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

2010 年 第 8 期 （总第 133 期）
2010 年 8 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
协　办：全国城市道路与桥梁技术情报网
上海斯雄复合材料有限公司
广东省市政行业协会

出　　版：《城市道桥与防洪》编辑部
总 编 辑：李　汾
责任编辑：骆燕妮　周盛伟　杨建华　叶　露
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来稿邮箱：yang_jh.fz@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：上海申光印刷厂
地址：上海市纪念路 500 号　　邮编：200434
标准刊号：ISSN 1009-7716 / CN 31-1602/U
广告许可证号：3101020070052
中国土木工程学会市政工程分会
中国勘察设计协会市政工程设计分会　刊物

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期刊基本参数：CN 31-1602/U * 1984 * m * A4 * 260 * zh * P * ¥15.00 * 10000 * 75 * 2010-08

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Abstract: In order to equilibrate traffic flow on urban expressway network and to enhance the efficiency of traffic operation, the paper introduces model-based predictive control method. Its control task is described as an optimal control problem of dynamic, discrete time, space and having restrictive control variables. The feedback control is realized by solving the optimal problem of control period within the future longer time period. The result of case analysis is shown that the model-based predictive control method can consider the time-dependent traffic status and the good control effect is achieved able to provide the basis for the planning and design of the advanced traffic management system.

Keywords: model-based predictive control, route guidance, macroscopic dynamic traffic flow model, advanced traffic management systems (ATMS)

Embodying Low-carbon Idea in Urban Comprehensive traffic Engineering Planning Design ····· Fan Yong(4)

Abstract: The article firstly points out that the design idea of low carbon must be used in the planning design of road traffic projects because of the carbon discharge related to the traffic holding the correspond large proportion in the gross carbon discharge, and then sets forth the planning first, "traffic priority", traffic engineering equipment and materials.

Keywords: traffic engineering, low-carbon conception, planning design, "traffic priority", equipment, material

Elementary Discussion on Layout Principle and Adaptability of Expressway Passageway ····· Yu Zhen(7)

Abstract: The urban expressway passageway is the importantly composed part of the urban expressway. The article analyzes the contents of layout style, layout principle and adaptability of the passageway in the design and planning of expressway, and preliminarily sums up the main design characteristics and gist of the expressway passageway able to provide the reference for the future implementation of expressway.

Keywords: urban expressway, passageway, layout style, layout principle

Intersection of Parallel Elevated Road and Road Network ····· Tian Geng(11)

Abstract: The parallel elevated road is an elevated road where the vehicles conversely drive and mainly severs the urban public traffic. The parallel elevated road is mainly used to connect the satellite towns surrounding the main city area and the large, middle and small cities near the large

city able to form the belt-shaped and net-shaped city circle. The intersection is the key of parallel elevated road to form the road network of the complete interchange and the belt-shaped and net-shaped city circle. The urban public traffic system formed by the parallel elevated road network costs low, and can make the land coordination have the specific pointing to. It will save the land and is favorable to the town construction as a whole, efficiently restrains too high house price of a city and prevents the city real estate from licking up overfull social fortune.

Keywords: parallel elevated road, interchange, road network, land coordination, urbanization

Design of Hackle Bus Lane Side ····· Zheng Chen(15)

Abstract: The article analyzes the problems existing in the traffic organization and operation safety of the common straight bus stop lane side, puts forward the design conception of the hackle bus lane side able to give consideration to the service efficiency and operation safety, and studies the geometry design of this lane side, which result can be applied in Hongqiao Comprehensive Traffic Hub Project. The article introduces the relative design conception and method for reference.

Keywords: hackle, lane side, traffic hub, collection and distribution

To Improve Sideway Paving Technology, To Create Accessibility Environment Recycled for Environmental Protection ····· Jiang Hongxin(18)

Abstract: The steep slope exists at the passageway of the existing sideway, which will result in the passengers are easy to trip if not carefully. Various manholes on the sideways are often under the conditions of no covers and being damaged owing to the factors of destroying and stealing, and sometimes evolve to the "trap to seize the life" indeed, which form the menace for the safe passing of the passengers. The manhole cover and manhole frame are easy to produce the noise after damaged, and the cover noise caused by the vehicle grinding seriously influences the residents' rest along the roads. The article puts forward the new three-face slope type aiming at the above problems. The new "hidden manhole" is used in the practice to decrease some common faults in the manholes before. In the result, the manhole covers are not easy to lose and it also avoids the road noise because of cover damage and is convenient for passing of the passengers. The distinguishing brick is paved on the sideway surface to show the manhole here.

Keywords: sideway, accessibility environment, three-face slope, manhole, hidden manhole, Shanghai

Road Design and Treatment of Parking Place in Urban Residential Area ····· Ruan Tiefeng, Sun Haiming(20)

Abstract: With the yearly development of economy, China has completely started into the automobile times. The possession of family automobile fast rises in recent years, which results in the serious shortage of parking place in the residential areas. The general contractors fall short of the design knowing in the exceeding quantity of proportional ratio of parking place in the construction of residential areas now, which will cause the problem of parking place in the following years. Moreover, the design of municipal roads in the residential areas is implemented after the building construction is started sometimes in the practical engineering design flow, which will bring a new requirement for the design of municipal roads how to utilize the existing land resources to the maximum extent. It is to optimize the design of road network in the residential areas during the design and to reserve the vehicle parking and transferring places. The article puts forward some methods to increase the parking places of the residential areas able to be referred for the similar projects.

