

TAU910 SCAFFOLDING POOL FOR CONSTRUCTION

**SCAFFOLDING MEASURING
INSTRUCTIONS AND USER
RESPONSIBILITIES**

TAU910 SCAFFOLDING POOL FOR CONSTRUCTION

Contents

1	SCAFFOLDING MEASUREMENT.....	3
1.1	STARTLEVEL, STANDING SCAFFOLDS	3
1.2	TOWER SCAFFOLDS	3
1.3	SCAFFOLDS WITH A DIFFERENT BASE HEIGHT.....	4
1.4	SCAFFOLDS WITH BUTTRESSES.....	4
1.5	LARGER SCAFFOLDS	5
1.6	SCAFFOLDS AROUND HEAT EXCHANGERS AND HORIZONTAL DRUMS	5
1.7	SCAFFOLDS AROUND TANKS	6
1.8	SCAFFOLDS INSIDE TANKS ALONG TANK WALL	6
1.9	MASS SCAFFOLDS IN TANKS	7
1.10	SQUARE SCAFFOLDS AROUND TOWERS	7
1.11	SCAFFOLDS IN SPHERES.....	8
1.12	SCAFFOLDS AROUND SPHERES	9
1.13	START LEVEL SUSPENDED SCAFFOLDS	10
1.14	SUSPENDED SCAFFOLDS.....	10
1.15	EXTENSION SCAFFOLDS	11
1.16	EXTENSION SCAFFOLDS WITH MORE THAN 1 WORK PLATFORM	12
1.17	STELLING PLACED ON GIRDERS.....	13
1.18	BRIDGING SCAFFOLDS.....	14

TAU910 SCAFFOLDING POOL FOR CONSTRUCTION

1 SCAFFOLDING MEASUREMENT

1.1 STARTLEVEL, STANDING SCAFFOLDS

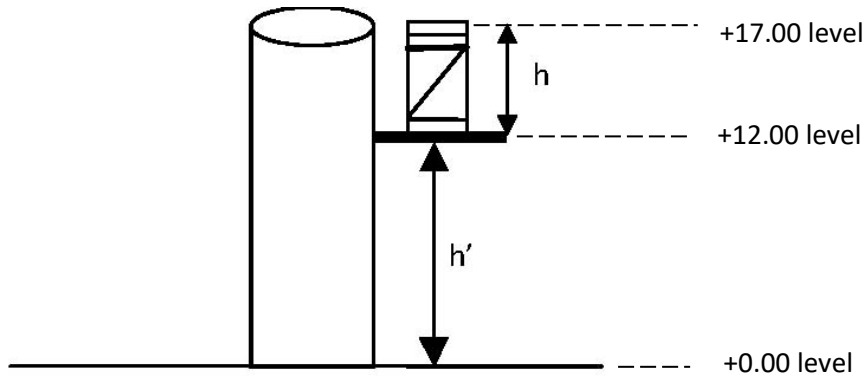


Figure 1. Scaffold starting level is a certain height distance (h') from the ground level (+0.00) level.

h' = Start level of the scaffolding, to be used only to determine the height area in calculations

