port Shatian District

Scientific Research Strength

项目针对海上复杂环境条件下的大型预制构件出运、系泊、寄放和安装等过程,采用理论分析、数值模拟和物理模型试 验等方法,开展了大型预制构件海上浮运阻力分析、半潜驳出运的稳性分析及安全评价、海上系泊系统选型和安全施工决策 支持系统研发等四个方面的研究。研究成果将使大型预制构件的出运方式和出运气象选择、安全施工的决策方面更为科学合 理,其海上施工技术将得到全面的总结提升,为该类工程施工的安全、快捷、顺利、高质量的建设提供强有力的技术支持。 该科研项目获得广东省土木建筑学会科学技术奖一等奖。

The project is aimed at the transportation, mooring, depositing, installaiton and so on of large prefabricated components under complex environmental conditions at sea. The project is studied with the theoretical analysis, numerical simulation, physical model tests and other methods, and the research content includes the following four parts, the floating resistance analysis of large-scale prefabricated components at sea, the stability analysis and safety evaluation of semi-submersible barge shipping, the selection of marine mooring system, and the research and development of safety construction decision support systems. The research results will make the decision-making of the transportation mode of large-scale prefabricated components, the weather selection and safe construction more scientific and reasonable. The offshore construction technology will be comprehensively summarized and improved, and it can provide strong technical support for safe, fast, smooth and high quality construction of such projects. The research results of this project won the first prize of Scientific and Technological Award of The Civil Engineering and Architectural Society of Guangdong.

新吹填超软土地基真空预压加固技术创新 Innovation of Vacuum Preloading Reinforcement Technology for Newly Filled Super Soft Soil Foundation

项目首次提出了新近吹填淤泥自重沉积稳定的评价指标,提出了适用于新近吹填淤泥地基且考虑了自重沉积的沉降估算公 式,完善了沉降估算方法;首次提出了该类地基真空预压加固塑料排水板的防淤堵准则,给出了真空预压加固该类地基时塑料排 水板的真空度衰减系数的建议值。同时,首次研发了适用于新近吹填淤泥地基的大面积砂被工作垫层工艺技术,开发了新型直排 式分级真空预压技术,解决了该类地基真空预压一次性处理的难题。该科研项目获得中国航海学会科技进步二等奖。

This research first presented the stable evaluation index and settlement calculation formula for the self-weight deposition of the newly hydraulic reclamation mud. The settlement estimation method has been improved. The anti-clogging guidelines were first presented and attenuation coefficient of vacuum degree was advised for plastic drainage plate in vacuum preloading reinforcement of such foundation. Meanwhile, for the first time, the large area sand bedding cushion technology applied to newly hydraulic reclamation mud has been developed. The new type of graded vacuum preloading technology was developed consisting of vertical drainage system, so as to solve the difficulty of one-time treatment of vacuum preloading for this kind of foundation . The research project has won the Second Prize of Scientific and Technological Progress Award of China Institute of Navigation.



项目成果应用于广州港南沙港区三期等工程

Application of project achievement in Phase 3 of the Guangzhou Harbor Nansha Zone and, etc.

科研实力

离岸海上人工岛深基坑防护技术研究

Scientific Research Strength

Study on Protecting Technologies of the Deep Foundation Pit of the Offshore Sea Artificial Island

项目依托港珠澳大桥东人工岛,主要针对离岸海上人工岛深基坑支护荷载确定方法、支护结构稳定性计算、 深基坑渗流分析及止水技术、施工关键技术和监控技术进行研究。通过对深插式大直径钢圆筒人工岛深基坑围护 结构讲行系统研究,首次构建了考虑位移效应的土压力及潮位、波浪、渗流耦合的计算模型,提出了支护结构、 水和土体三者之间相互作用的结构荷载计算、稳定性计算和渗流分析方法。项目成果不仅支撑了港珠澳大桥人工 岛的建设,也可在类似人工岛工程建设中推广应用,具有显著的经济效益和社会效益。该项目荣获中国航海学会 科学技术进步二等奖。

This research, based on the HZM Bridge East Artificial Island, is conducted through aspects of the method for determining support load of deep foundation pit, seepage analysis and water stopping technology of deep foundation pit and construction key technology and monitoring technology relating to offshore sea artificial island. Through systemic study on deep-inserted large diameter steel cylinder artificial island deep foundation pit enclosure structure, for the first time, the calculation model considering displacement effect of earth pressure and tidal level, wave and seepage coupling has been set up, and the methods of structural load calculation, stability calculation and seepage analysis resulting form interaction among supporting structure, water and soil have been presented. The research achievement has great economic and social benefits. It not only supported the construction of artificial island of Hong Kong-Zhuhai-Macao, but also could be applied to the similar artificial island projects. The project won the second prize of Scientific and Technological Progress Award of China Institute of Navigation.

项目成果应用于港珠澳大桥人工岛等工程

Application of project achievement in HongKong-Zhuhai-Macao Bridge Artificial Island and, etc.



水下深层水泥搅拌法(DCM)软基处理成套施工技术研究及应用 Research and Application of Complete DCM Technology applied for Improving underwater soft ground



项目成果应用于香港机场第三跑道项目(填海工程)、深圳至中山跨江通道项目等工程

Application of project achievements in Hong Kong International Airport Three-Runway System (Reclamation works), Cross-River Bridge from Shenzhen to Zhongshan, and etc

项目为中交四航局战略性研发课题,以中交四航局自主研发国内第一艘自动化程度高、处理能力强的DCM施工船 ("四航固基"号)为契机,采用理论分析、数值模拟、室内和现场试验等研究方法,对国内新近大规模应用的水下深层水 泥搅拌法成套技术进行了深入研究,涵盖水下DCM复合地基设计、加固机理与室内配合比试验、施工工艺技术、船舶选型 与施工控制系统、施工质量控制与评价体系。研究成果为中交四航局参与建设的多个国内大型水运工程项目的经营与生产提 供了有力的技术支撑,其中包括香港机场第三跑道项目(填海工程)、深圳至中山跨江通道项目等,为公司在业界赢得了良 好的声誉,取得了显著的经济效益。项目目前已获国家授权或公告专利10项,已发表或录用学术论文9篇。

It is a strategic research project funded by CCCC Fourth Harbor. This research is based on the development of "SI HANG GU JI" DCM (short for deep cement mixing) barge, which is the first DCM barge of high-level automation and good improving capacity with self-owned intellectual property right in China. By adopting different research methods including theoretical analysis, numerical simulation, and laboratory & field tests, deep study has been conducted on the complete underwater DCM technology that has recently been widely used in China, which involves underwater DCM composite foundation design, improvement mechanics and laboratory mixing tests, construction technology, barge selection, construction management system, construction quality control and assessment, etc. The research achievements have efficiently contributed to the operation and implementation of many port and waterway engineering projects participated by CCCC Fourth Harbor, including Hong Kong International Airport Three-Runway System (Reclamation works), Cross-River Bridge from Shenzhen to Zhongshan, etc. DCM technology has won good reputation and gained remarkable economic benefit for the company. So far, the research has obtained fruitful achievements, including 10 national authorized or announced patents and 9 academic papers have been published or accepted.

