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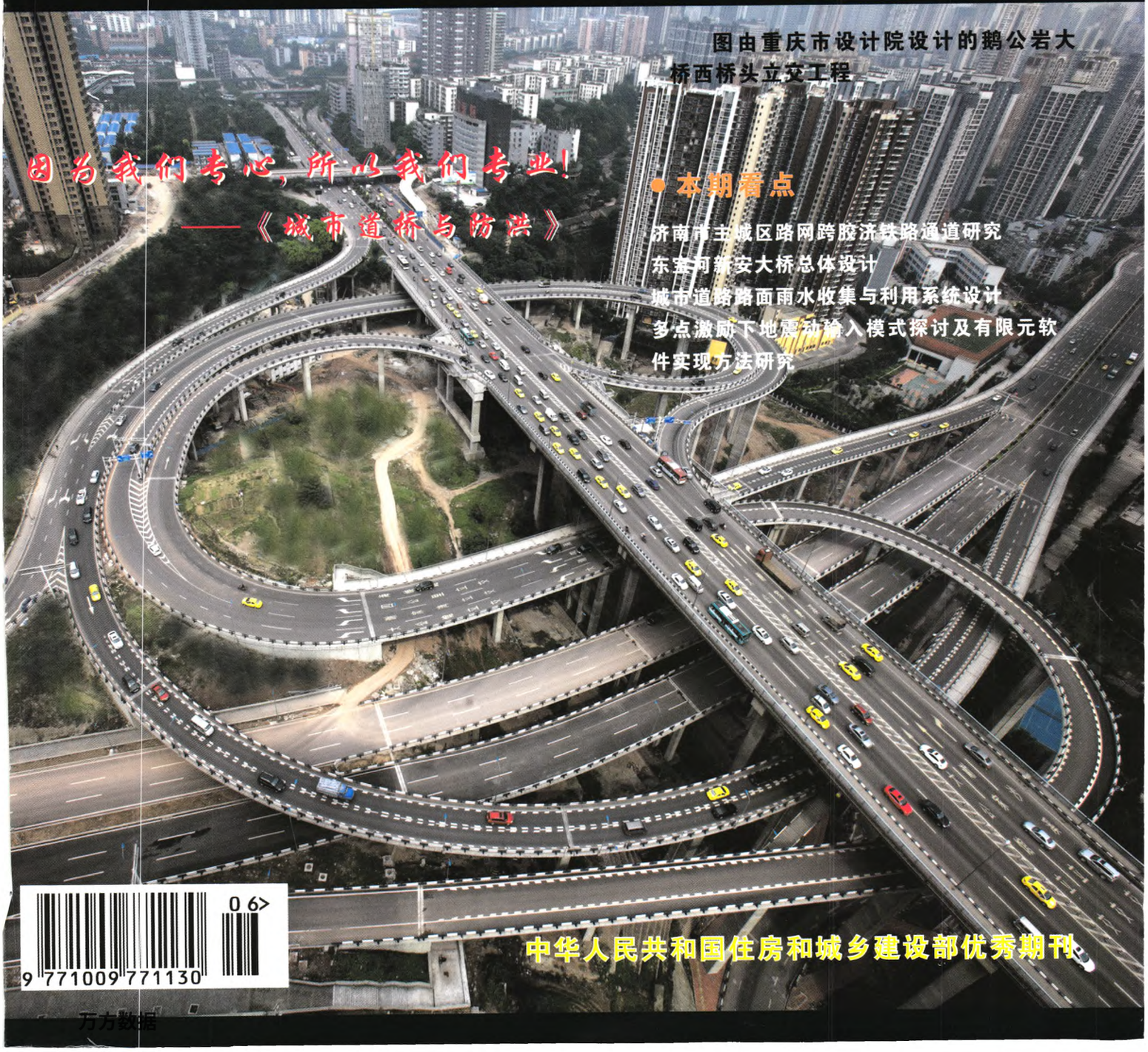

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因为我们专心，所以我们专业！
——《城市道桥与防洪》

● 本期看点

济南市主城区路网跨腔济铁路通道研究
东营河新安大桥总体设计
城市道路路面雨水收集与利用系统设计
多点激励下地震动输入模式探讨及有限元软件实现方法研究

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CONTENTS

ROADS & COMMUNICATION

Abstract: From the study on the service level ability of road system crossing Jiaoji Railway now, the article makes a count on the present situation of crossing road in the main city area, quantitatively analyzes the service level of the present road network, and evaluates it. According to the planned population development trend, the article qualitatively analyzes the demand of passage crossing railway, and puts forward the improvement proposals for the passage crossing railway based on the road network.

