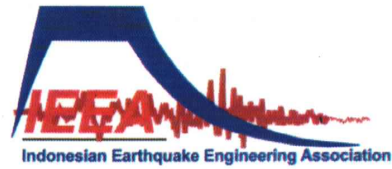




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ICEEDM

**The 2nd International Conference
on Earthquake Engineering
and Disaster Mitigation (ICEEDM-II 2011)**

**“Seismic Risk Reduction and Damage Mitigation
for Advancing Earthquake Safety of Structures”**

19 - 20 July 2011, Shangri-La Hotel, Surabaya, Indonesia



EXTENDED ABSTRACT

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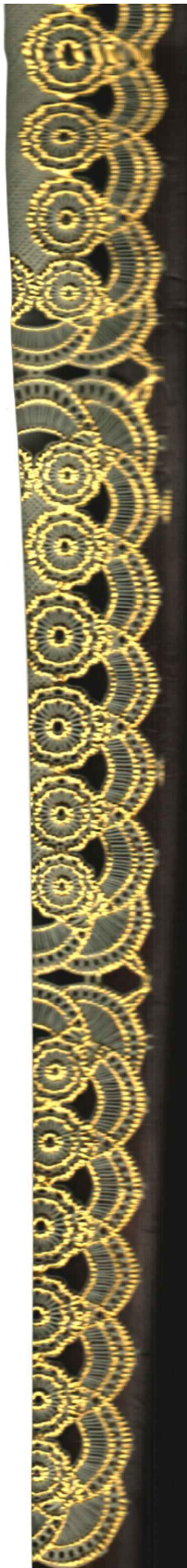
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Fracture Mechanics Approach in Determining Pressure and Injection Time To Repair Concrete Cracks

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EXTENDED ABSTRACT:

For the existing buildings and bridges, during the service period it is commonly found the problem of cracks in the beam, girder and slab. Cracks that could appear due to the load of work during the service period of construction, faults of design and recently. These cracks have an impact on anxiety owner or agency that responsible for building the bridge of the dangers that occur as collapse and structural failure. Considering that building is already standing still in use, there should be conducted some checking and repairing that should not disturb the ongoing activity of the building or bridges.

Checking with UPV test (*Ultrasonic Pulse Velocity Test*) is one of a non-destructive methods which not damage the existing building structure. Result obtained from UPV test include crack depth and strength of the concrete. After obtained the data of crack depth and strength of the concrete. The critical question is how to repair the crack, in fact this work during the epoxy done by applicator is not based on calculation that can be accounted for, but just based on feeling and routine works. This can be seen from absence of data about how much pressure should be given and how long it takes epoxy injection.

Injection with epoxy material is a solution that can be done to repair the cracks and finally retrofit the strength of the structure. This appropriate with the result obtained from UPV test whereas based on the injection based on the previous studies, crack injection was based on crack width.

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This study is to determine the pressure and injection time, Research was conducted on cracks that occurred repair work on bridges, testing with UPV test and used Indirect Method. Initial test data (before) was used as basis for carrying out repair work.

Epoxy material used for injection of concrete cracks is Ciba-Geigy product consisting of resin and hardener. Resin Type GY 250, Hardener type HY 2964 with viscosity 120 MPa.s. Tool for Injection PPW-Polypan-Werkzeuge GmbH. Epoxy materials are expensive, it necessary to care for injection of cracks of concrete work is not optimal

Based on this study obtained a calculation of injection pressure and time needed for injection so that the cracks depth can be fully filled through a fracture mechanics approach. To evaluate the result of these cracks injection then be checked again with UPV test (before and After).

Fracture mechanics approach combined with the existing injection methods can be used to determine pressure and injection time, so that repair cracks became more optimal.

KEYWORDS: UPV test, cracks, injection, fracture mechanics.