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07/主参编标准规范

Main Standard Specification

《既有混凝土结构耐久性评定标准》

Durability Evaluation Specification for Existing Concrete Structures

该标准是由四航研究院主编的国家标准,标准号GB/T51355-2019。该标准是在广泛调研以及借鉴国内外相关标准和工程实践经验基础上制定的,技术内容涵盖一般环境、氯盐侵蚀环境、冻融环境、硫酸盐侵蚀、混凝土碱一骨料反应混凝土结构耐久性评定等。该标准对既有混凝土结构的耐久性评定具有指导意义,为既有混凝土结构耐久性维护修复提供了依据,是我国第一部专门针对既有混凝土结构耐久性评定的标准,填补现有的国家标准在建筑物耐久性评估方面的空白。

This specification is the national specification edited by CCCC 4th Harbor Institute (GB/T51355–2019). This specification is formulated based on extensive research and referring to the relevant standards and engineering practice at home and abroad. The technical content covers assessment of durability for concrete structures under general environment, chlorine salt erosion environment, freezing and thawing environment, sulphate attacking, alkali–aggregate reaction and so on. This specification has a guiding significance for the durability assessment and provided a basis for the maintenance and repairing for existing concrete structures. It is the first specification specifically aimed at the durability assessment of existing concrete structures in China. It also has filled the gap of existing national specifications in the durability assessment of constructions.

深圳港盐田港区一期、二期、三期及三期扩建工程桩基检测、高性能混凝土配制及原材料检测

Pile foundation testing, preparation of high performance concrete and construction materials testing for the first phase, the second phase, the third phase and the third phase expansion engineering of Shenzhen Yantian Port



《水运工程地基基础试验检测技术规程》 Technical Specification for Testing and Inspection of Port and Waterway Engineering Foundation



广州港南沙港区一期、二期、三期工程桩基检测、软基处理施工监测、加固前后地基检测及原材料检测

Pile foundation testing, construction monitoring of soft ground improvement, ground foundation detection before & after reinforcement and construction materials testing for the first phase, the second phase and the third phase engineering of Guangzhou Port Nansha District Project

该规范是由四航研究院主编的行业规范,标准号JTS237-2017。该规范是在总结我国水运工程地基基础试验检测多年的 实践经验基础上,经过深入调查研究和广泛征求意见,并结合我国水运工程建设发展的实际情况编制而成。规范主要包括室 内试验、原位试验、基桩检测、现场监测、地基处理典型试验检测等内容。该规范的制定可保证水运工程地基基础相关试验 检测进一步规范化,对保障水运工程质量与安全发挥了重要的作用。

This specification is the Industry specification edited by CCCC 4th Harbor Institute (JTS 237–2017) . Based the practical experiences of the construction on port and waterway engineering foundation for many years and the investigation and broadly consultation, the specification was established, according to the development of port and waterway engineering in our country. The specification includes laboratory experiments, in–situ tests, pile tests, on–site monitoring, typical test of ground treatment, etc.. The formulation of this specification can ensure the further standardization of the relevant tests of port and waterway engineering foundation and is important to guarantee the safety and quality of port and waterway engineering.

《港口水工建筑物修补加固技术规范》(修订) Revision of Technical Specification for Repair and Strengthening of Harbor and Marine Structures

该规范是四航研究院主编的交通运输行业规范(在编),主要包括混凝土结构的修补与加固、钢结构加固与修补、基础与倒滤结构修复加固和结构耐久性修复等技术内容。该规范在保证港口水工建筑物的使用安全,有效延长其使用寿命,降低全寿命使用成本等方面起到积极作用。规范的修订有利于水运工程建设的长足发展,有利于进一步提升港口水工建筑物修补加固技术水平。

The specification is the transportation industry specification edited by the CCCC 4th Harbor Institute (in preparation), it mainly includes concrete structure repair and reinforcement, steel structure reinforcement and repair, foundation and inverted filter structure repair and reinforcement, structural durability repair and other technical contents. The specification plays an active role in ensuring the safety of harbor and marine structures, effectively extending their service life, reducing the whole life service cost and so on. The revised regulations are conducive to the development of port & waterway engineering construction and the improvement of the repair and reinforcement technology of harbor and marine structures.



《水运工程结构防腐蚀施工规范》 Anticorrosive Construction Specification of Water Transport Engineering Structures

该规范是四航研究院主编的行业规范(在编),规范针对水运工程的特点,并参考国内外相关标准,经深入调查分析和广泛征求意见、反复修改完善形成。该规范总结了近年来水运工程防腐蚀施工经验,对混凝土结构附加防腐蚀和钢结构防腐蚀材料、施工、检验与验收作出了相关规定,与《水运工程结构耐久性设计标准》(现行)配套适用,构成我国水运工程结构耐久性的系统标准体系,对提高我国水运工程基础设施的使用品质和寿命将发挥积极作用。

The specification is the industry specification edited by the CCCC 4th Harbor Institute (in preparation). This specification has summarized the experience of anticorrosive construction in recent years. According to the characteristics of port and water transport engineering and the relevant standards at home and abroad, the specification is completed after repeated revision and perfection based on in–depth investigation and extensive consultation. It has made relevant provisions on the materials, construction, inspection and acceptance of additional anti–corrosion measures for concrete and steel structures. This specification supports the use of Standard for Structure Durability Design of Port and Waterway Engineering". They have constituted the durability standard system of water transport engineering structures in our country, which will play an active role in improving the service quality and life of water transport engineering infrastructure in China.



巴基斯坦瓜达尔码头工程高性能混凝土配制及防腐涂层设计

Preparation of high performance concrete and design of corrosion prevention coating for Gwadar Terminal Engineering in Pakistan

《水运工程基桩试验检测技术规范》 Technical Specification for Testing Foundation Piles in Port and Water Transport Engineering

Scientific Research Strength



莫桑比克纳卡拉走廊水工工程桩基检测

Pile foundation testing of corridor water engineering of Nacala Port, Mozambique

该规范是四航研究院主编的行业规范(在编),规范主要包括轴向抗压、抗拔承载力、水平承载力、分层侧摩阻力及 桩身完整性等试验检测技术。该规范的制定对于规范和指导水运工程基桩设计、施工和试验检测工作,提升我国水运工程 基桩质量控制和推动水运行业的健康持续发展具有重大的现实意义。

The specification is the industry specification edited by the CCCC 4th Harbor Institute (in preparation). The specification includes testing technologies for axial compressive strength, anti-pulling capacity, horizontal bearing capacity, pile side friction, pile body integrity, etc. The formulation of this specification is of great practical significance to standardize and guide the design, construction and testing of port and water transport engineering, to improve the quality control of foundation piles in water transport engineering and promote the healthy and sustainable development of the water transport industry.

