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Urban Roads, Bridges & Flood Control

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Abstract: The article introduces the design subject of “Green, Ecology, Landscape, Environmental Protection, energy saving and harmony” of Tianjin Avenue in Tianjin City Binhai New Area, sets forth the innovating ideas of this project from the aspects of planning, design, roadbed treatment, pavement material, side ditch setup and landscape design, and introduces the scientific research subject of the integration technology, ecological design technological integration and soft soil subgrade treatment of the green ecological city expressways in Tianjin Binhai New Area.

Keywords: city expressways, ecological landscape avenue, city card, scientific technology and innovation, Tianjin City

Analysis on Construction Significance and Design Gist of Green Road in Shenzhen Peng Conghu(5)

Abstract: According to the huge accomplishment of the green road achieved in the low carbon, environmental protection and improving inhabitable environment, the article analyzes and discusses the gist for attention in the design of green road.

Keywords: green road, low carbon environmental protection, design gist

Study on Traffic Improvement of Bantang Passageway in G5011 Wuhe Expressway Zhang Dehao(11)

Abstract: In the light of the traffic confusing status of Bantang Passageway in G5011 Wuhe Expressway, the article forecasts and analyzes the traffic flows at the intersections of five roads by the site survey and traffic investigation and according to the traffic planning and the economical development index of Chaohu City, and puts forward three traffic improvement schemes on it. The optimized scheme of the short-term construction is determined by the comparison and selection of technology and economy.

Keywords: traffic investigation, forecast of traffic flow, traffic improvement

Application of Flexible Bus Rapid Transit (RBT) System in Guangzhou Su Zhuojun(13)

Abstract: Guangzhou City Zhongshan Avenue RBT Tested Line Project was put into traffic in February, 2010. This project uses the “closed corridor” + “flexible line” operation mode locally innovated in China, and is also the first large transportation capacity of RBT system in Asia. The article sets forth the study, design process and implementing effect of this operation mode including the setup of stations and the special lanes, line management and linking up with the other traffic modes.

Keywords: bus rapid transit, flexible, special corridor

- Master Scheme Design of Deyang City No.1 Ring Road Changjiang West Road Interchange Zhang Na, Wu Yan, Huang Qinglong(16)
- Abstract:** The article introduces the master scheme design of Deyang City No.1 Ring Road Changjiang West Road Interchange Project. Deyang City No.1 Ring Road Changjiang West Road Interchange is an important node of Tianyuan Area Center in the west of the center area in Deyang City to connect two trunk roads mainly for the traffic. This node is taken as the typical important external traffic passageway of a city. The selection type of interchange and the treatment of traffic organization have some reference for the similar projects.
- Keywords:** Deyang City, No.1 Ring Road, Changjiang West Road, interchange design
- Discussion on Selection of Baisha Interchange in Huanguan Expressway of Dongguan City Chen Yongguo(21)
- Abstract:** The interchange is one of the important contents in the highway design. This content is related to the factors of highway design scheme comparison, driving safety and engineering investment, and is also one of the main technical and economical indexes to evaluate the highway setup quality. The article analyzes the layout principle, selection idea and design method of interchange in the course of selecting and designing Baisha Interchange in Huanguan Expressway.
- Keywords:** interchange, layout selection, design principle, design method
- Study on Setup of Longitudinal Sectional Energy-saving Slop of Rail Traffic Line Tao Minghe(23)
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- Keywords:** urban rail traffic, longitudinal section, energy-saving slop, setup position, slop length, slop value
- Design of Yuyao Donghanmeng Crossing-river Tunnel Line Shu Xiaojian, Guo Ying, Chenli(26)
- Abstract:** The design rationality of the plane and longitudinal section alignment of the crossing-river tunnel with the traffic capacity of the mixed motored vehicle and non-motored vehicle will directly affect the construction cost of this project under the construction and the social benefit of the service period. According to the engineering cases, the article introduced the relative experience of the ling design for the crossing-river tunnel, which can be referred for the relative specialty members.
- Keywords:** crossing-river tunnel, motored vehicle, non-motored vehicle, alignment
- Discussion on Sectional Type of Road Reconstruction in Urban Built Area Zeng Huifen(29)
- Abstract:** Combined with the engineering case and under the premise of not breaking the boundary lines of road, the article discusses the typical sectional reconstruction type of road, and achieves the objective to enhance the traffic capacity of road and to release the traffic jam. The relative design experience can be referred for the specialty members.
- Keywords:** built area, road reconstruction, cross section type, traffic capacity
- Elementary Analysis on Design of Road Widening Reconstruction Project Liu Chao, Liu Geng, Cao Lisong(33)
- Abstract:** According to the design practice of Tianjin Binhai New Area Hancui Road Widening Reconstruction Project and the reconstruction scheme defined by the problems existing in the present

roads, the article sets forth the characteristics and the cautions of road line, roadbed and pavement in the widening reconstruction of the roads.

Keywords: road, widening reconstruction, road line, roadbed, pavement, design

Sight Distance Problem and Its Special Treatment Mother in Expressing Reconstruction of Existing Roads Jia Jie(36)

Abstract: The geometrical design of linearity is specially required by the restriction of some control factors in the design of highway line and interchange linearity. The article introduces the detail problems in the shortage of sight distance design occurred in the expressway engineering design cases, and focuses setting forth on some special treatment methods able to use for ensuring the sight distance when the enhancement of the linear index is limited.

Keywords: linearity, sight distance, traffic security

Study on Countermeasures Quickly to Handle Expressway Traffic Accident Qi Bo(39)

Abstract: The quick handling of expressway traffic accident is important to decrease the traffic accident loss and to avoid the secondary accident. According to the present status of expressway traffic accidents, the article analyzes and sums up the importance of quickly handling the expressway traffic accident. In the light of the different traffic accidents, the article analyzes in detail the main factors to affect the quickly handling of traffic accidents and puts forward the relative solving countermeasures.

Keywords: expressway, traffic accident, quick handling

Study of Common Problems in Security Facilities of Trunk highway Mao Juan, Gu Haihua(42)

Abstract: With the high-speed development of the economy in China, the highway traffic is also greatly developed. The traffic security also becomes an extremely serious social problem while the highway traffic brings the great convenience for the people's life and travelling. Based on the security facilities of trunk highway, the article analyzes some common problems existing in the present trunk highways, and puts forward the improving measures able to provide the reference and help for the design of highway security facilities.

