Introduction to Lean Construction
Professor N Raghavan
Department of Civil Engineering
Indian Institute of Technology, Madras
Current Project Performance, Workflow Variation, Traditional Project Management vs Lean Production Management

Hello everyone. So, we start today session on Introduction to Lean Construction, the first Module on Lean Basics. And Session 10, we are going to cover Collaborative Planning System called CPS, is also a variation of the famous Last Planner System.

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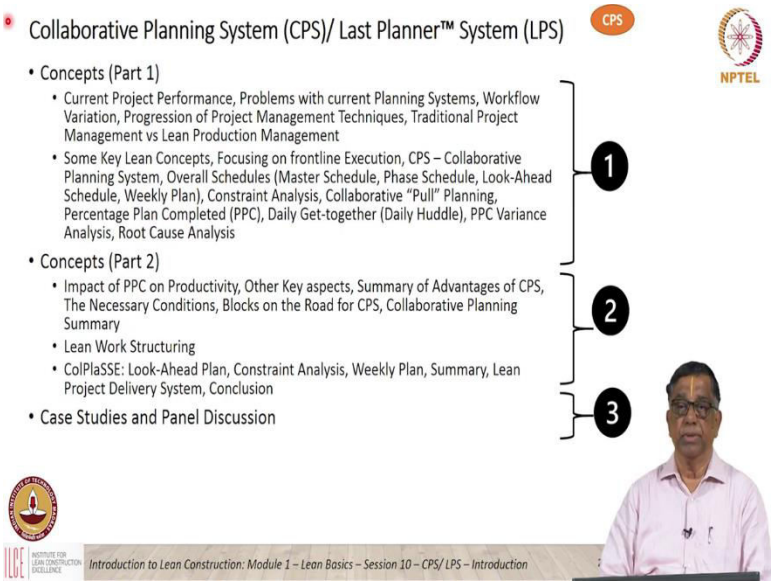

So, we are going to have two basic parts covering the basic concepts. And then we go on to case studies and also a panel discussion.

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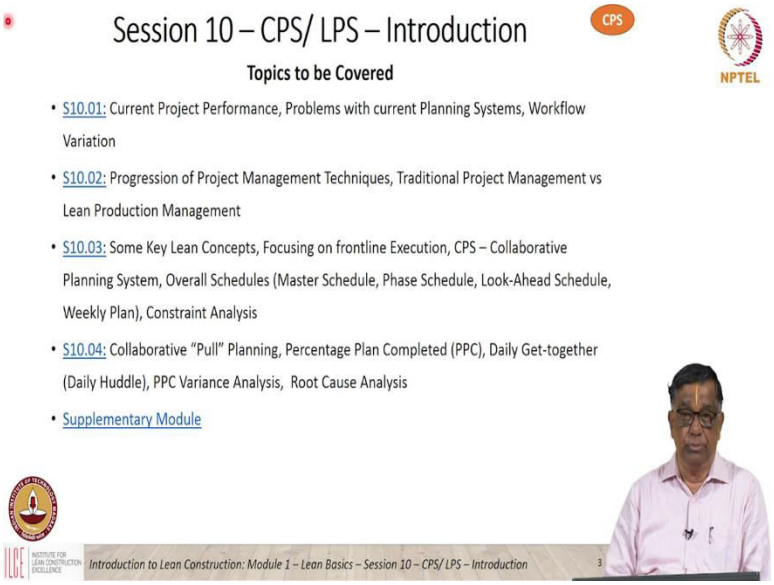

And if we look at the first session, S10.01 to 04. Initially, we will cover the Current Project Performance, what things generally go wrong? And then we look at the Progression of Project Management Techniques over a long period and about Traditional Project Management versus the Lean Project Management. Then we will look at some key lean concepts and then go on to the explanation of what is called Collaborative Planning System.

How does it work with the various schedules? And then the constraint analysis. And finally, we explained what is Collaborative Pull Planning? What are the various parameters called PPC? Then your Root Cause Analysis and Variance Analysis and so on. We will cover all these in this session.

