



**Haigh Ave
Whitehill Trading Estate
Reddish
Stockport
SK4 1NU**

Drawing No. **CSL-4073-CDS-1a**

Date: **24-Jun-24**

Signature:

Provided By: **CSL - Paul Brogan**

Drawing Title **Cantilever Drop Lift Scaffold**

Site: **Embassy Village, Manchester**

Materials/Properties

Standard steel scaffold tube in accordance with BS EN 39:2001.

All tube taken as galvanised or aluminium BS1139-1.2:1990, (as new, unless otherwise noted).

Fittings in accordance with BS EN 12811-1 characteristic strengths x F.O.S. 1.65

For erection/design guidance/permissible loads and stresses as translated from the above limit state codes see TG20:21 from the N.A.S.C.

For System Scaffolds see relevant Brochures/Data sheets

Properties Of Scaffold:

	Self Weight	Bending Moment	Shear
T4 - 48.3mm d steel tube	0.0437 kN/m	1.12 kN.m	29.1 kN
450 Apollo Beam	0.049 kN/m	15 kNm	13.2 kN
750 Apollo Beam	0.078 kN/m	40 kNm	37 kN
300 Ladder Beams	0.131 kN/m	11.7 kNm	18 kN
610 Steel Unit Beam	0.149 kN/m	27.7 kNm	20 kN
			Board Width
38mm Scaffold Boards	0.25 kN/m ²	0.475 kNm	0.225 m

Safe Working Load

Right Angle Coupler	1.2 kg	9.1 kN Slip (Class B Fittings Only)
Putlog Coupler (Single)	0.77 kg	0.63 kN Slip (1.26kN Slip Per Transom)
Sleeve Coupler	1 kg	3.6 kN Tension
Swivel Coupler	1.03 kg	6.1 kN Slip
Band & Plate	2 kg	6.1 kN Slip
RSJ Coupler-(in Pairs)	3 kg	12.1 kN Slip
Adj. Base/Forkhead	9 kg	30.0 kN Axial Compression

Drawing Title **Cantilever Drop Lift Scaffold**

Site: **Embassy Village, Manchester**

The following Codes of Practise and British Standards are used for the design and build of the scaffold detailed within this document:-

- All below to conform with Construction (Design And Management) Regulations 2015.
- BS EN 39:2001 Loose steel tubes for tube and coupler scaffolds - Technical delivery conditions.
- BS 1139-1-2:1990 Metal Scaffolding - Part 1: Tubes - Section 1.2 Specification for aluminium tube.
- BS 1139-2-2:2009 Metal Scaffolding - Part 2: Couplers - Section 2.2 Aluminium couplers and special couplers in steel - Requirements and test methods.
- BS 2482:2009 Specification for timber scaffold boards.
- BS EN 12811-1:2003 Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design.
- BS EN 12812-1:2008 Falsework - Performance Requirements and General Design.
- BS EN 1991-1-1:2002 Eurocode 1: Actions on Structure - Part 1-1: General Actions - Densities, Self-weight, Imposed Loads for Building.
- BS EN 1991-1-3:2003 Eurocode 1: Actions on Structure - Part 1-3: General Actions - Snow Actions.
- BS EN 1991-1-4:2005 Eurocode 1: Actions on Structure - Part 1-4: General Actions - Wind Actions.
- BS EN 1993-1-1:2005 Eurocode 3: Design Of Steel Structures - Part 1-1: General rules and rules for buildings.
- TG20:21 Design Guide - Technical Guidance on the use of BS EN 12811-1.
- TG4:19 Anchorage Systems.
- SG4:22 Preventing Falls In Scaffolding.
- SG25:20 Access & Egress from Scaffolds, Via Ladders & Stair Towers
- CG6:20 Scaffold Design.

The following Common Scaffolding Terms Referred To Within This Document:-

- **Anchor** - an element that transfers forces between a scaffolding tie and a supporting structure.
Can be temporary or permanent.
- **Base Plate** - a rigid plate under a standard, used to spread reaction
- **Bay** - space between two adjacent standards along face of a scaffold.
- **Bay Length** - distance between centres of two adjacent standards.
- **Coupler** - an element that connects two scaffold tubes together
- **Ledger** - a longitudinal scaffold tube (normally) parallel to a building face. Usually connected to adjacent standards using right angled couplers. Perpendicular to transoms.
- **Safe working moment** - is a characteristic moment of resistance divided by a factor of safety.
- **Scaffold tube** - any tubular element of a scaffold: standard, ledger, transom etc..
- **Standard** - a vertical scaffold tube.
- **Swivel coupler** - a coupler for joining tubes at an angle (i.e. other than at a right angle).
- **Tie** - connects a scaffold to an anchor point.
- **Structural Transom** - a scaffold tube spanning between standards underneath ledgers and connecting outer standards to inner standards using right angled couplers.
- **Board Transom** - a scaffold tube spanning across ledgers and supporting scaffold boards forming a working platform. Perpendicular to scaffold boards, connected using putlog ("single") couplers.
- **Working load** - a load that can be safely carried by a structural member.

