Engineering/Architectural Graphics – Part 1 Orthographic Projection

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Lecture – 05
Lettering

Good morning. Welcome to the 5th lecture the last lecture of this week 1 and today as I said I will be discussing about how to do lettering, how to write on your graphic sheets. Now, before I start that I think we need to understand what is the need for writing and how should we write. So, the need for writing is to convey whatever we are drawing in words, but in very simple words.

We do not write paragraphs about design, we write basic minimal things, for example, section, elevation, plan. So, we write minimally on our graphic sheets whether it be engineering graphics or architectural graphics and the second thing is that it has to be read in a very clear manner unlike the presentation drawings, unlike the artistic drawings where we want to emphasize on the beauty of the design.

The architectural graphic drawing or engineering graphic drawing is the drawing which is used to implement the design in reality, to construct. So, that is what we are going to be reading this drawing for and since we are reading this drawing for actually implementing the particular design in reality we have to make it very clear and it has to be unambiguous and the same thing is through the lettering as well.

So, it is no fancy, it is sans serif font. So there are no curves towards the ends. It is very simple, straight lettering that we use and each letter, each alphabet is going to be framed in a square, not in a visible sense. So, we do not really actually draw a frame, but if you look at it is actually within a square that most of these alphabets will be drawn, will be written. So, when I tell you how to draw each one of this and of course it will come with practice.

Very simply thing it has to be Sans serif (()) (02:31) and preferably all the letters in a particular sheet are going to be of the same proportion, the sizes may vary. So, if I am writing

if you remember the bottom title had introduction to graphics which was a very big font while the name on the side was in a slightly smaller font, the captions which I was writing on the sheet were even smaller.

So, depending upon the importance and how the text will be read we will vary the font size, but the font type will remain constant and in most often cases we use Gothic. There are couple of other fonts also which we can use, but this is the graphic font, this is the graphic format of writing. So, today we are going to see how to write I will tell you on this graph paper you do not need to write on a graph paper.

You can write on your cartridge sheets only, you can use a bigger sketch book and A 3 size sketch book to do all these exercises whatever I am telling you here and you can practice. So, when you start practicing you have to draw all these fonts in different font sizes. So, as big as say 1.5 centimeters and as small as say 3 mm. So that is the variation which you should try to make your hand firm just remember the strokes how each of the stroke has to be done, has to be made.

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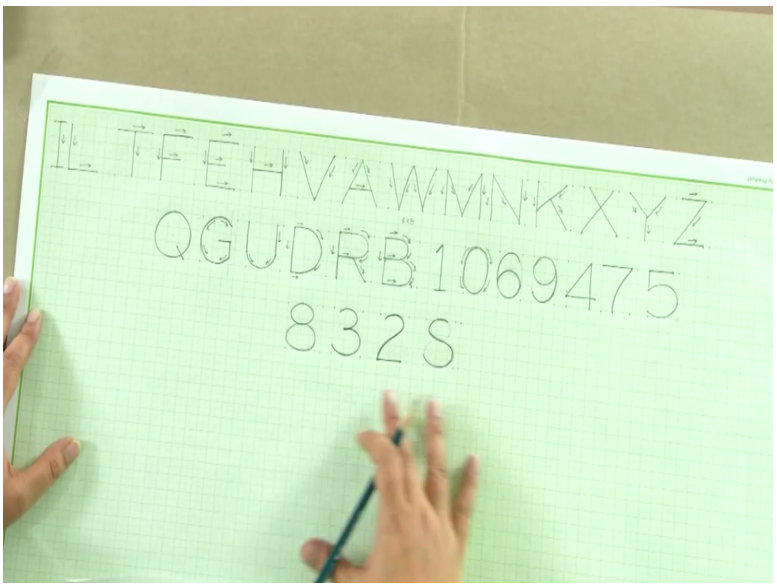

So, I will start with the straight line letters the simplest of the ones and I will be drawing free hand. So, to explain what I am doing is I am taking a square of 3 centimeter / 3 centimeter for each alphabet so that it is easier for you to learn, to remember. Now, the very first alphabet

that is the simplest one is I and for the architectural graphics we just use a straight line in case we want to add the top and bottom horizontal lines it is just a total of one unit.