Keywords: trunk line, security facilities, problem, countermeasure

Type and Time to Set up Bus Stops in Newly Built City Area Zhang Rudong, Luo Xin(44)

Abstract: With the Extending of various city scopes, the type and time to set up the bus stops are required to detailed and studied by the relative decision-making departments, which can embody the proper value of bus stop. The article analyzes the characteristics of the different bus stops and puts forward the setup time of bus stop.

Keywords: newly built city area, bus stop, setup type, setup time

Brief Analysis on Design Method of Asphalt Mixture Gradation at Home and Abroad Lu Jianming(46)

Abstract: The gradation of mineral aggregate is one of the key factors affecting the performances of asphalt mixture. The paper introduces the gradation design methods and characteristic of several commonly used asphalt mixtures at home and abroad, and discusses the boundary size between the coarse and fine aggregates, and considers that there is no clear boundary point between coarse and fine aggregates. The key is to define and control the content of the sensitive granules better.

Keywords: asphalt mixture, gradation design, boundary size

Function of One-way Traffic in Urban Traffic Management Zhao Yongchen(50)

Abstract: For solving the traffic jam commonly existing in various large and middle cities, the article firstly introduces the basic condition of setting up the one-way traffic at home and abroad, discusses the keystone of setting up the one-way traffic, then generalizes and sums up the setup conditions, setup mode and setup signification of this traffic control manner from the macroscopic angle, and finally sets forth the relation of the one-way traffic with the public traffic and bicycle traffic for the characteristics of the mixing traffic specially in China.

Keywords: road network, one-way traffic, traffic planning, traffic distribution, traffic management

Investigation Report on Travelling Features of Residents in Baoding City Li Tiezhu(56)

Abstract: The travelling feature investigation of the residents is the basis to draw up the urban comprehensive traffic planning and various relative planning and provides the basis for the government to work out the traffic policy. Based on the large number of site investigation data, the article analyzes in detail the basic travelling feature, travelling mode feature and travelling time feature of residents of Baoding City in 2008 ready for drawing up the comprehensive traffic planning and working out the traffic policy.

Keywords: resident travelling, feature, mode, time, Baoding City

City Development and Intelligent Traffic ---- Better City, Better Life

..... Gao Haixin, Ma Xianglu(59)

Abstract: The high-speed city development protrudes the traffic problems. According to the present status of traffic development in Beijing, the article analyzes the cause of traffic jam, puts forward the idea of intelligent traffic, and prospects the development trend of intelligent traffic. The relative experience can be referred for the professional members.

Keywords: city development, intelligent traffic, internet of vehicles

Fundamental Way of Handling Traffic Jam - Introduction of Urban Continuous Traffic Road System

..... Xiong Jianping(62)

Abstract: The article introduces an "urban continuous traffic road system". It is an intelligitized road traffic system able to ensure no traffic jam and high-efficient and high-speed traffic. This kind of traffic system has no traffic lights, and the vehicles do not stop to wait in the whole process of traffic, which eliminate the disturbing factors of various vehicle traffics, remove various traffic bottlenecks, avoid the cross disturbance among the different directions of vehicles, enhances over 6 times of road traffic capacity, can automatically ensure the public traffic and various buses smooth in all-weather, and can automatically control the vehicle volume of road. This system also includes a high-speed and high-efficient bus system to ensure the way to and from work by bus. 20-km distance in the main city area including interchange time is only required by 30 min.

Keywords: traffic jam, continuous traffic, trunk road network, road network of area, intelligitized traffic, urban bus, harmonious traffic

BRIDGES & STRUCTURES

Selection of Bridge Structure and Design of Landscape for Dongwan City Dongjiang Lichuan Bridge Project

..... Zhu Qiang(65)

Abstract: The article introduces the design characteristic of bridge structure for Dongjiang Lichuan Bridge, and discusses the gist in the selection of bridge structure and the coordination of environment within the complex urban interchange group. The relative design results can be referred for the similar projects.

Keywords: urban interchange group, selection of structural type, short-pylon cable-stayed bridge, cable-stayed bridge without back cable, pre-stressed concrete small-radius curved bridge

Scheme Planning and Landscape Design of Beichuan New County Xiwu South Bridge
..... Liu Hongjin(70)

Abstract: The article introduces the relative bridge planning of the rebuilding planning of Beichuan New County, sets forth the requirements of the bridge design scheme, deeply discusses and sums up the design scheme of Xiwu South Bridge - one of four bridges in the planning, and especially sets forth the selection of bridge design schemes in the earthquake areas.

Keywords: Beichuan New County, Xiwu South Bridge, rebuilding planning, landscape design

Design of Zhongtang Low-pylon Cable-stayed Bridge of Dongguan Lichuan Bridge Project
..... Wang Xuan(74)

Abstract: The main bridge of Zhongtang waterway in Dongguan Lichuan Bridge Project is a low-pylon cable-stayed bridge spanning Zhongtang waterway of Dongjian River. The article sets forth the design idea and the main technical characteristics of the main bridge from the master design and the structural design of the bridge. After the overall bar system calculation and the three-dimensional entity simulating analysis, the integral stressing characteristic, width sectional shearing lag and axis-force lag character of the bridge are mastered. The article makes clear that the transferring rule of cable force and the web stress are not even. It is to seek the reasonable stress status of this low-pylon cable-stayed bridge.

Keywords: low-pylon cable-stayed bridge, width section, calculation analysis, shearing lag, axis-force lag

Design of 2 × 85 m T-type Rigid Frame for Qianchun Bridge of Guiyang City
..... Xiao Chun, Li Xubiao(78)

Abstract: The article mainly introduces the span layout, structural design and structural calculation of 2 × 85m T-type rigid frame for Qianchun Bridge of Guiyang City and the issues for attention in the construction, which can be referred for the design of the same bridges.

