

Design Based Residue Hazard

Design based hazards are actively eliminated where possible within the design process. Where hazards cannot be eliminated this symbol denotes the following:

1. Design based hazards exist within this proposal
2. Action is required by the person supervising the should manage the hazards during construction.

Access to scaffold to be by external ladder, secured to sailed out and exposed handrail ladder gates to be installed as per manufacturer's specification and ladders to protrude at least 1.5m beside desired bay. Stepping distance not to exceed 100mm. Access to be available every 60 linear meters.

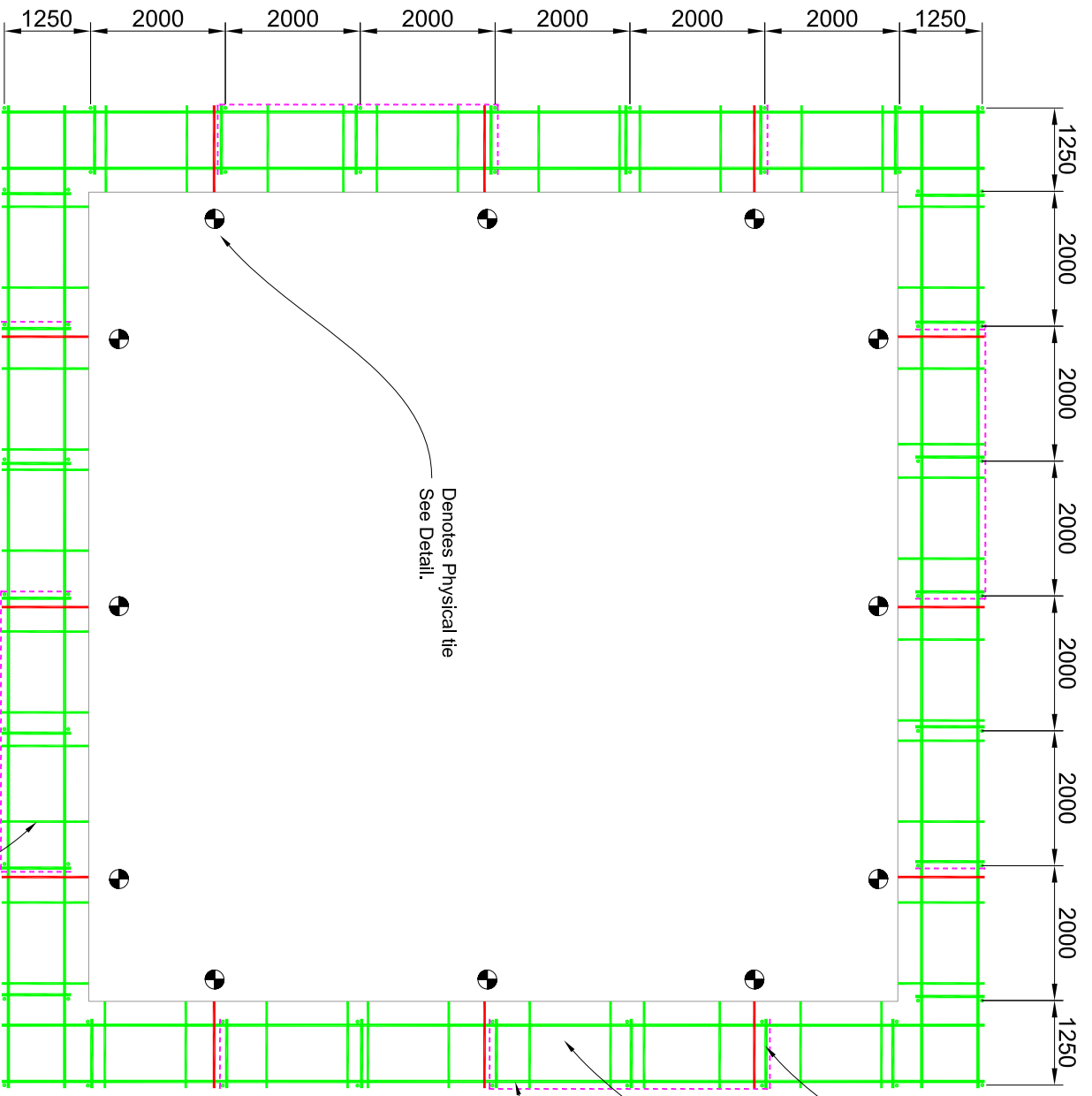
Access within scaffold to be by internal ladder, ladder hatches to be installed as per manufacturer's specification and ladders to protrude at least 1.5m into desired bay. Access to be available every 60 linear meters.

