

城市道桥与防洪

主管：中华人民共和国住房和城乡建设部
主办：上海市政工程设计研究总院(集团)有限公司



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7 2013 July 总第171期

中国学术期刊综合评价数据库统计源期刊 中国期刊全文数据库全文收录期刊
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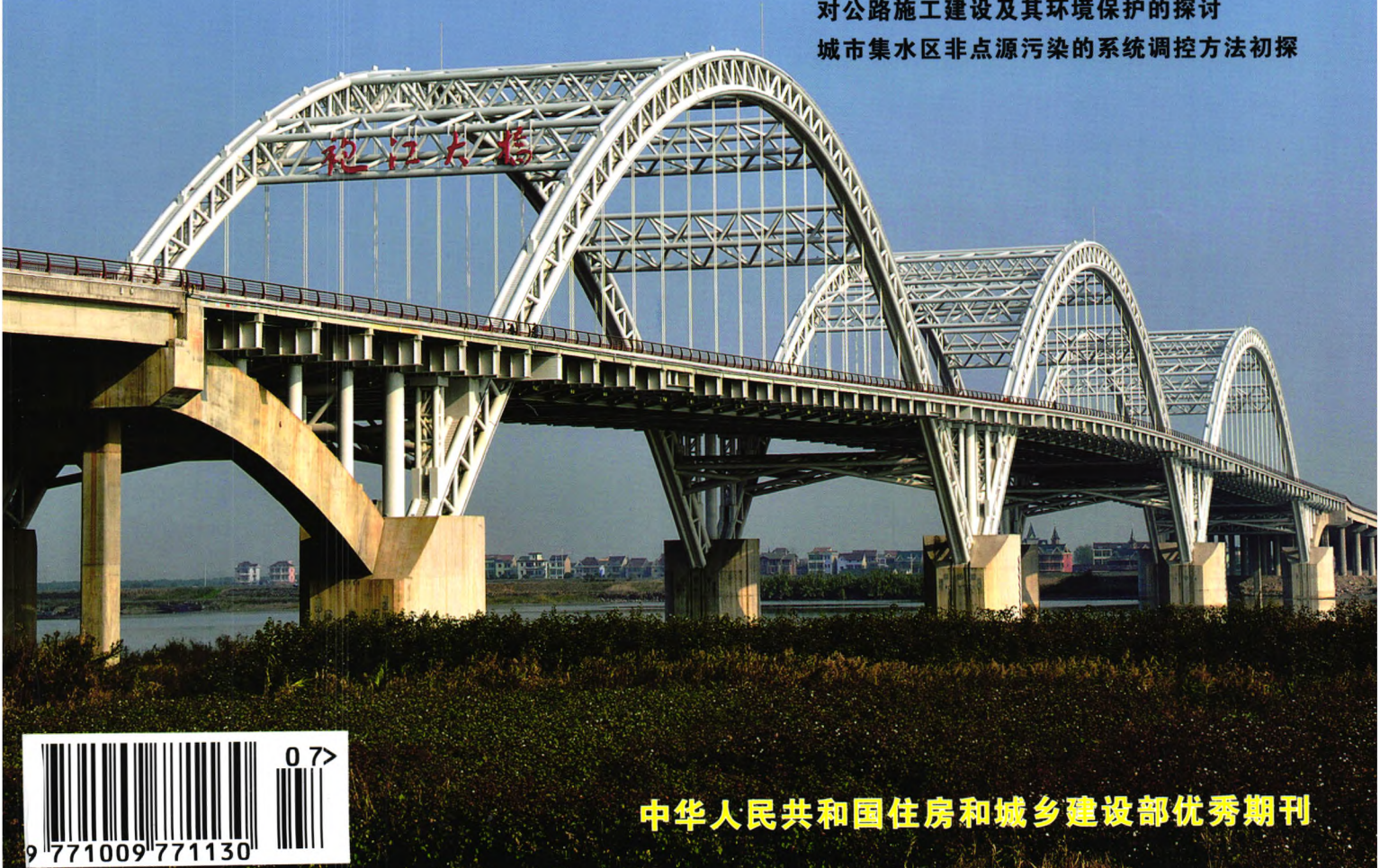
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——《城市道桥与防洪》

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- 南宁市南北快速路总体方案设计
- 匈牙利城市桥梁建设一瞥
- 对公路施工建设及其环境保护的探讨
- 城市集水区非点源污染的系统调控方法初探



中华人民共和国住房和城乡建设部优秀期刊

中华人民共和国住房和城乡建设部优秀期刊

城市道桥与防洪 (月刊)

CHENGSHI DAOQIAO YU FANGHONG

2013年 第7期 (总第171期)

2013年 7月 15日 出版

1984年 创刊

主管: 中华人民共和国住房和城乡建设部
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出版: 《城市道桥与防洪》编辑部

总编辑: 骆燕妮

责任编辑: 叶露

编辑: 周盛伟 杨建华

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电话: (021) 51298850 传真: (021) 51298850

来稿邮箱: cdq@smedi.com

国外发行: 中国国际图书贸易总公司 代号: BM 1859

排版印刷: 上海竟成印务有限公司

地址: 上海市纪念路 500 号 邮编: 200434

中国标准连续出版物号: CN 31-1602/U

广告许可证号: 3101020080007

目次

道路交通

- 南宁市南北快速路总体方案设计 黄晓清(1)
- 昆明南连接线高速公路工程总体设计 宋乔(6)
- 柳州市快速公交系统(BRT)的应用研究 武立新(11)
- 高速公路与快速路功能标准对比分析 李军(15)
- 市政道路可研中节能分析工作的改进建议 ... 李文栋(18)
- 高速公路与供水干线共线路段的设计 李超(21)
- 旅游区配套交通设施布局设计——以欢乐谷配套交通项目为例 马海峰(26)
- “美丽交通风景线”——大连长兴岛道路景观营造 邵奕敏(29)
- 对公路城市化改造的认识 沙亮(33)
- 高速公路拓宽设计难点浅析 徐梅, 郑杰(35)
- 湿陷性黄土地基不同处理措施流变分析 董晓亮(39)
- 关于宁波市环城南路快速路高架横断面的设计探讨 徐心(42)
- 生态水源地工程路面结构的选择——以盐城市区饮用水源生态净化工程为例 韩海潮(44)
- 格栅加强沥青路面结构设计分析 赵艳红(46)
- 砂岩在老挝琅勃拉邦机场道面基础工程中的应用研究 陈定中(49)
- 桥涵构筑物钢筋加工工厂化及机械化在高速公路建设中的推广运用 林鸿仁(52)

桥梁结构

- 匈牙利城市桥梁建设一瞥 穆祥纯(55)
- 沪杭高速公路桥改建工程总体设计特色与技术创新 汤岳飞(61)
- 兰州市深安黄河大桥设计 范佐银(66)
- 大跨度中承式拱桥结构体系 ... 冯希训, 徐利平, 张丛(69)
- 自锚式悬索桥主塔稳定计算方法及影响因素分析 宋凯(73)
- 混凝土自锚式悬索桥主缆锚固区应力分析 文清良, 廖东阳(76)
- (65+100+65)m钢-混组合连续梁下部结构抗震性能分析 雷艳妮(78)
- 铅芯橡胶支座与板式橡胶支座抗震计算对比 亢晓亮(84)
- 钦州子材大桥设计关键参数研究 万鹏, 马磊, 袁建兵(86)
- 钢-混凝土组合弯梁桥设计计算实例 廖莲姣(89)
- 某景观人行桥的结构设计及计算分析 陈何峰(93)
- 深圳地铁11号线高架桥简支箱梁设计计算 ... 谢丹(96)
- 绍兴市迪荡湖环湖桥梁总体设计 胡继铭, 陈亮, 王志君(100)
- 北城大桥景观设计 曹宏, 刘钢波(104)
- 拉萨市人行景观天桥设计 李超(106)
- 双拱式独塔斜拉桥设计与施工 杨虎根, 李显潮(109)
- 跨海大桥装配式栈桥结构与施工 ... 蔡田, 吴凯军(113)
- 装配式预应力鱼腹梁内支撑系统的利与弊 刘发前, 卢永成(117)

期刊基本参数: CN 31-1602/U * 1984 * m * A4 * 376 * zh * P * ¥ 18.00 * 10000 * 117 * 2013-07

暗挖电力隧道对邻近既有桥梁桩基的影响分析 姬永红,冯栋梁(119)

70 t跨线移动龙门吊设计计算 董柏富(122)

防洪排水

城市集水区非点源污染的系统调控方法初探 吕永鹏(126)

城市排水系统中初期雨水调蓄池的设计探讨 金敦(130)

负压收集系统在角直农村污水收集工程中的应用设计 仲明明(133)

上海白龙港污水处理厂污泥厌氧消化工程运行调试 魏海娟(136)

浅谈曝气沉砂池的设计与运行 杨琨(140)

COD快速测定质量控制方法研究 陈帅(142)

管线穿越水库重力堤的设计研究 毛炜(145)

浅谈地下工程运行期防汛安全措施 汤红亮(149)

连锁型水工砖和机织模袋混凝土在城市防洪中的联合运用 杨天祥,王京京(151)

浅析给水管网几种清洗技术的原理及应用 韩晓曦(153)

无锡市惠联垃圾发电厂长距离污水压力管道设计 张开顺,蒋岚岚,蔡丹新(155)

美洲三国城市建设拾零与联想 吴立群(157)

浅谈新加坡的雨水综合利用系统 潘丽娟(160)

管理施工

对公路施工建设及其环境保护的探讨 叶红福(162)

沥青混凝土路面施工质量均匀性检测与研究 郑辉娟,周国强,陈杰(165)

橡胶沥青在市道路改造工程中的施工控制探讨 吴国有,童姝娟(168)

灰土挤密桩在湿陷性黄土地区客运专线梁场地基处理中的应用 康艳飞(171)

冲击钻破除障碍确保桩基施工质量 叶圣宏,闵振寰(175)

当前路桥沉降段路基路面施工技术探究 --- 马丽莎,尹晔(178)

秋石快速路高架桥钢箱梁液顶推平移法施工关键技术 王伟业(181)

螺洲大桥钢箱梁顶推施工关键技术 杨灿宣(186)

宁波北环一体化高架叠合梁施工关键技术 丁晓威,蒋晓孟,冀昀(189)

奉化江大桥双肢拱肋安装精度控制 吴波,孙石超(192)

装配式钢吊箱在高桩承台施工中的应用 --- 吴凯军,蔡田(195)

预应力混凝土连续梁的合龙关键技术分析 张强(200)

渤海大桥V墩及0号段施工控制技术 张昕(202)

悬臂施工中预应力技术探讨 杨新应(205)

跨越城市道路现浇箱梁的施工工艺 孙石超,吴波(207)

超大跨径斜拉桥钢结构疲劳监测与评估 何江(209)

桥梁梳齿板伸缩缝维修探讨 茅卫生(214)

移动模架施工桥梁安全分析 刘炎(216)

东海大桥承台混凝土套箱分块拼接施工安全分析 黄向平,莫景逸(219)

连续梁悬臂施工临时固结设计与检算 丁东(222)

有关公路桥梁沉降段路基路面的施工技术研究 何杨阔,傅程辉(224)

锚碇基坑嵌岩地下连续墙施工监测研究 丁玉平(227)

