Cranes Loads

Middle span Crane loads :

	10	320	2.5					0.8	4.0	5.0			17.0	24.0	
	12.5	320	2.5					1.0	4.2	5.2			20.0	25.0	
32/5	16	320	2.5	1.4	1.9	16	0.5	1.1	4.3	5.3	1.0	14	24.0	27.0	2
	20	330	2.6					1.3	4.4	5.5			28.5	28.5	
	25	330	2.6					1.4	4.6	5.8			35.0	30.5	
→	32	330	2.6					1.6	5.1	6.4			43.0	33.0	

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 :

	10	250	1.8					0.8	3.1	4.1			7.5	6.8	
	12.5	250	1.8					1.0	3.7	4.7			10.0	7.7	
10	16	270	1.8	1.0	0.8	16	0.3	1.1	3.9	4.9	2.8		12.9	8.7	2
	20	270	1.9					1.3	4.1	5.2			17.0	9.8	
→	25	280	1.9					1.4	4.6	5.6			21.7	11.5	
	32	280	1.9					1.5	5.1	6.1			27.5	12.7	

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 / m^2
use live load = 100 kg / m^2 , span **2 m**
use **continuous** corrugated sheet of thickness **0.55 mm**

side spans live load = 60 – 200/3 * tan(α) = 60 – 200/3 * 0.1 = 53 kg / m^2
use live load = 100 kg / m^2 , span **2.5 m**

use **continuous** corrugated sheet of thickness **0.7 mm**

side Corrugated sheets :

level > 10 m , Wind load = C_e * K * q = 0.8 * 1.15 * 50 = 46 kg / m^2

Use wind load = 50 kg / m^2 , Span = 2 m

level < 10 m , wind load = C_e * K * q = 0.8 * 1.0 * 50 = 40kg/m^2

Use wind load = 50 kg / m^2 , Span = 2.5 m

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/m^2

Storage Floor Live Load = 500 Kg/m^2

Management Floors Live Load = 400 Kg/m^2

Deck span = 2.50 m

Use Metal Deck thickness = 0.8 mm

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

Dead load = 2500 kg/m^3 * 0.08 = 200 kg/m^2

Total ultimate load for storage floor = 1.4 * (200 + 200) + 1.6 * 500 = 1360 kg/m^2

Allowable load for storage floor = 1485 kg/m^2

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

Dead load = 2500 kg/m^3 * 0.08 = 200 kg/m^2

Total ultimate load for mang. floor = 1.4 * (200 + 175) + 1.6 * 400 = 1165 kg/m^2

Allowable load for management floor = 1270 kg/m^2

Mezanin Summery :

Use Metal Deck of **0.8 mm**

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

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

Thickness	0.8 mm				1.0 mm.				1.2 mm.				1.6 mm.			
Span \ Concrete thickness	5 cm.	6 cm.	7 cm.	8 cm.	5 cm.	6 cm.	7 cm.	8 cm.	5 cm.	6 cm.	7 cm.	8 cm.	5 cm.	6 cm.	7 cm.	8 cm.
2.0 m	1500	1760	2070	2360	1630	1900	2210	2520	1850	2130	2440	2770	1940	2230	2540	2890
→ 2.4	1000	1180	1400	1630	1100	1280	1500	1730	1290	1480	1700	1930	1350	1550	1770	2000
→ 2.8	610	750	880	1050	720	860	990	1160	920	1060	1210	1380	990	1140	1300	1470
3.2	300	410	500	570	410	520	610	680	650	760	870	990	760	870	990	1130