

城市道桥与防洪

主管：中华人民共和国住房和城乡建设部

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——《城市道桥与防洪》

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- 城乡一体化背景下公路与城市道路的衔接研究——以临沂市为例
- 双层钢桁架拱桥静力动力分析——南屏大桥工程设计
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- 薄层加铺层间抗剪强度理论及影响因素分析



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编 辑: 杨建华 赵晓燕

英文校审: 孙宁萍

地址: 上海市中山北二路901号 邮编: 200092

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Abstract: With the proposal of the new urbanization development strategy, the urban and rural integration becomes the basic requirement of the future city development. The seamless link between highway and city road is the main premise to realize the urban and rural traffic integration. Based on the main difference between highway and city road, the article discusses the definition of highway and city road in city space. The article studies the link mode of highway and city road from the aspects of network link layout, road rank matching and cross section design, and analyzes the case of Linyi City.

Keywords: urban and rural integration, highway, city road, link

Elementary Discussion on Development Strategy of City Bus Priority Cao Guanjun (5)

Abstract: The realization of bus priority is the inevitable way to solve the city congestion, city energy conservation and city environmental protection. The article analyzes the problems and causes existing in the city bus priority development, further sets forth the status of city bus priority development, and proposes five city bus priority development measures of lawmaking priority, planning priority and etc. aiming at the problems existing in the present city bus priority development.

Keywords: bus priority, city congestion, lawmaking priority, planning priority

Several Thoughts on Humanization Design of City Road Zhang Kai (8)

Abstract: Combined with the working practice, the article introduces the difference of the conventional design from the humanization design idea, and studies the humanization design in the design of city road including the design of sidewalks, pedestrian bridge and etc. The relative experience can be referred for the similar projects.

Keywords: city road, humanization design, sidewalk design, design of pedestrian bridge

Intelligent Traffic Observation Technology Based on Aero-modeling Assistance

..... Zhang Yuheng, Yuan Xiaoxiang (11)

Abstract: The article sets forth an intelligent traffic observation system based on aero-modeling assistance. This system achieves the traffic flow video in the target area by taking the model airplane as the hardware basis. The self-developed software is used to carry out a series of video processing so as to achieve the important information of each vehicle speed, acceleration, moving track and etc. The experiment shows that

the achieved data have the higher accuracy and can satisfy the requirements of traffic investigation, which has the good development prospect.

Keywords: model airplane, automatic recognition, vehicle track, investigation of traffic flow

Elementary Analysis on Traffic Organization of City Road Reconstruction Project in Construction Period

..... Zhang Lijun (14)

Abstract: The city road reconstruction projects have the characteristics of limited construction period, narrow field, complex pipelines and large traffic travel demand. Therefore, the reasonable and perfect construction organization scheme is the guarantee for the project to implement according to the progress of the plan and the regional traffic to operate in order. Taking Yanggao Road Reconstruction Project as an example, the article analyzes the traffic influence in the pipeline construction stage and the main structural construction stage from three levels of "point, line and surface", and puts forward the special engineering and management measures so as far as possibly to reduce the influence of construction on the society, economy and environment.

Keywords: road reconstruction, construction period, traffic organization, guarantee measures

Design of Traffic Organization under Construction Stage of Lijia Park Tunnel Reconstruction Project

..... Liang Minghao, Huang Huahua, Yang Wei (18)

Abstract: Lijia Park Tunnel Reconstruction Project is located at the core traffic node of the main city of Chongqing. No consideration of traffic organization during the engineering construction period in the design stage will cause the project hard to be implemented or the traffic paralysis of road network during the implementation of project. The article discusses the engineering construction organization and the traffic organization during construction. The relative experience can be referenced for the similar projects.

Keywords: construction organization, traffic organization design, tunnel reconstruction

Study of Traffic Influence and Traffic Organization during Urgent Repair Construction of Dangerous Haizhu Bridge

..... Zhang Xiaojin (22)

Abstract: Restricted by the geographical condition, the bridge crossing Zhujiang River takes the important traffic function in the north - south road network of the downtown in Guangzhou. The fully enclosed construction of Haizhu Bridge will directly reduce a channel crossing the river, which will produce the greater effect on the urban traffic. The article mainly analyzes the traffic influence and the relative traffic organization scheme during the urgent repair construction of the dangerous Haizhu Bridge, puts forward the reasonable traffic organization adjustment scheme, and analyzes the implementation effect.

Keywords: bridge, dangerous bridge, urgent repair, traffic organization, traffic influence

Study on Modification of Diamond Interchange Based on Land Limit

..... Hu Peng (25)

Abstract: Diamond interchange has been favored as a mainstream form of urban interchange because of large traffic capacity of the main line, clear turning, lower construction cost, a few land use and etc. Along with the acceleration of urban construction, the land limit of interchange facilities is increasingly prominent. This paper provides the design ideas for the modification of the traditional diamond interchange according to the local condition.

Keywords: land limit, diamond interchange, according to local conditions, design ideas

Scheme Design of Jianxin Road (W) Interchange in Three-longitudinal Line Expressway in Chongqing City

..... Zhou Lin (28)

Abstract: Combined with Chongqing Expressway Three-longitudinal Jianxin Road (W) Interchange Project as an example, the article introduces the scheme design of the multi-road traffic interchange and the design characteristics of mountainous city interchange. The relative experience can be referenced for the similar projects.

Keywords: expressway, multi-road interchange, scheme design

Study on Design Scheme of Jiangkou Bridge Interchange in Fenghua

..... Li Chunxiang (31)

Abstract: Based on the project area characteristics and the road traffic features, the article completely analyzes the key design factors in the scheme design of Jiangkou Bridge Interchange. Combined with the traffic features of municipal road, the article further analyzes and studies the scheme of Jiangkou Bridge Interchange located in the intensive area of town. The relative experience can be referenced for the similar projects.