Keywords: road network of main city area, crossing, Jiaoji Railway, Jinan Chity

Abstract: The article briefly introduces the master design of Tianjin Binhai New Area Qingfang Avenue Project, and sums up the key technical issues of this project in detail. The relative experience can be referred for the similar projects.

Keywords: widening reconstruction project, master design, treatment of key technical issues, different settlement of new and old roadbeds, foam light soil, Tianjin Binhai New Area

Abstract: This paper analyzes the utilization of old roads, the design of plane, profile and cross section of road, and the design of entrance and exit between master road and relief road aiming at some problems existing in the design of reconstructing Guihuang Highway into an urban expressway, which can be referred for the design of reconstructing the mountain highway into urban expressway.

Keywords: urban expressway, the plane, profile and cross section of road, design, entrance and exit

Abstract: With the continuous development of urban space, the expressway connecting two urban areas within a city has become the influence factor to restrict the rapid city fusion and the land development utilization. Therefore, it is necessary to reconstruct the expressway into the urban road. Taking Tianshui City Qingmai Expressway as an example, the article analyzes the reconstruction reasons and the function position after its reconstruction, and studies the master reconstruction design from six aspects of road, node, bridge culvert, drainage, traffic engineering and greening.

Keywords: expressway, municipal, reconstruction scheme, master design

Abstract: Wanzhou Tiancheng Connecting Road is a typical mountain city reconstruction project. Its terrain along the road is complex with the different elevations, more buildings hard to be relocated at both sides, and more ground and underground structures with many factors hard to collect the information and to control. According to the above conditions, the design focuses and the difficulties are comprehensively considered in the design in order to handle the connection and the traffic conversion of the newly built roads and the old roads, the relationship of the newly built rods and the surrounding buildings at both sides, and the unified coordinating relationship of the newly built roads and the land development construction. The article sums up and analyzes the problems in the design and construction of mountain city reconstruction project, and puts forward the design idea and the countermeasures.
Keywords: mountain city road, reconstruction project, design idea

Abstract: The rapid reconstruction of Pudong Section in Inner Ring Line of Shanghai advances Zhangjiang Interchange to the hub interchange. The article introduces the traffic organization scheme of this interchange after reconstruction, and focuses introduction on the design of traffic sign and marking guide system for the interchange, which can be referred for the design of traffic organization for the similar projects.
Keywords: reconstruction of interchange. Traffic organization, guide system

Abstract: The urban traffic is a great system and the parking lot is an organically composed component in this great system if urban traffic. The static traffic and the dynamic traffic are composed into a complete traffic system. The bad static traffic will seriously affect the dynamic traffic. The emergence of a large number of private cars makes the "parking difficulty" of urban central area more severe. On the one hand the mutual interference of the static and dynamic traffics will cause the4 reduction of road traffic capacity, and on the other hand the exhaust gas from the long-term low-speed driving cars will bring the serious pollution to the urban environment. As for the important urban infrastructure of parking lot and based on analyzing the parking status of the central area in Jinan City, the article comprehensively analyzes the influence factors on the planning layout of public parking lot, and according to the reconstruction of the central area of Jinan City, puts forward the layout ɜist suitable for the parking lot of central area and the planning management measures of public parking lot land in the city development.
Keywords: public parking lot, planning layout of parking lot in central area, reconstruction of urban central area, parking scale

Abstract: The chemical industrial zone is greatly significant for the development of city, but is more different from the city areas because of its closure, higher security requirement, no daily leisure travel, no permanent resident population and etc., and there is still no standard to guide the chemical industrial zone to compile the comprehensive traffic planning. Aiming at the characters of the zone, the article puts forward the characteristics and matters for attention in the compilation of the comprehensive traffic planning of the chemical industrial zone, and demonstrates the case of Caofeidian Chemical Industrial Zone.
Keywords: chemical industrial zone, comprehensive traffic planning, Caofeidian Chemical Industrial Zone

Abstract: With the development of society, the function of urban river embankment is not only for the flood control and disaster mitigation, but also integrates the flood control, ecology and landscape in order to satisfy

