

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



<http://www.roadbridgeflood.com>

12 2014 December 总第188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
“万方数据-数字化期刊群 维普资讯-中文科技期刊数据库”全文收录
《中国核心期刊(精选)数据库》收录 《中文科技期刊数据库》全文收录

图为中国市政工程西北设计研究院有限公司设计的福州淮安大桥工程

因为我们专心，所以我们专业！

——《城市道桥与防洪》

● 本期看点

- 长兴中心城区城市客运枢纽规划研究
- 日本大跨径城市桥梁印象
- 城市道路排水措施生态化分析及案例介绍
- 城市道路融冰雪技术分析与应用



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

2014年 第12期 (总第188期)

2014年 12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(第七届)

主任委员: 徐健

副主任委员: 穆祥纯 刘旭锴 靖译文

委员: (以姓氏笔画为序)

- | | | | |
|-----|-----|-----|-----|
| 丁心红 | 马国纲 | 王玉秀 | 王怀清 |
| 王磊 | 卢永成 | 李建民 | 李汾 |
| 李军代 | 刘伟杰 | 朱南松 | 朱海鹏 |
| 杨佩昆 | 陈翰新 | 陈德玖 | 童景盛 |
| 邵玉振 | 张澎涛 | 张鹤 | 张子龙 |
| 张煜 | 杨斌 | 何拥军 | 和坤玲 |
| 周松国 | 周文波 | 贺志宏 | 姜天鹤 |
| 姜健 | 钟强文 | 骆燕妮 | 徐波 |
| 高中俊 | 贾军政 | 隋军 | 蒋乐 |
| 蒋中贵 | 韩振勇 | 赏锦国 | 葛以衡 |

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

英文校审: 孙宁萍 常红

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: 3101020130030

目次

道路交通

- 长兴中心城区城市客运枢纽规划研究 孙琦, 陈静, 操志强, 杨军, 陆林军(1)
- 虹桥机场T2航站楼出租车上客系统组织管理优化探讨 黄岩, 王光裕(7)
- 浅析城市交通规划和城市规划的协调关系 曹鸣浩, 孙琦(10)
- 通州老城区南北通道交通改善研究 路峰, 马化洲(13)
- 城市道路分隔绿化带对交通安全影响的分析 周昊, 程建川, 薛林钢, 野诗琪(18)
- 城市道路横断面数字化模型研究 ... 朱海鹏(24)
- 强夯处理深垃圾坑作为道路路基的应用 贾媛, 武俊峰, 李廷斌(27)
- 城市下沉式地道的设计新思路——佛山大道一季华路口下沉式立交 许平(29)
- 泰达MSD地下交通空间总体设计的安全措施 ... 姜中波, 王海燕(31)

桥梁结构

- 日本大跨径城市桥梁印象 穆祥纯(36)
- 预应力混凝土连续箱梁桥开裂的三维仿真分析 杨允表(42)
- 中环线浦东段(军工路越江隧道—高科中路)变高度连续组合箱梁桥设计 朱世峰(46)
- 钢-混凝土连续组合梁的设计分析 王猛(53)
- 刘家峡大桥抗震结构体系优化分析 张己存, 刘晓琴(56)
- 某斜拉桥索梁锚固区三维有限元分析 ... 罗杰(59)
- 预应力承台设计探讨 江甫, 秦现德(62)
- 速度锁定支座在中生态城故道桥上的应用 李宏祥(65)
- 混凝土强度检测技术在桥梁工程中的应用 柴桦(69)
- 明州大桥拱桥吊索索力调索分析 张培君(73)
- 全焊箱型截面杆件三角形钢桁架在人行天桥中的应用 曾令权, 孟杰(75)
- 库区桥梁防洪计算及评价 张耀庭(78)
- 基于我国规范的压杆-拉杆设计方法 刘博(83)
- 航道中桥梁桥墩防撞技术及设施浅析 于伟(89)

沥青混凝土桥面铺装病害成因分析及防治措施研究
..... 张昊,李茂奇(94)

防洪排水

城市道路排水措施生态化分析及案例介绍 李彤(98)
浅谈南昌市新城区市政道路建设中现状水渠导通
思路 尹小斌(101)
关于市政给排水衔接的常见问题分析 ... 蔡娟(103)
ANSYS在峡江水利枢纽工程船闸应力分析中的应用
..... 谢玲璐,郑芳(105)
碾压混凝土坝上游面防渗结构形式分析
..... 袁翠平,党媛媛(109)
兰州雁滩南河道综合治理截污工程设计
..... 郭云红(111)

管理施工

浅析沥青混凝土路面施工质量控制 龚英(114)
同步加纤碎石下封层路面全寿命周期成本分析
..... 周晓华,陈明(117)
桥梁主桥合拢段的施工技术 骆诗凯(121)
情人谷特大桥合拢段施工方案与锁定计算
..... 黄万龙(124)
组合式小箱梁连续端质量通病的思考与对策
..... 朱长亮(128)
钢箱梁桥常见病害及其检测 王卫东(131)
U型桥台扩大基础裂缝产生的原因分析及防治措施
..... 施学军(135)
旧桥拆桥方案探析 李耀生(137)
工程项目设计阶段的管理和控制因素——以武汉市
二七路公共停车场工程为例 刘长庚(139)
简析标准化对防汛预案的支撑作用
..... 黎伟,张明兰,刘欢,刘雯(142)
流砂现象在污水管道施工中发生的原因与防治措施
..... 惠炜,蒋岚岚,余步存,刘刚(146)
大偏压下隧道半明半暗洞口段施工技术探讨
..... 蔡小明,包纯风,许建兴,张建军(149)
高大墙体可调式自撑无对拉单侧支模施工技术
..... 章洪俊,童湘萍,王金龙(153)

科技研究

车道被占用对城市道路通行能力的影响的研究
..... 尹欣然,李雪婷,张闾(158)
城市道路小交角斜交叉口设计研究 胡章立(161)
斜拉索实测索力计算方法研究
..... 何长江,曾振华,周兆环(164)
波纹钢腹板有限元模拟分析 胡金木,蔡杨(167)
橡胶粉微表处适用性研究
..... 任双宏,成功,滕达(170)

