

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

6 2017 June 总第218期

万方数据-数字化期刊群
清华同方-中国期刊全文数据库
维普资讯-中文科技期刊数据库
中国核心期刊(遴选)数据库
中国学术期刊综合评价数据库

全文收录
全文收录
全文收录
收录期刊
统计源期刊

图为重庆市设计院设计的重庆市学堂堡组合立交工程

因为我们专心,所以我们专业!

——《城市道桥与防洪》

学术联盟：上海市城市科学研究会

● 本期看点

- 五路环形交叉口交通改善方法与案例分析
- 分离式大悬臂钢箱梁力学空间效应分析
- 成都市中心城区深层隧道排水系统规划研究
- 基于三维蠕变模型的基坑开挖长时位移预测



中华人民共和国住房和城乡建设部优秀期刊



万方数据

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

2017年 第6期 (总第218期)

2017年 6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

主办: 上海市政工程设计研究总院(集团)有限公司

协办: 全国城市道路与桥梁技术情报网

编辑委员会(第八届)

主任委员: 徐健

副主任委员: 刘旭锴 和坤玲

委员: (以姓氏笔画为序)

马国纲 王玉秀 王磊 卢永成 宁平华

李建民 李军代 李克平 李东 刘伟杰

朱南松 朱海鹏 吴玉明 吴光辉 陈翰新

陈德玖 陈伟 邵玉振 张澎涛 杨斌

何拥军 周松国 周文波 贺志宏 姜健

钟强文 俞利明 骆燕妮 徐波 高中俊

黄永春 童景盛 蒋乐 蒋中贵 韩振勇

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: 赵晓燕

美术编辑: 杨建华

英文校审: 孙宁萍

地址: 上海市中山北二路901号 邮编: 200092

电话: (021)55008850 传真: (021)55008850

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: 上海出版印刷有限公司

地址: 上海市延安东路110号5楼

中国标准连续出版物号: CN 31-1602/U

广告许可证号: 3101020130030

目次

道路交通

- 五路环形交叉口交通改善方法与案例分析 赵强, 赵永(1)
- 济宁市西铺路-任城大道互通立交方案设计 王文娟(7)
- 上海市罗山路-外环线立交总体方案设计 ... 冯恣(11)
- 宜宾大溪口交通节点及景观规划方案 张云龙(15)
- 商都路下穿铁路及107辅道地道工程总体设计 刘福平(20)
- 莆田市滨海大道总体方案设计 楚喆(24)
- 商业中心区交通节点立体空间优化改造研究 李喜华, 张萧萧(29)
- 市政道路改造工程设计方案探究 袁敏(33)
- 城市道路公交街道改造——以汉口中山大道为例 汪托, 黎明(35)
- 贵阳改扩建城市主干路道路设计要点 刘云飞(39)
- 市政道路工程的海绵化设计应用 高晓飞(41)
- 郑州南三环东延平行匝道布设 杨静(44)
- 道路辟通工程对城市中心区路网的影响分析 赵一成(47)
- 连通度法在城市快速路规模预测中的应用 王小华, 王宇, 吕凯(51)
- 基于“小街区、密路网”理念的单向交通组织研究 於瑞松(55)
- 城市道路改建施工期间交通组织浅析 韩秀丽(58)
- 老年人交通出行需求与供给均衡分析 张春光(61)
- 上海市柔性基层沥青路面典型结构设计初探 张丽洁(64)
- 乌鲁木齐杂填土路基处理的比选及对策 高劲(68)
- 新疆准东地区盐渍土路基处理措施分析——以五彩湾环城路工程为例 陆银山, 魏晋(72)
- 旧路改造工程中路基路面加宽的处治设计 ... 黄志鹏(76)
- PHC管桩在临港新城市政道路桥台后高填土路基处理中的应用 周孔(78)
- 加铺沥青与贫混凝土在旧路改造中的应用 ... 陈少雄(81)

桥梁结构

- 分离式大悬臂钢箱梁力学空间效应分析 沈钱斌(84)
- 非对称斜拉桥温度效应对索力影响分析 陈自能(87)
- 钢桁腹杆PC组合箱梁桥自振特性研究 方映平(92)
- 城市高架预制装配式桥梁方案研究 郭忆(95)

期刊基本参数: CN 31-1602/U * 1984 * m * A4 * 318 * zh * P * ¥25.00 * 10000 * 91 * 2017-06

连续刚构桥箱梁设计要点分析	韩百成(99)
大跨预应力混凝土连续梁桥设计研究	刘文明,谢春玲(102)
水中大跨度连续刚构桥超长0#块(30 m)支架设计	马威(105)
朔州市安泰街大桥主桥结构设计	丁文俊(107)
江门水道大桥设计方案比选	代宇勇(110)
延河大桥改造工程总体设计	高明大,郭河,周立臣(114)
大跨径椭圆形空间变高钢桁架人行天桥关键技术 ...	俞雷(118)
城市高架立交桥梁上部结构类型研究	李君凤(122)
采用转体施工的有轨电车小半径曲线连续梁桥设计	李雪峰(126)
梁拱组合协作体系的地震分析	梁田(129)
大跨径桥梁钢桥面铺装设计分析	蒋欣(132)
温州洞头海景桥桥梁景观设计 --- 薛仲义,刘恩广,宿霄男(134)	
2×36 m连续箱梁桥主梁设计及纵向计算	谢居才(137)
城市桥梁拼接改造设计要点	闵诗磊(140)
浅桥城市下沉式地道设计思路	李峻岭(143)

防洪排水

成都市中心城区深层隧道排水系统规划研究	李莉,陆柯(146)
顶管穿越堤防及河道工程设计——以广东省肇庆市某湿地排水 涵管穿越河道相关顶管工程为例	汪平(150)
新城区河道综合治理措施探讨——以澄迈美伦河为例	吴春(155)
黑臭河道治理中生物修复技术的应用与实施方案研究	金香(160)

管理施工

基于过程控制理念的改扩建工程路面质量控制 --- 于营(163)	
研究道路交通环境对交通安全的影响及对策	甘睿(167)
分析高速公路路面质量管理控制方法	赵刚(170)
公路路基高填方施工技术的探析	邹祖钧(172)
论山区公路路基病害及防治措施	陈伟(174)
山区公路边坡崩塌的成因分析及处置措施	闫忠梅(177)
公路沥青路面水损害防治技术措施	邱峰(180)
分析高速公路绿化施工控制	李天竟(183)
宁波春晓大桥主拱施工关键技术研究	孟续东(185)
深水高墩托架及挂篮预压施工技术研究	缪为刚(189)
某较大斜坡先简支后连续 T 梁桥复位施工技术	闵玉,张润泽(192)
农村公路桥梁的典型病害及其防治措施	常小花(195)
超大盾构工作井半逆作法施工受力变形特征分析 ...	李雄飞(198)
冻结法在某盾构隧道进洞施工中的应用分析	孟俊(202)
高浓度膨润土泥浆在大口径越江顶管工程中的应用	吕品(205)
高承压水流沙层大口径钢顶管进洞关键技术	王帅(208)

编委成员单位(排列不分前后)

主任编委单位:

上海市政工程设计研究总院(集团)有限公司

副主任编委单位:

北京市市政工程设计研究总院有限公司

天津市市政工程设计研究总院

武汉市防汛指挥部

编委单位:

南京市水利规划设计院有限责任公司

中国市政工程西南设计研究总院有限公司

同济大学交通运输工程学院

上海市市政规划设计研究院

广东省建筑设计研究院

广州市市政工程设计研究总院

沈阳市市政工程设计研究院

中国市政工程西北设计研究院有限公司

中国市政工程华北设计研究总院有限公司

上海市城市建设设计研究总院(集团)有限公司

武汉市政工程设计研究院有限责任公司

武汉市城市防洪勘测设计院

武汉市水务科学研究院

西安市政设计研究院有限公司

重庆市设计院

重庆市勘测院

林同棧国际工程咨询(中国)有限公司

济南市市政工程设计研究院(集团)有限责任公司

成都市市政工程设计研究院

重庆市市政设计研究院

上海公路桥梁(集团)有限公司

上海城建市政工程(集团)有限公司

杭州市市政工程集团有限公司

深圳市市政设计研究院有限公司

天津城建集团有限公司

杭州市城建设计研究院有限公司

兰州市城市建设设计院

上海浦东路桥建设股份有限公司

上海市政交通设计研究院有限公司

上海弘路建设发展有限公司

保定市城乡规划设计研究院

上海奉贤建设发展集团市政公路工程有限

城市轨道交通类矩形盾构法隧道施工技术研究 ...	刘喜东(212)
单线隧道软岩大变形处理技术	刘军成(217)
三联隧道围岩大变形的原因与处理技术	谢光明(220)
双层超前小导管在中短隧道单向出洞施工中的应用	高文韬(223)
浅谈陆上锚碇深基坑施工技术	过佳鑫(225)
不可展锥曲线面构筑物树脂衬钢模板制作技术 ...	宋宝平(228)
上海迪士尼车站站顶吊项工程施工技术	李俊(231)
PPP合同条件下避免城市道路过度设计的若干措施	权君(233)
工程管理信息化与BIM技术应用	曹效义(236)
工程质检通用业务信息系统设计和实现	杨国宏(240)

科技研究

基于三维蠕变模型的基坑开挖长时位移预测	王荣勇,陈立生,王颖轶,黄醒春(244)
基于阻尼比的混合减震结构效果研究	周连伟(250)
基于拟合优度检验-贝叶斯理论的生态混凝土碳化深度概率模型研究	吴柳,董峰辉(254)
低温-重载耦合作用下钢桥面铺装力学特性	彭广银,景晶晶(258)
冷拌沥青混合料性能试验研究	长应海(261)
焚烧炉渣集料用于水稳碎石室内试验研究	韩金蓉(264)

