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| Bidang Unggulan | : Ketahanan Energi |
| Kode/ Nama Rumpun Ilmu | : 421/ Teknik Sipil |

**LAPORAN AKHIR
PENELITIAN UNGGULAN PERGURUAN TINGGI (P)**



**PREDIKSI LEBAR RETAK PELAT BETON PANEL PRACETAK KOMPOSIT
PADA DECK SLAB JEMBATAN JALAN RAYA**

oleh :

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Dibiayai oleh Direktorat Jenderal Pendidikan Tinggi,
Kementerian Pendidikan dan Kebudayaan, Melalui DIPA Universitas Brawijaya
Nomor : DIPA-023.04.2.414989/2013, Tanggal 5 Desember 2012, dan
berdasarkan SK Rektor Universitas Brawijaya
Nomor : 407/SK/2013 tanggal 2 September 2013

**UNIVERSITAS BRAWIJAYA
DESEMBER 2013**

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Judul : Prediksi Lebar Retak Pelat Beton Panel Pracetak Komposit Pada Deck Slab Jembatan Jalan Raya

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Institusi Mitra (jika ada)
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Alamat
Penanggung Jawab
Tahun Pelaksanaan : Tahun ke 1 dari rencana 1 tahun
Biaya Tahun Berjalan : Rp. 55.000.000,-
Biaya Keseluruhan : Rp. 55.000.000,-

Mengetahui,
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RINGKASAN

Kerusakan pada panel pelat beton pracetak pada kebanyakan struktur jembatan biasanya diawali oleh retakan. Tidak ada kesepakatan umum diantara beberapa peneliti tentang beberapa variabel yang mempengaruhi lebar retak, meskipun telah banyak uji eksperimental yang dilakukan selama beberapa dekade. Hal ini disebabkan karena para peneliti memasukkan variabel yang berbeda-beda dalam uji eksperimennya. Apabila mengambil kesimpulan parameter dari salah satu hasil pengujian tidaklah tepat karena banyaknya variabel yang terlibat dan interdependensi dari beberapa variabel.

Tujuan penelitian ini adalah untuk memprediksi besar lebar retak pada pelat beton panel pracetak komposit *deck slab* jembatan dengan variasi tulangan akibat beban siklis dan mengetahui perilaku perambatan retak dari pelat beton panel pracetak komposit *deck slab* yang mengalami retak dengan analisis numeris dibandingkan dengan hasil uji eksperimental serta menjawab secara detail dan mendalam perihal pengaruh aksi komposit antara pelat beton panel pracetak dan *deck slab* pelat lantai kendaraan akibat beban siklis.

Jenis spesimen atau benda uji utama adalah pelat beton ukuran 170 cm x 60 cm x 20 cm yang dicor bertahap yaitu setebal 6 cm kemudian 14 cm. Pelat tersebut diletakkan pada dua tumpuan dan selanjutnya dibebani di tengah bentang. Pengambilan data yang dilakukan pada benda uji pelat panel pracetak komposit berupa pengukuran beban statik dan siklis, regangan tulangan baja, lebar retak dan panjang retak.

Hasil dari penelitian ini adalah usulan rumus lebar retak pelat beton panel pracetak komposit secara detail dengan memasukkan faktor modifikasi komposit dan angka tulangan dilengkapi dengan pembahasan mendalam dimana rumus usulan tersebut menghasilkan lebar retak yang lebih besar pada siklus tertentu karena soliditas antara pelat bawah dan atas tidak sama dengan pelat monolit sehingga memungkinkan adanya celah *interface* yang dapat mereduksi kekuatannya. Pelat beton panel pracetak komposit ini direkomendasikan untuk digunakan di lapangan karena mempunyai kelebihan antara lain : dapat diproduksi atau difabrikasi secara massal, mudah dalam pelaksanaan, lebih cepat dalam pemasangan, digunakan sebagai pengganti bekisting, relatif ringan dan mudah dalam mobilisasi, biaya relatif lebih murah, serta kualitas atau mutu beton lebih terjaga karena proses fabrikasi.

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