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### **Optimization of Industrial Building with Shell Type Building**

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There has been a massive renaissance occurring within the construction industry due to the rapid economic development in conjunction with the vast urbanization processes which are taking place in the country. Ordinary types of buildings occupy more space due to the requirement of more columns and large beams which causes wastage of space. This is largely a hindrance to the industrial sector where capital costs play a vital role together with space therefore a solution to all these problems is in the construction of shell type buildings. Shell type buildings occupy less space and therefore provide some surplus space from the already available space which can be used for other useful or fruitful purposes to further the growth of and organization. The base model that was selected was a factory building belonging to POLIPTO which is based at the BOI investment zone in Horana. This is an ordinary rectangular type building which consists of a floor area of 975m<sup>2</sup>. A dome structure was designed for an equivalent to that area. A manual design was performed for the selected dimensions. Dome dimensions were selected relevant to the rectangular building. Span of the dome was 48m while height of the span was 8m. The selected dome area was larger than the rectangular building area. The total area of the dome cannot be considered as the total workable area due to the shape of the dome. This is due to the shape being spherical. A sky light was designed in order to allow ventilation inside the dome. Sky light was designed at 7.51 m above the floor level. Reinforced concrete spherical shell structure was designed by using the SAP 2000. For analyzing the dome, 40 angular divisions were selected. According to the project, the cost of the dome was higher than the rectangular building but when the area was widened without any columns and beams the dome structures were suitable. Concrete was selected due to the many beneficial properties it offers such as easy processing, high compressive strength and high durability. The structural stability of the domes are more in comparison to the ordinary rectangular type buildings in their ability to withstand natural environmental disasters such as tornadoes, hurricanes, cyclones etc.