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LABORATORY INVESTIGATION ON RE-USING POLYETHYLENE (PLASTIC) BAG WASTE MATERIAL FOR SOIL REINFORCEMENT IN GEOTECHNICAL ENGINEERING

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ABSTRACT

This paper presents a laboratory investigation into the resultant increase in shear strength and bearing capacity of locally sourced sand due to random inclusion of strips of high density polyethylene material from plastic shopping bags. A series of direct shear tests and bench-scape plate loadingtests was undertaken on soil-plastic composites of two selected sandy soils: Klipheuwel and Cape Flats sands. Strips of shredded plastic material were used as reinforcement inclusions at concentrations of up to 0.3% by weight. The effect of varying dimensions of the strips was investigated by using strip lengths from 15 mm to 45 mm and strip widths from 6 mm to 18 mm. Soil strength parameters were obtained for composite specimen from which analyses were carried out to identify the extent of soil improvement.Laboratory results obtained favourably suggest that inclusion of this material in sandy soils would be effective for soil reinforcement in geotechnical engineering.

KEYWORDS

Plastic bags, Polyethylene, Re-use and Recycling, Soil reinforcement, Ground improvement, Soil strength

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STRATEGIC COST MANAGEMENT FOR CONSTRUCTION PROJECT SUCCESS: A SYSTEMATIC STUDY

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ABSTRACT

Large construction projects are inherently complex and dynamic. Many projects start with good ideas, huge investments and great efforts. However, most of them do not achieve much success. A major contribution to unsuccessful projects is the lack of understanding on scope, time, cost and quality. Projects as powerful strategic weapons when initiated create economic value and competitive advantage. The objective of the research is to explicitly declare the scope of the research to by considering only the scope, time, cost and quality as process success parameters and how specifically the cost element would influence the project success when all other elements or factors other than cost are represented in terms of cost factor along with the contract conditions as basic rules or constraints that drive the strategic cost based on applying the CRASP methodology concept. The concept of benchmarking would provide right meaning of project success when allowing to properly distributing the meaning of customer profitability to the project providers (project owner and contractors).

KEYWORDS

Cost Management, Strategic Cost Management, Project Cost Management, Project Management Benchmarking, Project Success.

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PRODUCTIVITY DEVELOPMENT IN THE CONSTRUCTION INDUSTRY BY INTERNATIONAL COMPARISON AND AT THE EXAMPLE OF HUMAN CAPITAL

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ABSTRACT

A downward trend on productivity growth rates has been observed since the 1970s of the twentieth century for construction sectors of western industrial countries. Despite conflicting evidence, numerous recent economic studies on growth research suggest that innovation and technology are significant drivers for productivity and growth. According to the OECD the lack or low level of employees' skills and qualifications might be in different ways a possible explanation for the observed slowdown of productivity growth. In this context, intrafirm behaviour has long been recognized as a potentially important driver for productivity. Results from surveys show that management practices have become more structured, in the sense of involving more data collection and analysis. Furthermore, a strong positive correlation between the measured management quality and firm performance can be observed. Studies suggest that there is a positive association between human skills and productivity.

KEYWORDS

Labour Productivity, Total Factor Productivity, Productivity Slowdown, Human Capital, Education, Management practices & quality, Shortage of workforce, Demographic change

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DERIVATION OF TOPOGRAPHIC MAP FROM ELEVATION DATA AVAILABLE IN GOOGLE EARTH

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ABSTRACT

Topographic maps are most common source of terrain and elevation information for a given region. With the advancement of technology, other source of terrain and elevation data are now available at public domain. In this study, elevation data points (1600 in number) for Bahal region of Bhiwani district of Haryana extracted from the Google earth and a digital elevation model (DEM) was prepared. In order to evaluate the accuracy of the DEM, reference points comprising mostly of point elevations collected using GARMIN GPS along with few bench marks available in survey of India (SOI) topographic maps of 1: 50000 scale were collected. The accuracy of the Google earth derived elevation data are reported using root mean square (RMSE), mean error (ME) and absoluter mean error (AME). All these accuracy statistics were computed using 200 bootstrapped iterations to overcome the problems due to lesser number of reference points and bias, if any, in the selection of reference points. The study provides a procedural improvement in the accuracy statistics calculation and the results shows that Google earth can be a potential source of terrain information for many civil engineering projects.

KEYWORDS

Digital elevation model, DEM, Google Earth, GPS, accuracy assessment, bootstrap method

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COMPARATIVE ANALYSIS OF STEEL TELECOMMUNICATION TOWER SUBJECTED TO SEISMIC & WIND LOADING

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ABSTRACT

Over the past 30 years, the growing demand for wireless and broadcast communication has spurred a dramatic increase in communication tower construction and maintenance. Failure of such structures is a major concern. In this paper a comparative analysis is being carried out for different heights of towers using different bracing patterns for Wind zones I to VI and Earthquake zones II to V of India. Gust factor method is used for wind load analysis, modal analysis and response spectrum analysis are used for earthquake loading. The results of displacement at the top of the towers and stresses in the bottom leg of the towers are compared.

KEYWORDS

Steel communication towers; Bracings; Wind analysis; Gust factor method; Modal analysis; Response spectrum analysis

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REPAIR, REHABILITATION &RETROFITTING OF RCC FOR SUSTAINABLE DEVELOPMENT WITH CASE STUDIES

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ABSTRACT

The construction material mainly reinforced concrete is being used extensively for various types of construction projects. However, the deterioration of Reinforced Concrete structures is recognized as a major problem worldwide. Apart from requiring regular maintenance, many structures require extensive Repair, Rehabilitation &Retrofitting. Over a period of time, as these structures become older, we find in them certain degradation or deterioration with resultant distress manifested in the form of cracking, splitting, delaminating, corrosion etc. Such deteriorated structures can be rehabilitated and retrofitted by using various types of admixtures & modern repair materials. The paper brings out the present state of concrete structures & the major areas where improvement is needed during its service life stage for sustainable development & also the method of carrying out Repair, Rehabilitation &Retrofitting.This has been brought in details in the paper along with Case studies, where the Author of the paper was directly involved in planning and execution of the jobs.