Abstract: The slab staggering is a common fault of airport cement concrete pavement. This fault will impact the comfortableness of aircraft, and even pose a security risk for the aircraft flight if seriously. A large range of precision uplifting pavement slab is firstly grouted for an airport in Shanghai of China in order to eliminate the slab staggering of pavement. The engineering is involved to the precision uplifting control and no-stop construction security control, which have the great engineering difficulties. The article analyzes the key technical parameter determination method in the grouting scheme of this project, derivates the minimum grouting pressure calculation formula, introduces the calculation method of fluid diffusion radius, selects the grouting depth and control index, and draws up the monitoring scheme. With the help of the finite element software and by the numerical simulation, the analysis shows that pavement stress state during slab uplift is safe and controllable. The research findings of this project can offer reference data for the similar projects of airport and highway industry in China.
Keywords: airport, cement concrete pavement, slab staggering, grouting, slab uplift

Abstract: The article introduces the local hot recycling pavement fault treatment of Yingbin Avenue in Putian City, analyzes the fault status of old pavement, especially puts forward the pre-treatment contents, and focuses setting-forth on the experimental analysis, construction technology and quality control of integrated local hot recycling pavement. The results can be referred for the similar projects.
Keywords: Putian City, Yingbin Avenue, pre-treatment, integrated hot recycling, experimental analysis, construction technology, quality control

Abstract: The article introduces the common faults in the current municipal road excavation and repair projects, analyzes the fault causes, and puts forward the countermeasures for the current municipal road excavation and repair projects in order to improve the excavation and repair engineering level of municipal roads.
Keywords: municipal road, excavation and repair engineering, fault, countermeasures

Abstract: The reinforcing design of old cement road is different from the design of new pavement. Its design aim is to satisfy the traffic demand within a certain time. Therefore, the suitable design reference period should be determined according to the road grade, traffic flow, reconstruction and extension planning, and experience in the reinforcing design of old road. Taking Puxing Highway (Outer Ring Line ~ Area Boundary) Reconstruction Project as an example, the article sets forth the design process and method of cement pavement overlaying asphalt surface, which can be referred for the similar projects.
Keywords: old cement concrete pavement, fault, treatment measures

BRIDGES & STRUCTURES

Abstract: The article introduces the master design of Dongbao River Xinan Bridge Project. This bridge is an intercity crossing-river urban bridge connecting Shenzhen City Shajing Town Xinhe Avenue. Its total length is about 1.45 km, in which the total length of bridge (156-m shipping span) is about 1.08 km and is about 74.5% of the total line length. The road networks at the both sides of Dongbao River will be more perfected after the completion of bridge.
Keywords: Dongbao Xinan Bridge, master design, intercity crossing-river urban bridge, selection of bridge type

Abstract: The article compares, selects and proves the technologies and economies in the aspects of the main bridge spans, the main bridge types and the main beam types, and finally comprehensively determines the scheme of the main bridge, which can be referred for the comparison and selection of the other large bridge schemes.

Keywords: scheme of main bridge, span, bridge type, beam type, technology and economy, comparison and selection

Abstract: The Huangshui River Bridge on Wenhui Road in Xining City is a double-pylon 5-span (24+65+158+65+24)-m continuous concrete self-anchored suspension bridge. The article summarizes the design and calculation of this bridge. The semi-floating system is used for this bridge with the longitudinal dampers to control the displacement at the end of the girder. The single-box three-cell concrete section is used for the main girder. The height of the girder is 2.2 m. The bridge pylon is a concrete portal frame structure. The cross beam at the top of the pylons is a rectangular hollow section in which the pre-stressing steel strands are used. The separated base slab is used at the lower of pylon pier. Each base slab is supported by 6 bored cast-in-place piles with 2.2-m diameter. The main cables are respectively made up of ϕ5.25mm galvanized high strength parallel steel wires. The suspension cables are of ϕ7.0mm galvanized high strength parallel steel wires. The results of the calculation and analysis indicate that all checking calculations of this bridge can satisfy the relevant requirements in the codes.

Keywords: self-anchored suspension bridge, concrete box girder, main concrete pylon, main cable, damper, bridge design

Abstract: The article introduces the new engineering scheme design of Ningbo Xinjiang Bridge, and analyses advantages and disadvantages of the different schemes from two aspects of "landscape function" and "traffic function". Its design idea can be referred for the similar projects in the future.

Keywords: urban road, selection of bridge location, scheme design, comparative analysis, landscape function, traffic function

Abstract: Based on the natural condition of Mulan River with deep water and wide surface and the special geographical condition of large-sized ships hard to drive into lake, and according to the landscape requirement of Mulan Lake Scenic Spot, the (35+2 × 60+35)-m pre-stressed concrete V-type rigid framework is used for the main bridge of Mulan Lake Bridge. The article focuses introduction on the scheme conceptions of this bridge and the characteristics of four bridge schemes, and sets forth the construction method of the recommended scheme.