Keywords: T-type rigid frame, span layout, curve bridge, pre-stressing, pouring construction by cantilever

Reconstruction Design and Study of Deck System for Jilin Linjiangmen Bridge
..... Li Wei, Cao Jing, Xie Bin(82)

Abstract: In recent year, the construction of bridge is quickly developed in China. With the increment of traffic volume, the continuous increment of the heavy-load vehicles to make the bridge deck pavement seriously damaged has been attached high importance by the engineering world. Combined with the reconstruction engineering case of deck system of Jilin Linjiangmen Bridge, the article puts forward the deck system reconstruction scheme suitable for this cable-stayed bridge under the large traffic volume to cause the pavement fault of concrete cable-stayed bridge, and enhances its deck pavement durability, which provides the reference and help for the other similar projects.

Keywords: deck system, concrete cable-stayed bridge, fault, reconstruction, Linjiangmen Bridge, Jilin Province

- Plane Layout of Simply Supported Curved Bridge of Highway Li Haijun(84)
Abstract: Many bridges are limited by the plane alignment of line located at the curved section and increase the larger difficulty in the design of bridges in the highway projects. The simply supported beam bridge is widely used in various bridges because of its simple structure, convenient construction and low requirement of subgrade carrying capacity. The article sums up the plane layout method of simply supported beam bridge at the curved section of highway according to the engineering cases, and briefly introduces the characteristics and the suitable conditions of various layout methods.
Keywords: simply supported, curve, bridge, plane layout, Changzhou City
- Discussion on Structural Design of Pre-stressed Concrete Box Girder Hu Huiyong(86)
Abstract: The total length of No.2 Ring in Kunming City is 27.07 km. It is an urban expressway and elevated bridge system, in which East Ring and North No.2 Ring are about 13.5 km long. The article introduces and sums up the design of the pre-stressed continuous box girder occurred in Kunming No.2 Ring, and discusses the treatment of beam-end tensioning mode and the treatment mode of steel bunch at the construction joint able to be referred for the other similar projects.
Keywords: Kunming No.2 Ring, prestressing, continuous box girder, distribution of steel bunch, tensioning mode
- Analysis of Stress Status in Widening Oblique Bridge Zhan Xiuling, Wang Lingbin(89)
Abstract: In the light of the stress complexity at the joint of the new bridge with the old bridge when an oblique bridge is widened, combined with a hollow plate bridge of an expressway, the article applies the space finite element method to analyze the bending moment, supporting force and transverse stress of splicing structure of the new bridge with the old bridge by hinged seam under the action of vehicle load before and after splicing, and puts forward the improvement method for the disadvantaged stress status, which can be referred for the same type of splicing design.
keywords: oblique bridge, widening, inner force, bending moment, shear resistance
- Analysis on Temperature Effect of Through Semi-combined Slab Truss Bridge
..... Wu Xinwang, Liu Jun, Xiao Jie(92)
Abstract: The finite element model is set up for a 64-m through semi-combined slab truss bridge, and its slippage and raising effects are considered. The response of structure under the temperature load action is analyzes in detail by the finite element model. The conclusion is given, and the relative experience can be referred for the similar projects.
Keywords: through slab truss bridge, temperature effect, slippage and raising
- Finite Element Analysis and Design of Vase-opening Pier Column Space
..... Liu Jun, Chen Minggui, Yang Min, Feng Keyan(95)
Abstract: The vase-opening pier column and pier cap are stressed complexly. The traditional sectional inner force design method is not suitable for use. The steel bar and concrete crack effects are considered by the finite element model, which more truly simulate the stress status of structure and instruct the structural design able to be referred for the similar projects.
Keywords: vase-opening pier column, sectional inner force, concrete crack, separated reinforced model, integrated reinforced model
- Analysis on Lifting Stress of Continuous Girder Bridge Ma Lin(99)
Abstract: The stress produced by the synchronous error among various lifting jacks in the course of lifting the continuous girder bridge is analyzed by Midas/Civil software so as to get the maximum

allowable error in the course of lifting, and based on it to seek the safer lifting scheme. The calculation process is mainly based on the elastomer mechanics theory and the finite element method. It is to analyze and compare the different stress distributions caused by the synchronous error under various conditions so as to give the rule of experience result. A simple constant dimension continuous girder bridge is taken as the example to analyze so as to spread and get the general conclusion. The article analyzes the influence of the synchronous error of every lifting point on the partial stress of bridge and the control range of error in the course of lifting bridge girder. The continuous girder bridge belongs to the statically indeterminate structure, and the additional inner force will produce, and the additional displacement will produce the auxiliary inner force.

Keywords: continuous girder bridge, lifting, finite element method, synchronous error

Some Experience of Static Load Experiment for Old Bridge Li Xia, Sun Junping(103)

Abstract: Based on the working practice of old bridge carrying capacity test in recent years, the article introduces the relative experience to pay attention to the inspection of bridge status and to inspect the harmful cracks and steel bar rust level, correctly to arrange the test point of strain sheet, fully to understand reliability of testing data, accurately and skillfully to apply the checkout coefficient estimation method and the comparative residual deformation estimation method able to be referred for the similar projects.

Keywords: old bridge, carrying capacity, crack, strain sheet, checkout coefficient

Evaluation and Discussion on Basis of Bridge Bump-resistant Design Chen Guoyu(106)

Abstract: The water carriage is the maximum mode in five freightage modes. Many cases of the vessel bump bridge pier accident make clear that the vessels being damaged and sunk, and the bridges being cracked up and fell down will cause the great harm. The stipulated clauses in two bridge design criterions of highway and railway in China explain that it is necessary for the bridge designers to carry out the bridge bump-resistant design according to the criterions. The design of this bridge does not conform to the criterion if the design of preventing the vessel from bumping bridge is not according to many stipulations in the criterion. The bridge design criterion is under the development while the water carriage is developing. The social harmony is required by protecting not only the bridges, but also the vessels and environment, which are the scientific development concept. Therefore, fully discussion of the bump-resistant concept and method is also the development and supplement required for the criterion.

Keywords: bridge bump resistance, necessity and sufficiency, sufficient and necessary condition

FLOOD CONTROL & DRAINAGE

Design of Pipeline Network Supported for Baoding City Wastewater Treatment Plant Phase II Project

..... Zhang Shengjun(112)

Abstract: The article introduces the status and the existing problems of the drainage facilities in Baoding City, puts forward the design scheme for the layout of pipeline network system, the forecast of sewage flow and the selection of pipe material, and puts forward the suggestions for the design of urban drainage pipeline network.

