BEHAVIOUR OF CONCRETE BEAMS REINFORCED JUTE FIBER MAT

LEE YEN WAH

B. ENG(HONS.) CIVIL ENGINEERING

UNIVERSITI MALAYSIA PAHANG
SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Civil Engineering (Hons.).

(Supervisor's Signature)

Full Name: DR. CHIN SIEW CHOO
Position: SUPERVISOR
Date: 

(University Logo)
STUDENT’S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

____________________________
(Student’s Signature)
Full Name : LEE YEN WAH
ID Number : AA13126
Date : 
BEHAVIOUR OF CONCRETE BEAMS REINFORCED JUTE FIBER MAT

LEE YEN WAH

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<tbody>
<tr>
<td>%</td>
<td>Percentage</td>
</tr>
<tr>
<td>% (W/V)</td>
<td>Percent of weight of solution in the total volume of solution</td>
</tr>
<tr>
<td>°C</td>
<td>Degree celsius</td>
</tr>
<tr>
<td>c-c</td>
<td>Centre to centre</td>
</tr>
<tr>
<td>kg</td>
<td>Kilogram</td>
</tr>
<tr>
<td>kg/m³</td>
<td>Kilogram per cubic metre</td>
</tr>
<tr>
<td>kN/sec.</td>
<td>Kilonewton per second</td>
</tr>
<tr>
<td>L</td>
<td>Liter</td>
</tr>
<tr>
<td>L₁</td>
<td>Length</td>
</tr>
<tr>
<td>L₂</td>
<td>Width</td>
</tr>
<tr>
<td>m³</td>
<td>Cubic meters</td>
</tr>
<tr>
<td>mm</td>
<td>Millimeter</td>
</tr>
<tr>
<td>mm/min</td>
<td>Millimeter per minute</td>
</tr>
<tr>
<td>MPa</td>
<td>Mega Pascal</td>
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<tr>
<td>N/mm²</td>
<td>Newton per millimeter square</td>
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### LIST OF ABBREVIATIONS

<table>
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<tr>
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<tr>
<td>ASTM</td>
<td>Amerian Society for Testing and Materials</td>
</tr>
<tr>
<td>BS</td>
<td>British Standard</td>
</tr>
<tr>
<td>CB</td>
<td>Control beams</td>
</tr>
<tr>
<td>CFRP</td>
<td>Carbon fiber reinforced polymer</td>
</tr>
<tr>
<td>DoE</td>
<td>Department of The Environmental</td>
</tr>
<tr>
<td>FFRP</td>
<td>Flax fiber reinforced polymer</td>
</tr>
<tr>
<td>FRP</td>
<td>Fiber reinforced polymer</td>
</tr>
<tr>
<td>GFRP</td>
<td>Glass fiber reinforced polymer</td>
</tr>
<tr>
<td>JFM</td>
<td>Jute fiber mat</td>
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<tr>
<td>JFMB</td>
<td>JFM reinforced beams</td>
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<tr>
<td>JFRP</td>
<td>Jute fiber reinforced polymer</td>
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<tr>
<td>KF</td>
<td>Kenaf fiber</td>
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<tr>
<td>LVDT</td>
<td>Linear variable displacement transducer</td>
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<tr>
<td>NaOH</td>
<td>Sodium hydroxide</td>
</tr>
<tr>
<td>NSM</td>
<td>Near surface mounted</td>
</tr>
<tr>
<td>OPC</td>
<td>Ordinary Portland Cement</td>
</tr>
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<td>RC</td>
<td>Reinforced Concrete</td>
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<tr>
<td>S</td>
<td>Satisfactory failure</td>
</tr>
<tr>
<td>SB</td>
<td>Steel bar reinforced beams</td>
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<tr>
<td>TPU</td>
<td>Thermoplastic polyurethane</td>
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<tr>
<td>U</td>
<td>Unsatisfactory failures</td>
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<tr>
<td>UMP</td>
<td>Universiti Malaysia Pahang</td>
</tr>
<tr>
<td>UTM</td>
<td>Universal testing machine</td>
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