Introduction to Accounting and Finance for Civil Engineers

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Lecture-33
Construction Contract Status Reports

Good morning, namaskar and welcome tot eh course once again. In the last lecture we discussed about various ways in which revenue for a construction project is recognized.

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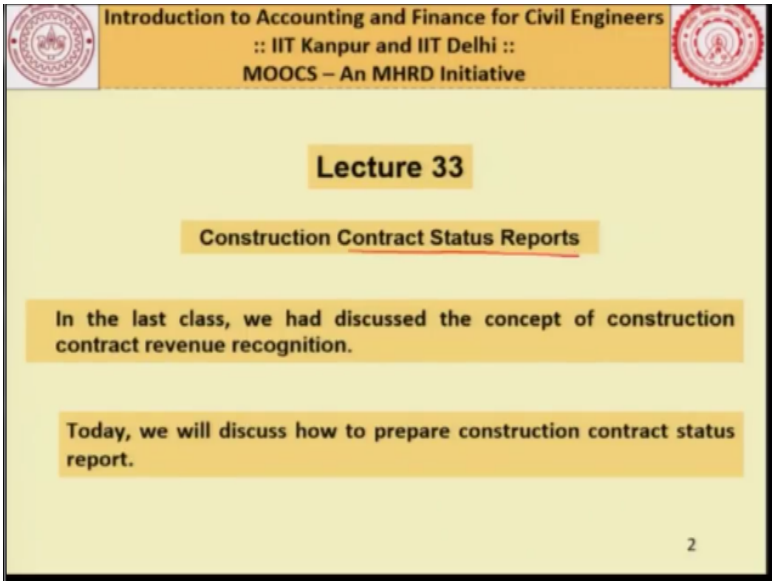

You have number of methods.

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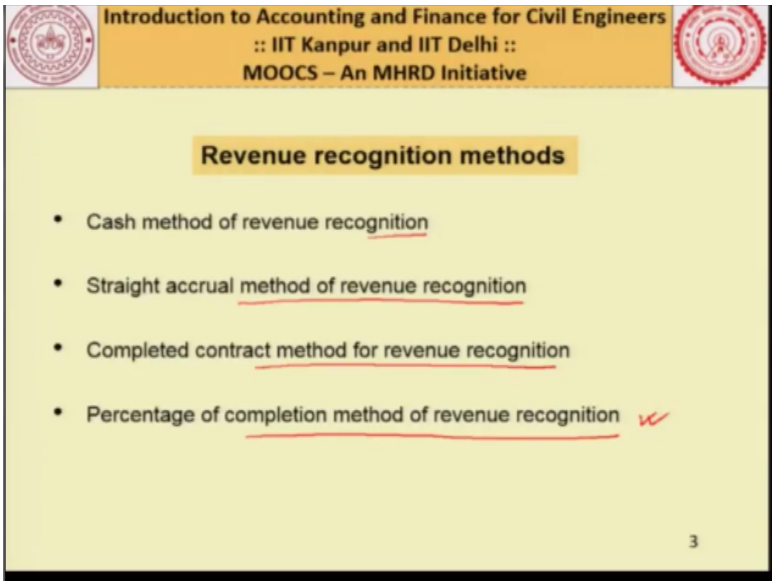

For example one of the methods was cash method of revenue recognition another one was straight accrual method of revenue recognition, the third one was completed contract method for revenue recognition and the 4th one that was explained was percentage of completion method of revenue recognition. This is one of the most widely used methods, now using this particular method, in this particular class we are going to understand how a contract status report is prepared.

