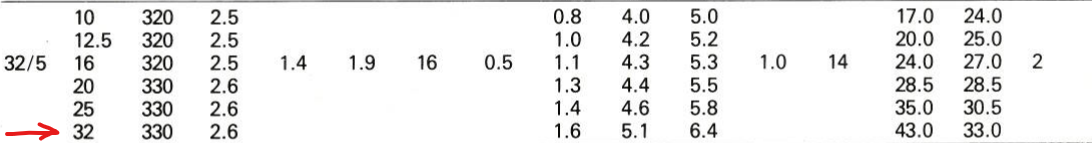
Cranes Loads

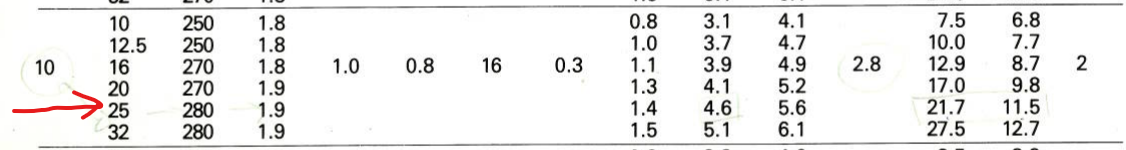
Middle span Crane loads :   
  
  
crane own weight : (43 / 32 ) \* 38 = 51 t  
own weight per wheel = 51 / 4 = 12.75 t  
crane max load = 32 t  
load per wheel = 32 / 2 = 16 t

Total wheel load = 16 + 12.75 = 28.75 t

Impact factor = 1.25

**Total wheel load with impact = 36 t**

Left span crane loads :

  
**wheel total load : 11.5 t**

Crane Loads Summery :

**Middle Span Crane Wheel Load = 36 t**

**Left Span Crane Wheel Load = 11.5 t**

Corrugated Sheets

roof Corrugated sheets :

**Middle span Live load** = 60 – 200/3 \* tan(α) = 60 – 200/3 \* 0.06 = 56 kg / m2

* use corrugated sheet of allowable live load = 100 kg / m­2 , span **2 m**  
  use **continuous** corrugated sheet of thickness **0.55 mm**
* Ow = 5.25 kg/m2
* **Total load** = 5.25 + 56 = **61.25** kg/m2

**side spans live load** = 60 – 200/3 \* tan(α) = 60 – 200/3 \* 0.1 = 53 kg / m2

* use corrugated sheet of allowable live load = 100 kg / m­2 , span **2.5 m**
* use **continuous** corrugated sheet of thickness **0.7 mm**
* ow = 6.66 kg/m2
* **Total load =** 6.66 + 53 = **60** kg/m2

side Corrugated sheets :

**level > 10 m , Wind load =** Ce \* K \* q = 0.8 \* 1.15 \* 50 = 46 kg / m2

* Use wind load = 50 kg / m2 ( lateral load ) , Span = 2 m
* Ow = 4.75 kg/m2 (vertical load)
* Use **continuous** corrugated sheets for all side of thickness **0.5 mm**

**level < 10 m , wind load =** Ce \* K \* q = 0.8 \* 1.0 \* 50 = 40kg/m2

* Use wind load = 50 kg / m2 ( lateral load ) , Span = 2.5 m
* Ow = 4.75 kg/m2 (vertical load)
* Use **continuous** corrugated sheets for all side of thickness **0.5 mm**

Corrugated Sheets Summery :

* Use continuous in **middle span** roof corrugated sheets of **0.7 mm**
* Use continuous in **side spans** roof corrugated sheets of **0.55 mm**
* Use continuous in **side corrugated** sheets of **0.50 mm**

Mezanin

Flooring = 200 kg/m2

Storage Floor Live Load = 500 Kg/m2

Management Floors Live Load = 400 Kg/m2

Walls distributed load = 200 kg/m2

Deck span = 2.50 m

Use Metal Deck thickness = 1.2 mm

For **Storage Floor** Use concrete thickness = 8 cm

* concrete load = 2500 kg/m3 \* 0.08 = 200 kg/m2
* total dead load = 600 kg/m2
* total live load = 500 kg/m2
* total working load = 1100 kg/m2
* Total ultimate load for storage floor = 1.4 \* (200 + 200 + 200 ) + 1.6 \* 500 = 1640 kg/m2
* Allowable load for storage floor = **1758 kg/m2**

