Introduction to Accounting and Finance for Civil Engineers

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Lecture-26
Bidding (part-5)

Good morning namaskar and welcome to the course once again, in the previous lecture if you remember we discussed the rate analysis for direct cost items. Some of the examples that we took for illustration was to compute the labor cost, material cost, plant and equipment cost. We explain you 2 methods of rate analysis, first we explained you unit rate method of estimation and subsequently we learnt operational estimation process.

In some of the cases if you remember we have to club both these methods. So we employed unit rate estimation method also and we employed operational estimation method also. In this class also we will continue our discussion, we will see some of the analysis pertaining to direct cost. And then the remaining lecture would be devoted to computation of indirect cost items. So straightaway we move to one item which we call it as sub-contractor cost computation, see what happens once you have decided as a contractor to sublet the work to some agencies at the time of tendering.

You will prepare tender document for them also, say for example we are going in for water proofing work. So what I do all the documents for turning to water proofing work I will collect it from the main tender document, so some portion I will collect it from below quantity, some portion I will collect it from a specification. Some person I will collect it from tender drawings and some of them I can get it from general contract conditions.

All these I put together I keep it as a separate document and I invite some of the leading sub-contractors who are engaged in water proofing works. Sometimes client may tell me whom should I contact, whether I have to contact agency A, B, C or D, in some cases they may not even

tell us. So in that case from my data bank I know who are the repudiates of contractors engaging water proofing work.

And accordingly I will invite them to bid for this particular project, so I will get them this particular document and I will tell them to give their rates, in may be next 4 or 5 days. Now suppose I have got the rates from let say 4 contractors, 4 sub-contractors rather, then how do I evaluate these, sometimes you will find that some contractors exclude water charges. Some of them they may exclude electricity.

Some may not even consider taxes, so what we have to do when you analyze these sub-contractor rates you have to make sure that they are at the same platform. So in order to understand this we have taken one small example in which let us assumes that we are trying to select the sub-contractor.

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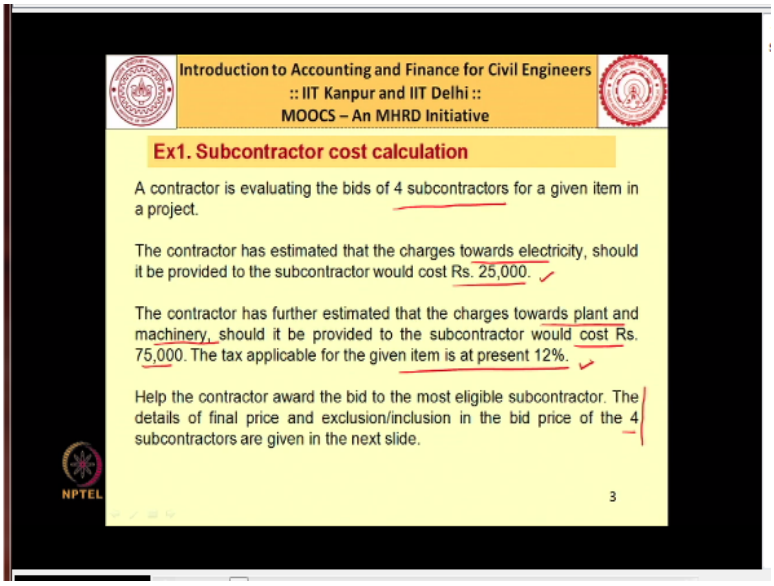

And for this we have given the bid document to 4 sub-contractors, now as a contractor I have estimated that if I have to provide electricity to the sub-contractor I may incur a cost of 25,000. Likewise I have further estimated that if someone is not considering plant and machinery for the work and if have to provide the plant and machinery to the sub-contractor it would cost me 75,000. I also know that the tax applicable for this item is at present 12%.

Now as I told you I have invited the bid form 4 sub-contractors and let say I have got these bids from them.

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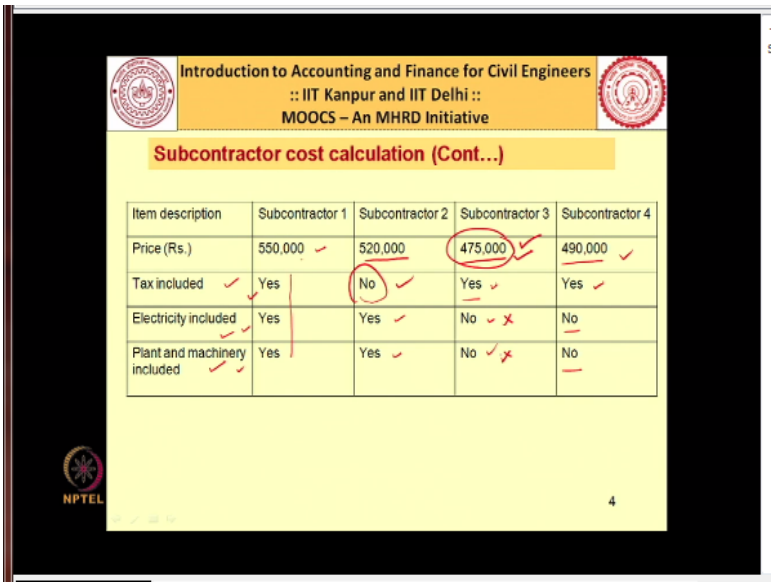

So, first contractor has given me a bid of 550,000 second one as submitted a bid of 520,000 the third one has given me a bid of 4,75000 and 4 sub-contractor has given me a bid of 490,000 against the set of items for which I have invited the bid. Now if you look at these heads taxes electricity plant and machinery you will find that sub-contractor 1 has considered all of them. So, his price includes the taxes includes the electricity includes the plant and machinery.

But when it comes to sub-contractor 2 he has not included the taxes in his rates. But he has included the electricity, included the plant and machinery cost. The third sub-contractor if you can see carefully here taxes are included in these rates. But no electricity, no plant and machinery and finally look at the bid of the sub-contractor 4 it has included the taxes. But it has not included the electricity cost and plant and machinery cost.

Now it would be unfair if you just simply look at the price and award the contract to the sub-contractor 3. Because his price is the lowest, if you look at these 4 figures but if you look at carefully here in this particular table. You will find that this sub-contractor has not included the electricity cost, they have not included the cost what in plant and machinery. So we have to load it suitably in these rates.

So, let us try to work it out the total cost implication for each of these prices, so as for as sub-contractor 1 is concerned his prices include taxes.