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

同济大学

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

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

上海城建(集团)公司

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

浙江省大成建设(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

上海市市政工程建设发展有限公司

保定市城乡规划设计研究院

- 多管并行定向钻穿堤数值模拟分析 岳青华(173)
 双侧壁导坑法开挖V级围岩隧道过程中地表沉降
 规律研究 尚武孝(176)
 围岩级别变更的隧道工期与造价风险研究
 曹昌洪(179)

应用成果

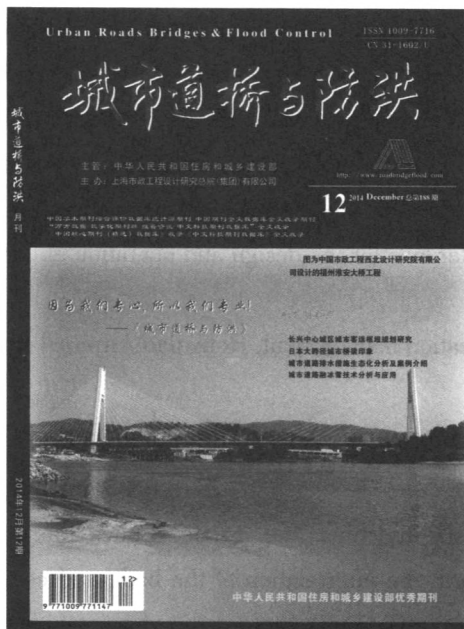
- 城市道路融冰雪技术分析与应用
 王 胜, 黄 岩(181)
 玄武岩纤维土工格栅在盐碱地区路面工程中的应用
 夏小楣, 赵振江, 王 强, 彭 凯(185)
 预应力钢筒混凝土顶管(JPCCP)在大口径压力供水
 工程中的应用和探讨
 樊雪莲, 唐文龙, 王建斌(187)

相关专业

- 浅析湖泊景观与城市环境的关系
 黄海华, 胡飞跃(190)
 浅谈城市河道滨水景观设计发展变化
 张旭蓉, 付东王, 陈伟伟(193)
 济南市城区河道生态构建与景观系统研究的思考
 樊瑞华(197)
 中外垃圾处理场选址中的邻避现象应对的比较分析
 孔 阳(200)

广告索引

- 封一 中国市政工程西北设计研究院
 有限公司
 封二 上海申华声华学装备有限公司
 封三 上海有正工程软件有限公司
 封四 上海汇城建筑装饰有限公司
 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
 广前3 上海同舟济方特种建材有限公司
 广前4 北京迈达斯技术有限公司
 广前5 城市道桥与防洪
 广前6 北京鸿业科技有限公司



《城市道桥与防洪》

是您合作的伙伴
 为您提供平台
 携手共同发展

欢迎新老读者订阅期刊
 欢迎新老客户刊登广告

电话:021-55008118
 传真:021-55008850
 邮箱:cdq@smedi.com

Urban Roads, Bridges & Flood Control

(Monthly)

Number 12, 2014(Total December 188)

CONTENTS

ROADS & COMMUNICATION

- Study on Planning of City Passenger Transport Hub in Changxing City Center
..... Sun Qi, Chen Jing, Cao Zhiqiang, Yang Jun, Lu Linjun(1)
- Abstract:** Under the guidance of strategic goal to build a fast, high efficient, safe, comfortable and low-carbon urban comprehensive transport system, the article intensively studies the planning of city passenger transport hub in the center of Changxing City. The article firstly analyzes the layout selection principle and the influence factors in the planning of passenger transport hub, and also investigates and sums up the present situation of external passenger transport in the center of Changxing City. According to the forecast of passenger transport demands, the article puts forward the reasonable schemes of the comprehensive transport hub in the center of Changxing City and the planning of passenger transport hub.
- Keywords:** passenger hub, traffic planning, layout selection
- Discussion on Organization and Management Optimization of Taxi Boarding System in Hongqiao Airport Terminal 2
..... Huang Yan, Wang Guangyu(7)
- Abstract:** The article introduces the design of taxi boarding system in Hongqiao Airport Terminal 2 and the field organization management method. According to the analysis of traffic parameters achieved from investigation, combining with some problems existing in the actual operations, and how to improve the transport capacity of existing traffic facilities, this paper studies the organization management mode of taxi boarding area of Hongqiao Airport so as to provide the reference for the design and operation efficiency of taxi boarding areas of the built and newly built airports.
- Keywords:** taxi boarding area, transport capacity, organization management, Hongqiao Airport Terminal 2
- Elementary Analysis on Coordinative Relationship between Urban Traffic Planning and Urban Planning
..... Cao Minghao, Sun Qi(10)
- Abstract:** According to the relative study and analysis in China, the article studies the position and influence of city traffic planning in city planning, sets forth the interrelation of the both, and combined with TOD mode of the future traffic development and the slow traffic, puts forward the viewpoint that the traffic planning in the future should be moderately advanced city planning so that the idea of city traffic to guide city planning development can be paid more attention.
- Keywords:** city traffic, city planning, traffic guidance, interrelation

Study on Traffic Improvement of South-North Corridor in Old City Area of Tongzhou ··· Lu Feng, Ma Huazhou(13)

Abstract: The article analyzes the main problems existing in the old city area and the new city area, forecasts the development demand of traffic facilities within the old city area of Tongzhou and puts forward the targeted engineering improvement scheme and traffic management measures so as to achieve the purpose of partially improve the traffic environment of the key area in the new city area.

Keywords: old city area of Tongzhou, traffic improvement, traffic forecast, traffic measures

Analysis of Influence of Urban Road Green Belt Separation on Traffic Safety

..... Zhou Hao, Cheng Jianchuan, Xue Lingang, Ye Shiqi(18)

Abstract: The green belt separation of urban road plays the role of separating the lanes and beautifying the environment, but the improper set of green belt will also bring the obvious influence on the traffic safety. Based on the field survey of green belt separation of roads in the main urban area of Nanjing City, the article firstly sums up and analyzes the influences of road green belt separations on traffic safety, then introduces the redesign of geometric dimension of green belt separation through the analysis of visibility range at opening of green belt and referring the relative norms, gives the design parameters of safe green belt to ensure the driving sight distance and carries out the 3D simulation and verification, and finally revises and simplifies the existing theory and algorithm of anti-dazzle height of green belt, and gives the new anti-dazzle calculation formula. This result helps to the reasonable design and adjustment of urban road green belt separation, and will also help to the revision of the relative norm standards of urban road green belt separation.