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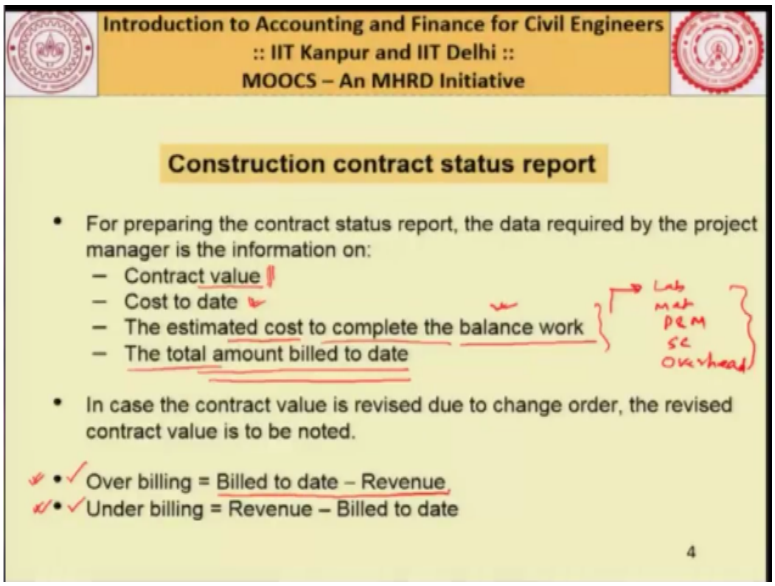

For this you have to understand few more things other than the contract value for that particular project, cost to date, the estimated cost to complete the balance work and the total amount billed to date. We have also going to understand what is meant by overbilling and under billing right, so

first I will explain you how a construction company takes stock of it is cost, when we say cost there are different types of cost.

For example you have labor cost, you have material cost, we have plant and equipment cost, you have subcontractor cost and you have various indirect costs such as overheads etc. Now if you remember in one of the lectures I explained you the overview of the entire bidding process that is followed for a construction project. Now suppose after the bidding is over and a particular contract has been awarded to a contractor what he does afterwards.

So, he starts mobilizing the site parallely what he does is the project manager in consultation with the planning manager of that particular project. They do a survey of all the cost that they are likely to be incurring when the project activities start. They will try to collect the various cost pertaining to labor, pertaining to material, plant and machinery, sub-contractor cost and other indirect cost.

Now using all these cost they come up with a separate cost estimate for the whole project. Now this is different from the contactors, tendering engineer. They had calculated a separate cost which was used for bidding, now here is the project manager in consultation with planning manager. They do survey and they find out how is the likely labor cost, how much is the likely material cost, plant and equipment cost, sub-contractor cost and other indirect cost.

The total it up and that way they come to the likely cost that they are going to incur for this particular project. Now with this working they go and meet the top management of the contracting firm, now when they present this value to the top management, top management obviously will not be happy with this figure. Because they might find that these 2 people deliberately they might have overestimated the cost and they might be showing that we are not going to get a large profit out of this particular project.

So, now what is happening you have an estimate prepared by the contract person, let us say that the total cost to carry out this particular project is X. Now here are these 2 persons who have

come up with the cost estimate of Y, now Y is the figure higher than X. Now you have 2 figures X and Y, now these 2 figures are getting evaluated by the top management.

Now obviously the objective of these project manager will be to overestimate the cost whereas the objective of tendering person would be to justify the cost which they had used for their evaluation, for their bidding purpose. So there would be rounds of negotiation they will say ok you have overestimated the cost at this point of time the site people will say no you underestimated the cost for this item.

So this argument will continue there would be revisions and you will find that after some rounds of discussion they will come to some general agreement. That let us say cost be called Z, now this Z sometimes is known as accepted cost estimate ACE. So ACE is strands for accepted cost estimate, some companies they also refer to it a 0 cost, so your bid prize minus accepted cost estimate or 0 cost is the projected margin which is likely to be generated out of this project.

So now both the parties have agreed that fine we are going to get this much margin from this particular project. So, there is an agreement on this particular figure, now any variance will be measured with respect to this accepted cost estimate or 0 cost. Now at every quarter or every month let us say whenever we are calculating the cost we will compare it with our 0 cost and we will see whether my project is making money or it is going to lose money.

So, this way all the sites they carry out this exercise and they supply the data to the head office whenever head office is in preparation of balance sheet and profit and loss statement. Now I will tell you how exactly the cost data is collected at site, as far as schedule is concern it is not difficult thing you know what is the activity you are doing, you know how much work has been done, you know how much work is remaining, so you can easily calculate how much time it is going to take.