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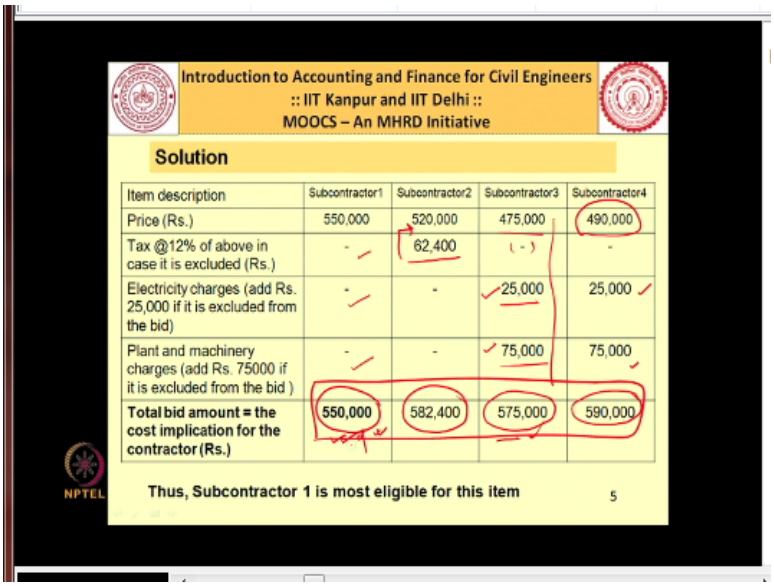

So, no addition of 12%, electricity also included in this plant and machinery also included in this. So whatever price have received that is the final one. When it comes to sub-contractor 2 I have to load a tax of 12%, so 12% of 520,000 it is 62,400 electricity charges are included. So no addition here, no addition here for plant and machinery, total bid amount if you add both of them you are getting 582,400, sub-contractor 3 if you see they have included taxes in their rates.

So, I am not adding anything here, they have not included electricity charges, neither they have included plant and machinery charges. So, I am adding 25,000 additional here and 75,000 additional here, so all put together you find this total is coming to be 575,000. So you can see there has been a cost implication of 100,000 here. So, when you add 100,000 in 475,000 you are getting 575000, let us go to the sub-contractor 4, here you find he has given you a coat of 490,000.

Now you add electricity at 25000 add the cost towards plant and machinery 75,000. So, this is coming out to be 590,000. Now all these 4 total values now they are at part, because all the things that should have been included are now included in all the prices. Now it is not very

difficult for us to see which one is the most appropriate bid. So, I will find that sub-contractor 1 his rate is 550,000 that is the most economical one.

And this price I am going to coat to my client as a contractor, so this is how you carry out the sub-contractor cost calculation.

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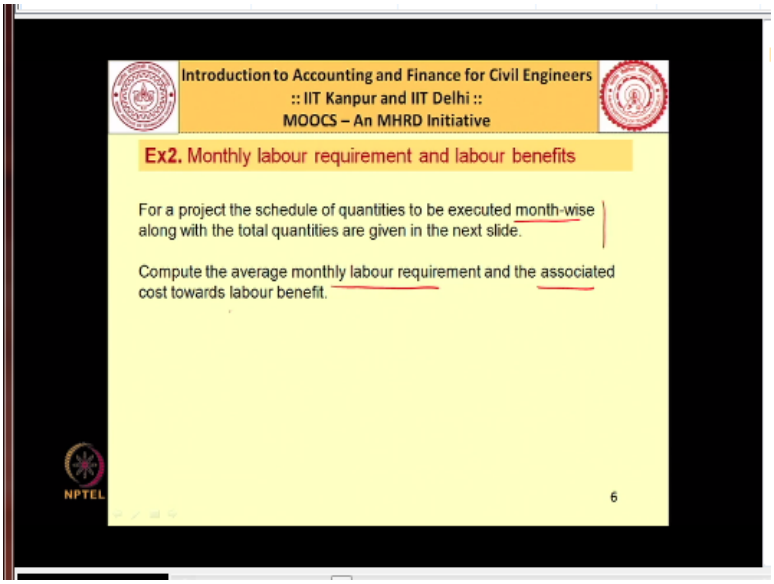

Now we will see some of the indirect cost because you have already completed our discussion on labor cost computation, material cost computation, plant and equipment cost computation and sub-contractor cost computation. So these are part of my direct cost, now we will see some of the indirect cost computations for example we will see how to take here of labor benefits for this we need to calculate what could be the possible number of workers that I would been employing at my project site on a monthly basis.

Then I would also like to calculate some of the heads of over head cost, for example how much stock I am going to keep it at site how much fixed asset I am going to move lies at site, how much is the average funds that I am going to employ at site, remember all these have a price implication. Because the more stocks you have at the site, the more working capital you have at site, the more cost implication as a contractor for you.

Now each one of these cost must be accounted for if you want your price to reflect the reality, if you would not consider these things and put it in your prices you might find that you will incur heavy losses once you start the project. So we will check each of these components one by one and we will see how do we take care of these heads. So let us try to work out the monthly recruitment and labor benefits for a particular project, for this we are given the schedule of quantities.

And we are also given the month wise split of quantities and we are supposed to find the average monthly labor recruitment and the associated labor benefit that we have to incur.

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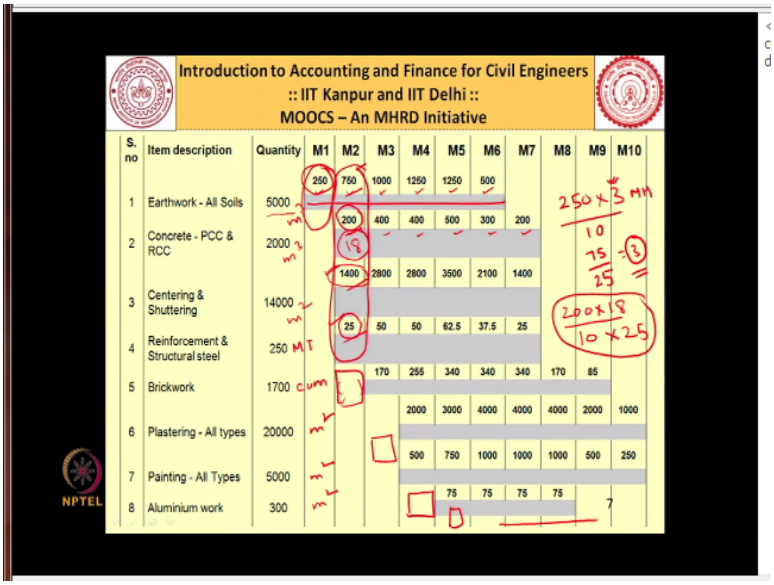

So, let say this is the construction schedule that we have prepared, in the project I have to carry out 5000 cubic meter of earthwork, 2000 cubic meter of concrete, 14,000 square meter of shuttering, 250 metric ton of structural steel and reinforcement. Brick work 1700 cubic meter, plastering 20,000 square meter, painting 5000 square meter and aluminum work 300 square meter. So these are the quantities that we have been given for a particular project.