Keywords: residential area, increase, parking place, improving the road network, adjusting the road width

Study on Structural Design of Typical Pavement in Industrial Function Zone of Tianjin Riverside New Area
..... Gong Fenggang,Wang Xinqi,Wang Yuxiu,Zhang Yang(23)
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Keywords: riverside new area, function zone, pavement structure, design, Tianjin City

Road System Planning in West Zone of Tianjin Economical Technical Development Area .....
..... Fu Xiaodun,Cheng Haibo,Wang Xinqi(28)
Abstract: The west zone of Tianjin Economical Technical Development Area ("west zone" for short) is the important composed part of Tianjin Economical Technical Development Area ("development area" for short), and takes on the partial functions of the development area to build the Chinese Northern Modern Manufacture Center, the scientific technological research and development, and the achievement transferring base. The west zone will become the ecological industrial zone high efficiently to utilize the resources and the important symbol area to play the leading action of the riverside new area. The article introduces the overall planning of the west zone economical development and the west zone road planning, and discusses the some issues in the road system planning for the orientation and characteristics of the west zone.
Keywords: road planning, road traffic, road section, main trunk road, second trunk road, branch road

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Keywords: cement concrete slab, seam layer , XXX natural asphalt

Study on Application of Permeable Pavement ..... Shao Yǔzhen(34)
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Keywords: permeable pavement, pavement structure design, des analysis

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..... Sun Liang, Luo Haochong(36)
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variety in the subgrade with the load applied step by step and the influence with or without cushion on the subgrade settlement and stress. The analysis result coincides well with the measured engineering data.

Keywords: expressway, soft clay subgrade, jet grouting pile, finite element, application study

Comparison of Technology and Economy of Soft Soil Subgrade Treatment Scheme for a Project ····· Zhang Yijun(41)

Abstract: The comparison has been made on technology and economy for the schemes of soft soil subgrade treatment in the article by combined with the soft soil subgrade treatment problems of high filled soil + thick soft soil + municipal pipeline in the highway and urban road.

Keywords: highway and urban road, soft soil subgrade treatment, municipal pipeline

Elementary Discussion of Concrete Admixture and Its Application ····· Ma Yutian(44)

Abstract: The article analyzes the action of concrete admixture and the issues of its application, and sets forth the selection of its variety and trademark, control of mixing quantity and using method.

Keywords: concrete, admixture, issue, selection of variety, mixing quantity, using method

Experimental Evaluation on Recycled Cement Concrete Performance ····· Li Fei(48)

Abstract: The article sets forth the utilization of the recycled aggregate made of the old crushed pavement cement concrete to carry out the performance experiment of recycled repairing road concrete, which mainly test its compressive strength, flexural strength, drying shrinkage and freeze-resistant performance. The result is shown that both the early-strength and the rapid-repairing recycled concretes have better mechanics performance and durability, which can be utilized to repair the heavy traffic pavement.

Keywords: recycled concrete, recycled aggregate, road-using performance, rapid repair, heavy traffic pavement

Disease Investigation and Mechanism Analysis of Road Manhole in Shanghai ····· He Zhilong(51)

Abstract: It is universal to have the different levels of manhole disease existing in the urban roads now. The article classifies and analyzes in detail the manhole disease through the practical investigation of many roads in Shanghai, and studies the mechanism of manhole diseases from the aspects of design, construction and engineering management so as to provide the basis for treating the road manhole disease.

Keywords: road manhole, disease investigation, mechanism analysis, Shanghai

BRIDGES & STRUCTURES

Analysis of Geometrical Nonlinear Finite Element Method for Long-span Cable Bridge ····· Li Zhongxiang, Zheng Yilong(54)

Abstract: Cable bridge is a type of suspension bridge taking the cable as the main stress component, and taking the steel beam and board as the partial stress components with the characteristics of low construction cost, short engineering period, easy to maintain and the wide using foreground, but a few relative technical materials. There is no the regulations and criterions for the design and construction of the cable bridge as the impermanent bridge in China. Taking a cable bridge of Yunnan as an example, the article uses the finite element software MIDA/civil to calculate and analyze the cable force and the transverse stability, and checks and calculates the design of

cable, steel beam and anchor. The achieved result and the calculation process can be referred for the design of the same cable bridges.

Keywords: cable bridge, long span, geometrical nonlinearity, finite element, cable force, transverse stability

Analysis on Pre-camber Calculation of Two Continuous Rigid Frame Bridges ····· Ni Yingsheng, Li Jinkai,Hui Yingxin(58)

Abstract: The article firstly sets forth the significance of studying the design and construction of this bridge for the excessive deflection in the midspan of the different-span continuous rigid frame bridges. The finite element model is set up according to the case of Jiankou River Super-long Bridge and Zhaojiayuan Bridge. The article analyzes the status in the curse of two bridge constructions by the reasonable calculation method and the theoretical analysis, and finally puts forward the relative suggestions for the design and construction of this bridge.

Keywords: continuous rigid frame bridge, construction control, pre-camber, formwork placing elevation, simulation analysis

Design and Checking of 0#-block Box Girder Bracket for Chahe River Bridge ····· Lin Zhijun(62)

Abstract: Chahe River Bridge is the T-shaped prestressed concrete continuous rigid frame box girder structure. The article introduces the design and checking of 0#-block box girder bracket of the main pier so as to guarantee the construction safety and construction quality.

Keywords: Chahe River Bridge, 0#-block, bracket, design and checking, Guizhou

Discussion on Stress Character of Pier Column and Reasonable Layout of Reinforcement of Tianjin Avenue ····· Li Lianqiang, Yang Liang, Chen Minggui(67)

Abstract: According to the calculation result by the space finite element calculation program Midas FEA, the article analyzes the stress character of single-column vase-deformed pier of Tianjin Avenue, and discusses the reasonable layout of reinforcement for the pier cap able to be referred for the design.