Keywords: green belt separation, driving safety, urban road, sight distance, anti-dazzle, simulation

Study on Cross Sectional Digitization Model of Urban Road

..... Zhu Haipeng(24)

Abstract: Aiming at the traditional cross sectional computer aided design method of urban road, the article analyzes the cross sectional digitization model, puts forward the new algorithm of cross sectional digitization model, and introduces two object models of basic point and road width, and the establishment and revision method of cross section in the detail software realization, which can provide a new idea for the application and programming of road cross section design software under AutoCAD platform.

Keywords: road design, cross section, basic point, road width, AutoCAD

Application of Deep Rubbish Pit Treated by Dynamic Compaction Method as Roadbed

..... Jia Yuan, Wu Junfeng, Li Tingbin(27)

Abstract: The deep rubbish pit treated by the dynamic compaction method as roadbed is the efficient measures to solve the increment of building rubbish. The rubbish backfill sections at the both sides of Xikang Railway are treated by the dynamic compaction pile replacement mode. The field test is carried out for the treated ground bearing capacity, settlement observation and resilient modulus. The result shows that the roadbed treated by this method can satisfy the design requirement. The article puts forward the proposals for the selection of technical parameters, the requirement of construction and the matters for attention in the construction process, which can be referred for the deep rubbish pit treated by dynamic compaction method as roadbed.

Keywords: dynamic compaction method, roadbed, deep rubbish pit, treatment

New Design Thinking of Urban Sunken Subway Xu Ping(29)

Abstract: The article introduces Foshan Jihua Road Sunken Interchange Project, briefly sets forth the new thinking and design method of some subway projects. The relative experience can be referred for the similar projects.

Keywords: sunken interchange, U-type groove, anchor, all underground pumping station, embedded grouting pipe

Safety Measures of Master Design for TEDA MSD Underground Traffic Space ... Lou Zhongbo, Wang Haiyan(31)

Abstract: The contradiction between city development and land resource shortage is the biggest challenge facing the sustainable urbanization. The wayout lies in the intensivism of city land resource, and the development and utilization of city underground space. The city underground space includes many fields of traffic facilities, underground commerce facilities, underground pipe gallery, underground garage, comprehensive disaster prevention system of city, underground storage, basement of high rise building, underground military affair system and etc. The underground traffic facilities are divided into underground railway, underground pedestrian mall, pedestrian passage, city tunnel, underground liaison passage and etc. At present, the development of underground traffic facilities in China is still at the primary stage. Taking TEDA MSD Underground Traffic Space Project as an example, the article analyzes and discusses how to build a safe, smooth and ordered underground traffic space project from the aspects of master design, alignment design, traffic guide, ramp slip and visual guidance.

Keywords: TEDA MSD, underground traffic space, safety design

BRIDGES & STRUCTURES

Impression on Long-span Urban Bridge in Japan Mu Xiangchun(36)

Abstract: The article systematically introduces the overall impression on the urban bridge construction in Tokyo, Osaka, Kobe and Nagoya of Japan, introduces the situation of classification and sets forth the relative inspiration and proposal, which provide the referring data and inspiration for the similar projects so as to promote the health development of urban bridge construction in China.

Keywords: Japan, long span, urban bridge, inspiration

3D Simulation Analysis on Cracking of Pre-stressed Concrete Continuous Box Girder Bridge ... Yang Yunbiao(42)

Abstract: The 3D solid finite element simulation model is established to analyze the crack cause in the construction process of a 1-couple 4×30 m span continuous girder bridge in a project. Before the analysis of bridge, the 3D simulation model is compared with the spatial girder element model. The comparison results are extremely matched, and validate the correctness of the 3D simulation model. In the analysis of bridge, the detail construction process is considered. The article completely analyzes the stress status of the bridge structure in the construction stage, relatively simulates the cracks of box girder. The calculation result reasonably analyzes the cracking causes of box girder.

Keywords: pre-stressed concrete box girder, cracking cause, non-linear finite element, solid element, simulation analysis

Design of Variable Height Continuous Composite Box Girder Bridge in Pudong Section (Jungong Road Crossing-river Tunnel ~ M Gaoke Road) of Centre Ring Line Zhu Shifeng (46)

Abstract: The temporary support method is used to combine the design with construction besides the technical measures of deck slab interrupted construction method, fulcrum lifting method and double-layer composite structure. Some design and construction measures are taken to improve the status of structure stress and the reasonable distribution of stress so as to realize the objective of improving the structure performance and reducing the material consumption in order to reach the optimization objective of technology and economy.

Keywords: long-span continuous composite box girder bridge, deck slab interrupted construction method, fulcrum lifting method, double-layer composite structure

Design and Analysis of Steel and Concrete Continuous Composite Beam Wang Meng (53)

Abstract: Combining with a real design bridge, the article analyzes some design key points of the steel and concrete composite beam. The method of reasonably controlling the middle support lifting of continuous beam can make the continuous composite beam get the better pre-stressing effect. The increment of the bedplate concrete near the middle pier can increase the rigidity of bridge structure, reduce the stress at the lower edge of steel beam, and improve the local stability.

Keywords: steel - concrete continuous composite beam bridge, middle support lifting method, bedplate concrete

Analysis on Optimization of Aseismic Structure System of Liujiaxia Bridge Zhang Jicun, Liu Xiaoqin(56)

Abstract: The article focuses study on the influence of the different parameters of viscous damper and the wind buckle on the aseismic performance of truss stiffening girder suspension bridge in order to determine the reasonable vertical and horizontal aseismic system. The study result will broaden the study field of long-span concrete filled steel tube bridge pylon and truss stiffening girder aseismic technology, and has the important theoretic value of revising the aseismic design method of long-span truss stiffening girder bridge in the aseismic design norm of highway bridge in China.

