THE IMPORTANCE OF LOW INTENSITY RAINFALL ON LANDSLIDE OCCURRENCE
Dwikorita Karnawati

ABSTRACT
A simulation modeling to assess the influence of low intensity rainfall on landslide event was performed. The input data were provided from references of previous studies, field survey and laboratory tests. Two different rainfall patterns were applied. These were the single event of rainstorm, i.e. one hour of 75 mm/day rainfall and the long-sustained concomitant rainfall with low intensity, i.e. 13 hours of 1.9 mm/day rain. This simulation shows that low intensity of long sustained concomitant rainfall can result in slope stability reduction and landslides, when the hydraulic conductivity of the slope is low (about 2.51 x 10^-6 m/sec) and initial position of groundwater table is shallow (about 1 m to 3 m depth).

PERENGGKIAN TERMAL PARAFIN-PARAFIN RANTAI PANJANG DARI TIR BATUBARA
Thermal Cracking of Long Chain Paraffins from The Coal Tar
Widyastuti, Hary Salisty, Wahyudi Budi Selawan

ABSTRACT
In the thermal cracking of sub-bituminous coal tar, under non-isothermic condition, the long chain paraffins would crack to form methane, propane, butane, acetone, and hydrogen. The pyrolysis was conducted in a retort made of Stainless-steel 304, 40 cm long and 2.54 cm inside diameter, equipped with some type K thermocouples. A tube furnace, Thermolyne F21-100 with a power of 1350 W, was used as the heat source. The furnace was operated at low level heating rate. Based on the plug-flow reactor model and a simple pseudo single C_{18}H_{38} \rightarrow 9C_2H_4 + H_2, a mathematical model could be arranged as follows:

\[-F_t \frac{dX}{dz} = \frac{\pi D^2}{4} \frac{d}{dT} \left[\frac{k(1-X)(\delta + 9X)^P}{(P/E)} \right] \]

\[dT = \frac{F_t (9H_2 + 1H_2 + 9C_2H_4) \frac{dX}{dz}}{dX} dT - T_e \]

\[dX = \frac{F_t (1 - X)C_{18}H_{38} + F_t X C_{18}H_6 + 9F_t X C_{2}H_4}{dX} \]
PERBANDINGAN UNJUK KERJA POMPA FLUIDA DUA FASA (GAS - CAIR) DAN FENOMENA KAVITASI
The Comparison of Performance Pump of Two Fluid Phase (Liquid - Gas) and Cavitation Phenomena
Subroto dan Indarto

ABSTRACT
In this research, the cavitation was done by means of giving obstruction at the suction pipe and by increasing the liquid temperature. At two phase flow, it was done by injecting air into the suction pipe through an injector of 4 mm in diameter.

The result shows that the character of the pump changes and the performance curve of pump moves to the left during cavitation phenomena. On the other hand, when the pump works on two phase flow, the curve moves down depending the air to be injected.

Key Word: Pump characteristic, two phase flow (liquid-gas), cavitation

MENGAPA PEMERINTAH DAERAH MENGADOPSI RENCANA KOTA: PENYIDIKAN PADA 40 PEMERINTAH DAERAH TINGKAT II
Leksono Sabbanu

ABSTRACT
Urban (spatial) plans are a relatively new urban management tool that was adopted at varying rates by local governments in Indonesia. Central government efforts to induce them to adopt urban plans are only fairly successful. This study tries to discover underlying local factors that might affect the rate of adoption of urban plans by local governments. Utilizing the large body of innovation literature, this study investigates the effects of local political culture, economic robustness, and population...
VERIFIKASI DAN KALIBRASI MODEL MATEMATIS ALIRAN PERMUKAAN DUA DIMENSI (RMA2), PENGARUH EDGY VISCOSITY DAN KEKASARAN DASAR PADA POLA ALIRAN

Adam Panudji Rahardjo, Ajas Saroso, Budi Wiyoyokusumo

ABSTRACT

The development of numerical models has provided some potentially useful engineering software especially for hydraulic engineering. A software called RMA2 in the ROSS SMS package is one of them that were supposed to be able to simulate 2D depth averaged surface water flow. A study has been conducted to verify the performance of the RMA2 software on flow influenced by tidal backwaters.

The verification was done by comparing the result of flow simulation of dynamic backwater flow on a sinus channel with a narrow section and the measured data on physical model of flow on the same system. The measurement of flow velocity and flow pattern implemented particle image velocimetry method by wing foam/patched floating tracer. Flow velocity data on several flow measurement stations were analysed quantitatively and the flow patterns were discussed qualitatively.

