LEE MARLEY BRICKWORK. 185 VICOUNT WAY WOODLEY, READING BERKS.RG5 4DZ Tel: 01 628 825 929	Job Description: EXTERNAL ACCESS AT No 8 PARK VILLAGE EAST FRONT ELEVATION				Job Ref: C-LMB-3915-1	
	Scaffolding Contractor:				Sheet No: Page 1 of 6	
	Calc. by: I.MARTINS	Date: 30-10-21	Chck'd. By: T.WARREN	Date: 30-10-21	Revision:	Date:

MATERIALS

STANDARD SCAFFOLD IN ACCORDANCE WITH EN-12811 PT.1 & TG20:21.
(TECHNICAL GUIDANCE ON THE USE OF BS EN 12811-1)
FITTINGS IN ACCORDANCE WITH TG20:21
ALL TUBE WILL BE TAKEN AS NEW IN ACCORDANCE WITH BS 1139-1:1982

PROPERTIES OF TUBE

OUTSIDE DIAMETER	=	48.3MM	I	=	13.80CM4
WEIGHT	=	4.37KG/M	r	=	1.57CM
Z	=	5.70CM3	Pbc	=	139N/MM2
AREA	=	5.57CM2			
ALLOWABLE SHEAR STRESS	=	93N/MM2			

ALLOWABLE TUBE STRUT LOADS (TG20-21 TABLE D.1 APPENDIX D AS NEW (BS 1139-1:1982)

LENGTH (MM)	LOAD(KN)	LENGTH(MM)	LOAD(KN)
1000	54.0KN	2600	18.90
1200	48.40	2800	16.80
1400	42.70	3000	14.90
1600	37.30	3200	13.40
1800	32.50	3400	12.0
2000	28.20	3600	10.90
2200	24.60	3800	9.90
2400	21.50	4000	9.0

ALLOWABLE FITTING LOADS (TG20:21)

FITTING TYPE	LOAD TYPE	S.W.L (KN)
RIGHT ANGLE CLASS A	SLIP	6.10
RIGHT ANGLE CLASS B	SLIP	9.10
SWIVEL CLASS A	SLIP	6.10
SWIVEL CLASS B	SLIP	9.10
SLEEVE	TENSION	3.0
ADJ. BASE / FORKHEAD	AXIAL	30.0

ALLOWABLE B.M & SHEAR FOR SCAFFOLDING BEAMS

TYPE OF BEAM	ALLOWABLE B.M KNM	MAX SHEAR FORCE
450 HAKI BEAM	15.70KNM	12.70KN
780 UBIX BEAM	36.50	30.0KN
LADDER BEAM	13.50KNM	18.0KN
SCAFFOLD TUBE	1.10KNM	25.0KN
UNIT BEAM	27.70KNM (BOLT SHEAR)	18.0KN