Keywords: sewage pipeline network, design of pipeline network, forecast of sewage flow, engineering construction cost, wastewater treatment plant, Baoding City

Design of Printing and Dyeing Wastewater Treatment Plant Reconstruction Project Liu Wei(115)

Abstract: In order to stabilize the up-to-standard discharge, the printing and dyeing wastewater

treatment plant in Cixi bleaching, printing and dyeing production base is reconstructed. The article introduces its reconstruction engineering design, firstly analyzes the problems existing in the current wastewater treatment plants, and then puts forward the solving scheme to make this plant stably reach Class I standard of *Textile Dyeing & Finishing Industry Water Pollutant Discharge Standard* (GB4287-92). Its result can be referred for the operation management of the present printing and dyeing wastewater treatment plant.

Keywords: printing and dyeing wastewater treatment plant, up-to-standard reconstruction, anaerobic hydrolysis, adjustment of water flow and water quality, Cixi City

Effect Analysis of Low-lying Greenbelt to Reduce Urban Runoff Depth and Runoff Coefficient

..... Cai Jianbo, Lin Ning, Du Xiaosong, Feng Yungang(119)

Abstract: The sampling values of urban runoff depth and runoff coefficient directly influence the safety and construction of urban flood control and waterlog drainage. The article analyzes the effect of the different concave depths of the low-lying greenbelt to reduce the urban runoff depth and the runoff coefficient. The analysis result displays that the runoff coefficient is influenced by the rainfall. The sampling value of runoff coefficient should be properly enhanced while the higher drainage standard is adopted. The runoff depth and the runoff coefficient are still greater under the condition of heavy rainfall while the Greenland has no concave. The greening rate of 35% depth is 100-mm low-lying Greenland. Under the condition of the different frequency rainfall for 1 h, the same runoff depths corresponding the rainfall frequency can be enhanced by 1~2 standard classes. Under the condition of the same frequency rainfall for 1 h, the runoff coefficient can be reduced by 0.3~0.4. It is obviously to reduce the confluence proportion and cut down the peak flood flow. Therefore, it is necessary greatly to spread the setup of low-lying greenbelt efficiently to reduce the runoff depth and runoff coefficient of area under the current condition of severe flood control and waterlog drainage in the partial cities of China. The average depth of greenbelt to set up is properly by 80~120 mm.

Keywords: low-lying greenbelt, concave greenbelt, runoff depth, flood control and drainage, urban waterlogging

Application of Artificial Strengthening - Man-made Wetland Composite Technology in Urban Landscape Water Purification

..... Wang Hongwei(122)

Abstract: With the continuous development of economy, the urban landscape water is more polluted. Its water quality presents the reducing trend year by year. Based on the present status, the Shanghai Chenshan Botanical Garden is built while the water purification yard is also constructed. The article introduces the engineering design of the water purification yard and the management measures of its multi-mode operation, which can be referred for the design of the similar urban landscape water.

Keywords: artificial strengthening, man-made wetland, urban landscape water, water quality purification, Chenshan Botanical Garden, Shanghai

Construction Management of Urban Pump Gate and Water Environmental Improvement of River

..... Yang Xiaohan, Dun Xifeng, Chen Zailian(125)

Abstract: Taking the present status of river check gate pumping station, municipal rainwater pumping station and suburb drainage irrigating pump gate in Changning Distribution of Shanghai as the samples, the article analyzes the existing problem of pump gate in the central area and the influence on the water environment of river, and discusses the improving measures and conception of the engineering construction and management of pump gate from the angle to improve the water environment of river.

Keywords: pumping station, gate, flood control, water environment

Discussion on Type of Riverway Ecological Slop Protection Gu Haihua, Yang Xiaokang(127)

Abstract: Combined with the practical experience of the ecological slope protection technology in some riverway repairing projects of Nantong City in recent years, the application status of the traditional riverway slop protection are compared. The article sets forth the conception of ecological slop protection, introduces three main types and practicability of ecological slop protection, i.e. slope of stones in gabion, slope of ecological bags and slope of chain ricks. All these aim at offering reference for construction of ecological slope protection of town riverway. Its aim is referred for the construction of the riverway ecological slop protection of city.

Keywords: urban riverway, ecological slop protection, type

Analysis and Suggestion on Present Status of Xiangyang City Area Municipal Drainage Pumping Station

..... Xu Binhong, Wang Songtao, Wang Feng(130)

Abstract: The article analyzes the present status of Xiangyang City Area Municipal Drainage Pumping Station, and puts forward the suggestions for the defects, which aim at the enhancement of the urban flood control and drainage capacity by the building of pumping station.

Keywords: municipal drainage pumping station, analysis of present status, suggestion, Xiangyang City

Design of Multi-functional Rainwater Pumping Station for Tianjin City Haihe Education Park

..... Zhu Wuxing(132)

Abstract: 1# and 2# rainwater pumping stations in Tianjin City Haihe Education Park can add the water into the landscape river to promote the recycle flowing if river in dry season and pump the rainwater to the external rivers from the water collecting system in raining season. The article introduces the design of this multi-functional rainwater pumping station able to provide the experience to the similar designs for reference.

Keywords: to add landscape water, multi-functional rainwater pumping station, design

Elementary Discussion on Application of Perfusion Pile Retaining Wall in Wuhan Xunsi River Phase I Project

Jing Zewen(134)

Abstract: There are the different bank-protection types in the river and channel protection projects often limited by the planned land, removal and excavation so as to satisfy the requirements of safety, environmental protection and economy. The article introduces the use of drainage corridor function to control some width, to avoid the more filling and excavation and to decrease the removal for satisfying the planning. The bank-protection type of perfusion pile retaining wall can solve the problems of the side slop stability, excavation and land removal.

Keywords: perfusion pile, pile length, reinforcement of the passive area, powder injection pile

MANAGEMENT & CONSTRUCTION

Design and Construction of Yunjing Expressway High-pier Bent Cap by Holt Hoop Iron Method

..... Wu Yingchun, Zhu Shusen, Shao Yongsheng, Yie Shuibiao(137)

Abstract: The article describes in detail the design and construction technology of bent cap of high-pier column bridge by the holt hoop iron method for Xikou Bridge in No.2 Contract Section of Yunjing Expressway, which can be referred for the similar projects.