Keywords: single-column vase-deformed pier, partial analysis of pier cap, deep girder, nonlinear of material, crack

Discussion on Design of Small-radius Curve Steel-concrete Combined Continuous Box Girder Bridge ····· Xiong Hongbo(72)

Abstract: The article introduces the design of the curve steel-concrete combined girder of Kunming No.2 Ring Dashuying Interchange, and briefly describes the design thinking and analyzing calculation method of small-radius long-span continuous steel-concrete combined box girder bridge.

Keywords: combined girder, curve girder, counterforce uneven coefficient, negative xxx

Design of Short-pylon Cable-stayed Bridge of Wixi Qingning Bridge ····· Qi Xin, Lu Hongwei, Mi Zhihui, Zou Deyi(75)

Abstract: The major bridge of Wuxi Qingning Bridge is a 113-m span of short-pylon cable-stayed bridge crossing Jinghang Grand Canal. This bridge is a single plane, its main girder is prestressed concrete single-box three-cell girder and the total width of bridge is 30 m. The cable is the parallel steel stayed cable and cold cast anchor. The main pylon is steel reinforced concrete structure. The anchorage area of the main pylon uses the steel anchor box of anchorage mode.

Keywords: short-pylon cable-stayed bridge, prestressed concrete structure, box girder, bridge design

Selection and Design of Bridge Structures for Kunming City East Ring and North Ring ····· Guo Jianmin(79)

Abstract: The total length of Kunming City East Ring and North Ring is 27.07 km. The rings are the urban expressway elevated bridge system with double-way six lanes. The design driving speed is 60 km/h. The length of East Ring and North No.2 Ring is about 13.5 km. The article introduces the structural design characteristics of elevated bridge of Kunming East Ring and North No.2 Ring. Its design achievement can be referred for the similar projects.

Keywords: two rings of Kunming, steel-concrete combined box girder bridge, prestressed concrete bridge

Design and Key Technical Issue of Bridge Structure of Tianjin Collection and Distribution Harbor Phase I Project ····· Yang Liang, Liu Wenjiang(83)

Abstract: Tianjin collection and Distribution Harbor Highway Phase I Project is under good condition and achieves the better social and economical benefits since opening into operation. The article sums up the bridge project with the seaside collection and distribution harbor characteristics from the aspects of overall design and structure selection based on this project so as to provide the reference for the similar projects.

Keywords: collection and distribution harbor Phase I, bridge, design and key technology

Study on Prestressing Friction Parameter Testing Method Based on Jack Oil Precision Measure ····· Yang Guang(87)

Abstract: The article introduces the use of strain pressure sensor and carries out the prestressing friction parameter test through the jack oil precision measure. Combined with the engineering case of Foshan Ganzhutan Bridge, the article discusses the prestressing friction parameter test method, and utilizes the minimum binary multiplication to seek the prestressing friction coefficients μ and k. this result can provide some reference for the design and construction of long-span prestressed bridge.

Keywords: strain pressure sensor, jack, friction parameter, testing method

Analysis on Crack Cause of Small Bridge Abutment Cap ····· Jin Chuanxing(91)

Abstract: The article introduces the crack distribution of the small bridge abutment cap in a Class I highway, analyzes the character of cracks according to the inspecting and testing data, and then rechecks it from the structure stress, analyzes the crack cause and judges the character of crack, and finally puts forward the repairing scheme.

Keywords: bridge abutment, abutment cap, crack, calculation, analysis

FLOOD CONTROL & DRAINAGE

Study on Zhengzhou City Waterlog Area Treatment Scheme ····· Wang Shaozheng, Shen Guochao, Liu Qingyu(94)

Abstract: The cause of the waterlog area in a city is more complex, which is not only the natural factors of climate change, terrain topography and river water system, but also human factors of city construction and city management. Based on the case of waterlog area in Longhai Road and Jingguang Road of Zhengzhou City, the article analyzes the cause of waterlog area in Zhengzhou City, and puts forward the treatment countermeasures.

Keywords: waterlog area, treatment scheme, Zhengzhou City

Elementary Discussion on Rainwater Planning of Dongying City ····· Zhao Jianwei(97)
Abstract: The utilization of rainwater is the necessary task in the present rainwater planning. The different rainwater drainage systems will produce the different influences on the water quality of the water system, which directly influences the reasonable utilization of rainwater. The Dongying City Rainwater Planning focuses on the rainwater utilization according to the city requirement of rainwater engineering. The article discusses whether or not able to be standard to discharge of rainwater quality, which can be referred for the similar units.
Keywords: rainwater quality, received water body, selection of drainage system

Some Means for Urban Flood Control Engineering in Fengcheng City ····· E Yingzi,Zhou Yuhong(100)
Abstract: In recent years with the development of ecological water conservancy idea, the people more and more pay attention to the harmony of water engineering with environment in the construction of the urban flood control engineering. The article introduces some means of ecological water conservancy in the urban flood control of Fengcheng City in Liaoning Province, and puts forward some suggestions.
Keywords: flood control engineering, ecological greening, water landscape, Liaoning Fengcheng

Application of Ecological Idea in Harnessing of Urban River ····· Ma Yazhong(102)
Abstract: With the development of social economy, the people's requirement for the living environment also continuously enhances. The river harnessing engineering is translated from the water conservancy engineering to a part of environmental engineering. The article deeply discusses the principle having to be followed and the issues necessarily for attention in the course of the ecological river construction, and further sets froth the construction thinking of ecological river by the case of water system ecological construction of river and lake in the New Jiangwan Town.
Keywords: ecological idea, river harnessing, application