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DESIGN RISK ASSESSMENT

Hazard Ref	Hazard Source	Risk Category		Residual Risk
1	Scaffold Requirements	MEDIUM RISK	*Have Meeting or be provided with the scaffold requirements in the form of Design request Form*	LOW RISK
2	Scaffold Leg Loadings and	HIGH RISK	*Drawing and Calculations will be Submitted and approved by the client prior to starting the work (Indicating Leg Load and Tie loads)*	LOW RISK
3	Vehicular Collision with S	HIGH RISK	*Traffic management systemutilsed by Main Contractor including the use of trained banksman and protective barrier.*	LOW RISK
4	Working at Height	HIGH RISK	*Scaffolders must comply with procedures in NASC guidance SG4:15 & its revisions as a minimum precaution.*	LOW RISK
5	Competence	HIGH RISK	*Only competent ,trained persons should erect scaffold materials, this falls under the scaffold contractors area of responsibility .*	LOW RISK
6	Manual Handling	MEDIUM RISK	*The manual handling regulations should be adhered to at all times by scaffolders, including correct lifting& lifting aid procedures.*	LOW RISK
7	Erection/Dismantling/Alt ering	HIGH RISK	*Only competent ,trained persons should erect, Disdmantle & Alter scaffold materials, this falls under the scaffold contractors area of responsibility .*	LOW RISK
8	Electricity[man made/natural]	HIGH RISK	*Only trained/competent persons are to install, use & maintain electrical equipment. The installation of earthing is also to be carried out by suitably qualified persons.*	LOW RISK
9	Environmental Conditions	HIGH RISK	*The scaffold contractor should make his own site specific risk assessment with the client as to if the scaffold can be used during periods of inclement weather, [wind, rain & snow].*	LOW RISK
10	Fire Exposure	HIGH RISK	*Ensure all personnel at site are aware of evacuation procedures/routes off the scaffold, clearly sign the fire escape rout, consider erection of emergency stair tower exit.*	LOW RISK
11	General Use/Loading	HIGH RISK	*The design drawings will clearly indicate the loading limitations of the specific scaffold which should be adhered to at all times, any deviation must be at the consent of the scaffold contractor.*	LOW RISK
12	Materials	HIGH RISK	*All materials must be checked prior to installation and should meetthe requirements of TG20:13.*	LOW RISK
13	Obstructions	HIGH RISK	*A min. width of 600mm should be maintained on the working platform, free of obstacles & in accordance with BSEN 12811-1.*	LOW RISK
14	Stability Issues	HIGH RISK	*Attention must be given to anchor & kentledge details shown on the design drawings. Inspection of these two areas must be detailed ensuring correct installation & testing.*	LOW RISK
15	Misoellaneous/Public	HIGH RISK	*Miscellaneous - written appropriately to the particular site. Public - sites are to be securely fenced off & appropriately protected to best prohibit access by the public to site.*	LOW RISK
16	Welfare/First Aid	MEDIUM RISK	*All aspects of Health & Safety should be addressed by the main contractor in accordance with the Health & Safety Act. Site should always have first aiders & kit on site at all times.*	LOW RISK

The Following symbol is used on Design Drawings to identify where residual risks remain in the scaffold design.	HIGH RISK	MEDIUM RISK	LOW RISK
	ACTION TO BE TAKEN TO MITIGATE RISK	RISK TO BE NOTED WITHIN DEISGN	NO ACTION REQUIRED

CHECK TUBE S/WT PER LIFT

OUTSIDE STND		TUBE	FIT'GS
STANDARD	=	3.10M	
LEDGERS	= 1.80M X 4 =	7.20M	4
TRANSOMS	= 0.70M X 3 =	2.10M	3
FACE BRCG	= 2.20M X 1 =	2.20M	1
TOTAL		15.0M X 4.37KG/M = 65.60KG	9 FIT'GS X 1.80KG = 16.20KG

COMBINED LOAD PER LIFT = 82.0KG / 102 = 0.80KN / LIFT OUTSIDE LEG

INSIDE STND		TUBE	FIT'GS
STANDARD	=	3.10M	
LEDGERS	= 1.80M X 1 =	1.80M	1
TRANSOMS	= 1.30M X 3 =	3.90M	3
TOTAL		8.80M X 4.37KG/M = 38.50KG	4 FIT'GS X 1.80KG = 7.20KG

COMBINED LOAD PER LIFT = 45.70KG / 102 = 0.45KN / LIFT INSIDE LEG

CHECK LEG LOAD AT BASE LEVEL FOR OUTSIDE STANDARDS

TUBE S/WT = 0.80KN/ LIFT X 3 = **2.40KN/ STND**
BRDS S/WT = 0.25KN/M2 X 1.20 X 2.0 X 3 LVLS = **1.80KN/ STND**
LIVE LOADING = 1.50KN/M2 X 1.0 X 2.0 X 1NO LIFT = **3.0KN/ STND**
LIVE LOADING = 0.75KN/M2 X 1.0 X 2.0 X 1NO LIFT = **1.50KN/ STND**
COMBINED LOAD = 8.70KN PER OUTER STND SAY 10.0KN
ALLOWABLE STRUTT LOAD FOR 3.10M TUBE = 14.0KN > 10.0KN :- OK