And what I have done I have prepared the consecution schedule and I have also estimated the month wise quantities. In one of the lectures I emphasize the importance of preparing the construction schedule and I told you that this construction schedule is the genesis of many other

associated schedules. I will illustrate you how to prepare other schedules but before that we will a start with labor schedule first.

Now you can see here out of this 5000 cubic meter of earth work I have a plant to do 250 cubic meter in month 1,750 in month 2,1000 in month 3,1250 in month 4,1250 in month 5 and 500 in month 6. So the total earthwork I am planning do it in 6 months time, likewise concrete 2000 cubic meter I have split into 200, 400, 400, 500, 300 and 200. Likewise for all the items whether it is centering and shuttering, reinforcement, brick work.

I have given the schedule that means how many month I am going to take it and what is the quantity that I am going to do on a monthly basis. Now you will see how using this schedule and month wise quantity estimate I am going to derive my labor schedule. When I say labor schedule that means I am interested in finding how many laborers are needed in month1, how many in month 2 and how many in month 2 and how many in month 3 and so on.

So let us try to find out the labor requirement for month 1, month 1 I am doing only one activity that is earthwork. How much quantity I am doing 250 cubic meter, so how do I calculate the labor requirement 250 cubic meter. Now the productivity norm for earthwork is about 3 man hours for cubic meter, so that means for doing 250 cubic meter I would require 750 man hours, if I divided by 10 if I am working for 10 man hours every day it could be 75.

And if you are working for 25 days a month, so the number of workers that are required for month 1 in excavation loan is 3. What I have done, what is the total quantity that we have a plant to do in month 1 it is 250, what is the productivity that you get for earth work. So, it is about 3 man hours per cubic meter, so that means for doing 1 cubic meter one worker would be employed for 3 hours, that they will do 1 cubic meter of earthwork.

So, total would be 250*3 man hours 750 man hours, now if you are working for 10 man hours in a day so you requires 75 man days, now if you are working for 25 days in a month you requires 3 workers, so earthwork month 1 we require 3 workers. In the same manner I can calculate my

monthly requirement for month 2, by calculating the individual labor requirement for earthwork, concrete work centering and shuttering and reinforcement.

For example for concreting normally we take 18 man hours per cubic meter, so for calculating the concrete it would be done like this, if you see here concreting it is 200 cubic meter multiplied by 18 man hours per cubic meter/10/25. So this will be the worker required for doing concreting in month 2. So, whatever quantity of workers I am getting for concreting whatever quantity I am getting it for centering whatever quantity I am getting it for reinforcement. And whatever quantity I am getting it for earth work I will add all of them.

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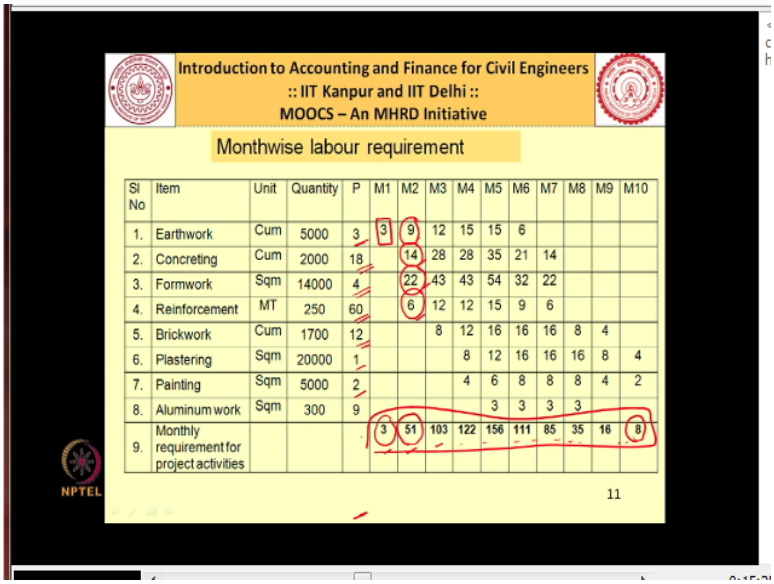

Sl No	Item	Unit	Quantity	P	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
1.	Earthwork	Cum	5000	3	3	9	12	15	15	6				
2.	Concreting	Cum	2000	18		14	28	28	35	21	14			
3.	Formwork	Sqm	14000	4		22	43	43	54	32	22			
4.	Reinforcement	MT	250	60		6	12	12	15	9	6			
5.	Brickwork	Cum	1700	12			8	12	16	16	16	8	4	
6.	Plastering	Sqm	20000	1				8	12	16	16	16	8	4
7.	Painting	Sqm	5000	2				4	6	8	8	8	4	2
8.	Aluminum work	Sqm	300	9					3	3	3	3		
9.	Monthly requirement for project activities				3	51	103	122	156	111	85	35	16	8

And that way I am getting a total of 51 workers for month 2. So, you can see this table is giving me month wise labor requirement, for month 1 I have already explain you I am getting 3 workers because only one activity earthwork is in progress in month 1. Month 2 I am doing 4 activities earth work, concreting, form work and reinforcement. Now depending on the productivity that you assume you can calculate the monthly labor required.

So 9 here, for earth work 14, for concreting 22, for formwork and 6 for reinforcement. These are the productivity norms which you can note form this particular slide, for earthwork I am considering 3 man hours per cubic meter, for concreting 18 man hours per cubic meter, for formwork 4 man hours per square meter, reinforcement I am considering 16 man hours per

metric ton, for brick work 12 man hours per cubic meter, for plastering 1 man hour per square meter.

For painting 2 man hour per square meter and for aluminum work 9 man hour per square meter. So, knowing this I can calculate the month wise labor requirement for the entire duration of the project. So, you can see here month 1 3, month 2 51, month 3 103, likewise you find in the last month you require only 8 workers. Now these are the workers which are needed for direct items like earthwork, concreting, formwork and so on.

In addition to this there are certain other workers also which are recorded side. For example you would require workers in the stores. You would require workers in time office, you would requires workers for doing office work. You would require some workers for operating curing pump, you would require certain persons for safety. So, they are all coming under miscellaneous labors, so what I will do I will have a fixed miscellaneous labor every month.

And I will add that particular miscellaneous labor in the labor requirement which we have calculated just now.

