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Spectrum is an e-magazine with the comprehensive collection of all the papers that have been published in our journal over the last two months — Volume 0, Issue 0 (October, 2014). This edition brings together 9 papers by 15 authors from 11 institutions. Each entry links to the abstract and the full paper.

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ABSTRACTS

1 Hard Faced Layer on Mild Steel Made by Paste Technique with Smaw Electrode to Improve Surface Properties

Paper ID M1P1-1136 · Production Engineering

Hitesh Vasudev, Assistant Professor, Rayat Institute of Engineering and Information Technology, Punjab

Mild steel (MS) is a soft metal having various applications in the field of engineering. Mild steel is subjected to surface contact with other metals such in lathe guide ways, dipper dozer teeth's with soil , nozzles to impact jets etc.Surface improvement technique has been chosen for the study to improve the surface characteristics of material. Hardfacing has been done on mild steel after applying chromium paste .Three factorial design has been chosen by taking chromium percentage and current as parameters. Higher percentage of chromium and lower current gives higher hardness and having minimum wear rate.

Keywords: Faced,Production,Engineering,Steel.

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2 Performance Study on a Pier Designed using Force based and Direct Displacement Methods

Paper ID M1P1-1139 · Structural Engineering

Sanjeev Kumar K.S., Research Scholar, Malaviya National Institute of Technology, Jaipur
Syed Ahmed Kabeer K I, Apprentice, Kingsway Consultants, Chennai, Tamil Nadu, India

An elevated metro system is more preferred type of metro system due to ease of construction and also it makes urban areas more accessible without any construction difficulty. An elevated metro system has two major elements pier and box girder. This paper concentrates only on the design of pier and its performance. Conventionally the pier of a metro bridge is designed using a force based approach. During a seismic loading, the behaviour of a single pier elevated bridge relies mostly on the ductility and the displacement capacit y. It is important to check the ductility of such single piers. Force based methods do not explicitly check the displacement capacity during the design. The codes are now moving towards a performance-based (displacement-based) design approach, which consider the design as per the target performances at the design stage. In this paper, performance of a pier designed by a Direct Displacement Based Design is compared with that of a force-based designed one. The design of a pier is done by both force based seismic design method and direct displacement based seismic design method and perform ance assessment is done based on both the methods.

Keywords: Peer,Structural Engineering, Metro.

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3 Comparison of Two Similar Buildings with and Without Base Isolation

Paper ID M1P1-1140 · Structural Engineering

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Sanjeev Kumar K.S, Research Scholar, Malaviya National Institute of Technology Jaipur, Rajasthan

Reinforced concrete is a major construction material for civil infrastructure in current society. Construction design has always preceded the development of structural design methodology. Dramatic collapse of buildings has been observed after each disastrous earthquake, resulting in loss of life. To prevent such a loss Base isolation is used which enables a building to survive potentially devastating seismic impact by providing flexibility into the connection between the building and the foundation. The mechanism of the base isolator increases the natural period of the overall structure, and decreases its acceleration response to earthquake/seismic motion. A reinforced concrete building with lead rubber bearing is used. The study analysis performed to check for the adequacy of the base isolation against earthquake damage when compared to the conventional earthquake resistant design. A building was analyzed using the equivalent lateral force method and response spectrum analysis as fixed base (FB) and as isolated base (IB) with lead rubber bearing. The analysis represents a case study for reinforced concrete to show the ultimate capacity of the selected bearing system, and to make a comparison for the difference between the isolated base and the fixed base buildings. Results show that the presence of the lead rubber bearing reduces significantly the displacement, moment and shear generated for the same mode and hence the reinforcement required is also lesser when compared to the traditional fixed based structure.

Keywords: Spectrum Analysis, Base, Structural.

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4 Mechanical Properties of Alkali Treated Agave Americana (Rambaans) Fibre Reinforced Epoxy Composite

Paper ID M1P1-1141 · Composite Material

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P. C. Gope, Professor, G.B Pant, University of Agriculture and Technology, Pantnagar, Uttarakhand

Composite based on short Agave Americana (Rambaans) fiber (untreated and alkali treated) reinforced epoxy resin using three different fiber length (3 mm, 5 mm, and 10 mm length) are prepared by using open mould technique. The composite thus prepared were subjected to the evaluation of different mechanical properties such as tensile and impact strength. The results obtained suggest that composites reinforced with Agave Americana fiber exhibited better mechanical properties than neat epoxy. All mechanical test showed that alkali treated fiber filled composites withstand more fracture strain than untreated fiber composites. Keywords: Composite; Agave Americana fiber; Alkali treatment; Epoxy Polymer; Tensile and Impact strength.

Keywords: Composite; Agave Americana fiber; Alkali treatment; Epoxy Polymer; Tensile and Impact strength.

