NEES: ACI 445 Punching Shear Collected Databank

By Carlos Emilio Ospina, Gerd Birkle, Widianto, Ying Wang, Sudheera R. Fernando, Sumudinie Fernando, Ann Christine Catlin and Santiago Pujol.

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Databases

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Abstract

Authors

The authors of this database are Carlos Emilio Ospina, Gerd Birkle, Widianto, Ying Wang, Sudheera R. Fernando (Purdue University), Sumudinie Fernando (Purdue University), Ann Christine Catlin (Purdue University) and Santiago Pujol (Purdue University). The database was published at NEEShub on October 06 2011and has been reproduced here to preserve the data and ensure continued access.

Database

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This resource features a database created by **The American Concrete Institute Committee 445C** in an effort led by

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The data presented here were obtained from tests of reinforced concrete slabs loaded statically to simulate concentric slab punching due to gravity loads. The data are fundamental in understanding the resistance of slabs to punching shear, which is critical in structures in regions of both low and high seismicity.

USING THE DATABASE

Please login to DataCenterHub to access this database. If you are not a **registered user**, register at https://datacenterhub.org.

Click on the black View Database button to browse the database. You can sort any column, search or filter on any number of columns, and export the database as a spreadsheet. -- in whole or in part. The columns are color coded for easier data exploration:

Support Conditions	fcu [MPa]	Reinf. Bar Ends	Failure Mode	dave [(mm)]	b1star [(mm)]
CSL-SR	105.80	H	P	82.00	173.57
green	pink	blue	yellow	purple	teal
Test Specimen, Geometry and Set-up	Material Properties	Slab Reinforcement Details	Test Results	Observations by Task Group	Derived Quantities

COLLECTED DATA

The database contains raw data as reported by the researcher(s) with some basic post-processing, distributed as follows:

The collected data correspond to raw data as reported by previous researchers. The data have been organized in 5 blocks (reference information, description of test specimen, description of material properties, slab reinforcement details, and test results) including room for commentary by the committee. The variables used to describe the test specimen properties are self explanatory. The databank developers recently published a paper which can be used as a manual.

CRITERIA (Last 11 columns)

These columns contain the results of a basic-level post-processing of collected (raw) data. The derived quantities are typically used by researchers to characterize both the test specimens and the results, and to calculate punching capacity. Conversion factors used to evaluate the concrete compressive strength listed under the heading f1c are

CY100x100	CY61x122	CY75x150	CY100x200	CY150x300	CY160x320	CY100x300	CY120x360	PR120x360	CU
0.84	0.89	0.90	0.92	0.95	1.00	1.00	1.05	1.00	0.68

In the cases of test slabs for which the reinforcement ratio was not reported by the researcher or insufficient information was reported to allow its calculation, column rho-near provides estimated reinforcement ratios within a column strip of width b1+3h. ACI committee 445C is in the process of preparing a series of checks and criteria that can be used to evaluate the mode of slab failure, namely i) slab flexural capacity evaluation and ductility check, and ii) check for bond failure of the slab reinforcement, together with a series of Data Acceptance Criteria (DAC) to be able to retrieve specific test data.

Cite this work

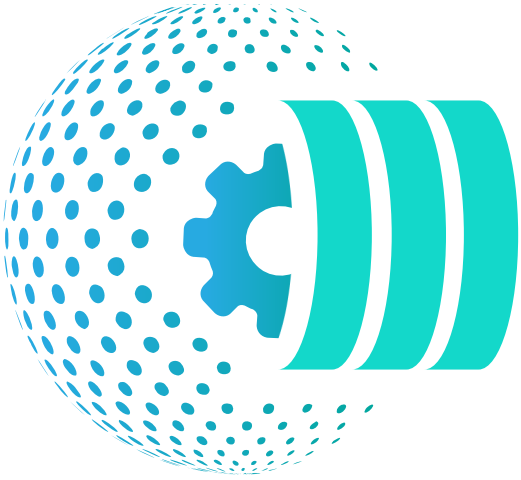
Researchers should cite this work as follows:

Carlos Emilio Ospina, Gerd Birkle, Widianto, Ying Wang, Sudheera R. Fernando, Sumudinie Fernando, Ann Christine Catlin and Santiago Pujol. (2015), "NEES: ACI 445 Punching Shear Collected Databank," https://datacenterhub.org/resources/256.

BibTex | EndNote

Tags

1. ACI
2. ACI 445
3. databases
4. punching shear
5. structural engineering



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