h = height of scaffolding, to be used as scaffolding height in calculations

1.2 TOWER SCAFFOLDS

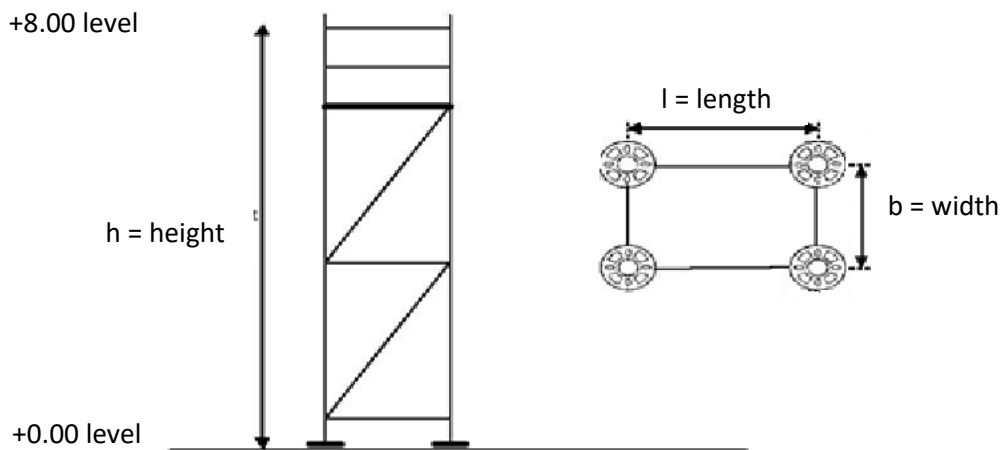


Figure 2. Calculation m3 scaffold.

Calculation m3 scaffold:

$$l \times b \times h$$

l = length, verticals centerline dimension

b = width, verticals centerline dimension

h = height, between bottom of the base plate and the top rail
(see note at the end)

For example, Figure 2:

- Scaffold volume [m³] = l x b x h
= 3m x 2,5m x 8m
= 60 m³

TAU910 SCAFFOLDING POOL FOR CONSTRUCTION

1.3 SCAFFOLDS WITH A DIFFERENT BASE HEIGHT

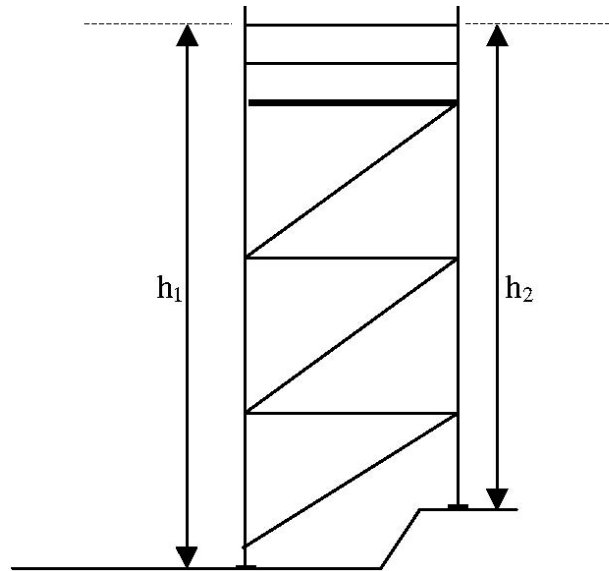


Figure 3. Scaffolds with a different base height.

Calculation m3 scaffold:
$$= \frac{h_1+h_2}{2}$$

1.4 SCAFFOLDS WITH BUTTRESSES

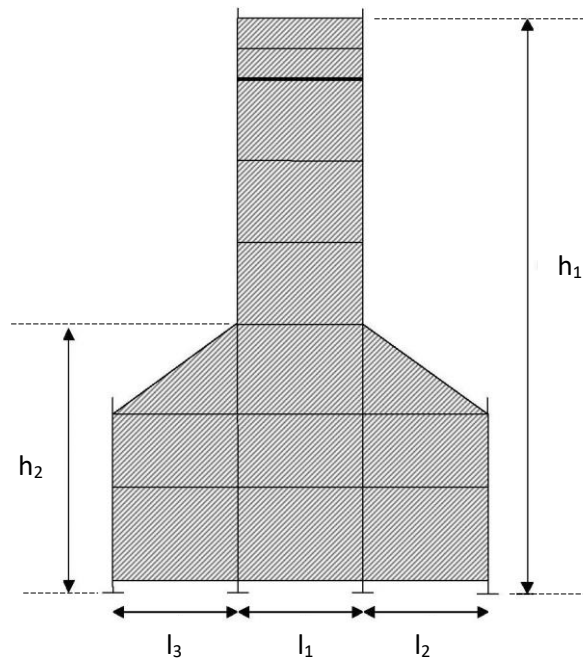


Figure 4. Scaffolds with buttresses.