斜桥、弯桥后张法T梁预制技术与控制 陈林兴(229)

桥梁单片梁试验方法及注意事项 李济民(233)

浅谈空心板简支梁桥面铺装病害成因分析及加固维修对策 范秀萍,刘康康(235)

浅议关于高等级公路桥头跳车的问题 贾志忠(238)

试论现代市政道路给排水管道工程的施工 白玉斌(240)

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保定市城乡规划设计研究院

隧道防排水施工技术	李汉忠(242)
基坑勘探孔诱发的管涌处理	陈磊(247)
玻璃钢加砂管在福建南安沿海三镇供水工程中的应用	程思胜(251)
大型越江隧道地下连续墙墙身质量修复方案探讨	陈慧芳(253)
浅述市政路桥工程的施工质量管理	黄翠眉(257)
市政道路施工协调性管理处理探析	张宏(259)
浅议工程投标策略与技巧	查永梅(261)
公路工程招投标阶段的风险分析与管理的浅析	房启军(263)
议投资方在市政BT项目施工阶段的投资控制	谭鹏程(266)
合同外新增价格的核定	刘妍(269)
上海市普通货运交通安全运营管理分析及改善措施	罗诗立(271)

科技研究

甬台温高速公路分水关超长上坡路段车辙处治技术研究	杨朝辉,温腾,陈浙涛(276)
平曲线半径与横向力系数关系研究	虞华(280)
慢行交通系统基础设施评价研究	何帆(282)
复式收费通道串联收费亭开启数量优化研究	史永超(284)
基于交通量荷载调查的斜拉桥疲劳损伤研究	王鸣军(287)
曲线梁部分斜拉桥空间性能分析研究	朱琴忠,王立新,高波,戴捷(291)
蝴蝶拱空间受力特点及承载能力研究	吴朴,胡欣科,谢旭(295)
钢结构稳定问题综述	张永康,高晓明(299)
颗粒分析试验成果影响因素分析	刘学芹(304)
嵌岩桩桩端以下基岩持力层最小厚度探讨	刘福东(306)
浅析钢材拉伸试验结果测量不确定度评定	黄金福(310)
氧化沟工艺处理低碳污水脱氮潜力的研究	李震,蒋玲燕,吕燕,胡启源,姚峥(312)

成果应用

基于GPRS单基站RTK技术的研究与应用	姚龙龙(317)
无核密度仪(PQI)在道路工程领域的应用现状	林春梅,潘洋(322)
低噪声透水沥青路面在湿热地区市政道路中的应用	徐波,傅春秀(326)
高性能混凝土在高架桥上的应用	李显潮,伍二发(332)
骨架格构梁三维网喷播植草技术应用	陈晓娟(335)
散射成像法在后张法预应力孔道压浆质量检测方面的应用效果分析	李斌,王成(337)

相关专业

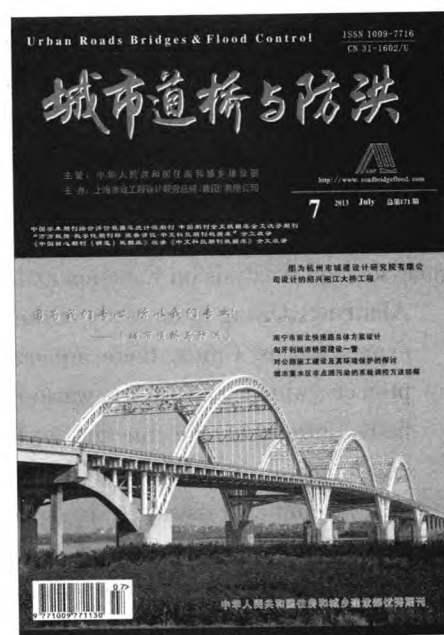
小波分析在地震工程中的应用	郑永阳(340)
高压单级离心鼓风机电容补偿容量计算	梁荣欣(342)
郑州市京广北路隧道设计综述	李选栋,中国朝(344)
一种新的隧道围岩稳定性判断基准的提出和应用	王玉文,李宁军(348)
浅析隧道衬砌混凝土裂缝的原因及其防治	何智钢,谭超(351)
土压平衡盾构刀盘中心回转接头修复技术	劳懿斌(354)
预留盾构穿越的非对称地下结构设计	华中良(357)
混凝土柱钢梁结构在污泥处理厂房中的应用	许怡(360)
浅谈综合管廊在市政工程中的设计应用	邓惠晗(362)
关于建设用地土方工程若干问题的探讨	杨玉奎(366)
某加热保温箱型钢钢筋混凝土厌氧发酵罐的结构设计浅析	郑中华(370)

工作探索

项目管理公司职工教育培训工作的探索与实践	顾放曙(374)
----------------------------	----------

广告索引

- 封一 杭州市城建设计研究院有限公司
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Urban Roads, Bridges & Flood Control

(Monthly)

Number 7, 2013(Total Number 171)

CONTENTS

ROADS & COMMUNICATION

Design on Master Scheme of South-North Expressway in Nanning Huang Xiaoqing (1)

Abstract: The article introduces the design on the master scheme of the South-North Expressway in Nanning. The master scheme makes clear the functional position and the service object of the South-North Expressway in the planned road network of Nanning city. The article demonstrates the main technical standard and construction scale, puts forward the master layout scheme of the whole line, and focuses discussion on the paving form of expressway, setting up of interchange node and ramp, and spanning node scheme of Yongjiang River, which can be referred for the similar projects.

Keywords: South-North Expressway in Nanning, master design, expressway form, design of grade separation, setting up of ramp

Master Design of Kunming South Connection Line Expressway Project Song Qiao (6)

Abstract: The article briefly introduces the master design of Tianjin Binhai New Area Qingfang Avenue Project, and sums up the key technical issues of this project in detail. The relative experience can be referred for the similar projects.

Keywords: widening reconstruction project, master design, treatment of key technical issues, different settlement of new and old roadbeds, foam light soil, Tianjin Binhai New Area

Study on Application of Bus Rapid Transit (BRT) System in Liuzhou Wu Lixin (11)

Abstract: As the representative of BRT, the new mass transit system has a great role in solving the urban traffic problem, and is especially suitable for the national conditions of China. It is necessary and timely to construct the middle and mass, rapid and new transit system in Liuzhou under the condition of not yet being reached on time of metro system because of high construction cost. Aiming at the BRT system in Liuzhou under construction, the article discusses the construction BRT system in the medium sized cities according to the practical situation of Liuzhou, which can be referred for the similar cities.

Keywords: bus rapid transit, BRT, intelligent traffic, Liuzhou

Comparison and Analysis on Function and Standard of Express Highway and Expressway Li Jun (15)

Abstract: Owing to no study of the key technical standard for the function conversion of express highway to expressway in China, there are many difficulties in some express highway reconstruction into expressway projects, which leads to the waste of engineering resources. Aiming at dealing with the situation, the article firstly introduces the function evolution of express highway to expressway in the process of urban space development, and then analyzes and compares the differences of functions and standards of the express highway and expressway in six aspects of land use, traffic capacity, service level, cross section type, horizontal and longitudinal linear designs, and grade separation.

Keywords: express highway, expressway, urban space, function and standard, comparison

Proposal for Improving Analysis of Energy Conservation in Feasibility Study of Municipal Road - Li Wendong(18)

Abstract: The article introduces the significance of energy conservation analysis in the engineering feasibility

study of municipal road, and points out the defects of model system in the foreign energy conservation evaluation and analysis. This kind of model takes the vehicle speed as the parameter only, and does not consider the different traffic characters of municipal road from expressway. The article proposes to correct the analysis of fuel conservation in the feasibility study of municipal road, add the analysis of electric power conservation, and perfect the analysis of energy conservation in the engineering feasibility study stage of municipal road project.

Keywords: municipal road, oil consumption, electric consumption, analysis of energy conservation, model correction

Design on Collinear Section of Expressway and Water Supply Pipeline Li Chao (21)

Abstract: The article compares, selects and calculates the design scheme of the collinear section of the transit expressway and the water supply pipeline in the east of Shenzhen City in detail, which can be referred for the design of expressways in the complicated road sections.

Keywords: expressway, water supply pipeline, campshed supporting, concrete diaphragm wall, anchor rod

Layout Design of Traffic Facilities Supported for Tourism Resort Ma Haifeng (26)

Abstract: The traffic facilities supported for tourism resort is significant as the important infrastructure in the development and construction of tourist area. Taking the traffic project supported for the Happy Valley Water Sports Center of Shanghai Sheshan National Tourism Resort as an example, the article discusses the contents and requirements of the traffic design for the tourism resort, and focuses discussion on the layout design of traffic facilities supported for the tourism resort.

Keywords: tourism resort, external traffic, traffic forecast, layout of traffic facilities, design of traffic organization, engineering case

“Beautiful Traffic Landscape Line” - Construction of Road Landscape in Changxing Island of Dalian City

..... Shao Yimin(29)

Abstract: The article introduces the planning and design of Dalian Changxing Island Road Landscape Project, shows how to combine the urban characteristics and planning layout, and uses the diversified landscape design skills to construct the road landscape of industrial symbiosis with nature, industry and landscape dialogue, and docking technology and culture, and to make the urban area road scene with the unique feature of the scenery on the way.

Keywords: urban road, road landscape, planning, design

Urbanization Reconstruction of Highway Sha Liang(33)

Abstract: According to the relative engineering cases, the article discusses the plane alignment, longitudinal section and cross section of road in the highway urbanization reconstruction, the utilization and reconstruction of bridges along the line, roadbed, intersections, municipal pipelines, road greening landscape, and the issues for attention in the utilization of energy equipment, which can be referred for the similar projects.

Keywords: highway, urbanization reconstruction, issues for attention, discussion

Elementary Analysis on Difficulty in Widening Design of Expressway Xu Mei, Zheng Jie(35)

Abstract: The article analyzes the difficulties in widening reconstruction design of expressway according to Shanghai-Nanjing Expressway Widening Reconstruction Project, which can be referred for the similar projects.

Keywords: widening reconstruction, expressway, treatment of new and old roadbeds, soft soil subgrade

Rheological Analysis of Collapsible Loess Foundation by Different Treatment Measures ... Dong Xiaoliang (39)

Abstract: The article analyzes the settlement deformation values in the different parts of foundation and embankment by the different treatment methods (compaction pile, DDC pipe and dynamic compaction) and

various loading actions, and the relationships with the time. The article calculates the settlement after construction, sums up the change rule of settlement after the construction of roadbed under various construction conditions, and analyzes the settlement constitution and the settlement position after the construction of roadbed in order to provide the test basis for the optimization design, to forecast the settlement deformation with the time change and to validate the design reliability of collapsible loess foundation treatment measures.

Keywords: collapsible loess, foundation, settlement, rheological

Discussion on Design of Elevated Cross Section of Ningbo South Ring Road Expressway Xu Xin (42)

Abstract: By analyzing the characteristics of urban elevated expressway and highway, considering the driving safety and traffic capacity and combining with the current traffic composition of Ningbo South Ring Road, this article finalizes the reasonable elevated section width of Ningbo South Ring Road Expressway.