Keywords: scheme conception, bridge characteristic, V-type rigid framework, structural design, construction scheme

Abstract: Hangzhou Kangqiao Road Canal Bridge is a main span 110m of three-span double-pylon double-plane low-pylon cable-stayed bridge. The article focuses introduction on the main design parameters and construction characteristics of its structure, and the spatial stress analysis, which can be referred for the design of the similar projects.

Keywords: low-pylon cable-stayed bridge, main concrete beam, concretion of pylon and beam, design

Abstract: The composite girder is a structure of steel girder and concrete girder combined by connector, bearing plate, pre-stressed bar or bolt at the longitudinal direction of girder. In recent years, the composite girder is widely used. The study on the stress character of its combination is especially important. According to the structural design of practical cases, the article sums up some rules able to be referred for the future designs.

Keywords: composite girder, transition section, shear key, stress state

Abstract: The article introduces the test of deformation performances of steel reinforcement and concrete after the partial opening of concrete component. In order to accurately test the strain in the tensile zone of concrete component during the static load test of bridge, it is usually required to dig out the partial concrete so as to stick the strain piece at the surface of steel reinforcement. In order to test and verify whether or not accurate is the strain of component in the tensile zone tested by this method, it is required to test the steel reinforcement strain piece and the concrete strain piece stuck at the lower border of precast pre-stressed concrete beam, to compare the strain between the both in same test condition, and at the same time according to the calculation results of the finite element model, to judge the influence of digging out the partial concrete on the strain of steel reinforcement.

Keywords: dig out of partial concrete, deformation of steel reinforcement, model test

Abstract: Taking a 100-meter continuous rigid frame bridge as the engineering background, the article calculates, compares and sums up the influences of the variables on the counter force of side support, the inner force of main girder and the inner force of main pier based on the variables of the main span number, the side span ratio and the plane alignment, which can be referred for the similar projects.

Keywords: continuous rigid frame, main span number, side span ratio, plane alignment

Abstract: The stiffened framework construction method is commonly used in the long-span concrete arch bridge in recent years. According to a newly built crossing-river bridge in Fujian, the article briefly introduces the layout and construction of the stiffened framework, and discusses three simulation methods of the stiffened framework commonly used in the calculation of construction stage. The calculation and comparison results show that the beam - slab composite model is sufficiently accurate and dependable.

Keywords: concrete arch bridge, stiffened framework, simulation mode, beam - slab composite model, beam - entity composite model

Abstract: China is a country where the earthquakes happen frequently. The earthquakes of Tangshan, Wenchuan, Yushu have caused the serious loss to the life and property of the people. The destruction of urban bridge structure caused by the earthquakes leads to the direct loss, and also cuts off the rescue lifeline, which results in the rescue teams and the rescue goods hard to arrive in the disaster areas in time and seriously affects the rescue work after disaster. The article further discusses the seismic performance evaluation method of modern urban bridge and the security countermeasures of bridge seismic design, which can be referred for the construction of the similar projects.

Keywords: modern bridge, seismic performance evaluation, security countermeasures

Abstract: The article introduces a method for the security evaluation of steel reinforced concrete bridge. The reliability of bridge is calculated and analyzed according to the special character of steel reinforced concrete bridge during the security evaluation of the existing bridges. The article considers the concrete carbonization and the structural resistance degradation caused by steel bar corrosion in the use process of steel reinforced concrete bridge, and establishes the resistance degradation model of structure. Based on the difference of evaluation base period, the time-dependent load effect model is established. Finally, the reliability index of structure is calculated by JC method so as to evaluate the structure reliability of the existing bridges.

Keywords: steel reinforced concrete, reliability, concrete carbonization, steel bar corrosion, resistance degradation model, JC method

Abstract: The cantilever pouring method is a construction method commonly used for a long-span pre-stressed continuous beam bridge. The form traveler is widely used for the cantilever pouring construction. The Bailey truss form traveler is widely used because of its characteristics of strong adaptive faculty, convenient use safety, lower construction cost and etc. According to the cantilever construction of Shanghai Zhenping Road Bridge crossing Suzhou River, the article studies the design and application of Bailey truss form traveler, and introduces its application, which can be referred for the construction of the similar projects.