Calculation m3 scaffold:
$$l_1 \times b \times h_1 + (l_2 + l_3) \times b \times h_2$$

TAU910 SCAFFOLDING POOL FOR CONSTRUCTION

1.5 LARGER SCAFFOLDS

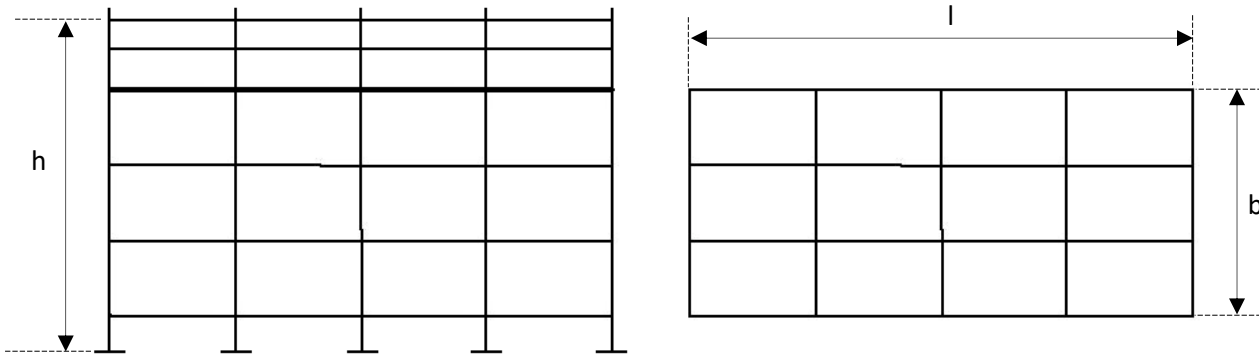


Figure 5. Dimensional scaffolds.

Calculation m3 scaffold: $l \times b \times h$
 l = length, verticals centerline dimension
 b = width, verticals centerline dimension
 h = height, see note at the end

1.6 SCAFFOLDS AROUND HEAT EXCHANGERS AND HORIZONTAL DRUMS

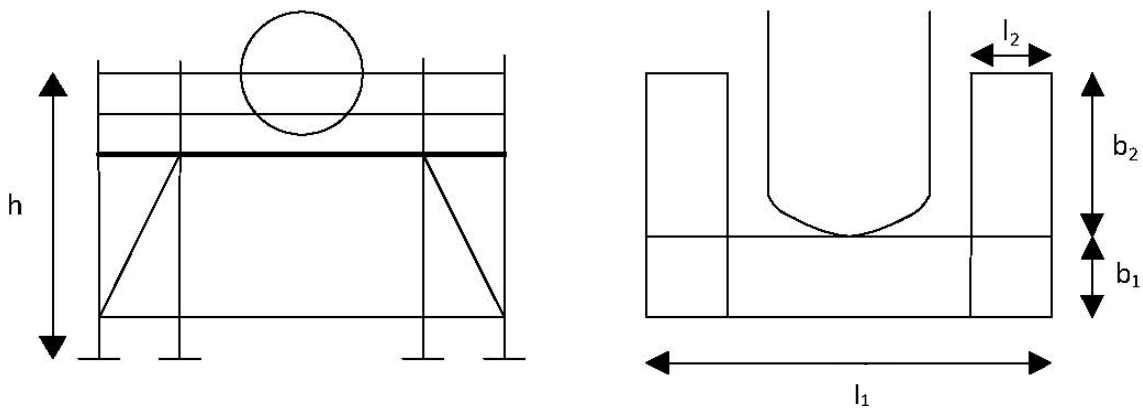


Figure 6. Scaffolds around heat exchangers and flat drums.