Measures for Low-carbon Energy Saving in Long-distance Water Conveying Engineering ·····
····· Xu Shiliang(105)
Abstract: In recent years, to development the low-carbon economy and to push the energy saving and emission reduction become the important measures for the people to reply the global climate warm because of the climate warming caused by the excessive discharge of greenhouse gases, i.e. CO_2 and so on. According to the engineering practical condition, the article discusses the energy-saving measures of long-distance water conveying engineering from the pipe material, pipe diameter selection, pipeline layout, pump selection and arrangement able to provide some reference for the future design and implementation of the similar projects.
Keywords: energy saving, water conveying, pipeline, water pump

Implementing Experience of Handan City Fuyang River Main Area Sewage Interception Project ·····
····· Dong Shuxian, Fu Min(108)
Abstract: According to the planning of Handan City Fuyang River Main Area Sewage Interception Project and the practical conditions, the measures of interception wells and interception pipes constructed along the rainwater channels are taken for intercepting the sewage in the short-term project, and in the long-long project for perfecting the city rainwater and sewage pipe network step by step completely to realize the separation of rainwater and sewage. The short-term sewage interception project is successfully implemented for intercepting 50000-m3/d sewage. The effect is obvious to achieve the expected aim.
Keywords: sewage interception planning, interception flow, separation of rainwater and sewage, expected aim

Study on Protective Technical Scheme of Combined Sewage Box Culvert ····· Zhang Yejiang(110)
Abstract: The combined sewage box culvert is an important underground pipeline in Shanghai and the certain protective measures must be taken for the box culvert when any constructional projects are implemented around the box culvert. Based on the engineering practices, this paper analyzes and summarizes the technical protective schemes of combined sewage box culvert and provides the technical references for similar constructional projects.
Keywords: combined sewage box culvert, root pile, bridge, monitor, Shanghai

Application of Air Suspending Centrifugal Blower in Wastewater Treatment Plant ····· Song Wenqing(114)
Abstract: The blower is the key equipment in the wastewater treatment plant by the aeration treatment technology. According to the engineering case, the article introduces the applying foreground of air suspending blower in the wastewater treatment plant.
Keywords: air suspending blower, wastewater treatment plant, application, Wuhu

Measures to Control Installation Precision of Mechanical and Electrical Components for Large-sized Vertical Axial-flow Water Pump ····· Cao Shenggen(116)
Abstract: The vertical axial-flow pump is widely used in the flood control drainage pumping station, but its installation technology is complex and its installation precision is required highly. The article analyzes and explains the measures necessary to take for guaranteeing the precision when various main components of the large-sized vertical axial-flow pump group are installed from the installing technological angle, and sets forth the installing technological method related to the precision and the basic control requirements of parameters, i.e. elevation, levelness, tilt angle, concentricity, clearance and so on in the course of installation.
Keywords: axial-flow pump group, mechanical and electrical components, installation, technological

MANAGEMENT & CONSTRUCITON

Study on Construction Technique of Long-span Steel Box Beam in Intricate City Surroundings ····· Liu Tianjun, An Guanfeng, Zhang Hongbin(119)
Abstract: Aiming at the difficult problems of constructing the long-span steel box beam in intricate city surroundings, the paper puts forward the method of integrally hoisting the long-span steel box beam taking Guangzhou Leide Bridge System North Extending Line Bid II Project as an example. This method is a technical system of construction organization design, hoisting safety analysis and installing accuracy control of steel box beam in intricate city surroundings. The study can bring help to the similar engineering.
Keywords: intricate surroundings, long span, steel box beam, integrally hoisting, Guangzhou

New Construction Technology of Shield Passing Through Buildings and Structrues ····· Li Gang(121)
Abstract: The high-speed development of urban rail traffic makes the environmental conditions at the tunnel construction by the shield process increasingly severe. The buildings and structures are more closed to the position of the tunnel construction. It is also more strictly to control the influence of shield construction. The article describes the construction cases of the shield up-passing the metro lines, side-passing the protected buildings and cutting-passing the underground barriers, and briefly sets forth the application of the new technology in the shield construction.
Keywords: shield, passing, shallow covering soil, isolating pile, demolish, new technology, Shanghai

Discussion on New Erection Construction Method of Large-gradient Bridge Beam ····· Zeng Xiangmao(125)
Abstract: The accident of the common bridge erecting machine is easy to happen if erecting the vertical gradient exceeding 3% of the prefabricated beam. According to the engineering case, the article discusses the new method to solve the erecting construction problems of the large-gradient bridge beam mainly by the refitting of the bridge erecting equipment and the other control measures.
Keywords: large-gradient bridge beam, refitting of bridge erecting machine, to heighten front support, to widen crane, fixing and longitudinal moving control of complete appliance, traverse moving of side beam, control, control of feeding beam

Three-way Non-uniform Eccentric Continuous Box Girder Traveling Form Construction Method ····· Luo xingyou(128)
Abstract: Based on the construction case of Shenjiang Road Bid 1 Project and combined with the bridge section layout type of this project, the article introduces the three longitudinal, traverse and vertical ways of non-uniform and eccentric structural continuous box girder, cantilever traveling form construction method and technical measures from the aspects of construction arrangement, temporary pier design at zero block, traveling form design and construction measures.
Keywords: three-way non-uniform, eccentric structure, temporary pier, traveling form construction, technical measures

Elementary Discussion on Construction of Cover Beam by Through-bar Process in Bridge Engineering ····· Chen Miaohua(132)
Abstract: Taking the cover beam construction of urban elevated bridge as an example, the article introduces the construction technology and its flow of through-bar process able to provide the reference for the similar projects.
Keywords: elevated bridge, cover beam, through-bar process, construction technology