Keywords: urban expressway, elevated cross section, lane width

Selection of Pavement Structure of Ecological Water Resource Engineering Han Haichao(44)

Abstract: Taking Yancheng Urban Drinking Water Resource Ecological Purification Project as an example, the article introduces the design scheme of color cement concrete pavement. Yancheng Urban Drinking Water Resource Ecological Purification Project is the largest raw water ecological purification project in China now. Since 2008, the project has gone through the designs of every stage, and at present has been basically completed. The overall effect after its completion has achieved the initial conception of design. Its function has the ecological purification and the better landscape effect. In the field, about 10-km road effectively links up each area into the organic whole, which is the important combined part of the project. The environmental protection of pavement structure is strictly required and the compatible coordination of landscape is put forward in the road design. After the comparison and analysis, the design scheme of the high-grade asphalt pavement used for the external ring road and the color cement concrete pavement used for the inner area is proposed.

Keywords: water resources, pavement structure, color concrete, Yancheng City

Analysis on Structure Design of Geogrid Reinforced Asphalt Pavement Zhao Yanhong(46)

Abstract: The geogrid is one of the most common reinforcement materials for pavement. The glass fiber geogrid is placed into the surface layer of asphalt pavement. The simulation method of composite material is used to determine the design model and parameters of the geogrid reinforced asphalt pavement structure layer. According to the design program and control index stipulated in *Code for Design of Highway Asphalt Pavement*, the geogrid reinforced asphalt pavement structure is analyzed by the layered elastic system theory. Based on the comparison of the structure designs of the geogrid reinforced asphalt pavement and the general asphalt pavement, the result shows that the use of geogrid can effectively increase the elastic modulus of asphalt surface. Under the condition of the design standard to be same, the use of geogrid can effectively reduce the thickness of asphalt surface.

Keywords: geogrid, asphalt pavement, structure design, thinning effect of thickness

Study on Application of Sandstone in Laos Luang Prabang Airport Pavement Foundation Works

..... Chen Dingzhong (49)

Abstract: The airport pavement foundation is the sandstone foundation used by the local material. The article introduces the studying test of the strength, crushing value, stabilization, durability etc. of the broken sandstone. The studying test has the good quality and economical effects.

Keywords: airport pavement foundation, sandstone application, durability

Popularization and Application of Bridge Culvert Structure Reinforced Bar Processing Manufactory and Mechanization in Expressway Construction Lin Hongren (52)

Abstract: In the modern traffic engineering construction, the reinforced bar is a special building material with the extremely important action. However, the reinforced bar used for the construction in China is pro-

cessed mainly by the labor power for a long time. This mode has the disadvantages of scattering, confusion, large error and high manpower demand, and seriously restricts the industrializing development speed of project construction in China. According to the practical conditions of bridge culvert structure reinforced bar processing manufactory and mechanization of Zhaohua Expressway Contract I, the article introduces the application of expressway bridge culvert structure reinforced bar processing manufactory and mechanization. The contents can be referred for the similar projects.

Keywords: expressway, bridge culvert structure, reinforced bar, manufactory, mechanization, popularization and application

BRIDGES & STRUCTURES

Construction of Urban Bridge in Hungary Mu Xiangchun(55)

Abstract: The article systematically introduces the investigation, enlightenment and proposal of urban bridge construction in Budapest, Sz é kesfeh é rv á r and etc. of Hungary, which can be referred for the similar project in order to promote the health development of urban bridge construction in China.

Keywords: investigation, Hungary, urban bridge, bridge construction, enlightenment

Master Design Characteristics and Technical Innovation of Shanghai-Hangzhou Expressway Bridge Reconstruction Project Tang Yuefei(61)

Abstract: Dazhenggang Bridge in Shanghai-Hangzhou Expressway overpasses the new and old Shanghai-Kunming Railway, Hangzhou-Shanghai Line (Shanghai Section) Class III Channel and underpasses S32 Expressway from south to north. The article sets forth the technologies of this project jacking the long-coupling large-roadway bridge, hoisting and heightening the old bridge, widening the old bridge, and long-span continuous steel-concrete composite box beam bridge. In which, the longest jacking coupling of the old bridge is 188 m, the maximum jacking height is 4.461 m, the maximum height of old bridge heightening is about 7.4 m, the maximum height of the reconstructed upright column is 18.4 m, and the widening at the outer side of the old bridge is 2.5 ~ 6.5 m. It is hard to connect the new structure with the old structure. The 2 × 75m equal-height single-cell long-cantilever continuous steel-concrete composite box beam is used to overpass Dazhenggang Channel. The old expressway bridge is beneficially attempted in this project, which can be referred for the similar projects.

Keywords: Shanghai - Hangzhou Expressway, reconstruction of old bridge, master design, composite box beam, bridge jacking, bridge widening, bridge design

Design of Shenan Yellow River Bridge in Lanzhou Fan Zuoyin(66)

Abstract: The article introduces the design of Shenan Yellow River Bridge in Lanzhou. This bridge is an interchange project. Its main bridge is a through butterfly steel box arch composite beam bridge. It is firstly used in single-span arch bridge. This structure is the innovation in bridge design, and its experience can be referred for the designers of the bridges.

Keywords: Lanzhou, Shenan Yellow River Bridge, design, through, butterfly, steel box arch, composite beam, V-shaped pier

Structural System of Long-span Half-through Arch Bridge Feng Xixun, Xu Liping, Zhang Cong(69)

Abstract: The structural system of long-span half-through arch bridge comes down to five structural systems of the thrust single-arch system, the self balancing multi-arch system, the self-balancing rigid frame multi-arch system, the rigid frame and through arch composite system and the beam support system. The article analyzes the laws of stress and force transmission of these five structural systems, and sums up the master installing parameters and structure shapes of every system.

Keywords: long span, half-through arch bridge, structural system

Analysis of Stability Calculation Method and Influence Factors on Main Pylon of Self-anchored Suspension Bridge Song Kai (73)

Abstract: The mechanics characteristic of self-anchored suspension bridge is quite different from the traditional earth anchored suspension bridge. The article analyzes the stability calculation principle, and by the case of Xining City Haihu New Area Wenhui Road Bridge Crossing Huangshui River, introduces the stability calculation of the main pylon in the master model of the whole bridge, and considers the influence of the other members of the whole bridge on the rigidity of the main pylon. Separately aiming at the different boundary conditions, the stability critical force of the main pylon is calculated. The result shows that the longitudinal restraint of the main girder greatly influences the stability calculation of the main pylon of the self-anchored suspension bridge. When the longitudinal restraint is set up between the pylon and the girder, the stability critical force of the main pylon is improved more than the longitudinal sliding system. The rotation restraint between the pylon and the girder influences the stability of the main pylon a little.

Keywords: self-anchored suspension bridge, main pylon, stability calculation, bridge design

Analysis on Stress in Main Cable Anchorage Zone of Concrete Self-anchored Suspension Bridge Wen Qingliang, Liao Dongyang(76)

Abstract: The main beam of concrete self-anchored suspension bridge is commonly the pre-stressed concrete structure. Under the combined action of the strong cable force, pre-stressing and supporting counter force, the stress status of the main cable anchorage zone is very complicated. Aiming at the stress status of the main cable anchorage zone to be studied, it is significant to optimize the detail structure of anchorage zone and the layout of pre-stressed steel beam. Taking Zhangjiagang Zhenshan Bridge as an example, the article analyzes the space stress of the main cable anchorage zone by the finite element method, and sums up the stress characteristics of the main cable anchorage zone of this bridge.

Keywords: self-anchored suspension bridge, anchorage zone, partial stress, analysis and calculation

Analysis on Seismic Performance of (65+100+65) m Steel - Concrete Composite Continuous Beam Substructure Lei Yanni(78)

Abstract: Taking the (65+100+65) m steel - concrete composite continuous beam bridge spanning the Nanning - Kunming Railway in Kunming South Connection Line Expressway Project as the background, the response spectrum and the dynamic time-history analysis method are used to carry out the earthquake response analysis of the bridge. Aiming at the non-linear character of lead rubber support, the structural response analysis is carried out separately by the response spectrum under the E1 earthquake action and the time-history analysis method under the E2 earthquake action. The calculation of the M-Phi curves of each pier stud section can decide the operative mode of each pier stud all being within the elastic operative range under the E2 earthquake action and can achieve the objective to set up the performance of seismic isolation device. The large bridge structural analysis software MIDAS is used for the finite element analysis.

Keywords: steel-concrete composite continuous beam, seismic analysis of substructure, seismic design of seismic isolation device, lead rubber support, seismic ductility, capacity protection

Calculation and Comparison of Earthquake Resistance of Lead Rubber Support and Laminated Rubber Support Kang Xiaoliang (84)

Abstract: The lead rubber support is used able to obviously prolong the natural vibration period of structure and decrease the earthquake force if the bridge pier is lower and the rigidity of bridge substructure is larger, which can guarantee the pier stud at the elastic state under the action of strong earthquake. The laminated rubber support can also satisfy the earthquake resistance requirements if the bridge pier is higher and the rigidity of bridge substructure is not larger. The reasonable selection of the lead rubber support or the laminated rubber support can be based on the practical engineering demands in the design work according to the earthquake prevention requirement of bridge.

Keywords: lead rubber support, laminated rubber support, earthquake resistance

Study on Key Design Parameters of Qinzhou Zicai Bridge Wan Peng, Ma Biao, Yuan Jianbing(86)

Abstract: Zicai Bridge is a super-long bridge crossing Qinjiang River in the central area of Qingzhou. The main structure of Zicai Bridge is a pre-stressed concrete self-anchored suspension bridge with three spans of 65 m+158 m+65 m. The total width of its main beam is 35.5 m. The article firstly introduces the structural characteristics of this bridge. The key design parameters of its rise span ratio, main beam type, main pylon modeling, cable crane and anchorage system are compared and studied by the preliminary calculation and also referring the cases of the similar bridges at home and abroad in order to select the reasonable result for the realization of the design intents.

Keywords: self-anchored suspension bridge, prestressed concrete beam, design parameters

Design and Calculation of Steel - Concrete Composite Curved Girder Bridge Liao Lianjiao (89)

Abstract: The article briefly introduces the bridge type and the section characteristics of 2-span 33-m steel-concrete composite girder bridge. Aiming at no calculation software specially used for analyzing the steel-concrete composite curved girder bridge now, the article calculates and analyzes its structure according to the straight girder bridge by the software - the bridge Dr. Program version 3.1.0, and checks the spatial analysis by the 3D-BSA2006 curved slope skew bridge spatial analysis procedure, and contrasts the reaction forces of the inner and outer bearings.

Keywords: steel-concrete composite curved girder bridge, design, calculation

Structure Design and Calculation Analysis of a Landscape Footbridge Chen Hefeng (93)

Abstract: This article introduces a cable-stayed footbridge with a main span of 72.3 m. It adopts I-shaped composite beam. According to the structural design, the static calculation and stability analysis of this bridge, the rationality and security of this design scheme are validated. Also according to the study on the comfort of pedestrians, the article analyzes the dynamic characteristics of this bridge. The results can be referred for the design of the similar bridges.

Keywords: footbridge, structural design, vibration analysis

Design and Calculation of Simple Supported Box Girder for Viaduct in Shenzhen Metro Line 11 Xie Dan(96)

Abstract: The article introduces the section design of 30-m pre-stressed concrete simple-supported box girder for the viaduct in Shenzhen Metro Line 11, and focuses introduction on the longitudinal calculation and analysis of the main beam for box girder, which can be referred for the similar projects.