So monitoring time not that difficult but when it comes to cost you will find it is very, very difficult. The reason is for getting the cost related information you have to interact with a number of people, for labor cost you have to need someone, for material cost you have to talk some

persons, plant and equipment you have different set of persons, sub-contractor cost you have different set of persons.

Likewise indirect cost such as overheads you have different set of person, for a big companies some material should be coming from head office, some materials coming from regional offices, some materials should come from stores, centralized stores and so on. So you will find generating cost related information is very, very difficult, so this is the one task which most of the planning engineers hate.

And there is the reason you will find most of the time the duration in which this cost monitoring is carried out is quite large maybe of the order of 2 to 3 months. Now we will see how to generate labor cost, material cost, plant and equipment cost and sub-contractor cost. So the moment the contractor lands at site they will try to see what are the key items involved in the project.

So for each of the key items they have a cost code, cost code could be as simple as ABCD or it could be 1, 2, 3, 4 or it could be very complicated also. Different companies have got different set of systems to generate these cost codes. So let us say we have got 30, 35 cost codes basically these cost codes are some kind of folders like you have in windows you have different folders. So, anything related to that particular item we will put it in that folder or in that file.

So, let us say I have to calculate the cost of labor, now who keep the data for labor at site, so there is a time office, what it does any worker that enters at the site they will first go into the time office. So there the in time will be entered in their labor card, whenever they go out they will go through the time office out time would be entered. So any worker when they did start the work and when they did leave is known to the time office.

Now when the worker comes to the site normally they say ok I am going to work in this area, now for that particular area and for that particular work you have a cost code. So, you will write okay cost code 20 or 00 something like this, so this worker spent the time during that particular activity. So I know on a daily basis which worker has work at which place, now this data every

month is sent to the planning office, so there is a planning engineer who collects all these set of data.

So he knows how much labor was engaged for which activity, now he will also know from the site engineer's progressive work how much quantity of that work has been calculated. So knowing the total quantity of that particular job and knowing the total number of man hours engaged for that work. He can easily find out what is the unit labor cost for that activity, now when it comes to material look the process is very simple.

Any material that is needed by a site engineer he puts requisition, so there is an indent form. So he will write okay I need 100 bags of cement for doing concrete work for this location. For this activity his boss will write ok what is the cost code, there are very few people authorize to enter the cost quote in the document. This is because if you have too many people engaged in this job there might be some error in recording the cost.

And once you made error in recording the cost code the whole thing goes wrong, you will not be able to get the correct picture. So let us say this indent then goes to the stores, store keeper will say okay you want 100 bags of cement here is the 100 bag cement, he knows from which lot this 100 bag of cement was given and he will sum simply enter the prizes per unit bag of cement and this document then again goes to the planning engineer in the evening.

So planning engineer or manager he has the information how much material has gone into which cost code. So knowing the quantity of work that was done and knowing how much money has been spent on the material he has got the idea of the material cost for that particular activity. Now when it comes to plant and machinery cost how it is recorded for each of the major plant you have a logbook.

So whenever you call the operator with the machine he will enter the in-time of the machine the time of the work when the equipment is started he will also write down the time at which the equipment stopped working. So he knows the total time and he also knows the cost code in

which this particular equipment was used. So knowing the total amount of work done and knowing the time the equipment was used we can easily calculate the total cost.

Now the logbook also contains various cost pertaining to repair, minor repair, major repair, the operating fuel that was consume, the operating labor that was used all these records are available in the logbook. And using the logbook and the total quantity of work done for a particular item we can very easily calculate the plant and equipment cost. Then comes your subcontractor cost, subcontractors are given the work order.

So whenever you make their bills you know how much quantity of work they did and how much money did they get. So, it is not very difficult to calculate the subcontractor cost, then when it comes to indirect cost such as overheads it contains number of items such as salaries, transportation and many things. So all these details are kept with the accountant and accountant will provide you all these details.