Live load allowance:
 1No lift @ 1.5kN/m²
 1No lift @ 0.75.kN/m²

Scaffold to be netted to manufacturer's instruction.

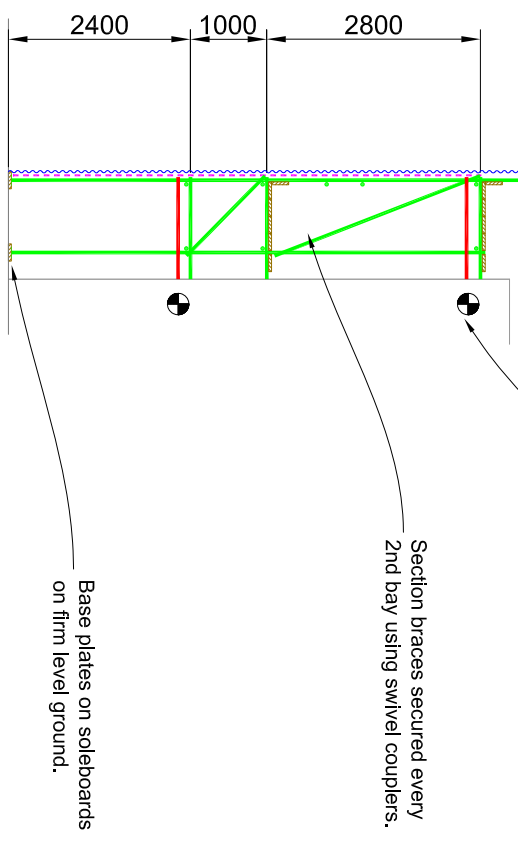
Drawing Status:

Approval Drawing.

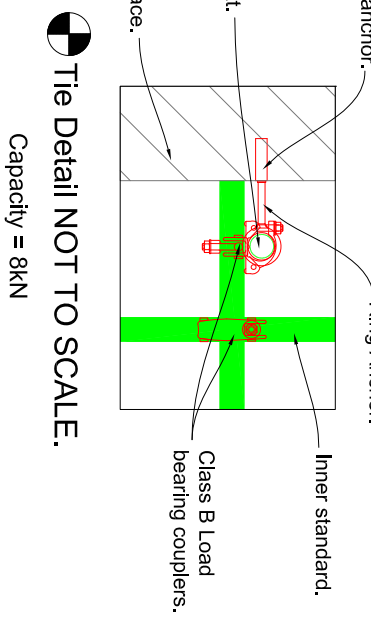


Plan View

Indicates board bearers @ 1200 C/L max.



Typical Section



Tie Detail NOT TO SCALE. Capacity = 8kN

General notes:

Property: This drawing remains the property of Reactive Design Ltd. No unauthorised use, copy or disclosure of this drawing is permitted without written permission from Reactive Design Ltd.

Basis of design: This drawing has been prepared from the information supplied to us by, or on behalf of the contractor, who should check that the requirements have been correctly interpreted and that loading, dimensions, lift heights, bay sizes and erection sequences etc. are as required and practicable.

This drawing has been prepared in accordance with the following:

BS EN 12811-1 & BS EN 12811-2
 BS EN 12811-1 & BS EN 12811-2
 BS EN 1991-1-3
 BS EN 1991-1-3:2009
 BS EN 1991-1-3:2009

Reference has been made to the following Documentation

BS: 5975: 2008
 BS: 5973: 1993
 NASC Document TG20/13

All scaffold materials forming this structure are to comply with BS EN 12811-1 & BS: 5973:1993. All proprietary equipment must be used in accordance with the manufacturer's information.

Design basis
 This scaffold has been designed for the following:
 1 No lift @ 1.5kN/m²
 1 No lift @ 0.75kN/m²

Total number of boarded lifts are as shown.

Working platforms
 All working platforms must comply with the statutory regulations at all times.

Foundations/supports
 The contractor must prepare all foundations and ensure that they are capable of taking the imposed scaffold loads without undue deflection. Where equipment is supported or suspended from an existing structure the contractor must ensure that the existing structure is adequate to safely support the imposed scaffold loads.
 Maximum Leg Load = 4,40kN

Shoring work
 Reactive Design Ltd cannot and will not pass comment on the building being shored. It is the contractor's responsibility to ensure that the existing structure will safely span between our supports and can be safely shored in the way indicated.