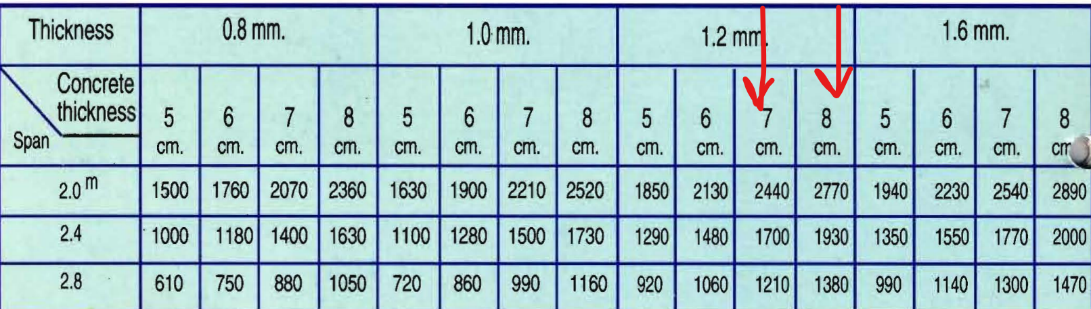
For **management Floor** Use concrete thickness = 7 cm

* concrete load = 2500 kg/m3 \* 0.08 = 200 kg/m2
* total dead load = 575 kg / m2
* total live load = 400 kg/m2
* total working load = 975 kg/m2
* Total ultimate load for mang. floor = 1.4 \* (200 + 175 + 200) + 1.6 \* 400 = 1445 kg/m2
* Allowable load for management floor = **1542 kg/m2**

Mezanin Summery :

Use Metal Deck of **1.2 mm**

For Management Floors , Concrete Thickness = **7 cm**

****For storage Floor , Concrete Thickness = **8 cm**

**Beams load**

**Mezanin storage floor main beams** (using metal deck allowable load ) :

* load = 16.2 t \* 2 = 32.4 t , secondary beams from both sides , @2.5m
* load = 16.2 t , secondary beam from one side at end gables , @2.5m

**Mezanin management floor main beams** (using metal deck allowable load ) :

* load = 14.7 t \* 2 = 29.4 t , secondary beams from both sides , @2.5m
* load = 14.7 t , secondary beam from one side at end gable , @2.5m

**Mezanin Storage Floor Secondary Beams :**

* load = 1758 kg/m2 \* 2.5 m = 4395 kg/m = 4.4 t/m
* ow = 100 kg / m
* Reaction = 4.4 t/m \* 6 m / 2 + 100 kg/m \* 6 m / 2= 16.2 t

**Mezanin Management Floor Secondary Beams :**

* load = 1542 kg/m2 \* 2.5 m = 3855 kg/m = 3.9 t/m
* ow = 100 kg/m
* Reaction = 3.9 \* 6 / 2 + 100 kg/m \* 6m / 2 = 14.7 t

**Purlins Middle span :**

* **Live** load = 56 kg/m­2 \* 2m = **112 kg/m**
* Ow = 25 kg/m
* **Dead** load = 5.25 kg/m2 \* 2 + 25 = **30.5** kg/m
* Dead Load Reactions = 30.5kg/m \* 6m / 2 = 91.5 kg = 0.092t
* Live load Reactions = 112kg/m \* 6m / 2 = 336 kg = 0.34t
* Total load Reactions = 427.5 kg = 0.43 t

**Purlins Side Spans :**

* **Live** Load = 53 kg/m2 \* 2.5m = **132.5 kg/m**
* Ow = 25 kg/m
* **Dead** Load = 25kg/m + 6.66kg/m2 \* 2.5m = **41.65 kg/m**
* Dead load Reactions = 41.65kg/m \* 6m / 2 = 125 kg = 0.125 t
* Live load Reactions = 132.5kg/m \* 6m / 2 = 397.5 kg = 0.4t
* Total load = 0.525t

**Frame girder load :**

* Purlins concentrated **Dead** loads from each sides= 2 \* 0.125t = **0.25t** ,9purlins@2.5m
* Purlins concentrated **Live** loads from each sides = 2 \* 0.4t = **0.8t** ,9purlins@2.5m
* Utilities **Dead** loads = **0.1 t /m**

**Truss loads :**

* Purlins concentrated **Dead** loads at nodes from each sides = 2\* 0.092t = **0.185t** ,purlins@2.5m at each node
* Purlins concentrated **Live** loads at nodes from each sides = 2\* 0.34t = **0.68t** ,purlins@2.5m at each node
* Utilities **Dead** Load = 100 kg / node = **0.1t** /node