

**EFFECTS OF ADDITIVES ON PHYSICAL AND THERMAL INSULATION  
PROPERTIES OF CONSTRUCTION BRICK**

**NONTHAPHONG PHONPHUAK**

**DOCTOR OF PHILOSOPHY  
IN MATERIALS SCIENCE**

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**THE GRADUATE SCHOOL  
CHIANG MAI UNIVERSITY**

**DECEMBER 2011**

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**A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
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THIS THESIS HAS BEEN APPROVED  
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