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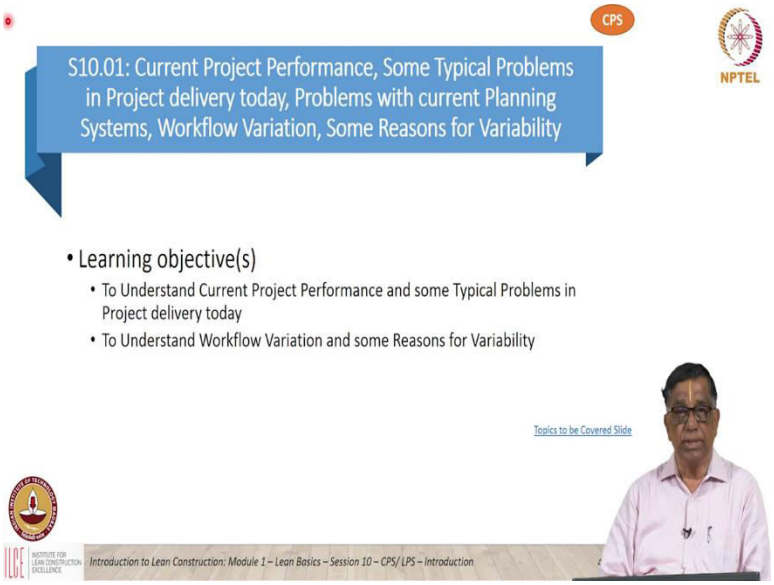

To start with the first learning objectives, to understand the current project performance and some typical problems encountered with project delivery as on date. And then look at what are the problem with workflow variation. And some of the reasons for this kind of variability.

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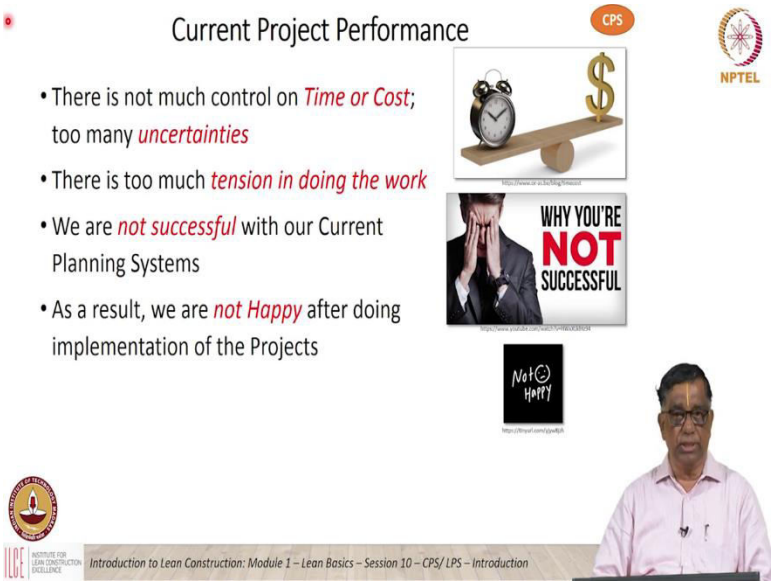

So, if you look at the current project performance, many people are reporting that we are not able to keep up to time or cost budgets. The Ministry of Statistics and Program Implementation is cataloguing the performance of a number of public sector projects all over the country, they have horrendous figures something like 40 to 50 percent of projects are having very high time

overruns and cost overruns in spite of following the best of project management practices as of existing now.

So, there is not much control on the time and cost. And if you ask any major construction company, whether they are able to keep up to their budget comfortably, the answer is no, many uncertainties, there is so much tension in doing the work at the ground level in the various projects. And generally, we are not successful with the current planning systems. As a result, the people at the site are not really happy doing the work.