Keywords: metro viaduct, box girder, design, calculation

Master Design of Bridges around Didang Lake of Shaoxing City Hu Jiming, Chen Liang, Wang Zhijun(100)

Abstract: Taking five bridges around Didang Lake of Shaoxing City as the background, the article introduces the landscape, aesthetic design and structural design of bridges around the lake in order to combine the humanistic spirit with the environment of Shaoxing City. The structural shapes of the bridges strive to be innovative and to be into environment.

Keywords: bridge modeling, landscape, master design

Landscape Design of Beicheng Bridge Cao Hong, Liu Gangbo(104)

Abstract: In recent years, it is more and more required for the appearance of the urban landscape bridges with the rapid development of traffic construction in China. A bridge is no longer the structural entity isolated from the environment and culture. It will carry the mission embodying the regional culture, showing the city style and reflecting the city characteristics. Combined with the practical experience of the landscape design for Nantong Beicheng Bridge, the article discusses the design of the current urban landscape bridge.

Keywords: urban landscape bridge, landscape design, regional environment, architectural style

Design of Landscape Passenger Footbridge in Lhasa Li Chao (106)

Abstract: The article focuses introduction on a design idea in the design characteristic and the technological treatment of Lhas Landscape Passenger Footbridge. The footbridge can be challenged and innovated to certain extent in the basis of the conventional design so as to achieve a certain aesthetic design. The article briefly introduces the project background, construction difficulty, difficulty treatment and practical effect, and sums up the design experience of this footbridge. The relative experience can be referred for the similar projects.

Keywords: footbridge, landscape, TMD shock absorption

Design and Construction of Double-arch Single-pylon Cable-stayed Bridge Yang Hugen, Li Xianchao (109)

Abstract: With the rapid development of urbanization construction in China, the design of urban bridge more and more seeks the beauty. Guizhou Province Libo County Guantang Bridge is an 85m + 85m double-arch single-pylon cable-stayed bridge. Its structure is novel and its model is graceful. At present, there is a little experience of this bridge able to be referred. The article sets forth the main aspects of structural design, structural calculation and construction scheme of this bridge. The relative technical parameters can be referred for the similar projects.

Keywords: urban bridge, Guantang Bridge, double-arch single-pylon cable-stayed bridge, novel structure, design, construction

Structural Design and Construction of Assembled Trestle Bridge for Crossing-sea Bridge Cai Tian, Wu Kaijun(113)

Abstract: Depending on the construction of the trestle bridge in the deep water zone at the south bank of Quanzhou Bay Crossing-sea Bridge and taking the assembling construction as the construction concept, the article describes the design optimization of the structural type of the trestle bridge, the use of prefabricated steel reinforced concrete slab to replace the surface structure of trestle bridge, and introduces the construction technology. The result shows that the optimized structure of trestle bridge can decrease the construction processes, efficiently improve the construction efficiency and have the obvious economical benefit. This construction technology decreases the water high-altitude construction time of workers in maximum and makes the personal security of the workers be ensured, and at the same time the assembling construction can efficiently decrease the construction difficulties and make the construction simplified and standardized.

Keywords: assembling, trestle bridge, structure design, construction technology

Advantages and Disadvantages of Assembled Pre-stressed Fish-belly Beam Inner Strut System Liu Faqian, Lu Yongcheng(117)

Abstract: The assembled pre-stressed fish-belly beam inner strut system is a new supporting type of foundation pit and is used more frequently in recent years. The system is composed of steel assembled components of fish-belly beam, diagonal brace, angle brace, triangle connecting peaces and circuit purlin. Therefore, the steel structures can be completely reused after the braces disassembled. However, this advanced technique hasn't been known and mastered by the most engineers, who even more do not understand the points for attention in its application process. In result, this process is limited in its application range. Besides, some problems are ignored so as to cause the faults of the projects. This new technology is a few used because of a few study of it in China. By the engineering case of Nanjing South Station Ring Highway Subway, the article analyzes the whole engineering construction process and sums up the advantages and disadvantages of this strut system in order to carry out more discussion and study, which can be referred for the design of the similar projects.

Keywords: fish-belly beam, strut, foundation pit, rigidity

Analysis on Influence of Bored Power Tunnel on Adjacent Bridge Pile Foundation Ji Yonghong, Feng Dongliang(119)

Abstract: Aiming at the problems of a bored power tunnel crossing the adjacent bridge pile foundation, a two-dimensional FEM model is built to analyze the influence rule of tunneling on the pile foundation of the adjacent bridge under the conditions of the different tunnel depths and the central distances of tunnel and pile foundation. The results show that the excavation will have the great effect on the pile foundation when the center distance of tunnel and pile is less than a certain range. The locations of the maximum horizontal deformation and the maximum bending moment of the pile will change with the depth variation of tunnel. While the depth of tunnel is at the upper part of pile, the maximum horizontal deformation and the maximum bending moment of pile will be relatively larger.

Keywords: bored tunnel, adjacent existing bridge pile, cross, depth of tunnel, center distance of tunnel and pile

Design and Calculation of 70-t Spanning Mobile Gantry Crane Dong Baifu(122)

Abstract: The main bridge of an expressway crossing-river bridge is the through continuous steel truss arch structure. Its spans are arranged by (132+276+132)m. The total length of the main bridge is 540 m. A 70-t spanning mobile gantry crane is installed separately at two side spans of the main bridge in order to assemble the steel beams of side span and to lift the steel beam members up to the bridge. On the basis of 2008 crane design standard, the structural stress calculation and the stability analysis are carried out for 70-t mobile gantry crane for lifting the steel truss beam of a high-speed railway by the limit state method. The article focuses introduction on the load value and load combination of gantry crane according to the standards, and the method of modeling calculation and optimization design by midas civil.

Keywords: gantry crane, design calculation, structural stress, stability analysis

FLOOD CONTROL & DRAINAGE

Systemic Approach to Control Non-point Source (NPS) Pollution in Urban Watershed Lv Yongpeng(126)

Abstract: On the basis of comprehensively analyzing the transport and control process of the pollutants in watershed, the present situation of non-point source (NPS) pollution control and its limitations, the control system and procedure of NPS pollution in the urban watershed of China are proposed. In addition, the concept of the effective green area is proposed to allow the runoff from the other lands. The comprehensive department of the government is required to coordinate and solve the management of the effective green area to be added according to the foreign experience.

Keywords: urban watershed, non-point source (NPS) pollution, watershed management, effective green area

Discussion on Design of Initial Rainwater Storage Tank in Urban Drainage System Jin Dun(130)

Abstract: The initial rainwater storage tank is used to store initial rainwater and can avoid the initial rainwater directly discharged into river to cause the water pollution. With the emphasis on the ecological environment, the initial rainwater storage tank has been started to construct in many cities. According to the design case of the initial rainwater storage tank of No.2 Rainwater Pumping Station in Zhengding New Area of Shijiazhuang City, the paper introduces the design gist of the initial rainwater storage tank in the urban drainage system, which can be referred for perfecting the design method of the initial rainwater storage tank.

Keywords: initial rainwater storage tank, pumping station, design

Design on Application of Negative Pressure Collection System in Luzhi Village Sewage Collection Project

..... Zhong Mingming(133)

Abstract: The negative pressure collection system is a new technology for hard to collect the village domestic sewage by the gravity mode. According to a demonstrating project of Punan Village in Luzhi County of Wuzhong District in Suzhou, the article introduces the engineering design of negative pressure collection system in order to provide the reference for the design of the similar projects.

Keywords: village sewage collection, negative pressure collection system, demonstrating project, Suzhou City

Operation and Adjustment of Sludge Anaerobic Digestion Project of Shanghai Bailonggang Wastewater Treatment Plant Wei Haijuan(136)

Abstract: The article introduces the adjusting process of the Sludge Anaerobic Digestion Project of Shanghai Bailonggang Wastewater Treatment Plant, analyzes the adjustment process, and sums up the problems met in the adjustment and the solving measures of the egg-shaped digestion tank in order to provide the reference for the adjustment of the similar projects.

Keywords: wastewater treatment plant, sludge disposal, anaerobic digestion, operation and adjustment

Elementary Discussion on Design and Operation of Aeration Grit Chamber Yang Kun(140)

Abstract: The article introduces the technical characteristics and the main design parameters of aeration grit chamber, analyzes the problems often existing in the operation of aeration grit chamber in the sewage treatment industry and the measures taken to solve this kind of problems, and provides the source materials for the design of aeration grit chamber in the future so as to guarantee the security and reliability of the engineering operation and achieve the expected treatment effect of the design.

Keywords: aeration grit chamber, operation management, surface scum, scum collection system, grit lifting system

Study on COD Rapid Test Quality Control Method Chen Shuai (142)

Abstract: The chemical Oxygen Demand (COD) is an important index of monitoring the water quality, and can be taken as the index of balancing the relative content of the organic compounds in water. The rapid test method is more and more noted in recent years because of the potassium dichromate standard method with the disadvantages of long analysis time and low efficiency. The article studies the COD rapid digestion spectrophotometry, and introduces the establishment of laboratory inner quality control method to monitor the whole process of test, which can effectively improve the accuracy of the analysis process.

Keywords: COD, rapid test, quality control method, accuracy

Study on Design of Pipeline Crossing Gravity Dam of Reservoir Mao Wei(145)

Abstract: This paper discusses the laying scheme of the intake pipeline crossing the gravity dam according to the engineering cases, compares and selects the stress calculation formulas and theory of the jacking pipe, analyzes the influence of jacking pipe construction on the built dams, and puts forward the seepage treatment scheme of the dams after constructed. The contents can be referred for the similar projects.

Keywords: jacking pipe, crossing dam, analysis of pipe stress

Elementary Discussion on Flood Control Security Measures for Operation Period of Underground Engineering Tang Hongliang(149)

Abstract: The article analyzes the flood control security in the operation period of underground space (self-waterproof, retaining and drainage capacities) from the angle of engineering measures and the flood control security in the operation period of underground engineering from the angle of non-engineering measures. The security measures can be referred for the similar projects.

Keywords: underground engineering, operation period, flood control security, engineering measures, drainage engineering measures

Combined Use of Interlocking Hydraulic Brick and Woven Bag Concrete in Urban Flood Control Yang Tianxiang, Wang Jingjing(151)

Abstract: Rilong Mountain - Wenzhi Channel Prevention Project of a river in Liaoning Province Dandong City is an important work for the flood control of Dandong City. The interlocking hydraulic brick and woven bag concrete revetment are used to solve the dual-task of flood control and landscape owing to the lower standard of flood control in this section and its location within the border of the Dandong Industrial Area. The

woven bag concrete prevention is used below the average tidal lever (4.01 m) and the interlocking hydraulic brick prevention is used above this lever. The article mainly introduces the material characteristics, construction conditions and development prospects of the interlocking hydraulic brick and woven bag concrete.