《水运工程施工监控技术规范》 Technical Specification for Construction Monitoring and Control on Port and Waterway Engineering

该规范是四航研究院主编的行业规范(在编),规范在总结我国近50年水运工程施工监控实践经验的基础上,经过深 入调查研究和广泛征求意见,并结合我国水运工程建设发展的实际情况编制而成。规范主要包括地基处理、基坑工程、岸 坡工程、桩基工程、码头工程、航电枢纽及通航建筑物、整治建筑物、疏浚与吹填、防波堤和护岸、船厂水工建筑物的监 控项目、安全预警控制、监测资料整理及分析、监控报告等技术内容。该规范的制定可以有效减少甚至避免工程建设中安 全质量事故的发生,为工程设计实现优化、工程建设实现信息化提供可靠保证。

The specification is the transportation industry specification edited by the CCCC 4th Harbor Institute (in preparation), basing on the our country's practical experiences of the construction on port and waterway engineering for nearly 50 years and the investigation and consultation, , according to the practical situation of our country's development of port and waterway engineering. The specification includes technical contents for ground treatment, foundation pit treatment, bank slope engineering, pile foundation engineering, wharf engineering, navigation-power junction and navigation structure, regulating structure, dredging & reclamation, revetment & breakwater, monitoring and control of shipyard hydraulic structures, safety warning control, monitoring data collection and analysis, monitoring report, etc. The formulation of the specification will effectively reduce or even avoid safety quality accidents during engineering construction, optimize the engineering design and provide reliable guarantee for informationization realization.



项目成果应用于深圳市海洋新兴产业基地陆域形成工程等

Application of achievement in Shenzhen marine emerging industry base land formation engineering, etc.

Scientific Research Strenath



四航研究院在开展科技研发的基础上,还拥有勘察专业甲级、水运工程材料和结构甲级资质、公路工程桥梁隧道工程专 项试验检测资质和建设工程质量检测机构资质等多项专业资质,能够为社会各界提供建筑材料、环境生态岩土、结构工程等 专业领域的策划咨询、勘察设计、施工监测、质量检测等成套技术服务和整体技术解决方案。业务足迹遍布华南、华东、华 北、华中、西南、东北、港澳等国内地区以及东南亚、南亚、中东、东非、西非、北非、南欧等海外区域。

四航研究院通过质量安全监控、方案优化等手段为国内外重点项目提供了技术支持,保障了工程施工的质量、安全和效 益。在海外项目中,四航研究院技术团队表现出的专业技术水平以及所提供的优质技术服务受到了包括丹麦COWI公司、美 国AECOM公司、澳大利亚沃利柏森斯集团、荷兰皇家豪斯康宁集团、英国合乐集团、美国路易斯伯杰集团、法国EGIS集 团等国际大型设计咨询公司的认可和好评,为国内标准走向国际化,以及我国施工总承包企业走出海外作出了应有的贡献。

On the basis of technology research, CCCC 4th Harbor Institute has a number of professional qualifications, such as survey Grade A qualification, port and waterway engineering materials and structure Grade A qualification, special test qualification for highway engineering and bridge and tunnel engineering, construction engineering quality inspection organization qualification, and other professional qualifications. It provides technical services and comprehensive solutions covering a range of planning consulting, survey & design, construction monitoring, quality testing and others in fields of construction materials, environmental & ecological geotechnical engineering, structural engineering, etc. Our footprints spread across domestic areas including South China, East China, North China, Central China, Southwest China, Northeast China, Hong Kong, Macao, etc. and overseas countries in Southeast Asia, South Asia, Middle East, East Africa, West Africa, North Africa, and Southern Europe, etc.

CCCC 4th Harbor Institute supports Chinese and overseas major projects with quality control, safety management and design optimization to guarantee the safety, quality and economic benefits for construction. The professional skills and high-quality technical services we provided for overseas projects, which have made remarkable contribution for Chinese standard internationalization and for Chinese general construction contracting enterprises to enter the world's market, are highly appraised by famous overseas design & consulting companies, such as Danmark COWI, USA AECOM, Australian Worley Parsons, Holland Royal Haskoning DHV, UK Halcrow Group, USA Louis Berger Group, French Egis International, etc.

01/业务范围 Business scope

a.环境生态岩十丁程

Environmental & Ecological Geotechnical Engineering

- 岩土工程设计与咨询(基坑、边坡、地基处理)
- 地基基础工程检测与监测
- 基坑及地下空间结构工程监测
- 围堤、护岸、防波堤等设计、咨询、监测与检测
- 路基路面检测
- 特殊土处理与环境生态、环保技术服务

- Geotechnical engineering design & consultation (including excavation, slope and ground treatment)
- Monitoring and testing of ground and foundation engineering
- Monitoring of foundation pit and underground engineering
- Design, consultation, monitoring and testing of embankment, revetment, breakwater, etc
- Subgrade pavement testing
- Special soil treatment and technical services of environmental ecology and environmental protection

b. 结构工程

Structural Engineering

- 基桩与基础试验检测与设计咨询
- 水运工程结构检测、评估与鉴定咨询(码头、船坞、 船闸、护岸等)
- 公路工程及桥梁工程检测、综合评价及评估
- 桥梁施工监控与临时结构设计咨询(支架、模板、挂篮等)
- 海洋工程施工稳性校核、运动响应计算与环境姿态监控 (沉箱、沉管、半潜驳、起重船等)
- 施工安全与信息化控制技术实现
- 室内结构性试验、检测与观测
- 施工过程模拟试验及计算分析

- Detection and design consultation of foundation pile and foundation
- Detection, evaluation and identification consulting of port and waterway engineering structure (such as terminal, dock, ship lock, revetment)
- Detection, comprehensive evaluation and assessment of highway engineering and bridge engineering
- Construction monitoring and temporary structural design consultation (such as bracket, template, hanging basket)
- Stability check, calculation of motion response, and environment & attitude monitoring of marine engineering construction (such as caisson, immersed pipe, semi-submersible, crane ship)
- Construction safety and information control technology implementation
- Testing, detection and observation of interior structures
- Simulation test and calculation analysis of construction process

C. 建筑材料

- 工地试验室建设及运营管理
- 旧有建筑物耐久性检测评估及新建建筑物实体检测验收
- 高性能混凝土及特种混凝土的咨询及质量控制
- 混凝土结构裂缝控制咨询及监测
- 钢结构和混凝土结构耐久性评估、监测及修复
- 钢结构和混凝土结构防腐(涂层、阴极保护等)咨询

- Construction and operation management of site laboratory.
- Durability inspection & evaluation for old buildings and acceptance check for new buildings
- Technical consultation and quality control of high performance concrete and special concrete
- Crack control consultation and monitoring of concrete structures
- Durability technical assessment, monitoring and restoration for steel structures and concrete structures
- Technical consultation for corrosion protection (coating, cathode protection, etc.) of steel structures and reinforced concrete structures

02 / 国内主要技术咨询与支持业务 Domestic Key Technical Consultation and Support Service

Scientific Research Strength



四航研究院针对港珠澳大桥耐久性突出问题,设置耐久性监测点,预埋先进的耐久性传感器,建立耐久性监测系统,实现监测数据的定期自动采集,整个过程无需人工干预,同时基于目前高速4G无线网络,可实现采集行为的远程控制及采集数据的远程获取。

In order to meet the prominent durability problem in Hong Kong–Zhuhai–Macao Bridge, durability monitoring points are set in the concrete structure. Advanced durability sensors are embedded in each monitoring point to establish a set of durability monitoring system. The monitored data can be collected by means of periodic automatic acquisition without manual intervention. Meanwhile, based on the high speed 4G wireless network, remote control of acquisition behavior and remote acquisition of data can be realized.