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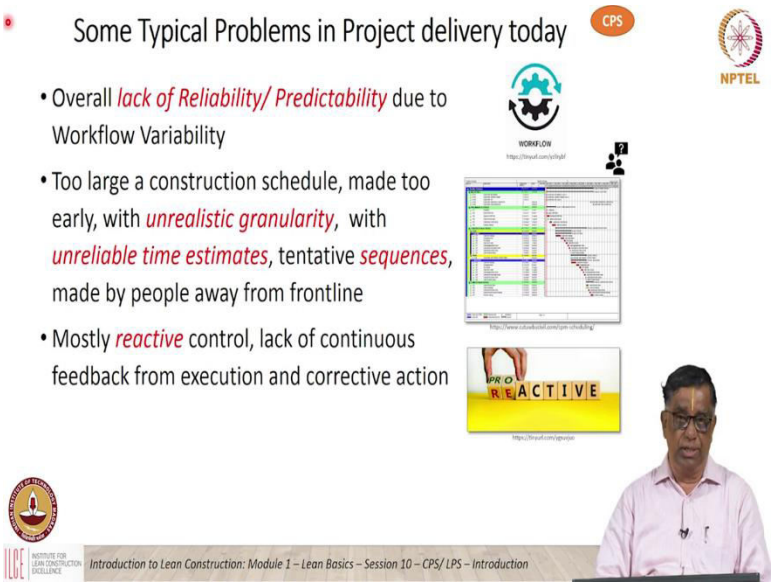

So, the main reason is the lack of reliability or predictability or certainty in the workflow due to workflow variability. Generally, people are operating with Current Primavera, MS Projects, very large construction schedules, thousands of activities, but all made well before the project starts. And by people who are sitting in the head office or regional office away from the actual reality of the project, and the actual people working on the project, the frontline people, they are generally not involved in all this planning.

So, too much of granularity, unreliable time estimates, then the sequences are tentative till actual construction methods are worked out at the side. And again, they are made by people sitting away from the front line. And thereafter we have only reactive controls hardly any proactive controls. And then there is a lack of continuous feedback, which helps you to correct what goes wrong between the planning and the actual execution.

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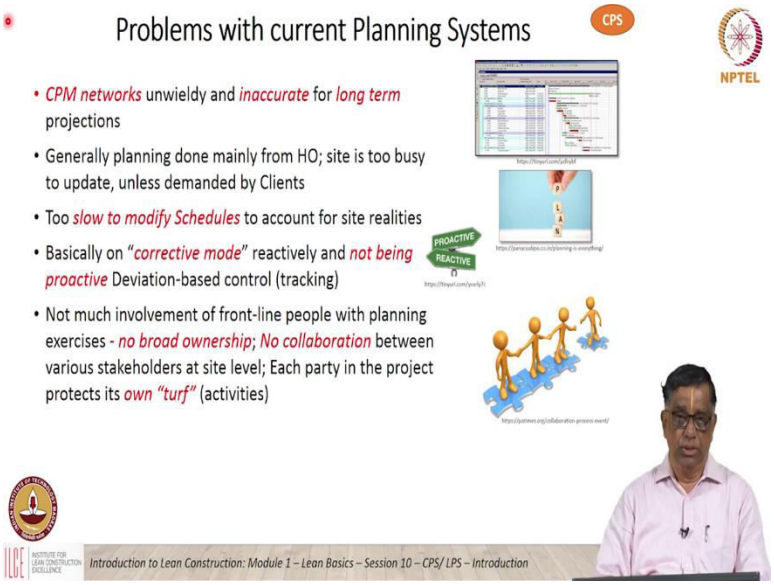

So, CPM networks, if you are having too many activities, they are quite unwieldy. And they are made per project running for about 4 to 5 years, if you make a large network in the beginning, is bound to be unreliable. Because you cannot plan what is going to happen for example, at the end of second year, on a particular day, there is so many activities going on.

So, and again, the planning is done by people away from the project site. And if you look at the revisions of these schedules, whether they are really up to date on a given day, the answer is no. They are too unwieldy to keep on revising on a day to day basis. As and when there is a disconnect between the actual planning and the execution. There is a need for updating the schedules, but that is not really possible with these large schedules.

And we do not get such timely feedbacks. So, unless a client insists, we never update the schedules quite frequently. And then again, there is the proactiveness is not possible because the schedules are too unwieldy, to always in a corrective mode, trying to put the blame on people, and look at the targets and variances, targets and variances that is how the day goes at the site.