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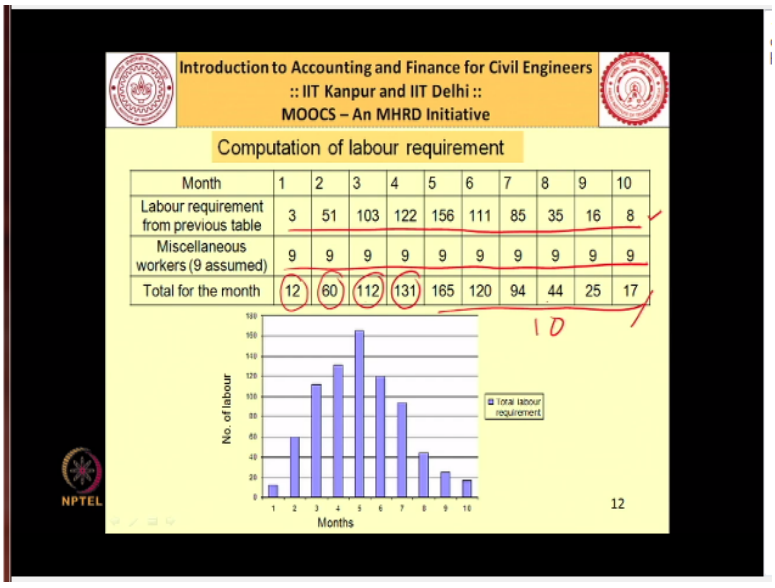

So, if you see at this particular slide this is what I have done, so the top row you can see 3, 51, 103, 122, 156, 111. All these being just now calculated. And now we are adding miscellaneous

workers, these workers are coming from which departments safety, time office your planning office, your accounts office and so on. So now I can easily calculate the total for the month, so month 1 I require 3+9 which is 12, month 2 51+960, month 3 112, month 4 131 and so on.

So this is giving me the monthly labor require for that particular project, now from this I can calculate the average number of workers that are needed. So I will add all of them so 12+60+122+131 I will continue at up to adding up to last column and then I divide it by 10.

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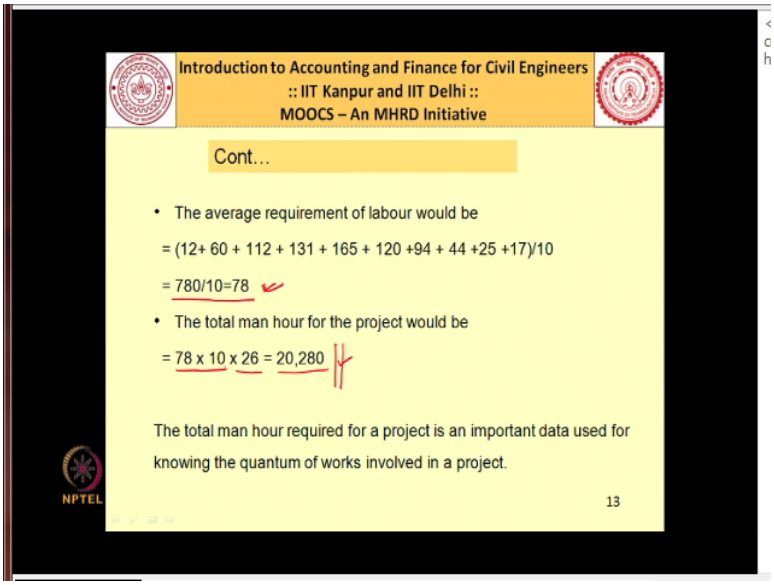

So, you will find that I am getting the average requirement of workers as 78. So if you want to convert it in man hour basis, so 78 into every day we are working for 10 hours and let say we have work for 26 days in a month. So the total man hour is coming to be 20,280. Now this figure man hour figure is very important if you want to compare different projects, let us say across different countries the cost term will not give you a correct comparison.

But if you talk in terms of man hours so there it could be million man hours or so on. It will give you the nature of complexities involve in that particular project. So, just by coating this particular example that ok I did a particular project which involve 10 million man hours or 1 million man days. This is giving me the extent of work that I perform, but if I would have told you that ok I did a project of 5 million dollar in US.

I just simply cannot get a feeling what was the extent of work there, how complicated it was but if you are talking in terms of man days it always gives you some kind of a feeling that ok. This must be the nature of project or this must be the level of project whether large or small. You can judge it using the number of man hours that you have estimated for your particular project. Now we will see some more examples let us say once you have calculated the number of labors.

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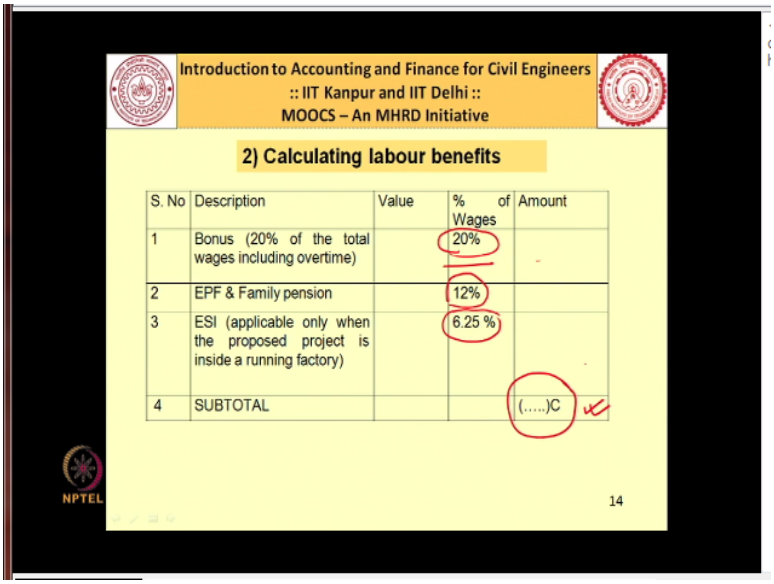

Then we can calculate how much benefit we have to be considering it in our estimate. So, whatever is the wages we can on an average take 20% of that to consider for bonus, EPF which is employee's provident fund and family pension roughly we can take about 12%, ESI which is employee's state insurance I will take about 6.25%, so if you add all this. This is one part of labor benefit, we will see what other things are also coming under the labor benefit.

