



INDUSTRIAL DESIGN PROBLEM (IDP)



PROBLEM INTRODUCTION:

Customer wants to re-build their Casthouse building in a way which will help them remodel their equipments. This existing building is a RCC building which needs a part of it be demolished and reconstructed to meet the requirement. A portion of the existing building floor at 8m level shall have to be dismantled. This portion shall be re-built with steel beams and concrete slab. The new floor structure will have structural steel beams. The roof supporting columns are main columns and will not be disturbed, and only the floor columns (supporting floor) will be dismantled or re-built to support the steel beams.

The floor when demolished, its structural connection from the existing building is also removed. The existing RCC slab and beams under the demolished area and the continuity from existing beams is also removed. New floor shall have to be re-connected with the existing building.

The new floor plan made of structural beam and concrete floor is provided. We cannot add new foundation because of paucity of space. All old foundations can be reused, but new load cannot exceed old load. No new foundation can be built because no such space is available. There are railway tracks running between the two rows of foundation. Compare new load and old load to get an idea about how you wish to re-load. The old slab and new slab will have same level.



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THE CONTEST AND REQUIREMENTS:

The participating teams are required to develop a solution to address the following:

- A. Feasibility of this project based on new loads or any other engineering or re-construction issue.
- B. A solution which is structurally feasible and aesthetic. Also it shouldn't deteriorate the life of structure.

The proposed solution must be such that it is singly applicable to all the columns or location.

It is provided that company wants that the solution is easy to execute, keeping the life of structure and aesthetics in mind and doesn't want hindrances in terms of space occupancy.

Time constraints and economic feasibility may be neglected.

- Solution must be presented by the teams in the PDF/Powerpoint presentation format before the judges at IIT Kharagpur.
- There are no limitations on the number of pages and on the use of any software. However a maximum of 20 min is provided for presentation followed by Q/A session.



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DATA GIVEN:

Load Data:

1. Live Load – 3T/sqmt
2. Wind & Seismic as per IS code. Location is Jamshedpur, India.
3. Dead Load to be calculated as per the engineering drawing

[Drawing 1](#)

[Drawing 2](#)

[Picture showing the Demolition zone](#)

Description:

The RCC building is clad with GI sheet. There is one floor slab. The level of the floor slab is at 8m. The column girds are available in the drawing. This building is complete RCC structure up to this 8m level. Beyond that there will be steel columns to support the roof and EOT crane. The capacity of EOT Crane is 35MT. The building shall be cut off from the floor level at 8m., and then connect the new steel floor with this concrete floor. The floor level of old and new will be same. The foundation type is isolated footing. The depth of foundation is 3.5m from Ground Level. The bearing capacity is 30T/sqmt. The bearing capacity has been fully utilized when designing the old foundations.



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Rules for IDP:

- 1) Each team should comprise of a maximum of 5 members.
- 2) The participating teams must e-mail the list of their team members along with the college name and a specific team name to submissions@megalith.co.in before 7th January 2011.
- 3) Online and other sources should only be used as references. Any direct resemblance may lead to disqualification of the team.
- 4) A presentation on the proposed solution shall be made in front of the judges during Megalith. Judging panel consists of representatives of the Company and Professors of IIT Kharagpur.
- 5) A maximum of 20 minutes will be given for the presentation followed by a 5 minutes Q/A session. Exceeding the time limit provided will result in loss of credits.
- 6) The decision of judges will be final and binding.

For any queries contact:

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