So, there is not much of a broad ownership at the site, the people will always say that the schedules are made by somebody else, and I am not really responsible, I am trying to do the best I can. So, the collaboration is not there, at the site, between the various departments. So, everybody wants to protect his own turf, his own activities, and they do not want to step into the other people's work, help them and take help and so on.

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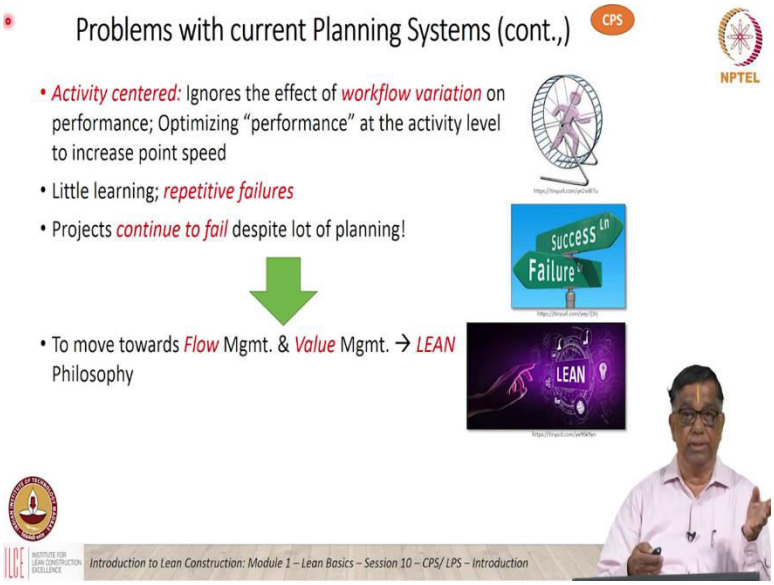

And again, if we look at the focus, the focus is actually activity control, have I been able to do today is concreting, have I been able to get so many bent for today or tomorrow, if you asked the frontline people, whether they have a hang of the overall flow of work towards delivering value for the client ultimately handover the project at the end of the day, that they will, you will find that they do not have that kind of connection.

So, it is all activity oriented and there is not much concerned with the overall flow of work and there is not much of feedback loops. So, there are repetitive failures, the same kind of problems occur again and again, and the project continued to fail. And today, the Ministry of Statistics and Program Implementation keeps coming up with bad statistics, we are not able to control much. And this is where we have a great ray of light, the lean construction management coming in and trying to help us to get back to proper controls.

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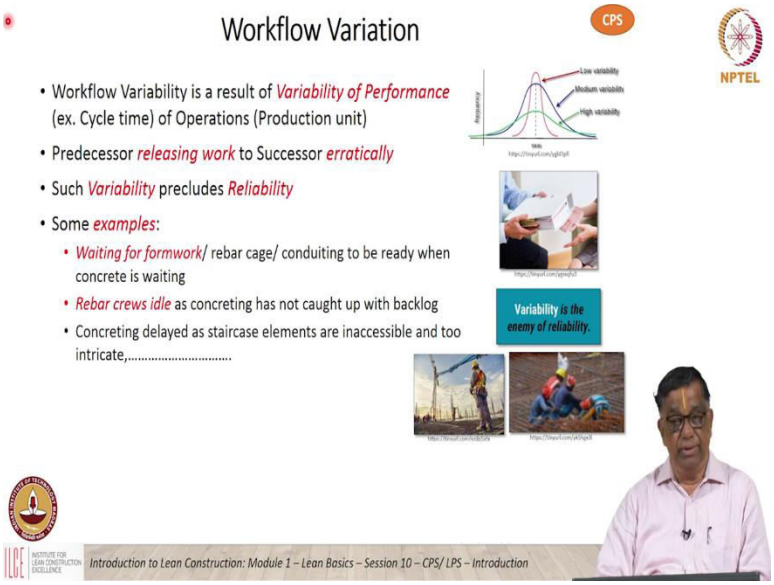

If you look at the variability of workflow. The main reason is the variability of performance, that is your cycle time, you are not able to control and predict exactly how it goes. So, the generally what happens the predecessor activity does not release the work for the successor as planned on a given day or given shift. So, for example, somebody the formwork gets delayed or the rebar bending gets delayed, the concrete man waits.

