Greenwood Scaffolding Limited.

Title: Plettac Metrix system scaffold to access 6 x 2.0m lifts with a Beamto the loading bay elevation.3 elevations.Loading 2kN/m2 .

Debris netted.

Drawing No sd25-GSL-32

Site:Sharston Logistics.No 4 Harling Road,Wythenshawe.M22 4UZ. Client:Dale Group.
Sheet No.1 of 3
Prepared by:R.Challender(Scaffold Design Engineer) Date 5-6-25. MATERIALS:

ALL TUBE WILL BE GALVANISED THEREFORE AS NEW CONDITION.

PLEASE SEE MANUFACTURERS PLETTAC METRIX COMPONENT CAPACITIES.

ALLOWABLE B.M & SHEAR FOR SCAFFOLD BEAMS:

TYPE OF BEAM	ALLOWABLE B.M (kN.M)	ALLOWABLE SHEAR (kN)
UNIT BEAM	27.70	15.60
LADDERBEAM	13.50	18.0
PLETTAC ALUM BEAM	18.00	14.00
X BEAM(750)	44.50	4.50
450 ALUM BEAM	13.94	12.70

References used in design

BS6399 – Part 2 – Wind Load
EN12811 – Latest code of practice (TG20 – 21)

Determined wind forces

Windloads as TG20-21 AND En12811-1

(Appendix E to be used with scaffolds< 100m high with no significant topo or < 50m with significant topo)

Distance from edge of	45	in km	Cc	2.83	Table E 1 (combination)
Significant Topography	n	y or n	23.5	23.5	Fig E 1 App E
Altitude above sea- A	52	in m	Cdir	1	Table NA.1 page 4
Cprob- do not use twf i	1		Cseason	1	Table NA.2 page 6
			Twind	1	Fig E 3

1) Peak Wind Pressure 0.613*Cc*Swind² Appendix E
2) Swinc Twind*Vmap*(1+0.001 * A) * Cprob*Cdir*C Appendix E
3) Swinc 23.50
4) Qp= 0.34 kN/m² * 1.00 tw factor 0.96 kN/m²

Wind Load per tie/m2

(Cpe for sheeting-Cpe*1, for debris netting Cpe*0.5, for unsheeted Cpe *0.21)

Ae- Max Area acting or	10.00	in m2	0.5
Qp=	0.96	kN/m²	
Cpe +ve=	1.1		
Cpe -ve	1.1		

1) Load= Qp*Ae*Cf
2) Therefore max push 5.29 Kn
3) Therefore max pull 5.29 Kn

Liveloading is 2.0kn/m2.plus Decks 0.25kn/m2=2.25kN/m2

Transom check (gridsize 2.5m span x 1.0m crs)
Transom BM =2.25kn/m2 x 2.50m span x 1.050mtr squared
8
=0.703kn.m
4.39kn.m<1.41kN.m Bm

a Ledger Check
Ledger span 2.50m.Loading is is 2.25kn/m2 UDL
2.25Kn/m2 x 2.50m(crs)
4 = 1.40625kn.m <2.10k.N.m
As per table 4 given

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Check scaffold decks.
Max span 2.5m
Max bm = 2.25kn/m2 x 2.5m
4 =1.406kN.m
=1.406kN.m<1.41kn.m Allowable bending for a 2500mm long steel deck 300mm wide decks as per table 7.(6Kn/m2 x 0.3m =1.8kN/m.) M max 1.8kN/m 2.5square
8 =1.41kNm.

Check Facade bracing
Length of facade bracing
Scaffold 2.0m high x 2.5m wide
Thus 2.0m2 plus 2.5m2=10.25m square root=3.202m

The worst case horizontal load will occur from a percentage of the vertical load.
Assume 25 percent of vertical load is acting horizontally.
10.0kn x 0.25 =2.5kn
Load 2.5kn /cosine 40 degree angle of strut.=3.26kn
Within tolerance as per table 1.

Leg Loadings.

Leg loading to the Bridge beam.Taken on the inside and outside legs
Standards@ 2 lifts high Plus bracing =130Kg or 1.3kN
Steel Decks x 1.5 no of 300mm wide x 2.5m long.
15.41Kg per 2.5m deck x 3no =115Kg x 2 bays=230Kgs 0r 2.30kN.
subtotal 3.6Kn plus liveload of .5m x 2.5m x 2kN/m2=2.5Kn plus 3.6Kn
Total 6.1Kn to each end span.

Check the beam
6.1Kn x 2.5m plus 6.1kN x 5.0m
6.5m =7.038kN x 5=35.19Kn Allowable 44.50kNm,

Calculation by R.A.Challender(Scaffold Design Engineer)