So this way you calculate the total cost as for as labor, material, plant and equipment is concern. Now what document the planning engineer prepares is sometimes known as job cost report or it is also known as project cost report. Now this particular project cost report is very, very important for making various contract status report as well as to generate the balance sheet of a particular company.

Now this particular document if you see it contains your cost code, it will contain the description of the item, it will have unit of measurement, the total quantity. Now when it comes to quantity it will have number of columns.

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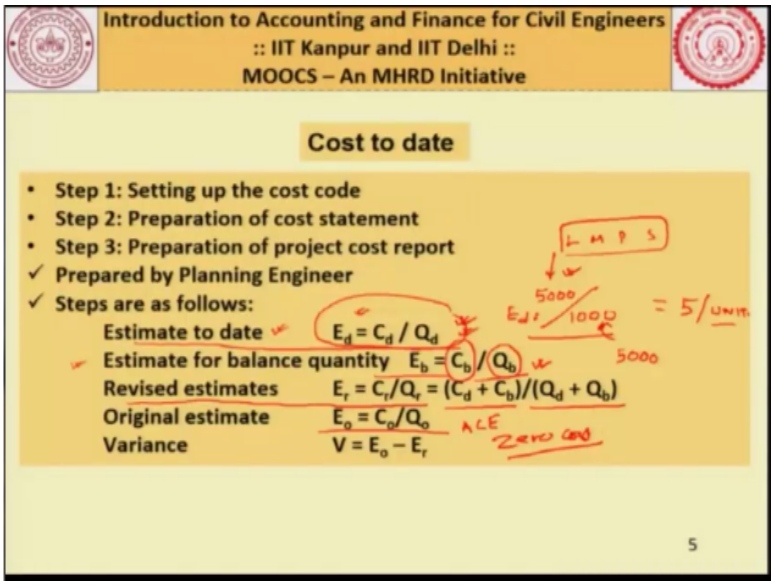

For example if you look at the format it will consist of estimate to date, we denote it by Ed. Now how do I calculate this estimate to date it is the cost to date/quantity to date. So how much cost did we incur on this particular item and how much quantity did we actually do, so that way I can calculate the unit cost. So this I call it as estimate to date, suppose you did 1000 cubic meter and for this you spend 5000 rupees.

Now this 5000 where it is coming from this is the cost of labor, material, plant, subcontractor all these I am putting and I am getting a value of 5000. So, what is my Ed, my Ed becomes 5000/1000 which is 5 rupees/unit. Now what I do I see what is my estimate for balance quantity, so let us say my total quantity would have been 5000 out of this I already did 1000.

Now as a planning engineer I have to estimate what will be my likely cost for doing this additional 4000 cubic meter or 4000 square meter. Now this is the reason the planning engineers hate this job, because every now and then you have to estimate the cost to do the balance work especially at the time of monitoring. So then again you have to estimate the cost of labor, estimate the cost of material, plant and equipments, subcontractor cost and so on.

It may be possible that the estimate to do the balance work maybe the same as the estimate to date or it could be less or it could be more. So, you have to really estimate let us say the cost you will estimated is coming to be Cb and quantity already you were knowing it is 5000-1000, so

4000. So I will calculate what is my estimate it cost for doing the balance quantity, so if I combine these 2 that is the estimate to date and estimate for balance quantity I call this figure as revised estimate which is nothing but the sum of these 2 costs.

Cost to date and cost for doing balance quantity and I divided by quantity to date and quantity for doing balance quantity. Now if you remember original estimate this is coming from where accepted cost estimate or 0 cost, I have already explained you from where this is coming this is a compromised figure between the contractors, tendering person and the project manager. This is been compromised in the presence of superiors of the particular company.

Now what I do for each of the item I can calculate the variance what was my 0 cost and what is my revised cost. Now by doing this I will be in a position to find out the total variance, the variance could be in positive, the variance could be in negative. So that will come to know whether I am making money as expected as agreed at the time of starting of the project or whether I am making losses.