成果应用

数字化技术对沥青路面抗滑评价的应用	陈惠萍(266)
牺牲阳极法在混凝土桥梁保护中的应用	肖勇辉(270)
小型无人机在大比例尺地形图测绘中的应用	谢海燕(274)

相关专业

与道路隧道合建地铁车站深基坑设计方案研究 ...	刘凡凡(277)
小半径近距离盾构隧道侧穿高架桩基影响研究 ...	王春凯(282)
城市综合管廊工程重要节点设计研究	王毅,章海璇,杨绍猛(287)
软土地区地下通道上跨运营地铁区间的保护措施研究	王维朋(290)
小春湾隧道工程地质条件的相关分析	李剑(294)
某综合管廊地基处理方案研究	褚方平(296)
双排预应力管桩在软土地区污水处理构筑物基坑支护中的应用	曹志杰(301)
邻近既有隧道的软土地区深基坑设计与监测分析 ...	李成巍(303)
上海道路工程勘察中注意的问题	周黎月(309)
论城市滨水区的景观设计	周芸(314)

广告索引

封一	重庆市设计院
封二	上海申华声学装备有限公司
封三	绿水股份有限公司
封四	上海金曲信息技术有限公司
广前1	青岛润邦防水建材有限公司
广前2	柳州欧维姆机械股份有限公司
广后1	上海强路路基材料有限公司

封面工程

本期封面工程为重庆市学堂堡组合立交,由重庆市设计院设计。

重庆市学堂堡组合立交是重庆主城快速路一纵线与渝遂道高速 G93 相交形成的一座大型立交。其中,快速路一纵线由北向南串联了北碚、沙坪坝、九龙坡和江津四区,是主城西部片区南北向快速通道。G93 属于国家高速公路网成渝环线,因此该立交节点非常重要。

一纵线主线设计车速为 80 km/h,双向 8 车道;渝遂高速公路设计车速为 100 km/h,双向 4 车道。由于该项目与相邻的物园区中心站立交距离只有 600 m,因此将两个立交进行组合设计。一纵线主线依次上跨渝遂高速和中心站北线,学堂堡采用“8”字型立交,中心站采用蝶式立交,在一纵线主线外侧增设双向 4~6 车道辅道来实现两个立交的交通转换。既实现了快速路与高速公路的交通转换,又解决了重庆西部物流园区对外的交通。

该组合立交于 2009 年 11 月开工,2012 年 12 月竣工。其造型优美、线形流畅,为重庆自由贸易区建设提供了重要保障。

Urban Roads, Bridges & Flood Control

(Monthly)

Number 6, 2017 (Total Number 218)

CONTENTS

ROADS & COMMUNICATION

Traffic Improvement Method and Case Analysis of Five-road Ring Intersection Zhao Qiang, Zhao Yong (1)

Abstract: With the increment of non-motor vehicle and motor vehicle ownership in the city, the urban island, especially the five-road ring intersection has been not suitable for the traffic operation demand of city now. This paper analyzes the traffic causes of the five-road ring intersection, and finds the reconstruction schemes and concepts suitable for the different intersections according to many ring intersection reconstruction schemes at home and abroad. Taking the reconstruction of Changcheng Island in Miyun District of Beijing as the engineering background, this paper provides the theoretical basis for the reconstruction of five-road ring intersection.

Keywords: five-road intersection, island reconstruction, traffic improvement

Scheme Design of Xipu Road – Rencheng Avenue Interchange in Jining City Wang Wenjuan (7)

Abstract: Xipu Road – Rencheng Avenue Interchange is an intersection of the " + " -shaped skeleton of the urban expressway network in Jining City. Its oblique crossing angle is smaller and its north side is closely adjacent to Rihe Railway. According to the comprehensive analysis of planning condition, functional location, traffic demand and surrounding construction condition of this node, the article puts forward to retain the existing crossing-railway interchange and ramp taken as the auxiliary road system of Xipu Road Expressway to serve the traffic contacts surrounding Rihe Railway, and to newly construct the main road bridge and hub interchange of Xipu Road Expressway to serve the express traffic contacts among the long-distance groups. On this basis, two schemes of alfalfa leaf shape + semi-directional ramp and full semi-directional ramp are proposed for the main line hub interchange of expressway. The alfalfa leaf shape + semi-directional ramp scheme is recommended after the factors of planning, traffic, status and land are comprehensively considered, which can be referred for the similar projects.

Keywords: expressway, interchange, railway, comparison and selection of scheme

Overall Scheme Design of Shanghai Luoshan Road – Outer Ring Line Interchange Feng Min (11)

Abstract: Luoshan Road – Outer Ring Line Interchange is a traffic conversion hub of Luoshan Road with two expressways of Outer Ring Line in Shanghai. Based on the location analysis of node traffic and the

forecast result of traffic volume, and combined with the node situation and limiting factor, the article discusses the selection process of overall scheme of the interchange. Under the premise of meeting the traffic functions, the scheme controls the interchange scale, avoids the important structures along the line, and also considers the combination of the short term and long term.

Keywords: interchange reconstruction, node traffic, interchange selection, forecast of traffic volume, Shanghai

Traffic Node and Landscape Planning Scheme of Daxikou in Yibin Zhang Yunlong (15)

Abstract: The node of Daxikou in Yibin is located at the south bank of the main city of Jinsha River, Minjiang River and Yangtze River. It is also an important part of the landscape belt around Yangtze River. The surrounding traffic network is developed. Based on the traffic situation of node road and the future planning of road network, this paper puts forward the overall landscape planning scheme and the node traffic design scheme according with the macroscopic strategy of city development, and compares and analyzes the node scheme.

Keywords: road design, traffic node, landscape planning, Yibin City

Overall Design of Shangdu Road Under-crossing Railway and 107 Auxiliary Road Subway Project

..... Liu Fuping (20)

Abstract: Combined with the engineering case of Zhengzhou Shangdu Road Under-crossing Railway and 107 Auxiliary Road Subway Project, the article sets forth the engineering control condition, plane design, profile design and cross section design, and focuses on attention to the detailed analysis of surrounding control conditions of the project in the design process of urban underpass tunnel, which can be referred for the design of the similar urban underpass tunnels..

Keywords: urban underpass tunnel, overall design, control condition

Design on Master Scheme of Binhai Avenue in Putian Chu Zhe (24)

Abstract: The article introduces the design on the master scheme of Binhai Avenue in Putian. The master scheme makes clear the functional position and the service object of Binhai Avenue in the planned road network of Putian 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 section form, main node, setup of entrance and exit, slow traffic system and crossing facilities.

Keywords: Binhai Avenue, master design, section form, setup of entrance and exit, slow traffic system

Study on Three-dimensional Space Optimization and Reconstruction of Traffic Node in Commercial Center

..... Li Xihua, Zhang Xiaoxiao (29)

Abstract: The traffic nodes located in the commercial center are generally composed of varied transportation organization, especially the important node of multi-road intersection. The optimization of traffic space and the rationality of traffic optimization become the significance to guarantee the effective traffic operation. As an example of a three-dimensional space optimization and reconstruction project of traffic node in a commercial

center, and based on the traffic demand analysis of the different traffic nodes, this paper introduces the strategy of taking measures of transit traffic three-dimensional separation, traffic streamline hierarchical organization, ground-underground integration joining and parking facility management, and describes the optimization design of the complex traffic node to form the multimode, integrated and high-effective three-dimensional traffic space.

Keywords: traffic integration, traffic demand analysis, commercial center, traffic node

Further Study on Design Scheme of Municipal Road Reconstruction Engineering Yuan Min (33)

Abstract: With the development of traffic operation in China, the scale of road traffic system is gradually increasing. In order to improve the security and stability of municipal road, it is required to implement the reconstruction specifically to the partial municipal roads so as to meet the basic demand of road traffic system and to avoid the increment of road traffic operation pressure. The direct purpose of municipal road reconstruction is to improve the operation level of road, and to prevent the cause of security risk. Taking the municipal road reconstruction as the study object, the article analyzes the relevant contents of engineering design scheme.

Keywords: municipal road, reconstruction engineering, design scheme

Reconstruction of Public Transit Street of Urban Road Wang Tuo, Li Ming (35)

Abstract: As an example of Zhongshan Avenue in Hankou, the present situation of Zhongshan Avenue in Hankou is hard to guarantee the pedestrian way right because of its traffic congestion. According to the adjustment of road section, the optimization of traffic organization and the planning of static traffic, Zhongshan Avenue is reconstructed into the public transit street. The public transit street can guarantee the road public transit and the pedestrian way right.

Keywords: public transit street, traffic organization optimization, static traffic planning

Design Gist in Reconstruction and Extension of Main Urban Trunk Roads in Guiyang Liu Yunfei (39)

Abstract: Aiming at the problems existing in the design process of reconstructing and extending the main urban trunk roads, taking the main trunk road projects of Baihua Avenue and Mawang Road in Guiyang City as the examples, the article analyzes the factors to influence the design of main urban trunk roads, and puts forward the relative design gist.

Keywords: main urban trunk road, reconstruction and extension, road design

Application of Sponge Design in Municipal Road Engineering Gao Xiaofei (41)

Abstract: The paper discusses the concept and practical method of sponge city, sets forth the sponge design concept in the municipal road engineering in detail, and also aiming at the detailed municipal road engineering cases, introduces the road engineering design of sponge city. The detailed measures are the sidewalk porous pavement, ecological grassed swales and municipal pipe network, which has some reference

for the sponge design of municipal road.

