Introduction to Lean Construction
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Module 1
Lecture 32
Sampling/Surveying Techniques – Foreman Delay Survey – Implementation

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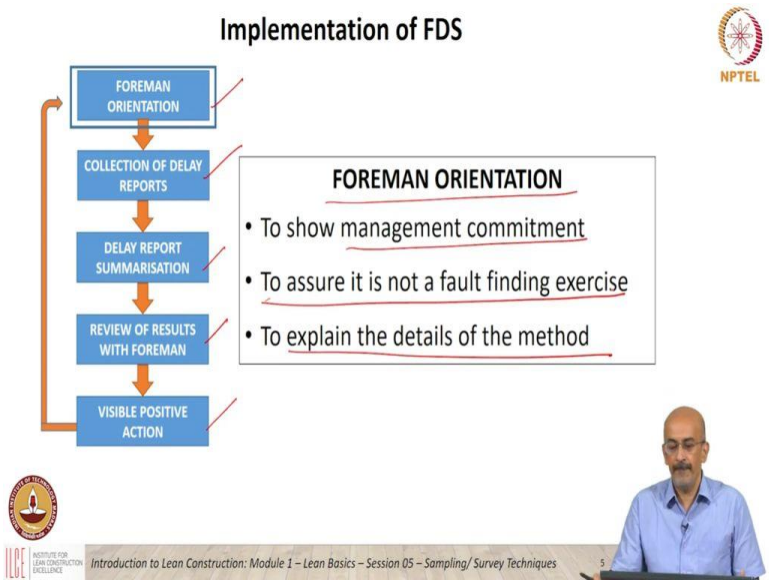

Now, these are the steps in a Foreman delay survey. So, we have the Foreman orientation, the collection of delay reports, the report summarization, review of results and visible possible action. We will go through these steps and give you a little more detail on what happens in each. So, when we do an orientation, like I mentioned earlier, this is to mainly to explain the details of the method. You have people have to understand why what are the types of delays? What is the delay happen, it is not regular and construction just to have delays not a given.

We should be able to notice that it is happening and be able to quantify it. Now, when you do this, it shows management commitment. It is a little bit of training for the Foreman to you know act from a management perspective. And one very very important aspect is we should assure, it is not a fault finding exercise. A lot of times we have come across situations where Foremen are reluctant to share data, because they think they will be asked to take the blame. The management

here should be clear that any that it is an exercise, to be able to enable management to take corrective action.

And they and they will take corrective action and it is not just to put the blame on the foreman. Now, this is easy to say. But, in many many cases, we have found that a lot of Foremen have tough time believing that the management will not blame them if there is a delay; and getting that cooperation has been an issue. But, at the same time in several sites, we have found that once the Foreman are convinced that this is an exercise which is going to result in overall easing of their work, getting them the required resources at the right time et-cetera. There is a tremendous amount of cooperation and this Foreman orientation really helps with it.

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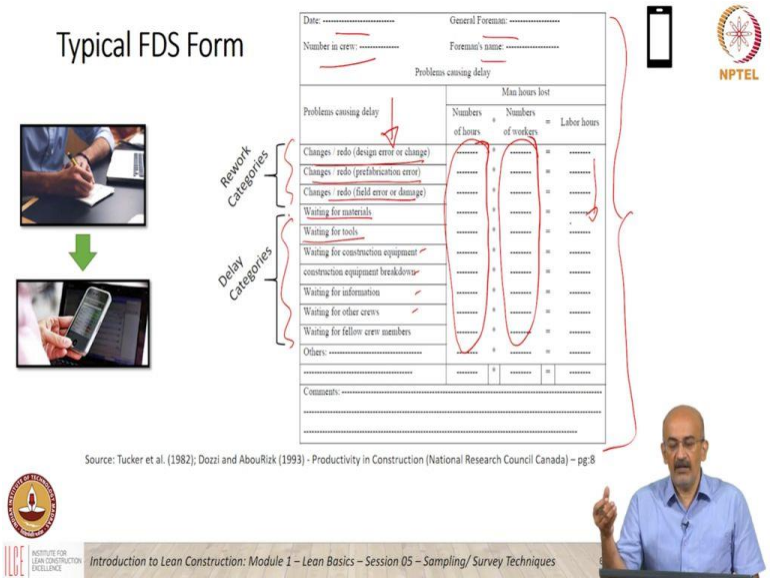

Now, when we go into the form they have to fill out one of the in a one of the real enablers is the form is fairly simple. So, in the orientation program, they have to be taught as to how to fill the form. And again, the form is not necessarily asked; I mean while most people use the format shown here, if you would like to have any other category; then it is it is more than okay to add or delete with something; that is add something that is relevant to your project and delete something that is not relevant.

