

Review of Concept and History of Financing and Evaluation of China Financing Performance in Iran Infrastructure Projects

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Abstract

Since the late '50s, attempts have been made to obtain foreign loans in Iran and until the '80s, limited financial resources were mobilized from other countries. In the '80s, as a result of costs incurred by political change and imposed war, foreign loans were more interesting so that at the end of that decade and the early '90s, this subject was considered as a national security strategy. Then from early 2000 and especially until 2010, using finance for infrastructure projects was selected as a strategy in response to internal and external conditions; so that over the past decade, most tenders issued by the government agencies for construction of projects were in the form of EPCF (Engineering, Procurement, Construction and Finance) and private contractors would have to seek for domestic and foreign financiers. Overall achievement of these companies in financing from domestic sources was insignificant due to reluctance of domestic banks and financial enterprises to invest in infrastructure projects. Borrowing from the National Development Fund by private sector also was not successful because of the special mechanism applied by that Fund. Since funding from foreign sources faced many problems as a result of increasing sanctions, only one solution remained; which was communicating with Chinese state companies because of the political relationship between the two countries and also because of accumulated assets in Chinese banks (in foreign currency) belonged to Iran due to sale of oil. Iran and China agreed in 2010 that about 65 percent of Iran's credits from China would be returned in form of goods and the remaining would be paid back in form of cash. But since the sanctions prevented transfer of money to the country, the parties came to the conclusion that this credit will be allocated as a finance support for Iran Infrastructure projects. Unlike conventional financing contract terms, China was interfering on how to spend financial resources. In late 2013 China refused to finance projects due to reaching credit limit; while mobilized resources were only the equivalent of the credits belonging to Iran and its situation was very unfair: Regarding 15 percent share of Iran and 85 percent of China in financing projects, and taking into account the financing costs and the condition of buying 60 percent of mobilized finance from Chinese products, only about one-third of finance amount was available for increasing employment in the country and two-thirds of the amount was used for growth in China productions and improving employment. Now after removing sanctions and with competition among countries for economic activity in Iran, and even competition between Chinese companies, the time has come to revise the past relations. Iran must benefit properly from its shareholders in the "Asian Infrastructure Investment Bank" and also from potentials of the newly established financial institution named "New Development Bank". Chinese government has recently raised the subject of reviving the Silk Road, which has the opportunity of using financial resources existed in a related Fund in the form of low interest loans and even grants for development of road, maritime, railway and aviation transportation infrastructures. Finally reconsidering financial relations with the Chinese government and establishing a focal point composed of public and private sectors for achieving optimal utilization of financial resources and win-win situation between the two countries should be adopted as the main strategy by policymakers.

Keywords: Financial Resources, Loan, Finance, China Finance

A Method for Economic Analysis and Assessment of Sustainable Construction

With Case Studies of Baran Tower and Atlas Plaza Projects

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Abstract

The construction industry is the world's third largest greenhouse gas-producing industry. This fact has given more attention to the issue of sustainable development and sustainable construction in recent years and contractors are inevitably forced to deliver projects in a sustainable manner. However, due to the inability or unwillingness of clients to finance projects, contractors are required to invest in projects; and these investments are generally significant. As a result, there is a need for economic analysis and assessment to decide about investing in a project. That is selection of projects which are profitable. So a method for economic analysis and assessment is required. A method which can give civil contractors companies the ability to choose from among several sustainable projects. The aim of this study is to provide a method for economic analysis and assessment of sustainable projects. With this method, sustainable projects that have opportunity to invest and make maximum profits are selected. A model based on integer planning regarding environmental costs is presented. The model receives costs and revenue of projects as inputs and the output is selection of projects with appropriate profitability and environmental impact. Next, a case study is reviewed and information of some projects is processed by the model. Using the model, optimization of profit, environmental impact and project selection is achieved. Also profit and environmental impact are calculated without using the model and are compared with results of the model to assess its performance. So this model gives company managers the ability of choosing the best combination from various projects in tender process. Using this model, results in a combination of the project which has maximum profit as well as cost of environmental impacts. In fact, application of this model leads to the selection of projects in which company profit is maximum and simultaneously environmental impact is minimum as possible.

