**A PROCEDURAL FRAMEWORK FOR EXTENSION OF TIME (EOT) CLAIM SETTLEMENT IN THE MALAYSIAN CONSTRUCTION INDUSTRY**

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The construction industry is often burdened by various problems associated with contractual claims that affect not only the administration and management of projects but also disrupt the smooth running of construction activities as well as contribute to the occurrence of disputes between the parties involved. Such disputes will affect harmonious relationships among industry players if they are not tackled in the best possible way. Despite the many studies that have been carried out with regard to improving the management of contract claims, yet very little research has been conducted to address the issue in relation to the extension of time (EOT) claim, specifically as to what constitutes a good EOT claim and the possible measures that can be taken by industry players towards the successful settlement of an EOT claim.

Therefore, this study was undertaken with the aim of developing an appropriate framework that can help the parties involved in the construction industry to come up with EOT claims that can be resolved harmoniously without any unnecessary disputes. Prior to the development of such a framework, the practices of industry players in dealing with EOT claims were investigated, contentious issues in relation to EOT claims and the reasons for the rejection of such claims were revealed, and the success elements for EOT claims and initiatives to reduce the likelihood of failure of such claims were identified. The triangulation method comprised of a questionnaire survey, semi-structured interviews and a modified Delphi approach, was employed to achieve the research objectives. Such an approach will produce a robust and reliable data. The findings revealed that weaknesses in terms of the management and keeping of records as well as the lack of competency in handling claims which result in the submission of poor and incomplete claim documents are among the factors that disrupt the preparation and assessment of EOT claims, which may then lead to a rejection of such claims. On the other hand, issues associated with EOT claims that often create dissatisfaction and conflict between the parties involved are concurrent delays, eligibility of time extension claims, non-compliance with contract requirements, inadequate efforts to mitigate delays, and also the permissible time period for extensions. The conservation of harmonious business relationships, the preservation of reputation as well as continuity in the construction industry are seen as the major factors influencing the likelihood of industry practitioners opting for negotiations as a medium to resolve any problems and disputes in relation to EOT claims. The findings from the research were then used to develop a framework for a successful EOT claim which contained elements that contribute to the success of EOT claims and initiatives that can be implemented in order for claims to be successful, and to reduce the possibility of failure of such claims. Subsequently, a personal (face-to-face) questionnaire survey conducted with eleven (11) experts from the industry confirmed that the framework is appropriate and is viewed as having great potential for implementation in the construction industry in Malaysia. The findings of this research may offer valuable information, not only to industry players but also to students in the related fields, in preparing themselves to face the challenges of working in the construction industry.

Nature of roof that covers the very top of the building, has encouraged related research, especially regarding the properties, types, problems and materials for roofs. In recent years, awareness about environmental pollution and sustainability, has driven the demand for roof coverings that are more sustainable. Currently, the use of local raw materials that are easily found, in addition to reducing waste, and reuse of materials is a key features of construction materials. The use of recycled materials based on palm oil can be profitable for the farmers and consumers in general. The objective of this research is to produce an advanced composite material from oil palm empty fruit bunch (EFB) at the same time exploring the mechanical and physical properties of this material as a preparation to develop a substitute's material for sustainable roofing material. The mechanical and physical properties of oil palm EFB as roofing material is originally tested as per American Standard (ASTM) and British Standard (BS). Materials are selected based on normal concrete mix with the addition of oil palm empty fruit bunch fibres in various batches. The oil palm empty fruit bunch (EFB) fibre is obtained from MPOB Research Centre and there is no treatment done to the selected fibre. The selected cement to sand ratio used is 1:2, with six different water to cement ratio (0.32, 0.37, 0.42, 0.47, 0.52 and 0.57). The thickness of the sample is 10mm and percentage of fibre used is 0.5%, 1.0%, 1.5% and 2.0%. Fibre sizes are divided into four categories; OS, LS, MS and SS. The size of the fibre is range from 0.7mm -14.04mm length. The ratio of sand is used as an aggregate with sizes ranging from 0.06 to 2mm which is passing a 2mm to 2.5 mm mesh size sieve. The sample is tested and the impact of the sample on the five different variables which are cement to sand ratio, water to cement ratio, fibre volume, size and weathering condition are analysed. The samples are tested based on the flexural strength, density and water tightness only. Fibre volume of 0.5% is found as the appropriate volume for this mixture design. The highest flexural strength recorded is 6.44N/mm² which exceed from the minimum requirement of ASTM for roofing slates. Flexural strength is increases when using the large size of fibre, it is found that the size of 6.4-14.04mm fibre length, 396-471μm width; achieve the highest flexural strength at 6.44N/mm² for sample C3-15-42. Fibre size is categorised as LS (Large Size) with 0.37 water cement ratio. Weathering condition gave a big effect to the sample as there is an increment in strength for samples mixed with oil palm fiber through the curing process from 7 to 28 days. The highest increment is 63.46% for sample C2-27-52 with 1.0% fibre content. Even though the highest strength is using 0.42 water cement ratio, but 0.47 water cement ratio gave constant result for other samples compares to other variables. The highest density recorded is from the LS fibre (water cement ratio 0.42) with 1.0% fibre volume and 28 days immersion in wet condition. The density of the sample is 2030.99kg/m³. The lowest reading of density is 1247.73kg/m³ with water cement ratio 0.32 (MS fibre), 2.0% of fibre volume and 28 days immersion in dry condition. An average density is also indicated which between 1562.51kg/m³ to 1997.19kg/m³. Unfortunately, all samples failed the water tightness test with 49g water retention which is 44g more compare to the minimum requirement.