Keywords: expressway, high-pier bent cap, holt hoop iron method, construction technology

Design and Construction of Dashi Bridge Extension Project

Zhang Liwen(140)

Abstract: The article generally introduces the design and construction of the Dashi Bridge Extension

Project in National Highway G105, emphasizes the design of 43.75 + 62.5 + 43.75 m continuous box-girder. The tactfully design of cross-section solves the problem of how to enable the structure symmetrical in the case of the un-symmetric deck lanes, which greatly facilitates the construction, and can be referred for the similar project.

Keywords: bridge extension, continuous box-girder, cross-section, design, construction

Construction of Long-span Prestressed Concrete Bridge Crossing River Chen Bin(144)

Abstract: the article introduces the construction process and construction technology of Bid 18 Bridge in Dalu Line Channel Harnessing Phase I Project, describes the construction technologies of watercourse backfill, foundation construction, temporary locking column, stud, long-span pre-stressed concrete continuous girder and simply supported beam in approach section. Its construction technology is referred for the construction of the similar projects.

Keywords: long span, pre-stressing, bridge, technology, Lingang Avenue Bridge, Shanghai

Control of Prestressing Tensioning Technology for U-type Girder by Post-tensioning Method Wang Yanyan(149)

Abstract: Combined with the prestressing tensioning construction of U-type girder by the post-tensioning method in the civil construction project supported for Shanghai Minhang Pujiang Town Public Traffic and according to the structural characteristics of U-type girder, the article discusses the technological control measures of prestressing tensioning construction of U-type girder, and puts forward some optimized the means and methods of tensioning operation and stress control.

Keywords: U-type girder, prestressing tensioning, synchronous comparison, forecast ahead of time

Characteristics of Post-tensioned Pre-stressed Concrete Girder Bridge and Construction Gist of Box Girder Ming Yuanfeng(151)

Abstract: Taking Luogang No.3 Bridge in Contract Section No. S10 of Roadbed Bridge Tunnel Project in Guangzhou Section from Guangzhou to Heyuan Expressway as the engineering case, the article sets forth the characteristics of the pre-stressed concrete girder bridge, introduces the prefabrication process and cautions of the post-tensioned pre-stressed box girder, and sums up the construction experience.

Keywords: post-tensioned pre-stressed box girder, characteristic, construction

Study on Support Setup Method and Reinforcement of Beilei Frame Taken for Application of Bridge Load-bearing Bracket Sun Jiuchun(154)

Abstract: The Beilei frame is widely applied in the cast-in-situ bridge structure, but the accidents occur sometimes caused by the improper support setup of Beilei frame. In the light of this condition, the article firstly analyzes the necessity of the support to set up at the vertical rod from the theoretical angle, then points out several common support setup methods and analyzes the advantages and disadvantages of these setup modes and the application conditions, and finally discusses the influence of the support setup mode on the mechanics status of Beilei frame according to the cases and puts forward the suitable reinforcement handling scheme. The practices prove that this handling method is feasible and has some guiding significances for the future construction.

Keywords: Beilei frame, support, reinforcement, allowed inner force

Construction Control Gist of B1 and B2 Road Prefabricated Box Girders of Interchanges in New Airport Chen Mao(158)

Abstract: According the construction control gist of the prestressed concrete box girder in the structural construction of the prefabricated box girder and the cast-in-situ reinforced concrete deck

slab combined box girder commonly used in the interchanges, the article introduces the installation of corrugated pipe in the prestressing post-tensioning method, the construction gist of tensioning equipment, tensioning technological program and tensioning operation, and the cautions of post-placed aggregate as well as the key link of prestressed concrete box girder. The main technical measures of the projects are drawn up on it to make the projects fully successful.

Keywords: combination of simple support, prestressed concrete box girder, post-tensioning, corrugated pipe, tensioning operation, post-placed aggregate

Steel Casing Platform Construction Technology of Jiaojiang Bridge No.2 Xie Jianhua, Ning Yanling(162)

Abstract: The article introduces the construction technology of the main pylon pier pile foundation platform for Zhejiang Taizhou Jiaojiang Bridge No.2 by directly using the steel casing of pile foundation as the platform foundation. Compared with the conventional tubular steel pile foundation platform, it has the advantages of the new structural design, short working period and economized materials. Based on the design characteristics of steel casing, the carrying capacity, anti-erosion ability, safety and stability of steel casing can be popularized in the similar projects because of the tubular steel pile with the independent platform structure.

Keywords: platform. Construction, technology, Jiaojiang Bridge No.2, Taizhou City

Control of Welding Line Deformation of Steel Box Beam of Weihe River Super-large Bridge Spanning South Bank Dyke Zhao Wenlong, Xie Jianhe(166)

Abstract: According to the assembly manufacture practice of 122#~126# pier steel box beam of Weihe River Super-large Bridge spanning the south bank dyke in Contract XTK-3 of Xitong Expressway, the article analyzes the rule and control method of welding deformation of steel box beam under various conditions, and describes how to strengthen the control of welding line deformation in detail.

Keywords: steel box beam, welding line, deformation, control

Reinforcement and Repair Technology of Reinforced Concrete Structure of Urban Bridge Lu Qihui(169)

Abstract: With the continuous pushing on of urbanization process in China, the city scale is increasingly broadened, and the pedestrian flow and vehicle flow gradually increase. Some old urban bridges have not satisfied the development requirements because of increasing faults in a dilapidated condition and the low load class of the primary bridge design. Therefore, the testing, inspecting, reinforcing and repairing technologies of the old bridges are the feasible, efficient, economical means to slow down the development of bridge faults and to enhance the original bearing class. The article specially discusses the common faults of the reinforced concrete bridge structure and the reinforcement and repairing method able to be referred for the similar projects.

Keywords: urban bridge, reinforced concrete, structure, reinforcement, repair

Discussion on Various Open Caisson Schemes for Deep-water Foundation of Bridge Liu Guangzong(172)

Abstract: The article mainly introduces some understanding and experience in the practices of several bridges on the Yangtze River, puts forward some views and suggestions for the comparison of several measures and positioning work for reference.