Pipe Jacking Construction by Air Pressure Method and Settlement control in Crossing Dike ····· Chen Min, Huang Yongfu, Bao Liumin(135)
Abstract: In the course of pipe jacking construction, the soil will be disturbed and cut so as to make the ground in settlement. The pipe jacking to cross Qiantang River Dike is the highly risky and difficult project. Combined with the experience of successfully crossing Qiantang River Dike in the pipe jacking project of a wastewater treatment plant, the article analyzes the influence of pipe jacking construction by air pressure method on the dike settlement, and analyzes a series of technical measures to make the influence on the dike body decrease to minimum level.
Keywords: air pressure, pipe jacking, dike, settlement control

Summarization of K8+600 Bridge High-pier Slip Form Construction Technology ····· Wang Baoyan(139)
Abstract: Taking two k8+600 bridge 79-m high-pier slip form construction projects in Sinkiang Dina as an example, the article introduces the construction technology, key technical control and economical benefit contrast analysis of slip form, which have some reference for the future similar construction of high pier.
Keywords: bridge high pier, construction of slip form, structural system, technological flow, benefit

Construction Technique to Treat Soft Soil Roadbed by Gravel Grouting Pile ····· Wang Tiefa, Kong Fanliang(143)
Abstract: Zhejiang Province is in more complex terrain, where the mountains and hills account for

about 70%, and the plains and basins account for about 23%, mainly dominated by the mountainous hills. Terrain is sloping from the southwest to the northeast. The plains are mainly at the north of Zhejiang and along the south-east coastal, the hills are mainly at the west and the east of Zhejiang, Jinqu Basin is in the center, and the mountains are at the south of Zhejiang. With the expanding scale of high-class highway construction, the routes always inevitably pass through the soft soil section. Therefore, it is common and important task for the soft subgrade treatment in the design and construction of high-class highways.

Keywords: gravel grouting pile, soft subgrade, treatment

Analysis on Numerical Simulation for Bearing Capacity of Single T-shaped Mixing Pile ····· Cai Zhi(147)

Abstract: T-shaped soil-cement mixing pile is a new soil-cement mixing pile technique, which can solve many problems of traditional soil-cement mixing pile and has the good engineering effect. The article briefly introduces the construction mechanism and construction technology of the T-shaped soil-cement mixing pile. Its new technology can guarantee the cement admixture into the pile and enhance the distribution uniformity of grout so as to ensure the quality of pile body, especially the quality of deep mixing pile. The 3D finite difference method is mainly used for simulative analysis of the bearing characteristics of single T-shaped mixing pile. It is found that the single pile Q-s of T-shaped mixing pile presents dropping type. The limit bearing capacity of its single pile is higher than the conventional soil-cement mixing pile. The bearing capacity will gradually increase with the increment of expanding head height H, expanding head diameter D, pile length L and Pile modulus Ep.

Keywords: T-shaped, soil-cement mixing pile, bearing characteristic, 3D finite difference method

Preliminary Discussion on Soil and Water in Excavation of Deep Foundation Pit ····· Zhu Bin,Zhang Guisheng(150)

Abstract: In order to guarantee the smooth pit excavation and foundation construction, it should be paid attention to the analysis and evaluation of geotechnical engineering issues to ensure the stable safety of pit construction. According to the soil pressure theory and engineering practice, the article puts forward the basic calculation method and analysis method as well as the detail measures for the pit dewatering.

Keywords: deep foundation pit, soil pressure, water pressure, stability, pit dewatering

Application of PLC Integral Synchronizing Control Technology in Rectifying Deviation of Continuous Beam Bridge ····· Zhou Songguo(155)

Abstract: The article introduces and analyzes the continuous box beam of bend bridge slipping to the inner side of curve. PLC hydraulic synchronizing control system is used to synchronously and integrally lift so as to release the inhibiting action of the components, i.e. original support and so on to the bridge and to set up the new system taking the jack as the supporting. The interfaces of jack and supporting are treated to decrease the friction force of transversely rectifying deviation, and then the jack installed at the side is used to rectify deviation to replace of bridge beam. The technology provides the reference for the deviation rectifying and reinforcing construction of the similar structures in the future.

Keywords: continuous beam bridge, PLC integral synchronizing control, bend bridge, rectifying deviation

Development and Application of Pathway Grouting of Prestressed Concrete Bridge ·····

..... Huang Dong, Wang Zhaolin, Zhu Tiao, Zhang Peng(159)

Abstract: According to the inspection of bridge fault in Shanghai, the article analyzes the rust cause of prestressed steel bar in the prestressed bridge beam, then puts forward the scheme to improve the pathway grouting material, and compares it with the common grouting material in the construction to find the method to solve the prestressed steel bar rust.

Keywords: bridge, prestressing concrete, pathway grouting, material, development

Application of Sunk Pipe Compacted Anti-pull Anti-floating Gravel Pile in Water Tank Engineering
..... Li Haifeng(162)

Abstract: Combined with the engineering practice, the article theoretically analyzes the anti-pull bearing capacity of sunk pipe compacted anti-pull anti-floating gravel pile. The pile is successfully used in the single unit of the engineering biological reaction tank in a wastewater treatment plant. This kind of the pile can provide the anti-pull bearing capacity required for the design after the practical inspection and test. The pile is proved to achieve the satisfying effect in the treatment of soft soil subgrade. The article puts forward some suggestions for engineering design and construction as well as further study after the analysis.

Keywords: sunk pipe compacted anti-pull anti-floating gravel pile, soft soil subgrade, anti-pull, compound subgrade

Application of Poured Asphalt Concrete in Concrete Deck Paving Reconstruction .....
..... Zhang Xinyu(165)

Abstract: The article introduces and analyzes the deck paving fault and its cause of a concrete continuous beam bridge, and describes the poured asphalt concrete technology to improve the deck paving.