So this is how you try to calculate the cost, now we see some other items that we need to know for preparing the contract status report. So contract value is very important, cost to date I have already told you how to get this value, we also know how to calculate the estimated cost to complete the balance work, I know I have already told you how to calculate the labor cost, the material cost, the plant and machinery cost, the subcontractor cost and the overhead cost.

So, you have to estimate these to complete the balance work and you also have to find out the data on the total amount billed to date, that means how much bill you have raised to the client. Sometimes it may so happen that you might have done less work and raised more bill, sometimes the other way round also may happen, you might have done more work but you might have presented a bill for lesser value.

So accordingly we can identify whether I have carried out the overbilling or whether I have done the under billing. Now with the help of an small example I will show you how to prepare the contract status report.

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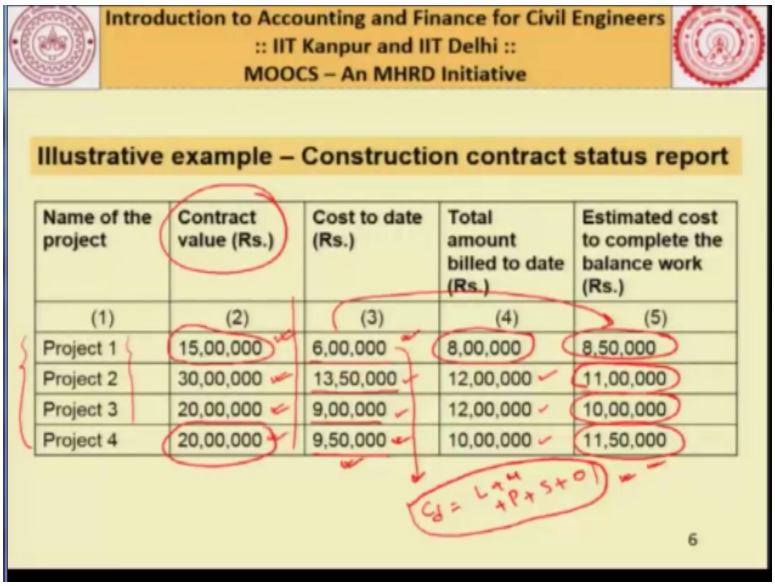

For doing this let us say I have got data from 4 projects, let us say I am a contractor and at present I am doing 4 works, project 1, project 2, project 3 and project 4. Now the contract value for each of these projects are given, so this is for 15 lakhs project 1, project 2 is for 30 lakhs, project 3, 20 lakhs and project 4 is again 20 lakhs. So these things anyway will be known to us cost to date now you understand how do I calculate this cost to date I have calculated Cd=how I have added how much I have spent on labor, how much I have spent on material, how much I have spent on plant.

And how much I have spent on subcontractor and how much I have spent on overheads for doing the given quantity. So, this is known to me cost to date, so I have calculated it using this formula and I found that this is coming to be 6 lakhs. So this report I am getting from different sites with the help of project manager and the planning manager. For the second project I have the data that I spent 13 lakh 50,000 for 3rd project I spend 9 lakhs and for the 4th project I spend 9 lakh 50,000.

Now against each of these cost the amount which I billed to the client for project 1 I build for 8 lakhs. So, although I have 6 lakh cost but I have already raised a bill of 8 lakh from project 1, project 2 I raised a bill of 12 lakh, project 3 also I raised a bill of 12 lakh, project 4 I raised a bill

of 10 lakh. Now at this point of time I also estimated my likely cost to complete the balance work.

So, I find that cost to date was 6 lakh but remaining quantity of work I will be able to complete it in 8 lakh 50,000. So, this my first estimate I made it at this point of time for second project I estimated the likely cost to be a 11 lakh for third project 10 lakh and for 4th project 11 lakh 50000. So this information I will gather from on the project sites which are running at the time of preparation of balance sheet and profit and loss account.