Keywords: sponge city, municipal road engineering, design

Layout of Parallel Ramp for Zhengzhou South Ring III East Extension Project Yang Jing (44)

Abstract: Combined with Zhengzhou South Ring III East Extension Project, the article discusses the layout of parallel ramp, sets forth the design principle and concept of the parallel ramp in this project, and introduces the design gist of the ramp layout location, location spacing, acceleration lane, deceleration lane, and distance from ramp to intersection of this project, which can provide the method and experience for the design of the similar interchange projects.

Keywords: urban expressway, design of parallel ramp, ramp spacing, layout

Analysis on Influence of Road Opening Project on Road Network of Urban Center Zhao Yicheng (47)

Abstract: Owing to the lagging reasons of regional development and planning, the road network of urban center is faced of increasing traffic impact, and the existing traffic problems have become more and more prominent. It is necessary to combine with the existing road network and traffic situation to carry out the further study and analysis because of more and complicated influence factors of new opening road. Taking Jinchang Road – Jiaotong Road Opening Project in Putuo District of Shanghai as an example, the article analyzes the present situation of the surrounding road networks along the project, puts forward the existing structural problems now, and discusses the improvement effect of the existing road network after the road opening in detail.

Keywords: opening project, urban center, present road network

Application of Connectivity Method in Scale Forecast of Urban Expressway ... Wang Xiaohua, Wang Yu, Lv Kai (51)

Abstract: In order to guarantee the planning construction of urban expressway system with the urban coordinating development, and to realize the maximization of social and economic benefits, how to determine the reasonable scale of urban expressway system is an important issue faced by many city decision makers and planners of China. The connectivity method in combinational mathematics graph theory is introduced to calculate the reasonable scale of urban expressway system through the connectivity of expressway system with the main traffic hubs within city. This method more intuitively restores the functional essence of urban expressway system, and has a certain adaptation to the different city scales and space layouts. The application case of Jinan shows that the analysis result of this method can be taken as an important reference basis for the comprehensive determination of urban expressway construction scale, and has the good operability in the planning practice.

Keywords: traffic planning, urban expressway, connectivity method

Study on One-way Traffic Organization Based on Concept of "Small Block and Dense Road Network"
..... Yu Ruisong (55)

Abstract: With the planning concept of "small block and dense road network" more and more respected and

applied in the urban road planning of China, the design and management of urban road are also facing the new challenges of planning concept change. The traditional road design and traffic management method mainly for motor vehicle has been hard to adapt various traffic demands in the new road network. The article summarizes the concept of "small block and dense road network", introduces the characteristics of one-way traffic, analyzes the adaptability of one-way traffic organization under the condition of "small block and dense road network", and analyzes how to better implement this planning concept of "small block and dense road network" in the practice from the angles of road design and traffic organization.

Keywords: small block and dense road network, one-way traffic organization, road design

Elementary Analysis on Traffic Organization in Reconstruction of Urban Road Han Xiuli (58)

Abstract: The reconstruction of urban road will have a great influence on the existing traffic and the surrounding area. This paper introduces the design of traffic organization in the reconstruction of Lingkong Road Interchange, which can be referred for the traffic organization in the construction of the other roads.

Keywords: urban road, construction period, design of traffic organization

Analysis on Trip Demand and Supply Equilibrium of the Elderly Zhang Chunguang (61)

Abstract: According to the analysis of trip purpose, trip time and trip mode, the article studies the trip demand characters of the elderly, points out the deficiency of meeting the trip traffic facilities for the elderly, expects the modern traffic technology and policy to improve the trip flexibility of the elderly, to improve the living quality of the elderly, and to meet the trip and activity needs of the elderly in order to provide the idea for the reform of urban traffic supply.

Keywords: aging society, trip character, trip demand, traffic supply, activity space

Initial Discussion on Typical Structure Design of Flexible Base Asphalt Pavements in Shanghai ... Zhang Lijie (64)

Abstract: In recent years, to speed up the schedule of construction, the flexible base asphalt pavement structure is used in many municipal highway overhaul or municipal road reconstruction projects of Shanghai. Owing to no further study, this kind of pavement structural composition designed by the design unites is not unified. Therefore, on the basis of analyzing and studying the design situation flexible base asphalt pavement structure, and according to the selection of the unified design parameters and material parameters, the typical structural composition of flexible base asphalt pavement for Shanghai is achieved by the software calculation easily for the designers to choose. And the ideas and suggestions are proposed for the use of flexible base.

Keywords: asphalt pavement, flexible base, typical structure design

Comparison and Countermeasures for Miscellaneous Filling Roadbed Treatment in Urumqi Gao Meng (68)

Abstract: Taking a miscellaneous filling roadbed project of Urumqi as an example, the article introduces the engineering characteristics of miscellaneous filling, analyzes and compares the practical roadbed reinforcement methods, determines the replacement method and the dynamic compaction method as the

relatively excellent roadbed treatment methods, and also determines the Gobi soil as the priority option of roadbed filling material and replacement filling material, and defines the Gobi soil compaction technical requirements.

Keywords: roadbed, miscellaneous filling, replacement and filling, dynamic compaction, Gobi soil

Analysis on Treatment Measures for Salinized Soil Roadbed in Zhundong Area of Sinkiang
..... Lu Yinshan, Wei Jin (72)

Abstract: Taking Wucaiwan Ring Road Project as an example, the article further discusses the salinized soil causes and the roadbed disease treatment measures of Zhundong Area by the salinized soil roadbed disease prevention of Wucaiwan Ring Road in Zhundong Economic and Technological Development Zone. The relative technical reference can be provided for the roadbed treatment of road construction in this area.

Keywords: Zhundong Area of Sinkiang, salinized soil, cause of salinized soil, roadbed disease treatment measures

Treatment Design of Roadbed Pavement Widening in Reconstruction of Old Road Huang Zhipeng (76)

Abstract: With the continuous development of economy in China, the road transportation volume increases every day, and the widening reconstruction of old road is extremely urgent. The widening reconstruction of old road can effectively improve the road network structure and upgrade the road grade, but is easy to cause the problems of differential settlement of old and new roadbeds, and the reflection crack of overlaid asphalt surface. Taking a practical project as an example, the article analyzes the problems existing in the widening of old road, and discusses the relevant design measures to be taken for the problems possibly caused in the widening of roadbed pavement.

Keywords: widening of old road, reconstruction of old road, widening of roadbed pavement

Application of PHC Pipe Pile in High Filling Subgrade behind Municipal Road Abutment of Lingang New City ...
..... Zhou Kong (78)

Abstract: Lingang New City is one of the key areas to be developed in the future of Shanghai. In the recent years, the construction of municipal infrastructures in the area of Lingang is promoted rapidly. However, the complex soft soil subgrade brings a serious test to the municipal construction, especially in the high filling subgrade section behind the abutments. Owing to the larger moisture content, high compressibility and low strength of subgrade soil, the conventional treatment mode if used will be very easily to cause the vehicle bump at bridgehead and seriously to affect the traffic safety and comfort. According to the practical projects, this paper puts forward the use of PHC pipe piles to treat the high filling soft soil subgrade behind the abutments through comparative analysis. A good technical effect is achieved.

Keywords: pre-stressed high strength concrete (PHC) pipe pile, soft soil subgrade, subgrade treatment, post-construction settlement

Application of Overlaying Asphalt and Lean Concrete in Reconstruction of Old Road Chen Shaoxiong (81)

Abstract: In recent years, the old cement concrete pavements used for some years are seriously damaged, and cannot meet the increasing traffic volume and the development demand. The reconstruction engineering of old road is particularly urgent and important. According to the application of overlaying the asphalt and lean concrete in Hainan Province Sanya City Haitangwan Haiyu East Line Municipal Road (from Tengqiao West River to Intersection of Haian Avenue) Reconstruction Project, the article sets forth the delay and prevention of the cracks caused by the pavement overlaying, and the function of improving the service life of urban old cement concrete pavement in the design.

Keywords: reconstruction of old cement pavement, overlaying, reflection crack, flexible surface course, roller compacted concrete

BRIDGES & STRUCTURES

Analysis on Mechanical Space Effect of Separated Large Cantilever Steel Box Girder Shen Qianbin (84)

Abstract: The separated box section is widely used in steel bridges. Owing to the ground road traffic and landscape demand under bridge, this structural style will often form the large horizontal cantilever structure when used for the urban viaduct, and its mechanical space effect is obvious. According to a two-span continuous steel box girder in Taiyuan Wuhu Mountain Expressway Construction Project, the Abaqus finite element engineering simulation software is used to establish a three-dimensional shell element model of the whole bridge in order to analyze its space mechanical property under the typical load including the shearing lag effect, live load unbalance load effect and pivot crossbeam stress by the comparison with the single girder model, which can be referred for the design and simplified analysis of the similar bridges.

Keywords: separated, large cantilever, steel box girder, space effect, finite element

Analysis on Influence of Temperature Effect on Cable Force of Asymmetric Cable-stayed Bridge

..... Chen Zineng (87)

Abstract: According to the engineering background of a cable-stayed bridge in Wuqi County of Yan'an City, a space member system finite element model is established to analyze the change rule of stayed cable force of this bridge under the influence of overall temperature variation, gradient temperature and cable-beam temperature difference. The results show that the temperature effect has an obvious influence on the cable force, and the sensitivities of the cable force to the temperature effect are different in the different positions. The results can be referred for the cable adjustment in the design stage of this bridge, the monitor in the construction stage and the health inspection and maintenance of the bridge in the service stage, and can be also referred for the construction of the similar cable-stayed bridges.

