

## Project Process and Outcomes

The IPRO 315 group was asked to fix problems with the previous building design made by the designers of the previous semester. The major problem with the previous design was that it could not withstand any wind or seismic loads. These are loads that are perpendicular to the structure, causing it to twist off of its foundation. The IPRO 315 group saw this as a major issue. The team moved the "core" of the building, made up of four shear concrete walls that span the entire height of the building, five feet toward the center. The team thought this would be a better placement of the concrete core as the center of mass was closer to the geometric center, preventing twisting in the building.

After an 3D analysis of the building on the computer modeling program, SAP2000, the engineers determined that this change fixed the torsion problem. The Architectural group produced a set of plans from AutoCAD for each story of the hotel including a ballroom, cafe, hotel suites and green roof. Using SAP2000 the Engineering group was able to find the service, axial, dead & live, loads on the individual members at each floor so a complete steel and foundation design could be performed while adhering to the relevant building code. The Engineering group also created construction plans to show the structural design of the building.

View of Green Roof

## Conclusion

This semester is the actual conclusion of the IPRO 315 group, for the project has been successfully finished. Although the time parameters seem restricting, it was a good way to experience exactly what goes into a project of this magnitude. The group was fortunate that most of the research was done in the previous semester so that the design work could start immediately. With this information, the group was able to make the best decisions based on the information given so the safest and most cost efficient building could be constructed.

When the IPRO 315 project started, the initial goals were to incorporate the materials learned through out the IIT education and apply those studies in an actual design procedure and process. Teamwork and fluidity within the company was necessary in order to determine solutions to the problems that arose in the design of the large scale project. With success, the IPRO 315 groups were able to attain the skills necessary to prepare them for the following steps of their professional careers.



## IPRO 315 Design of a Large Scale Structure



## The Phantasy Hotel

## Purpose

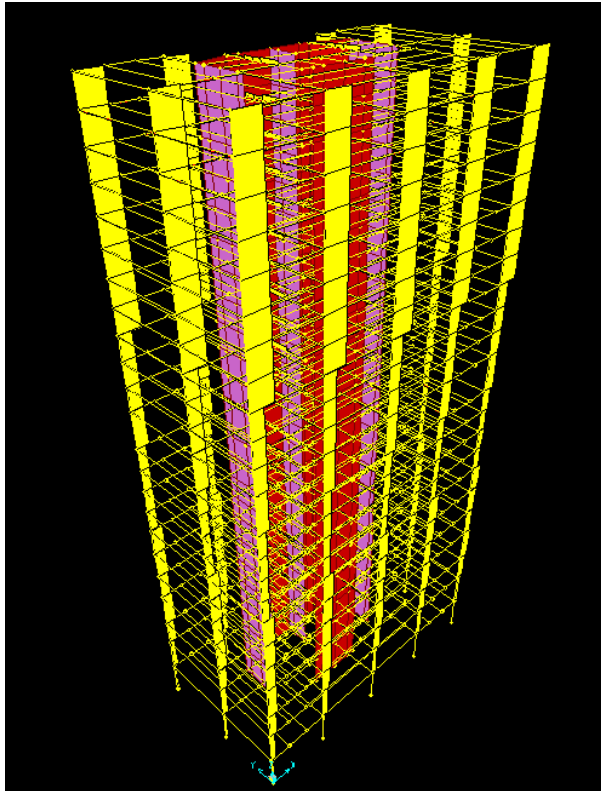
IPRO 315 is an ongoing project. This semester the students were asked to use their skills as architects and engineers to modify a structure created by the previous semester's designers. The group was given a similar frame design from an existing hotel in Chicago, IL. An architectural re-creation of the original Phantasy Hotel and a computer analysis of the structure were made to select new materials for construction of the tower. At the end of the semester, the architects and engineers are to have completed drawings that can be sent to contractors and developers for construction.



View of Lobby

## Methodology

As a simulation of a real team from a design firm, this IPRO class was the first time that team members were asked to work on a "real life" project. It was also the first time that the architects and engineers were able to work together outside of the classroom environment toward a possible goal. It was important for both groups to be able to work together to achieve the goals ahead of them, so a big emphasis was put on management, ethics, teamwork, and leadership. Although no sponsors or clients were involved the IPRO went ahead and worked on the project seriously, and made no shortcuts.



SAP2000 Modeling Result—Torsion Forces

## Team Organization

The IPRO 315 Group is made of two main divisions: Architectural and Engineering. Since the group met weekly, each member was fully aware of each team's standings and what their next steps were. Once each part was completed, it was uploaded to IGroups so that each team member had access to all files. In order to prevent confusion, an AutoCAD standard for project drawings was created. Upon completion of research and tasks all files were compiled.

The Engineering group was divided into the following three sub-teams: Computer Analysis, Steel Design, and Foundation Design. This was done to ensure that each group was able to accomplish their individual group goals.

Architectural	Engineering
<ul style="list-style-type: none"> <li>Namrata Hegde</li> <li>Michael Cullen</li> <li>Oladipo Animashaun</li> <li>Steve Kuo</li> <li>Dawveed Scully</li> <li>Yoojee Kim</li> </ul>	Computer Analysis <ul style="list-style-type: none"> <li>Christopher Lee</li> <li>Carmen Aguilar-Wedge</li> <li>Yongdoo Lee</li> </ul> Steel Design <ul style="list-style-type: none"> <li>Shuaib Hadi</li> <li>Yongdoo Lee</li> </ul>
Faculty Advisors	<ul style="list-style-type: none"> <li>Shadi Yousef</li> </ul> Foundation <ul style="list-style-type: none"> <li>Karol Rybaltowski</li> <li>Alex Bauer</li> </ul>
<ul style="list-style-type: none"> <li>Dr. Jeffrey Budiman</li> <li>Dr. Jay Shen</li> <li>Mr. Jorge Cobo</li> </ul>	

The Phantasy Hotel