The result of the study shows that the curves of velocity magnitudes on all measurement was measured from the physical model and simulated by the mathematical model have very small differences. This result was achieved by implementing several zones in the computational domain with different roughness and diffusion coefficients. Both the numerical and physical model shows similar patterns.

PEMODELAN SISTEM DISTRIBUSI ANGKUTAN MINYAK DI INDONESIA

Dastang Parikesit, Widodo, Sukandarumati, Iman Harryanto

ABSTRACT

Optimization technique using operational research (OR) methods has been used to provide more efficient transportation system, particularly in the area of freight transport and logistics. This paper examines the use of OR in improving the efficiency of oil tanker distribution in Indonesia. Since current revision of oil tanker and distribution system. It can be demonstrated that using a simplified method, the efficiency of current distribution system can be improved by 27% at an aggregate level and between 2 - 34% depending upon the oil types. The study recommends that further works in the optimization procedure are necessary to allow various combinations of delivery system, i.e. single drop and multi drop delivery, and ship types.

SEGMENTASI PASAR ANGKUTAN PENUMPANG KERETA API DI PULAU JAWA

J. Dwijoko Anumbanto, Oily Norcimsa

ABSTRACT

Rail transport plays a major role in conveying a large number of people in Java, Indonesia. At present, inter city rail services in Java may be divided into three classes, namely, economy, business, and executive classes. People may choose the service level depending on the fare level, the quality of service offered, the income level, the destination, trip purposes, and the service availability. The research aims at exploring the market share of different rail service quality in Java, Indonesia. The research utilizes multinomial logit model based on the available aggregate data. There is an evidence that rail fare plays an important role in the decision to choose a particular service quality. The significant context variables are trip distance and passenger's income.

SAMBUNGAN BAMBU DENGAN CELAH DAN PENGISI

Moriwes

ABSTRACT

The growth of human population and its prosperity are bound to cause large demand on timber for housing. In the process, serious problems of overcrowstration and destruction of tropical forest may occur. In order to protect forests from degradation and shrinkage, one needs to search for substitute materials for timber. Bamboos grow rapidly, can be cultivated easily and have good mechanical properties and can be preserved employing simple techniques. However, bamboo joining has posed structural problems. It is often accomplished using conventional methods with pins and ropes, resulting in very weak joints. The use of bamboo as substitute material for timber is limited only because of lack of knowledge on how to make strong joints.

Research has been conducted experimentally to improve the method of joining bamboo with timber filling developed by Morisbo and Haridjo (1996). Less epoxy has been used to reduce the cost and steel clamps have been employed temporarily to strengthen the joint.
Results of the research show that the new method can reduce cost of the joint materials by 45%, even strengthen the joints significantly. The optimum ratio of bond and bamboo diameter can be concluded theoretically.

APLIKASI RANCANGAN CAMPURAN KERJA MODEI SUPERPAVE UNTUK SMA 0/11 DENGAN BAHAN PENGISI ABU TERBANG
Suprapto Tan
ABSTRACT
Increasing road users will effect on traffic flow and then pavement will be more trafficked. All of those will create pavement defects rise quicker. There are many quality parameters of pavement layers and air voids in a range of 3−5% is one of them. The percentage of air voids out of the range will be an indication of pavement defect types, which are cracking for high air voids and plastic deformation for low air voids. From the parameters, pavement layers have 4% air voids will be moderate.

The Asphalt Institute introduces superior performing asphalt pavement (Superpave) to overcome increasing traffic flow and pavement layer defects. A job mix formula of the Superpave is based on 4% air voids. To find a job mix followed a requirement, an adjustment should be carried out on the aggregategradation and asphalt content. Finally, a job mix design model is prepared. The model will be applied on split mastic asphalt of fly ash.

From this research, find out that the job mix design of Superpave model is applicable for split mastic asphalt of fly ash. Air voids of the mix closed to 4% can be established.

PERILAKU KEMBANG DAN SUSUT LEMPUH EPSANSIF (SWELLING AND SHRINKING BEHAVIOR OF EXPANSIVE CLAYS)
Supriyono
ABSTRACT
Very highly swelling and shrinking is the expansive soil characteristic that can be easily found in Indonesia and it often arises a problem in civil work constructions.

To investigate the relationship between swelling and shrinkage, it is necessary to carry out the examination of Atterberg limit, in particular, the shrinkage limit. Samples test condition of optimum moisture content and maximum dry density were analyzed to determine swelling and shrinkage limit, which was based on the value of the critical dry density.

The result shows that the value of critical dry density in 1.225 g/cm³ for a normal condition and 1.38 g/cm³ for an influenced wet dry process. Therefore, a water contain may influence the level of swelling and shrinkage expansive clays.