Keywords: asymmetric cable-stayed bridge, temperature gradient, cable-beam temperature difference, overall temperature variation, cable force

Study on Natural Vibration Characteristics of Steel Truss Web Member Pre-stressed Concrete (PC) Composite Box Girder Bridge Fang Yingping (92)

Abstract: To study the natural vibration characteristics of steel truss web member PC composite box girder bridge, and based on the background engineering of a three-span continuous waveform steel web PC composite box girder bridge, the steel truss web member is used to replace the waveform steel web in the original box girder and the steel truss web member PC composite box girder bridge is designed. Two analysis software ANSYS and Midas Civil are used to establish a three-dimensional finite element model to analyze the natural vibration characteristics of this bridge. The influences of diaphragms set up as the parameter on the natural vibration characteristics of steel truss web member PC composite box girder bridge are studied. The results show that the vertical bending stiffness of the steel truss web member PC composite box girder bridge is small, and the torsional stiffness is large. The setup of the diaphragm has a little influence on the vertical bending stiffness of this bridge, but has a certain influence on the cross bending stiffness and torsional stiffness of the box girder. Moreover, the torsional stiffness of box girder is obviously improved when the diaphragm is reasonably set up.

Keywords: steel truss web member PC composite box girder, natural vibration characteristic, diaphragm, finite element method

Study of Urban Viaduct Prefabrication and Assembly Scheme Guo Yi (95)

Abstract: The prefabricated and assembled bridge to realize the industrialization can improve the bridge construction level of China and decreases the construction influence on the environment and traffic, which certainly will bring the good social benefit and economic benefit. Aiming at the development of urban viaduct assembly at home and abroad, the article summarizes and puts forward the bridge assembly design scheme suitable for the situation of China at the present stage, and especially studies the inverted T-shaped bent cap prefabrication scheme with six-lane and eight-lane sections more difficultly treated.

Keywords: prefabricated and assembled, bent cap, viaduct

Analysis on Design Gist of Box Girder for Continuous Rigid-frame Bridge Han Baicheng (99)

Abstract: Aiming at the problems existing in the design of box girder for continuous rigid-frame bridge now, the article analyzes the design characteristics of the box girder structure for continuous rigid-frame bridge by the practical cases, and puts forward the design gist of detailed problems. The result shows that the design effectiveness of box girder for continuous rigid-frame bridge will be effectively controlled according to the geological and climate conditions of the project location.

Keywords: continuous rigid-frame box girder, form traveler structure, design of closure segment of main girder, friction resistance coefficient of steel strand pipe

Study on Design of Long-span Prestressed Concrete Continuous Beam Bridge ... Liu Wenming, Xie Chunling (102)

Abstract: Combined with the design of a (60+105+60)-m prestressed concrete variable cross-section

continuous box girder bridge, the article studies and analyzes the design gist to select the section form, to propose the structural dimensions, and to arrange the prestressed steel strands of the long-span prestressed concrete variable cross-section continuous box girder bridge, which can be referred for the structural design of the similar bridges.

Keywords: prestressed concrete, box girder, bridge design, section dimension, crack, deflection

Design of Support for Super-long 0# Segment (30m) of Long-span Continuous Rigid-frame Bridge in Water

..... Ma Wei (105)

Abstract: The difficulty in the construction of long-span rigid-frame bridge in water is relatively greater. The requirements for its support structure system are higher. Therefore, the reasonable design of support system is very important. Taking a practical project as an example, the article introduces that the stand column is the double-channel 40 U-steel support system for the super-long 0# segment (30m) of this long-span continuous rigid-frame bridge according to the beam-type support. The software Midas is used to calculate the inner forces of crossbeam and stand column. The bearing capacities of crossbeam and stand column, and the stability of stand column pressure lever are checked and calculated. The results show that the double-channel 40 U-steel support system used for the stand column as the support system of super-long girder of long-span continuous rigid-frame bridge is effective according to the beam-type support.

Keywords: railway bridge, support calculation, model test, continuous rigid-frame bridge, stability of pressure lever, bridge construction

Structural Design of Main Bridge for Antaijie Bridge in Shuozhou City

Ding Wenjun (107)

Abstract: The article focuses introduction on the structural design and calculation analysis of Antai Street Bridge – an important urban landscape bridge crossing the Qili River in Antai Street of Shuozhou City in Shanxi Province. Its main bridge is a three-span truss arch-beam composite bridge. Its main arch is an introversive no-wind bracing structure. Its stayed cables are arranged in the fan shape. The bridge modeling structure is novel and delight. The static analysis, stable analysis and fatigue calculation analysis can verify the rationality and safety of this design scheme, which can be referred for the design of the similar bridges.

Keywords: arch-beam composite system, structural design, calculation analysis, introversive no-wind bracing structure

Comparison of Design Schemes for Jiangmen Waterway Bridge

Dai Yuyong (110)

Abstract: The main span combination of Jiangmen Waterway Bridge is (52.5+80+77.5+80+52.5) m. The article compares and analyzes the rigid frame – continuous system, continuous system and steel structure system used in the design stage, and introduces the comparison of design schemes, the main calculation results and the structural design characteristics.

Keywords: rigid frame – continuous system, continuous system, steel structure system, bridge design

Overall Design of Yanhe River Bridge Reconstruction Project Gao Mingda, Guo He, Zhou Lichen (114)

Abstract: The Yanhe River Bridge Reconstruction Project includes two parts of old bridge reconstruction and new bridge extension. The main aim of reconstruction design is to construct the beam and bridge into a bridge, and to construct the new as the old. The new bridge is constructed by the integral prefabricated bridge deck slab, lattice arch architecture and new shaft underground diaphragm wall abutment. The deck system of old bridge is reconstructed by the integral deck slab structure, the new light ceramsite concrete material to replace the arch stuffing, the re-layout of arch waterproof and drainage system, and the treatment of stone surface weathering and cracks of old bridge structure. Aimed at the design difficulties, the monographic study of the shaft underground diaphragm wall abutment and concrete structural surface coating system is carried out.

Keywords: Yanhe River Bridge, overall design, lattice, underground diaphragm wall, preventive coating

Key Technology of Long-span Oval Space Variable High Truss Pedestrian Overpass Yu Lei (118)

Abstract: Taking a span (80+102+88+110)-m oval space variable high truss pedestrian overpass as the design background, and according to the overall layout and structural style, the article introduces the key technologies of support arrangement, pedestrian-induced vibration control, joint structure, wind resistance and seismic resistance.

Keywords: space variable high truss, TMD, viscous fluid damper, cast steel joint

Study on Superstructure Type of Urban Viaduct Li Junfeng (122)

Abstract: With the development of economy and society, the structural form of urban viaduct also tends to be diversified. Based on Zhengzhou South Ring III East Extension Project, this paper compares the construction costs, construction technologies and later maintenances of pre-stressed reinforced concrete continuous beam, cast-in-situ corrugated steel web continuous beam, prefabricated corrugated steel web continuous beam and prefabricated small-box beam. The prefabricated small-box beam as the main structural type is determined to use for the main line. The cast-in-situ corrugated steel web continuous beam bridge is used at the node of long-span bridge required to span the intersection, which can be referred for the selection of superstructure type of urban viaduct.

Keywords: urban viaduct, corrugated steel web, cast-in-situ, prefabricated

Design of Minor Radius Curve Continuous Beam Bridge of Tramcar by Rotation Construction ... Li Xuefeng (126)

Abstract: The tramcar Line T2 in Songjiang crosses over G60 Shanghai-Kunming Expressway. Its main span bridge located on the radius 350 m of circular curve in plane is constructed by the rotation method. The article introduces the structural design and rotation system of this bridge, and analyzes the design gist of the pre-eccentricity of rotation, the stress of upper turntable and the static wind stability of rotation construction in detail.

Keywords: rotation, minor radius curve, tramcar, static three-component force

Seismic Analysis of Beam Arch Combination System Liang Tian (129)

Abstract: The beam arch combination system is composed of continuous structure and decorative arch. Both the continuous structure and the arch rib have own substructure, but the both are connected with each other through suspender. In this paper, the modal analysis of this structure is carried out, and the first six structural periods are obtained. At the same time, this paper analyzes the arch rib stress, deformation and foundation stress under the earthquake action, and the earthquake horizontal force of bridge pier in the continuous structure, and compares with the single-beam model of continuous structure so as to have some reference for the seismic analysis of beam arch combination system in the future.

Keywords: beam arch combination, single-beam model, seismic effect, arch rib

Analysis on Design of Steel Deck Pavement of Long-span Bridge Jiang Xin (132)

Abstract: With the continuous improvement of the social economic standard and the flourishing development of the socialist construction cause, the construction of road traffic is also developing rapidly. The more and more construction number of long-span bridge greatly satisfies the travelling demand of the people. At the same time, the construction quality of long-span bridge is also becoming more and more attention. The steel deck pavement is the important technical component of long-span bridge construction not only relating to the aesthetic measure of bridge, but also relating to the quality and safety of long-span bridge. Therefore, the professionals should pay high attention to the design of steel deck pavement. Based on the practical condition of bridge engineering, the design level should be improved to promote the further development of long-span bridge. The design of steel deck pavement of long-span bridge is analyzed. The relative experience can be referred for the similar projects.

Keywords: long-span bridge, steel deck, pavement design

Landscape Design of Dongtou Seascape Bridge in Wenzhou Xue Zhongyi, Liu Enguang, Su Xiaonan (134)

Abstract: Taking the project background and landscape scheme of seascape bridge as an example, the article introduces the design concept and flow of bridge landscape, introduces the landscape design of the local components and overall bridge, and discusses the design concept of urban bridge landscape, which can be referred for the landscape design of the similar bridges.