港珠澳大桥澳门口岸桩基检测

Pile foundation testing of Hong Kong-Zhuhai-Macao Bridge at Macao Port 港珠澳大桥澳门口岸人工岛总面积约217万平方米,其中澳门口岸总建筑面积约60万平方米。港珠澳大桥澳门口岸市政及外围承包工程作为涵盖房屋、隧道、桥梁和路基等方面的综合性项目,四航研究院承担的桩基检测内容主要包括静载(试验最大吨位1500吨)、界面取芯、超声波、低应变、高应变、焊缝探伤和桩基材料检测。

Hong Kong–Zhuhai–Macao Bridge Macao port artificial island is about 2.17 million square meters. The total construction area of Macao Port is about 600,000 square meters. Hong Kong–Zhuhai–Macao Bridge Macao Port Management Zone Municipal and Peripheral Contracting Project covers housing, tunnels, bridges, roadbed and other aspects, which is a very comprehensive project. The Institute undertook the pile foundation testing of Hong Kong–Zhuhai–Macao Bridge Port artificial island, which includes static loading test (maximum test 1500 tons), interface core sampling drilling, ultrasonic testing of pile foundation, low–strain pile integrity testing, pile high–strain dynamic testing, non–damage inspection of weld and pile foundation material testing.



深圳至中山跨江通道主体工程(S09标)DCM和(S03标)地基处处理检测

Testing of DCM (Bid S09) and ground treatment of (Bid S03) for Main Project of Cross-River Bridge from Shenzhen to Zhongshan

深圳至中山跨江通道(以下简称"深中通道")地处珠江中游核心区域,直接连深圳经济特区和中山市、江门。四航研究院承担了西岛斜坡段沉管隧道深层水泥搅拌桩(DCM)及东人工岛水下地基检测工作,为保证工程质量提供技术支撑。

The Cross-River Bridge from Shenzhen to Zhongshan (hereafter short as Shenzhen-Zhongshan Bridge) is located in the core area of the middle reaches of Pearl River, directly connecting to Shenzhen Special Economic Zone, Zhongshan, and Jiangmen. CCCC 4th Harbor Institute undertook the inspection of deep cement mixing pile (DCM) foundation of immersed tube tunnel of Xidao Slope, and inspection of underwater foundation of the Dong artificial island, providing technical support to ensure the quality of the project.

四航研究院组建港珠澳大桥沉管预制厂试验室,承担与预制沉管相关的科研、检测以及生产质量控制等工作,为港珠澳大桥生产了近100万m³的优质混凝土,确保沉管隧道252个节段无裂缝,研制并生产出具"和田玉"效果的清水混凝土小型预制构件,完成了最终接头钢壳高流动性混凝土的研制和生产浇筑。

CCCC 4th Harbor Institute established the immersed tube precast laboratory of Hong Kong–Zhuhai–Macao Bridge, which is to undertake scientific research, testing and production quality control related to immersed tubes precast. The Laboratory produced nearly 1 million m³ of high–quality concrete for Hong Kong–Zhuhai–Macao Bridge, and ensured that there are no cracks in 252 immersed tunnel sections. Simultaneously, the Laboratory developed and produced small–scale prefabricated fair–faced concrete with the effect of "HeTian Jade" and completed R&D and production of the final joint steel shell high–flow concrete.



港珠澳大桥岛隧工程沉管预制厂试验室

Immersed tube precast yard laboratory of island and tunnel engineering of HongKong-Zhuhai-Macao Bridge

四航研究院承担了基坑施工过程的监测,包括深层水平位移、支撑轴力、水位、位移等。在基坑施工过程中,对基坑 支护结构、基坑周围的土体和相邻的建(构)筑物进行全面、系统的动态监测,掌握基坑施工过程中工程安全性和周围环 境的影响程度,确保基坑工程的安全和顺利施工。

CCCC 4th Harbor Institute undertook the monitoring of foundation pit construction process, including deep horizontal displacement, supporting axial force, water level, displacement and so on. In the foundation pit construction process, the support structure of the foundation pit, the soil around the foundation pit and the adjacent buildings (structures) were comprehensively and systematically monitored, to master the engineering safety and the influence of the surrounding environment in the foundation pit construction process, to ensure the safety and smooth construction of the foundation pit.



四航研究院承担了广州南沙国际邮轮码头工程的桩基高应变、 声波透射法、钻芯法检测等专项技术服务。现场检测人员为该工程 提供了优质的技术服务,保证了该工程的沉桩施工按时按质顺利完 成,得到业主单位、施工单位的高度认可。

CCCC 4th Harbor Institute provides special technical services for Guangzhou Nansha International Cruise Terminal, such as dynamic pile testing of high strain, acoustic transmission testing, core drilling testing and so on. Field inspectors provide professional technical services for the project, which ensures the smooth completion of the project's piling construction on time and in high quality, and they are highly appreciated by the construction team and the owner.



广州南沙国际邮轮码头桩基检测

Pile foundation test of Guangzhou Nansha International Cruise Terminal

四航研究院承担了盐田港包括钢筋混凝土、结构变形和钢结构 与地基基础等多项性能参数检测,并对码头结构耐久性、安全性与 使用性评估,为业主后续的码头升级提供了技术支持。

CCCC 4th Harbor Institute undertook the inspection of many performance parameters of Yantian Port, including reinforced concrete, structural deformation, steel structure and foundation. and evaluated the durability, safety and usability of wharf structure, providing technical support for the subsequent upgrading of wharf by the owner.



深圳盐田港码头结构检测与评估

Structure inspection and evaluation of Shenzhen Yantian port

道安超前地质预报是在分析既有地质资料的基础上,采用地震波 法和地质雷达法相结合的手段,对隧道开挖工作面前方不良地质体的 工程性质、位置、产状、规模等进行探测、分析及预报,并提出措施 和建议,为正确选择开挖断面、支护设计参数和优化施工方案提供依 据,并为预防隧洞涌水、突泥、围岩失稳等可能形成的灾害性事故及 时提供信息,便于施工单位提前做好预案,保证施工安全。

Dao'an advanced geological prediction is undertaken on the analysis of existing geological data, using the combination of seismic wave method and geological radar method to analyse and detect the engineering properties, location, occurrence and scale of the unfavorable geological body in front of the tunnel excavation face, to propose measures and recommendations to provide a basis for the correct selection of excavation sections, support design parameters and optimization of construction plans, and to prevent possible accidents such as tunnel water inrush, sudden mud and surrounding rock instability. The projects provide information in time to facilitate the construction unit to make plans in advance and ensure construction safety.