Keywords: aseismic system, optimization analysis, centre buckle, damper, wind resistant support

3D Finite Element Analysis of Cable Beam Anchorage Area of Cable-stayed Bridge Luo Jie(59)

Abstract: Combined with the detail engineering cases, the large common finite element analysis software Ansys is used to establish a 3D finite element model of cable beam anchorage area of cable-stayed bridge in order to analyze the stress distribution characteristic of cable beam anchorage area. The relative experience can be referred for the similar projects.

Keywords: cable beam anchorage, stress, finite element analysis

Further Discussion on Design of Pre-stressed Base Slab Jiang Fu, Qin Xiande(62)

Abstract: Combined with an engineering ramp bridge, the long-span stressed base slab scheme is used for the bridge pier pile foundation in order to avoid the oil pipelines. And the stress of this base slab is analyzed. The relative experience can be referred for the similar projects.

Keywords: pre-stressing, base slab, stress analysis

Application of Speed Lock Support in Gudao Bridge of Zhongxin Ecological City Li Hongxiang(65)

Abstract: Taking Zhongsheng Avenue Gudao Bridge crossing Ji Canal of Zhongxin Tianjin Ecological City as the engineering background, the article introduces the influence of speed lock support on the longitudinal

seismic performance of bridge. The software of Midas/Civil is used to analyze the non-linear time history of this bridge, and calculates the dynamic responds of bridge structure when the ordinary pot rubber bearing and the speed lock support are set up. The calculation considers the interaction of pile and soil. The result shows that the speed lock support can make the movable pier and fixed pier resist the earthquake action together, the fixed pier top shear greatly decreases, the speed lock support makes the fixed pier bed bending moment obviously decreases, the maximum bending moment almost decreases a half greatly to decrease the construction cost of fixed pier, the speed lock support makes the maximum displacement almost decrease a half efficiently to decrease the displacement of beam end, which are favorable for preventing the beams from falling.

Keywords: anti-seismic, bridge, nonlinear time history analysis, speed lock support

Application of Concrete Strength Detection Technology in Bridge Engineering Chai Hua(69)

Abstract: The article introduces three common concrete strength detection methods, sets forth the basic principles, advantages, disadvantages and application scopes, and according to the practical engineering cases, introduces the application of the methods in the highway bridge engineering. The relative experience can be referred for the similar bridges.

Keywords: concrete strength, detection, rebound, ultrasonic rebound combined method, core drilling method, bridge engineering

Analysis on Cable Adjusting of Arch Bridge Suspender Cable Force of Mingzhou Bridge Zhang Peijun(73)

Abstract: Mingzhou Bridge is a half through double-limb arch bridge with the main span 450m. The main beam of the middle span is the floating structure. Taking this bridge as an example, the article mainly introduces the analysis mode of suspender cable force deviation and cable adjusting method of long-span steel arch bridge in the construction process, which can be referred for the similar projects.

Keywords: Mingzhou Bridge, steel arch bridge, construction control, cable adjusting

Application of All-welded Box Section Bar Triangular Steel Truss in Pedestrian Overpass Zeng Lingquan, Meng Jie(75)

Abstract: This paper introduces the determination of pedestrian overpass truss structure in the airport road of Yining City, the design of truss node structure, the calculation of profiled steel sheet composite bridge deck and overpass structure. The solving of the above key problems makes all-welded box section bar triangular steel truss have some advantages, which is worthy of popularization and application in municipal pedestrian overpass.

Keywords: pedestrian overpass, steel truss, node of truss, profiled steel sheet composite bridge deck

Calculation and Evaluation on Flood Control of Bridges in Reservoir Area Zhang Yaoting(78)

Abstract: The design flood peak flow, design flood level and damming scouring calculation are the main contents in the evaluation of flood control influence of river engineering. The accuracy of calculation result is conducive to the river flood safety and the engineering safety. However, the engineering project is in the different river conditions, and its analysis and calculation method is different. Taking Kongjiashi Huanghe River Bridge as an example, the article uses a two-dimensional model of the YRCC2D mathematical model to analyze and calculate the design flood level at the bridge place, uses the experience formula method to analyze and calculate the damming height and scouring depth, and discusses the flood control standard of river in reservoir area with larger bridge density. According to the relative flood control standard, the article puts forward the design pa-

rameters of bridge satisfying the river flood safety so as to provide the scientific basis for the river flood control and management.

Keywords: reservoir area, bridge, flood control calculation, YRCC2D model, flood safety

Strut-and-Tie Design Method Based on Chinese Code Liu Bo(83)

Abstract: The article introduces the strut-and-tie model widely for attention in recent years and applied in some codes have received wide attention in recent years and adopted in some codes for design of concrete structures, and the design method of strut-and-tie methods used in the American Concrete Institute Building Code (ACI 318-05). Based on the analysis of strut-and-tie models for concrete structures, the article puts forward the design methods of strut-and-tie model according to the design parameters (load, concrete strength and steel reinforced strength) of Chinese code for concrete structure. Furthermore, the article shows the comparison and analysis of safety levels in designs according to its method and ACI 318-05 Code. Finally, the article describes a design case according to the Chinese parameters.

Keywords: concrete structures, design, strut-and-tie model

Elementary Analysis on Anti-collision Technology and Facilities of Bridge Pier in Channel Yu Wei(89)

Abstract: The article sets forth the ship bridge impact problem in the channel, studies the present bridge anti-collision technology and the Chinese bridge anti-collision facilities, and sums up the present situation of application in order to provide some reference for the anti-collision design and construction of bridge in the future.

Keywords: bridge, impact force, anti-collision technology

Analysis on Fault Cause and Study on Prevention Measures of Asphalt Concrete Deck Pavement Zhang Hao, Li Maoqi(94)

Abstract: Owing to the large number of overweight vehicles, the faults of crack, passage and water damage are easy appeared on deck pavement in the operation process. In order to solve the faults of deck pavement layer in the long-term operation process, the article analyzes and sums up the faults commonly appeared in deck pavement in detail, and puts forward the relative preventive measures, which can be referred for the design and maintenance of deck pavement layer in the future.

Keywords: asphalt concrete, deck pavement, fault, cause analysis, prevention measures

FLOOD CONTROL & DRAINAGE

Analysis of Ecology and Introduction of Cases of Urban Road Drainage Measures Li Tong(98)

Abstract: The urban road drainage is an important link in the urban rainwater and flood management and utilization system. With the increasing improvement of resident travel and living environmental requirements, the ecology of urban road drainage measures gradually becomes an efficient means of solving the pavement runoff pollution problem, and the known ecological drainage technology lays a good foundation for its application in engineering and the popularization of road ecological drainage measures.