I have seen in one site at the sixth floor, the reinforcement is ready, the concreting, the batching plant has sent the concrete in transit mixer, the concrete pump is ready, but suddenly people find that there are some inserts or some conduits not placed in the right place. So, somebody goes and gets it and all that. So, there is not much of proper connection, not much of coordination between things and the activities get delayed and the effect downstream activities, add there is not much of overall flow.

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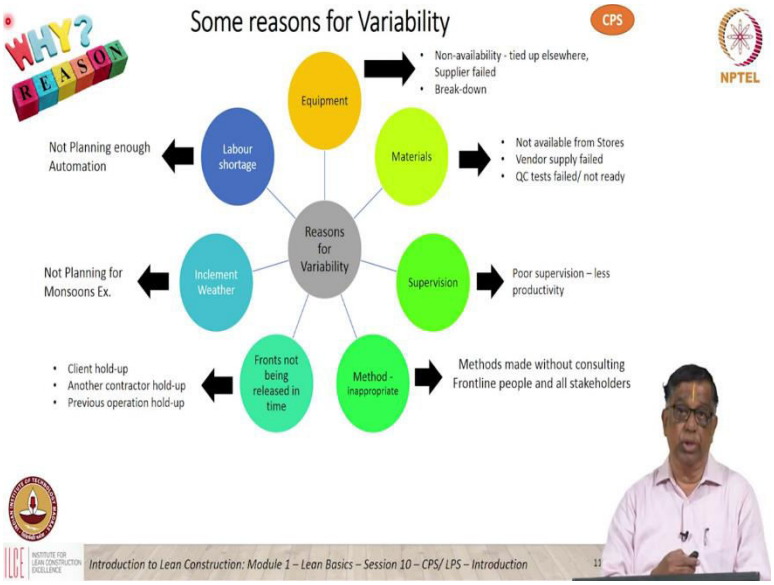

So, you look at some of the broad reasons for variability, there are several. We can look at for example, the equipment, the equipment one has to make sure in advance that is available on a given day. And then again available with good performance or the availability of a large number of materials. Construction actually goes on in a number of funds in a project with multiple stakeholders, there are civil, mechanical, electrical, equipment people, labor supply people, there are so many stakeholders.

So, multiple activities, there is a lot of problems with coordination. So, materials can get hit if there is not proper coordination. And then again, the supervisors have to be properly briefed, they have to be on board fully and they have to have proper morale, and they should have the wherewithal to supervise the work to the required quality, safety and so on. That does not happen many times.

And again, their consumption methods are made by somebody else, not with the site people sometimes there is not much of ownership there. And then the funds not being relieved for lack of coordination, the client may not release, drawings may not be available, the previous, another contractor may not have release of fronts, there are a number of reasons. And if all goes well, the rain god may step in, and you have inclement weather.

And India, the perennial problem you go to any site and ask the project manager, what is your major problem, he will say labor shortage, so labor again, so many factors can give rise to

variability. And then we do not have much control because we do not have that kind of granular planning, close to the time of working, and that is where Lean can help us to a great extent.

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Now, we will look at the second session, where the learning objectives are to understand the progression of the project management techniques over time. And then to understand how the traditional management techniques and lean management techniques are different.

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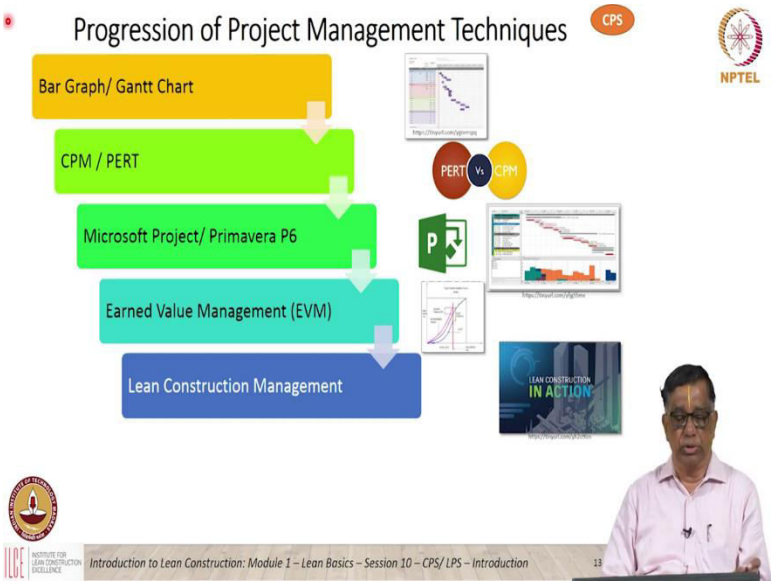