贵州道安高速公路超前地质预报与监控量测项目

The projects of the advanced geological prediction and monitoring measurement in Guizhou Dao'an Expressway

珠海市区至珠海机场城际轨道交通 拱北至横琴段项目施工监测

Construction monitoring for Gongbei-Hengqin Section of Zhuhai Intercity Rail Transit Engineering from Zhuhai city area to Zhuhai Airport

四航研究院承担了包括基坑冠梁的变形、围护结构的深层位移 变形、支撑的受力变化、基坑周边环境、隧道拱顶沉降、断面收敛 等项目内容。同时,根据监测数据及时提出诸多建议措施,如基坑 顶卸载、坑外注浆、复加上下钢管撑轴力等监测工作,并根据监测 数据及时分析各抢险处理措施的效果,保障基坑施工安全。

CCCC 4th Harbor Institute undertook monitoring of deformation of foundation pit top beam, deep displacement deformation of the surrounding structure, change of load-carrying of the support, surrounding environment of foundation pit, settlement of tunnel arch roof, convergence of section, etc. At the same time, according to the monitoring data, many consultations were put forward in time, such as consultations on monitoring of foundation pit roof unloading, grouting out of pit and puls axial force of upper and lower steel pipe support. The emergency measures were analyzed in time according to the monitoring data to ensure the safety of foundation pit construction.



引江济淮工程(安徽段)江淮沟通段施工J005-1标安全监测

J005-1 safety monitoring for Jianghuai Communication section of the diversion project (Anhui section) from Yangtze River to Huaihe River.

四航研究院承担的安全监测包括以下内容: 水位监测、垂直位移监测、水平位移监测、相邻块体错动监测、船闸扬压 力和地基反力监测、绕闸渗流监测、钢筋混凝土结构应力监测、闸墙水土压力监测、施工期宽缝监测、船闸水力学监测。 CCCC 4th Harbor Institute undertook the safety structure monitoring including water level monitoring, vertical displacement monitoring, horizontal displacement monitoring, adjacent block displacement monitoring, ship lock pressure and ground reaction monitoring, gate seepage monitoring, reinforced concrete structural stress monitoring, gate wall water and soil pressure monitoring, wide seam monitoring during construction and lock hydraulics monitoring.



广明高速公路高边坡治理工程

High slope improvement engineering of Guangzhou Gaoming Highway

四航研究院开展高边坡动态施工技术及运营期安全监控、预警系统研究,研 制了监测数据的无线传输及设备远程控制模块,实现了数据的远程无线接收、数 据共享、网络化管理、实时分析及预警。

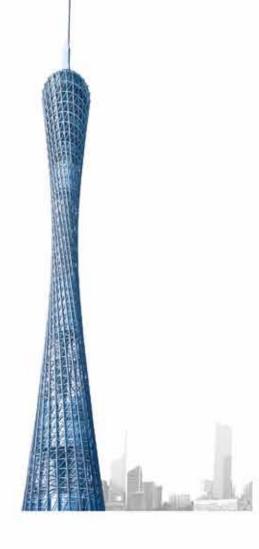
CCCC 4th Harbor Institute carried out research on technologies of high slope dynamic construction, safety monitoring during operation and early warning system. It also developed technology of data-monitoring wireless transmission and equipment remote control module. These put data remote wireless receiving, data sharing, network management, real-time analysis and pre-warning into practice.

广州新电视塔外部钢结构防腐涂装

Painting work of the external steel of Canton Tower

广州塔总高度为618米,外部钢结构复杂,不规则,呈双曲面等特性。四航研 究院结合广州新电视塔的工程实际,设计制造出了适用于广州塔的专用吊篮和单人 电动吊椅,并相应制定出完善的施工方案,圆满完成外部钢结构的涂装工作。

The total height of Canton Tower is 618m, and its external steel is complex, irregular, hyperboloid, etc. Basing on actual situation of Canton Tower, CCCC 4th Harbor Institute designed and constructed dedicated basket and single electric chair for Canton Tower. The Institute also developed a complete construction plan and successfully completed the painting work of the external steel structure of Canton Tower.



Scientific Research Strength

沙特JEC港疏浚与回填工程地基检测、施工勘察和降水设计

Ground detection, construction monitoring and precipitation design for dredging and filling engineering of JEC Port in Saudi

四航研究院对沙特JEC港疏浚与回填工程项目开展了相关地基与基坑设计、咨询业务,工作内容包括了基坑降水设计、进水渠边坡 稳定优化、基坑安全监测、项目地质勘察及地基检测等。为项目的工程质量和经济效益提供了有力的保障。

CCCC 4th Harbor Institute carried out the design and consultation of relevant foundation and foundation pit, including the design of foundation pit precipitation, optimization design for slope stability of inlet canal, monitoring of foundation pit, engineering investigation and ground detection. We provide high quality technical services to our clients to guarantee the quality and economic benefits.







蒙内铁路马泽拉斯特大桥施工监控

Construction monitoring of Mazeras Super Major Bridge in the Mombasa-Nairobi Standard Railway

四航研究院负责大桥的施工监控工作,并开展桥梁施工全过程 与关键控制参数分析研究,为桥梁施工安全和质量提供技术支撑。

CCCC 4th Harbor Institute was responsible for the bridge construction monitoring and carried out analysis and research of the whole process of bridge construction and key control parameters to provide technical support for the bridge construction safety and quality.

东帝汶帝巴湾新集装箱码头项目 地基处理咨询与检测技术服务

Consultation and detection of ground treatment of new container wharf of Tibar harbor, East Timor

东帝汶帝巴湾港是东帝汶建国以来规模最大的港口项目,四 航研究院主要开展了岩土补充勘察咨询、地基处理咨询与检测、 堆载预压监测、广州港湾试验室的授权及管理等与岩土、地质相 关的技术咨询工作。

Tibar Port Project is the largest port project in Timor-Leste since the founding of Timor-Leste. CCCC 4th Harbor Institute mainly carried out geotechnical and geological related technical consulting work, such as geotechnical additional investigation and consultation, ground treatment consultation and inspection, preloading monitoring, authorization and management of Guangzhou Harbor Laboratory.

中交四航局拉姆港1-3号泊位工程桩基检测

Pile foundation testing for no. 1–3 Berth of Lamu Port, CCCC Fourth Harbor

拉姆港1-3号泊位位于肯尼亚东北部的曼达湾,该项目由肯尼亚政府 全额资助。研究院主要负责桩基础结构的技术服务和咨询,为桩基设计优 化提供依据,为沉桩施工提供指导,保证沉桩施工的顺利进行。

Scientific Research Strength

No. 1–3 Berth of Lamu Port, located in Manda Bay, Northeast of Kenya, is fully funded by Kenya government. CCCC 4th Harbor Institute mainly undertook technical service and consultation of pile foundation. These contributes to the optimization of pile foundation design, provide guidance for pile driving engineering, and give tremendous assistance to guarantee the smooth progress of pile driving construction.