Keywords: road drainage, ecology, case

Elementary Discussion on Breakover Idea of Present Water Channel in Construction of Nanchang New Urban Municipal Roads Yin Xiaobin(101)

Abstract: Owing to the development of new urban land relatively lagged behind of the construction timing of municipal roads, the reasonable breakover of the present water channel has the important significance for maintaining the flood control, drainage and irrigation of the area before the land development. The water channels have developed in Nanchang, and the breakover problems of present water channel in the development of new urban area are complex. The article analyzes the ideas of functional qualification, plane breakover and vertical breakover of the present water channels.

Keywords: new urban area, municipal road, present water channel, breakover, flood control and drainage, irrigation

Analysis of Common Problems in Connection of Municipal Water Supply and Drainage Cai Juan(103)

Abstract: The article sets forth the principle in the municipal water supply and drainage engineering, and discusses and analyzes the connection problems of HDPE pipeline in the water supply and drainage engineering, and the safety management and quality inspection in the connection of water supply and drainage.

Keywords: municipal engineering, connection of water supply and drainage, problem

Application of ANSYS in Ship Lock Stress Analysis of Xiajiang River Water Conservancy Hub Project

..... Xie Linglu, Zheng Fang(105)

Abstract: In the structural design of ship lock, the finite element method is used to calculate and analyze the ship lock, and to solve the limitation of conventional method in the structural design of ship lock so as to more accurately analyze the structural stress of ship lock. As the main study object of Xiajiang River Water Conservancy Hub Project, the finite element method is used to calculate and analyze the structural stress of ship lock. The relative experience can be referred for the similar projects.

Keywords: ship lock, stress analysis, finite element

Analysis on Impervious Structural Style of Roller Compacted Concrete (RCC) Dam Upstream Face

..... Yuan Cuiping, Dang Yuanyuan(109)

Abstract: As a new type of dam, the building structure of RCC dam has higher requirements of the upstream face imperviousness. Once the impervious measures for the upstream face fail, it will lead to excessive pervious amount and bedding uplift pressure of dam. On the basis of explaining the impervious style of RCC dam upstream face, and through the finite-element of numerical analysis to calculate and analyze the detail impervious function of impervious zone of upstream face, the article compares and analyzes the status with impervious zone and without impervious zone. It is believed that the impervious zone of upstream face plays a controlling role in RCC imperviousness, and the most of water flow energy of dam is consumed in the impervious zone of upstream face. Therefore, the construction quality of impervious zone of upstream face should be strictly controlled in the construction process so as to ensure the normal impervious role of impervious zone of upstream face.

Keywords: RCC dam, impervious zone of upstream face, finite-element method, abnormal concrete, uplift pressure

Design of Lanzhou Yantan South River Comprehensive Treatment Sewage Interception Project

..... Guo Yunhong(111)

Abstract: The Lanzhou Yantan South River Comprehensive Treatment Sewage Interception Project is a systematic engineering of comprehensive treatment of water environment. The treatment of water environment

involves various aspects of the society. The treatment of water environment must be carried out by comprehensive treatment. That is to transform a single river treatment to the treatment of the whole basin. The interception of sewage is the fundamental to implement the comprehensive treatment. Aiming at several problems existing in the planning and design of sewage interception engineering, the article puts forward the solving methods, which can be referred for the similar projects.

Keywords: Lanzhou Yantan South River, comprehensive treatment, sewage interception engineering

MANAGEMENT & CONSTRUCTION

Elementary Analysis on Quality Control in Construction of Asphalt Concrete Pavement Gong Ying(114)

Abstract: The asphalt concrete pavement becomes the important constitution part in the modern highway construction because of its special strength, slide resistance and stability. Its construction quality is particularly important. The article briefly introduces the relative measures to improve the construction quality of pavement, and focuses introduction on the main method and facilities used for the control of quality, which has some guiding means to control the quality in the construction of asphalt concrete pavement.

Keywords: asphalt concrete, construction quality, control measures, facilities

Analysis on Life Cycle Cost of Synchronous Plus Fiber Rubble Lower Seal Zhou Xiaohua, Chen Ming(117)

Abstract: According to Ji'an-Lianhua Expressway Pavement Project and the comparison of rubble seal and slurry seal pavements, the life cycle cost analysis method is used to carry out the economic analysis of synchronous plus fiber rubble lower seal pavement. The analysis shows that the synchronous plus fiber rubble lower seal pavement has the lower direct cost within the analysis period, its service life is 4~5 a longer than the general lower seal pavements, its maintenance is convenient, the users' costs are able to greatly save, the energy consumption is low and environment is friendly.

Keywords: engineering management, synchronous plus fiber rubble lower seal, life cycle cost analysis

Construction Technology of Closure Section of Main Bridge Luo Shikai (121)

Abstract: In the bridge engineering, the construction of bridge closure section is the key link to control the stress status and alignment of bridge. Therefore, it is required to control the construction quality of the closure section of the main bridge. Based on this and engineering cases, the article further discusses the construction technology of the closure section of the main bridge. According to the calculation of construction scheme and the analysis of the relative factors, the article puts forward the matters for attention in the construction of the closure section of the bridge. The relative experience can be referred for the construction of the similar bridges.

Keywords: main bridge, closure section, construction technology

Construction Scheme and Locking Calculation of Largest Bridge Closure Section in Valentine Valley

..... Huang Wanlong(124)

Abstract: The article introduces the closure scheme of the main bridge 95m + 170m + 95m continuous rigid frame closure section of large bridge in Valentine Valley, and introduces the outer lock stiff skeleton design of closure section and the accurate mechanics calculation in order to provide the important theoretical guidance and quality guarantee for the closure of closure section.