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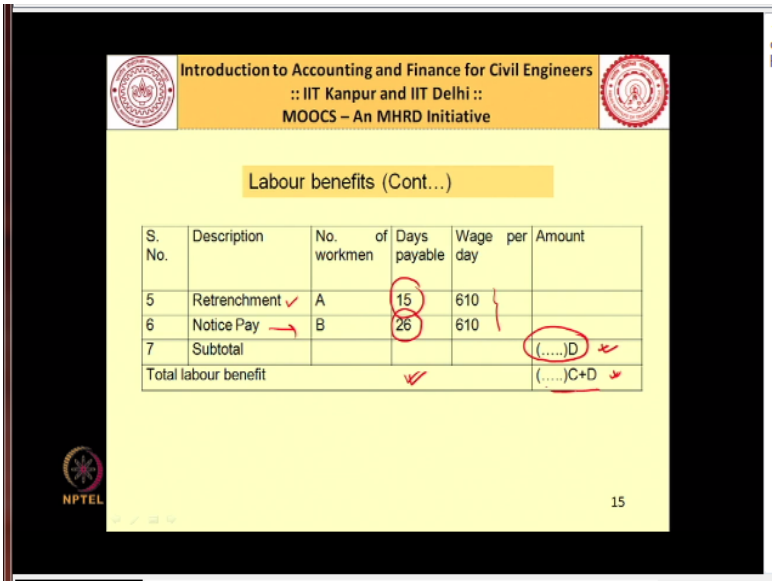

They are your retrenchment, so every worker that you retrench you have to pay them 15 days of salary and notice pay you have to pay them 26 days salary. So whatever is the category of the worker whether skilled semi-skilled are unskilled, so you multiplied with that wages and then you get this value let say D. So, the previous one, so this value+this value which is on account of retrenchment and notice pay you added it up.

And you get the total labor benefit this is what you have to include in your price when you are submitting the bid.

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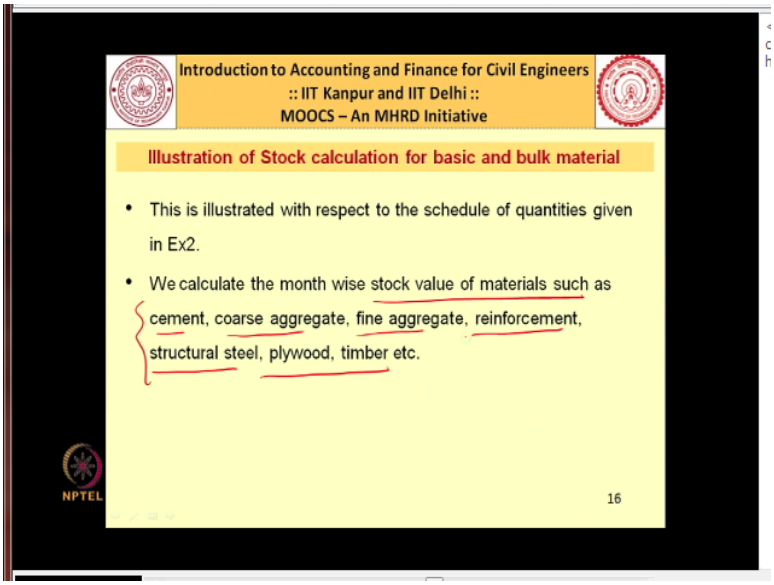

Now we take another example of overhead cost which is the financing towards maintaining your stock. So, first we will understand how do we calculate the stock, this again we can do with the help of one small example. Now in this particular example essentially we are considering the stock value of materials such as cement, coarse aggregate, fine aggregate, reinforcement, structural steel, plywood and timber what is happening if you are stocking these materials in your stores.

You are blocking some amount of money now if this money would have been invested somewhere else. It would have faced you some return now that return your no longer getting. Because you have invested in these stock and these stocks are sitting idle in your stores. So, we must load the financing charges for losing the return which I would have got otherwise through this particular project itself.

So I would like to know what is the average stock that I will be keeping in case I am getting this project. So from the average stock we can see how to calculate the financing charges, so first part we will see how to calculate the stock for cement, for coarse aggregate, for fine aggregate and so on.

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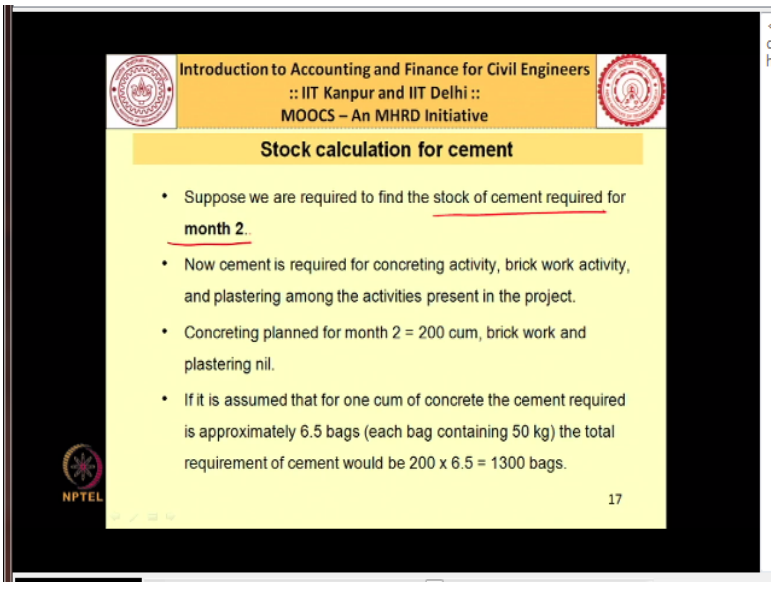

So, let us say we want to continue with the same example and we want to find the stock of cement required for month 2. So if you back to the previous slide if you see here month 1 you do

not require any stock because you are doing only earthwork. So you do not require any material, but month 2 if you see what are the things you are doing, you are doing 200 cubic meter of concreting, you are doing 1400 square meter of shuttering.

And you are doing 25 tons of structural steel, so for doing this work we require certain kind of stocks to be built. Now when you are doing 200 cubic meter of concrete what is the quantum of cement that I would like to keep it with you. So that 200 cubic meter of concrete can be done in an uninterrupted manner, so irrespective of what grade of concrete we are producing, let us assume that we will be requiring about 6 and half bags of cement per cubic meter.

So, I have to do 200 cubic meter this multiplied by 6.5, so that means I require 1300 bags of cement , in that particular month itself now suppose that there is a lead time of about 15 days that means the moment I place the order and the time I receive the material. I spend 15 days time, so for how many days we need to keep the stock, that means if I require 1300 bags and my lead time is 15 days I must have a stock of 650 bags.

So now the cost of 650 bags is my stock value for cement alone. Now suppose you are getting the cement for let us say 380 or 400, so 650 multiplied by 400 will be the stock value for that month for cement alone. Now in the same manner you can do it for steel also, for example you are requiring 25 tons of a steel. So, here again suppose the lead time for a steel is 15 days, so that means you need to have a stock of 12.5 tons right.