Keywords: interlocking hydraulic brick, woven bag concrete, application, revetment

Elementary Analysis on Principle and Application of Several Cleaning Technologies of Water Supply Pipeline Network Han Xiaoxi (153)

Abstract: Aiming at the secondary pollution of water quality within the water supply pipeline network, the article sets forth the necessity of strengthening cleaning and security management of water supply pipeline network, introduces the present situation of pipeline network cleaning technological development at home and abroad, and focuses introduction on the principles and applications of four cleaning technologies of one-way cleaning method, high-pressure jet-flow method, mechanical scraping pipe method and air water pulse method in the physical cleaning process.

Keywords: water supply pipeline network, secondary pollution, developing ring, air water pulse

Design of Long-distance Sewage Pressure Pipeline for Huilian Garbage Power Plant in Wuxi City Zhang Kaishun, Jiang Lanlan, Cai Danxin(155)

Abstract:Aiming at the characteristics of the long-distance sewage pressure pipeline system, the article introduces the key contents of technological design, the selection of construction technology and the issues for attention in the operation and maintenance of the long-distance embedded sewage pressure pipeline system for Wuxi Huilian Garbage Power Plant, and puts forward the measures for enusing the safe operation from the aspect of design.

Keywords: long-distance sewage pressure pipeline, design, pipe material, auxiliary structure

Introduction of City Construction in Three Countries of America Wu Lijun(157)

Abstract:The article introduces the experience of urban sewage treatment, urban sludge disposal, urban water treatment engineering construction and city construction management in three countries of the United States, Brazil and Peru, which can be referred for the similar projects.

Keywords: urban sewage, sludge treatment, urban water treatment engineering construction, city construction management, experience, the United States, Brazil, Peru

Elementary Discussion of Comprehensive Utilization System of Rainwater in Singapore Pan Lijuan(160)

Abstract:The Republic of Singapore is an island country located at the south end of the Malay Peninsula. It is a country being short of freshwater resource because of its landform and climate, but is also a model city utilizing the rainwater. In the long term, with the rapid development construction and the untempered use, the rainwater collection utilization system must be brought into the urban planning, design and management in anyone city. The article introduces the comprehensive utilization of rainwater in Singapore, which can be referred for the similar projects.

Keywords: Singapore, rainwater collection, comprehensive utilizaiton

MANAGEMENT & CONSTRUCITON

Discussion of Highway Construction and Its Environmental Protection Ye Hongfu(162)

Abstract:According to the practical engineering experience, the article analyzes the effect of highway construction on the environment and the caused environmental problems, and discusses how to strengthen the environmental protection in the highway construction in order to provide the reference for the similar projects.

Keywords: highway construction, building, environmental protection, discussion

- Detection and Research on Construction Homogeneity of Asphalt Pavement Zheng Huimei, Zhou Guoqiang, Chen Jie(165)
- Abstract:** Good pavement construction quality is the premise of achieving the expected performance of asphalt mixture. Therefore, it is greatly significant to study the detection and control method of the construction homogeneity of asphalt pavement. The article focuses setting forth on the control of construction segregation, puts forward the use of laser texture tester to evaluate the condition of pavement surface segregation as the main method for controlling the quality of asphalt pavement, and hereby evaluates the construction homogeneity of each representative road section.
- Keywords:** asphalt, asphalt mixture, segregation, laser texture tester
- Discussion on Construction Control of Rubber Asphalt in Municipal Road Reconstruction Project Wu Guoyou, Tong Shujuan(168)
- Abstract:** Compared with the ordinary asphalt concrete, the rubber asphalt concrete has the better advantages of high temperature stability, water stability, noise reduction and environmental protection. According to four municipal road maintenance engineering cases, the article focuses setting forth on the technical indexes of raw materials and the construction control of mixing, transport, paving and rolling of the rubber asphalt mixture in order to provide the technical support for its application in the reconstruction of municipal roads.
- Keywords:** rubber asphalt, rubber asphalt mixture, rubber asphalt concrete, municipal road
- Application of Lime-soil Compaction Pile in Beam Foundation Treatment of Passenger Railway Line in Collapsible Loess Region Kang Yanfei(171)
- Abstract:** The passenger railway line from Zhengzhou to Xian is the first ballastless track passenger railway line with 350 km time per hour built in the collapsible loess region in China and also in the world. The collapsible loss is the main and special engineering geological problem met in this line. How to treat the foundation base well is related to the construction quality of the whole project. Based on this, the article mainly discusses the application of the lime-soil compaction pile in the roadbed foundation of collapsible loess region by the practical cases.
- Keywords:** lime-soil compaction pile, collapsible loess, foundation treatment, reinforcing, bearing capacity
- Impact Drill Breaking Barriers for Ensuring Construction Quality of Pile Foundation Ye Shenghong, Min Zhenhuan(175)
- Abstract:**The article sets forth the new working method of using the impact drill for breaking the barriers of sewage pipelines at the pile foundation of the main line of Contract Section VII of Ningbo North Ring Expressway Project. The new working method is obviously more excellent than the traditional common construction method in the safety, construction period and cost, and the quality of finished pile satisfies the design requirements and standards.
- Keywords:** cast-in-site pile, barriers, breaking, impact drill
- Discussion and Study of Present Construction Technology for Roadbed Pavement of Settled Section of Highway Bridge Ma Lisha, Yi Ye(178)
- Abstract:** The article analyzes and studies the roadbed pavement construction technology of easily settled soft soil roadbed section of highway bridge, and a series of structural design and roadbed construction measures taken for guaranteeing the construction quality and greatly reducing the non-uniform settlement probability of roadbed pavement in the settled section of highway bridge so as to avoid the bridgehead bump at the settled section of highway bridge, to improve the using performance of highway and to ensure the life security and property safety of drivers and passengers.
- Keywords:** highway bridge, settlement, roadbed pavement, structural design, construction technology
- Key Construction Technology of Elevated Bridge Steel Box Beam in Qiushi Expressway by Hydraulic Pushing Shift-

ing Method Wang Weiye(181)

Abstract: According to the hydraulic pushing shifting construction of steel box beam for the main line spanning Genqiu Interchange in Hangzhou Qiushi Expressway Phase III Project and aiming at the characteristics of this project, the article analyzes and studies the selection, special requirements and key technical measures of the pushing shifting scheme.

Keywords: sewage pipeline, engineering protection, elevated bridge, function construction

Key Technology of Pushing Construction of Steel Box Beam for Luozhou Bridge Yang Canxuan(186)

Abstract: Luozhou Bridge is the longest-span self-anchored suspension bridge in China now. The pushing method is used to construct the main beam of this bridge. By the engineering background of this bridge, the article introduces the pushing construction technology of the steel box beam of the self-anchored suspension bridge, which can be referred for the construction of the similar projects.

Keywords: self-anchored suspension bridge, steel box beam, pushing, guiding beam

Key Technology for Construction of Ningbo North Ring Integrated Elevated Composite Beam

..... Ding Xiaowei, Jiang Xiaomeng, Ji Yun(189)

Abstract: Ningbo North Ring Expressway is the first integrated elevated expressway in Zhejiang Province. The composite beam is the steel structure crossing the main intersections. Its construction is more highly required for the more conventional structures of traffic under the bridge, construction organization sequence, hoisting safety and etc. Aiming at the characteristics of the composite beam of this project, the article completely sets forth each key construction technology of the integrated elevated composite beam, which can be referred for the similar projects.

Keywords: integrated elevated bridge, composite beam, construction, key technology

Control of Arch Rib Installation Precision of Fenghua River Bridge Wu Bo, Sun Shichao (192)

Abstract: This paper discusses the control of installation precision of steel box arch rib and its guaranteeing measures. Based on the practical field conditions, the installation precision of steel structure and the structure security of its installation process are ensured by two modes of shore assembly and ship assembly under the premise of reasonably arranging the construction procedure.

Keywords: steel box arch rib, hoisting, precision, control

Application of Assembled Steel Hanging Box in Construction of High-pile Base slab ... Wu Kaijun, Cai Tian(195)

Abstract: Depending on the construction of the approach bridge in Quanzhou Bay Crossing-sea Bridge South Bank Deepwater Zone, the article introduces the application of assembled steel hanging box in the construction of high-pile base slab from two aspects of the design and construction of steel hanging box. The cofferdam construction of steel hanging box has been widely applied in the construction of long-span deep-water bridges because of its characteristics of the short construction period, small flow resistance, being convenient for shipping, not necessary to submerge to the riverbed, small construction difficulty and small concrete usage.

Keywords: crossing-sea bridge, assembled, steel hanging box, high-pile base slab, construction

Analysis on Key Technology for Closure of Pre-stressed Concrete Continuous Girder Zhang Qiang(200)

Abstract: The closure of pre-stressed concrete continuous girder by the form traveler cantilever construction is a key working procedure in the construction. The different schemes will give the different results. Combined with the engineering cases, the article studies the key technology of closing the continuous girder by the form traveler cantilever construction, and analyzes the displacement variation of continuous girder by the different closure modes and the different pre-stressing tensioning Sequences. Thus, some beneficial conclusions can be referred for the engineering designs.

Keywords: pre-stressed concrete continuous girder, closure, system conversion

- Construction Control Technology of V-shaped Pier and No.0 Pier for Lema River Bridge Zhang Xin(202)
- Abstract:** The article introduces the construction control technology of a project. According to the construction characteristics of V-shaped pier and No.0 pier for Lema River Bridge, the construction control method is studied and determined. This method is combined with the deformation monitoring of support outside of V-shaped pier and the stress monitoring of key control section for V-shaped pier and No.0 sectional structure. The engineering practice shows that the measured result and the theoretical calculation result are better identical not only for the structural linear status, but also the control section stress with the good construction control effects, which can be referred for the construction control of the similar projects.
- Keywords:** V-shaped pier rigid frame bridge, construction control, No.0 section, stress monitor
- Discussion of Pre-stressing Technology in Cantilever Construction Yang Xinying (205)
- Abstract:** In the development of bridge construction, the cantilever construction method is often selected, especially more used in the construction of the long-span bridge (generally in more than hundred-meter span). The cantilever construction is used in more than 70% of the practical projects. It can not only simplify the complicated mechanical equipment and construction processes, but also give the obvious help to control the construction cost. The pre-stressing technology is successfully transplanted from the building of houses to the construction of bridges, which efficiently satisfies the development requirement of bridge consolidation. The article sets forth the effective combination of the pre-stressing technology in the cantilever construction in detail, which can be referred for the similar projects.
- Keywords:** cantilever construction process, cantilever pouring process, pre-stressed concrete continuous beam, pre-stressed concrete bridge
- Construction Technology of Cast-in-situ Box Beam Crossing Urban Road Sun Shichao, Wu Bo(207)
- Abstract:** This paper discusses the layout of cast-in-situ box beam support crossing urban road under the complicated traffic condition. According to the practical investigation of the local traffic conditions, the optimized layout type of support is reasonably arranged to solve the problems of construction and traffic organization of the upper structure crossing the urban roads.
- Keywords:** crossing, urban road, cast-in-situ box beam, construction scheme
- Fatigue Monitor and Evaluation of Steel Structure of Overlong-span Cable-stayed Bridge He Jiang(209)
- Abstract:** Taking a cable-stayed bridge as the background and based on fatigue monitor result of steel box girder, the article studies the fatigue performance of steel box girder for the overlong-span cable-stayed bridge. The result shows that the top slab and U-rib web are easy appearing with the fatigue cracks under the accumulative effect of vehicle, the stress range of every slab component of steel anchor box in cable girder anchorage zone is smaller, and the web outside of box girder is possibly appearing with the fatigue crack under the long-term traffic load. The bedplate, bedplate U rib and cable pylon steel anchor box can not be appearing with the fatigue loss because of smaller stress range value.
- Keywords:** cable-stayed bridge, steel box girder, fatigue, monitor
- Discussion on Maintenance of Comb-plate Expansion Joints of Bridge Mao Weisheng(214)
- Abstract:** The article introduces the maintenance method and technology of comb-plate expansion joints of bridge, and combined with the more common maintenance methods and materials now, comprehensively compares various advantages and disadvantages, and puts forward the more reasonable and efficient maintenance proposals from the aspects of construction technology, cost and material so as to instruct the maintenance of bridges.
- Keywords:** comb-plate expansion joint, self-locking nut, rapid concrete, efficacy wrench
- Analysis on Security of Form Traveler to Construct Bridge Liu Yan(216)
- Abstract:** The form traveler construction technology is one of the most bridge construction methods now-

days. The article analyzes the security of this method used to construct a hillside line bridge of Guozigou Bridge in Xinjiang. The result shows that the most bridge piers satisfy the security requirement, the partial pile foundation of high base slab is required to reinforce, and the bridge pier is required to carry out the horizontal displacement monitor in the period of pouring the box beam.

