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The effect of geometric on buckling strength of rectangular hollow pipe under pure bending

Yudo H.^a, Amiruddin W.^a, Jokosisworo S.^a[📄 Save all to author list](#)^a Naval Architecture Department, Diponegoro University, Indonesia

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Not only the circle hollow pipe but also the rectangular hollow pipes are used on construction. The pipe subjected various kind of load. In this research, the bending moment was given at both end of pipe. It is known that strength of buckling moment can be reduced by increasing the length of the pipe. The rectangular pipe models are varying from $a/b = 0,125; 0,25; 0,5; 1; 2; 4$; $a/t = 10, 15$ and $L/a = 10, 15, 20$. The finite elements method was used to analysis of buckling strength. The buckling strength will increase with decreasing a/b . The deformation at mid span will be shown. The buckling strength will decrease with increasing of a/t and L/a . © IAEME Publication.

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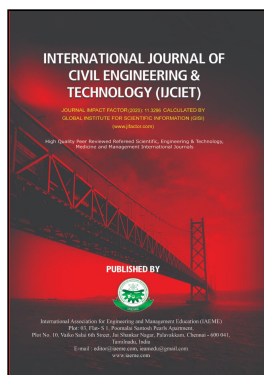
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THE EFFECT OF GEOMETRIC ON BUCKLING STRENGTH OF RECTANGULAR HOLLOW PIPE UNDER PURE BENDING

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ABSTRACT

Not only the circle hollow pipe but also the rectangular hollow pipes are used on construction. The pipe subjected various kind of load. In this research, the bending moment was given at both end of pipe. It is known that strength of buckling moment can be reduced by increasing the length of the pipe. The rectangular pipe models are varying from $a/b = 0,125; 0, 25; 0,5; 1; 2; 4$; $a/t = 10, 15$ and $L/a = 10, 15, 20$. The finite elements method was used to analysis of buckling strength. The buckling strength will increase with decreasing a/b . The deformation at mid span will be shown. The buckling strength will decrease with increasing of a/t and L/a .

Key words: Rectangular Hollow Pipe, Buckling, Bending, Deformation.

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1. INTRODUCTION

The damage of material when buckled is difficult to be discovered, because that is suddenly occurred. The steel is one of the important material constructions. Particularly have mechanical properties which are strong enough and the ductility. Ductility is the material ability to deform, withstand the tensile and compress before failure.

The steel have random circumstances when used. If the maximum ability of construction has been discovered, thus the construction is safe. Buckle occurred due to pressure on the steel bar which has deformation in this case through an axial compressive force. Buckle can be occurred before or after maximum stress was reached. It would not a problem if the buckle occurred after the steel passed the maximum stress. However if the buckle occurred before the steel passed maximum stress, it can be a problem because the buckle will suddenly occurred.

The structure with the rectangular hollow pipe has been used on house roof construction, the bridge pillar, port construction, the offshore construction and building construction. The typical of the neither offshore construction nor coastal construction is the casing for the pipe;



ANALYSIS OF CRITICAL SUCCESS FACTORS OF THE GERMAN PASSIVE HOUSE IN TECHNICAL MANAGEMENT PERSPECTIVE

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ABSTRACT

The Passive House (PH) concept first presented in Germany is an excellent eco-friendly construction technology that enhances not only energy efficiency, but also occupants' comfort. PH construction presupposes high-standard, green technologies to ensure optimal insulation, airtightness, window system, thermal bridge, and ventilation. This study was conducted to determine critical factors for successful implementation of PH from the perspectives of technology and construction management using German success cases. To this end, we performed a literature review and conducted a focus-group interview (FGI) with German PH experts. The interview results were assessed via hierarchical classification by grouping similar items in an expert workshop. A relative importance analysis was performed by conducting a questionnaire survey with Certified Passive House Designers (CPHDs) based on the resulting hierarchically structured items. As a result, construction management factors, such as interdisciplinary collaboration and inter-field cooperation, were found to have high importance in addition to technological factors. Therefore, it is considered essential to consider both technological and managerial aspects of development for successful implementation of the PH concept.

Key words: Passive house, Energy cost, Focus group interview (FGI), Management factor, Relative importance analysis.

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ABSTRACT

In this paper, we used Asaoka method for determining consolidation degree of the soft ground as it is the most simple and reliable method. For this, settlement observation results collected from km 94+340÷ km 94+440 of Ha Noi – Hai Phong highway construction project were used. Validation was also done by comparing the consolidation degree determined from the Asaoka method and technical design records from the project. The results show that the consolidation degree calculated from observational data using Asaoka method is 99.81% which is larger than technical design record data (90%).

Key words: Consolidation Degree, Asaoka method, Soft Soil, Viet Nam