Calculation m3 scaffold: $(l_1 \times b_1 + 2 \times l_2 \times b_2) \times h$
 l = length, verticals centerline dimension
 b = width, verticals centerline dimension
 h = height, see note at the end

TAU910 SCAFFOLDING POOL FOR CONSTRUCTION

1.7 SCAFFOLDS AROUND TANKS

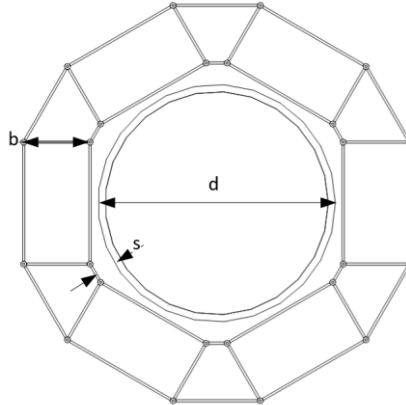


Figure 7. Scaffolds around tanks.

Calculation m3 scaffold:

$$(d + 2s + 2b) \times \pi \times b \times h$$

d = outer diameter of a tank

s = distance between scaffolding and equipment: working space /
insulation thickness / vacuum rings

b = width of a scaffold, external dimension

h = height, see note at the end

Platform m2 calculation: $(d + 2s + 2b) \times \pi \times b \times (\text{platform qty} - 1)$. The top level platform is included in the cubicmeter price

1.8 SCAFFOLDS INSIDE TANKS ALONG TANK WALL

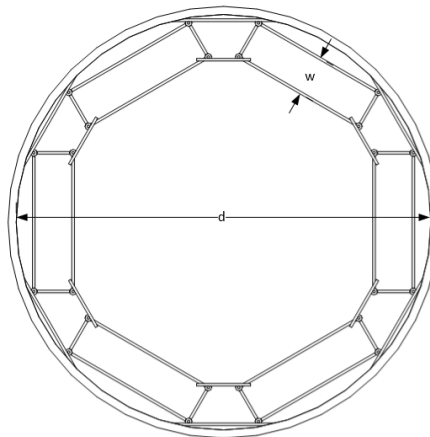


Figure 8. Scaffolds inside tanks along tank wall.

Calculation m3 scaffold:

$$d \times \pi \times w \times h$$

d = inner diameter of a tank

w = width of the scaffold, external dimension

h = height, see note at the end

1.9 MASS SCAFFOLDS IN TANKS

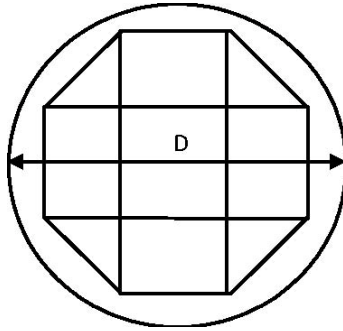


Figure 9. Mass scaffolds in tanks.

Calculation m³ scaffold: $\left(\frac{D^2 \times \pi}{4}\right) \times h = \pi \times r^2 \times h$

D = Inner diameter of the tank

r = D/2

h = height, see note at the end

1.10 SQUARE SCAFFOLDS AROUND TOWERS

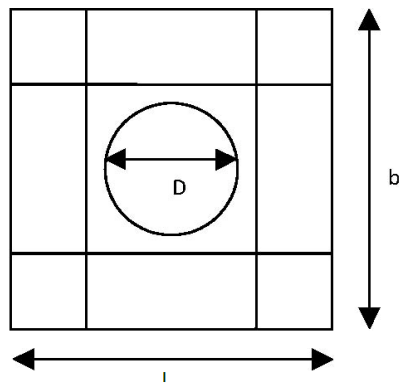


Figure 10. Square scaffolds around tanks

Calculation m³ scaffold: = Outside – Inside = $\left((l \times b) - \left(\frac{D^2 \times \pi}{4}\right)\right) \times h = (l \times b \times h) - (\pi \times r^2 \times h)$

l = length, verticals centerline dimension

b = width, verticals centerline dimension

D = outer diameter of the tank

h = height, see note at the end

1.11 SCAFFOLDS IN SPHERES

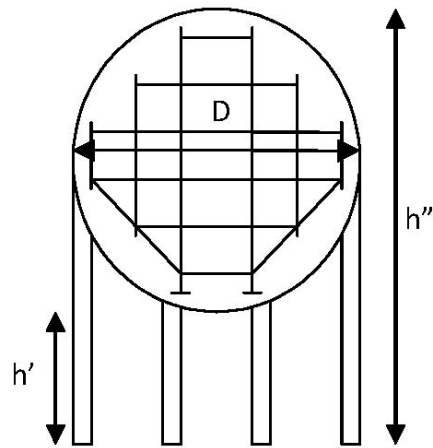


Figure 11. Scaffolds in spheres.