So, in a 6 / 6 unit in a 6 / 6 square this will come out to be 2 units. So, 2 units top and bottom and 6 units total height. So, the total height anyways remains 6 units and the width will vary. Now, next we have L, so L has a proportion of 5 / 6 so the height remain 6 and the width becomes 5 so we have 5 units / 6 units then we have T, it is a 6 / 6 alphabet so we have entire square covered for the T.

Next, we have F, it is a 6 / 5. So, you have to make straight lines and the middle line of the F the shorter line will be half the width that is 3 units here. E is very similar to F we just add a line in the bottom. H is again 5 / 6, V is a 6 / 6 alphabet. Remember the strokes as I make them in almost all cases you never draw a line from bottom towards the top, you will always draw a line from the top to the bottom which is how you normally write as well and from left to right.

So, if you have to make a horizontal line it has to be left to right and then top to bottom is how any line while lettering will be drawn. A is similar to V it is a 6 / 6 unit letter and this is how we draw. So, first stroke is down like this second here and third here. This is the most common way of writing these alphabets the strokes will usually be following the same pattern and very rarely would you find that this sequence is altered this sequence is changed.

And once you have picked up the format, the sequence of making these strokes very rarely would you differ from these and your handwriting would normally come very constant similar to each letter, each alphabet will be similar to each other. W is the only letter which is wider than 6 units so it is 8 units that we take. So, that is W in four strokes. So, you have 2 Vs, but thinner V.

So W overall has a 6 / 8 the width is 8, it is the only letter wider than this. then we have M is again a 6 / 6 alphabet so unlike W have the edges as straight and the internal ones as inclined. Next, we have N, N is again a 5 / 6 this is 5/6 of N and then we have a K, K is again 5 / 6

alphabet if you draw a thin line here this is how K is drawn. So, that is the way of writing a K. Next, we have X is again a 5 / 6 alphabet the top triangle is smaller than the bottom one.

So, the lines actually join from 1 unit in side on top to full 6 units wide in the bottom triangle. Y is again a 6 unit. These are all straight line letters that I am talking about and then we have Z, Z is again a 5 / 6 letter. Now the only thing is that the top line is only 4 units while the bottom line is 5 units so Z starts slightly recessed, but in the bottom the base is bigger. These are all the straight line letters that we would be using in architectural graphics English alphabets.

Now we will move on to the curved ones. Now in this font that we are using the curved fonts are all perfect circle. So, if you look at this you would actually be drawing O like a circle so that is O it is a 6 / 6 it is in 6 / 6 I will be making all the alphabets in a circle that is O. If you have to make a Q so what we do is we make a line joining the center with a unit recessed here that is Q out of O.

So, the O is just a circle Q is a circle with this line joining center to a one unit recess. In case we have to do a C it is again out of the circle the same circle. Once you have practiced enough you would not be needing to draw these guides. So, C is actually a part of the same circle which is constituting O and Q, but it just stops one unit in side so it is not 6 / 6 actually it is a 5 / 6 size C.

But if you were to complete the circle it would become a 6 / 6, but it would just stop right short here so that is what C is. If you have to make G here it is exactly continuation of C. So, where you stop C you just make this line and it becomes a G so O and Q C and G they are altogether. Next, we have a J so a J is also a 5 / 6 unit letter. Now you draw a straight line and in the bottom 2 so it is actually an ellipse.

So, the curves actually starts two units from the bottom and then we have 5 units here so mid of that so it is actually an ellipse that is how we would make a J that is a J and in case you have to make a U we just complete the other side of the line as well. So, that is J up till here

and in case it is U it is like this and the strokes of the curve will actually go like this. So that is how we will be making the curves here same is with these curves here.

So we make these curves in four different parts so that is how we are making. So, O, Q, C, G, J and U and the last one is D. D is again a 5 / 6 letter so one unit is straight and then we have a semicircle which is making the curved part of the D. This is the order of the stroke that we will be using. Next, we have P is again a 5 letter alphabet. So, we have straight units 2 units straight and 3 units curved that is how P would come and a straight line, that is P.

R is within P so you have this line at the end of this 5th unit and assuming you are continuing this straight line from the top left corner to the bottom right corner. The line which is remaining is the line of R so from P we actually make this R and that is how the R would be done. The next we have B is again a 5 / 6 unit. So, it is not exactly in the center that we divide the B vertically.

