A Case Study on Construction Safety Prof. Jigar Metha Indian Institute of Technology, Delhi

Module No # 04 Lecture No # 16

Hi, good day friends. I am Jigar Mehta an alumnus of IIT Delhi. A PMP qualified construction professional, with 11 years of experience in L & T construction. I have worked in EPC projects like Delhi international airport phase 2, a FIFA 2022 world cup stadium in Qatar known as Al Rayyan stadium, Dhirubhai Ambani International Convention exhibition center in BKC, Mumbai and hotel Sahar Star and Wankhede Stadium in Mumbai.

Today I will be speaking on a topic of safe lifting operations at construction site. How it is governed and how it is taking place? So, what is safe lifting operations and how it is governed? As per BS 7121 and LOLER which stands for lifting operation lifting equipment regulations. PUWER 1998 which is provision and use of work equipment at construction sites and HASAWA Health and safety at work act which is 1974.

According to these laws, a safe lifting operation is something which is safely planned by a professional who is certified and qualified to carry out the lifting operation, and then executed by a professional team. So that all the lifting works is carried in as per the plan. A professional qualified team of lifting consist of a lifting supervisor, lifting riggers, signalers, signal man and crane operators. All this crew together forms a safe lifting team.

So, all this team member will follow a lifting plan ideally a lifting plan consist of 5 constituents. Numbers 1 is determining or identifying the weight of the object to be lifted. And determine its CG once the weight and CG of the object is known it becomes easier how to lift it. Number 2 is the selection of a suitable lifting accessory or a lifting gear. Depending on the type of load we are going to be lifting.

Number 3 is rigging and slinging arrangements based on the lifting points. There may be a single point lift or a multiple point lift that is the 2-point lift, 4-point lift or even a more point lifts may be there. So, we have to determine how the lifting points will be there of an object. Then

determine whether a strong back arrangement is needed if it is too heavy object or asymmetrical. Where CG is not balanced, we may need a strong back arrangement.

Number 4 is a selection of a suitable type of a crane for which we are going to lift the load. This type of a crane depends on various factors and is the most important subject to understand. The type of a crane at a construction site may be a mobile crane or a tower crane. The mobile crane which consists of a tyre mounted crane crawler mounted crane. All depending on the capacity of load which we are going to lift and the location of the lift.

The tower crane can be flat jib crane or a luffing jib crane and it depends on the location. In metro cities where there is an obstruction of a flat jib. Where it may obstruct another building or object, we use a luffing jib crane, where the jib is tilted. The fifth component of a lifting plan is safe lifting operations which includes exclusion zone where it is going to be lifted. Ground pressure calculation, determination of the ground whether it is stables no underground service or any obstruction is there in underground.

Wind speed, increment weather conditions and risk identifications during lifting. All these things are very important to determine before completing the lift plan. And all this thing has to be included in lift plan to ensure that lifting is carried safely at site. I hope I have clarified in brief about the requirements of operation of the safe lifting at construction site. And it is regulated by international labour organizations.

Once this lifting plan is ready it is than handed over to the lifting supervisor. The lifting engineer and lifting supervisor together will coordinate how it will be taken at site. And the lifting team which consists of rigger, signalman and the most important is an operator, he is the person who knows where the load is going and how the load is being taken. So, any risk he the first one to highlight it and second one is the supervisor.

Ideally it will be safe if we select the proper type of crane based on the load the lifting will go safe. So, I hope I have clarified all the requirements for the lifting operations. On a happy note, I will say goodbye to all of you for your patience and watching me. Have a good day.