h' = Start level of the scaffolding, to be used to determine height area in calculations

h'' = height of sphere from the ground

Calculation m3 scaffold: $\frac{1}{6}\pi \times D^3$

D = inner diameter of the sphere

The volum [V] of a sphere = $\frac{4}{3}\pi r^3$

$$V = \frac{4}{3}\pi r^3$$

$$V = \frac{4}{3}\pi \left(\frac{d}{2}\right)^3 \quad \left| \quad \left(\frac{d}{2}\right)^3 = \left(\frac{1}{2}\right)^3 \times d^3 \right.$$

$$V = \frac{4}{3}\pi \times \left(\frac{1}{2}\right)^3 \times d^3$$

$$V = \frac{4}{3}\pi \times \frac{1}{8} \times d^3$$

$$V = \frac{1}{6}\pi \times d^3$$

1.12 SCAFFOLDS AROUND SPHERES

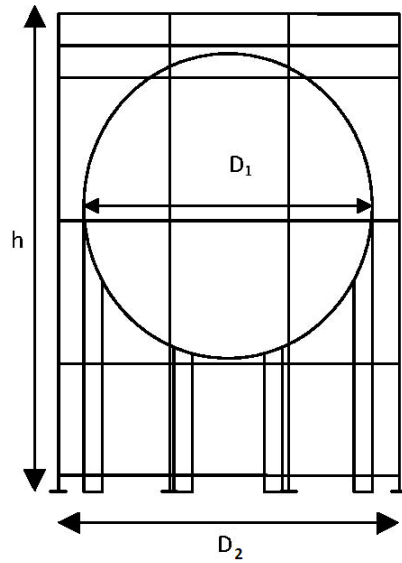


Figure 12. Scaffolds around spheres.

Calculation m3 scaffold:

$$\underbrace{\left(\pi \times \left(\frac{D_2^2}{4} \right) \times h \right)}_{\text{Volume of external measures of scaffold}} - \underbrace{\left(\frac{1}{6} \pi \times D_1^3 \right)}_{\text{Volume of a sphere}}$$

D_2 = external diameter of the scaffolding

D_1 = external diameter of the sphere

h = height, see note at the end

1.13 START LEVEL SUSPENDED SCAFFOLDS

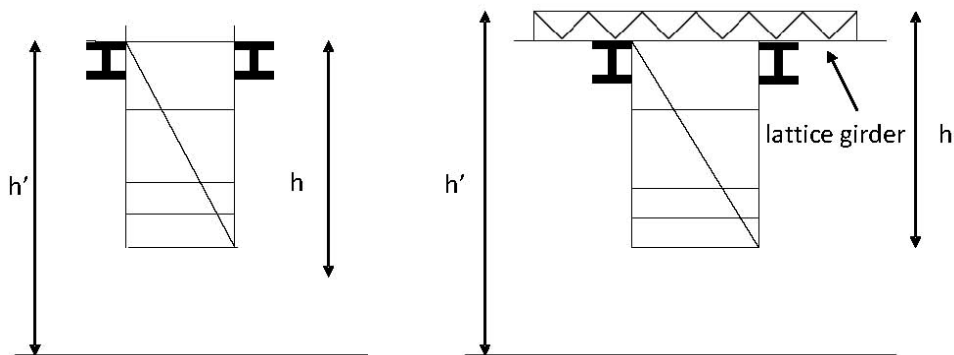


Figure 13. Starting level of hanging scaffolds.

h' = Start level of the scaffolding, to be used to determine height area in calculations
 h = height of scaffolding, to be used as scaffolding height in calculations