Keywords: highway interchange, municipal facilities, scheme analysis

Overall Design of Pudong Section in Middle Ring Line

..... Liu Xin (33)

Abstract: Taking the new built engineering design of Bid 5 in Pudong Section (Jungong Road Cross-river Tunnel - Gaoke Road (M)) of Middle Ring Line as the background, the article introduces the overall design of Pudong Section in Middle Ring Line, the structural scheme of the main typical elevated section within the bid section, and the design scheme of main node, which can be referenced for the overall design of the similar urban elevated bridges in the future.

Keywords: Middle Ring Line, Pudong Section, overall design, Shanghai

Design of Urban Expressway

..... Chen Shaohua (36)

Abstract: According to the characteristics of urban expressway, the article analyzes and sums up some experience and problems in the design of urban expressway, and puts forward the solving thinking and method of problems. The result can be referred for the relative projects.

Keywords: urban expressway, design speed, alignment design, interchange design, design of auxiliary road

Elementary Discussion on Design of Block Pavement and Analysis of Failure

..... Peng Xiaodong, Liu Wangkun (39)

Abstract: The block pavements are more and more applied to the city roads. There are no official design theory and method for this kind of block pavement, and also lack of relative systematic specifications and regulations. Therefore, based on the design experience in recent years, the article elementarily discusses the design and application of block pavement, and taking a block road in the southwest region as an example, analyzes the failure cause of block pavement, and discusses the treatment method. The relative experience can be referenced for the similar projects.

Keywords: block pavement, design, analysis of failure

Scheme Design of Important Node of Shijiazhuang New Shengli Avenue Bai Xu (42)

Abstract: The new Shengli Avenue is a north-south traffic artery through the downtown of Shijiazhuang. The present traffic volume of Shengli Avenue has become saturated. After the new railway station of Shijiazhuang opened for service and the construction of Metro Line 1 and Line 3 started, the new Shengli Avenue will bear more pressure of the north-south traffic. Therefore, it is imperative to reconstruct new Shengli Avenue. The article introduces the scheme design of several important nodes in the reconstruction of new Shengli Avenue, which can be referenced for the similar projects.

Keywords: road reconstruction, important node, scheme design, new Shengli Avenue, Shijiazhuang

Evaluation and Study on Pavement Inspection of Connection Line of Jin River Bridge in Quanzhou - - - Shi Qi (46)

Abstract: The connection line pavement of Quanzhou Jin River Bridge has been patched for several times, and the road condition is in a poor state. Through the investigation of road damage status such as disease status survey, pavement bearing capacity deflection tests, pavement drill core sampling and so on, the article systematically evaluates the road condition and proposes that the problems of poor drainage, serious rainy day pavement waterlogging and so on are the important reasons leading to road disease damage. Combining with the existing materials, the article put forward the proposal of road patch to thoroughly renovate the pavement.

Keywords: pavement inspection, disease survey, bearing capacity deflection test, drill core sampling

Elementary Discussion on Development Status of Highway Fence at Home and Abroad

..... Zhang Shiji, Shui Yinping (49)

Abstract: The article sets forth the development status of road fence type and material at home and abroad, analyzes the problems existing in the road fence of China in this stage, and expects the development prospect of highway fence in China.

Keywords: highway, fence type, fence material

Study on New Technology Suitable for Asphalt Pavement Maintenance in Shenzhen Zha Wei (51)

Abstract: From the angle of improving the maintenance quality of asphalt pavement and the utilization efficiency of asphalt pavement maintenance fund, the article studies the advanced technology of asphalt pavement maintenance in China, and analyzes the more advanced maintenance technology suitable for the urban road maintenance in Shenzhen. The relative experience can be referenced for the similar projects.

Keywords: asphalt pavement, maintenance, new technology

Discussion on Countermeasures of Road Crossing Water Source Protection Area

..... Feng Rongxuan, Huang Zhenyu (54)

Abstract: The environmentally sensitive zone of water source area and etc. are often met in the road construction process. The road construction certainly will cause the impact on the water source protection area. These impacts include the environment pollution in the construction and operation periods. The relevant laws of the state have detailed provisions for the protection of the water source protection area. These provisions should be strictly executed during the project construction, and the reasonable measures are taken in order to strive to minimum the adverse impact of environment. Taking the Shenzhen Nanping Expressway Phase III Project as an example, the article introduces the countermeasures taken for this road crossing the Class I and Class II water source areas of Dashan Pond - Mine Reservoir, puts forward the design measures

of line position passing round, pavement rainwater flood discharge, construction of accident emergency tank, building of double barrier guardrails, and proposes the pollution preventive measures of construction and operation periods. The relative experience can be referenced for the similar projects.

Keywords: Nanping Phase III, water source protection area, pollution, comparison and selection of line position, countermeasures, measures

BRIDGES & STRUCTURES

Static and Dynamic Analysis of Double-layer Steel Truss Arch Bridge ... He Jichun, Guo Jiye, Gao Kangping (59)

Abstract: The main bridge of Nanbing Bridge is a bridge of double-layer rigid truss beam flexible arch combined structure. The total length of bridge is 216 m. The bridge span is arranged by 48 + 120 + 48 m. The upper layer is for Jinding - Hengqin Expressway of Zhuhai City and the lower layer is for the municipal road of Zhuhai City. The article introduces the overall design scheme of this bridge, and analyzes the static force, self-vibration characteristic, static stability, wind resistance and seismic performance of this bridge, which can be referenced for the design of the similar bridges. The study process and result can be referenced for the similar bridges of the other projects.

Keywords: double-layer bridge, steel truss arch bridge, static analysis, dynamic analysis, wind resistance, seismic resistance

Calculation, Forecast and Analysis of Long-term Deflection of Long-span Continuous Rigid Frame Bridge

..... Pan Changsheng, Yang Bin, Wang Shicheng, Lin Ping (63)

Abstract: According to the long-term deflection data measured from a continuous rigid frame bridge, and through the establishment of the different working finite element models, the article compares and analyzes the measured data and the calculation values of the long-term construct deflection by stages. The results show that the calculation method of long-term deflection considering the effect of quasi permanent and structural damage is more close to the actual scratch. On the basis of analyzing the measured data and the calculation result, the method of long-term deflection correction coefficient is introduced to forecast the long-term deflection of structure.