Keywords: cantilever construction, Bailey truss, form traveler, design, application

Abstract: Combined with the crack problem of Naner Bridge in Shilong Town of Dongwan, the article calculates the shear lag effect, transverse bending effect, distortion effect, vertical pre-stressing loss and temperature of box girder so as to qualitatively analyze the crack causes of Naner Bridge.

Keywords: crack, shear lag, transverse bending, distortion, vertical pre-stressing loss

FLOOD CONTROL & DRAINAGE

Abstract: With the further acceleration of urbanization, the contradiction of urban water shortage is also further deepened, and the environmental and ecological problems are also synchronously expanded. In order to solve the contradictions among water shortage, environment, ecology and etc., the collection and utilization of rainwater are becoming more and more important, the development and application of urban rainwater utilization technology also emerge as the times require. The urban road pavement rainwater collection and utilization system introduced in the article is a kind of low cost, convenient and fast effect of urban road pavement rainwater collection and utilization system. By adjusting the cross section layout of road and adding the rainwater collection facilities, the rainwater of road pavement firstly flows into the rainwater inlet of road and then flows into the underground blind ditch network to achieve three functions of rainwater filtration, greening irrigation and greening water storage.

Keywords: urban road pavement rainwater collection and utilization, break-stone blind ditch, water grate, catch basin

Abstract: Urban waterlog can not only cause traffic jams, but also cause heavy loss to people's lives and property. According to the investigation and analysis of the present situation and the main problems in the

MANAGEMENT & CONSTRUCITON

Abstract: After service and operation for morn than twenty years, the steel-concrete composite bridges built in early stage have step into the first stage of life cycle in China. Due to deterioration of structural materials and component performances, corrosion of external environment, overload operation and the other unconventional factors, the bridge diseases such as bridge deck damage, steel girder corrosion and etc. begin to appear. This paper introduces the study on maintenance and reinforcement measures, and reinforcement quality inspection and evaluation for this kind of bridges in this stage. The paper firstly studies the common diseases and the corresponding maintenance reinforcement measures for this kind of bridges, sums up five measures basically covered maintenance and reinforcement methods for this kind of bridges in current stage, that is, anticorrosion and recoating of steel girder, replacement of concrete bridge deck, replacement and treatment of component joints for steel girder, dimensional checks and correction of component and bar, and crack repairing of steel girder, then establishes the corresponding index systems of quality control, inspection and evaluation for various treatment measures, and gives the evaluation standards and inspection methods for the inspection indexes.

Keywords: steel-concrete composite bridges, bridge diseases, maintenance and reinforcement, inspection system, inspection index

Abstract: Aiming at the influence of open caisson construction on its surrounding environment, the article puts forward the concept of environmental benefits and takes the reasonable preventive measures to make the project achieve the best economic and social benefits. The results can be referred for the design and construction of the similar projects.

Keywords: open caisson, settlement, monitoring, foot blade, environmental effects, preventive measures

Abstract: The foundation pit engineering is mainly including the design and construction of pit supporting system, and its soil excavation, and is a quite strong comprehensively systematical project. It is required that the geotechnical engineering and structural engineering technical members should be closely cooperated. The supporting system of foundation pit is a temporary structure, and is not wanted after the completion of underground engineering construction. Its safety stock is smaller and its risk is greater because of the pit supporting system as the temporary structure. The engineering construction process of foundation pit must be monitored with the emergency measures. The timely rescue is needed once a danger appears in the construction. According to the practical engineering cases, the article introduces the deep foundation pit excavation supporting technology used in this project. The deep cement mixing pile is forced to mix the soft soil or sand with the hardening agent of cement at the subgrade by deep mixing mechanism to make the soft subgrade hardened in order to improvement the subgrade strength. This method is suitable for the deep cement mixing pile to treat the soft subgrade of silt, sand soil, silt soil, turf soil and powder soil. Its effect is obvious with pile and wall after treatment.

Keywords: deep foundation pit supporting, cement mixing pile, cast-in-situ pile

Abstract: The study of current municipal road rainwater drainage engineering construction technology is an important task. According to the engineering practices, the article analyzes the design of municipal road rainwater drainage system, the preparation work before construction and the construction technical gist, which can be referred for the similar projects.