Keywords: line bridge, form traveler, security analysis

Analysis on Piecemeal Assembly Construction Security of Concrete Jacket Box for Base Slab of Donghai Bridge

..... Huang Xiangping, Mo Jingyi(219)

Abstract: The base slab of the high-pier bridge in the non-navigable spans of Donghai Bridge is constructed by the concrete jacket box process. The shape of jacket box is the rectangle, has the larger head wave surface than the circular jacket box and is unfavorably stressed. Its hoisting and transportation are all limited by the construction conditions because of its larger volume. Its period of marine construction is also longer and is greatly influenced by the weather. Aiming at the above unfavorable factors, the article puts forward the piecemeal assembly scheme suitable for the rectangle jacket box from the angles of construction security, construction conditions, construction schedule, economical rationality and etc., and analyzes the simulating construction process by the large-sized finite element analysis software, which provides the basis for the selection of construction technological scheme and the optimization of construction flow.

Keywords: square jacket box, piecemeal assembly, construction of base slab, Donghai Bridge

Design and Computation of Temporary Consolidation for Cantilever Construction of Continuous Beam

..... Ding Dong(222)

Abstract: In order to ensure the stability and security of the pre-stressed concrete continuous box beam in the course of cantilever construction, it is required to take the temporary consolidation measures for the beam construction. The article introduces the design, computation and dismantlement schemes of temporary consolidation in detail by the cantilever construction case of an expressway ramp bridge overpassing a special passenger railway line.

Keywords: cantilever construction, continuous beam, temporary consolidation, strength and stability

Study on Construction Technology of Roadbed Pavement at Settlement Section of Highway Bridge

..... He Yangmin, Fu Chenghui(224)

Abstract: The article introduces the study on the construction technology of roadbed pavement at the easily settled soft soil roadbed of highway bridge. The efficient control of every link in the construction of settled section structure can guarantee the construction quality and greatly reduce the occurrence probability of non-uniform settlement of roadbed pavement at the settled section of highway bridge so as to avoid the bridgehead bump occurring at the settled section of highway bridge, improve the use performance of highway and ensure the life and property security of drivers and passengers. The study result can be referred for the similar projects.

Keywords: highway bridge, settlement, roadbed pavement, construction technology

Study on Construction Monitor of Anchorage Foundation Pit and Rock-socketed Diaphragm Wall

..... Ding Yuping (227)

Abstract: The article introduces the construction monitor technology of anchorage foundation pit for a large suspension bridge. In the construction of this project, the deformation development and the stress level of rock-socketed diaphragm wall are controlled in real time during the excavation of foundation pit. Based on the measured data, the article sums up the stress mechanism of the rock-socketed supporting structure and puts forward the reasonable design proposals.

Keywords: rock-socketed diaphragm wall, construction, deformation, monitor

T-beam Prefabricating Technology and Control of Skewed Bridge and Curved Bridge by Post-tensioning Process

Abstract: At present, the steel reinforced concrete T-beam has been widely used in the highway construction. There are many advantages of this bridge, but the serious quality problems of hard to install T-beam, web to be dislocated and hard to install expansion joints are often caused in the construction if not strengthened to control, especially for skewed bridge, sloped bridge and curved bridge, which will change the whole stress system of bridge and directly affect the service life of vehicles and bridges. Aiming at the above quality problems and according to the detail conditions of the former construction processes, the article briefly discusses the T-beam prefabricating technology, the main control process and the matters for attention in the construction, which can be referred for the similar projects

Keywords: skewed bridge, curved bridge, post-tensioning process, T-beam prefabrication, technology and control

Test Method of Bridge Monolithic Beam and Attention Issues Li Jimin(233)

Abstract: This paper introduces the test content of bridge monolithic beam, including the determination of loading test efficiency, and the measurement and analysis of strain and deflection. The paper focuses discussion on the elimination of the temperature influence during the collection of strain data. The neutral axis height and the other issues must be accurately calculated in the strain theoretical analysis.

Keywords: strain, deflection, temperature, neutral axis

Elementary Discussion on Deck Pavement Fault Cause and Reinforcement Maintenance Countermeasures of Hollow Plate Simple-supported Girder Fan Xiuping, Liu Kangkang(235)

Abstract: The article discusses the deck pavement fault cause of hollow plate simple-supported girder, its reinforcement principle, its construction method and its engineering application. The aim validates the reinforcing effect of deck pavement of hollow plate simple-supported girder by the theoretical calculation and the measured data comparison.

Keywords:deck pavement, hollow plate girder, reinforcement, maintenance, to plant steel bar, steel fiber

Elementary Discussion on Bridgehead Bump of High-grade Highway Bridge Jia Zhizhong(238)

Abstract: The article points out that the difference of subgrade treatment mode of embankment and bridge culvert foundation is the main reason to cause the bridgehead bump, and it is the key to control the human factors of survey, design, construction and etc. in order to decrease these differences.

Keywords: highway, bridgehead bump, problem, preventive countermeasure, discussion

Elementary Discussion on Construction of Modern Municipal Road Water and Wastewater Pipeline Project

Abstract: As the urban infrastructure construction, the municipal road water and wastewater pipeline project is an importantly composed part, which plays the significant role for the urban environmental protection, drainage and waste discharge. The construction environment of water and wastewater pipelines for the municipal roads is more complex. It is required to comprehensively consider the influence possibly caused by the ground traffic in the construction of water and wastewater pipelines, and also to consider the safety of the buried cables, pipelines and the other facilities because of the problems, i.e. pipeline leakage, deviation and backfill subsidence commonly existing in the construction. On the basis of problem analysis and summing up the practical experience, the article puts forward a series of technical gist in the construction of municipal road water and wastewater pipelines, which can be referred for the similar projects.

Keywords: municipal road, water and wastewater pipelines, pipeline engineering, engineering construction, technical gist

Tunnel Waterproof Drainage Construction Technology Li Hanzhong(242)

Abstract:According to Guangzhou Xunfenggang Parking Lot Tunnel Project, the article introduces the wa-

terproof principle mainly to block up the water and to combine the prevention, drainage, interception with the blocking up so as to make the tunnel up to the objective of smooth drainage, waterproof reliability and reasonable economy, which effectively solves the difficulties of tunnel leakage and seepage, and achieves the better economical and social benefits. This construction technology can be referred for the similar projects.

Keywords: tunnel engineering, waterproof plate construction, slurry pouring for blocking up water, self-waterproof structure

Treatment of Piping Caused by Exploration Hole of Foundation Pit Chen Lei(247)

Abstract: The piping case is found at the soil surface when the construction of a foundation pit in an area is completed in an underground parking lot project. The water flow is medium with a little sand. It is a static exploration hole after judgment. The piping point and the water lever are stabilized by setting the pipes, and then the hole is not sealed until the large bedplate is completed. Finally, it is successfully treated. The relative experience can be referred for the similar projects.

Keywords: foundation pit, piping, rescue, exploration

Application of Glass Fiber Reinforced Plastic Sand Pipe in Water Supply Projects of Three Coastal Towns in Nanan City of Fujian Province Cheng Sisheng(251)

Abstract: The article introduces the engineering situation of the large-diameter glass fiber reinforced plastic sand pipe laid in the soft soil foundation in the water supply projects of the three coastal towns in Nanan City of Fujian Province, and sets forth the technical requirements in the projects of glass fiber reinforced plastic sand pipe from the aspects of pipe material specifications, pipe interface form, groove excavation form, cushion layer requirements, pipe laying, pipe trench backfill material choice, backfill scheme, compactness requirements, deformation control and etc. The practical effect shows that the water supply projects are excellently operated for two years with the reliable security.

Keywords: large-diameter glass fiber reinforced plastic sand pipe, soft soil foundation, water supply project, installation, pipe specifications

Discussion on Quality Repair Scheme of Diaphragm Wall for Large-sized Crossing-river Tunnel Chen Huifang(253)

Abstract: The article sets forth the quality problems and treatment scheme in the construction of the diaphragm wall for the large-sized crossing-river tunnel, and puts forward the relative preventive measures. The relative experience can be referred for the similar projects.

Keywords: crossing-river tunnel, diaphragm wall, wall quality, repair scheme

13222 Elementary Discussion on Construction Quality Management of Municipal Highway Bridge Project Huang Cuimei(257)

Abstract: With the continuous development of city construction and the increasing perfection of urban infrastructures in China, the management of city construction is more highly required. It is especially important how to apply and seek after a construction quality management mode and a quality assurance system for the construction quality management control of municipal highway bridge project. On the basis of analyzing the basic characteristics of municipal highway bridge engineering construction, the article discusses the quality management of municipal highway bridge project in the aspects of controlling the construction field quality and mastering the engineering quality inspection, which can be referred for the similar projects.

Keywords: municipal highway bridge, construction engineering, quality management, quality control, inspection

Analysis of Municipal Road Construction Coordination Management Zhang Hong(259)

Abstract: With the development of the times, the demand of the people is higher and higher for the life quality. The people focus the topic of road quality when traveling. In recent years, the urban construction devel-

opment is very quickly in China, and moreover, the quality problem of urban road is also serious to cause the bad traffic accidents, which will bring the huge loss to the people and the state. In order to guarantee the municipal road engineering quality, it must be to conform to the relative technical standard of road construction, and strictly to control the construction technology. It is important and necessary to carry out the coordination and cooperation among the specialties from the engineering technology to the construction management in order to build the high quality and the high standard of the municipal roads. The article analyzes the existing problems in the current construction coordination management, and discusses the significance and measures of coordination management, which can be referred for the similar projects.

Keywords: municipal road, construction, coordination management significance, coordination management measures

Elementary Discussion of Engineering Tendering Strategy and Skill Zha Yongmei(261)

Abstract: At present, the construction market is faced with the higher and higher competition force in China, and also the construction enterprises completely enter the low-profit times. In order to achieve the further income growth and upgrade the comprehensive competitiveness of a construction enterprise, its ultimate source of development is the winning percentage in the engineering bidding. Only winning the bidding, the development of enterprise and the growth of its income can be possibly increasingly realized. Therefore, how to achieve the larger winning percentage of bidding becomes the issue mostly to be concerned and mostly to be further studied by an enterprise. The article discusses this issue, and puts forward some simple views to be referred for the similar projects.