Keywords: continuous steel rigid frame, closure section, lock calculation, stiff skeleton, water tank weighting

Thinking and Countermeasures of Quality Defects of Combined Small Box Beam Continuous End

..... Zhu Changliang(128)

Abstract: According to the study on the quality defects existing in the continuous end negative bending moment pre-stressing construction of the combined prefabricated small box beams for Gaotian Elevated Bridge and Luoge Interchange from Chencun Village of Guangming Expressway to Bid S03 of Xiqiao Section, the article sets forth the advantages and disadvantages of the continuous ends of simply supported and continuously pre-stressed combined beam bridge, the causes of quality defects, the preventive countermeasures and treatment methods from the construction angle to think about the problems for attention in the design stage and operation stage.

Keywords: combined, small box beam, continuous end, quality defect, countermeasures

Common Faults and Detection of Steel Box Girder Bridge Wang Weidong(131)

Abstract: Based on the faults of steel box girder bridge found in the practical projects, the article analyzes and sums up various characteristics and multiple sites of faults, analyzes the interaction and consequences of various faults, and puts forward the detection strategy for the faults of steel box girder according to the current detection technology. The article describes the strategy containing, the detection method corresponding various faults, key detection places and detection cycle.

Keywords: steel box girder bridge, fault analysis, detection method, detection cycle

Cause Analysis and Prevention Measures of Enlarged Foundation Cracks of U-type Abutment ... Shi Xuejun(135)

Abstract: In the northern area of Baotou, the geological condition is better, and the shallower gravel and rock layers are good bearing layers. The U-type abutment is widely applied, but it belongs to the big volume concrete. The temperature crack is easy caused in the construction, which will seriously influence the integrity, stabilization, permeability and durability of structure. According to the engineering case of Baotou Erdaosha River Bridge, the article introduces the causes of bid foundation cracks of U-type abutment and the prevention measures.

Keywords: U-type abutment, bid volume concrete, crack, prevention

Further Analysis of Old Bridge Demolishing Scheme Li Yaosheng(137)

Abstract: The article analyzes an old bridge demolishing scheme of Shanghang Nanmen Bridge, briefly introduces the situation of the project, and puts forward the three bridge pavement demolishing schemes. Through the comprehensive comparison and selection, the article finally defines the demolishing thinking of "directly using long-arm drilling machine to demolish the stress part (arch rib) of arch bridge, and analyzes and studies the technical gist and demolishing effect of old bridge demolishing.

Keywords: old bridge, demolishing, scheme, technical gist, effect

Management and Control Factor in Design Stage of Engineering Project Liu Changgeng(139)

Abstract: Taking Wuhan City Erqi Road Comprehensive Public Parking Lot Project as an example, the article sets forth and analyzes the task and control factor of each design stage in the project promotion, further reveals the problems for attention in the design process of projects and the development trend, and sums up the solving problem method in the design process of project, which can be referred for the similar projects.

Keywords: engineering project, design stage, control factor, management, schedule

Preliminary Analysis on Supporting Effect of Standardization for Flood Control Emergency Plan

..... Li Wei, Zhang Minglan, Liu Huan, Liu Wen (142)

Abstract: Flood control emergency plan has the important guidance for the rapid disposal of flood and the reduction of disaster losses, should be compiled based on the actual situation, and continually revised and improved. As the important method of modern scientific management, the standardization has the very important supporting effect of emergency plan. Taking a revision of flood control emergency plan in Shanghai as an example, and aiming at some shortcoming existing in the emergency plan, the article briefly analyzes the process of emergency plan standardization. The practical operability of emergency plan can be greatly improved by the standardization means of optimization, coordination, simplification, harmonization and modularization.

Keywords: flood control, emergency plan, standardization

Causes and Prevention Measures of Quicksand Phenomenon in Sewage Pipeline Construction

..... Hui Wei, Jiang Lanlan, She Bucun, Liu Gang(146)

Abstract: With the development of city and paying more attention to environmental protection, the underground drainage pipeline is increasing. Due to the quicksand phenomenon, the underground water and soil will be caused to lose, and the settlement of the partial pipelines will appear so as to cause many road pavements caving in and bring the huge influence to the safety of people's life and property. By analyzing the experience and lessons in construction and operation of Wuxi Sewage Pipeline Network Project, the article preliminarily sums up the causes and prevention measures of quicksand phenomenon in the construction and operation of sewage pipeline.

Keywords: quicksand phenomenon, sewage pipeline network system, prevention measures

Discussion on Construction Technology of Tunnel Half-open and Half-hidden Portal Section with Large Bias - - -

..... Cai Xiaoming, Bao Chunfeng, Xu Jianxing, Zhang Jianjun(149)

Abstract: According to the construction of Xishan Tunnel in Hangxinjing Expressway (Quzhou Section) Project, the article introduces the construction technology of pushing combined tunnel half-open and half-hidden portal section with large bias. The core contents of this construction technology are the construction technologies of improving the integrity of supporting structure, and the first excavation and then backfilling synchronously under the condition of good integrity stability of slope. This method can improve the integrity of supporting structure at the open and hidden connection point, reduce the harmful impact brought by the uneven inner deformation of open-hidden portal, overcome the problem of large vertical bias from arch waist to vault early into portal, realize early into portal, early excavation, reduce the engineering cost and improve the engineering benefit. This tunnel has been overall completed with good effect, which can be referred for the design and construction of the similar projects.

Keywords: tunnel with bias, half-open and half-hidden, supporting structure, first excavation and then backfilling synchronously, construction technology

Construction Technology of Tall Wall Adjustable Self-supporting No-to-pull Unilateral Formwork

..... Zhang Hongjun, Tong Xiangping, Wang Jinlong(153)

Abstract: The construction of underground engineering wall will cost too highly by the conventional formwork technology because of the narrow construction site, high structural waterproof requirement and good concrete forming quality. The most are used of the unilateral formwork construction technology. But in

order to guarantee the stability of deep foundation pit, the enclosure of foundation pit is commonly the diaphragm wall and multichannel inner supporting structure. Therefore, the difficulties will be brought to the material transport of formwork and the construction of formwork. The supporting system can be adjustable self-supporting technology by the optimization of unilateral formwork technology, which can solve the problems in the transport of unilateral formwork and the construction of formwork. The article introduces its construction technique and compares it with the conventional method from the aspects of construction technological principle, its stress calculation, construction technological flow and operation. The practice shows that the adjustable self-supporting unilateral formwork technology is feasible, and also has the advantages of convenient construction, simple operation and fast speed.