科特迪瓦阿比让港口扩建项目码头胸墙混凝土结构裂缝控制

Crack control of concrete structure of pier parapet in Cotedivoire-Abidjan Port expansion project

针对科特迪瓦阿比让港口扩建项目码头胸墙裂缝问题,四航研究院认 真分析产生裂缝的原因,提出了胸墙增加抗裂网格、采取保温保湿及砂浆 缓冲层等系列控裂措施,优化了冷却水管布置及混凝土浇筑工艺。最终, 胸墙混凝土裂缝数量大幅减少,面层混凝土未出现有害裂缝。

In response to the crack in the pier parapet of the Cotedivoire–Abidjan Port expansion project, a series of crack control measures such as adding anti–crack mesh to the parapet, adopting heat preservation and moisture preservation and mortar buffer layer and optimizing cooling water pipe layout and concrete casting process after carefully analyzed the causes of the cracks. Finally, the number of concrete cracks in the parapet wall was greatly reduced, and no harmful cracks appeared in the surface concrete.



卡塔尔多哈新港码头地基处理咨询、设计与检测技术服务

Ground treatment consulting, design and detection of new pier engineering of Doha Port in Qatar

四航研究院对卡塔尔多哈新港码头及内防波堤工程项目地基处理工程开展相关地基处理设计、咨询以及相关的检测业务;港池开挖过程的安全风险监控;码头墙施工过程的旋转与沉降评估、基槽承载力的勘探与评价、港池开挖料的回填适宜性分析等。

CCCC 4th Harbor Institute carried out design, consultation, and the relevant detection services of the ground treatment of inner breakwater engineering project and the new pier engineering of Doha Port in Qatar, including safety risk monitoring during excavation of harbor basin, evaluation of rotation & settlement during pier wall construction, exploration & evaluation of bearing capacity of foundation trench, analysis on the suitability of excavation material backfill in harbor basin, etc.



四航研究院承担了项目经理部与疏浚吹填、地基处理相关的地质和岩土专项技术咨询服务,具体为项目疏浚吹填、砂料吹填提供了相关的质量控制方案、吹填区砂料地质分析报告、协助建立了CPT与压实度关系指标并进行优化、协助地基处理施工工艺与检测技术管理,此次咨询的顺利完成确保了吹填砂土质量与地基处理的顺利验收。

CCCC 4th Harbor Institute is responsible for the geological and geotechnical consulting services related to dredging and reclamation and ground treatment, such as offering related quality control scheme for dredging and reclamation and sand reclamation, sand reclamation area geological analysis, assisting to establish and optimize relationship index between CPT and compacting degree and assisting the construction technology for ground treatment and detection technology management. The successful completion of the consultation ensured the quality of the filling sand and the smooth acceptance of the ground treatment.



Scientific Research Strength

四航研究院始终秉承"科技创造价值"的理念,积极推广科技创新成果的应用和转化,将各项新技术和新材料充分应用于地基处 理、高边坡治理与生态修复、深基坑支护、城市综合体建设、防腐和维修加固等多种工程项目,创造了良好的经济价值和社会效益。

CCCC 4th Harbor Institute keeps sticking to the concept of "Create Value with Science and Technology". It actively promotes the application & transformation of scientific & technological innovation achievements and has fully applied various new technologies & new materials to various engineering projects such as ground treatment, high slope treatment, ecological restoration, deep foundation pit support, urban complex construction and anti-corrosion, maintenance and reinforcement.It has created great economic value and social benefits.

中交汇通 · 横琴广场基坑支护及桩基础工程

CCCC Huitong Hengqin Square Foundation Pit Support and Pile Foundation Engineering

基坑支护采用"旋挖钻孔灌注桩+三道砼"支撑,外侧采用三轴水泥搅拌桩止水,桩基础工程采用旋挖钻孔灌注桩。

The excavation pit was supported by churning driven cast-in-place pile & three-concrete. The outboard was sealed up by three-shaft cement mixed pile and churning driven cast-in-place pile was used for pile foundation.



澳门友谊大桥混凝十涂层防腐工程

Concrete coating engineering for anticorrosive of Macau Friendship Bridge

国内最早将涂层防腐技术应用在跨海大桥混凝土构 件,涂装面积达28万m²。

It is the first in China to use technology of coating for anti-corrosive for cross-sea bridge concrete units. The coating area was 280,000m².



巴基斯坦瓜达尔港口施工工程

Construction engineering of Pakistan Gwadar Port

2002年援巴基斯坦瓜达尔港口一期工程第一标 段施工工程, 软基处理工程总面积为41万m², 荣获 "鲁班奖"。

In 2002, the company supported Pakistan Gwadar Port Phase I Section 1 Project. Area of the soft ground improvement was 410,000m² and Luban Award was issued.



惠州市G324线东江大桥维修加固工程

Remedial & Strengthening Engineering of G324 Dongjiang Bridge in Huizhou City

主要对右半幅桥水下基础加固及全桥上部结构 加固,采用水下混凝土技术、注浆、裂缝修补等维 修加固措施。

Mainly strengthening for the right part of underwater foundation and the upper part of the whole bridge, with strengthening measures of underwater concrete technology, slip casting, crack repairing, etc.





国际交流与合作 International Commuication







- 1.承办第三届基础设施服役寿命设计国际会议
- 2.主办第一届国际海洋工程暴露试验国际研讨会
- 3.参加中国交建第二次中法建筑新材料及建造新技术学术交流会
- 4.参加第八届国际环境土工大会
- 5.参加第二届纤维增强海水海砂混凝土结构国际研讨会参加
- 6.参加Geoshanghai国际会议

- 1. Organization of the 3rd International Conference on Service Life Design for Infrastructure
- 2. Hosting the 1st International Symposium on International Marine Engineering Exposure Testing
- 3.Participating in the 2nd Sino-French Academic Exchange on New Construction Materials and New Construction Technology
- 4. Participating in the 8th International Conference on Environmental Geotechnical Engineering
- 5.Participating in the 2nd International Symposium on Fiber-reinforced Seawater & Sea Sand Concrete Structures
- 6. Participating in Geoshanghai International Conference















1.参加中山大学举办的首届"土木工程珠海论坛" 2.参加第十届全国土动力学会议 3.参加第十三届全国土力学及岩土工程学术大会 4承办广东省2017年工程材料与结构耐久性技术研讨会.