Sheeting/fans
 No additional wind protection, sheeting or fans etc. to be added to the scaffold structure unless otherwise stated on this drawing.

Modifications
 No major alterations are to be made to the scaffold or its components without written permission to Reactive Design Ltd.

Dimensions
 All Dimensions are in Millimeters.
 Written dimensions will take precedence over scaled dimensions. Contractor should note all site dimensions and notify Reactive Design Ltd of any discrepancies. The contractor is responsible for accurately setting the position of the scaffold structure.

CDM
 This drawing constitutes the design risk assessment in accordance with regulation 6.5 & 11 of the current CDM regulations 2015. Good practice is to be used in the preparation of general files in the use of temporary works. For full details please see the relevant codes as provided in HSE publications.



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Client:
 AGB Scaffolding Services Ltd.

Drawing Title:
 Cynetnet House, Staines.

Job Description:
 Independent Scaffold.

Scale:	Drawing Number:	Drawn/CH	Date:	Rev:
1:100	15/REACT/09/323	Checked:	15/09/15	A
ISO A3				

DESIGN RISK ASSESSMENT

BS:EN 12811 performance Requirements and General Design & TG20:13

Other Codes / British Standards

Table 2.1: Load Classes for Working Scaffolds
Table 5.1: Scaffold Component Weights
Table 5.9: Sectional Properties of Steel tube
Table 5.10: Safe axial loads for Steel tube
Table 5.15: Working Capacities of Couplers
Table C1: Sectional Properties of Aluminium tube
Table C2: Safe axial loads for Aluminium tube

<input checked="" type="checkbox"/>	BS EN:12811-1 Temporary Works Design	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	BS EN:12811-2 Temporary Works Equipment	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	BS 1991-1-4; 2005 General actions. Wind actions	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	BS:6399: Part 3: 1988 Loading for Buildings Working at Height Regulations 2005	<input checked="" type="checkbox"/>
<input type="checkbox"/>	BS: 5975: 2008 (Temporary Works Procedures)	<input type="checkbox"/>
<input type="checkbox"/>	NASC Document TG20:13	<input checked="" type="checkbox"/>

Manufacturers Information

Type	Max M.R.	Max Shear	Self Weight
Unit Beams	27.5kNm	15kN	0.15kN/m
Ladder Beams	12.5kNm	15kN	0.13kN/m
450 Alloy Beams	19.6kNm	17.40kN	0.05kN/m
750 Alloy Beams	39.50kNm	33.50kN	0.07kN/m

Scaffold Equipment

Type	Max Load	Self Weight
90° Coupler	9.1kN	1.4kg
Swivel Coupler	6.1kN	1.4kg
Scaffold Tube	1.12kNm	4.4kg/m
Scaffold Board	0.468kNm	0.25kN/m ²

Loading Considerations

Loading type	X	Comments
Dead / Imposed	<input checked="" type="checkbox"/>	1.5kN/m ² & 0.75kN/m ²
Wind	<input checked="" type="checkbox"/>	See Wind Report
Snow	<input type="checkbox"/>	
Horizontal	<input type="checkbox"/>	
Other	<input type="checkbox"/>	

Stability Considerations

Item	X	Comments
Erection Bracing	<input type="checkbox"/>	
Final Bracing	<input checked="" type="checkbox"/>	As shown
Type of Tie	<input type="checkbox"/>	
Buttress	<input type="checkbox"/>	
Kentledge / Anchor	<input type="checkbox"/>	
Other	<input type="checkbox"/>	

Assembly Considerations

Beams	X	Comments
Built in-situ	<input checked="" type="checkbox"/>	In-situ Scaffold erection
Craned into position	<input type="checkbox"/>	
Additional Bracing	<input type="checkbox"/>	
Lifting Point	<input type="checkbox"/>	
Lifting Beam Required	<input type="checkbox"/>	
Other	<input type="checkbox"/>	

Hazards to the Public

Item	X	Comments
Side Sheeting	<input checked="" type="checkbox"/>	
Walkthrough	<input type="checkbox"/>	
Protection lift	<input type="checkbox"/>	
Protection fan	<input type="checkbox"/>	
Crash deck	<input type="checkbox"/>	
Other	<input type="checkbox"/>	