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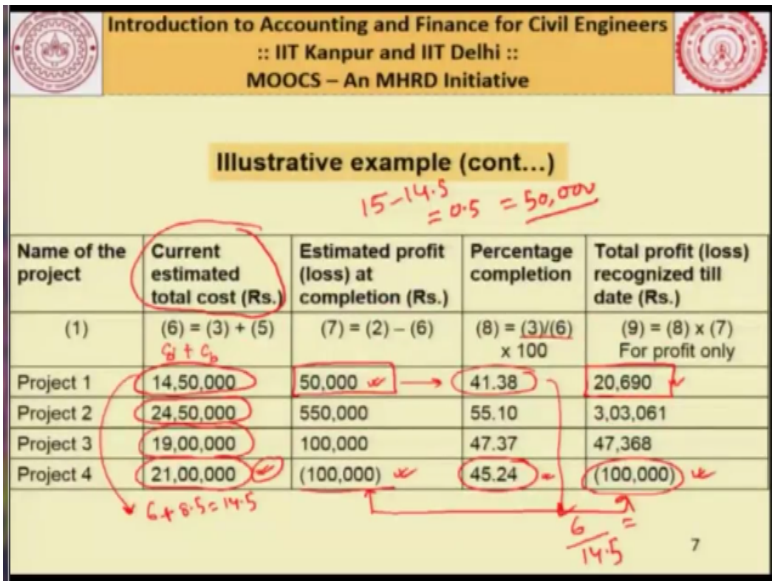

Now using this data what I do, first I calculate the current estimated total cost, how do I get this I add up my cost to date which is cost to date+cost of doing balance quantity. So if you remember for this my cost to date was 6 lakh and my cost to do the balance work was 8.5 so you are getting 14.5 lakhs. So, this is how this column is obtain, I am adding cost to date and cost to do the balance work, so this is how this is coming**.**

If you look at project 4 cost to date was 9.5 lakh and estimated cost to complete the balance of is 11.5 lakh. So, this is coming to be 21 lakh, now from this value I can calculate whether my project is estimated to give me a profit or a loss. So how do I calculate estimated profit is calculated from the contract value, column 2 minus the current estimated total cost. So my contract value for first 1 was 15 lakh and my current estimated total cost is 14.5 lakh.

So 0.5 lakh which is about 50000 is the estimated profit that I am likely to get it from project 1 right, what I did I look at my contract value and I looked at the cost which I am likely to be spending at the completion. So, I took the difference and this is what is my projected profit, but as you know accountants are pessimistic in their approach. So you know that 50000 is my likely profit but I will not show full profit, I will show what is my percentage completion at this point of time.

And I will show only that fraction as my profit but when it comes to loss what I will show, I will show the whole lots then and there itself, I will not do it pro-data depending on how much progress I achieved at that point of time. So, this will be clear when you look at the data from project 4, project 4 if you see we are making a loss of 100,000 how because estimated total cost complete the project is 21 lakh and my contract value was 20 lakh itself.

So, against 20 lakh I am likely to spend 21 lakh, so I am likely to lose 100,000, so for this value I am not going to take pro-data value. Because if you see the percentage completion I have completed only 45.24 yet I am showing that I am making 100,000 loss, this is nothing but pessimistic approach. Because I sniffed that I am likely to make a loss of 100,000 and that whole thing is being projected as loss.

But when it comes to profit I am showing only the fraction of that particular profit at this point of time. For example if you look at the percentage completion of project 1 it is 41.38% how I am getting this it is column 3 divided by column 6. Look at column 3, column 3 cost to date was 6 lakhs for project 1 and column 6 it is 14.5 lakh. So, this value is nothing but 6/14.5 you are getting of 41.38 if you multiplied with 100.

So, when it comes to profit recognition I am saying 41.38% of 50000 is my likely profit because I am not sure, I am pessimistic in my approach. But when it comes to let us say loss I am showing 100000 loss right now itself although my project is only 45.24% complete. Now looking at these figures I can also calculate the overbilling and under billing.