Keywords: poured asphalt concrete, continuous beam, deck paving, fault, reconstruction, Shenyang

Discussion on Design of Short Steel Reinforced Concrete Pile .....
..... Wei Wei, Liu Xiong, Wu Dongmei, Hu Xiaoyan(169)

Abstract: Combined with the engineering case, the article analyzes the problems of broken pile and difficult driving in the curse of driving 12-m long steel reinforced concrete pile (25cm × 25cm section), puts forward the method of firstly holing and then driving pile after checking computation to solve the problem of the broken pile in the pile foundation construction because of shortage in its strength of pile foundation, and at the same time puts forward the opinions for the design of short pile.

Keywords: sound barrier, breaking of pile foundation, reinforcement ratio, concrete grade

Test Pile of Diameter 3.8-m Cast-in-site Pile and Analysis on Construction Efficiency for Jiashao Bridge
..... Cao Zongyong, Fu Shousheng(172)

Abstract: Taking the technological test pile of diameter 3.8-m cast-in-site pile and the practical construction of Jiashao Bridge as the background, and through the analysis of construction efficiency, the article determines and checkouts the key parameters of the key equipment and the rationality of forced conditions for the equipment using quantity defined by the bid and tender, and validates the rationality required for the construction period. At the same time, the article analyzes the practical construction efficiency of cast-in-site pile to understand the working performances of various large-diameter drilling machines able to be referred for the similar projects.

Keywords: large-diameter cast-in-site pile, technological test pile, analysis of construction efficiency,

engineering practice

Elementary Discussion on Quality Inspection Method and Principle of Cast-in-site Pile ····· Jia Dong, Wang Dong(176)

Abstract: The article briefly introduces some inspection methods of cast-in-site pile, mainly introduces the basic principle of reflected wave method and the factor influencing the quality inspection wave of foundation pile, and points out that the stress wave reflection method used to inspect the construction quality of cast-in-site pile has the advantages of high inspection speed, low cost, easy to generally inspect the pile quality and distinguishing the pile integrality and quality shortcoming. It is worth to wide spread this method.

Keywords: cast-in-site pile, reflected wave method, inspection

Discussion on Action of Field Monitoring and Analyzing in tunnel Construction ····· He Pengfei(179)

Abstract: Through review and summarization of the anciently construction experience, the article introduces the numerical analyzing means of monitoring materials in a tunnel construction, and puts forward how to reasonably select the construction method after the field monitoring and analysis of the tunnel construction to present the actions of the field monitoring and analyzing in the tunnel construction.

Keywords: tunnel construction, filed monitoring and analyzing, selection of construction method

Elementary Discussion on Quality Control Gist of Drainage Pipe Engineering Construction ····· Lin Ling(182)

Abstract: The article analyzes some quality problems or common faults in the engineering construction of drainage pipe from the whole flow of drainage pipe engineering construction including nine quality control steps of pipe material purchasing, measure and setout, groove excavation, flat-base pipe seat, installing pipe, joint, water-closing test of manhole and backfill, and puts forward the relative quality control measures.

Keywords: drainage pipe engineering, purchasing of pipe material, measure and setout, quality control

Quality Control of Prestressed Tension for Deck Plate ····· Hu Jianjun(185)

Abstract: The article discusses the quality control of prestressed tension for deck plate. The practical experience validates that the relative measures should be taken for the quality gist of selecting, laying, tensioning and grouting of corrugated pipe besides strictly controlling the qualities of anchor tool and steel wire in order to enhance the construction quality and eliminate the latent hidden trouble of quality.

Keywords: deck plate, prestressed tension, corrugated pipe, grouting

Comparison of Water Intake Mode for Road Maintenance ····· Wei Zuocheng(189)

Abstract: The city of Shanghai is a scarcity of water while in the practice the traditional way to intake water is to use the fire hydrants for the road maintenance, which results in waste of water resources. In 2005 Highway Management Bureau of Pudong New District started the experimental work to classify the use of water resources in road maintenance work and gradually formed the application technology of using the river water resources in daily maintenance work. This article analyzes the economic cost through the evaluation of engineering cost benefit in order to obtain a relatively easy determinant principle of the different water intake modes applying for the areas, and

discusses the aspects to be improved for the water intake points of pumping station.
Keywords: municipal maintenance water, river water resources, cost analysis

Shield Soil Cabin Pressure Insulation Construction Process ····· Chen Junqiang(195)
Abstract: The article completely sets forth the applying range, technological principle, process characteristic, technological flow, operation gist and benefit analysis of the shield soil cabin pressure insulation construction process, which can provide the practical reference for the engineering technical members and the field construction members in the aspect of shield soil cabin pressure insulation construction.
Keywords: shield process, tunnel, soil cabin, pressure insulation, construction, working process

Study on Pothole Repair of Asphalt Pavement ····· Wu Liping(198)
Abstract: Through the study on the breakage form and the cause of the asphalt pavement pothole, the article divides the potholes into four kinds of producing on the surface layer, producing on the surface layer and the middle surface at the same time, producing between the bottom surface and the base, and producing on the rigid combined pavement, and completely introduces and analyzes the present pothole repair technology including four repair technologies of dimpling process, stuffing process, jet patching process and regenerative process. The article finally elaborates the steps and technology of the pothole repair.
Keywords: asphalt pavement, pothole repair, breakage type, repair technology