Keywords: continuous rigid frame, long-term scratch, structure loss, deflection correction coefficient, deflection forecast

Analysis on Bending Shear Lag of Thin-walled Box Girder Lu Chongyang (66)

Abstract: The effect of shear lag is a phenomenon commonly existing in the box section, which not only influences the stress distribution of box girder, but also influences its deflection so as to cause the deflection increment of the different bridges in varying loads. The article discusses the influence of shear lag effect on the different bridge deflections, and sums up the influence degree of shear lag on box girder deflection.

Keywords: thin-walled box girder, shear lag, bending

Load Problems and Solving Analysis in Bridge Design Liu Jiayu, Zhang Jun (69)

Abstract: Combined with the practices, the article briefly introduces the basic theory of bridge design load, analyzes the load problems in the bridge design, and analyzes how to solve the bridge design load problem. The relative experience can be referenced for the similar projects.

Keywords: Ningbo North Ring Expressway, double-deck elevated bridge of highway-rail construction, structure selection, small rigid frame box beam, composite bent cap

Calculation and Analysis on Internal Force of Saddle Supported Large-diameter Flat Steel Pipe Bridge Shen Ye (89)

Abstract: Taking the large-diameter self-supported flat steel pipe bridge supported on steel reinforced concrete saddle support as an example, the article introduces the three-dimension finite element numerical calculation of self-supported steel pipe bridge based on Winkler subgrade. After the calculation, the article analyzes to determine the reasonable liquid pressure load model in steel pipe and the subgrade coefficient between steel pipe and concrete pier, and compares the calculation result and the calculation method recommended by the current pipe and bridge design regulations. The result shows that the supporting section of self-supported pipe bridge is the controlled section of structure design. The inner force of pipe wall structure will reach the maximum at the edge of supported area. The safe storage is ample when the large-diameter pipe bridge is designed on the current design regulations.

Keywords: pipe bridge, numerical calculation, saddle support

Design of Medium-span Half Through X-type Arch Bridge Kang Kaile (93)

Abstract: The main bridge of the municipal WenzutuanYanyang Bridge in Zhaoqing of Guangdong is a 16.5m+70m+16.5m half through X-type arch bridge. The article focuses introduction on the design characteristics of this bridge structure including the selection of structure type, design of detailed bridge structure, process of system calculation and stress analysis of key position.

Keywords: half through, X-type arch, space calculation, bridge design, landscape design

Design of Diagonal Arch Bridge in Meishan Road (S) of Liuan City Cheng Zhenglin (96)

Abstract: According to the analysis of the surrounding environment of Meishan Road (S) Bridge, the bridge scheme is designed. The article introduces the scheme design, structural construction details and construction scheme of diagonal arch bridge, and analyzes its structure.

Keywords: diagonal arch bridge, bowstring arch bridge, steel-tube arch

Structural Design of a Sunflower-shaped Arch Bridge Sun Quanli (98)

Abstract: The design of urban bridge has the high requirement for the landscape. Lansheng Bridge in Yanshou County of Guilin City is a deck bowstring sunflower-shaped arch bridge. Its structure is new and original, its type is stretch and light, and it is integrated with the surrounding environment. Combined with the engineering characteristics of this bridge and the geographical position of this bridge located at the famous landscape scenic spot of Yanshou, the article focuses introduction on the bridge type, structural design, construction scheme and construction gist of Lansheng Bridge.

Keywords: sunflower-type arch bridge, box-shaped arch, external strand bowstring, bridge design

Overall Design of Elevated Area in Ningbo Rail Transit Line 4 Bao Haifeng (101)

Abstract: Ningbo Rail Transit Line 4 Project traverses the area of Ningbo City, connects two new planned cities of Cicheng and Dongqianhu, and has the important significance for the city planning and economic development of Ningbo. The article introduces the main structure design of bridges in the interval engineering

of Ningbo Rail Transit Line 4 including the overall scheme design of interval bridges in the selection of typical bridge span, selection of main girder, layout of section, selection of substructure and scheme comparison of node bridge.

Keywords: rail transit, overall design, bridge, scheme comparison

Brief Introduction of Design for Puhe Jinsha River Bridge in Yibin County, Optimization and Comparison of Bridge Type Zhang Zengya (106)

Abstract: The article firstly introduces the engineering situation of Puhe Jinsha River Bridge in Yibin County of Sichuan Province, describes the basic principle of bridge design and overall layout scheme of bridge in detail, then briefly introduces the bridge design, discusses the proposal and comparison processes of bridge scheme in detail, and finally compares the schemes of bridge types, and recommends the bridge type.

Keywords: brief introduction of design, optimization of bridge type, comparison and recommendation of bridge type

Design and Pushing Construction of Long-span Steel Box Girder He Jiandong, Yang Liping, Cui Lu (112)

Abstract: Taking an engineering case as an example, the MIDAS is used to establish the upper model for the bridge check, and the ANSYS is used to establish the construction model including guide girder for construction simulation. The article analyzes and calculates the reliability of construction operation of the steel box girder in this project. The article introduces the design method of long-span steel box girder and the detail process of pushing construction. The relative experience can be referred for the similar projects.

Keywords: steel box girder, design, pushing construction

Design of Steel Structure Pedestrian Bridge Hu Mei (115)

Abstract: The article introduces the design scheme and its structural design of Binhe Road (N) - Fengshan Road Pedestrian Bridge in Lishi District of Lvliang City. The structural stress is analyzed and checked by the space finite element computation program. The result shows that various indexes of stress, deformation, natural vibration frequency and etc. of pedestrian bridge all satisfy the standard requirements. Its design is reasonable.

Keywords: steel structure, pedestrian bridge, scheme design, master design, structural design

Overall Design of Wanjiali Road Express Reconstruction Project in Changsha City Chen Qiao (118)

Abstract: The express reconstruction scheme combined with the elevated expressway and the ground expressway is used for Wanjiali Road Express Reconstruction Project in Changsha City. The elevated double-way six-lane scheme is used in the whole line, in which 4 pairs of ramp at grade and an interchange are constructed. The whole elevated line is mainly used of "flying goose" inclined web pre-stressed concrete continuous box girder and double-column vase-shaped pier. The interchange is mainly used of inclined web steel reinforced concrete continuous box girder and single-column vase-shaped pier.