		Haigh Ave Whitehill Trading Estate Reddish Stockport SK4 1NU	Drawing No. CSL-4073-CDS-1a Date: 24-Jun-24 Provided By CSL - Paul Brogan
Drawing Title Cantilever Drop Lift Scaffold			Site: Embassy Village, Manchester
<u>Designers Risk Assessment:-</u>			
Hazards	Control Measures	Responsible	
Capability of the ground / existing structure to carry the loads imposed by the scaffolding structure.	Client to ensure that all foundations can adequately support the loads detailed within this calculation document, such as external ground, roofs and/or internal slab structures.	CLIENT	
	Maximum Leg Loads provided within Design Calculations.	CSL	
Inclement Weather Conditions	Scaffolding not to be used in periods of inclement weather.	ALL	
	Weather forecasts should be monitored to aid planning of scaffold operations and its use.	ALL	
	Scaffolding that is in progress should always be left in a safe and secure state with appropriate signage and/or tags.	CSL	
Capability of the existing structure to carry the loads imposed by the scaffold ties & / or tie failure.	All anchors / ties detailed within this document (& relevant design drawing), are based on correct installation in line with manufacturer's guidelines.	CSL	
	Client to ensure that the existing structure can suitably withstand imposed loads from ties, as this exceeds matters beyond CSL remit.	CLIENT	
	Prior to installation of any ties into structure, CSL will carry out prelim tie test in line with TG4 current edition, to ascertain suitability of structure to withstand scaffold ties.	CSL	
	Client to ensure no 3rd party interference with any scaffold ties, at any time.	CLIENT	
Design Platform Load & Overloading	Client responsible to ensure that the platform load and service load detailed within this document, are suitable for their works, and that adequate control measures are in place to prevent risk of overloading of scaffold to prevent risk of scaffold collapse.	CLIENT	
	CSL to provide, complete and fit CSL Scaff Tag detailing scaffold load capability, at access point of scaffold.	CSL	
Falls From Height	All scaffolds relating to this document, to be built with handrails in line with SG4 current edition, with handrails conforming to the Work At Height Regulations 2005 to all working platform levels & detailed within TG20 current edition.	CSL	
Falling Materials	Client and all scaffold users must ensure suitable measures are taken to prevent materials from falling to public area.	CLIENT	
	Where applicable, all materials and tools to be tethered with brickguards / debris netting used as added safety measure.	ALL	
	Where material storage and access is required on scaffold platforms, brickguards or similar material fall prevention system to be fitted, to prevent risk of falling materials.	CSL	
	Client to induct all operatives to access scaffold on safe storage of materials on scaffold, and to ensure that 3rd parties do not remove such safety materials to aid own works.	CLIENT	
Unauthorised Adaptions To Scaffold	No alterations or adaptions to be carried out to the scaffold, via 3rd parties, other than authorised CSL scaffold operatives.	CLIENT	
	Any possible required alterations and / or adaptions to be authorised via CSL management and conducted by CSL operatives.	ALL	
Uplift Of Scaffold Boards	All compliant scaffold boards shorter than 2.13m are to be suitably tied down to scaffold frame with proprietry board clamps. In addition a Risk Assessment for the tying down of all scaffold boards should be conducted, in line with TG12 current edition.	CSL	