Keywords: bridge landscape design, scheme, concept

Design and Longitudinal Calculation of Main Girder for Two-span 36-m Continuous Box Girder Bridge
..... Xie Jucai (137)

Abstract: The adoptive probability of two-span continuous girder bridge is relatively smaller in the practical bridge engineering construction. Its economical indexes are lower than the multi-span continuous girder bridges. According to the background of a two-span 36-m pre-stressed concrete continuous box girder bridge in the approach bridge of Zhoushan Xiaogan Bridge II Project, the article introduces the design and longitudinal calculation of its main girder from the design criteria of main girder, the proposal of main girder

structure size, the steel strand configuration of main girder and the longitudinal calculation in detail, which can be referred for the similar projects.

Keywords: continuous box girder, main girder, structure size, steel strand, load, longitudinal calculation

Design Gist of Urban Bridge Splicing Reconstruction Min Shilei (140)

Abstract: At present, China is in the period of rapid development. In order to strengthen the connection of the newly built satellite town and industry cluster district with the main city, the demand of splicing and reconstructing the existing municipal expressways and expressway bridges is more and more high. The article preliminarily discusses the splicing design of bridge by the practical engineering cases.

Keywords: bridge, reconstruction, splicing, design

Elementary Analysis on Design Concept of Urban Sunken Subway Li Junling (143)

Abstract: The overpass is often opposed by the residents during the reconstruction of urban intersection. The sunken subway becomes a better choice. The relative experience can be referred for the relevant projects.

Keywords: sunken subway, foundation pit, drainage, floating resistance, structure

FLOOD CONTROL & DRAINAGE

Planning Study of Deep Tunnel Drainage System in Central Area of Chengdu Li Li, Lu Ke (146)

Abstract: In recent years, the "water problems" of "less water as the sorrow, dirty water as the danger, and more water as the disaster" become the difficulties urgently to solve in the sustainable development of many cities in China. Some city disasters also expose in the central area of Chengdu after the rapid development and high strength development construction for many years. The problems of urban drainage system and water environment are concentrated in four aspects of deficient drainage pipe network and sewage treatment capacity, lower urban waterlogging drainage capacity, serious urban rainwater runoff pollution, and not effectively treated local combined sewage system and rainwater into estuary. Aimed at the above problems, and according to the advanced city construction experience a home and abroad, the article studies and analyzes the shallow reconstruction scheme and the deep tunnel storage scheme, and recommends the "two-ring four-shoot" deep storage tunnel as the key deep tunnel drainage system in order to solve the problems of urban drainage system and water environment faced in the current and long-term developments of central area in Chengdu.

Keywords: deep tunnel drainage system, shallow reconstruction scheme, deep tunnel storage scheme, analog simulation

Design of Pipe Jacking Crossing Embankment and River Project Wang Ping (150)

Abstract: Taking the relative pipe jacking project of drainage culvert crossing river in a wetland of Zhaoqing City of Guangdong Province as an example, the article introduces the scheme design of pipe jacking crossing

embankment and river, demonstrates the reliability and economy of the pipe jacking scheme, and summarizes the gist in the design and construction, which can be referred for the design and construction of the similar projects.

Keywords: pipe jacking, embankment, river engineering

Discussion on Comprehensive Treatment Measures for Rivers of New City Area Wu Chun (155)

Abstract: The comprehensive river treatment of new city area should be considered from the safety of flood control and waterlogging drainage, the recovery of water ecology, the guarantee of water quality, the utilization of water source and the water landscape. Taking the treatment of Dengmai Meilun River as an example, the article analyzes the problems existing in the rivers of urbanized new area and the construction demands. The article introduces the countermeasures comprehensively to apply the river extension and dredging, beach ecological protection, waste interception along river, water source conservation and river water impounding, and at the same time the measures of paying attention to the design coordination of greening belt landscape at river bank, and implementing the ecological revetment, waterfront wetland, ecological interception of nitrogen and phosphorus, and storage treatment of initial rainwater in order to meet the requirements of flood control and water ecology, to recover the self-cleaning capacity of river, to build the waterfront park of "adjustable water flow, controllable water quality, clear water and green bank" for the ecological corridor of Meilun River, and fully to play the system function of flood control, ecology, water supply and landscape.

Keywords: comprehensive treatment of river, ecological restoration, new city area, ecological embankment, constructed wetland

Study on Application and Implementation Scheme of Biological Remediation Technology in Treatment of Black-odor River Jin Xiang (160)

Abstract: According to the study, the article analyzes the biological remediation technology in the treatment of black-odorous river, summarizes its basic technological format and describes the project implementing scheme in the biological remediation treatment. The core objective is to build the good ecological environment by the optimizing innovation of treatment technology in order to provide the good support for the sustainable development of environment.

Keywords: treatment of black-odorous river, biological remediation technology, implementation scheme, technological application

MANAGEMENT & CONSTRUCTION

Pavement Quality Control of Reconstruction Extension Engineering Based on Process Control Concept Yu Ying (163)

Abstract: The key of construction engineering quality control consists in the process control. The mileage is

large and the technical difficulty is high in Henan Lianyungang – Huoerguosi Expressway Luosan Section Reconstruction Extension Engineering Project. In the first stage of construction, the project company sets up the high quality awareness according to the quality control requirements, and puts forward the pavement quality management and control methods based on the process control concept. The pavement construction quality is obviously improved.

Keywords: expressway, reconstruction extension, quality control, process control

Study on Influence of Road Traffic Environment on Traffic Safety and Its Countermeasures Gan Rui (167)

Abstract: In the new era, the national strategic decision is given priority in the traffic environment. It is required to do better the traffic environmental planning and distribution work in the different regions, and to relieve the adverse influence caused by the traffic accidents in time. The road traffic construction will involve the elements of geology, structure, resource and etc., which will not only influence the construction level of highway projects, but also have the key influence on the following traffic operation safety. Based on the guidance of traffic safety concept, it must be completely to implement the reform target of traffic environment and to do better the highway construction management work. Accordingly, the article analyzes the influence of traffic environment on the traffic safety, and puts forward the feasible management countermeasures.

Keywords: highway, traffic environment, traffic safety, management

Analysis of Expressway Pavement Quality Management and Control Methods Zhao Gang (170)

Abstract: Based on the problems existing in the expressway pavement quality management process now, the article analyzes the present situation of pavement quality management and control, and puts forward the strategy method to optimize the management and control. Its objective is to provide some theoretical basis for the relative constructors.

Keywords: expressway, pavement quality management, pavement paving quality

Further Analysis on High Filling Construction Technology of Highway Roadbed Zou Zujun (172)

Abstract: Based on the problems existing in the application process of high filling construction technology of highway roadbed now, the article analyzes the application requirement of high filling construction technology of highway roadbed, and puts forward the application strategy optimizing the high filling construction technology of roadbed by the practical engineering projects. The objective is to provide some theoretical basis for the relative constructors. The result shows that the construction technical members should use the targeted construction preparation technology, filling roadbed feeding technology, rolling compaction construction technology and dynamic compaction construction technology according to the construction requirements of engineering project in order to improve the application effect of high filling construction technology of highway roadbed.

Keywords: highway engineering, high filling roadbed structure, rolling compaction construction technology, dynamic compaction construction technology

Discussion on Roadbed Defect and Prevention Measures of Mountainous Highway Chen Wei (174)

Abstract: The highway roadbed defect will directly affect the service life of highway, and bring many inconveniences to the normal operation of vehicle and the maintenance of highway. Therefore, it is very necessary to strengthen the highway construction maintenance management, to prevent the highway roadbed defect, to guarantee the driving safety and to extend the service life of highway. The article mainly studies and analyzes the preventive measures of highway roadbed defect in the mountainous areas.

Keywords: mountainous highway, roadbed defect, cause, treatment measures

Cause Analysis and Disposal Measures for Side Slope Collapse of Mountainous Highway - - - Yan Zhongmei (177)

Abstract: The main causes of side slope collapse of mountainous highway are summarized, and the mechanical mechanisms of various causes are also analyzed. Design principles and methods for the stability prevention of side slope are also proposed. The surface protection and deep reinforcing mode are required to summarize. The stability of side slope is improved. Finally, the disposal scheme is proposed by the practical projects on the basis of analyzing the basic characteristics and topographical geological characteristics of side slope, and the good reinforcement effect is achieved. The relative effects can be referred for the design and prevention of side slope collapse.

Keywords: mountainous highway, side slope, collapse, causes analysis, disposal measures

Preventive Technical Measures for Water Damage of Highway Asphalt Pavement Qiu Feng (180)

Abstract: In recent years, with the fast development of the national economy, the highway construction is advanced rapidly, and plays the important role in the national economy and social development. But the early damage of many highways is more serious after the completion and operation, especially the asphalt pavement. The article analyzes the cause of water damage of asphalt pavement, and sets forth the preventive measures for the water damage of asphalt pavement. The relative experience can be referred for the similar projects.

Keywords: asphalt pavement, water damage, preventive measures

Analysis on Control of Expressway Greening Construction Li Tianjing (183)

Abstract: The article analyzes the control problem of expressway greening construction, describes the greening work of Liuliu Expressway, summarizes the engineering situation, and puts forward the problems existing in the construction process including the expressway field construction, insufficient construction workers and external relationship. According to these contents, the article summarizes the greening engineering construction technical management, and summarizes the problems for attention in the expressway greening construction. The relative experience can be referred for the similar projects.