Keywords: Wanjiali Road, elevated bridge, Sanyi Avenue Interchange, pre-stressed concrete continuous box girder, steel - concrete composite box beam, vase-shaped pier

Reinforcement Design of Half Through Concrete Filled Steel Tube Arch Bridge Gao Yanxin (122)

Abstract: Taking a half through concrete filled steel tube arch bridge of Foshan as the background, the space

finite element model is established to analyze the structure of the whole bridge. On the basis of structural analysis, and aiming at the main faults of this bridge, the article puts forward the reinforcement design scheme, which can be referenced for the reinforcement design of the similar bridge structures.

Keywords: half through concrete filled steel tube arch bridge, structural design, reinforcement design, boom replacement

Elementary Discussion on Mechanism Analysis of I-shaped Beam Bridge Ship Collision Diseases and Design of Reinforcement Liu Zhijun, Bai Ping (124)

Abstract: The accidents of ship collision to bridge under service often occur. The light is bridge damage, and the serious is bridge collapse, which will seriously affect the traffic safety of ship and the operation safety of bridge. Taking the collision disease of the main girder of I-shaped beam bridge and ship as an example, combined with the finite element calculation, and through the simulation of ship collision role location and the size of impact force, the article analyzes the mechanism of collision damage and puts forward the corresponding reinforcement design scheme based on the analysis result.

Keywords: I-shaped beam, ship bridge collision diseases, mechanism analysis, design of reinforcement

Analysis and Calculation of Stress of Column-type Pier Pile Foundation before and after Excavation of Riverbed, and Treatment Proposal for Faults Yang Zhi (128)

Abstract: Taking the exposed pile foundation of a bridge in Zhenggong Road caused by the reconstruction of river and landscape along the road in the "three-longitudinal one-horizontal" significant infrastructure project of Tianfu New Area in Chengdu and the excavation of riverbed as the example, according to the geology and field measured condition, the analyzes and calculates the stress of pile foundation before and after river excavation. The result provides some references for the design and construction of the similar pile foundations, and solving the following problems in Tianfu New Area.

Keywords: pile foundation, excavation of riverbed, bending moment, carrying capacity of subgrade

Discussion on Overhaul of Cultural Riveting Steel Truss Bridge Wang Qian (132)

Abstract: With the development of bridge construction in China, more and more significant bridges already have a certain cultural values. How to reasonably repair and reinforce this kind of bridge has become a new important research subject in the current bridge construction. There is a few of research especially for the overhaul projects of riveting steel truss bridges with the historical cultural value at home and abroad. The article analyzes and discusses the overhaul projects of several cultural riveting steel truss bridges in China, describes the overhaul project of Shanghai Zhejiang Road Bridge, analyzes the overhaul thinking of cultural riveting steel truss bridge and overhaul technology of its key positions, which can be referenced for the maintenance and reinforcement of the similar bridges.

Keywords: bridge overhaul, bridge reinforcement, riveting steel bridge, steel truss bridge, cultural relic

Design of Inspections of Bridge Pile Foundation Gao Jin (135)

Abstract: The article sets forth the inspection content, inspection method and inspection number of bridge pile foundation, and introduces the design method of bridge pile foundation inspection by the engineering projects.

Keywords: bridge, inspection of pile foundation, design, bearing capacity

FLOOD CONTROL & DRAINAGE

Elementary Discussion on Design Characteristics of City Flood Control River Management under Construction Requirement of "Sponge City" Lu Guoxiang, Liu Xiaohong (139)

Abstract: In the construction of city infrastructures, and with the ecological civilization construction idea of saving water resource, protecting city ecological environment and etc. winning support among the people, the authorities of China put forward to promote the construction of the natural accumulation, natural infiltration and natural purification "sponge city". Combined with the comprehensive management engineering case of Longji River in the east area of Jinan City, the article discusses the comprehensive management design characteristics of river under the construction requirements of "sponge city". The relative experience can be referenced for the similar projects.

Keywords: sponge city, comprehensive management of flood-control river, design

Analysis on Stability of Flood Control Wall in Downtown Area of Huangpu River Lu Weihua (141)

Abstract: The flood control wall in the downtown area of Huangpu River is long. The structure type is complex structure. The wall is affected by the channel evolution and navigation. The plastering is different in front of wall. And many wharfs and yards are distributed along the wall. The loads are different at the back of wall. If strictly according to the standards and regulations to recheck and calculate each section of flood control wall, the workload is huge. The sensitive factor method is proposed by analyzing the boundary condition affecting the integrate stability and seepage stability of flood control wall structure. According to the practical condition of flood control wall, the sensitive factor is selected and its sensibility analysis is carried out in order to find out the critical value of meet the structural integral or seepage stability requirements of flood control wall. The comparison of practical value and critical value can evaluate the structural integral stability and seepage stability of flood control wall.

Keywords: Huangpu River, flood control wall, sensitivity analysis, integral stability, seepage stability

Study on Reconstruction of Old Town Combined Sewage Pipe Network in Narrow Road Network of Tianjin City Zheng Yujia (145)

Abstract: The core area of Heping District in Tianjin City is the road pattern mainly of narrow road network, and this area is also the old town with the combined sewage system. According to the introduction of the general situation of area road network and the present status of drainage pipe network, the article analyzes the problems existing in the combined swage pipe network, sets forth the principle of pipe network reconstruction, and aiming at the road pattern of present narrow road network, the article puts forward the method of using the new drainage facilities for reconstruction of separate sewage system and the countermeasures for perfecting the drainage facilities.