So 12.5 tons multiplied by let us say if you are getting the steel at 40,000 that will be the stock for that particular month for steel alone. So this way I can carry on for all the materials which are required for that particular month. I have to do it for coarse aggregate. I have to do it for fine aggregate, I have to do it for plywood, all these values I can easily calculate depending on the lead time that is applicable for that particular procurement of material.

Now if I go and calculating I will be able to find how much stock is needed in month 2, how much stock is needed in month 3, how much stock is needed in month 4 how much in month 5 and so on.

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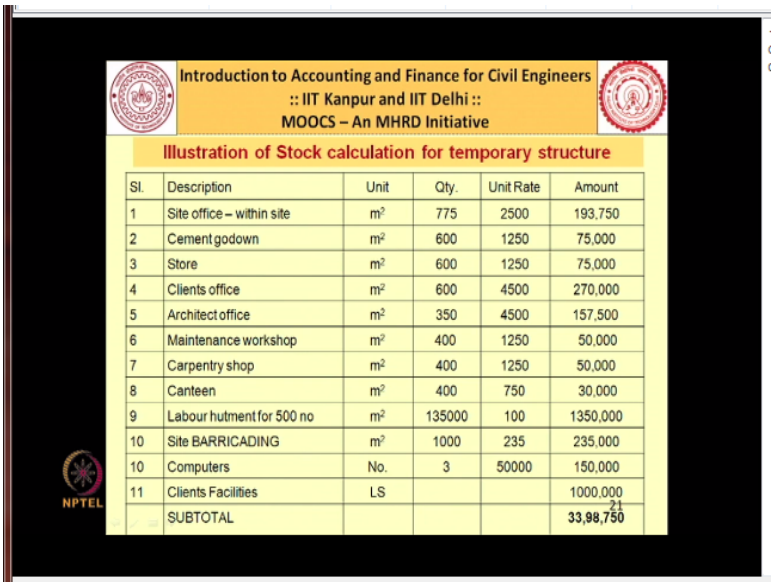

Sl.	Description	Unit	Qty.	Unit Rate	Amount
1	Site office – within site	m^2	775	2500	193,750
2	Cement godown	m^2	600	1250	75,000
3	Store	m^2	600	1250	75,000
4	Clients office	m^2	600	4500	270,000
5	Architect office	m^2	350	4500	157,500
6	Maintenance workshop	m^2	400	1250	50,000
7	Carpentry shop	m^2	400	1250	50,000
8	Canteen	m^2	400	750	30,000
9	Labour hutment for 500 no	m^2	135000	100	1350,000
10	Site BARRICADING	m^2	1000	235	235,000
10	Computers	No.	3	50000	150,000
11	Clients Facilities	LS			1000,000
	SUBTOTAL				33,98,750

So, I have done these calculations in order to save time I straightaway give you the values and as I told you this is how you can calculate.

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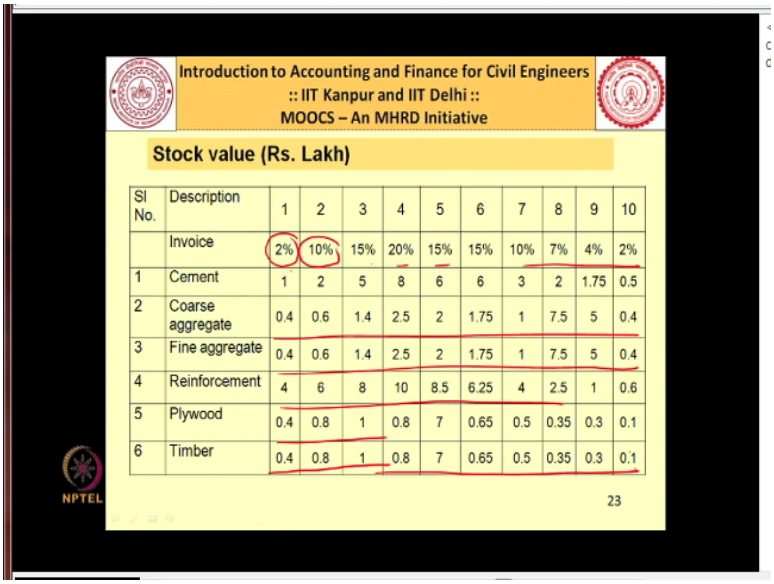

Sl No.	Description	1	2	3	4	5	6	7	8	9	10
	Invoice	2%	10%	15%	20%	15%	15%	10%	7%	4%	2%
1	Cement	1	2	5	8	6	6	3	2	1.75	0.5
2	Coarse aggregate	0.4	0.6	1.4	2.5	2	1.75	1	7.5	5	0.4
3	Fine aggregate	0.4	0.6	1.4	2.5	2	1.75	1	7.5	5	0.4
4	Reinforcement	4	6	8	10	8.5	6.25	4	2.5	1	0.6
5	Plywood	0.4	0.8	1	0.8	7	0.65	0.5	0.35	0.3	0.1
6	Timber	0.4	0.8	1	0.8	7	0.65	0.5	0.35	0.3	0.1

This is how you can calculate, say for example cement for first month, second month, third month, fourth month and up to 10 months these values are given, coarse aggregate how much money will be block every month that has been calculated how much money is blocked in fine aggregate that is calculated in reinforcement, in plywood, in timber. So depending on your problem we can calculate.

For example in this particular problem I have assume that month 1 I am doing an invoice of 2% this is slightly different example which I am doing what has been done in this is.

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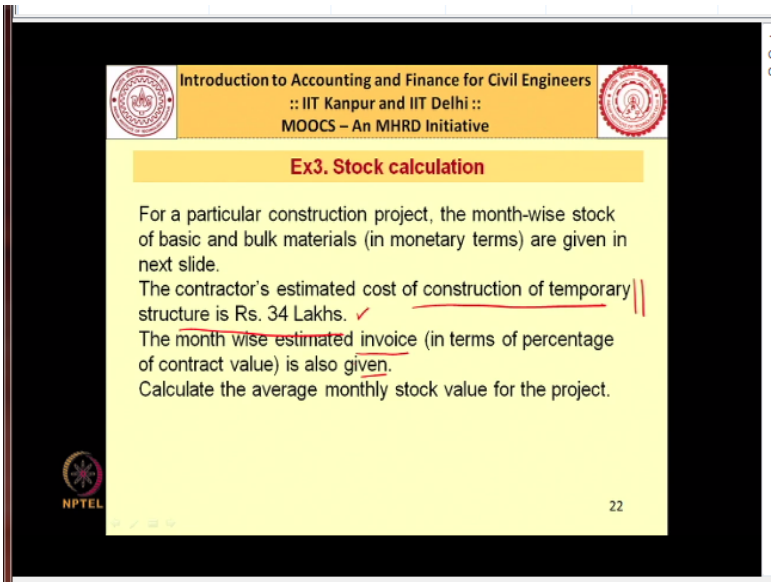

I am assuming that the cost of providing the temporary structure is 34 lakhs, for this also I can show you the working how it is done. But for the time being just assume that cost of providing temporary structure is 34 lakhs what are the things that come under temporary structure.