1.14 SUSPENDED SCAFFOLDS

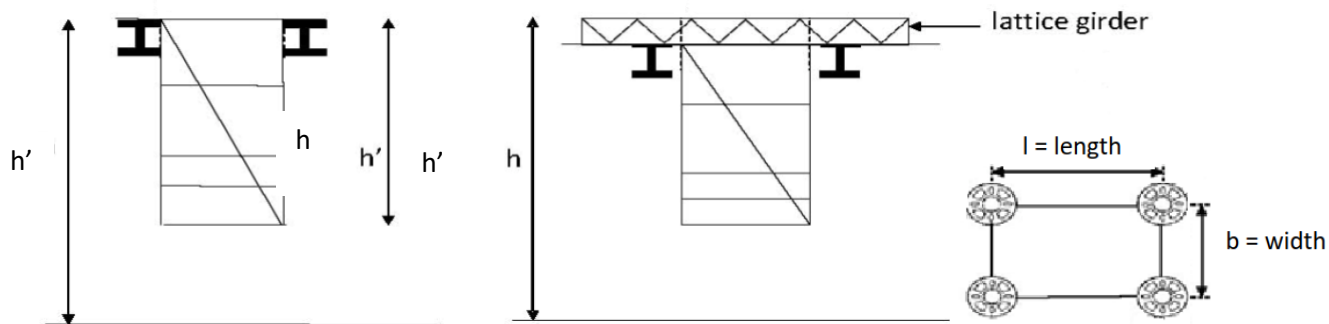


Figure 14. Hanging scaffolds.

h' = Start level of the scaffolding, to be used to determine height area in calculations
 h = height of scaffolding, to be used as scaffolding height in calculations

Calculation m3 scaffold: $l \times b \times h$
 l = length, verticals centerline dimension
 b = width, verticals centerline dimension
 h = height, see note at the end

1.15 EXTENSION SCAFFOLDS

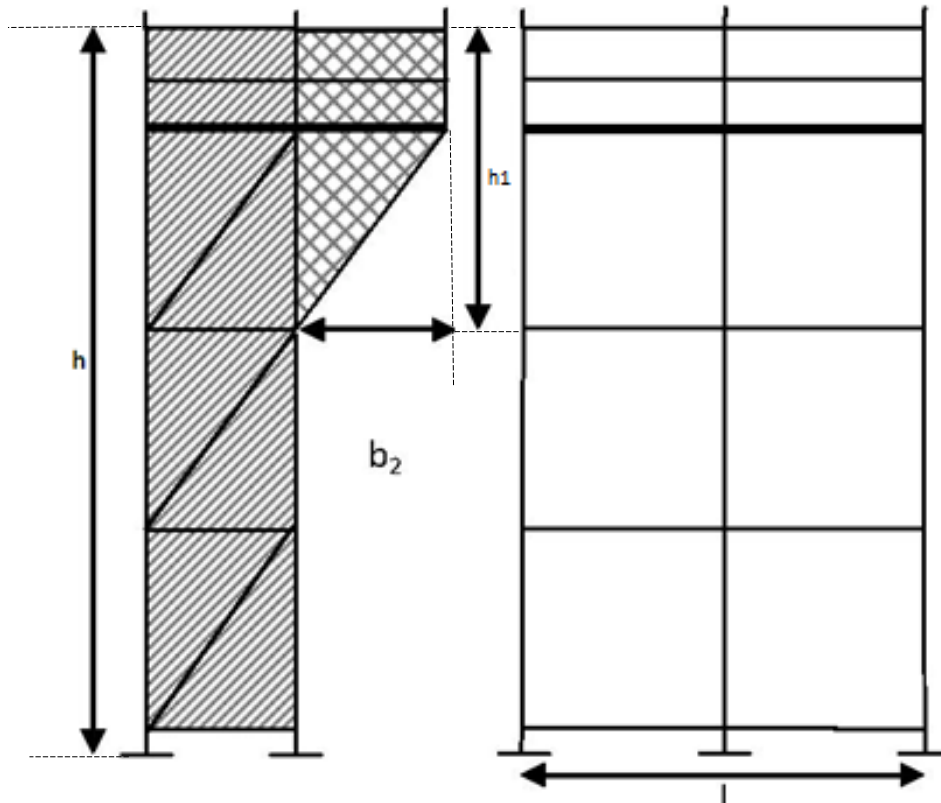



Figure 15. Extension scaffolds.