Keywords: construction, engineering tendering, winning strategy of bidding, winning skill of bidding

Risk Analysis and Management Measures in Highway Engineering Bidding and Tendering Stages Fang Qijun(263)

Abstract: With the rapid development of engineering market, the competition is increasingly severe in the building industry. Many engineering projects often fail because of the great risks. The management level of the owners and the contractors will directly lie on the risk management of engineering bidding and tendering stages. The activity result of the bidding and tendering stages will directly impact the following implementation of engineering projects. Therefore, the article points out to analyze the risk of bidding and tendering stages and take the relevant management measures so as to avoid the risks, which are propitious to the contractors for correctly quoting the price and taking the efficient countermeasures and planning for the risks in order to realize the project objective.

Keywords: highway engineering, bidding and tendering, risk analysis, management

Discussion on Investment Control of Investors in Construction Stage of Municipal BT Project Tan Pengcheng(266)

Abstract: The article analyzes the characteristics of investment control in the construction stage of the municipal engineering BT project from the angle of the investors. According to the present situation of the conventional investment control of the investors in the construction stage, the article puts forward it is required to make sure the contents and programs of investment control of the investors in the construction stage in order to better realize the over-expected investment profit, and proposes some detail and efficient investment control methods.

Keywords: BT project, municipal engineering, investment control

Check and Ratification of Newly Added Non-contractual Price Liu Yan(269)

Abstract: Owing to the uncertainty of external environment, almost all implemented large-scale projects have the different levels of scheme variation and the adding of the non-contractual price. The article tries to discuss the important contents of check and ratification work of the newly added non-contractual price, which can be referred for the similar projects.

Keywords: engineering project, newly added price, check and ratification, financial supervision

Analysis on Traffic Security Operation Management of Ordinary Freight in Shanghai and Its Improvement Measures Luo Shili(271)

Abstract: According to the comparison and analysis on the traffic security accident data of the ordinary freight in Shanghai from 2006 to 2001, the article sums up the traffic security status, operation management problems and the existing security danger of the ordinary freight, introduces the relative international experience for treating and solving the relative problems of the developed countries, Europe and America, Japan and etc., and puts forward the improvement measures for the traffic security of ordinary freight in the aspect of security operation management.

Keywords: ordinary freight of Shanghai, traffic security, operation management, improvement measures

STUDY ON SCIENCE & TECHNOLOGY

Research on Treatment Technology for Rutting in Fenshuiguan Super-long Upslope Section of Ningbo-Taizhou-Wenzhou Expressway Yang Zhaohui, Wen Teng, Chen Zhetao(276)

Abstract: Through investigation and analysis, the causes of rutting in the super-long upslope section of Fenshuiguan in Ningbo-Taizhou-Wenzhou Expressway have been found. Many treatment measures are taken to evaluate the treatment effects of rutting. Also combined with the construction gist and the cost analysis of this structural layer, the treatment technology for the rutting in the super-long upslope section is given.

Keywords: long upslope, rutting, treatment measures, Superpave-20

Study on Relationship of Horizontal Curve Radius and Transverse Force Coefficient Yu Hua(280)

Abstract: On the basis of analyzing and studying the transverse force coefficient at home and abroad and according to various radius curves and super-elevations collected from the typical highways, the article comprehensively studies the comfort of passengers and the security of driving, preliminarily determines the valuing standard of the transverse force coefficient of highway, and then briefly calculates, analyzes and studies the transverse force coefficients corresponding to the limit minimum radius and the general minimum radius as well as no-super-elevation minimum curve radius in the standard.

Keywords: transverse force coefficient, comfort, minimum radius

Evaluation of Infrastructure for Slow Transit System He Fan (282)

Abstract: The slow transit is an important component of the urban transit system, and is one of the important strategies of low-carbon transport. The users of slow transit put forward the requirements of security, comfort and accessibility of the slow transit system. This paper presents the evaluation method and model of the infrastructure of slow transit system based on the above three evaluation indexes. The method of the user giving marks and the expert evaluation is recommended to achieve the weights of evaluation indexes. The hierarchical weighted method is used to achieve the satisfaction of slow transit system users. The paper put forward several proposals for the design of road infrastructure.

Keywords: slow transit system, infrastructure, security, comfort, accessibility, satisfaction

Study on Starting Quantity Optimization of Double Toll Channel Series of Toll Booths Shi Yongchao(284)

Abstract: Based on the operation characteristics of double toll station and vehicle, the article analyzes the operation cost of double toll station and the queue cost of drivers. On this basis, the starting quantity optimization model of toll booths with the minimum total cost of the both is set up. Then the average stop time and the average waiting number of vehicles are solved by the model simulation of Matlab. The application process of the model is realized by the practical cases.

Keywords: double toll channel, operation cost, queue cost, starting quantity of toll booths

Study on Fatigue Damage of Cable-stayed Bridge Based on Loading Investigation of Traffic Volume Wang Mingjun(287)

Abstract: By the background of a cable-stayed bridge, and introducing the S-N curve based on the hot spot stress, the article studies the fatigue damage of the structure under the action of heavy traffic. According to the investigation of traffic volume, 35 sample data of traffic volume are achieved. The typical fatigue vehicle type and the vehicle load spectrum are given by the equivalent damage principle. The typical damage level of structural details is calculated by Monte-Carlo method and Miner linear damage norm. In order to study the influence of heavy traffic, the article considers two situations of a certain proportion of overloads of various fatigue vehicle types and the overload of only one vehicle type, and discusses the influence of heavy traffic on the structural damage. The study result shows that the fatigue life of bridge satisfies the design requirement according to the present forecast of traffic status. With the proportion increment of the overload vehicle quantity in the total traffic volume, the fatigue damage level of the components will rapidly increase. Compared with the other vehicle types, the damage level of more than 5-axis vehicle under the overload will be obviously increased.

Keywords: heavy traffic, fatigue load spectrum, Miner norm

Analysis and Research on Space Performance of Partial Curved-girder Cable-stayed Bridge

..... Zhu Qinzong, Wang Lixin, Gao Bo, Dai Jie(291)

Abstract: This paper comprehensively researches the mechanical properties of the partial curved-girder cable-stayed bridge by the special finite element model, and analyzes the influence of every loaded item on the space structural behavior in the construction phase and the use phase. According to the mechanical characteristics, this paper proposes the key points in the design process of the partial curved-girder cable-stayed bridge, which can be referred for the design and analysis of the similar bridges.

Keywords: curved girder, partial cable-stayed bridge, space performance, analysis and research, design gist

Study on Space Stress Characteristic and Carrying Capacity of Butterfly Arch ... Wu Pu, Hu Xinke, Xie Xu(295)

Abstract: Taking a practical butterfly steel arch bridge as an example, the article analyzes the stress and deformation of the whole bridge by setting up the three-dimensional finite element model and applying the elastic-plastic and geometric nonlinearity calculation method. According to the analysis on the maximum deformed section at the arch top of small arch rib, the article the stability characteristic of the special-shaped arch rib. The result shows that the partial instability of arch rib will not play the control role for the limit carrying capacity of the whole structure. By the comparison of the stresses of the large arch rib and the suspender, and the character of deformation with the variation of loading coefficient, the data show that the rigidity of suspender will more greatly influence the carrying capacity of structure.

Keywords: butterfly arch, calculation method, arch rib, suspender, stability, limit carrying capacity

Summarization of Steel Structure Stabilization Zhang Yongkang, Gao Xiaoming(299)

Abstract: The article sums up the characteristic and classification of the stabilization in the design of steel structure, and introduces the calculation method and specifications of the overall stability of stressed component and the bended component of the axis. The relative experience can be referred for the similar projects.

Keywords: steel structure, stressed component of axis, bended component, overall stability, particle stability

Analysis of Influence Factor on Result of Grain Analysis Test Liu Xueqin(304)

Abstract: The grain analysis test is one of the important contents in the engineering survey soil test. The accuracy and reliability of its test result are influenced by many factors. Aiming at the grain analysis test by the common densitometer method (A) (including test sieving method), the article compares and analyzes the influences of densitometer, analysis sieve, graduate, sampling quality, dissolving salt, soaking time, temperature, dispersant and etc. on the test result from two aspects of the test equipment and test process.

Keywords: grain analysis test, densitometer method, test sieving method, influence factor

Discussion on Minimum Thickness of Bedrock Bearing Stratum below End of Socketed Pile ... Liu Fudong(306)

Abstract: Aiming at the strong weathered rock usually existing below the bearing stratum of bedrock, there is no definite stipulation for the minimum thickness of bedrock bearing stratum below the end of socketed pile in the current standard. According to the practical cases, the article checks and calculates the minimum thickness of the different end resistance bearing ratios by the theoretical calculation and numerical simulation modes, and analyzes the minimum thickness of bearing stratum under the different rock strengths and the influence of underlying stratum below the strong weathered rock on its thickness.

Keywords: socketed pile, minimum thickness of bedrock bearing stratum, underlying stratum below strong weathered rock

Elementary Analysis on Measurement Uncertainty of Tensile Test Results of Steel Products ... Huang Jingfu(310)

Abstract: The article analyzes and discusses the influence of three factors, i.e. sectional area, tensile test force and numerical rounding on the measurement uncertainty of tensile strength test result of steel products.

Keywords: tensile strength, inclusion factor, weight, uncertainty

Study on Nitrogen Removal Potential of Oxidation Ditch Technology to Treat Low-carbon Sewage

..... Li Zhen, Jiang Lingyan, Lv Yan, Hu Qiyuan, Yao Zheng(312)

Abstract: This Paper studies the nitrogen removal potential of the anaerobic - oxidation ditch technology to treat the low-carbon sewage from the towns. According to the test and analysis of the denitrification potential to the influent and the anaerobic mixed liquid, the article sets forth that the particulate degradable component is mainly from the nitrogen removal carbon source, and opens out the significance of endogenous denitrification in the nitrogen removal process of low-carbon sewage.

Keywords: denitrification potential, oxidation ditch, endogenous denitrification, nitrogen removal and phosphorus removal

APPLICATION OF ACHIEVEMENTS

Study and Application of RTK Technology of Single Base Station Based on GPRS Yao Longlong(317)

Abstract: Combined with the characteristics of the engineering survey, the article sums up the deficiency in the practical application of urban CORS system, proposes to build up RTK system of single base station based on GPRS and introduces the solution method to realize the real-time field use acquisition results, and the verification and promotion of the application cases.

Keywords: GPRS, single-base-station RTK, engineering survey, coordinate elevation transforming parameters

Application of Non-nuclear Density Gauge in Road Engineering Lin Chunmei, Pan Yang(322)

Abstract: The non-nuclear density gauge is used to test the temperature segregation for the compaction quality of asphalt surface layer. The non-nuclear density gauge is used fast and nondestructively to quantify and test the density variation of asphalt concrete pavement to carry out the dynamic control and evaluation of construction quality. The article analyzes the transverse and longitudinal heterogeneities of asphalt concrete pavement and its causes, and also studies the influence of temperature on the uniformity of asphalt concrete pavement. The result shows that the temperature does not obviously influence the heterogeneity if only above the compaction temperature.