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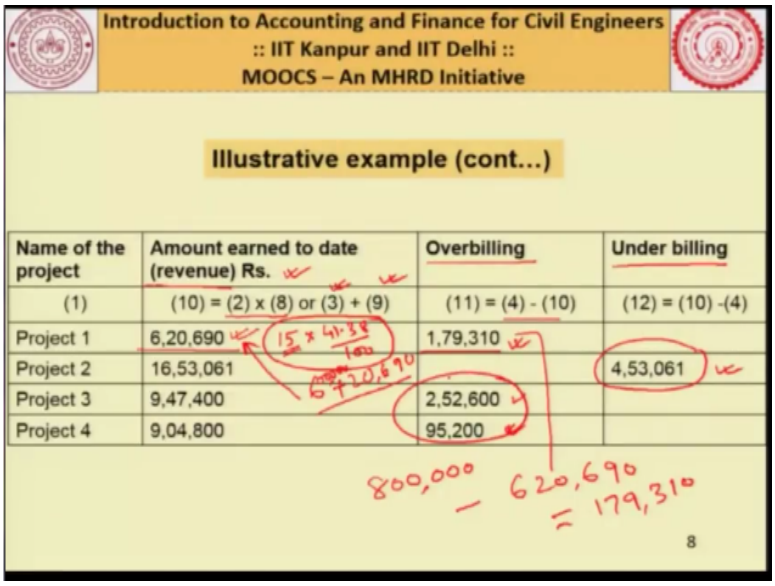

So, if you look at the overbilling thing it is basically you have to see how much amount was earned to date that is what we call it as revenue. You already know the revenue computation formula from the previous lecture, so from that concept I calculated the revenue to be 6,20,690 how do I get this either you can multiply column 2 with column 8 which is column 2 is what column 2 is contract value which is 15 lakh.

And column 8 we are getting 41.38, so this is 15 lakh multiplied by 41.38%, so either you do it like this or you add 2 columns, column 3+9 column 3 is what, column 3 if you see it is cost to date which is 6 lakh. So cost to date is 6 lakhs+9 column 9 is 20690, so you add both of them and you get the same value 6600000+20690 if you add up you will get this value. So, whether you do percent completion multiplied by this value or whether you add these 2 value given in column 3 and column 9 you are getting amount earn to date or revenue.

In the last class you have told 4 methods to recognize the revenue, we are using 1 of the methods and from this revenue I can calculate whether I did overbilling for this project or I did under billing. For overbilling what I do you are given the formula for overbilling this is given here billed to date minus revenue. So, for overbilling I have to calculate what is bill to date, bill to date is in this case for project one 620690.

And column 10 and you can see what is column 4, column 4 is total amount bill to date for project 1 is 800000. So, 800000 - 620690 you will get 179310, so in this case it is overbilling, so you charge more to the client than what you deserve on the other hand for project 2 you did under billing, you charge less whereas you should have charged more. So, in this case you are getting 453061 and for the 3 projects project 1, project 3 and project 4 you did overbilling.

So, this is how you prepare the construction contract status report and you are able to identify the overbilling and under billing. Now I will just quickly summarize what we learnt in this particular method. First I explained you how to calculate the cost, whether it is labor cost, material cost plant and equipment cost, subcontractor cost or overhead cost. Then I told you how this cost is monitored at site, so you prepare the cost code, you prepare the cost report every month or every 2 month or for that matter every quarter.

In that you will calculate you will estimate to date you calculate the estimate to do the balance quantity, you calculate the estimate to do revise quantity, you compare these estimates with your original estimate, you calculate the variance. The variance sum will give you whether you are making profit you are making losses. Now this calculation is done for all the projects that the contractor is engaged in at the time of preparation of balance sheet and profit and loss account.

Now knowing the contract value and knowing these cost related data we can find out the status of each of the project in terms of whether the project is doing under billing, overbilling and whole lot of data can be generated for different projects which can be compiled at the head office level and these data only will be useful for preparing the balance sheet and the profit and loss statement for a given contracting organization.

So, we stop at this particular point of time and when we meet next time we will see more details pertaining to all these things so till then thank you very much and good bye.