Keywords: Sustainable Development, Construction Projects, Economic Analysis Model

Value Engineering of Structure Systems Used in Design, Procurement and Construction of Stadium Roof Structure; Case Study of Baghdad Sport City

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Abstract

Application of stable, harmonic and beautiful structures as the roof of world-class stadiums based on FIFA standards is a top priority as well as special structure systems that can meet these requirements. An overview of different types of structural systems used in stadium roof structures with consideration of generally cantilever form for this kind of structure shows that application of two-dimensional or three-dimensional trusses, space frame structural systems, lightweight tensile roof system or other hybrid systems can be considered according to their construction process. Studies on the mentioned systems and comparison of the cost, time, quality and construction technology in Iraq can demonstrate significant differences and have a great added value. So that only in the weight index of existing structures in the project, there is a possibility for a 60 to 70 percent reduction, which has can improve construction process and reduce costs as well as affecting the main structure of stadium drastically. In this paper, after assessment of these systems for class-A global stadiums, with the capacity of hosting Olympics games, a summary of results of value engineering on stadium roof structure is presented.

Keywords: Stadium Roof Structure, Truss, Space Frame Structure, Tensile Structure, Value Engineering

Linkage of Parking Facilities and Metro Stations for Creation of Urban Underground Areas Case Study of Jalal-Al-e-Ahmad Street

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Abstract

Application of large number of personal cars by citizens requires suitable places for parking. Lack of these places cause important difficulties and consequent problems. Regarding the complexity of the subject and increasing demand in cities, traditional solutions for construction of parking facilities are not sufficient anymore and therefore, new and innovative solutions should be considered in which all hardware and software facilities are mobilized for solving the problem. This study seeks for a proper solution of this problem in Metropolises with considering the concepts and analyzing domestic and foreign samples. A solution which can provide a green public transportation for citizens as well as compensating shortage of parking in cities. Thus, in a bilateral procedure, interaction of underground parking with metro stations is one of the results of this study. Then, this result is tested in District 6 of Tehran Municipality so that feasibility of underground parking in connection with metro station in Jalal-Al-e-Ahmad Street would be analyzed.

Keywords: Parking, Underground Area, Urban Traffic, Public Transportation, Metro

Review of Traffic and Transportation Studies of Large Sport Stadiums

A Case Study of Baghdad Sport City¹

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Abstract

Traffic analysis reflects the review of public, semi public and private transportation networks. In this article the traffic and transportation studies of Baghdad Sport City located on the outskirts of northwestern Baghdad is described. This study is presented in three parts. The first part describes the recognition of the existing situation, the second part reviews the analysis of the existing situation and the third part provides solutions and suggestions. In fact the situation shows that the network around the sport complex does not have enough capacity for massive evacuation of spectators at the time of important and national matches; which requires a solution to avoid disorder in traffic network around the stadium. The results of network simulation by Aimsun software shows that traffic indexes will greatly improve after implementation of corrective actions. In addition, some appropriate management strategies can be partially replaced by operational solutions to improve traffic conditions.

Keywords: Traffic Analysis, Traffic Index, Baghdad Sport City, Baghdad-Mosul Freeway

¹ Retrieved from final traffic report of Baghdad Sport City, Fajr-e-Tosea Consulting Engineers Co. and TTBP Consulting Engineers Co. (2014)

Review of Manufacturing and Assembly Considerations of Beam Launcher

Case study of Hajame - Sawa Railway in Iraq

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Abstract

Beam launcher is a construction equipment used for installing bridge precast beams with large dimensions and application of it leads to time and cost save. The maximum standard capacity of equipment is about 200 tons with horizontal launch speed of 5 m/min and lateral movement speed of 6.1 m/min. Boland Payeh Company as one of the leading companies in the field of bridge construction, is the contractor of under-construction project of Hajame - Sawa railway in Iraq; in which there are three bridges with a total length of 720 meters on the Al-Furat, Al-Suwer and Al-Atshan rivers. In order to install precast beams with a length of 40.5m, height of 3m and weight of about 160 tons, a steel-structure beam launcher with span of 41m is applied. The weight of this equipment is about 272 tons and has two cranes with a capacity of 100 tons and raising speed of 6 m/min. In this study, after introducing beam launcher components used in the project and their performance, considerations of manufacturing and assembly steps of steel parts are reviewed.

Keywords: Beam Launcher, Manufacturing and Assembly, Concrete Precast Beam, Construction Method