And also the top part is only 4 units slightly more than 4 units so the top part will come and this is not exactly 3 units it is a 2.5 units here. So, we get B in 2.5 / 4 units the top part and the bottom part is in 3.5 and 5 units so that is how the B is done 1, 2 and then horizontal line. So 1, 2, 3 that is how the B would be done. So, these are all the alphabets of English that we would be using for architectural graphics.

And whenever you are writing whatever font size it would be the proportions should ideally remain the same. So, if you start practicing in different fonts you would be able to master these. So now I will tell you the numbers, the numerics because all the dimensions are done in these numerics. So, I will start with the simplest one which is 1 so it is a simple, straight line you could just draw one like a straight line which is most often used.

But in case you want to make the horizontal line in the bottom it is again those two units and one single unit 1 / 1 unit for the top inclined one. The 0 is actually made in a 4 / 6 unit so we actually get an ellipse here so that is what we are getting in a 0. So 0 is different from an O that is what the 0 would be. So, 4 different strokes, 3 different strokes rather and we get a 0.

The 6 is out of 0 only. So, what you get when we have to draw 6 so we have a 4 / 6 ellipse if it was complete so we have a 4 / 6 ellipse, but we do not complete it definitely.

So, what we do we have another ellipse which is in the bottom. So, we keep it short and that is how we would draw a 6 using the same font. So that 6 and 9 is reverse so we have the same 0 so you can roughly draw it or you could just keep it in your mind and the above one is almost an ellipse so that is what we get I am sorry so that is 9 for us. Again, we have this 4 which is a 5 / 6 unit, but the vertical line of a 4 is drawn at 4 units.

So 4 units and from the bottom we leave a 1.5 units here and this horizontal line will go all the way up to 5 units. So, that is how the 4 would come, 7 is slightly simpler it is again a 5 / 6 units a horizontal line and in the bottom it is at 2 units that you will slightly curve it that is how the 7 would be done. 5 is again a 5 / 6 unit, but the top line is only 4 units so 4 units 2.5 units down and then the rest of the portion will come all the way up to 5 towards the mid of it.

So, it is a continuous curve that is how the 5 would be done then we have 8 and 3 so for 8 is again a 5 / 6 units. The top portion is slightly more than 2.5 units and taking the center it is a 5 / 6 units so taking the center at around 2.5 so what we have actually is top is a separate ellipse and bottom is a separate ellipse. So, bottom ellipse is 5 units / 3.5 units and top one is a 3.5 units / 2.5 units that is how the 8 would be done.

And to make a 3 out of an 8 all we do is remove almost the half part of this same 8. So, we have the same size and the 3 comes half a unit in side. So, we have a part of the curve of 8. So we do not just actually half it, but we just remove the part of the curve for the top and bottom curves and in the middle one we retain the entire half. So, that is how 3 would be done, 2 is again a 5 / 6 units.

So, what we are doing is this is very similar to how we were doing 8. So the top part is same as 8 we will start it similar to 8, but instead of making it straight we would just bring it like we did for 7. So, the top part is of 8 and the bottom part is of 7. So, that is how we would do

it. So 2 is actually not going all the way up to 5 it is stopping only at 4. So, that is how we would make a 2.

So, that is how we have drawn almost everything one thing which is left one alphabet which is left is S and S is quite tricky most of the times it is again in a 5 / 6, so just like you do an 8 so assume you are doing an 8 here. So, I am drawing it in very light. So we have a bigger ellipse and then we have a smaller ellipse. So, instead of drawing this complete thing we would just draw part of 8 here that is your S.

So, now we have completed all the alphabets and also the numerals which is mostly what we are going to be using while we are dimensioning, while we are writing the captions, we are writing the titles it is called labeling. So, when we are labeling the sheet these are the alphabets and numerics that you will be going to use in your sheet. Please practice these in different font heights, different font sizes, but retain the same proportion.

So, as you practice more and more and graph paper is really good for that because you have the squares and you can conveniently practice within this squares you can have different font sizes and you can practice. So, practice as much before you actually write on the cartridge sheet without any grid and graph and your hand has already become reasonably firm to work with the pencil and these numbers freehand.

So, that is all for in the lecture today. Thank you for joining. We will be starting in the next week starting with geometrical drawings, geometrical constructions, dimensioning and different kinds of curves which are used in geometric drawings. So, thank you for joining this week, see you again next week bye-bye.