Keywords: narrow road network, combined sewage system, reconstruction, new drainage facilities, old town

Analysis and Study of Drainage Design of Elevated Road in Urumqi City Liao Xinliang, Yin Fei (148)

Abstract: The main purpose of drainage design of elevated road is to collect and discharge the snow rainwater of pavement. There are standards for the drainage design to follow, but there are no detailed provisions in the distinguishing standards in the different areas and the different climate features. In recent

year, the elevated road projects of Outer Ring Road, Nanhu Road (E and W), Kalamayi Road and etc. have been completed in Urumqi City with the different rainwater collection and drainage modes. Taking the drainage system of elevated roads in Urumqi as the study object, the article collects some engineering cases, and analyzes many modes of rainwater collection and drainage. According to the comparison of rainwater flow calculation result of Shanghai and according to the relative specifications of the standards, the article proposes the rainwater inlet type and gap, and drainage mode of elevated road in Urumqi Area.

Keywords: elevated road, rainwater collection, rainwater flow calculation, rainwater inlet gap, drainage, Urumqi City

Construction and Application of Headstream Monitoring System for Town Wastewater Treatment Plants in Industry-intensive Area Zou Weiguo, Ding Yongwei, Xu Chun, Liu Zhan'guang (151)

Abstract: The town wastewater treatment plants (WWTPs) in industry-intensive area generally have the problems of the high proportion of industry wastewater in the influent and the great variations of influent water quantity and quality so as to cause the instable operation effect. The article proposes three-level monitoring strategy of enterprise sewage outfall, midway lifting pump stations and pretreatment processes of WWTPs, the proper management measures of takeover agreement in order to form the headstream monitoring system. The application result of a WWTP in Suzhou City shows that the concentrations of key pollutants discharged from the headstream enterprises are reduced year by year, and the fluctuation of wastewater quality is improved. More importantly, the influent water quality and operation stability of WWTP are significantly improved, and the annual mean effluent COD and TP are decreased separately from 60 ± 10 mg/L and 2.1 ± 1.6 mg/L to 37 ± 3 mg/L and 0.14 ± 0.03 mg/L, which can meet the Class A standard and the excessive risk is greatly decreased.

Keywords: industry-intensive area, headstream monitoring, industrial wastewater, wastewater treatment plant (WWTP)

Elementary Discussion on Application of Plastic Drainage Manhole in Municipal Road Wang Yuna, Cui Yunzhi, Sun Yan (155)

Abstract: The plastic manhole is more and more concerned by the municipal industry because of its simple construction technology, flexible assemble method and shorter construction period, and is gradually applied to the municipal road works. The article introduces the characteristics of plastic manhole, the selection of its main components and the gist of design and construction, and puts forward the proposal for the application and relative treatment technology of plastic manhole by the engineering cases, which can be referred for improving the design schemes and optimizing the construction design service.

Keywords: plastic manhole, municipal road, manhole shaft, manhole pit, pressure-bearing ring

Application and Discussion on Inspection Method of Small and Middle River Dredging Quality in Shanghai Chen Yunlan, Zhang Xianjie (159)

Abstract: The inspection work of the small and middle river dredging quality in Shanghai involves many rivers with the complex situation. With the help of Shanghai SHCORS System, the use of GNSS for section cable positioning, the tower for sounding and the rubber boat for measurement boat in the outdoor, and the use of the southern CASS7.0 professional graphics software for drawing section chart in the indoor can quickly and correctly complete the dredging quality inspection work.

Keywords: river dredging, Shanghai SHCORS System, cross section measurement, third part inspection

Exploration and Practice of Ecological Management of Urbanized River Chen Feihua, Chen Yunlan (162)

Abstract: With the continuous development of economic society, the demands of the people for living condition and public environment of city is increasingly enhanced, and the building of river landscape, the improvement of river water environment, the highlighting of river landscape, recreation and ecology, and the interaction with the surrounding environment are gradually concerned. The idea of river ecological management comes into being. According to the analysis on the status and the existing problems of river water environment in Zhabei District of Shanghai and taking the ecological management of Xujiashai River as the practical case, the article analyzes the design principle, main technical gist and implementation effect in the management of Xujiashai River in order to provide the reference for the ecological management of the other urban rivers.

Keywords: urban river, water environment, ecological management

MANAGEMENT & CONSTRUCTION

Analysis and Treatment Method of Cause Influencing Asphalt Concrete Pavement Roughness ... Xiao Weiyan (165)

Abstract: Based on the asphalt concrete pavement construction practices for many years, the article analyzes the roughness of subgrade and pavement, and the mixing quality, paving machinery and technology, compaction machinery and rolling technology of asphalt concrete, and treatment of longitudinal and transverse construction joints and treatment of manholes. On this basis, the article puts forward the analysis and relative solving method of causes influencing the roughness of asphalt concrete pavement.

Keywords: asphalt concrete pavement, roughness, cause analysis, method

Improvement of Construction Quality of Class III Collapsible Loess Subgrade Tao Bingfang (169)

Abstract: The subgrade is the road foundation. The subgrade strength and stability are the basic conditions to guarantee the pavement strength and stability. Therefore, it is the special key to improve the subgrade construction quality. According to the investigation and detailed analysis of quality faults existing in the construction process of collapsible loess subgrade, the main factors of quality fault are found so as to formulate the relative measures taken for improving the construction quality of collapsible loess subgrade.

Keywords: subgrade, construction quality, planeness

Construction Technology of Municipal Road Subgrade Treatment by Grouting Method Chen Zhiwan (172)

Abstract: Taking a practical project as an example, the article comprehensively analyzes the construction principle, scheme design and reinforcing effect of pressure grouting, and analyzes and discusses the relative problems and treatment measures of grouting technology construction, which can be referred for the construction of the similar projects.

Keywords: municipal road, subgrade treatment, grouting method, construction

Practice and Proposal for Construction Quality Management of Urban Bridge and Expressway ... Zheng Shaojie (174)

Abstract: With the continuous development of urban bridge and expressway engineering in China, the

construction quality of this industry is widely concerned. The article analyzes the problems existing in the construction quality management of urban bridge and expressway, and proposes the relative management measures, which can be referenced for improving the construction quality management of the similar engineering industries.