Keywords: underground engineering, deep foundation pit, unilateral formwork, adjustable self-supporting

STUDY ON SCIENCE & TECHNOLOGY

Study on Influence of Land Occupied on Traffic Capacity of Urban Road Yin Xinran, Li Xueting, Zhang Kan(158)

Abstract: The lane occupied is a phenomenon of reducing the traffic capacity of road or road cross section within the unit time because of traffic accident, roadside parking, construction occupying land and the other factors. Taking the lane traffic capacity of two typical traffic accidents in the main roads in the front of a university of Shenyang City as the study object, the article adds up the vehicle number every 30s to calculate the maximum number of standard vehicles passing in 1 h, and seeks the possible traffic capacity of one-way lane and the situation of traffic every direction. The analysis shows that the different occupied lanes of traffic accident at a same cross section will have the different influences on the practical traffic capacity of this cross section.

Keywords: traffic accident, traffic flow, line-up length, traffic capacity, lasting time of accident

Study on Design of Minor Angle Deflection Intersection of Urban Road Hu Zhangli(161)

Abstract: According to the analysis on the plane design of minor angle deflection intersection, the article puts forward the reasonable scheme of channelization design of minor angle deflection intersection. Based on the analyses of gradient combination of minor angle deflection intersection, the article deduces the relation between the right turn lane slope grade and the radius of right turn curb, lane width, road slope, and the angle of two intersected roads, which provides some viewpoints and suggestions for the reasonable design for minor angle deflection intersection.

Keywords: urban road, minor angle deflection intersection, plane design, vertical design

Study on Calculation Method of Stayed Cable Force Measurement He Changjiang, Zeng Zhenhua, Zhou Zhaohuan(164)

Abstract: For the cable fore measurement of cable-stayed bridge, the most commonly used method is the frequency method to test the vibration of stayed cable, and then the frequency - cable force calculation formula is used to calculate the cable force of stayed cable. Combining with Wujiang Shunhu Bridge, the article discusses the appropriate method under the condition of known cable force and the corresponding cable force spectrum in the construction of stayed cable. Based on the calculation method of eduction in the tensioning process, the cable force of stayed cable can be accurately calculated so as to make the force of

stayed cable and the inner force of the main girder simultaneously satisfying the design requirements.

Keywords: stayed cable, calculation of cable force, natural frequency, construction monitor, boundary condition, condition correction coefficient, derivation formula

Analysis on Finite Element Simulation of Corrugated Steel Web Hu Jinmu, Cai Yang(167)

Abstract: The article introduces the eigenvalue buckling analysis of model by the finite element software ANSYS to establish the finite element model of corrugated steel web girder, and discusses the buckling characteristics of corrugated steel web by the comparison with flat steel web girder model.

Keywords: finite element, corrugated steel, web, buckling

Study on Applicability of Rubber Powder in Micro Surfacing Ren Shuanghong, Cheng Gong, Teng Da(170)

Abstract: To study the applicability of rubber powder in micro-surfacing, the indoor accelerating tire method is used to test nine groups of sound pressure levels of micro-surfacing mixture with the different gradations, rubber powder contents and rubber powder meshes through the design of three-factor and three-level orthogonal test, and according to the road performance and job performance of micro surfacing, it is comprehensively studied. The results show that the sound pressure level of micro-surfacing mixture reduces with the increment of rubber powder content, the 60-mesh rubber powder has the best low-noise performance, and comprehensively considering the mixture noise reduction and road performance, the optimal rubber powder micro-surfacing solution is coarse aggregate rough gradation + 2% rubber powder content + 80-mesh rubber powder.

Keywords: micro surfacing, rubber powder, orthogonal test, noise reduction

Analysis on Numerical Simulation of Multiple Parallel Directional Drilling Crossing Dike Yue Qinghua(173)

Abstract: Yongtaiwen natural gas conveying pipe crosses a large river project, and is parallel distributed with the optical cable and finished-product oil pipe at many places along the line. These three pipelines are constructed by the non-excavation directional drilling technology. In order to analyze the comprehensive influence of multiple-period construction on embankment and ground deformation, the software of Abaqus is used separately to carry out the numerical calculations of single-pipe and multiple-pipe crossing. The result shows that the multiple paralleling will cause the close relation of settlement groove with pipe size and spacing, and it is to control the spacing of adjacent pipe larger than the sum of half width of single-pipe settlement groove. The interrelationship of multiple paralleling can be neglected.

Keywords: multiple parallel, directional drilling, Abaqus, numerical simulation

Study on Surface Settlement Law in Excavation of V-grade Surrounding Rock Tunnel by Double Side Wall Pilot Tunnel Method Shang Wuxiao (176)

Abstract: As the shortage in the study of ground surface settlement law in excavation of tunnel by double-side-heading method, and taking the ground surface settlement caused by V-grade surrounding rock excavation at the exit of a tunnel in Fujian Province as example, the article describes the surface settlement value at the ground surface settlement monitoring site in the tunnel excavation through the field measurement, and records the corresponding excavation process in detail. The surface settlement volume and velocity as well as other statistical quantities caused by the excavation of pilot tunnels are get by the chart analysis and mathematical statistics method. The tunnel excavation process and its settlement curve trend are comprehensively considered, and the whole monitoring process is divided into 7 sections. The settlement

curve equation is given by the curve fitting method. According to the analysis of curve features in various sections, it is found that the influence of the top center tunnel excavation is the largest on the surface settlement, and the surface settlement caused by the first pilot tunnel is obviously larger than the secondary pilot tunnel in the excavation of left and right tunnels.

Keywords: V-grade surrounding rock, double side wall pilot tunnel method, settlement velocity

Study on Tunnel Construction Period and Construction Cost Risk of Rock Level Change Cao Changhong(179)

Abstract: The article puts forward a calculation method to study the tunnel construction period and construction cost risk of surrounding rock level change by the application of Monte Carlo simulation analysis method. The article studies the theoretical calculation steps of this method, and sets forth the main problems in the tunnel construction period and construction cost risk on the basis of the practical characteristics in the construction of a tunnel engineering project.