Abstract: EPC general contract project management mode is the mode of the general engineering contract singed by the owner and the general contractor, i.e. the owner contracts the construction project to the general contracting unit, the general contracting unit is responsible for the design, purchase and construction of the whole construction project, and has the full responsibility for the quality, security, project period, construction cost and etc. of the contracted construction project, and finally the general contracting unit can provide a construction project conforming to the contract stipulation, satisfying the service function, possessing the service conditions and qualifying the completion, test and acceptance. In recent years, this mode has been more and more used in the building market in China because of this mode able to bring the owner the excellently comprehensive service functions. In the practical operation of project, the profit making abilities of project are often different because of the different project management capacities, fund management control capacities and cost control capacities of the project management members. How to play the function of financial personnel, to efficiently carry out the financial risk management and to improve the profit making ability of project has become an important aspect of EPC project management. The article analyzes the risks possibly existing in the financial management of project according to the practical engineering experience, and discusses the thought and method of financial risk management under the EPC general contracting mode, which can be refereed for the other financial personnel.

Keywords: EPC general contract, financial management, risk

Abstract: To strengthen the quality management of municipal road engineering project is not only a necessary means to set up the government image, is but also related to the trip convenience and security of the common people. The article analyzes the impact factors in the quality management of municipal road engineering project, sums up the problems existing in this current work, and discusses the measures to strengthen the municipal road engineering projects, which can be referred for the similar projects.

Keywords: municipal road, engineering project, quality management

Abstract: The lease of mechanical equipment is adapt to the demand of market economic development and is the effective way to improve the use efficiency and the economic efficiency. How to do the leasing management of mechanical equipment well, the article sets forth the bold innovation to establish the leasing companies, the scientific management of leasing target, cost accounting and mechanical equipment, and the establishment of information network to expand the leasing way, which can be referred for the similar industries.

Keywords: mechanical equipment, leasing model, economic objectives, scientific management

Abstract: The article introduces how to apply the overall planning and the scientific arrangement to reduce the risk, to reduce the investment and to shorten the construction period in the prophase pipeline removal in order to make various works smoothly implemented in the simultaneous implementation of Metro Line 7 Reconstruction Project, Humin Elevated Road Project and Guilin Road Project located at intersection of Guilin Road and Humin Road in the construction of Shanghai Railway Station (South) Project. The application of overall planning in the projects provides some reference for the implementation of the similar projects.

Keywords: engineering pipeline implementation, overall planning and reasonable arrangement, overall planning of engineering, application

Abstract: *The National Engineering Survey and Design Enterprise Statistics Compilation* is the summary of the top 100 survey and design enterprises and industries with the annual operation revenue issued by the Ministry of Construction. Based on 2007~2011 Compilation, the article analyzes the development of the survey and design enterprises in recent five years in order to better understand the development situation of the industries and enterprises.
Keywords: survey and design, top 100 enterprises, achievement, operation revenue, analysis and evaluation

STUDY ON SCIENCE & TECHNOLOGY

Abstract: Roundabouts always become a bottleneck of the urban road traffic. This article discusses the capacity calculation method of roundabouts without signal control, application conditions, optimization methods and improvement strategies in detail. According to the situations of the roundabout, the article analyzes the traffic organization design of roundabout, and confirms the phase setup and the main traffic parameters of signal lamp. The result indicates that the improvement is feasible for roundabouts.
Keywords: roundabout, traffic capacity, intersection evaluation, traffic improvement

Abstract: For analyzing the seismic response of long-span structure, it is required to consider the influence of multi-support non-uniform excitation. Based on the dynamic equilibrium equation, it is further to derive the seismic response analysis of displacement input model and the acceleration input model under the multi-support excitation. The article puts forward three practical methods - large mass method, large stiffness method and direct displacement method of suitable for the multi-support seismic input model by the currently common finite element software, sets forth the calculation principles of various methods in detail, and analyzes the multi-support excitation seismic response by the different methods based on SAP2000 software platform and according to the engineering background of a suspension bridge with the main 850-m span, and finally briefly analyzes the response law of long-span suspension bridge under the multi-support seismic response.
Keywords: multi-support excitation, seismic input model, large mass method, large stiffness method, absolute displacement input method

Abstract: With the increment of traffic flow and the reduction of self-bearing capacity of structure, more and more stone arch bridges can not satisfy the service requirements. As the important cultural heritage of China, the protection of stone arch bridge is particularly important. Therefore, the reconstruction and copying restoration of stone arch bridge are more and more implemented. The new structural system is often used in the reconstruction and copying of stone arch bridge. In the new structural system, the other components and the stone arch are commonly coordinated to stress and together to bear the external load. The reconstructed structure is the stone - concrete composite arch bridge. There is a little study on the stress mechanism of composite arch bridge now. According to the reconstruction project of a stone arch bridge, the article studies the stress functions of composite arch bridge.
Keywords: composite arch bridge, mechanical properties, parameter analysis