Calculation Method of Earth-stone Cubic Meter and Study on Optimizing Allocation ·····
····· Wu Yu,Song Haiyun(202)
Abstract: The earth-stone engineering investment occupies the great percentage in the construction projects of traffic road, water conversation and waterpower, and land development. Whether or not correct the earth-work calculation and whether or not reasonable its allocation scheme will directly influence the investment of construction projects. The article uses the systematical think and sets up earth-stone optimizing allocation system model to realize unite optimizing allocation of earth-stone work within the project and among the projects so as to save the total investment to the maximum limit. The article approaches the method of Visual Basic6.0 and MATLAB combined programming, fully utilizes the MATLAB abundant, strong mathematical calculation and analysis functions to compile the earth-stone optimizing allocation program and to realize the optimizing allocation of earth-stone work.
Keywords: calculation of earth-stone work, earth-stone work, system, study

Discussion on Project Cost Control of Construction Enterprise ····· Sun Yuanjun(204)
Abstract: With the working up and deepening of the market economy in China, the competition of the building market is getting fierce day by day. The construction enterprise should control well the project cost to realize the benefit by the maximization. The article discusses in detail the principle and the efficient way to control the project cost.
Keywords: construction enterprise, project cost control, principle, way

Cost Management of Construction Enterprise ····· Cui Yinghong(207)
Abstract: The threshold of building industry is low, the market competition is fierce and the profit is continuously apportioned. The construction enterprises are facing the severe business posture. Only to strengthen the cost management, increase the income and save the payout, the enterprises can gain

achievements in the business activities. The article analyzes the system, rule and strategy of the cost management between the enterprise and project of the building company, sums up some experience of cost management of the construction enterprise under the condition of the market economy, which have some reference for the construction enterprise to enhance the market competition force and economical benefit.

Keywords: construction enterprise, cost management, cost control, inner budget

Discussion on Influence of Design Phase on Engineering Construction Cost and Control Method of Construction cost ..... Ying Lijie(210)

Abstract: The article firstly sets forth the significance of controlling the construction cost of engineering project in the design phase, then introduces some methods of controlling the engineering construction cost, and finally puts forward the comments to improve the bid and tender modes and suggests setting up the design and construction unit combo and taking the design unit as the responsible tendering unit of the general contractor for tendering.

Keywords: engineering project, design phase, control of construction cost, method

To Strengthen Construction Technology Management, To Upgrade Competitiveness of Enterprises ..... Han Tiejun(212)

Abstract: Technical management of a construction enterprise is an important part of enterprise management. The state of technical management represents the vitality and competitiveness of the construction enterprise in construction market. This paper introduces the technical management involved four aspects of construction process, technical document, science and technology advancement and personnel management.

Keywords: construction, technology management, competitiveness of enterprises

STUDY ON SCIENCE & TECHNOLOGY

Stability Analysis of Bowstring Arch Bridge in Nielsen System ..... Mu Bohai Li Ximei(215)

Abstract: The structure of the bowstring arch bridge in Nielsen system is very complicated, and a lot of factors influence its stability. This paper contrasts and analyzes to the factor influencing the system stability by establishing the dimensional finite element model, gives the influences of each member on the stability, and sums up the general conclusion able to provide the basis for the structure design and stability analysis of the bridges in this system.

Keywords: Nielsen system, stability, instability modes, model

Experimental Study on Semi-rigid Base of Urban Road Pavement ..... Wang Shoujun,Shao Yuzhen,Ren Ruibo(218)

Abstract: The semi-rigid base has been widely used in the construction of high-class highway and the urban road in China because of high intensity, high rigidity, strong carrying capacity and relatively cheap price of raw materials. The selection of design parameters of the semi-rigid base and the correct grasping of material design and performance are related to the economy and safety of road construction in the pavement design. Through the indoor experiment and field experiment, the article deeply studies and analyzes the design parameters, the material design and performance of semi-rigid base able to provide the reference for the pavement design.

Keywords: urban road, semi-rigid base, design parameter, experimental study, contrast analysis

Study on Plane Alignment Design Gist of Port Road ····· Bai Zijian,Gong Fenggang,Wang Yuxiu(221)

Abstract: According to the traffic characteristics of the port, the article discusses the design principle and process of the plane alignment of the port road from the analysis of the safe driving vehicle stress of the drivers, and calculates, analyzes and revises various key controlling parameters in the course of the plane design so as to finally design the plane alignment suitable for the port roads.

Keywords: port road, stress analysis, plane alignment, transition curve

Study on Optimized Airport Cement Concrete Pavement Joint Technology ····· Wu Nianzu, Du Hao(224)

Abstract: The joint fault is one of main damage types for the cement concrete pavement. Besides the airplane wheel loading action and the natural environmental influence, the type and dimension of joint notch also have some influence on forming of fault. Based on the finite element analysis, and after comparing and studying the loading stress and temperature stress at the joint edge positions of six different joint types, the article finds that the joint chamfer technique can obviously improve the stress status of joint position. The engineering cases of Pudong Airport No.3 Runway and Hongqiao Airport No.2 Runway are proved that the joint chamfer technique can not only decrease the pavement maintenance cost, but also can enhance the pavement using safety and reliability with the obvious economical benefit and social benefit.

Keywords: airport, cement concrete pavement, joint, chamfer

Study on Concrete 3D Elastoplastic Constitutive Model ····· Chen Zhongsheng(228)

Abstract: The article introduces a constitutive model able to consider 3D restricted concrete elastoplastic. This model can describe the strength enhancement and shear effects of the common concrete and the high-strength concrete under 3D stress. This model uses three-parameter model to describe the concrete plastic loading in Haigh-Westergaard stress space. In order to consider the shear effect of concrete, the nonlinear plastic potential function is used, and the plastic volume strain is taken as the inner variable of concrete strengthening function and the softening function. Various parameters in the model can all be come down to a basic parameter, and this parameter can be demarcated by the single-axis compression test so as to make the model having the great practicability and universality. The model calculation result and the experimental data are compared better able to better describe the strength enhancement and shear effect of concrete under the restricted stress condition.