In the earlier days, we used to have bar charts, Gantt charts, very much older days. Then we had the CPM and PERT networks, then we had the great Primavera and MS project, then we had a concept called Earned Value Management. And today we have Lean Construction Management. A great progression of different kinds of project management techniques, and all going towards getting a better handle on project management.

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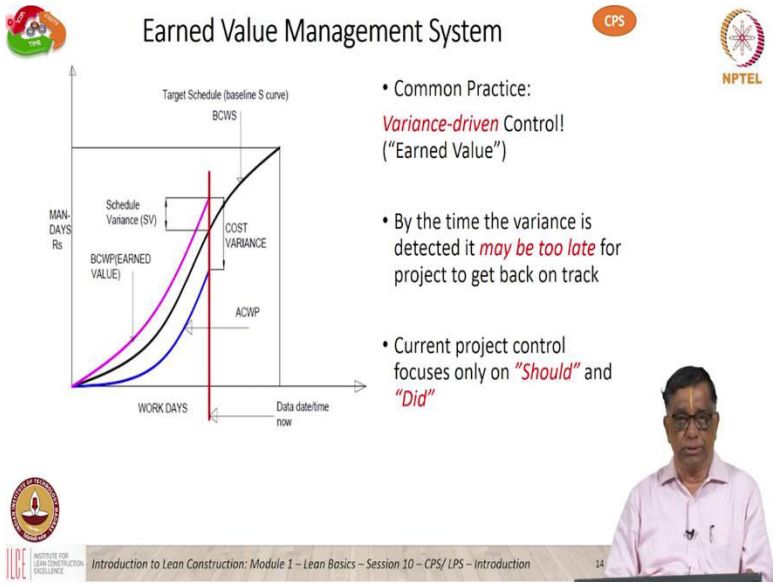

So, when EVM, Earned Value Management concept came, people were very happy that you have a better understanding of the project. But again, you are only measuring variances, you are measuring schedule variance, or cost variance. And measurement of these variances can take place only post facto, you do not have control beforehand. So, once you measure the variances after the work is done, you are in a reactive mode, and you do not have any proactive control. Hence this particular method again is not that good.

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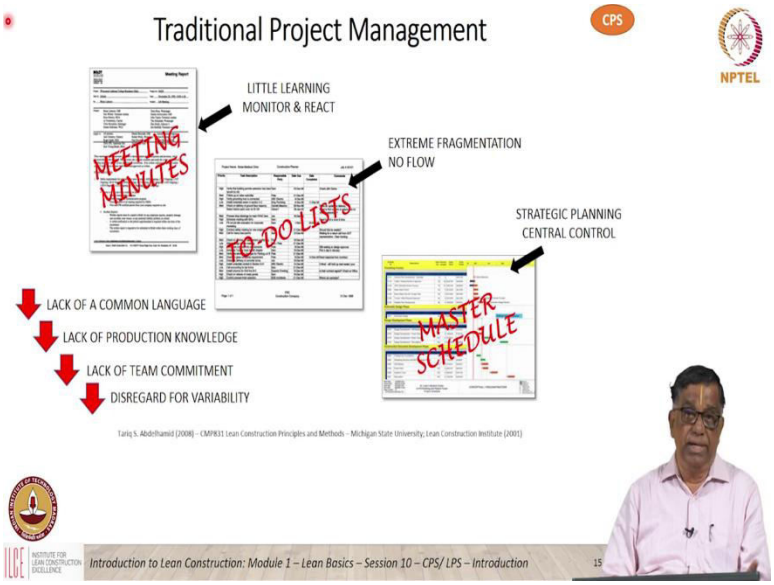

And if you look at the way projects are managed, you have your minutes of meeting, a lot of meetings are going on, then we make To Do lists. And then we have master schedule, which is a huge Primavera, MS project or network with a lot of activities and so on. So, we have little learning, because of minutes of meeting they keep getting made. And then we only are able to react and the To Do lists are again very fragmented, we do not have the overall picture, the workflow is not the criteria, it is actually a number of specific activities to be done by various people.