Keywords: urban bridge and expressway, construction management, quality monitoring

Analysis on Pavement Maintenance Technology of Expressway Zhou Xiaoxi, Qu Baoyi, Huang Yuan (177)

Abstract: With the continuous development of expressway industry in China, the pavement maintenance of expressway is more and more concerned, and the study of maintenance technology is also required to further advance. The article sets forth and analyzes the multi-layer action and treatment of asphalt pavement, material selection of interlayer treatment, treatment technique and technology of interlayer in the pavement maintenance of expressway.

Keywords: expressway, pavement maintenance, asphalt maintenance, asphalt pavement, interlayer treatment

Analysis of Formwork Lateral Pressure at Different Pouring Heights of Bridge Pier Yu Guoji (179)

Abstract: With the large-scale development of city viaduct, multilayer interchange, intercity high-speed railway, the bridges with high pier column above 10m appear in large numbers. Therefore, this paper analyzes the factors influencing formwork lateral pressure, and introduces the calculation and the evolution of lateral pressure when the formwork is newly poured by concrete. Comparing the calculation value amendment of the newly poured concrete lateral pressure at home and abroad, the paper proposes a new amendment method of lateral pressure calculation value of the newly poured concrete for high pier column of bridge, which can be referred for the construction of the similar projects.

Keywords: pier column, concrete lateral pressure, calculation value

Study and Countermeasures for Stress Mechanism of Beam Bending Force of Pre-stressed Concrete Box Beam Bridge Li Maowen (184)

Abstract: Taking the construction of concrete continuous box beam of Jiuzhou Elevated Expressway in Nanchang City as an example, the article analyzes the steel broken wire occurring when the tension of beam is pulled, studies the stress mechanism of beam bending force, and puts forward the solving countermeasures for the cause of the broken wires.

Keywords: beam bending steel wire, broken wire, uneven stress, squeeze, steel strand tensile stress

Construction of Long-span Cable-stayed Bridge Closure Section in Mountain Region Zhao Wei (187)

Abstract: The article mainly introduces the closure section construction scheme of Liuchong River Bridge in Guizhou Province, separately introduces the cast-in-site support schemes of side span closure and middle span closure, and briefly describes the measurement of closure section, and the construction method of concrete and pre-stressing of closure section. The relative experience can be referenced for the similar projects.

Keywords: mountain region, cable-stayed bridge, closure section, measurement, additional weight, cast-in-situ support

Elementary Discussion on Test Inspection Technology of Steel Reinforced Concrete Bridge and Its Development TrendHu Sheng (190)

Abstract: The article introduces, analyzes and evaluates the nondestructive examination method of bridge, introduces the load test class, dynamic test and static load test methods of bridge, and sets forth the development trend of concrete bridge inspection technology.

Keywords: bridge test, inspection technology, development trend

Elementary Discussion on Application of Correcting Technology in Reconstruction of Bridge Ju Zhijun (192)

Abstract: With the rapid development of transportation construction, human's economic of engineering activity makes the development of geological disasters increasingly intensified, and with the bias and errors in construction, these gaintly impact on the bridge structure, resulting in a large number of bridge piers subsided, lateral offset and other serious diseases. This paper takes Jianghai Avenue viaduct reconstruction project for example, firstly, it introduces a brief overview on Jianghai Avenue viaduct jacking project, then, it describes the correction technique in use of this transformation. The successful application of this case will provide some reference value to similar conditions of the bridge reconstruction.

Keywords: correction; reaction force; limit; steel corbel; jacking-up

Study of Safety and Durability in Design of Municipal Road and Bridge Nie Yongjun, Qi Wei (196)

Abstract: Under the new situation how to improve the design quality of road and bridge, the safety and durability have become the key emphases in work of the most road and bridge designers. Aiming at the design type of road and bridge in China, the article sums up the safety and durability, and puts forward the relative solving countermeasures and strategy.

Keywords: municipal road and bridge, safety, durability, construction design

Repair Technology of Double-chamber Sewage Box Culvert under Operation Bai Zhanwei (199)

Abstract: With the increment of operation years, the repair of the damaged position of the large sewage trunk pipe has become the problem urgently for solving under the condition not to affect the operation. Taking the repair project of an old 4.7-m double-chamber box culvert of Shanghai as an example, the article introduces a series of measures, i.e. holing at the top of box culvert, the temporary underwater closure of middle wall leakage expansion joint, the rubber waterstop pasted on inner wall to seal the leakage expansion joint, the reinforcement of soil at the bed of box culvert and the operation taken for the successfully implementation repair of an old seriously leaked double-chamber box culvert under operation, which can be referenced for the repair of the other large-diameter drainage pipelines and the repair of box culvert.

Keywords: sewage box culvert, leakage, expansion joint, repair

Discussions on Deformation Control of Subway Tunnel by Large Section Rectangular Pipe Jacking Crossing in Close Distance Ye Yaodong (203)

Abstract: Aiming at the large quantity of unloaded soil when the rectangular pipe jacking of large section crosses over subway tunnel, and the technical difficulties of hard to control the tunnel deformation, the scheme is compared and selected by the means of numerical calculation and etc. Finally, the measures of cover plate and load are determined to reduce the structure deformation of subway tunnel. The informatization monitoring method is used to optimize the construction technical parameters of jacking speed and pressure in order to ensure the structure and operation safety of subway tunnel during the crossing process.

Keywords: rectangular pipe jacking, subway tunnel, deformation control

..... Qiu Suwan, Xu Qin, Wei Ying, Xu Yuting (206)

Abstract: The construction of rural bridge is one of rural practical projects determined by the government. In order to regulate the construction procedure of rural bridge and to guarantee the construction quality of rural bridge, the article puts forward the methods and proposals from three aspects of construction procedure, construction sequence and quality control of rural bridge engineering by the design practices of rural bridge projects.

