Introduction to Lean Construction
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Module 01 – Lecture 55
Lean Work Structuring

Hello everyone, in this module 1 of lean basics session 11 we will cover, a lean collaborative planning system, of that you know today we are going to cover work structuring, COLPLASSE, and a few other details.

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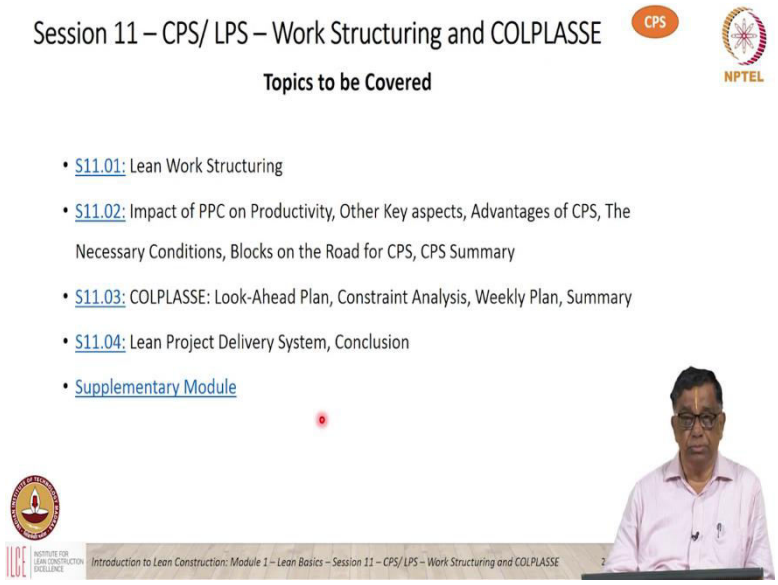

So, if you look at these sessions 11.01 through 11.04, talk about work structuring, then a few things about productivity and so on, then about a new process called COLPLASSE. and finally, the lean project delivery.

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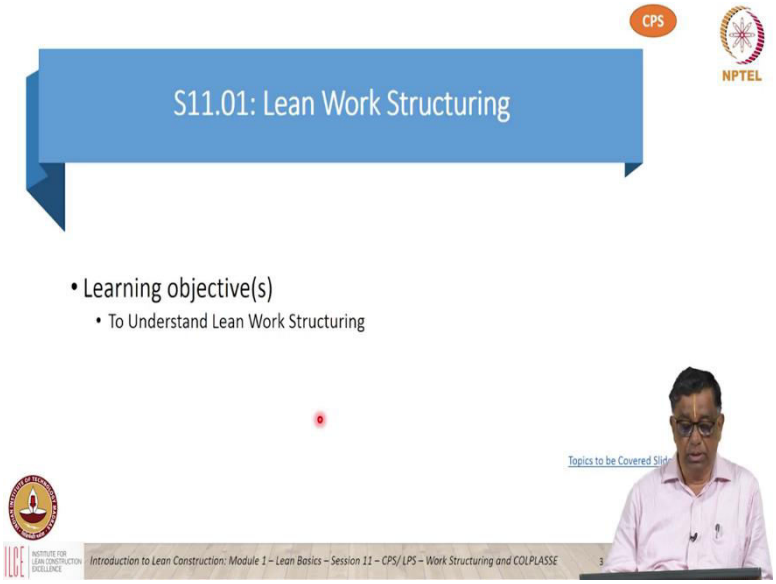

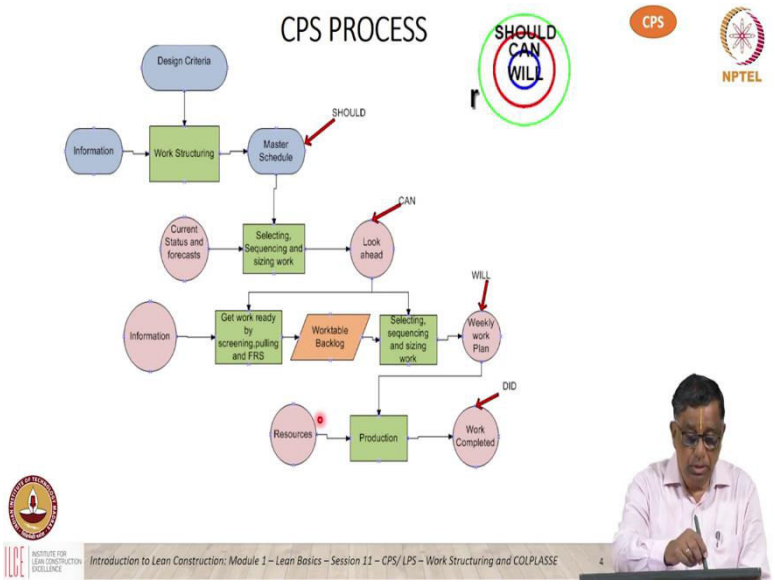

So, the first one 11.01, we will try to understand what exactly is lean work structuring. If you look at the overall CPS process, this particular chart we have seen earlier and right at the beginning, right at the top, you know, you have the work structuring, that is actually very important. So, work structuring is the first part to start with and from that, we develop the master schedule and so on going further down the line.