Keywords: surrounding rock level change, tunnel, construction cost risk

APPLICATION OF ACHIEVEMENTS

Analysis and Application of Urban Road Ice and Snow Melting Technology Wang Sheng, Huang Yan(181)

Abstract: The article analyzes the urban road ice and snow melting technology at home and abroad, and focuses study on the characteristics and using status of the passive snowmelt method and active snowmelt technologies. The analysis results show that the traditional passive snowmelt technology is hard to implement because of bad climate and larger longitudinal slope area. The electric heating cable melting technology has the characteristics of environmental protection and system stability. The first successful application of Urumqi "Tian" Expressway Project lays a solid foundation for the application of electric snow melting technology in the special sections of urban roads in China.

Keywords: passive snowmelt, active snowmelt, hydronic snowmelt, heating cable

Application of Basalt Fiber Geogrid in Pavement Engineering of Saline Area

..... Xia Xiaomei, Zhao Zhenjiang, Wang Qiang, Peng Kai (185)

Abstract: Under the background of continuous boost of development speed of modern economic society, and with the continuous improvement of vehicle transportation heavy load level, the highway projects on the original design basis have been hard to satisfy the requirements of its using functions, which cause the problems of hollow and crack frequently occurring on the pavements, and seriously and even cause the breaking of pavement roadbed so as to make the whole highway hard to continuously put into operation. Therefore, the construction members are required to do the best for finding the mode and method to improve the stability of pavement structure. The application of geogrid is one of the key means. The article concentrates the studied objects on the application of basalt fiber geogrid, and analyzes the application of this material in the pavement engineering cases of saline area. The result approves the reliable superiority of this material.

Keywords: basalt fiber, geogrid, saline area, pavement engineering, application

Application and Discussion of Pre-stressed Steel Cylinder Concrete Pipe Jacking (JPCCP) in Large-diameter Pressure Water Supply Project Fan Xuelian, Tang Wenlong, Wang Jianbin(187)

Abstract: The article discusses the application of JPCCP in the large-diameter pressure water supply

projects. The JPCCP is a composite pipe produced by the pre-stressing and non-pre-stressing technologies with the tensile strength, impermeability and compressive performances of concrete, and is a large-diameter updated product researched and developed on the basis of pre-stressed cylinder concrete pipe (PCCP). The analysis, study and comparison show that it is suitable for the unexcavated large-diameter pressure water conveying and sewage pressure transportation engineering.

Keywords: pre-stressed composite pipe, impermeability, compressive resistance, safety

THE RELATIVE SPECIALITIES

Elementary Analysis on Relationship between Lake Landscape and Urban Environment

..... Huang Haihua, Hu Feiyue (190)

Abstract: Urban lake landscape is one of the important elements of urban landscape pattern, spatial constitution and ecological structure. The rich waters of space combined with pleasant green landscape and cultural landscape can promote the improvement of the urban ecology and environmental quality. The article elementarily analyzes the relationship between lake landscape with the surrounding architectures, people, plant landscaping, supporting facilities and etc., and puts forward the relative design guidance basis in order to provide the technical support for the scientific and high efficient implementation of city construction and water conservancy engineering.

Keywords: water front, lake landscape, human behavior, plant landscaping, landscape supporting

Elementary Discussion of Development and Change in Design of Urban River Waterfront Landscape

..... Zhang Xurong, Fu Dongwang, Chen Weiwei(193)

Abstract: The article firstly analyzes the problems existing in the urban rivers, then sets forth several principles in the river design, discusses the plane and vertical design ideas, and the new materials and new methods of revetment, and finally puts forward some proposals for the design of urban landscape rivers, which can be referred for the similar projects.

Keywords: river, safety, landscape, integration

Thinking about Ecological Building of Urban River and Study of Landscape System in Jinan

..... Fan Ruihua(197)

Abstract: The article analyzes the characteristics and the existing problems of urban rivers in Jinan, studies the relationship between the river and city space development. According to the systematical planning of river, the article puts forward the concept of city river landscape classification, and discusses the construction idea of urban river landscape. The above contents can be referred for the similar projects.

Keywords: urban river, landscape classification, overall planning

Comparison and Analysis of NIMBY (Not In My Back Yard) Phenomenon in Selection of Chinese and Foreign

Garbage Treatment Fields

..... Kong Yang(200)

Abstract: The treatment of urban domestic garbage has become an important task urgently to be solved in the cities of China. The negative externality brought in the garbage treatment makes the selection of garbage treatment field become the focal point of the whole society. This kind of public facilities becomes the NIMBY facilities because of some opposing and resisting of urban residents usually on these facilities. The article analyzes the difficulties in the field selection of NIMBY facilities for the Chinese and foreign garbage

treatment fields, and puts forward some proposals for the field selection of NIMBY facilities according to the experience. The relative contents can be referred for the similar projects.

Keywords: NIMBY phenomenon, garbage treatment field, public participation, field selection

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

Urban Roads, Bridges & Flood Control

Monthly

Number 12, 2014 (Total December 188)

Publication on December 15th, 2014

<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)55008850

Fax: (021)55008850

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**

PRC—2000沥青路面再生复原剂

引进国际先进“预防性养护”技术

“预防性养护”再生复原技术在北美已有超过50年成功应用的辉煌历史，新建路面和出现早期老化病害（毛细裂缝、松散、离析、麻面和缺油）的路面均适用此技术。

卓越的性能：

- 与沥青同为石油提炼产品，具有超强的吸附和渗透能力；
- 环烷基的石油属性不含蜡，溶解力强有助于恢复集料和沥青的粘结性能；
- 补充路面面层沥青活性成分的损失，恢复沥青各组分的平衡；
- 有效提高沥青针入度，降低沥青黏度。
- 路面面层沥青在PRC-2000再生复原剂的作用下软化膨胀，进而填充道路表面结构中的空隙，有效地隔绝空气、水对路面沥青的氧化和侵蚀，达到路面的防水和密封作用；
- 大大改善路面的视觉效果；
- 大大提高道路的使用寿命和降低维护成本。



再生剂处理五年后的路面对比

电话：021-65731743 65432873 65439619 传真：021-65199183

地址：上海市杨浦区军工路2180号林怡苑 邮编：200438

ISSN 1009-7716 国外发行代号：BM1859 定价：18.00元
CN 31-1602/U