Keywords: rural bridge, construction procedure, construction sequence, quality control

Study on Project Management Model of Post-disaster Reconstruction by Counterpart Support

..... Huang Jiāngāng (210)

Abstract: The post-disaster recovery and reconstruction work is an extremely difficult and complex system engineering because of limited time, heavy task and high request. The article studies the project management model of post-disaster reconstruction of Shanghai Counterpart Support to Dujiangyan City in detail from ten aspects of project organization, pre-construction management, design management, schedule management, investigation control, contract management, quality management, emergency management, conference management, work report management and etc. The agent construction management model is proposed in order to provide the reference for the project management model of post-disaster reconstruction implemented by the government.

Keywords: counterpart support, post-disaster reconstruction, project management, agent construction system

STUDY ON SCIENCE & TECHNOLOGY

Analysis on Interlayer Shear Strength Theory and Influence Factor of Thin Overlay

Sun Chao (214)

Abstract: Thin overlay is one of important preventive maintenance measures. The adhesion of overlay and original pavement is the key factor determining road performance. In this thesis, interlayer shear strength is chosen as the evaluating index of interlayer adhesion. With reference to domestic and foreign interlayer shear test methods, skew shear test is adopted. Based on theoretical and experimental analysis, a control method of test parameters is brought out, and the relationship between interlayer shear strength and normal stress on sliding surface are tested in 31 working conditions. The results show interlayer shear strength increased linearly with the increase of normal stress. Accordingly, the interlayer shear strength theory applying to thin overlay is put forward, and the effects of temperature, humidity changes on the interlayer shear strength theory are discussed.

Keywords: thin overlay, interlayer shear strength, Moore-Kulun strength theory

Finite Element Analysis on Effect of Fiber Concrete on Bridge Down Deflection Based on MIDAS/Civil

..... Liu Bo (219)

Abstract: Taking an under-construction three-span continuous bridge as an example, the simulation analysis of short-term down deflection of fiber reinforced concrete beam bridge is carried out by the general finite element program MIDAS/Civil. With the analysis of steel fiber and polyacrylonitrile fiber, the influence law of bridge down deflection with different fiber volume fractions is proposed. Though the comparative analysis of bridge down deflection by using fiber reinforced concrete in different part of main girder, the best

local fiber concrete girder bridge scheme is proposed by the comprehensive consideration of service performance and economic factor.

Keywords: fiber reinforced concrete, steel fiber, polyacrylonitrile fiber, simulation analysis, down deflection

Research on Unstressed State Control Method Model for Double-cable Tension Yang Chun (222)

Abstract: In view of the problem that unstressed state control model of cable-stayed bridge for single-cable tension cannot be applied for the double-cable tension, an unstressed state control model of double-cable tension is established on the basis of the single-cable tension model. The correctness and reliability of the model is verified by a case of three-span cable-stayed bridge considering the geometrical nonlinearity of structure. The modeling idea can be extended up to multi-cable tension.

Keywords: cable-stayed bridge, construction control, unstressed state control method, stay cable, construction analysis

Study on Reinforcement and Load Test of T-type Rigid Frame Bridge Chen Zhaoquan, Chen Weiquan (225)

Abstract: A large number of T-type rigid frame bridges with hanging beam were constructed before the Twentieth Century 90's. This kind of bridge is mostly required for the overhaul after the long operation. Therefore, aiming at this type of bridge, it is very necessary to look for an efficient and reliable reinforcement method. Taking a T-type rigid frame bridge with hanging beam as an example, the article introduces the method of using the external pre-stressing to reinforce the T structure. According to the analysis of static and dynamic load tests, the T-structure rigidity and bearing capacity of T-type rigid frame bridge with hanging beam after reinforced by the external pre-stressing are greatly improved. The analysis result can be referenced for the maintenance and reinforcement of the similar bridges.

Keywords: T-type rigid frame bridge with hanging beam, external pre-stressing reinforcement, static and dynamic load tests

Simplified Algorithm of Vehicle Bridge Coupling Vibration of Bridge Cai Zhonghua, Yang Jun (229)

Abstract: Aiming at the vehicle bridge coupling phenomenon caused by the vehicle running, a simple practical moving vehicle load simulation method is used to simplify the vehicle load into the time varying triangular load for dynamic loading. Combined with the literature data, the ANSYS software is used to establish the space finite element model for analysis. The comparison result shows that the calculation result of this method is in good arrangement with the reference data, can reflect the influence of moving vehicle on bridge, and can be used for the engineering practices..

Keywords: vehicle bridge coupling, vehicle model, time varying load

Analysis on Design Calculation of Curved Bridge Zhu Zhong, Zhou Xiaoxi, Li Hongliang (231)

Abstract: With the continuous development of expressway and the continuous improvement of road grade in China, the curved bridge is more and more widely applied. Combined with the engineering practices, the article analyzes the design calculation of curved bridge, and studies the design construction, support type, inner force calculation and computer software application of curved bridge in order to improve the design level of cured bridge, which has a certain theoretical significance.

Keywords: curved bridge, design, calculation, computer software

Study on Influence of Aggregate Gradation on Concrete Property Liu Xuemin, Song Haitao (233)

Abstract: As an important part of concrete, aggregate gradation has a great influence on the workability, mechanical properties and durability of concrete. Based on the design theories of the different aggregate gradations, the aggregate gradation is design. The workability and mechanical properties of three different aggregate concretes are compared, analyzed and studied by the experiments so as to provide the theoretical basis for the design of concrete gradation.

Keywords: concrete, aggregate gradation, Talbol curve, workability, strength

Study on Pavement Performance of Large-void Noise-reduction Asphalt Mixture Zhu Tiantong (236)

Abstract: The article compares and analyzes the mechanical properties of the noise-reduction asphalt mixtures with the different void volumes, and tests the noise reduction effects. The result shows that the increment of void volume will reduce the pavement performance of asphalt mixture, but the noise reduction is not obvious when the void volume is increased from 20% to 23%. And compared with the low-void SMA pavement (void volume about 4%), the large void drainage noise-reduction pavement can efficiently reduce the vehicle driving noise. The maximum reduction is 6.4dB(A), which is sensitive to the environment.