Site Considerations

Item	X	Comments
Types of foundations	<input checked="" type="checkbox"/>	Firm and Level ground
Obstructions	<input checked="" type="checkbox"/>	Checked by main contractor
Services (Gas, etc)	<input checked="" type="checkbox"/>	Checked by main contractor
Overhead wire	<input checked="" type="checkbox"/>	Checked by main contractor
other	<input type="checkbox"/>	

Other Design Considerations

Notes



Specification:
Independent scaffold for Cygnet House, Staines
Calculation to determine axial loads to standards

Axial loads for independent scaffold

Self weight of scaffold per bay (Inside)

item	Quantity	length	tube	fittings
Standards	1	6.2	6.2	1
Ledgers	3	2	6	3
Transoms	3	0.5	1.5	3
Board Bearers	6	0.75	4.5	6
Section Bracing	1	1.6	1.6	1
Section Bracing	1	0.7	0.7	1
			20.5	15
SW Tube @ 4.4kg/m			0.88	kN
SW Fittings @ 1.4kg/fit			0.21	kN

Boards

Width (No)	Length (m)	Lifts (No)	Layers (No)	LOAD	
3	2	2	1	0.61	kN

Imposed (Working Lift)

Width (m)	Length (m)	Lifts (No)	kN/m ²		
0.45	2	1	1.5	1.35	kN

Imposed (Access Lift)

Width (m)	Length (m)	Lifts (No)	kN/m ²		
0.45	2	1	0.75	0.68	kN

Imposed (Inside Boards)

Width (m)	Length (m)	Lifts (No)	kN/m ²		
0.225	2	2	0.75	0.68	kN

Total weight of bay			1.70	kN
Total load per bay			4.40	kN

Self weight of scaffold per bay (Outside)

item	Quantity	length	tube	fittings
Standards	1	7.5	7.5	1
Ledgers	3	2	6	3
Transoms	3	0.5	1.5	3
Board Bearers	6	0.5	3	6
Guard Rails	4	2	8	4
Section Bracing	1	1.6	1.6	1
Section Bracing	1	0.7	0.7	1
Face Bracing	3	1.6	4.8	3
			33.1	22
SW Tube @ 4.4kg/m			1.43	kN
SW Fittings @ 1.4kg/fit			0.30	kN

Boards

Width (No)	Length (m)	Lifts (No)	Layers (No)	LOAD	
2	2	2	1	0.41	kN

Toe Boards

Width (No)	Length (m)	Lifts (No)	Layers (No)	LOAD	
1	2	1	1	0.10	kN

Imposed (Working Lift)

Width (m)	Length (m)	Lifts (No)	kN/m ²		
0.45	2	1	1.5	1.35	kN

Imposed (Access Lift)

Width (m)	Length (m)	Lifts (No)	kN/m ²		
0.45	2	1	0.75	0.68	kN

Total weight of bay			2.24	kN
Total load per bay			4.26	kN



Specification:
Independent scaffold for Cygnet House, Staines
Calculation for Capacities of ties

Load to butt

Spacing of Ties	=	6m x 2m (12m ²)
Dynamic pressure	=	0.511kN/m ²
Cf	=	1.3
Cs	=	1
Seasonal Factor	=	1
Load to butt	=	7.98kN

Load to Ties

Spacing of Ties	=	2m x 4m (24m ²)
Dynamic pressure	=	0.141kN/m ²
Cf	=	0.3
Cs	=	1
Seasonal Factor	=	1
Tensile load to tie	=	4.608kN

<18.2kN
2No Couplers

<9.1kN
Tie Capacity

Wind Assessment to BS EN 1991-1- 4

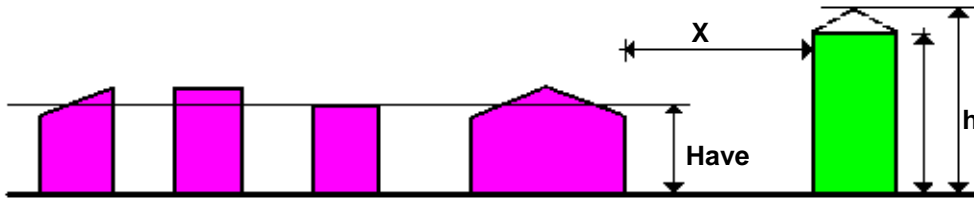
Data Entry:-

Site Altitude	15.000 m	Reference Height (Z)	Size Effect Dimension (b + h)
V _{b,map}	21.500 m/s	Roof 7.500 m	Roof 8.200 m
Seasonal Factor (C _{season})	1.000	Side Walls 7.500 m	Side Walls 8.200 m
Probability Factor (C _{prob})	1.000	Gables 7.500 m	Gables 8.200 m
Site ID	TQ033715		