Keywords: concrete, 3D elastoplastic, constitutive model, experiment, study

Study on Performance of Modified Cast Asphalt Mixture with Waste Rubber Powder ····· Liu Xiaochu,Wang Lin,Yan Dongbo,Chen Shizhou(232)

Abstract: The cast asphalt concrete is the mixture type commonly used in the deck paving work. The article introduces how to use the waste rubber powder into the cast asphalt mixture, and to use two wet and dry mixing technologies, and studies the performance of the modified cast asphalt mixture with the waste rubber powder. The result makes clear that it is feasible to use the cast asphalt mixture with waste rubber powder, the performance of modified cast asphalt mixture with waste rubber powder can satisfy the requirements of the relative standards and its high-temperature stability is still required to further study.

Keywords: waste rubber powder, rubber asphalt, cast asphalt mixture, performance, study

Windproof Study of Color Steel House in No.2 Dual-Line Canshili Wind Area in Lanxin Railway ····· Zhu Changyue, Niu Shuqiang(235)

Abstract: The bidding section LXTJ7 of No.2 Dual-line Xinjiang Section in Lanxin Railway is located at the world famous Canshili Wind Area. The temporary housing of the construction members is mostly the color steel houses because of the construction time in winter. The color steel house maybe endangers the safety of construction members if the necessary windproof measures are not taken. The article mainly introduces the windproof design, calculation process and construction method of the temporary color steel house able to provide some reference for the similar projects.

Keywords: wind area, color steel house, windproof design, construction method

THE RELATIVE SPECIALITIES

Urban Square Night Piece Lighting Project Based on Innovating Design Idea ····· Mu Xiangchun(238)

Abstract: The article systematically introduces how to implement the overall design of urban square, the paving lighting reconstruction of square, roads and buildings, the reconstruction of building lighting surrounding the square, and the lighting reconstruction of the greenbelt, tree and street tree in front of the square buildings and structures, and the relative thinking of the implementation based on the innovating design idea and the existing relative problems in the Tiananmen Square Night Piece Lighting Project able to provide the referred materials and experience for the similar projects.

Keywords: innovation, design idea, Tiananmen Square, night piece lighting project

Design and Construction of Engineering Tunnel Supporting System in EXPO Site ····· Wang Hui(244)

Abstract: The engineering tunnel is in the rectangle type of box culvert as the carrier for installing and laying various pipelines to avoid the excavation of the road if to add the pipelines in future, which is convenient for the maintenance management. The engineering tunnel has the characteristics of the longer route, deeper tunnel, more variable structural dimension and son than the conventional box culvert. The design and construction of tunnel supporting system must fully consider the above characteristics. The article introduces the design and construction of the engineering tunnel system in China Shanghai 2010 EXOP Site able to provide the experience for the similar projects.

Keywords: engineering tunnel, supporting, design and construction, EXPO Site, Shanghai

Study on Fire Resistance Issue of Exterior Thermal Insulation System ····· Ming Xiaoxi, Xiao Jianzhuang(247)

Abstract: The paper elaborates the importance of fire resistance for the exterior thermal insulation system and analyzes the developing status of technique at home and abroad. On this basis, the paper studies and discusses the requirements of the existing exterior thermal insulation system from three aspects of material selection of insulation, joint details and fireproof details, and puts forward suggestions for the construction.

Keywords: exterior thermal insulation system, fire resistance, material selection, joint details, fireproof details

Evaluation and Design Study on Plant Landscape of Shanghai Country ····· Liu Kai(252)

Abstract: In recent years, the people pay more attention to the building of new countryside. With the improvement of the living condition in the countryside, the "three supplies and one leveling" of supplying water, electricity and road and leveling ground have not satisfied the spirit need of the people day by day. The design mode of middle and small cities are used in the rebuilding of

countryside and results in losing the original country breath. Therefore, how to reserve and improve the local existing landscape resources becomes the problem to be treated in the building of new countryside. The article objectively and scientifically evaluates six typical places of the new countryside in Shanghai suburb by using layer analysis method and comprehensive evaluation according to the field investigation and the relative literatures. At the same time, the article puts forward the methods and means for arranging the country plant in Shanghai according to the problems existing in the evaluation result. The methods and means are used in the landscape rebuilding design of Shanghai Qingpu District Dingfeng Village, which provides the reference and basis for the future building of new countryside.

Keywords: Shanghai country, plant landscape, layer analysis method, landscape evaluation, plant arrangement

WORK & DISCOVERY

Thinking about Project Culture Building in Architectural Enterprise ····· Lu Jing(256)

Abstract: Speaking to the architectural enterprises and to enhance the core competing force of the enterprises, it is the development spirit for an enterprise to do well the enterprise culture building, especially the project culture building of enterprise. Taking the significance of project culture in architectural enterprise as the cut-in point, the article focuses analysis on some issues for attention in strengthening the project culture building of architectural enterprise.

Keywords: enterprise management, enterprise culture building, project culture building

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

Urban Roads, Bridges & Flood Control

Monthly

Number 8, 2010 (Total Number 133)

Publication on August 15th, 2010

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: Li Fen

Address: No.901 Zhongshan Bei Er Road, Shanghai

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

Fax: (021)51298850

E-mail: yang_jh.fz@smedi.com

ISSN 1009-7716

CN 31-1602/U

Domestic price: 15 yuan RMB

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