Keywords: large void asphalt mixture, high-viscosity modified asphalt, dynamic stability, noise reduction

APPLICATION OF ACHIEVEMENTS

Frist Application of Preformed Pavement Compression Sealing Strip in Airport - - - Duan Shengli, Deng Keku (239)

Abstract: The quality of concrete pavement grouting material will directly influence the service life of concrete pavement. The article briefly introduces the advantages and disadvantages of silicone, sealant, polyurethane sealant, polysulfide sealant filling materials, and set forth the advantages, construction technology and application status in practical works of preformed pavement compression sealing strip in detail.

Keywords: airport concrete pavement, seam, preformed pavement compression sealing strip, adhesive lubricant, construction technology

THE RELATIVE SPECIALITIES

Elementary Discussion of Landscape Resource Integration in Construction of Expressway and New Mountainous City Duan Yuanyu, Ding Saihua, Han Bin (242)

Abstract: With the city extension, the construction of new city area will gradually urbanize the expressways to make it the passage of city. In the construction of new mountainous city, a large number of excavated fields are changed to the terrain at both sides of highway. The landscape surrounding the original highway is damaged or has not satisfied the city requirement. The noise and dust caused by the highway traffic will pollute the city environment. It is very important and urgent to integrate the boundary landscape between highway and city. Aiming at the landscape damage in the development process of Nan City of Lishui, the article discusses two integrations of boundary landscape and bridge culvert node. Based on the idea of "ecological traffic", the article puts forward the rationalization proposal of landscape resource integration, and sums up several basic landscape integration principles. The relative experience can be referenced for the similar projects.

Keywords: expressway, construction of new city, landscape resource integration, ecological traffic

Study on Comprehensive Management Planning Strategy of Dali Cang Mountain Eighteen Rivers and Surrounding Environment Wang Zhenyu, Chen Lu, Cui Songyan (246)

Abstract: The water source of Erhai Lake, as the mother-lake of Dali, is mainly supplied from eighteen rivers of Cang Mountain. The quality of the surrounding natural environment will directly affect the whole water environment of Erhai Lake. The building level of cultural environment will directly affect the inheritance of history and culture around Erhai Lake. Through the study and analysis of the present environment of those rivers, and according to the practical condition, and aiming at the comprehensive management of Cang Mountain eighteen rivers and the surrounding environment, the scientific and reasonable planning strategy is proposed to promote the eco-environment improvement of Cang Mountain and Erhai Lake, and to build the eco-city with beautiful water and mountain, the wonderful city of everyone nostalgia, and the cultural city of history and culture context from the root cause.

Keywords: environment management, natural environment, cultural environment, Dali City

Elementary Discussion on Reconstruction of Municipal Pipelines in Shanghai Metro Stations Wang Jian (252)

Abstract: The urban metro of China is entering a rapid development period. The underground municipal pipelines bring the great difficulties to the construction of metro stations. This article sums up the basic idea of municipal pipeline reconstruction planning by an example of metro stations construction in Shanghai, and proposes the special measures from the aspects of saving the engineering investment, shortening the construction period and fully utilizing the undergrounding land resource.

Keywords: rail transit, metro traffic, station, municipal pipeline, underground land resource

Elementary Discussion on Planting Technology of Street Tree and Tree Array in Huaxiang Greenbelt Zhang Qingying (255)

Abstract: Huaxiang Greenbelt is one of four great greenbelts in Hongqiao Business Area. The main type of construction is the street tree and tree array within the greenbelt. Based on the practical condition of greenbelt, the main selected types of street tree are camphor, mexico cypress, soapnut, oriental fir and Guang magnolia. The article discusses the grounding leveling, of this greenbelt before planning, planning technology of street tree, and the detailed implementation process, which can be referred for the similar projects.

Keywords: Huaxiang Greenbelt, street tree, tree array, ground leveling, planting technology, transplanting technology

Application of Cement Mixing Pile Reinforcement in Control of Adjacent Pier Displacement Chen Weijing, Li Zhanhuai (260)

Abstract: Aiming at the complex surrounding environment of a foundation pit project, the excavation has a certain risk because of more close to the present bridge pier. The treatment method of cement mixing pile reinforcement is used between the support pile of foundation pit and the adjacent bridge pier. According to the different reinforcement widths of cement mixing pile, the different displacements of pier are calculated, the suitable reinforcing width is selected, and the limited space between support pile and bridge pier is reasonably used so as to efficiently reduce the excavation risk of foundation pit.

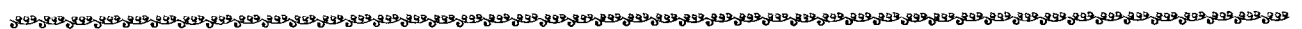
Keywords: support of foundation pit, reinforcement of cement mixing pile, displacement of bridge pier

Abstract: There are full of pipelines around the project facing the heavy load lane with the complex geological condition. The excavated soil layers are mainly weak soil layers. Based on the monitoring condition of the whole pit construction process, the article sums up and analyzes the monitoring result of the typical settlement and the displacement of deep soil. The article analyzes the influence of various factors on the surrounding environment by stages, and proposes the countermeasures to control and decrease the influence on the surrounding environment.

Keywords: foundation pit, monitoring analysis, environment influence

Abstract: With the advancement of society and the quickening of urbanization process, the people's living standards are continuously improved. The planted roof has the positive effect for enlarging the urban greening area, beautifying the city and improving the urban environment quality. The article introduces three planting types of planted roof in detail and discusses the design issues for the planted roof.

Keywords: planted roof. Waterproof layer, planting soil, structure, design method



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由公司独立完成的典型桥梁顶升工程包括：同三国道（A30）跨上海横潦泾特大桥梁顶升工程、成都二环西路羊西立交清水河立交整体调坡顶升工程、杭申线沪杭高速公路桥梁顶升工程等。桥梁顶升规模和难度最大的是A30跨横潦泾特大桥梁顶升工程。该桥全长779 m，主桥为85 m+125 m+85 m=295 m的三跨连续梁，整体顶升高度1.58 m，全桥顶升重量48 000 t，是国内迄今为止规模及难度最大的顶升项目，并创造了吨位最大和跨径最大桥梁整体顶升工程两项世界纪录。

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