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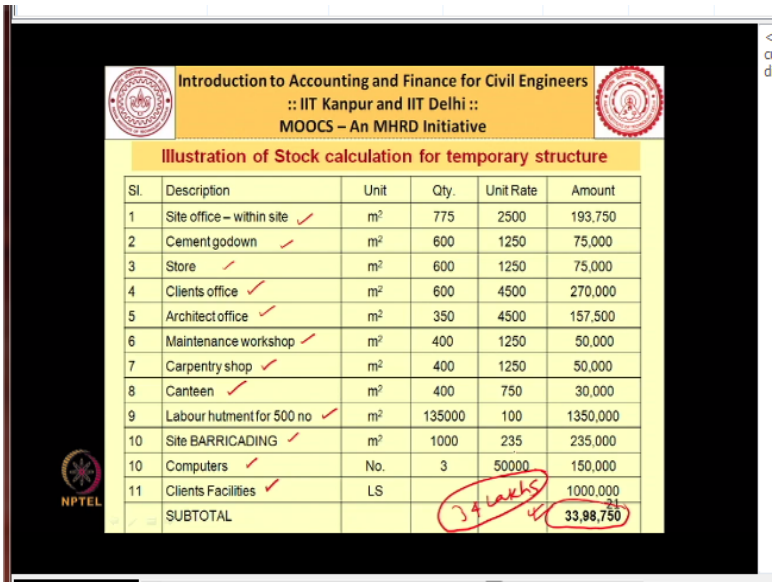

Sl.	Description	Unit	Qty.	Unit Rate	Amount
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11	Clients Facilities	LS			1000,000
	SUBTOTAL				33,98,750

You will see it from this slide, you will construct the sight office, cement godown, stores, client office, Architect office, maintenance workshop, carpentry shop, canteen, Labor hutment, site barricading, computers, client facilities. These are the things that we consider under temporary

structure now depending on how many workers have to employ how many staff I am going ot employ. I can calculate the quantity required for each of these facilities.

Now these are temporary structures, so cost is going to be very less compare to the permanent structure construction. So for each one of them I will assume what is the cost likely to be incurred by me, so the area multiplied by unique cost I will get the total cost. So for all the temporary structures item I will add it up and that way I will get the total cost of putting up the temporary structure right.

Because when you want to run a side you will have to rate this facilities and you will be incurring cost also. So this slide tells you how to calculate the cost pertaining to temporary structure and I have got a figure of 3398,000. This is what I am rounding it of to 34 lakhs. Now this value I am using it in the next problem, so I am saying that the contractors estimated cost of construction of temporary structure is 34 lakhs.

The month wise estimated invoice is also given, so that means how much billing we are going to do every month is also estimated. So for example if you see month 1 I am going to invoice 2%, month 2 again 10%, month 3 15%, 4 20% month 5 15% and so on. Now I have to calculate the average monthly stock value for this particular project. So once you know the invoice and you know what kind of materials are needed, how much money you would be needed for keeping that in stock. You can find out the monthly values of these stocks.

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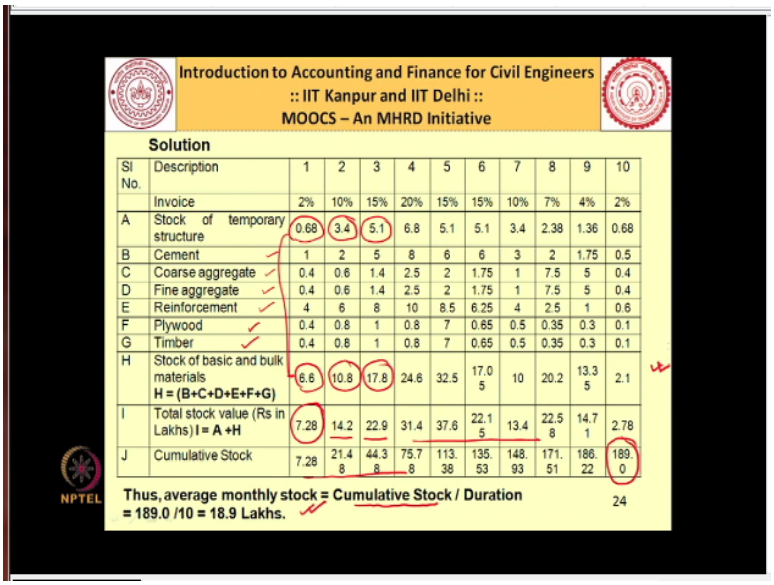

Sl No.	Description	1	2	3	4	5	6	7	8	9	10
	Invoice	2%	10%	15%	20%	15%	15%	10%	7%	4%	2%
A	Stock of temporary structure	0.68	3.4	5.1	6.8	5.1	5.1	3.4	2.38	1.36	0.68
B	Cement	1	2	5	8	6	6	3	2	1.75	0.5
C	Coarse aggregate	0.4	0.6	1.4	2.5	2	1.75	1	7.5	5	0.4
D	Fine aggregate	0.4	0.6	1.4	2.5	2	1.75	1	7.5	5	0.4
E	Reinforcement	4	6	8	10	8.5	6.25	4	2.5	1	0.6
F	Plywood	0.4	0.8	1	0.8	7	0.65	0.5	0.35	0.3	0.1
G	Timber	0.4	0.8	1	0.8	7	0.65	0.5	0.35	0.3	0.1
H	Stock of basic and bulk materials H = (B+C+D+E+F+G)	6.6	10.8	17.8	24.6	32.5	17.05	10	20.2	13.35	2.1
I	Total stock value (Rs in Lakhs) I = A +H	7.28	14.2	22.9	31.4	37.6	22.15	13.4	22.58	14.71	2.78
J	Cumulative Stock	7.28	21.48	44.38	75.78	113.38	135.53	148.93	171.51	186.22	189.0

Now you will add them up for example in the first case I am adding the cement cost, the coarse aggregate cost, the fine aggregate, reinforcement, plywood, timber all of them I am adding. And I am getting monthly cost implication for this. Then I am also adding the cost towards temporarily structure. Now what is done is in the case of temporary structure I am not putting the total cost in the very beginning itself.