Keywords: open caisson, settlement coefficient, precision positioning, mud set, air curtain

Analysis on Preliminary Application of Super-strong Vacuum Tube Well in Construction of foundation Pit Ma Jianfeng(175)

Abstract: The traditional water-discharge tube well usually uses the negative pressure to aid the dewatering, but is limited by the structural airtightness. The vacuum degree can not continuously keep. A new super-strong vacuum dewatering process is researched and developed for the shortage of the traditional vacuum tube well, which makes up for the shortage of the traditional vacuum tube well, greatly enhances the dewatering effect and reduces the labor strength of the workers.

Keywords: tube well, super-strong vacuum, foundation pit, dewatering

Elementary Discussion on Treatment Method of Underground Cave Subterranean Flow Occurred in Pile Foundation Drilling You Qiubo(179)

Abstract: The foundation of cast-in-situ pile belongs to the hided works with many links of drilling pile. How to successfully treat the underground cave subterranean flow occurred in the course of construction, it is the key to drill the pile foundation. According to the engineering cases, the article puts forward the treatment method of applying the steel casing, artificially digging hole and mechanically drilling, muck fetching loader and cleaning hole by air-lifting method.

Keywords: pile foundation, subterranean flow, treatment, drilling, Taipingpu Bridge, Hunan Province

Use of High-pressure Jet Grouting Method to Treat Sandwich Defect at Bottom of Pile Shi Chunbao(182)

Abstract: The article sets forth the strong weathering sandwich existing at the bottom of rock-socketed pile in a project. After the comparison and selection of schemes, the high-pressure jet grouting method is determined to treat its defect. The reasonable design of nozzle type, pressure, diameter and number is the key factor to determine the sandwich replacement level, and is also technical difficulty of this scheme. The cement mortar is filled into the caves by high pressure after the sandwich is fully replaced, and it is cemented with the upper and lower weak weathering stratum so as to ensure the integrity of the pile-end supporting layer. This method can be referred for the similar projects.

Keywords: rock-socketed pile, defect, treatment scheme, high-pressure jet grouting method

Elementary Discussion on Application of Single-wall Screw Plastic Sleeve Cast-in-situ Concrete Pile in Soft Subgrade Treatment Work Liu Yian(185)

Abstract: The article mainly introduces the construction technology and construction method of single-wall screw plastic sleeve cast-in-situ concrete pile, and analyzes its advantages and its applying prospect of single-wall screw plastic sleeve cast-in-situ concrete pile by compared with the cement mixing pile and the prestressing pipe pile.

Keywords: plastic sleeve pile, soft subgrade treatment, application, advantage

Elementary Discussion on Hydraulic Sand-fill Building Island by Large Filled Bags and Shortcut Construction Method Ning Yanling(188)

Abstract: According to the bridge construction of spanning the shallow sea beach, the article introduces the hydraulic sand-fill building island by local large filled bags and shortcut construction. This construction method has the characteristics of using the local materials, quick construction, low construction cost and ecological environmental protection, which is worth to study for reference.

Keywords: hydraulic sand filling, building island, construction, method

Analysis of Deep Pit Dewatering Failure Liang Jie, Huang Fu, Zhang Lirong(191)

Abstract: The article introduces some failing engineering dewatering cases of deep pits under the condition of soft subgrade in Shanghai, sets forth in detail the failing causes of dewatering, treatment scheme and result, which aims at the continuous summing up of engineering experience to provide the reference for the

similar projects and continuously to enhance the engineering technical level.

Keywords: soft soil subgrade, failing dewatering of deep pit, treatment scheme

Indispensable Radial Force - Bridge Concrete Crack Caused by Radial Force
..... Huang Yingdong(196)

Abstract: The "radial force" is the unavoidable stress in the prestressing concrete. The general designers will all pay attention for it in the bridge design. But the problems of bridge crack and disintegrating will occur because of the radial force by the construction factor (i.e. the deviation of corrugated pipe) if exceeding the allowed range of bridge, which is bound to reduce the durability of bridge. The article fully describes the cause, solving method and dealing with the aftermath of a bridge crack caused by the radial force.

Keywords: radial force, prestressing concrete, cracking, corrugated pipe, deal with

Classification and Prevention of Common Cracks in Small Prefabricated Box Beam Wu Qing(200)

Abstract: The article classifies the common cracks existing in the small present prefabricated box beam, and sets forth how to prevent this fault in the design and construction.

Keywords: small box beam, crack, prevention, Guangzhou

Cause and Preventing Measures of Asphalt Concrete Pavement Upheaval
..... Bao Hong, Peng Xiaobin(204)

Abstract: The article analyzes the cause of service life not to reach the design service life existing in the asphalt concrete pavement, and puts forward the several preventing measures to the same profession for reference.

Keywords: asphalt concrete pavement, service life, problem, cause, preventing measures

Comparison and Study of Slurry Seal Coat and Synchronous Surface Dressing as Road Lower Seal Coat Technology Zhu Rong(206)

Abstract: The black asphalt pavement is the important structural type of pavement in China and is widely applied in the pavement structural layer of various highways. This structural layer is commonly composed of asphalt concrete mixture surface (including the upper, middle and lower layers), inorganic binders stabilized gravel semi-rigid base or cement stabilized macadam rigid and semi-rigid base and cushion. In order to enhance the carrying capacity, durability and anti-water damage capacity of the pavement, more importance is attached to the treatment among the layers of asphalt concrete pavement. During the design and construction of this multi-layer structure, the combination of the layers is very important especially the combination of the surface and base. The article compares and studies several lower seal coat technology commonly used in China so as to further efficiently enhance the service life of road and to prevent the roads from the faults.

Keywords: road asphalt pavement, lower seal coat, performance comparison, quality control

Study on Testing and Inspecting Quality of Duct Grouting by New Ultrasonic Testing Technique
..... Gan aimin, Hu Qiongxian, Chen Mengda, Xu Li, Yu Dawang(209)

Abstract: The prestressing duct grouting quality testing inspection is the attention always focused by the concrete structure testing and inspection circles at home and abroad. The article introduces the new ultrasonic testing technique and its correction of engineering practices.