1.Participating in 1st Zhuhai Forum on Civil Engineering held by Sun Yat-sen University
 2.Participating in 10th National Conference on Soil Dynamics
 3.Participating in 13th National Academic Conference on Soil Mechanics and Geotechnical Engineering
 4.Hosting 2017 Guangdondg Technical Seminar on Engineering Materials & Structural Durability



5.参加广东省岩土力学与工程学会2019年学术大会暨学会理事会议 6.承办中交四航局结构技术梯队交流会 7.承办中交四航局建材技术梯队交流会 8. 承办中交四航局岩土技术梯队交流会

5. Participating in 2019 Academic Conference & Council Meeting of Guangdong Association of Geotechnical Mechanics and Engineering 6.Hosting CCCC Fourth Harbor Structural Technology Echelon Exchange Meeting 7. Hosting CCCC Fourth Harbor Construction Materials Echelon Exchange Meeting 8. Hosting CCCC Fourth Harbor Geotechnical Echelon Exchange Meeting









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- 1.开展党员活动
- 2. 参加广东省直单位技能大赛
- 3. 举行第四次团代会
- 4. 承办梁卓仁劳模创新工作室技术交流活动
- 5. 举行职工代表大会











- 1. Carrying out Party member activities
- 2. Participating in Guangdong Provincial Units Skills Contest
 - 3. Hosting 4th Youth League Congress
- 4.Hosting Technical Exchange Activity ofInnovation Studio of
 Model Worker Liang Zhuoren
 5.Hosting Staff Congress

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- 1.开展新员工拓展训练
- 2.开展健步走活动
- 3.开展"六一"亲子活动
- 4.参加四航局集体婚礼
- 5.选派科研骨干到瑞士洛桑联邦理工学院开展学术访问交流











1.Carrying out extended training for new staff
2.Carrying out brisk walking activity
3.Carrying out Children's Day parent-child activities
4.Participating in CCCC Fourth Harbor group wedding ceremony
5.Selecting scientific research backbone to carry out academic exchanges at the Federal Institute of Technology in Lausanne,Switzerland

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- 1. 到敬老院开展关爱老人活动
- 2. 参加义务献血
- 3. 捐助云南省广南县莲城镇坝旺落地松贫困小学







- 1. Caring for the elderly in nursing home
- 2. Participating in voluntary blood donation
- 3. Donation for the poverty primary school in Luodisong, Bawang, Liancheng Town, Guangnan County, Yunnan Province



科技团队 Technology team Technology team 科技团队







工艺研究所成立于四航局科技整合与研究院重组改革之际,旨在凝聚力量加强工艺技术研发,进一步增强科技引领与主业支撑能力。

工艺所求真务实,开拓创新,重点开展科技研发、技术提升、价值创造等方面的工作。

工艺所牵头开展了"水下深层水泥搅拌法(DCM)软基处理成套施工技术研究及应用"、"中长周期波浪条件下工程船舶水上作业的适 用性研究"等四航局战略课题的研发工作,研究成果对四航局承建的香港国际机场第三跑道、深中通道、陆丰甲湖湾电厂、加纳特码港扩建 等项目的经营或实施提供了有效支撑。结合行业发展趋势与四航局主营业务经营需要,工艺研究所也在对水环境、海上风电、装配式建筑等 拟立项的重大课题深入开展工程需求调研及相关理论与技术研究,科学策划,努力实现"前沿储备、产研结合,为企业创造效益"的目标。

Research Laboratory for Construction Technology was established coinciding with the integration of science & technology in CCCC Fourth Harbor and the reform of restructure in CCCC 4th Harbor Institute. It is expected to gather strength to focus on research and development of technology, so as to further enhance the sci-tech leading ability and provide strong support for the main business.

Research Laboratory for Technology concentrating on the work involving research & development of science and technology, technique updating and value creation for engineering project with the attitude of being pragmatic, pioneering and innovative. Research Laboratory for Technology has led the research & development of strategic projects such as "Research and Application of Complete Deep Cement Mixing Technology for Improving Underwater Soft Ground" and "Study on Operation Applicability of Engineering Ships under Sea Condition with Medium and Long Period Waves". The research achievements have efficiently contributed to the operation and implementation of the project contracting business of CCCC 4th Harbor, including Hong Kong International Airport Three-Runway System (Reclamation works), Shenzhen-Zhongshan Bridge, Lufeng Jiahuwan Power Plant, and Expansion of Tema Port in Ghana. Besides, combining with industry development trend as well as business needs of CCCC 4th Harbor, Research Laboratory for Technology is also working on the research proposals involving water environment, offshore wind plant, and prefabricated building by carrying out in-depth survey of engineering demands and corresponding theory and technology. With scientific planning, we are striving to achieve the goal of reserving advanced technology, combining production and research, and creating benefits for enterprise.

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建筑材料研究所集科研、检测监测、技术咨询业务于一身,长期从事工程建筑材料、水工建筑物耐久性、工程建造品质 保障与结构物检测监测评估等领域的研究与应用工作,工程结构耐久性研究达到行业领先水平。

建材所始终秉持科技创新,先后承担国家科技部、交通运输部、广东省等国家及省部级科研项目30余项,主编参编国 家、行业、地方和团体标准30余项。面向行业需求,广泛开展高性能混凝土及特种混凝土配制与应用、工程施工质量控制、 混凝土结构温度应变监测及裂缝控制、混凝土及钢结构健康监测、检测与评估预警、钢结构和混凝土结构的防腐蚀设计咨 询、混凝土外加剂及外观美化防腐材料等功能型环保工程材料研发等业务。

Focusing on scientific research, detection and monitoring and technical advice, the Research Laboratory for Construction Materials has long been engaged in research and application of construction materials, hydraulic structures durability, construction quality assurance, testing, monitoring and evaluation of structure and so on. The research of engineering structure durability has reached the leading level in the industry.

Insisting on technological innovation, the institute has undertaken more than 30 provincial and ministerial level scientific research projects of Ministry of Science and Technology, Ministry of Transport, Guangdong province and so on. It has edited and participated in more than 30 standards includes national standard, industrial standard, local standard and group standard. Facing the industry needs, Research Laboratory for Construction Materials widely develops business including preparation and application of high performance concrete and special concrete, engineering construction and quality control, temperature strain monitoring and crack control of concrete structure, health monitoring and detection and warning evaluation of concrete and steel structure, design consulting for anticorrosion of concrete structure and steel structure and R&D of concrete admixture, appearance beautifying anticorrosive material and other functional environmental protection engineering materials.

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结构工程研究所长期专注于科技开发、检测监测、评估鉴定、技术咨询业务,在桩基检测技术、码头与桥梁检测评估技术、 结构与水动力数值仿真技术、工程施工控制技术等领域的研究与应用拥有雄厚的实力。

结构所坚持新技术开发与应用,承担了数十项国家科技部、交通运输部、中国交建、广东省、广州市和中交四航局等不同层次的重大科技攻关项目,主编参编行业、地方和团体标准近20项,取得了一系列重大科研成果。面向行业与中交集团和四航局主业技术需求,在国内十几个省及亚非美国家广泛开展桩基检测与咨询、水工构造物检测评估与鉴定、桥梁与地下空间结构监测及检测、结构与水动力数值仿真分析、工程(桥梁、水工结构、船舶等)施工监控与咨询等业务。

Research Laboratory for Structure Engineering has been focusing on R&D, detection & monitoring, assessment & appraisal and technical consulting for long time. It has power strength in pile foundation testing technology, inspection and evaluation technology of wharf and bridge, numerical simulation of structure and hydrodynamics and construction control, etc.