So, if you like analyze the form, you have some general information on the crew date, for the form and Foreman name; and the key is the categories of delays. So, you can see here, there are changes due to design, changes due to prefabrication error, field error, or waiting for material,

waiting for tools. So, these are the wait categories, these are the rework categories. And so you have your categories which people have identified are common categories for waste, and idling, and delay in construction.

These are the common categories. Like I said, if you want to add or change that is fine. Now, what is done here is you find the number of hours a crew has waited; and the number of workers in the crew. So, each of these the Foreman would fill out which category of delay was there; and then quantify the total hours of delay that occurred. This seems very simplistic, it is simplistic. But, if the Foremen are able to or the supervisor is able to do, fill this out meaningfully.

It means that you have be able to get good information on what is happening at the work phase in a very simple way.

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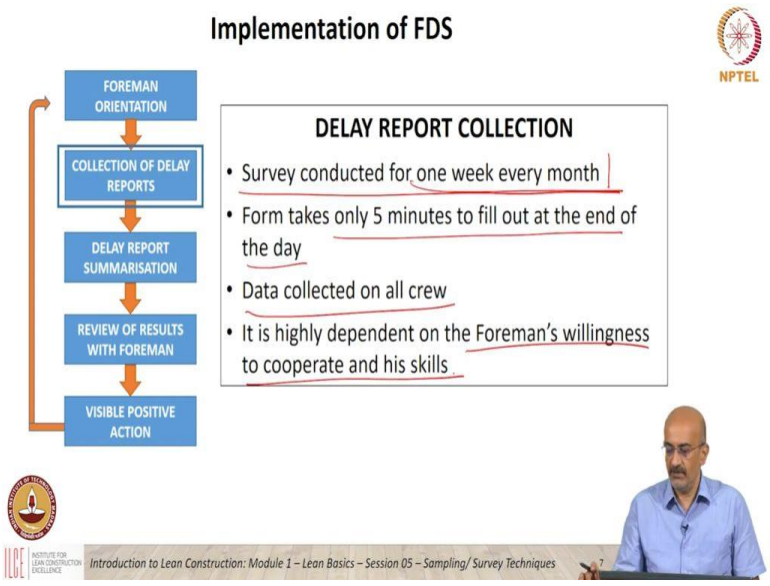

Now, once you collect the delay report, so basically you would have to do the survey once a week. Okay for every month, or one week every month; actually is one week every month, you do the survey. And as you can see the simple part of the form taking only five minutes to fill out at the end of the day is actually the biggest enabler of the form. Nobody wants to sell out and fill a questionnaire for 20, 30 minutes at the end of the day, or end of the week.

So, for each day of the week, at the end of the day, they will fill out this form and give it to you. Data is collected on all crew; and like we said it is dependent on the Foreman's willingness to

cooperate, and his or her skills. And a lot of times I am just repeating, we have found that even though they can be initially a little bit of reluctance. Once they see that the management is committed, and if the management is truly committed, there is buy-in and there is benefit to this.

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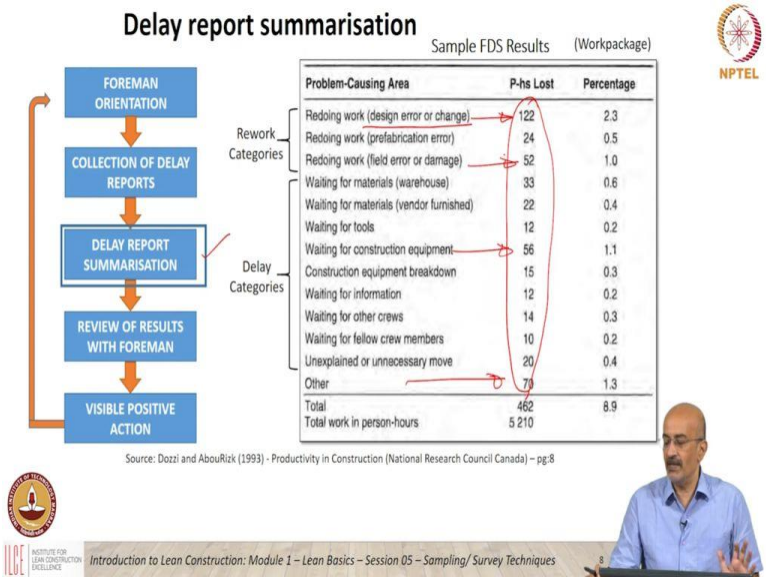

Now, then the delay reports are summarized. So, this is a typical summary that you can see here; this is person I was lost for different categories. You can see this is for a particular category how much was lost; and the percentage of time that is lost. So, if you are look at this, for example, in design change, error or change; there were so many person hours lost. That seems to be one very critical issue. So, we then start now is change of design in the control of the Foreman, no. So, if we take some action to kind of look at design, review design; or to how do we kind of make sure this change or error is avoided, if it is possible.