Keywords: duct grouting, nondestructive testing, ultrasonic

Risk Control in Construction of Shield Going In and Out of Cave in Sandy Soil Layer
..... Guo Hongyuan(211)

Abstract: Based on the sandy soil layer in Shanghai, the article analyzes several sand flow conditions when the soil pressure balanced shield goes in and out of cave in the sandy soil layer, and puts forward the construction technical measures especially for the leakages, which can be referred for the similar risk control in the shield construction.

Keywords: shield, going in and out of cave, sandy soil layer, risk control, Shanghai

Brief Analysis on Full-face Curtain Grouting Technique of Shallow-buried Sub-surface Excavated Tunnel

..... Nie Zhenyu(215)

Abstract: Taking the full-face curtain grouting construction of Guangdong Province Donghui Inter-city Rail Songshan Lake Tunnel in DK32 + 240-DK32 + 465 Section as an example, the article focuses introduction on some key links of the tunnel grouting construction and the control gist of safety quality.

Keywords: geology, water surge, grouting effect, tunnel excavation, Songshan Lake Tunnel, Guangdong

Discussion on Safety Management of Large-scale State Owned Construction Enterprise under New Situation

..... Xu Bin(218)

Abstract: In recent years, the economical increment and the structural adjustment in China, and the demand of speeding up the urbanization process greatly increase the market demand and the investment demand for the infrastructural service. The national capital construction investment widely rises while the safe production management pressure of construction enterprise is obvious. Combined with the safety management problems existing in the enterprise construction, especially in the state owned construction enterprise under the present construction market situation, the article puts forward some countermeasure study as so to interchange in the same trade.

Keywords: state owned enterprise, safety management, problem, countermeasure

Construction Quality Control of Expressway Traffic Engineering System Tian Xiujuan(221)

Abstract: Based on the engineering cases, the article sums up the problems often courred in the construction of expressway traffic projects, and sets forth the means and gist of the quality control in the course of construction from two aspects of the construction quality controls of the safe traffic facilities and the management facilities.

Keywords: expressway, traffic engineering system, construction, quality control

Quality Control and Chief Engineer Action in Management of Municipal Engineering Project

..... Miao Junjie, Guan Weimin, Hou Dindin(223)

Abstract: The article analyzes the factors affecting the municipal engineering quality for the problems existing in the municipal engineering quality, puts forward the basic requirement of quality control in the management of municipal engineering project, and sets forth the action of the chief engineer in the management of project quality.

Keywords: municipal engineering, project management, chief engineer of project, quality control

STUDY ON SCIENCE & TECHNOLOGY

Study on State Alarming System of Bridge Structure

..... Wen Qing, Wang Xiuyong, Yang Qi, Wei Liqiong, He Xiongwei(226)

Abstract: The article discusses the state alarming system of bridge structure. Based on the characteristics of bridge structural damage, the alarming system is divided into two parts: local alarming system and integral alarming system. The local alarming system is an un-model alarming system and the integral alarming system apples the novelty detection technique based on neural

network. The timeliness and the accuracy of the alarming are improved by the combination of the both.

Keywords: alarming system, bridge, neural network

Comparative Calculation Analysis of Mechanics Behaviors among Skew Bending Beam Bridge, Curvature Beam Bridge and Straight Beam Bridge Zhang Yu, Peng Hong, Zhang Hui(230)

Abstract: The skewed bending bridge model is set up by using the calculation method of the structural finite element and ANSYS software under the background of a skewed bending bridge. It is to calculate the mechanics behaviors among skew bending beam, curvature beam bridge and straight beam bridge under the constant loading and prestressed action by the parameter variation process. It is to contrast and analyze the law and cause of the variation able to be referred for the engineering design and construction departments.

Keywords: skewed bending bridge, curvature beam bridge, straight beam bridge, mechanics behaviors

Quantitative Analysis of Controlling Measures for Temperature Crack of Large-sized Box Structure Li Jun(234)

Abstract: According to a practical case, the article calculates, compares and analyzes many crack-proof measures of layer pouring, slot pouring (or post-poured strip) and partially integrated pouring and heat preservation by three-dimensional temperature field creep stress field finite element imitating calculation analysis program, quantifies the effects of various crack-proof measures, and finds the most efficient crack-proof measures.

Keywords: box structure, temperature, crack, controlling measure, quantitative analysis

Analysis on Semi-infinite Slab Effect of Flange Slab of Box Girder Yang Likun, Huang Siyong(238)

Abstract: The common analysis method of the cantilever slab of box girder is to calculate according to the infinite width cantilever slab consolidated at the root, but dose not consider the semi-infinite effect of flange slab near the end of box girder. This it will make a lack of reinforcement in flange slab near the end of box girder so as to cause the danger. After the analysis of the full box girder model and the cantilever slab model, the bending moment of flange slab at the root is given while the load is applied near the free end of box girder, and the range of bending moment centralization at the root of flange slab is given, which will be referred for the design of the reinforcement for the large cantilever box girder.

Keywords: box girder, flange slab, large cantilever, semi-infinite

Influence of Effective Distributing Width of Crossbeam of Box Girder on Calculation Zhao Chuanliang, Tang Ying(242)

Abstract: The calculation of reinforced concrete and pre-stressed reinforced concrete box girders includes not only longitudinal calculation of the main girder, but also the crossbeam calculation. The selection of crossbeam section has some influence on the final calculation result in the calculation of crossbeam, but the influence level is not obviously defined. The article compares and analyzes the calculations of the reinforced concrete and pre-stressed concrete box girder crossbeam with the effective distributing width and the crossbeam without the distributing width. The corresponding conclusion is given.