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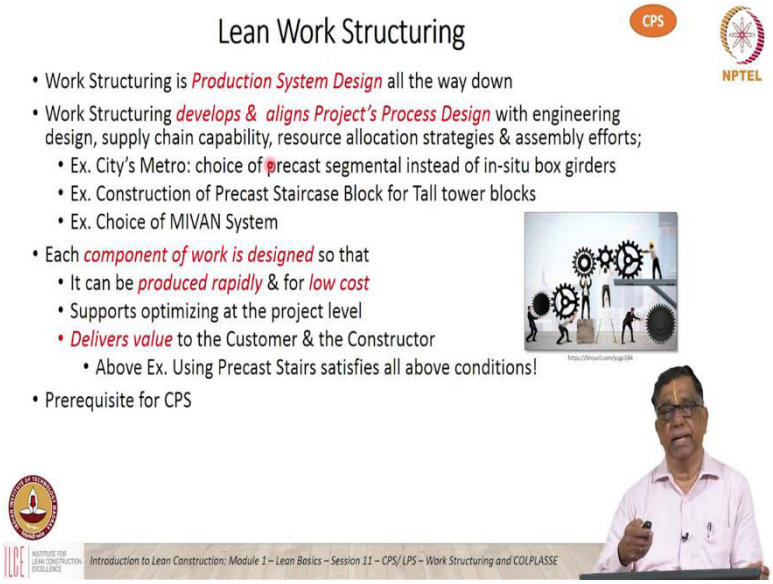

So, what exactly is work structuring? It is a production system design all the way down, and it develops and aligns the projects the process design with, you know, the various aspects which are coming down stream like the project design, the separate chain capability, allocation of resources, the kind of strategies we will have for that and different assembly efforts, or the construction methods.

We need to have a broad idea of how we are going to go about in the project, for example a metro project in the city, for example we traditionally use precast segmental construction, that is the kind of decision we need to make early by using the lean work structuring. For example, a multi-storey building, you may need to decide to use precast concrete, staircase blocks to speed up the process of going from floor to floor or some other building you may choose to use aluminium formwork, MIVAN system for example.

So, that kind of broad decision has to be made in the beginning as part of the lean work structuring. So, each the basic idea is that the various components of work can be produced rapidly and at low cost, the right construction method, the right design, and so on and then we need to be able to optimize at the overall project level, you know, get in the big picture, the global picture, and go accordingly. And then it has to drive value to the customer and the constructor or the contractor as well, for example the use of precast concrete staircase system and a multi-storey building, that adds value for everybody. And of course, this is the prerequisite for doing CPS to start with.

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This is what I was talking about in an urban convergent environment, we use the precast segmental construction system, whereas in the open fields for example, in the Singapore metro they used a different system of launching the entire precast concrete girder, each of these would be inappropriate in the other circumstances. So, for the given system for the given circumstances or the environment we need to decide the right kind of method and the corresponding design, supply chain management, and so on that is where work structuring comes in.

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This is another example of the you know, the use of precast concrete staircase blocks for multi-storey buildings.

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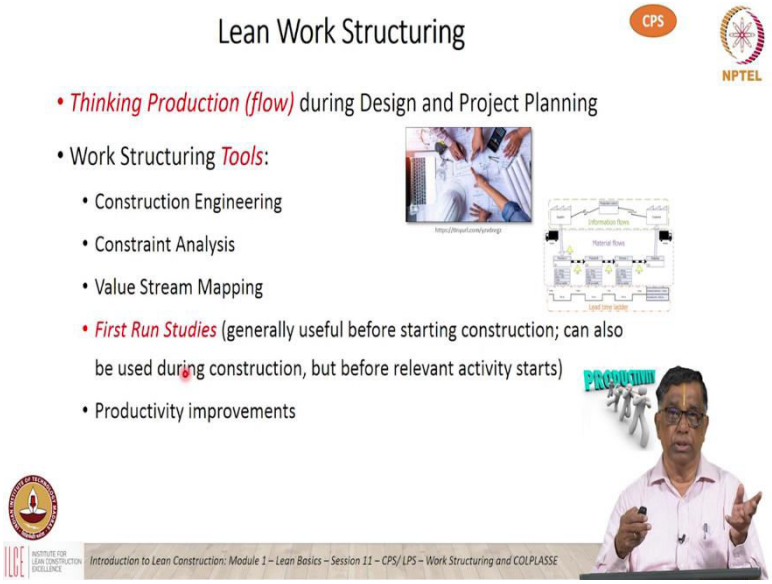