CHECK LEG LOAD AT BASE LEVEL FOR INSIDE STANDARDS

TUBE S/WT = 0.45KN/ LIFT X 3 = **1.50KN/ STND**
BRDS S/WT = 0.25KN/M2 X 1.0 X 2.0 X 3 LVLS = **1.50KN/ STND**
3No INSIDE BRDS S/WT (WITH CANT'LVR) = 0.25KN/M2 X 0.80 X 2.0 X 1 LVL = 0.40KN/ STND
0.40KN X 2.40 / 2.0 = 0.50KN PER LIFT X 3No = **1.50KN / STND**
LIVE LOADING = 1.50KN/M2 X 1.0 X 2.0 X 1NO LIFT = **3.0KN/ STND**
LIVE LOADING = 0.75KN/M2 X 1.0 X 2.0 X 1NO LIFT = **1.50KN/ STND**
LIVE LOADING (3No INSIDE BRDS) = 0.75KN/M2 X 2.0 X 0.45 X 1NO LIFT = 0.70KN/ STND
WITH CANTILEVER = 0.70KN X 2.40 / 2.0 = 0.85KN PER LIFT X 2No = **1.70KN / STND**
COMBINED LOAD PER INSIDE STND = 10.70KN SAY 12.0KN
ALLOWABLE STRUTT LOAD FOR 3.10M TUBE = 14.0KN > 12.0KN :- OK

CHECK TRANSOMS SPANNING 2.0M

LIVE + BRDS = 1.75KN/M2
LOAD = 2.0M X 1.0M X 1.75KN/M2 = 3.50KN
MR = WL/8 = 3.50KN X 2.0M / 8 = 0.88KNM
ALLOWABLE MR = 1.10KNM > 0.88KNM :-OK
ACTUAL SHEAR = 3.50KN / 2 ENDS = 1.80KN
ALLOWABLE SHEAR = 25.0KN > 1.80KN :-OK

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CHECK WIND LOAD.

WIND LOAD IN ACCORDANCE WITH BS EN 1991-1-4

Wind Assessment to BS EN 1991-1- 4

Data Entry:-

Site Altitude	40.000 m	Reference Height (Z)		Size Effect Dimension (b + h)	
$V_{b,map}$	22.000 m/s	Roof	10.000 m	Roof	0.000 m
Seasonal Factor (C,season)	1.000	Side Walls	10.000 m	Side Walls	0.000 m
Probability Factor (C,prob)	0.840	Gables	10.000 m	Gables	0.000 m
Site ID	*TQ287834*				

Dynamic Pressure Results

Wind Direction (deg)		0	30	60	90	120	150	180	210	240	270	300	330
Direction Factor C,dir		0.78	0.73	0.73	0.74	0.73	0.80	0.85	0.93	1.00	0.99	0.91	0.82
Orography Factor Co		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Effective Height (h-hdis) m	Roof	6.800	6.800	6.800	6.800	6.800	6.800	10.000	6.800	6.800	10.000	6.800	6.800
	Sides	6.800	6.800	6.800	6.800	6.800	6.800	10.000	6.800	6.800	10.000	6.800	6.800
	Gable	6.800	6.800	6.800	6.800	6.800	6.800	10.000	6.800	6.800	10.000	6.800	6.800
Altitude Factor C,alt	Roof	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040
	Sides	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040
	Gable	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040
Roughness Factor Cr	Roof	0.647	0.649	0.647	0.653	0.647	0.649	1.000	0.646	0.644	0.991	0.646	0.652
	Sides	0.647	0.649	0.647	0.653	0.647	0.649	1.000	0.646	0.644	0.991	0.646	0.652
	Gable	0.647	0.649	0.647	0.653	0.647	0.649	1.000	0.646	0.644	0.991	0.646	0.652
Exposure Factor Ce	Roof	1.510	1.519	1.509	1.545	1.511	1.520	2.316	1.504	1.491	2.266	1.503	1.540
	Sides	1.510	1.519	1.509	1.545	1.511	1.520	2.316	1.504	1.491	2.266	1.503	1.540
	Gable	1.510	1.519	1.509	1.545	1.511	1.520	2.316	1.504	1.491	2.266	1.503	1.540
Vb,0 (m/s)	Roof	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880
	Sides	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880
	Gable	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880	22.880
Vb (m/s)	Roof	14.991	14.030	14.030	14.222	14.030	15.375	16.336	17.874	19.219	19.027	17.489	15.760
	Sides	14.991	14.030	14.030	14.222	14.030	15.375	16.336	17.874	19.219	19.027	17.489	15.760
	Gable	14.991	14.030	14.030	14.222	14.030	15.375	16.336	17.874	19.219	19.027	17.489	15.760
Vm (m/s)	Roof	9.701	9.100	9.076	9.293	9.083	9.980	16.332	11.550	12.375	18.848	11.295	10.283
	Sides	9.701	9.100	9.076	9.293	9.083	9.980	16.332	11.550	12.375	18.848	11.295	10.283
	Gable	9.701	9.100	9.076	9.293	9.083	9.980	16.332	11.550	12.375	18.848	11.295	10.283
Turbulence Intensity Iv	Roof	0.303	0.303	0.303	0.303	0.303	0.303	0.176	0.303	0.303	0.176	0.303	0.303
	Sides	0.303	0.303	0.303	0.303	0.303	0.303	0.176	0.303	0.303	0.176	0.303	0.303
	Gable	0.303	0.303	0.303	0.303	0.303	0.303	0.176	0.303	0.303	0.176	0.303	0.303
Peak Velocity Pressure qp (kN/m²)	Roof	0.210	0.185	0.184	0.193	0.184	0.222	0.382	0.298	0.342	0.509	0.285	0.236
	Sides	0.210	0.185	0.184	0.193	0.184	0.222	0.382	0.298	0.342	0.509	0.285	0.236
	Gable	0.210	0.185	0.184	0.193	0.184	0.222	0.382	0.298	0.342	0.509	0.285	0.236
Size Effect Factor Cs	Roof	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Sides	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