Abstract: The footbridge is suspended between two main bridges. This design method is firstly used in China. The rigidity of suspended structure is smaller. The vibration caused by the traffic load of main bridge will directly impact the comfortable feeling and security feeling of the pedestrians. Therefore, it is required to specially study the comfortable issue of this footbridge. Using the coupling vibration of vehicle and bridge, the article analyzes and studies the vibrating response of footbridge caused by the vehicles passing bridge according to a large number of numerical simulations. The result sows that the comfort of footbridge basically satisfies the requirements when the vehicle number (heavy vehicle) is less than 10 vehicles / side under the good condition of pavement. The pavement smoothness greatly impacts the comfort, but the driving speed does not obviously impact the comfort of footbridge.

Keywords: suspended footbridge, coupling vibration of vehicle and bridge, comfort, vibration response, pavement smoothness, driving speed

Abstract: Aiming at the fore-bay flow filed of large pumping station with multi-restriction, an incompressible turbulent fluid velocity field model and a multi-hydraulic model are established. The article calculates and analyzes the flow filed improvement of fore bay and suction tank with the additional diversion cone and diversion pier by the finite volume method. The calculation result of numerical simulation shows that the influent drift angle of pump below the inlet is generally less than 4° with the additional diversion cone, which is useful to improve the drift effect of influent pump. In accident conditions, the average flow deviation ratio of pump for unilateral suction tank is reduced from 26.89% to 13.26%, and the flow field near the suction pipe is smooth and uniform. Hydraulic model tests show that the splayed diversion pier scheme for the fore bay of pumping station can effectively eliminate a wide range of existing back-flow zone and oblique flow zone, and strengthen the role of diversion by adjusting the flow ratio of water distribution holes. The maximum water level drop between the water distribution channel and the end of fore bay is 0.020 m by diversion pier rectification scheme, which meet the design requirements of the hydraulic design.

Keywords: diversion, flow field, pumping station, hydraulic model, hydrodynamics

Abstract: On the basis of the volume method, the paper proposes the mixing ratio design method of BRA mixture according to the characteristics of BRA. This method is introduced into the mathematical model in the design, avoids the interference effect of BRA granule on the compound gradation, and improves the optimum asphalt content and VMA in BRA mixture. The testing results show that the volume method is quick and convenient, and the BRA mixture has the favorable volume parameters, which efficiently avoids the shortages of the traditional BRA mixture and has the excellent road performance.

Keywords: asphalt mixture, volume method, BRA, gradation, road performance

Abstract: In order to decide the relationship between the asphalt stabilized crushed stone base gradation composition and the high-temperature stabilization, the stone-on-stone contract (SSC) is used to evaluate the mutual contact compaction rate among the coarse aggregates. The article puts forward the detail relationship between SSC and dynamic stabilization according to a large of experiments, which can be referred for the mixing ratio design of asphalt stabilized crushed stone base.

Keywords: asphalt stabilized crushed stone, coarse aggregate, SSC, dynamic stabilization, high-temperature stabilization

THE RELATIVE SPECIALITIES

Abstract: The article discusses the application of high modulus asphalt concrete. The high modulus asphalt concrete can reduce the deformation of pavement structure, delay the rut causing, improve the fatigue properties of pavement and lengthen the service life of pavement. At present, HMAC has been well-known in the foreign countries, and there have been the relevant standards, but it is just started in China. It should be further to study HMAC in order to form the complete set of technology in line with the national conditions of China.

Keywords: road engineering, high modulus, asphalt concrete, asphalt pavement, application

Abstract: The foam light soil, as the soil roadbed of municipal road, is firstly used in Shanghai. The new anti-floating technology is not set forth in the current road construction standard. According to the road engineering case of Yangguang Road, the article sets forth the application of the anti-floating technology for the typhoon rainstorm events and the conventional road anti-floating technical preventive measures, and collects the practical construction experience so as to be referred for the construction of the similar projects.