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5 Uncertainty in Improving Durability Aspects and Mechanical Properties of Bamboo Reinforced Concrete

Paper ID M1P1-1142 · Structural Engineering

Dhanendra Kumar, IIT (BHU), Varanasi
Dr. S. Mandal, IIT (BHU), Varanasi

The construction industry uses the most of clean energy and also produces most of the carbon dioxide in the present global world. The production of one ton of steel and concrete emits more than two tonne and one tonne respectively of carbon dioxide whereas production of one tonne of bamboo consumes more than one tonne of carbon dioxide from the atmosphere. In SAARC countries like India where about two-third of the population live below poverty line, there is a great need of some other suitable construction material in terms of cost, availability and environment friendly. Towards this, many researchers in the past has emphasized on the use of Bamboo as reinforcement. Bamboo offers competitive strength to mass ratio, compared to re-bars. Since it is a natural material,the necessity to understand their long term behaviour regarding its acceptance as a suitable construction material in general is important. Due to the advantageous characteristics of bamboo, efforts should be made to popularize the use of bamboo. In this study, a review of the existing research work on Bamboo Reinforced Concrete with the emphasis on the various factors, which are considered as demerits in making bamboo reinforced concrete construction, as a tool is presented. This uncertainty study may serve the goal of making the dream of common people, to have their own home, come true. Keywords: Bamboo Reinforced Concrete, Durability, Mechanical Properties, Economic and Environmental Friendly Reinforcement.

Keywords: Construction Material, Cost, Research Work.

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6 Human Factor Considerations in Sewing Machine for Workstation Design

Paper ID M1P1-1143 · Industrial Engineering (m.e)

Gurbhej Singh, Research Scholar, RIEIT, Ropar, Punjab

There is a need of ergonomically fit sewing machine workstation so that sewing machine operators can perform their tasks comfortably. The present study was initiated where worker’s perceptions were measured by preparing questionnaire to find out difficulties during sewing machine work. Questionnaires were filled up by 100 sewing machine operators from different parts of the region. Questionnaire included the different modules which are Perceived posture, localized postural discomfort and estimated endurance time. Worker’s perceptions were analyzed by finding their critical values. Criticality index of questionnaire was calculated for concluding the most critical areas. Based on the criticality index, recommended parameters were performed on selected operators. Nine sewing machine operators performed experiments at twelve different combinations of table height, desk slope and pedal position. ANOVA technique was used to analyze the data obtained from nine selected sewing machine operators after performing experiments and the dimensional adjustment of sewing machine workstation was made, in relation to desk height, desk slope and pedal position. The recommendations were formulated in order to minimize the load on the musculoskeletal system during operation in terms of anthropometric dimensions with respect to sewing desk height, desk slope and pedal position. Statistical methods were used to find out the significance of the parameters considered in the study.

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So sewing machine workstation is said to be best fitted; only if it will have desk height +10 cms (above elbow height), desk slope 10° and pedal position -4 cms.

Keywords: Anthropometric, Dimensions,M.E, Slope, Postion

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7 Significance of OSPF Routing Protocol in Mobile Ad Hoc NETworks (MANET)

Paper ID M1P1-1144 · Mobile Ad Hoc Networks

Anuj Verma
Disha Guleria

Mobile Ad Hoc Network (MANET) is collection of multi-hop wireless mobile nodes that can communicate with each other without centralized control or established infrastructure. The network in which wireless links are highly error prone and can go down frequently due to mobility of nodes, interference and less infrastructure. Routing in MANET is a quite difficult due to highly dynamic environment. Several routing protocols have been proposed for mobile ad hoc networks. This paper proposed OSPF routing protocol in Mobile Ad Hoc Network. Here, the router first find out the shortest path from source to destination and forwarded the packet in that path.

Keywords: MANET,Routing,Protocol.

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8 A Survey on Web Research for Data Mining

Paper ID M1P1-1145 · Data Mining

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Web mining is the application of data mining techniques to extract knowledge from web data, including web documents, hyperlinks between documents, usage logs of web sites, etc. The process of extracting useful information from the contents of web document is data mining. Content data is the collection of facts a web page is designed to contain. It may consist of text, images, audio, video, or structured records such as lists and tables. The large and dynamic information source that is structurally complex and ever growing, the World Wide Web is fertile ground for data mining principles, or Web mining. Here, it defines the information retrieval and information extraction from web and making research for data mining.

Keywords: Web Mining, Data Mining, Research, Principles,Audio.

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9 SIFT: Scale Invariant Feature Transform (Review)

Paper ID M1P1-1146 · Digital Image Processing

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Sonia Watta, Associate Professor, Rayat Bahra University, Mohali

This paper presents a study on SIFT (Scale Invariant Feature transform) which is a method for extracting

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distinctive invariant features from images that can be used to perform reliable matching between different views of an object or scene. The features are invariant to image scaling, translation, and rotation, and partially invariant to illumination changes and affine or 3D projection. There are various applications of SIFT that includes object recognition, robotic mapping and navigation, image stitching, 3D modeling, gesture recognition, video tracking, individual identification of wildlife and match moving.

Keywords: Invariant, 3D Modeling, Image.

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