PENGEMBANGAN METODE PENGUKURAN MEDAN KECEPATAN ALIRAN DENGAN METODE BAYANGAN PARTIKEL
Fahmi Rizal dan Adam Pamudji Rahardjo
ABSTRACT
Flow velocity measurement is one of the very important aspect in the field of hydraulics. Until today, the common method used in measuring flow velocity is limited to one point measurement. In order to get velocity pattern in a single measurement, multi point velocity measurement methods such particle image and tracking methods have to be developed. A study for the development of the instrument based on particle image method has been conducted.

The developed measurement method was validated by applying it on velocity field measurement of two steady uniform flow cases. They were: flow in normal straight flume and downstream flow of broad crested weir. Collecting and analyzing data procedure were as follows: setting up flow cases and inserting particles into water flow, lighting the flow and recording image by developed instrument, photographic (studio) processing, photo scanning, reading pixel brightness data, transforming pixel data into velocity flow data, visualizing velocity vectors, and validating data by comparing them with data collected by a volumetric calibrated Mini Propeller velocimeter.

The results indicate that data collected by developed measurement method were comparable and relevant to data collected by the volumetric calibrated Mini Propeller. The mean velocity profiles measured by developed measurement method in straight flume were 13−14 cm/s, meanwhile that of Mini Propeller was 9−13.5 cm/s. Measurement error between data obtained by those two methods was 4.8 percent (RMS=0.563 cm/s). In case of downstream flow of a broad crested weir, the data were 0.97±2.24 cm/s for developed measurement method and 0.77±2.19 cm/s for standard measurement, Measurement error was 7.7 percent (RMS=0.1228 cm/s). Furthermore, by using the measurement method developed in this research, location, magnitude, and direction of the velocity vectors distributed on the velocity field would be available simultaneously.
PEDOMAN PENULISAN NASKAH MAJALAH FORUM TEKNIK
FAKULTAS TEKNIK UGM

I. Susunan Naskah
Suara naskah hendaknya menanai; judul, abstrak, pengantar, cara penelitian, bagian
penelitian dan pembahasan, kesimpulan, ucapan terima kasih, dan daftar pustaka.

1. Judul tulisan diusulkan supaya singkat dan jelas. Di bawah judul dicantumkan naf
penulis (tanda disvajat kesampingan) dan tempat menjalankan kegiatan (alamat).
2. Abstrak menurut inti permasalahan, cara menjalankan penelitian, dan hasil. Bagian ini
dilusuri tidak lebih dari 200 kata dan ditulis dalam bahasa inggris.
3. Pengantar berisi permasalahan yang memeluk kasus penelitian dan tilinan penelit,
mengandung uraian sistematis tentang keterangan-keterangan yang ada kaitannya d
yang menunjang tulisan itu. Sumber keterangan ditunjukkan dengan menuliskan na
penulis dan tahun penelitian.
4. Cara penelitian mengandung uraian tentang cara menjalankan penelitian, yang menca
bahan baku, alat, jadwal penelitian, dan analisis hasil.
5. Hasil penelitian dan pembahasan menguraikan hasil yang diperoleh beserta penjelasan
secara kualitatif dan kuantitatif (jika diperlukan). Tekanan diletakkan pada pember
jawaban atas pertanyaan yang diajukan.
7. Ucapan terima kasih diusulkan supaya singkat.
8. Daftar pustaka disusun:
   a. Kerabat menurut abjad nama akhir penulis pertama.
   b. Keterangan: (1) Buku: penulis, tahun, judul buku, jilid, terbitan ke, halaman, na
   penerbit, dan kota.
   (2) Majalah: penulis, tahun, judul tulisan, nama majalah (dengan singk
   resminya), jilid, dan halaman.

II. Teknik Penulisan
Penulisan naskah hendaknya memperhatikan hal-hal berikut:
1. Pengaturan naskah ditukar dengan jarak sekurang-kurangnya 1,5 spasi pada kerria
   dan tidak bolak-balik. Pastikan tulisan tidak lebih dari 10 halaman kuarto, dan dikirim
   rangkap dua berserta disket (MS, W/WS) kepada Redaksi dengan alamat Biro Dif
   Fakultas Teknik UGM, Yogakarta.
2. Bahasa yang dipakai adalah bahasa Indonesia yang bukan asal bahasa Inggris.
3. Penomoran: daftar gambar, dan persamaan diberi nomor urut, yaitu daftar dengan ai
   Romawi besar, gambar dan persamaan dengan angka Arab. Ukuran gambar jangan sa
   lebih dari 12 cm x 18 cm, termasuk tulisan yang menjelaskan gambar itu. Gambar d
   dengan tinta hitam.

III. Batas akhir penyerahan naskah
31 Desember tahun : edisi Maret
20 April unik : edisi Juli
31 September unik : edisi November