Keywords: road engineering, temperature segregation, non-nuclear density gauge, degree of compaction

Application of Low-noise Porous Asphalt Pavement in Municipal Roads of Hot and Humid Area

..... Xu Bo, Fu Chunxiu(326)

Abstract: This paper introduces the application of low-noise porous asphalt pavement in the municipal roads of hot and humid area from the aspects of the raw material selection, mixture mixing ratio design, construction control, the points for attention and maintenance management in a constructed low-noise porous asphalt

pavement project of Shenzhen. The practice shows that the low-noise porous asphalt pavement can greatly improve the driving security, drain off water and reduce the city heat island effect with the very applicable prospect in the southern hot and humid areas. This technology used in the hot and humid area can mainly solve two great problems of water stability and thermal stability of low-noise porous asphalt pavement. And the use of high viscosity modified asphalt and the determination of its technical indexes are the key to guarantee the stability of this technology. Also it is necessary to further strengthen the regional study of material technology index for the southern hot and humid areas.

Keywords: low-noise porous asphalt pavement, hot and humid area, high viscosity modified asphalt, mixing ratio design, construction control

Application of High-performance Concrete in Viaduct Li Xianchao, Wu Erfa (332)

Abstract: The service life of bridge structure is clearly required in the current standards. The durability design of bridge structure has become the key point. The high-performance concrete is the important measures to ensure the structure durability. The article sets forth the signification of durability design in the design of a main trunk viaduct of Guiyang City, the selection of concrete grade of the main structures, and the design of the main beam and the bridge piers according to the high-performance concrete, which can be referred for the application of high-performance concrete in the bridge structures.

Keywords: high-performance concrete, viaduct, application, service life, durability, Guiyang City

Application of Skeleton Lattice Beam and Three-dimensional Net Spray Planting Grass Technology
..... Chen Xiaojuan (335)

Abstract: A municipal road and its supporting engineering project of Luogang Center are located within Guangzhou Scientific City. The design requirement is the first-class highway and three high slopes are constructed along the highway. According to the design requirements, the slope protection is used by the method of concrete skeleton lattice beam and three-dimensional net spray planting grass. The three-dimensional net spray planting grass is a new technology of greening on the pure rock slope. The article focuses introduction on the fabrication and installation of the prefabricated skeleton lattice beam and the technology of three-dimensional net spray planting grass, which can be referred for the similar projects.

Keywords: slope protection, skeleton lattice beam, three-dimensional net spray planting grass

Analysis on Application Effect of Scattering Imaging Method in Grouting Quality Detection of Pre-stressed Structure by Post-tensioning Process Li Bin, Wang Cheng(337)

Abstract: The article introduces the application of scattering imaging method in the grouting quality detection of pre-stressed structure by post-tensioning process. The grouting quality of pre-stressed structure is one of the factors to determine the bridge durability. The grouting material, steel strand and pre-stressed structure are composed of the multiphase composite system of heterostructure materials to form the extremely complex inner structure with the very difficult detection. In recent years, several pre-stressed structure grouting quality detection methods, i.e. radar method, impact echo method and sonic wave scattering imaging method are developed at home and abroad. Aiming at the characteristics of the cast-in-situ beam in a project of Guizhou Province and the higher requirement of detection accuracy, the beam is detected by the sonic wave scattering imaging method, and the partial areas are carried out of breaking verification. The application effect shows that the sonic wave scattering technology has the greater practical significance in the engineering nondestructive testing field of fine structure.

Keywords: scattering imaging, grouting of pre-stressed structure, grouting quality detection of pre-stressed structure, application

THE RELATIVE SPECIALITIES

Application of Wavelet Analysis in Earthquake Engineering Zheng Yongyang(340)

Abstract:The continuous and scattering wavelet transformation is used to analyze, identify and simulate the stochastic process, and make it be characterized. The wavelet transformation is used to transform the stochastic process into a localized orthogonal basis function, which can provide a convenient method to simulate, analyze and emulate an unstable state process. The time domain and frequency domain of wavelet transformation are analyzed to make the character of instant signal given by time–frequency chart become possible, but the traditional method can not do it. The wavelet analysis is found able to apply in many domains in the short history of its development. The article briefly discusses the application of the continuous and scattering wavelet transformation to analyze the development status of mathematical signal, and also introduces some methods to identify and characterize the instant stochastic process of earthquake engineering.

Keywords: wavelet, earthquake, engineering

Calculation of Capacitance Compensation Capacity of High–voltage Single–stage Centrifugal Blower Liang Rongxin(342)

Abstract: The article introduces the calculation method of capacitance compensation capacity of high–voltage single–stage centrifugal blower. According to the characteristic analysis of single–stage centrifugal blower, the article gives the practical capacitance compensation capacity of high–voltage single–stage centrifugal blower and determines several strong–points to be grasped in the projects so as to ensure the practical energy conservation effect archived by the capacitance compensation for blower.

Keywords: single–stage centrifugal blower, high–voltage capacitance compensation, energy conservation

Summarization on Design of Jingguang Road (N) Tunnel in Zhengzhou City - - - Li Xuandong, Shen Guochao(344)

Abstract:Jingguang Road (N) Tunnel in Zhengzhou City is an important component of Jingguang Expressway System. The article mainly introduces the supporting of foundation pit, and the design of the main structures and the operation system, and sums up the characteristics of engineering design of this project, which can be referred for the design of the similar projects.

Keywords: tunnel, supporting, structure, design, system

Proposal and Application of a New Judging Standard of Tunnel Engineering Wall Rock Stability Wang Yuwen, Li Ningjun(348)

Abstract: According to the practices of tunnel engineering monitor measurement of Guangdong–Guangxi Expressway Lianhuan Section and Jiyuan–Jincheng Expressway, the article puts forward the method of using the displacement change rate and combining the geological and supporting information to judge the stability of wall rock and instruct the construction, and introduces its application in three aspects of modifying the grade of wall rock, changing the construction method and forecasting the collapse danger.

Keywords: tunnel, stability of wall rock, judging standard, application, forecast of collapse

Elementary Analysis on Causes and Prevention of Tunnel Lining Concrete Crack - - - He Zhigang, Tan Chao(351)

Abstract: The lining concrete crack has the greater impact on the construction quality in the tunnel engineering construction. Therefore, the article puts forward the preventive measures for the cause of concrete cracks by the practical cases in order to improve the tunnel engineering construction quality, which can be referred for the similar project.

Keywords: tunnel engineering, lining concrete, concrete crack, preventive measures

Repairing Technology of Rotary Joint of Cutter Center for Earth Pressure Balanced Shield Lao Yibin(354)

Abstract: According to a existing repair of a shield machine and the repair problem of this rotary joint of its center, the article studies the characteristics of this component, analyzes the damage status, discusses the repair economy and puts forward the improvement scheme. It is significantly to implement this repair work for ensuring the shield machine to be smoothly tunneled in the next tunnel.

Keywords: earth pressure balanced shield, rotary joint of cutter center, shield repair

Design of Dissymmetrical Underground Structures Reserved for Shield Tunneling Hua Zhongliang (357)

Abstract: It is required to reserve the enough implementation condition for the rail traffic shield obliquely tunneling the lower of the area in later period during the implementation of a section for Shanghai East-West Passage Project. The article systematically sets forth and studies the designs of the new dissymmetrical building envelope and inner structure used for the deep foundation pit of the underground structure in this section, which can be referred for the similar projects.

Keywords: shield tunneling, dissymmetrical building envelope, deep foundation pit, design

Application of RC Column-Steel Beam Structure in Sludge Treatment Plant Xu Yi (360)

Abstract: The RC column-steel beam structure is a RC column as a vertical component and the lightweight steel beam is used as the structure type of roof. It differs from the portal framed structure and also from the RC framed structure. Combined with analysis gist of the structure, the paper discusses the key structures and compares its economies, and studies the application of RC column steel beam structure in the sludge treatment plant.

Keywords: RC column steel beam, portal frame, plant structure

AElementary Discussion on Design Application of Engineering Tunnel in Municipal Engineering

..... Deng Huihan(362)

Abstract: According to the summarization, development application and superiority of the engineering tunnel, the article sets forth the development tendency of the engineering tunnel for the construction modernization of municipal infrastructures, and for the intensification and intelligence of municipal pipelines, and its important promoting role in the construction of the urban infrastructures. According to the design and construction cases of the engineering tunnels in Huaxia Road, Guangming New Area, Shenzhen City and in the ceramic culture creative area of Jingdezhen City, the article sums up the design gist and difficulties of the engineering tunnels, analyzes the restraint factors and the main problems existing in the engineering tunnel, and puts forward the proposals for its development.

Keywords: underground development space, engineering tunnel, pipeline intensification, intelligence, Shenzhen City

Discussion on Several Problems of Earthwork Engineering for Construction Land Yang Yukui (366)

Abstract: The earthwork engineering is a problem having to be met in the course of city construction and development. How to implement the earthwork engineering better is the problem to be concerned by the people. The article discusses the matters for attention in the earthwork engineering from the different factors to influence the earthwork engineering, which can be referred for the similar projects.

Keywords: earthwork engineering, earthwork calculation, site leveling, loosing coefficient, earthwork balance

Elementary Analysis on Structural Design of Heating Thermal Container Steel Reinforced Concrete Anaerobic Fermentation Tank Zheng Zhonghua(370)

Abstract: Taking the structural design of a heating thermal container anaerobic fermentation tank in a garbage disposal plant as an example, the article briefly discusses the structural design method and design gist of the container-type anaerobic fermentation tank, and puts forward several proposals of structural design according to the characteristics of fermentation tank.

Keywords: container-type anaerobic fermentation tank, structural design, heating, thermal insulation, corrosion resistance, impermeability

WORK & DISCOVERY

Exploration and Practice of Education and Training of Employees in Project Management Company

..... Gu Fangshu(374)

Abstract: The carrying out of the education and training of employees is necessarily required to improve the overall quality of employee team and to adapt the sustaining development of enterprise. According to the human resource management characteristics of construction engineering project management company, the article preliminarily discusses how to carry out the education and training of employees, and introduces some detail methods and practical cases to carry out the education and training, which can be referred for the similar companies.

Keywords: human recourse management, education and training, exploration and practice

Excellent Journal of the Ministry of Housing and Urban-Rural Development of PRC

Urban Roads, Bridges & Flood Control

Monthly

Number 7, 2013 (Total Number 171)

Publication on July 15th, 2013

<http://www.roadbridgeflood.com>

Start publication in 1984 Scope of issue: Issue at home and abroad

Department responsible for the work: the Construction Ministry in PRC

Sponsor: Shanghai Municipal Engineering Design & Research Institute

Editor & issue: Editorial department of "Urban Roads, Bridges & Flood Control"

Editor-in-chief: Luo Yanni

Address: No.901 Zhongshan Bei Er Road, Shanghai

P.C.: 200092 Tel.: (021)51298850

Fax: (021)51298850

E-mail: cdq@smedi.com

ISSN 1009-7716

CN 31-1602/U

Domestic price: 18 yuan RMB

**Journal of Municipal Engineering Branch of China Society of Civil Engineering
and Municipal Design Branch of China Society of Prospecting Design**