Keywords: foam light soil, soil roadbed of road, anti-floating technology

Abstract: E-steel damping bearing integrates E-steel damping element and bearing together, and it is appropriate for isolation bearings of continuous girder bridge. This article gives the result that the selection of E-steel damping bearing can withstand severe earthquakes by the anti-earthquake analysis of the continuous girder bridge of the main bridge (41+58+58+58+41) m of No.1 Bridge Project in Tianshui Economic Development Area (Shetang Industrial Park) in 8-degree earthquake area, and under the action of severe earthquake, the bridge pier is not into the plastic block by itself, just E-steel damping element of E-steel damping bearing has plastic energy dissipation.

Keywords: E-steel damping bearing, continuous girder bridge, isolation bearings

THE RELATIVE SPECIALITIES

Abstract: The article introduces the technical scheme of the underground diameter line to cross Jingang Bridge from the two east and west banks from Tianjin (W) Station to Tianjin Station, and calculates, analyzes and compares the schemes by the numerical simulation means, which provides the technical support for the optimization of the engineering technical scheme.

Keywords: underground diameter line, shield method, comparison and selection of scheme, Tianjin

Abstract: This paper analyzes the impact of an undercut tunnel on the existing vehicle subway settlement and soil layer deformation. A practical project is modeled. The paper analyzes two construction steps of reducing the groundwater level and undercutting the electric power tunnel. The results show that the reduction of groundwater level will cause the greater settlements of vehicle lane and soil layer, but the undercutting process will result in a little impact on the settlement.

Keywords: undercut, underpass, settlement

Abstract: The article puts forward a semi-empirical and semi-theoretical calculation model considering the characteristics of DOT construction method to calculate the ground loss caused by DOT tunneling from the viewpoint of engineering practices. This mode uses peck method to calculate the surface settlement, and contrasts with the engineering measured data. The result shows that the relative error of the measured data and the model prediction can be controlled within the allowed limits of project.

Keywords: double-o-tunnel construction method, surface settlement, ground loss, prediction

Abstract: The soil loss rate is large relatively to the metro shield in the construction because of its large section and strong slurry permeability when the super-large-diameter slurry shield crosses the buildings and structures. The construction risk is huge when it crosses the flood control wall or wharf pile foundation in short distance, which will affect the use of flood control wall and wharf and cause the greater economical loss and the bad social impact in an unguarded moment. The article studies and sums up the construction of Shanghai Changjiang Road (W) Crossing-river Tunnel to cross the flood control wall and wharf pile foundation of Puxi in short distance, and puts forward the issues for attention in the short-distance crossing process and the detail solving measures, which can be referred for the similar construction.

Keywords: super-large diameter, shield, short distance, crossing, pile foundation, Shanghai

Abstract: The embedment depth of the supporting piles for deep foundation pit is an important parameter in the design and construction of the foundation pit, and is also an important parameter to affect the stability of the foundation pit. So properly to increase the embedment depth of the piles can not only improve the overall stability of the pit, but also reduce the displacement of the supporting piles. But excessive depth will be inevitably not economic. According to the practice of a station, the paper adjusts and optimizes the embedment depth of the supporting piles for deep foundation pit by using the software of Lizheng. The results show that the pit is safe and reliable so as to reduce the cost and saves the time, which can be referred for the similar projects.

Keywords: foundation pit, supporting pile, embedment depth, optimization

Abstract: The foundation pit of Shanghai Railway Station North Square is an overlarge area of deep foundation pit project adjacent to several metro lines under operation, and its surrounding environmental protection is very high required. Aiming at the characteristics of irregular shape of this pit, complicated geological condition and limited construction period, the foundation pit is constructed by zones, and every zone is used of the different supporting structural design schemes. The result of implementation shows that this design can guarantee the smooth implementation of foundation pit, and also ensure the security of the surrounding metro lines under operation, which can be also referred for the similar projects in the future.

Keywords: deep foundation pit, overlarge area, design, Shanghai

Abstract: Zhujiang Road Station in Nanchang Metro Line 1 is constructed by the enclosure of cast-in-site pile plus rotary jet grouting pile and the open excavation construction method. This station is located at the bad geology of Changbei Fenghuangzhou. The article introduces the scientific monitor of foundation pit to make the pit be constructed by the informatization and to guide the treatment of various dangers in order to guarantee the security of foundation pit.

Abstract: Taking the underground station decoration project of Rail Traffic Line 16 as an example, the article analyzes the interface of decoration engineering and various specialties, and according to the main engineering contents of decoration engineering, describes the construction interface relationship among the main materials and various system specialties in the decoration engineering, and puts forward the relative requirements of interface management, which can be referred for the underground station decoration engineering of rail traffic.

Keywords: rail traffic, underground station, decoration engineering

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