So, lean work structuring is actually thinking production flow during design and project planning in a seamless manner. The various tools we adopt, the first is construction engineering, many people are not aware of what exactly is construction engineering, is designing the construction methods and asks the wherewithal which we need as you know the prerequisites for starting construction, the kind of equipment you need, number of equipment, the productivities you are going to use, what kind of tools, what kind of labour all the you know even the temporary structures like formwork design, all these actually come under construction engineering.

This is actually as important as your engineering for the permanent structures. But many people you know do not pay that much attention to construction engineering and in the process, there are delays there are you know less than what is optimization process and generally people are not aware of this aspect and we need to pay attention to it.

And we also look at the various constraints and see you know whether they are remedied by the lean work structuring process. The value stream mapping we need to have a good idea of how to avoid waste in the entire process and sometimes we also use what is called first run studies that is actually making a mock-up of some of the processes for example, you know, Precast segmental construction you want to adopt in an extensive manner for the entire city, for the urban metro.

So, you may need to, you may want to make an initial mock-up or a kind of model test kind of thing, so that you are sure that the method will work out well for the entire project. And also, for there are methods for improving productivity like work sampling and so on, they also need to be thought of, while doing work structuring.

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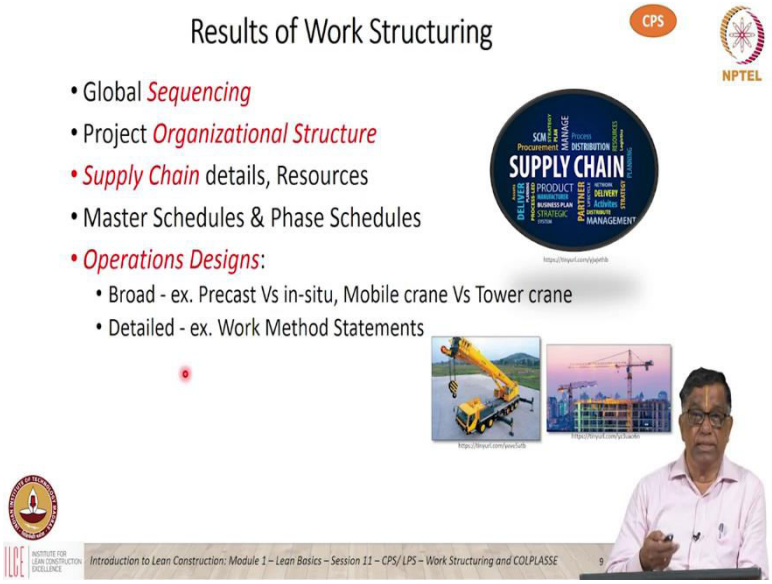

And once you complete the work structuring, what you get are the results, we get the complete global sequencing which require for making the milestone planning for, to start the CPS process, then we get the organizational structure, how many places you know you need to work simultaneously? what is the supply chain system?

So, the supply chain details, what kind of resources? the broad equipment, you know, we need to design a 300 ton crane, or 200 ton crane, Mobile crane, Tower crane, all the decisions have to be made a priory in the beginning itself in the work structuring process, otherwise you know, we get into problems later on. And then you also get the master schedules and the phase schedules as a result of work structuring.

So, like I said, you know, broadly we decide Precast or in-situ, then you need to use a Mobile crane or a Tower crane, boom placer, whatever it is and also get the work method statements. The method statement is another important component of construction. So, many people tend to ignore this important step in between step, if you look at the major international construction companies, they will not permit any work to be done unless there is a method statement in place and approved by the competent authorities and that should be like a bible for the entire work and no deviation would be permitted.

Any self-respecting project management consultant for example, will not permit any deviation from a written down approved method statement unless it gets reapproved with the whatever revisions one has in mind. So, we need to look at the work structuring and other systems in construction before embarking upon CPS.

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