Calculation m3 basic scaffold:  see pages 3-4

Calculation m3 extension scaffold: 

$$l \times b_2 \times h_1$$

l = length, verticals centerline dimension

b_2 = width of extension, verticals centerline dimension

h_1 = height of extension from the lowest point of diagonal support to the top hand rail, see note in the end.

h = height of base scaffolding

For example, Figure 15:

= Basic scaffold + Extension scaffold

$$= (l \times h \times b) + (l \times b_2 \times h_1)$$

1.16 EXTENSION SCAFFOLDS WITH MORE THAN 1 WORK PLATFORM

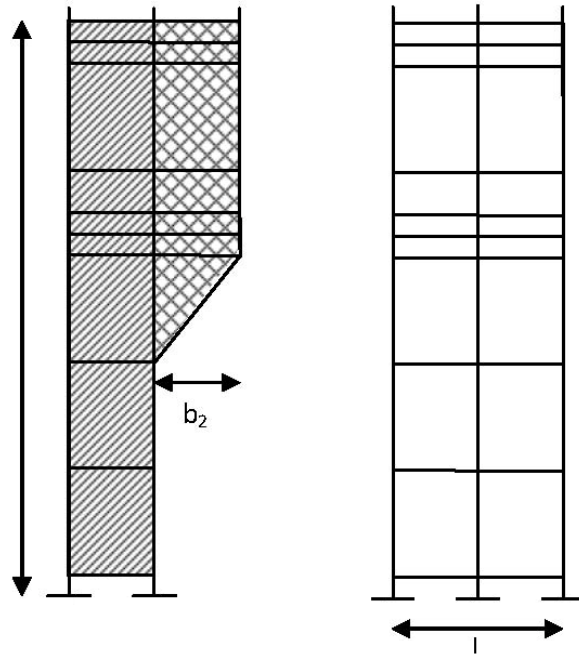




Figure 16. Extension scaffolds with several platforms.

Calculation m3 basic scaffolding:  see pages 3-4

Calculation m3 extension scaffold:  see page 13

1.17 STELLING PLACED ON GIRDERS

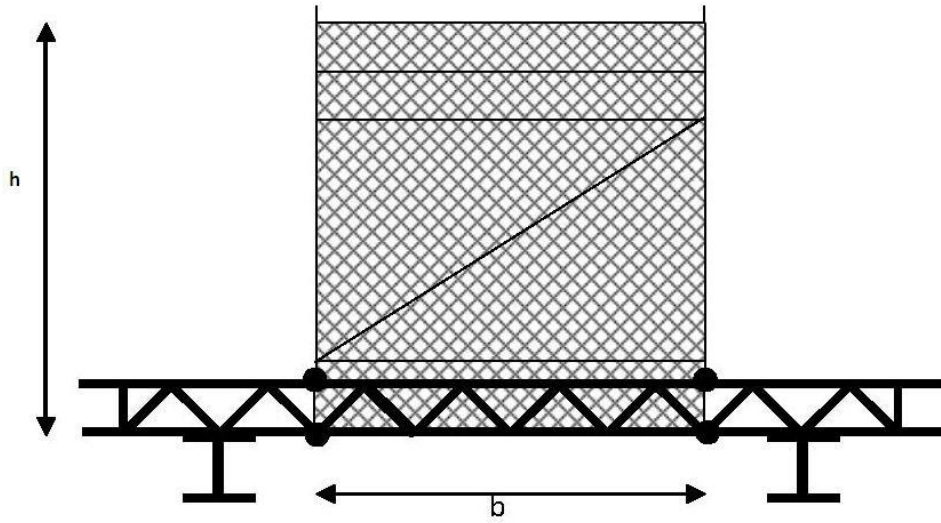



Figure 17. Extension scaffolds on girders.