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1 Lift Drop Lift Off Scaffold Cantilevered Beam																																													
LIVE LOAD - MAIN WORKING PLATFORM LOADINGS																																													
MAIN SCAFFOLD DECK		2 kN/m2		INSIDE SCAFFOLD DECK																																									
				0 kN/m2																																									
LIVE LOAD - SERVICE PLATFORM LOADINGS (OPTIONAL)																																													
MAIN SCAFFOLD DECK		0 kN/m2		INSIDE SCAFFOLD DECK																																									
				0 kN/m2																																									
Scaffold Max Transom Spacing		1.2 m		No. Scaffold Lifts																																									
				1 No.																																									
Scaffold Max Inside Ledger Bays		1.8 m		No. Lift Of Boards																																									
				1 No.																																									
Scaffold Max Outside Ledger Bays		1.8 m		Base Lift Double Boarded																																									
				No																																									
Scaffold Board Width		4 No. = 0.225 x 4		0.968 m Wide																																									
Inside Boards No.		0 No. = 0.225 x 0		0 m Wide																																									
Max Lift Heights		2.5 m High		Outside Leg - No. Toe Board Per Lift																																									
				1 No.																																									
Maximum Base Lift Height		2.5 m High		Inside Leg - No. Toe Board Per Lift																																									
				0 No.																																									
				Z = 2.5 m High																																									
Additional Bay Detail																																													
INSIDE LEGS PER BAY			OUTSIDE LEGS PER BAY																																										
No.of Inside Guardrails 3 No.			No.of Outside Guardrails 3 No.																																										
Max No. Ledger Brace / Bay 1 No.			Max No. Ledger Brace / Bay 1 No.																																										
Max No. Face Brace / Bay 1 No.			Max No. Face Brace / Bay 1 No.																																										
Ledger Bay Details <table border="1"> <tr> <td>2> Bays</td> <td>Single Bay</td> </tr> <tr> <td>Yes</td> <td>No</td> </tr> </table>			2> Bays	Single Bay	Yes	No	Transom Span For Calcs = Simply Supported No. Transoms Between Ledger Spans = 1																																						
2> Bays	Single Bay																																												
Yes	No																																												
Ledger Braced <table border="1"> <tr> <td>Yes</td> </tr> </table>			Yes																																										
Yes																																													
Check the board spans for the design load, plus self weight of the boards.																																													
Live Load 2 kN/m2		Dead Load 0.25 kN/m2		TOTAL 2.25 kN/m2																																									
Maximum calculated bending moment, based upon board supports fixed at maximum 1.2 m centres																																													
$\frac{W * L^2}{8} = \frac{2.25 * 0.225^2}{8} = \frac{1.2 * 1.2}{8} = 0.091 \text{ kN.m}$																																													
Permissible 0.475 kN.m		Therefore		Ok																																									
Check the Transom Board bearers, at maximum span of 0.968 Maximum calclated bending moment moment.																																													
Maximum calculated bending moment, based upon board supports fixed at maximum 1.2 m Centres																																													
<table> <tr> <td>Live Load</td> <td>2</td> <td>x</td> <td>Trans c/c 1.2</td> <td>x</td> <td>Width 0.968</td> <td>=</td> <td>2.323 kN</td> </tr> <tr> <td>Dead Load</td> <td>Tube 0.968</td> <td>x</td> <td>W Transom 0.0437</td> <td></td> <td></td> <td>=</td> <td>0.043</td> </tr> <tr> <td></td> <td>Boards 0.9</td> <td>x</td> <td>Trans c/c 1.2</td> <td>x</td> <td>Board w 0.25</td> <td>=</td> <td>0.27</td> </tr> <tr> <td colspan="6">Total Dead Load</td> <td>0.313 kN</td> <td></td> </tr> <tr> <td colspan="6">Total Design Load</td> <td>2.636 kN</td> <td></td> </tr> </table>						Live Load	2	x	Trans c/c 1.2	x	Width 0.968	=	2.323 kN	Dead Load	Tube 0.968	x	W Transom 0.0437			=	0.043		Boards 0.9	x	Trans c/c 1.2	x	Board w 0.25	=	0.27	Total Dead Load						0.313 kN		Total Design Load						2.636 kN	