Research Laboratory for Structure Engineering insists on the development and application of new technologies. It has undertaken many key scientific and technological projects from Ministry of Science & Technology, Ministry of Transport, CCCC, Guangdong Province, Guangzhou City, CCCC Fourth Harbor, etc. and edited & participated in nearly 20 industry, local and group standards. A series of major scientific research achievements have been achieved. Oriented to industry and main industry technical requirement, the laboratory expended its business in more than 10 provinces in China and several countries in Asian, Africa and America. These technical and consulting services include inspection and pile foundation detection and technology consulting, inspection, evaluation and appraisal of hydraulic structure, inspection and monitoring measurements of underground space structure and bridges, structure and hydrodynamics numerical simulation analysis and construction monitoring and consulting of bridge, hydraulic structure and ship.

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环境生态岩土工程研究所 Research Laboratory for Environmental & Ecological Geotechnical Engineering



环境生态岩土工程研究所是专门从事地基处理、基础工程、基坑工程、地下空间结构工程、工程环保与安全等以工程应用为主的研究所,是中交交通基础工程环保与安全重点实验室和广东省港口工程技术研究开发中心的主要基地。

岩土所紧密结合四航局及中交集团主业,立足粤港澳大湾区,服务全球重大工程,形成了以地基处理为主、基坑工程为辅的地基基础工程核心技术。主要业务范围涵盖水运、公路、房建、市政、水利、铁路等行业,主要开展地基处理设计与咨询、地基基础工程监测检测、基坑支护设计与咨询、基坑及地下空间工程施工监控、岩土工程施工仿真分析等技术服务;工程业绩遍布国内华南、华东、华北、西北及港澳地区,并延伸至越南、东帝汶、科威特、沙特、卡塔尔、埃及、几内亚、喀麦隆、斯里兰卡等"海上丝绸之路"沿线国家。

Research Laboratory for Environmental & Ecological Geotechnical Engineering is a research institutio focusing on engineering application including ground treatment, foundation engineering, foundation pit engineering, underground structure engineering and environment protection and safety of engineering. It is also an important R&D base of CCCC Key Laboratory of Environment Protection & Safety in Foundation Engineering of Transportation and Harbor Engineering Technology Research and Development Center in Guandong Province.

Closely combined with the main business of CCCC and Fourth Harbor Engineering Institute Co.,Ltd, Research Laboratory for Environmental & Ecological Geotechnical Engineering is based on Guangdong-Hong Kong-Macao Greater Bay Area and serves major global engineering. The core technology of foundation engineering is formed, which is mainly based on ground treatment and supplemented by foundation pit enginnering. Its main business scope includes design & consultation of ground treatment, monitoring & detection of ground treatment, design & consultation of foundation pit, construction monitoring of foundation pit and underground engineering, simulation analysis of geotechnical engineering construction and other technical service for port & waterway, road, housing building, municipal works, hydraulic engineering, railway and others. The Laboratory has achieved good results in South China, East China, North China Northwest, Hong Kong and Macao. In addition, its business is now being expanded to overseas countries including Vietnam, East Timor, Kuwait, Saudi Arabia, Qatar, Egypt, Guinea, Cameroon, Sri Lanka and other countries along the Maritime Silk Route.

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工程勘察所是集岩土工程勘察、地球物理勘探、工程安全监测、地质灾害调查、技术咨询、设计、科技研发于一体的综合性专业研究所,是中交交通基础工程环保与安全重点实验室主要组成部门。

勘察所始终坚持实践与科研相结合的方针,业务足迹遍布海内外,在灰岩区隧道溶洞探测技术、灌注桩桩基基底溶洞探测技术等领域均处于行业领先。勘察所始终秉持"为员工创造发展机会,为工程提供科技支撑"的价值理念,不断提升自我,开拓前行,坚持为社会提供更优质、专业、公正、高效的技术服务。

Research Laboratory for Engineering Investigation is a comprehensive professional research institute whose business includes geotechnical investigation, geophysical exploration, engineering safety monitoring, geological disaster survey, technical consultation, engineering design, and scientific research and development. It is also a main department that constitues CCCC Key Laboratory of Environment Protection & Safety in Foundation Engineering of Transportation.

Since its establishment, Research Laboratory for Engineering Investigation has always adhered to the principle of combining practice with scientific research and its business footprint has spread all over the world. It is the leader in the directions of tunnel cavern detection technology in limestone area, case—in—place pile foundation cavern detection technology, etc. In the future, Research Laboratory for Engineering Investigation will continue to uphold the value concept that creating development opportunities for employees and providing technical support for projects. The laboratory will continuously improve itself, develop forward and strive to provide quality, professional, fair and efficient technical services for the society.

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广州港湾工程质量检测有限公司 Guangzhou Harbor Engineering Quality Inspection Co., Ltd



科技团队

Technology team



广州港湾工程质量检测有限公司(以下简称检测公司)是研究院代管的隶属于四航局的具有独立法人地位的工程质量检验检测和仲裁的检验检测机构。检测公司于1995年10月通过了国家技术监督局计量认证;1997年8月首次取得交通部建设工程试验检测机构"甲级"水运工程试验检测资质;2004年1月获得了水运工程材料甲级、水运工程结构甲级证书;2009年3月获得实验室认可证书;2009年12月通过了广东省住房和城乡建设厅的资质备案;2011年2月获得公路工程桥隧专项证书;2018年5月获得公路工程综合乙级证书。到目前为止,检测公司具备在全国范围内承担水运工程、桥隧工程、公路工程、市政工程、铁路工程、房屋建筑等质量检验检测以及接受委托承担其他建设工程质量检验检测的资格。检测公司已具备在资质认定范围内向社会提供具有公正性和合法性检测数据的能力。

Guangzhou Harbour Engineering Quality Inspection Co., Ltd. (hereinafter referred to as the Inspection Company) is an independent legal person entity of engineering quality inspection and arbitration inspection and testing institution. The company passed the measurement certification of the State Bureau of Technical Supervision in October 1995; In August 1997, it first obtained Class A qualification of port and waterway engineering test & detection institution of Ministry of Transport. Certificate of Grade A for water transport engineering materials and structure of water transport engineering was obtained in January 2004; Acquired Laboratory Accreditation Certificate in March 2009; the qualifications of the Housing and Urban–Rural Construction Department of Guangdong Province were approved for filing in December 2009; obtained Special Certificate of Highway Engineering Bridge and Tunnel inFebruary 2011; obtained Highway Engineering Comprehensive Grade B Certificate in May 2018; Up to now, the company has the qualification to undertake the quality inspection and testing of water transport engineering, bridge and tunnel engineering, highway engineering, municipal engineering, railway engineering, housing construction and other construction projects in the whole country, as well as to accept the commission to undertake the quality inspection and testing of other construction projects. We have the ability to provide the society with fair and legitimate testing data within the scope of qualification recognition.

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