KEYWORDS

Rehabilitation, Retrofitting, Sustainable Development, Polymers, Admixtures

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SOLVENT EXTRACTION AND ADSORPTION TECHNIQUE FOR THE TREATMENT OF PESTICIDE EFFLUENT

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ABSTRACT

Solvent extraction and adsorption techniques are effective methods for the removal of pesticides like DDT and Dicofol from the waste water. Study was conducted using 3 different solvents- Ethylene dichloride (EDC), Monochlorobenzene (MCB) and Hexane to optimise parameters like effluent to solvent ratio, agitation speed, agitation time and settling time to attain maximum removal of pesticides by solvent extraction process. MCB was found to be the best solvent when compared to other two solvents using the optimised parameters. The activated carbon (8 x30) is an effective adsorbent for the removal of DDT and Dicofol. The material have good adsorptive capacity and follows Freundlich model. The optimum adsorbent dose was observed as 2 gm/100ml and optimum contact time needed to reach the equilibrium was observed as 3 hr. Column study was conducted with the synthetic effluent after solvent extraction. Combination of solvent extraction process and adsorption technique was very effective for the removal of Dicofol and DDT with an efficiency of 99 % and 97 % respectively.

KEYWORDS

DDT, Dicofol, Solvent extraction, Pesticide Effluent, Activated Carbon

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THE IMPACT OF WAITING TIME ON PEDESTRIAN VIOLATIONS AT SIGNALIZED INTERSECTIONS

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ABSTRACT

The phenomenon that pedestrian violates traffic signals at intersections and crosses with danger is universal. This study aims to find out the influence of the waiting time of pedestrians at an intersection and the three main factors of pedestrian violations. In this study, 13 intersections and 1075 violations sample were collected in Suzhou China, which had different maximum waiting times. The validation would use the complementary video data. There are several factors, which have great influence on the proportion of pedestrian violations, such as the age, sex, arrive time, red phase, conflicting traffic volume and the length of volume crosswalks. Additionally, The significance of pedestrian maximum waiting time was highlighted in the end. For the purpose of reducing dangerous pedestrian behaviors at signalized intersections, minimizing waiting times is supposed to be one proper way.

KEYWORDS

Pedestrians ;Violations; Signalized intersections; Crossing Behaviour;

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WARM MIX ASPHALT INVESTIGATION ON PUBLIC ROADS-A REVIEW

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ABSTRACT

Warm mix asphalt has been introduced in Europe in 1997 and in the United State 2002. The first trail of warm mix asphalt has done publically in Europe in 1999, in U.S.A 2004 and in India 2009. Most of countries like Germany, Norway, France, U.S.A, Canada, China, Korea, South Africa, India and Brazil have successfully used the WMA construction on public roads after successful laboratory test. The WMA is more success in U.S.A compare to European countries (EAPA, 2014). The main goal of WMA is to produce the bituminous mixtures with similar strength, durability and performance characteristics as HMA substantially reduced the mixing and compaction temperature. This study focus on history and development of warm mix asphalt in different countries including advantage and disadvantage of warm mix asphalt. This paper also reviews the warm mix asphalt in India.

KEYWORDS

Warm Mix Asphalt, Hot Mix Asphalt, Emission, Rutting, Moisture Susceptibility, Fatigue, WMT, Temperature.

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STUDYING THE EFFECTS OF AIRCRAFT NOISE AROUND ABU DHABI INTERNATIONAL AIRPORT, UAE ON THE SURROUNDING RESIDENTIAL AND WORK PLACES

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ABSTRACT

The aim of this study is to investigate the impact of aircraft noise pollution on community and workers' health near Abu Dhabi International Airport. This study was conducted in residential neighborhoods and employment areas living and working within a 25-km radius of the airport with high exposure to aircraft noise and in matched control areas far from the airport (outside the 25-km radius) and are unaffected by aircraft noise. Data was collected by conducting a revealed-preference face-to-face interview surveys among the residents and the workers nea rand far from Abu Dhabi International Airport during the months of September and December 2014. A total of 5,070 residents in both areas (2,579 near the airport and 2,492 far from the airport) and 1,995 workers in both areas (995 near the airport and 1,000 far from the airport) were interviewed and completed the questionnaire. Binomial Logit Regression Model was used to determine the impact of aircraft noise on community and workers' health. After controlling for confounders, the health of the residents adjacent to the airport who have been chronically exposed to high aircraft noise level are found to be worse than the control group. The results show that residents from the noise exposure area have a high level of noise stress, hypertension, headache, general disturbance, loss of sleep/insomnia, and hearing problems than the matched control area. On the other hand, aircraft noise pollution near Abu Dhabi Airport has no negative impact on workers adjacent to the airport. The impact of aircraft noise on community health should not restrain the growth of air travel industry in the city as this growth is essential and beneficial to the whole nation's economy. The reduction of aircraft noise level in the exposed area could be achieved by imposing policies, codes of practices, and action noise plans to assess and evaluate land use management as an effective tool for mitigating aircraft noise. Future research should assess community health based on self-reported physician diagnosed blood pressure; and hearing, stress, headache diagnostic examination.

KEYWORDS

Noise Pollution, Abu Dhabi International Airport, Binomial Logit Regression Model, Aircraft Noise, Health

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