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| ISBN | 978-93-88122-14-6 | VOL | 01 |
| Website | www.veltech.edu.in | eMail | nisdce@veltech.edu.in |
| Received | 08-May-2020 | Accepted | 23-May-2020 |
| Article ID | NISDCE167 | eAID | 2020.nisdce.167 |


# ANALYTICAL INVESTIGATION ON THE LOAD-BEARING BEHAVIOR OF HOLLOW CORE SLABS WITH DIFFERENT VOID SHAPES

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**ABSTRACT:** The Total weight of a structure is of a great importance as it directly affects the cost of the building. Slabs are the biggest and heaviest structural members in buildings. Hence, many attempts have been done to find new ways to decrease the self-weight of the slabs without highly effecting the load carrying capacity of them. One of the solutions is to use hollow core slabs as they are considered as an effective alternative to reduce the self-weight of slabs beside its many other benefits regarding the need of workman ship and cost. This paper studies the flexural behavior of reinforced hollow core slabs and the effect of voids shapes and spacing on it using the finite element analysis program ANSYS. The test specimens are of uniform size 2600x1200x140mm and same reinforcement. They consist of a solid slab acting as a reference, Group 1 consists of four hollow core slabs with different voids shapes that have the same area of 1963.5 mm², and Group 2 consists of the hollow core slab with the voids shape that gave the best results but with different spacing between the voids. It has been found that the self-weight of the slab has reduced with about 15% and the load carrying capacity has decreased by about 50%. The use of hollow core slabs in construction will decrease the self-weight of the structure and this will directly lead to a dramatic reduction in cost too.

***Keywords:*** *Hollow Core Slabs, Finite Element Analysis, Ansys, Self-Weight Reduction*