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 C _o	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-h _{dis}) m	Roof	7.500	7.500	7.500	4.300	4.300	4.300	7.500	4.300	4.300	4.300	7.500	7.500
	Sides	7.500	7.500	7.500	4.300	4.300	4.300	7.500	4.300	4.300	4.300	7.500	7.500
	Gable	7.500	7.500	7.500	4.300	4.300	4.300	7.500	4.300	4.300	4.300	7.500	7.500
Altitude Factor C _{alt}	Roof	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	
	Sides	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	
	Gable	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	
Roughness Factor C _r	Roof	0.939	1.110	1.110	0.568	0.575	0.587	0.949	0.587	0.583	0.561	0.939	1.023
	Sides	0.939	1.110	1.110	0.568	0.575	0.587	0.949	0.587	0.583	0.561	0.939	1.023
	Gable	0.939	1.110	1.110	0.568	0.575	0.587	0.949	0.587	0.583	0.561	0.939	1.023
Exposure Factor C _e	Roof	2.099	2.664	2.664	1.332	1.367	1.429	2.152	1.425	1.402	1.298	2.099	2.467
	Sides	2.099	2.664	2.664	1.332	1.367	1.429	2.152	1.425	1.402	1.298	2.099	2.467
	Gable	2.099	2.664	2.664	1.332	1.367	1.429	2.152	1.425	1.402	1.298	2.099	2.467
V _{b,0} (m/s)	Roof	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	
	Sides	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	
	Gable	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	21.823	
V _b (m/s)	Roof	17.022	15.930	15.930	16.149	15.930	17.458	18.549	20.295	21.823	21.604	19.858	17.894
	Sides	17.022	15.930	15.930	16.149	15.930	17.458	18.549	20.295	21.823	21.604	19.858	17.894
	Gable	17.022	15.930	15.930	16.149	15.930	17.458	18.549	20.295	21.823	21.604	19.858	17.894
V _m (m/s)	Roof	15.983	17.677	17.677	9.170	9.157	10.253	17.600	11.904	12.717	12.131	18.647	18.306
	Sides	15.983	17.677	17.677	9.170	9.157	10.253	17.600	11.904	12.717	12.131	18.647	18.306
	Gable	15.983	17.677	17.677	9.170	9.157	10.253	17.600	11.904	12.717	12.131	18.647	18.306
Turbulence Intensity I _v	Roof	0.183	0.153	0.153	0.339	0.339	0.339	0.183	0.339	0.339	0.339	0.183	0.183
	Sides	0.183	0.153	0.153	0.339	0.339	0.339	0.183	0.339	0.339	0.339	0.183	0.183
	Gable	0.183	0.153	0.153	0.339	0.339	0.339	0.183	0.339	0.339	0.339	0.183	0.183
Peak Velocity Pressure q _p (kN/m ²)	Roof	0.376	0.407	0.407	0.209	0.209	0.262	0.456	0.353	0.403	0.367	0.511	0.493
	Sides	0.376	0.407	0.407	0.209	0.209	0.262	0.456	0.353	0.403	0.367	0.511	0.493
	Gable	0.376	0.407	0.407	0.209	0.209	0.262	0.456	0.353	0.403	0.367	0.511	0.493
Size Effect Factor C _s	Roof	0.950	0.950	0.950	0.894	0.894	0.894	0.950	0.894	0.894	0.894	0.950	0.950
	Sides	0.950	0.950	0.950	0.894	0.894	0.894	0.950	0.894	0.894	0.894	0.950	0.950
	Gable	0.950	0.950	0.950	0.894	0.894	0.894	0.950	0.894	0.894	0.894	0.950	0.950

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)	0	0	0	6	6	6	0	6	6	6	0	0
Distance to Obstruction X(m)	0	0	0	20	20	20	0	20	20	20	0	0
Upwind Distance to Sea (km)	200	0	0	130	114	90	72	101	200	200	200	2
Upwind Distance from Edge of Town(km)	0.0	0.0	0.0	3.5	2.5	1.5	0.0	1.5	1.5	4.5	0.0	0.0

