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——《城市道桥与防洪》

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CONTENTS

ROADS & COMMUNICATION

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

FLOOD CONTROL & DRAINAGE

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

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

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

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

MANAGEMENT & CONSTRUCITON

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

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

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

Abstract: Taking an under-construction three-span continuous bridge as an example, the simulation analysis of short-team 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

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

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

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

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.

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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