Keywords: reinforced concrete, pre-stressed concrete, box girder, crossbeam, effective distributing width

Influence of Fly Ash Granularity Distribution on Fly Ash - Cement Binding System Yang Zhiguo, Zhou Lixia, Zhang Rongling(246)

Abstract: the article introduces Malvern MS2000 Laser Granularity Analyzer used to determine the granularity distributions of several different fine fly ashes. The grey relational method is used to analyze the correlation between the fly ash granularity distribution and the relative fly ash - cement mortar mechanics performance. The study makes clear that the granularity distribution of fly ash obviously affects its mortar mechanics performance. The granularity distributed within the range of 0 ~ 20 μm is actively contributed to the mortar mechanics performance, in which the contribution of 10 ~ 20 μm granularity is the maximum, but the granularity larger than 20 μm will weaken the mortar mechanics performance. When the specific surface area does not exceed 600 m^2/kg , the increment of fly ash fineness can enhance the fluidity of binding material system. The high-efficient water reducing agent should be used while the fly ash is mixed into the binding material system. The dosage of water reducing agent will be increased to satisfy the requirement of fluidity while the water-binder ratio decreases. The mortar mixed with the fly ash can reach the fluidity as same as the standard mortar under the condition to decrease the dosage of water reducing agent. The mortar strength presents the increasing trend while the water-binder ratio reduced.

Keywords: building material, granularity distribution, testing study, grey relational analysis, fine fly ash, fly ash- cement binding system

Study on Protection Performance of Rubber Protection Carpet for Blasting Flyrock
..... Liu Zhenyi(250)

Abstract: The article sets forth the protection mechanism of rubber protection carpet for flyrock, and analyzes its protection effect according to the engineering cases able to be referred for the similar projects.

Keywords: urban removal blasting, reinforced concrete support, blasting flyrock, blasting mat, flexible protection, rubber protection carpet

Design and Performance Study of New Pavement Maintenance Material - Ultra-thin Asphalt Friction Course Mixture
..... Liu Hui(255)

Abstract: The article introduces the use of the coarse aggregate void-filling method to design the mixing proportion of ultra-thin asphalt friction course mixture. The indoor experiment proves that the asphalt mixture pavement has the good road performance. The article also introduces the application of the ultra-thin asphalt friction course paved in the expressway maintenance projects. The testing and inspecting result makes clear that the ultra-thin asphalt friction course pavement has the characteristics of deep structure depth, good anti-slip performance and obvious noise reducing effect by comparing with the dense grading asphalt concrete pavement.

Keywords: new maintenance, material, ultra-thin, design

Numerical Simulation of Mechanics Behavior for High Modular Asphalt Concrete Pavement
..... Qiuziping, Zhengmulian(258)

Abstract: AS a new pavement material, the high modular asphalt concrete (HMAC) can effectively improve the road capacity of rutting-resistance with its high modulus, good rutting-resistance, weak sensitivity of low-temperature cracking and the temperature fatigue cracking. The general finite element software ANSYS is used in this paper to carry the numerical analysis of the loading response of the semi-rigid base asphalt concrete pavement with the high modular asphalt concrete cover. The result indicates that HMAC can significantly inhibit the emergence of asphalt pavement rut, the reasonable module scope and thickness of the high modular asphalt concrete cover is recommended.

Keywords: high modular asphalt concrete, rut, shear stress, numerical simulation

APPLICATION OF ACHIEVEMENTS

Application of Prestressed Soil-strata Anchor Rod Reinforcement in Haihe River Retaining Wall Harnessing Project Hu Rulan , Ai Lianyong(261)

Abstract: The article introduces the successful application of prestressed soil-strata anchor rod reinforcement in Haihe River Retaining Wall harnessing Project, sums up three links of design, construction and test in the course of implementing the soil-strata anchor rod technology, puts forward the cautions especially in the different links, and illustrates the social, economic and environmental benefits brought to Haihe River Retaining Wall harnessing Project by the prestressed soil-strata anchor rod technology, which will be referred for the design and construction of the similar projects.

Keywords: soil-strata anchor rod, retaining wall, prestressing

Application of Carbon Fiber Cloth in Old Bridge Reinforcement Project Luo Peng, He Jinyi(264)

Abstract: The article briefly introduces the history of building materials developed and utilized by the human being, the characteristics and purpose of carbon fiber materials, the testing result of using the carbon fiber cloth to reinforce the tested beam and its application in the bridge reinforcement projects. According to the application cases of two bridge projects, the article validates the reinforcement result of carbon fiber cloth, and sums up the cautions in the application of carbon fiber cloth, which can be referred for the specialty members.

Keywords: compound material, carbon fiber material, bridge reinforcement

THE RELATIVE SPECIALITIES

Feasibility Study of Binhai Xinjiayuan Area Development and Construction Li Guangzhao(268)

Abstract: After the development and construction for more than ten years, the economy is quickly developed, the comprehensive power is obviously strengthened, the external opening level is continuously enhanced and the infrastructure construction becomes more and more perfected in Tianjin Binhai New Area. The development and construction of Tianjin Binhai New Area has achieved the historical success and has stood at a new start of the history. The “Eleventh Five-Year Plan” puts forward “to provide the diversified residential conditions” in “creation of living and working in peace and contentment” as the main objective in the future. With the breaking out of the subprime crisis, the state increases the investment of infrastructural construction and increases the domestic demand. With the rising of house price step by step, how to guarantee the smooth and steady house price becomes the important work of the government. The article analyzes the significance and feasibility of the development and construction of Binhai Xinjiayuan Area.

Keywords: quick development of economy, investment of infrastructure, land contradiction, to guarantee the smooth and steady house price, Binhai Xinjiayuan Area, Tianjin City

Elementary Analysis on Design of High Definition (HD) Video Surveillance Bayonet Front-end System Xu Jian(270)

Abstract: The building of HD video surveillance bayonet system can better upgrade the levels of the dynamic road control and security, criminal investigation and traffic management, and play the role in combating and preventing the crimes, dealing with the sudden incidents, regulating the urban traffic order and the other applications. The system is composed of three parts, i.e. the front-end information gathering system, communication system and information center. The design of the front-end information gathering system should consider the selection, layout mode, trigger mode,

capture mode distance and fill light of the front-end camera.

Keywords: HD camera, loop, overlooking angle, LED fill light

Handling Importance and Handling Technology of Temperature Insulating Layer Interface of External Wall Temperature Insulating System Gao Haifang(275)

Abstract: The article sets forth the importance of handling the temperature insulating layer interface to guarantee the stability and security of the temperature insulating system of external wall of the buildings, points out the importance to attach and study in the application and construction of the external wall insulation systems, and finally puts forward several efficient measures to handle the interface.

Keywords: external wall temperature insulation system, importance of interface handling, interface handling technology and method



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