So, if you remember we arrived at a figure of 34 lakhs for our temporary structure. Now this cost I am putting right at the beginning, although I am spending this whole money right at the beginning. Because until unless have or these facilities directed I want be able to proceed further. But the accounting practice is to distribute this cost also in a prorate manner. So if I am doing the invoicing of 2% in month 1 I will book the cost of only 2% of 34 lakhs in my first month.

If I am doing an invoicing of 10% in month 2, I am going to add 10% of 34 lakhs in my month 2 as their stock. If I do not do it this way in a prorate manner will find that it becomes very unbalanced kind of a situation. So in order to avoid that this is how the accounting practice adjust that you distribute it in a prorate manner. So, even though you are spending the whole money at time at the very beginning it is a practice to distribute it on a prorate basis.

So, that is what has been done here if you look at this. So 2% of 34 lakhs is 0.68, 10% of 34 lakhs is 3.4, 15% of 34 lakh is 5.1. Now this and this we are adding and we are getting this

figure, so total stock value in month 1 is 7.28, month 2 is 14.2, month 3 is 22.9 and so on, cumulative stock also we can derive out of this. So, we find that cumulative stock of 189 lakh would be needed at my project side.

Now so using this I can easily find out the monthly stock average monthly stock. So, 189 lakh is the cumulative stock that divided by 10 gives me 18.5 lakh, so this how you calculate the monthly stock average monthly stock. Now what is this figure representing it is simply says that in order to run this particular project I have to block 18.5, 18.9 lakhs as stock in my stores. Then only I can run my project in a smooth manner.

So, this 18.9 lakh whatever is block I must get a written out o fit, so whatever is the interest I am losing at least that I will put it in the indirect cost and that is what we will be doing. Now there are few more items which is coming under the working capital. So basically we are trying to find the total working capital that I need to employ at my project site. So one of the components of working capital is stock and that is why I told you this calculation process.

Then the next step is how much are rather for what value we are keeping the fixed assets at our project site. So how do we calculate those fixed assets, so you have different types of fixed assets, so you are bringing equipment say for example.

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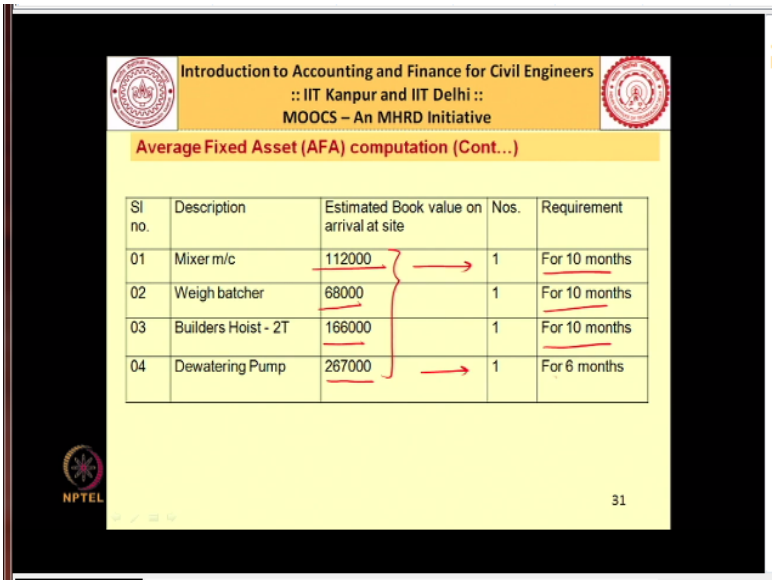

I am doing let say a project in which I am bringing mixer machines, you can see here I am bringing mixer machines I am bringing weight batchers, I am bringing builder waist, I am bringing dewatering pump. Now each of these machines come with the particular book value and you are already exposed to the concept of depreciation. So every month you can calculate the depreciation, now suppose that this particular equipment is there at the site for 10 months.

This is also for 10 months, this is also for 10 months and dewatering pump is needed only for 6 months. So what I will do I will calculate at what book value these assets came at my site and what book value these assets went from site. I can calculate the average book value, so this average book value multiplied by the number of equipment that I have will give me the total fixed assets that I have mobilized for that particular site.

Now the total fixed asset value divided by the number of months it is a 10 months will give me the average fixed asset. So I have told you how to calculate the stock average stock how to calculate the average fixed assets, now I will tell you how to calculate the outstanding, what is outstanding? You know that a contractor supposed to be raising the bill every month, ideally the contractor should be paid then and there itself.

But it is not done that way, so normally there is a time gap, between the time you submit the bill and the time you get the payment. So, normally the time lapse is about 1 month, so you raise the bill and you get paid nearly after 1 month. So for this much times you are this much money is blocked, so that it would also earn some return to you. So you can calculate how much money is blocked by the client in this process for the total duration of the project, that divided by the total duration will give you the average outstanding value, that means this much money on an average is getting blocked.

Sometimes you may also have to consider for the unadjusted advance, what happens if you remember in one of the lectures we discussed about mobilization advance, so mobilization in advance is paid by the client to the contractor in some cases, say for example 10% mobilization advance has been paid to the contractor for let us say 30,000,000 job. So 3000,000 is with the

contractor, now for how much time this money is there with you that also needs to be accounted for because this is the money which you have got it without doing any work.

So for of course you might have deposited the bank guarantee but this is not against the work that you carried out for that particular client in that particular project, no it is not that way. So, this much has to be detected from your working capital computation. So now you can see working capital is essentially consisting of a number of components. When we take up the accounting topic we will discuss this in more details.

We will again come back to the computation of stock, computation of fixed assets, computation of outstanding, computation of unadjusted advance, computation of average funds employed and that way we will see how much is the working capital required for running a particular project in a smooth manner. Now on that particular working capital I will see how much to load in this particular project because this much working capital is blocked.

So I am losing interest I am losing return on this money. So, I must earn at least equal to what I would have earn from other places from this particular project itself. So, all these things we will discuss in detail then we separately take up this particular working capital exercise, in some other lectures. So, in this particular lecture what we have learn today I show to carry out the analysis of sub-contractor cost, how to carry out the analysis of some indirect cost items.

Such as labor cost computations, stock computation, average funds employed, unadjusted advance, working capital and so on. Of course we have to do it very briefly because of the time constraint but I can assure you that we will take this up in detail when we take up the exercise in working capital computations. So till then we stop at this particular point, thank you very much and see you some other time.