

A PROJECT REPORT ON

**“EXPERIMENTAL INVESTIGATION ON COMPOSITE CIRCULAR COLUMNS
INFILLED WITH RECYLED CONCRETE”**

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SYNOPSIS

Columns occupy a vital place in the structural system. Weakness or failure of a column destabilizes the entire structure. Strength & ductility of steel columns need to be ensured through adequate strengthening, repair & rehabilitation techniques to maintain adequate structural performance. Recently, composite column are finding a lot of usage for seismic resistance. In order to prevent shear failure of RC column resulting in storey collapse of buildings, it is essential to make **ductility** of column larger. Recently, most of the buildings utilize this CFT concept as primary for lateral load resisting frames. The concrete used for encasing the structural steel section not only enhances its strength and stiffness, but also protects it from **fire damages** ^[28-31].

In order to reveal the performance of steel recycled composite columns, 171 **specimens** will be designed for axial compression loading experiment. The two types of concrete that will be considered are **Natural & Recycled Concrete** for infill in steel tubes.

Based on these factors, failure patterns and influence of recycled coarse aggregate replacement and slenderness ratio to axial compression load carrying capacity are analyzed. For axial compression load of steel recycled composite columns will be developed. Practical importance of this study is in the application of this system to seismic resistant structures prone to earthquakes ^[23].

The experimental investigation focuses on modes of failure and the most significant factors affecting the experiment with the help of Taghuchi's Analysis. The equation can be generated to find the ultimate Load carrying capacity. Axial shortening and ultimate stress carrying capacity of the column. As recycled aggregates is Green material and also easily accessible, thus can be used seismic prone region. The use of recycled concrete in filled columns would provide an amicable solution. As recycled concrete has LEED points by U.S GBC, its usage will boost the structure towards a green structure. Eco- friendly material being the of demands of today's construction need for Eco-friendly Columns.