Keywords: expressway, greening construction, soil improvement

Study on Key Technology to Construct Main Arch of Chunxiao Bridge in Ningbo Meng Xudong (185)

Abstract: Chunxiao Bridge of Ningbo is a three-span (80 m+336 m+80 m) continuous half-through steel

truss bowstring arch bridge. The side span of the main arch is constructed by the scaffolding assembly and the middle span is constructed by the cable hoisting large segment + less anchor cable cantilever assembly technology. The construction process of this bridge is complicated with many times of system transformations. Especially, the main arch is constructed by the pre-bias compensation displacement method to realize the no-stress closure of main arch. Therefore, it is necessary to analyze the construction stage in detail in order to ensure the stress safety and smooth construction of structure. The article introduces the construction scheme of the main bridge, focuses study on the mechanics principle of pre-bias compensation displacement method, and studies the pre-bias displacement theoretical value calculation method through the inverse - formal finite element calculation method. According to the engineering practice, the article sets forth the influence factor of pre-bias displacement setup in the construction process, which can be referred for the similar projects.

Keywords: truss arch bridge, cantilever assembly of large segment, less anchor cable, pre-bias displacement compensation method, closure, finite element simulation analysis

Study on Deep Water High-pier Bracket and Form Traveler Pre-pressing Construction Technology Miao Weigang (189)

Abstract: In order to evaluate the strength, rigidity and stability of bracket and form traveller, the securities of bracket and form traveler are verified, and the data of elastic deformation and non-elastic deformation of bracket and form traveler under the load action of are achieved. The pre-pressing experiment should be carried out for the bracket and form traveler. Taking the pre-pressing construction process of bracket and form traveler for Tuojiang River Bridge as an example, the article compares and analyzes the pre-pressing schemes under deep water high pier, introduces the pre-pressing optimization scheme and construction technology, and summarizes some practical engineering conclusions referred for the similar projects.

Keywords: anchoring end installation, bracket pre-pressing, form traveler pre-pressing

Restoration Construction Technology of Larger Slope Pre-simple Supported Post-continuous T-beam Bridge Min Yu, Zhang Runze (192)

Abstract: Taking the restoration construction technology of pier deviation correction and support treatment of a larger slope pre-simple supported post-continuous T-beam viaduct as an example, the article analyzes the displacement cause of larger slope bridge out of standard and fully considers various factors. The targeted construction technological scheme is formulated and implemented to complete the restoration of pre-simple supported post-continuous T-beam bridge radically, which can be referred for the restoration construction of the similar projects.

Keywords: larger slope, pre-simple supported post-continuous T-beam bridge, restoration, construction technology

Typical Damage and Preventive Measures for Rural Highway Bridges Chang Xiaohua (195)

Abstract: Rural highway bridges have the important role for the transport infrastructures of rural area. It is

very necessary to guarantee the safe operation of the rural highway bridges. The article summarizes the main operation damages of rural bridges now, analyzes the causes and development state of damage in detail, and hereby puts forward the preventive measures to repair and reinforce the damaged bridges. Also based on the practical situation, the implementation force of maintenance work should be strengthened and the necessary transport control should be implemented in order to lengthen the service life of these damaged bridges.

Keywords: rural highway, bridge, damage, preventive measures, maintenance management

Analysis on Stress Deformation Feature of Super-large Shield Working Shaft by Semi-reverse Construction Method Li Xiongfei (198)

Abstract: With the fast development of economy in China, the urbanization level is continuously improved, and the requirements of municipal transportation are more and more high. The development of the limited ground space increasingly turning to the development of underground space has become the tendency of urban traffic development. At present, the underground space is constructed mainly by the shield tunneling method in the municipal traffic of Shanghai. The structural working shaft in the shield construction bears the function to install and debug the shield mechanical equipment. Its structural security is the key for the shield equipment whether or not to implement as expected. The construction of the general shield working shaft has been mature, but the implementation time of super-large shield (diameter larger than 14m) is relatively shorter. Its structural construction of working shaft is also in the continuous improvement of technical members.

Keywords: semi-reverse construction method, enclosure wall survey, supporting axial force

Analysis on Application of Freezing Method in Shield Tunneling-in Construction Meng Jun (202)

Abstract: The tunneling-in construction geology and the surrounding environment of a shield tunnel project are complicated in Shanghai, and its construction technical risk is high. The different composite reinforcement methods combined with the cement system and freezing method are used to reinforce the subgrades at the uplink and the downlink of this project. Aiming at the uplink and the downlink, the article separately introduces the main technical gist in the construction, compares and analyzes the problems found in the process, and summarizes the experience.

Keywords: shield tunneling in, subgrade reinforcement, freezing method, cement system, leakage of water and sand, shield freeze

Application of High-concentration Bentonite Slurry in Large-diameter Crossing River Pipe Jacking Project Lv Pin (205)

Abstract: The traditional bentonite slurry has a certain limitation in the long-distance pipe jacking projects under the silt geological condition, mainly showing that the slurry is deficient at the top of large-diameter jacking pipe, the jacking force increases sharply after the repeated jacking, and the slurry is accumulated at the bottom of machine head when downgrading jacking. On the basis of the traditional bentonite slurry, a

high-concentration bentonite slurry is added to solve the above problems. The good effect is achieved after the practical engineering application. The article introduces the proportion and characters of high-concentration bentonite slurry in detail, then sets forth its application value in the projects, and finally discusses itself defect of this slurry.

Keywords: high-concentration bentonite slurry, pipe jacking engineering, slurry proportion, application

Key Holing Technology of Large-diameter Steel Jacking Pipe in High Confined Water Drift Sand Layer

..... Wang Shuai (208)

Abstract: In order to guarantee the smooth holing of large-diameter steel jacking pipe in the high confined water drift sand layer in Shanghai Huangpu River Upstream Water Source Communicating Pipe Project, and aimed at the geological characteristics of this project, the article puts forward the key holing technology of large-diameter steel jacking pipe composed of open caisson subgrade reinforcement, dewatering, high-pressure rotary jet grouting reinforcement at hole opening, deep well dewatering, pipe jacking machine head reconstruction and pipe jacking construction control in the high confined water drift sand layer. This technology is successfully used in the engineering practices. The engineering practical result shows that the proposed pipe jacking holing technology better guarantees the slurry balance pipe jacking smoothly under the conditions of high confined water and drift sand layer, better solves the construction technical difficulties of Shanghai Huangpu River Upstream Water Source Communicating Pipe Project in the complex stratum, has the good technical promotion value, and also provides the practical reference for the construction of the other similar projects.

Keywords: high confined water, drift sand layer, jacking pipe, dewatering, high-pressure jet grouting

Study on Tunnel Construction Technology of Urban Rail Transit by Quasi-rectangular Shield Method

..... Liu Xidong (212)

Abstract: The section form of normal shield tunneling method is round, which is easy to realize the whole section cutting and the relative reasonableness of structure stress system to cover up the deficiencies of low space utility rate and large occupied underground space. The rectangular shield tunneling method has the greater superiority in the utility rate of sectional space and the travelling capacity in the narrow road, but cannot be effectively developed because of its structure stress and deformation, shield machine tunneling control, rectangular segment assembly and the other difficulties. The article systematically sets forth the study on the tunnel construction technology of urban rail transit by quasi-rectangular shield method. According to the analysis of the difficulties in the quasi-rectangular shield tunneling construction, the article studies and discusses the relative technological aspects of the whole section cutting, segment assembly, axis control and monitoring technology in order to provide the more reliable basis and proposal for the further development of rectangular shield tunneling method.

Keywords: quasi-rectangular shield, whole section cutting, segment assembly, axis control, monitoring technology

Treatment Technology for Large Deformation of Single-line Tunnel in Weak Rock Liu Juncheng (217)

Abstract: The large deformation of tunnel in weak rock is the difficulty in the tunnel construction. The primary support deformation will cause the confined arch replacement, even landslip, which will bring the huge economic loss to the construction units. Therefore, it is very important to control the primary support deformation in the construction of weak rock tunnel. Taking the construction of Yuanbao Mountain Tunnel 3# Transverse Gallery Area in Lijiang - Shangri-La Railway as an example, on the basis of field engineering practice, the article focuses introduction on the construction technology of single-line railway tunnel in the weak surrounding rock area, and the taken technology parameters, and analyzes the monitoring measurement and stress data in order to provide the reference for the similar projects.

Keywords: large deformation in weak rock, arch replacement, railway tunnel, treatment technology

Causes and Treatment Technology of Great Deformation of Triple Tunnel Surrounding Rock

..... Xie Guangming (220)

Abstract: The great deformation of tunnel surrounding rock means an extreme deformation damage of surrounding rock causing under the condition of high ground stress, and belongs to the category of plastic flow and plastic damage, which has the greater impact on the normal construction of tunnel engineering. Taking the practical project as an example, the article introduces the geological situation of triple souring rock, analyzes the cause of great deformation of surrounding rock, finds the deformation cause of support result, and then formulates the relevant treatment measures according to the practical conditions so as to guarantee the smooth construction of tunnel engineering.

Keywords: triple tunnel, bench excavation method, surrounding rock deformation treatment technology

Application of Double-layer Advanced Small Conduit in Construction of Short and Middle Tunnels One-way out of Portal Gao Wentao (223)

Abstract: The economic excavation mode of short and middle tunnels is the one-way tunneling and the tunneling through at the portal. Taking Guangzhou - Foshan - Zhaoqing Expressway Luorimian Tunnel Project as an example, the article introduces the "zero-excavation one-way out-of-portal" construction technology, and especially the application of the double-layer small conduit advanced support to replace the long pipe shed portal project, which breaks the traditional tunneling through mode, realizes the safe tunneling out of portal, and achieves the better economic value. The experience can be referred for the similar projects.