Calculation m3 scaffold: 

$l \times b \times h$

l = length, verticals centerline dimension

b = width of extension, external dimension

h = height of extension from the lowest point of girder to the top hand rail, see note in the end.

1.18 BRIDGING SCAFFOLDS

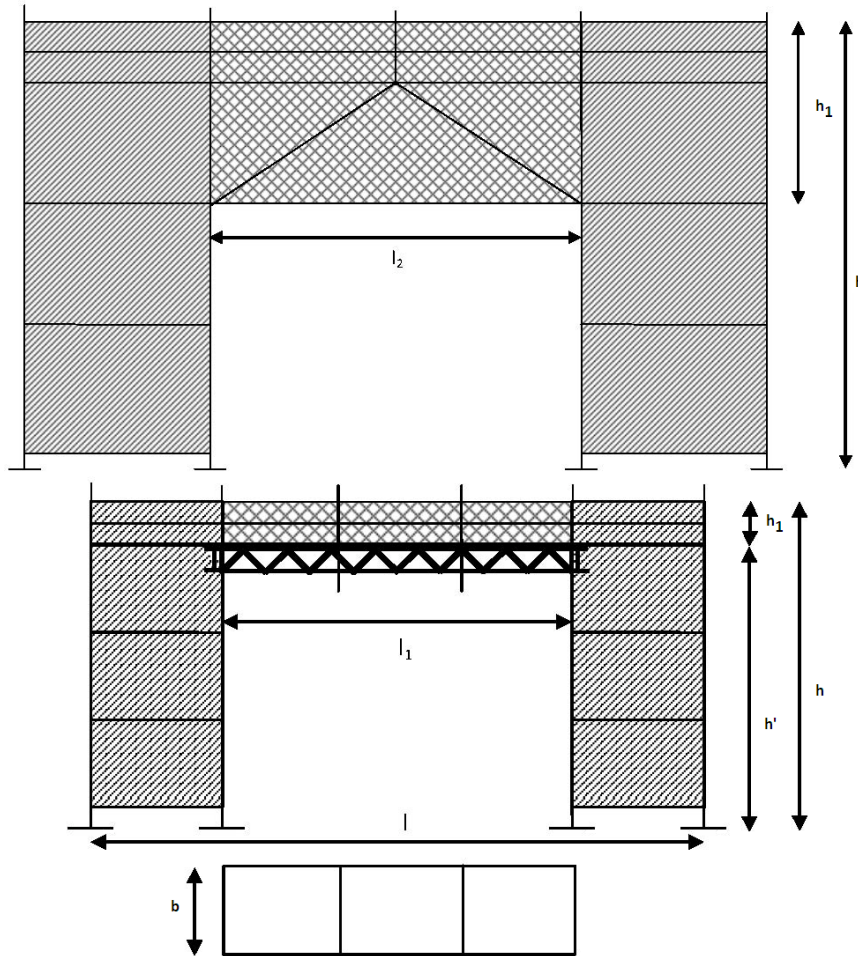




Figure 18. Bridging scaffolds.

Calculation m3 basic scaffold:  see pages 3-4

Calculation m3 bridging:  $l_1 \times b \times h_1$

l_1 = length of bridging
 b = width of bridging, verticals centerline dimension
 h_1 = height of bridging from the lowest point of diagonal support to the top hand rail, see note in the end.

NOTES:

When used plank or plywood platforms, calculation is like for steel platforms.

When used ladder platforms as inside scaffolding structure, it is included to scaffolding price.

If ladder platforms are outside of scaffolding structure, calculation is like for stair towers.

Scaffolding height [h] = height between bottom of the base plate and the top rail, round off to closest 0.5 meters. E.g. 3.26 m -> 3.5 m.

Minimum volume to be measured per scaffold: 10 m³. Clustering is not allowed.