I think that would kind of build more, try to bring that down, waiting for construction equipment; it is another category which is taking that. So, this again jumps out of the from the analysis. Now, this might be something on site with a better equipment management or requisition pattern; we might be able to reduce this waiting. Similarly, if you look at some other say 70, might be in the meeting of the Foreman, will have to ask, what is this other? How did this come about? What are the details of this? How do I resolve this? field error or damage?

So, you can take item by item, and it gives you a detailed discussion on various categories. And there will be so much of probably communication on that that becomes beneficial to understand what are causing these problems.

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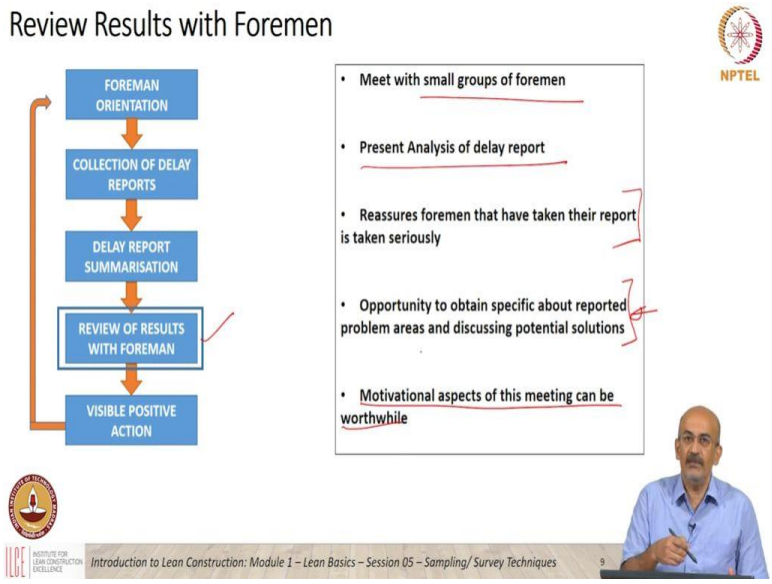

Now, reviewing results with Foreman, if you are meeting small groups of foreman, you are presenting the analysis of the delay report. And this is this people have found it, this is very important because it, I mean it is not that the report came was submitted, somebody analyzed it, somebody did something with it, and it went off. One week they submitted reports and there is no results on it. The feedback that is coming back to the Foreman, showing the numbers, showing the big pictures, makes them feel they are a part of the whole organization.

And it has had a really strong motivational aspect and makes a meeting work. Not only this, but you also get the opportunity to sometimes the best solution. So, we know we have we have heard is that a lot of what happens in Lean is about empowering people. So, this bringing this in actually not only empowers people, but enables them to bring in their ideas. And sometimes those ideas are the best ideas. The top down ideas are not necessarily the best ideas; so, here is a tool that enables that also.

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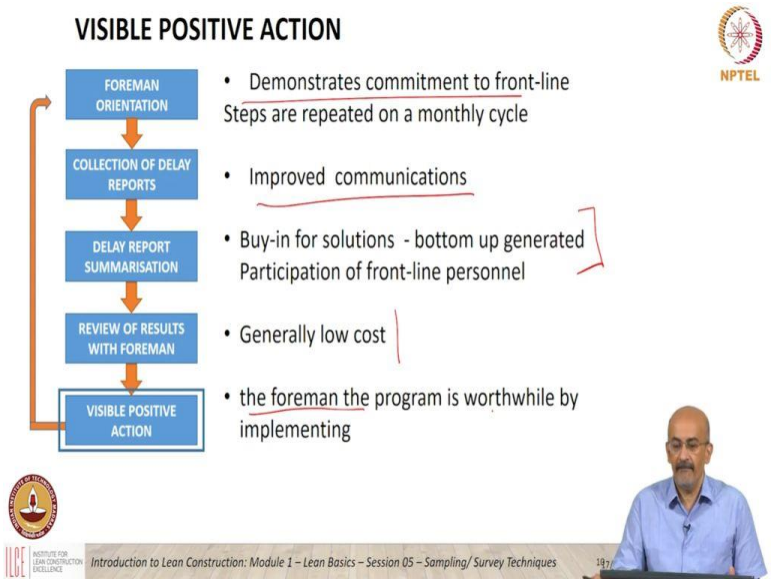

And ultimately you have to take visible positive action. That is if there is a report on equipment non availability, how do we facilitate that? If there is a requirement on material issues, how do we change a material management plan to do it? So, there should be a positive action that is taken to try to address these delays that are there; this demonstrates commitment. It improves communication and definitely if this is collaborative, there is buy-in for the solution. If this, if there, if it is solution that is come up from the field, and it is implemented as a lot of motivation. Generally, people are found it is low cost and the foreman; and then the Foreman also thinks that the whole program is successful; and it kind of brings in, it kind of spirals up.

There is a lot more participatory decision making, participatory contribution to the team.

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