Keywords: double-layer advanced small conduit, short and middle tunnels, one way out of portal, construction application

Elementary Discussion on Construction Technology of Land Anchored Deep Foundation Pit Guo Jiaxin (225)

Abstract: Taking the south anchored foundation pit for Wufeng Mountain Changjiang River Bridge in the railway from Lianyungang to Zhenjiang as the study object, the article discusses two construction stages of foundation pit supporting and excavation. The supporting stage of foundation pit is mainly to compare and select the construction scheme of underground diaphragm wall for the practical engineering situation. The

excavation stage of foundation pit is mainly to monitor the whole excavation process by informatization construction in order to meet various construction technical requirements.

Keywords: anchorage, underground diaphragm wall, deep foundation pit, excavation, inner lining, construction

Manufacture Technology of Non-developable Conic Surface Structures of Resin Lining Steel Formwork Song Baoping (228)

Abstract: According to the processing manufacture construction of the main bridge pier template of Taolai River Bridge in Jiayuguan City Nanshi District – New Railway Station Project (Bid II), this article sets forth a method of utilizing the characteristics of steel formwork and epoxy resin, and replacing curve by straight line, approximate expansion blanking, and slice simple assembly to weld the steel skeleton into various similarly different shapes, which can achieve the existing strength and stiffness with epoxy resin as lining, and also conform to the processing technology of large steel skeleton resin lining steel formwork in the design surface shape of structure.

Keywords: non-developable conic surface, structure, resin lining steel formwork, manufacture technology, replacing curve by straight line

Cambered Surface Ceiling Engineering Construction Technology of Shanghai Disney Station Li Jun (231)

Abstract: The main layout of Disney Station in Shanghai Metro Line 11 is at the north side of the central landscape lake and under the landscape avenue of ring lake in the Disney World. The decoration standard of the station is too higher than the general metro stations. The ceilings in the public zones of the station hall floor and platform floor are used of cambered surface aluminum plate modeling ceiling in the large area installed with the perforated plate built-in LED lamp beads. Its decoration standard is high, and its technology is diverse and complex.

Keywords: cambered surface, irregular, aluminum ceiling

Some Measures for Avoiding Excessive Design of Urban Roads under PPP Contract Conditions ... Quan Jun (233)

Abstract: The paper elementarily analyzes how to control the construction investment of urban roads under PPP mode, and puts forward some measures for avoiding the excessive design of urban roads according to the PPP management experience for many years.

Keywords: Public-Private Partnership (PPP), urban road, excessive design, control measures

Engineering Management Informationalization and BIM Technology Application Cao Xiaoyi (236)

Abstract: At present, the construction of China is on the large scale. The amount of the fixed-asset investment of the whole society is huge and presents the double-digit growth. In recent years, 20% of the new buildings in cities and towns meet the requirements of green building standards. How to make such a huge investment management scientific and reasonable is the problem to be solved in the construction management field of China. With the wide and deep application of BIM technology in the municipal industry, the article

briefly sets forth the necessity of BIM technology integrating into the present engineering practices, and the whole on-line management of practical projects in order to save the engineering period and engineering cost.

Keywords: engineering management, BIM technology, informationalization

Design and Realization of Common Business Information System for Engineering Quality Inspection

..... Yang Guohong (240)

Abstract: The common inspection business information system mode is proposed to realize the separation of the detailed inspection professional information from the inspection management flow, which makes the software developers not necessary know the detailed business logic of inspection, and the inspectors submit into the software system by the common template to describe the detailed inspection business logic. In this way, the inspectors can realize the upgrading of inspection technology and keep up with the change of inspection standard without the modification of inspection business information system software. The realization of management software based on this mode development is introduced.

Keywords: quality inspection, template technology, inspection business, information system development

STUDY ON SCIENCE & TECHNOLOGY

Prediction of Long-term Displacement in Excavation of Foundation Pit Based on 3D Creep Model

..... Wang Rongyong, Chen Lisheng, Wang Yingyi, Huang Xingchun (244)

Abstract: Aiming at the aging characteristics of disturbance displacement and the prediction calculation of long time displacement in the excavation of large deep foundation pit in the rheological property soft soil stratum, a systematic study is carried out. The article puts forward the calculation conceptualization constitutive model of integrating the excavation unloading elastic plastic dynamic displacement of foundation pit, creep displacement of soil body, and the long time displacement of its interaction mode. And the corresponding mechanical expression is established. The article analyzes the applicability of soft soil creep model, and deduces the key calculation parameters of long time displacement – the calculation formula of creep displacement aging coefficient. Based on the time incremental method of FEM and stratum creep model, the unified calculation method of foundation pit excavation long time displacement combined with foundation pit excavation unloading displacement and soil creep displacement is established. The study result is appropriate for the prediction calculation of soil body disturbance long time displacement in the engineering design stage and construction of the different foundation pits, and the completion of foundation pit excavation in the soft soil stratum. The comparison and analysis results of engineering cases show that the calculation method has good reliability and the engineering applicability.

Keywords: creep stratum, long time displacement of foundation pit excavation, unified model of unloading and creep displacement, time increment solution

Study of Combined Damping Structure Effect Based on Damping Ratio Zhou Lianwei (250)

Abstract: SAP2000 is used to carry out the numerical analysis. The article compares the energy dissipation effects of setting up the seismic isolation support and steel damper, and combining these two devices together, and analyzes the parameters of interlaminar shear and structural top displacement curve. The results show that the combined energy dissipation damping structure has the good energy dissipation effect, and has the more superior damping effect than the structure with a single energy dissipation component, which can make the seismic property of the targeted building structure obviously improved.

Keywords: damping structure, damper, pencil lead rubber support, combined energy dissipation, time–history analysis

Study of Ecological Concrete Carbonation Depth Probabilistic Model Based on Fit Goodness Test – Bayesian Theory
..... Wu Liu, Dong Fenghui (254)

Abstract: Aiming at the randomness characteristic of ecological concrete carbonation depth, the article puts forward the combined method of fit goodness test and Bayesian theory to carry out the model analysis of ecological concrete carbonation depth probability. The fit goodness test is used to identify the optimal probability distribution pattern of ecological concrete carbonation submission. The Bayesian theory is used to estimate the parameters in the optimal probability distribution pattern. On this basis, the carbonation reliability is analyzed. Three groups of test data illustrate the application process of the combined method of fit goodness test and Bayesian theory in the study of ecological concrete carbonation depth probabilistic model and the analysis of carbonation reliability. The results show that this combined method to carry out the ecological concrete carbonation depth probabilistic model and carbonation reliability analysis is more conformed to the engineering practices and more convenient for the engineering application by comparing with the traditional method.

Keywords: ecological concrete, carbonation depth, probabilistic model, fit goodness test, Bayesian theory

Mechanics Characteristics of Steel Bridge Deck Pavement under Low–temperature and Overload Coupling Conditions
..... Peng Guangyin, Jing Jingjing (258)

Abstract: Aimed at the steel bridge deck pavement of epoxy asphalt concrete, the three–dimensional mechanical model of orthotropic steel deck pavement is established to study the mechanics characteristics of steel bridge deck pavement under the low–temperature and overload coupling conditions, and to compare and analyze the results without considering the temperature condition. The results show that the tensile stress of steel bridge deck pavement under the low–temperature and overload coupling conditions increases significantly and the maximum tension stress can be up to four times of the overload alone.

Keywords: steel bridge deck pavement, epoxy asphalt concrete, low–temperature and overload, mechanics characteristic

Study on Performance Test of Cold Mixed Asphalt Mixture Chang Yinghai (261)

Abstract: The cold mixed modified asphalt is used to compare and test the pavement performances of the

different dosages and gradations of hot mixed asphalt and cold mixed asphalt mixtures. The void ratio of the ordinary hot asphalt mixture is smaller than the cold mixed asphalt mixture, the ratio of VMA is lower than the cold mixed asphalt mixture, and the pavement performance of cold mixed asphalt mixture is slightly lower than the ordinary hot asphalt mixture. But all meet the standard requirements. The cold mixed asphalt mixture has the advantages of wide applicability, little climate effect, greening, environmental protection, good application value and prospect. The study result provides the theoretical basis and testing support for the wide application of cold mixed asphalt mixture.

Keywords: asphalt pavement, cold mixed asphalt mixture, design of mixing proportion, pavement performance

Study on Laboratory Test of Incinerator Slag Aggregate Used for Cement Stabilized Macadam ... Han Jinrong (264)

Abstract: The article studies the cement stabilized macadam mixed with the incinerator slag aggregate of domestic garbage. The result shows that the 7 d unconfined compressive strength values are all larger than 4MPa if the cement stabilized macadam is mixed with the different amounts of incinerator slag aggregate of domestic garbage.

Keywords: incinerator slag, cement stabilized macadam, unconfined compressive strength

APPLICATION OF ACHIEVEMENTS

Application of Digitization Technology in Skid Resistance Evaluation of Asphalt Pavement ... Chen Huiping (266)

Abstract: The AC-13 and SMA-3 mixture specimens of road are simulated and prepared for the different using stages. A portable handy 3D laser scanner is utilized to scan and to achieve the surface texture of specimens. The Geomagic software is used to carry out the data preprocess. The Matlab software is used to extract and calculate the statistics indexes of texture. Based on the Murat Ergun study theory, the numerical relationship model between the sectional statistical indexes of Ra, Rq, La, Lq and MPD specified by IOS and the friction coefficient is established. The calculation shows that the numerical simulation result has the good relevance with the practical testing operation result, and proves that this numerical computation method can efficiently estimate the skid resistance performance of pavement.