And then we have the master schedule, which is again too granular, too broad, too large to have any control. So, there is a lack of common language. And the production knowledge is not percolated across the entire spectrum, we have a lack of Team Commitment. And then the variability keeps on happening, very little regard for controlling that.

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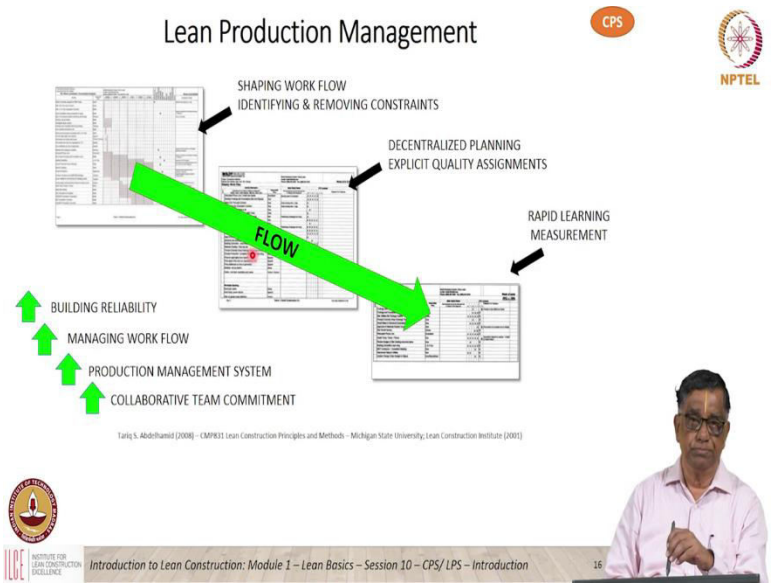

Whereas if we look at the Lean Production Management, we have the workflow, that is a very important concept. And then we identify constraints beforehand, not measuring afterwards, but beforehand, and trying to remove them. And then we have decentralized planning. So, the people who are actually doing the work, they are involved in the planning, and then we have explicit quality definitions and assignments.

And then they are the measurement of the learning and then the feedback loop and so on. So, we actually build reliability into the entire process. We manage the workflow for that. And then we have a good robust Production Management System. And then we have the overall collaborative team commitment, not isolated, something thrust on people, but the team itself comes forward to do the work on a collaborative basis. That is the beauty and advantage of Lean Construction Management System.

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Quiz

1. Which of the following is/are incorrect for advantages from removing workflow variability:
   a) **Development of Planning skills in Frontline Supervisors**
   b) **Less waiting, more Predictability/ Certainty**
   c) **Increase Productivity**

   a) Development of Planning skills in Frontline Supervisors

2. Current Project management concepts are activity-centered or workflow- centered?

   Activity-centered

3. Right or Wrong?
   a) Uncertainties in construction are a result of work variability

      Right

   b) Labour shortage, inclement weather and wrong methods could be reasons for Variability

      Right

   c) Predecessor item releasing work to successor item erratically cannot be a reason for workflow variation

      Wrong

Quiz

1. BCWP-BCWS is____.
   a) Cost variance
   b) Schedule variance
   c) Neither
   d) Both

   b) Schedule variance

2. BCWP-ACWP is____.
   a) Cost variance
   b) Schedule variance
   c) Neither
   d) Both

   a) Cost variance

3. Typically Minutes of Meeting and To-Do lists are part of:
   a) Traditional Project Management
   b) Lean Project Management
   c) Neither of these
   d) Both

Supplementary Module

Link (to read and contribute)

https://tinyurl.com/yf9pvee6