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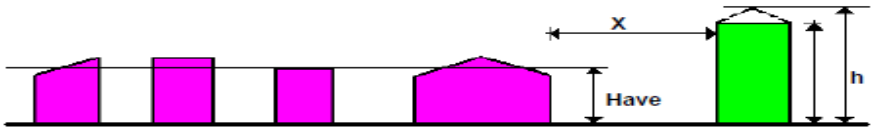
Wind Assessment to BS EN 1991-1- 4



Have = Obstruction Height or average height of roof tops upwind of building under consideration
h = Maximum height of building (REFERENCE HEIGHT)
X = Distance to obstruction

Terrain Data

Wind Direction (deg)	0	30	60	90	120	150	180	210	240	270	300	330
Smallest Obstruction Height Have(m)	6	6	6	6	6	6	0	6	6	0	6	6
Distance to Obstruction X(m)	20	20	20	20	20	20	0	20	20	0	20	20
Upwind Distance to Sea (km)	200	174	150	70	100	86	80	130	200	200	200	200
Upwind Distance from Edge of Town(km)	13.5	12.5	16.5	14.5	22.5	20.5	0.0	20.5	19.9	0.0	15.5	8.5

UK Grid Reference Finder

Grid Reference	X (Eastings)	Y (Northings)	Latitude	Longitude	Description (Click to Edit)	Address	Postcode
TQ 28707 83462	528707	183462	51.535398	-0.1457038	10 PARK VILLAGE EAST	NW1 7PX	NW1 7PX

PEAK WIND PRESSURE

Qp = 0.51KN/m2

CHECK EXTERNAL PRESSURE COEFFICIENT (Cpe TABLE 7.1)

SCAFFOLD NOT SHEETED ASSUME 30% SOLID
Cf ZONE A = -0.30p X 0.50KN/M2 = 0.15KN/M2
Cf BRICKGUARDS = -0.18p X 0.51KN/M2 = 0.15KN/M2 SAY 0.10KN/M2
COMBINED Cf = 0.25KN/M2

CHECK TIE LOADS FOR ACCESS SCAFFOLD

2.0M BAY X 3.20M HIGH X 0.25KN/M2 = 1.60KN SAY 2.0KN
TIE TUBE CONNECTED TO SCAFFOLD WITH LOAD BEARING COUPLERS + CHECK FITTING
FITTING CAPACITY = 6.10KN X 2 = 12.20KN CAPACITY > 2.0KN THEREFORE OK
TIES TESTED ON SITE TO 2.0KN X 25% = 1.50KN SAY 3.0KN / 2No ANCHORS = 1.50KN