Keywords: asphalt pavement, texture scanning, digitization technology

Application of Sacrificial Anode Protection Method in Protection of Concrete Bridge Xiao Yonghui (270)

Abstract: The sacrificial anode construction method is used for the corrosion prevention and control of reinforced concrete structures. The electrochemical mode effectively protects the reinforcement. The newborn corrosion at the repairing area edge of structure is transferred to the sacrificial anode so as to protect the surrounding reinforcement, to lengthen the service life of repairing area, to decrease the repairing times with the high economic value and high durability. The conclusion can provide the beneficial reference for the overhaul projects of the bridges in Shanghai and the other wet climate coastal areas.

Keywords: sacrificial anode, electrochemical corrosion prevention, bridge, concrete, durability, corrosion prevention, corrosion control

Application of Small-sized Unmanned Aerial Vehicle (UAV) in Surveying and Mapping of Large Scale Topographical Map Xie Haiyan (274)

Abstract: In recent years, the UAV aerial photogrammetry technology is more and more widely used in the surveying and mapping industry with the advances in technology. As the study objective of the small-sized UAV application in the surveying and mapping of large scale topographical map and combined with the production practices, the UAV aerial survey experiment is carried out. According to the study on the mapping flow and key technology of small-sized UAV, the field measured data are used to evaluate the aerial survey accuracy, which provides the reference for the application of small-sized UAV in the surveying and mapping field.

Keywords: UAV, photogrammetry, large scale topographical map

THE RELATIVE SPECIALITIES

Study on Design Scheme of Deep Foundation Pit for Metro Station Constructed Together with Road and Tunnel ...
..... Liu Jifan (277)

Abstract: In recent year, the surrounding conditions faced by the construction of deep foundation pit are complicated. A lot of engineering co-construction problems is inevitably encountered. According to the co-construction project of the foundation pit for Caochangmen Station in Nanjing Metro Line 4 and the municipal tunnel, the article studies the design and construction of deep foundation pit under many adverse conditions of deep excavation depth, complicated surrounding conditions, high deformation requirements and poor geological condition. The Venus and the finite element calculation results show that the scheme of underground diaphragm wall containment combined with six inner bracings can better solve a series of engineering difficulty, which can be referred for the design and construction of the similar projects.

Keywords: tunnel co-construction, metro station, deep foundation pit, soft soil

Analysis on Influence of Minor Radius Short-distance Shield Tunnel Side Crossing Viaduct Pile Foundation
..... Wang Chunkai (282)

Abstract: Taking a shield tunnel side crossing the viaduct pile foundation of the Inner Ring of Shanghai Metro as the background, and according to the finite element numerical simulation, the article analyzes the vertical displacement, the horizontal displacement and the inclination ratio of the pile foundation caused by the crossing construction of shield tunnel. The results show that the use of the finite element software to simulate the shield crossing construction can better achieve the deformation of the adjacent piles caused by shield tunneling, and the deformation and variation trend of pile foundation. The calculation results after comparison with the field test data show that the vertical deformation and the inclination of the adjacent pile foundation

caused by the shield tunnel construction meet the normal operation requirements of viaduct within the allowance range of pile foundation deformation under the premise to take the reliable measures. It is required to strictly control loss ratio of stratum during the construction of minor radius shield tunnel in order to avoid too much and substantial rectification.

Keywords: shield tunnel, viaduct pile, finite element calculation, pile foundation settlement

Research on Design of Important Nodes in Urban Comprehensive Tunnel Project

..... Wang Yi, Zhang Haiying, Yang Shaomeng (287)

Abstract: Along with the urbanization process continuously speeding up in China, more and more people come into a city every year. The higher requirements are put forward for the perfection of city infrastructure, in which the urban comprehensive tunnel as the main countermeasures to perfect the urban infrastructure has the important role to ensure the more smooth operation of city. Based on the summarization of urban comprehensive tunnel, the article analyzes the design superiority of urban comprehensive tunnel, and focuses analysis on the important node design of the node types in the urban comprehensive tunnel project, the connecting channel of comprehensive tunnel and monitoring center, the cross node and calculation mode of comprehensive tunnel.

Keywords: city, comprehensive tunnel project, important node, design

Study on Protection Measures for Underground Tunnel Overpassing Metro Area under Operation in Soft Soil Area

..... Wang Weipeng (290)

Abstract: In recent years, the relative departments of metro increasingly strictly control the engineering construction influence in the range of metro protection area. The protection measures for the urban underground tunnel to cross over the metro area under operation in the soft soil area are complicated. The article studies and analyzes the protection measures for the underground tunnel obliquely crossing over the area of Metro Line 10 in Hongqiao Yingbin Road I of Shanghai from the angle of controlling construction unloading of underground tunnel, which provide the beneficial reference for the design and construction of the similar projects crossing over the metro area.

Keywords: soft soil area, metro area, underground tunnel, overpassing, unloading, uplift pile protection measures

Analysis on Geological Condition of Xiaochunwan Tunnel Project

..... Li Jian (294)

Abstract: At present, the amount and scale of foundation construction engineering projects gradually increase, and the amount of mountainous tunnel engineering construction is also more and more. In order to guarantee the tunnel engineering construction quality, it is necessary to carry out the geological survey to provide the reference for the engineering design and construction. Therefore, the article firstly introduces the significance to analyze the geological condition, and then analyzes the geological condition of tunnel engineering construction by the study object of Xiaochunwan Tunnel Project in detail.

Keywords: Xiaochunwan Tunnel Project, geological condition, proposal

Research on Subgrade Treatment Scheme of Utility Tunnel Chu Fangping (296)

Abstract: Taking a utility tunnel as an example, this paper introduces the treatment method combining the short and long three-axis cement-soil mixing piles in detail from the treatment angle of liquefied soil and weak soil, which provides the experience for the similar projects, and hopes to play the reference role in the design of the similar subgrade treatments.

Keywords: utility tunnel, liquefied soil, subgrade treatment, composite subgrade, three-axis mixing pile

Application of Double-row Prestressed High-strength Concrete (PHC) Pipe Pile in Foundation Pit Support of Wastewater Treatment Structure in Soft Soil Area Cao Zhijie (301)

Abstract: The article discusses the characteristics of horizontal bearing capacity of PHC pipe piles. Taking a wastewater treatment project of Guangzhou as an example, the article introduces the selection, calculation and detailed design scheme of foundation pit support of wastewater treatment structure, and puts forward the relevant proposals for the PHC pipe pile used in the support of foundation pit.

Keywords: PHC pipe pile, soft soil, foundation pit, double-row pile

Design and Monitoring Analysis of Deep Foundation Pit in Soft Soil Area Adjacent to Existing Tunnel

..... Li Chengwei (303)

Abstract: Based on a deep foundation pit in Xinlong Plaza Project, the article introduces the design method to control the deformation of a deep foundation pit in the soft soil area adjacent to the existing tunnel, and puts forward a series of design and construction measures to control the deformation under the complex environmental condition. In order to decrease the adverse impact of pit depressurization on the surrounding environment, the super-deep three-axis cement soil mixing pile partition confined water aquifer is used in a project. The analysis on the monitoring data of foundation pit shows that the relative technical measures taken for this foundation pit project can effectively control the influence of pit excavation on the surrounding protected objects, which can be referred for the similar projects.

Keywords: existing tunnel, trench wall reinforcement, soil reinforcement of passive zone, super-deep three-axis cement soil mixing pile

Problems for Attention in Road Engineering Survey of Shanghai Zhou Liyue (309)

Abstract: According to the classification and survey scheme layout of road engineering in the Shanghai and the national codes, and the exploration of poor geological hidden creeks and thick filling, some problems and proposals for attention in the road engineering survey of Shanghai. The relative experience can be referred for the similar projects.

Keywords: road engineering classification, survey scheme layout, poor geology, hidden creek, thick filling

Abstract: With the speeding up of urban economic development and the demand for the higher quality life of the people in China, the landscape design of waterfront area has become one of indispensable and important elements in the modern urban planning and design. The article sets forth the landscape design of waterfront area in the riverside block W7 of Yangpu District in Shanghai in detail, discusses the combination of the cultural feature and the history of the landscape and site in the waterfront area, introduces the contents, method and process of building the waterfront landscape with the characteristics, and summarizes the design difficulties and highlights in order to provide the relative experience and reference for the design of waterfront landscapes in many cities.

Keywords: waterfront area, landscape design, site memory, scheme design of subareas, image display

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

Urban Roads, Bridges & Flood Control

Monthly

Number 6, 2017 (Total Number 218)

Publication on June 15th, 2017

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)55008850

Fax: (021)55008850

E-mail: cdq@smedi.com

ISSN 1009-7716

CN 31-1602/U

Domestic price: 25 yuan RMB

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

上海金曲软件 打造工程设计企业管理软件一流品牌

上海金曲信息技术有限公司，成立于1999年，18年来专注于开发工程设计单位的信息管理系统。

经过长期的研发和实际应用，金曲软件以其“简单、实用、灵活”的特点深受全国各地各类设计单位欢迎，成功用户遍及全国三十多个省、市、自治区的一百多个城市，涵盖了建筑、市政、交通、电力、水利、规划、园林、煤矿、电信、石油化工、钢铁冶金等各行业的设计院。

设计院管理软件，请选上海金曲！



上海金曲信息技术有限公司

地址：上海市天目西路547号C座1513室（联通国际大厦）

邮编：200070

邮箱：jq@jinqu.cn

网址：<http://www.jinqu.cn>

联系人：金克勤

联系电话：021-50600066