Live Load	2	x	Trans c/c 1.2	x	Width 0.968	=	2.323 kN																																						
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Transom Bending Moment = TG20:21 - Section 5.11.1																																													
Main Transom Between Standards <table> <tr> <td>0.125</td> <td>x</td> <td>W 2.64</td> <td>x</td> <td>L 0.968</td> <td>=</td> <td>0.319 kNm</td> </tr> </table>						0.125	x	W 2.64	x	L 0.968	=	0.319 kNm																																	
0.125	x	W 2.64	x	L 0.968	=	0.319 kNm																																							
Permissible 1.12 kN.m		Therefore		Ok																																									
Inside Cantilever Transom <table> <tr> <td>0.5</td> <td>x</td> <td>W 0.00</td> <td>x</td> <td>L 0</td> <td>=</td> <td>0.000 kNm</td> </tr> </table>						0.5	x	W 0.00	x	L 0	=	0.000 kNm																																	
0.5	x	W 0.00	x	L 0	=	0.000 kNm																																							
Permissible 1.12 kN.m		Therefore		Ok																																									
Point load on outside ledger, from transom (No Outer Boards)																																													
TG20:21 Section 5.12.1 Function & Load Of Ledgers Loads per transom at 1.8 m max ledger span																																													
$0.172 * 1.8 * 1.32 = 0.408 \text{ kNm}$																																													
Permissible 1.12 kN.m		Therefore		Ok																																									
Point load on Inside ledger, from transom																																													
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1 Lift Drop Lift Off Scaffold Cantilevered Beam					
LIVE LOAD - MAIN WORKING PLATFORM LOADINGS					
MAIN SCAFFOLD DECK		2 kN/m ²		INSIDE SCAFFOLD DECK	
				0 kN/m ²	
LIVE LOAD - SERVICE PLATFORM LOADINGS (OPTIONAL)					
MAIN SCAFFOLD DECK		0 kN/m ²		INSIDE SCAFFOLD DECK	
				0 kN/m ²	
Scaffold Max Tansom Spacing		1.2 m		No. Scaffold Lifts	
				1 No.	
Scaffold Max Inside Ledger Bays		1.8 m		No. Lift Of Boards	
				1 No.	
Scaffold Max Outside Ledger Bays		1.8 m			
Scaffold Board Width		4 No. = 0.225 x 4		0.968 m Wide	
Inside Boards No.		0 No. = 0.225 x 0		0 m Wide	
Max Lift Heights		2.5 m		Out Leg - No. Toe Board Per Lift	
				1 No.	
Maximum Base Lift Height		2.5 m		In Leg - No. Toe Board Per Lift	
				0 No.	
Max Scaffold Top Lift Height		2.5 m High		Vertical Tie Distance =	
				5 m	
Additional Bay Detail					
INSIDE LEGS PER BAY			OUTSIDE LEGS PER BAY		
No. of Inside Guardrails	3	No.	No. of Outside Guardrails	3	No.
Max No. Ledger Brace / Bay	1	No.	Max No. Ledger Brace / Bay	1	No.
Max No. Face Brace / Bay	1	No.	Max No. Face Brace / Bay	1	No.
Slip On The Platform Couplers					
Outside Ledger Load =		2.19 kN		Permissible For Ledger Coupler (kN) = 9.1	
Therefore		Ok		CHECK FITTING(S) Required = 0	
Inside Ledger Load =		2.11 kN		Permissible For Ledger Coupler (kN) = 9.1	
Therefore		Ok		CHECK FITTING(S) Required = 0	
IF STRUCTURAL TRANSOM PLACED BELOW LEDGER - THIS FITTING ACTS AS ONE No. CHECK FITTING					
Does Table 5.14 Apply For Effective Lengths L _E			Yes		
Additional Loads Onto Standards - Imposed At Lift =			0		
			Inside Standard Outside Standard		
			0 kN 0 kN		
Axial Effective Length - Table 5.14 - L _E Standards In Ledger Braced Tied Independent Scaffolds With 2.0m Lifts with Effective Façade Bracing					
Bay Length =		1.8 m		Vertical m Between Ties =	
				5 m	
Effective Standard Length L _E =		3 m		Max Permissible Leg Load	
				15.2 kN	
Maximum Leg Loads Down Node Point					
	INSIDE LEG		OUTSIDE LEG		
Tube/Fitts	0.496	kN.	0.504	kN.	H/Rails
Boards	0.203	kN.	0.304	kN.	Live Load
Addn. Load	0	kN.	0	kN.	
	MAX LEG LOAD - DEAD LOAD ONLY				
	1.0	kN.	1.1	kN.	
	MAX LEG LOAD INC LIVE LOAD				
	2.7	kN.	2.8	kN.	
Inside Standards			Outside Standards		
Single Standards OK			Single Standards OK		
0			0		

cheshire SCAFFOLDS Ltd			Haigh Ave Whitehill Trading Estate Reddish Stockport SK4 1NU			Drawing No. CSL-4073-CDS-1a Date: 24-Jun-24 Provided By CSL - Paul Brogan		
Drawing Title Cantilever Drop Lift Scaffold						Site: Embassy Village, Manchester		
SECTION E-E - 3 Lift Saddle Scaffold Erected Off Roof						> 2 Bays Wide No		
INNER CANTILEVER			INNER BAY			CENTRAL MAIN BIRDCAGE / END BAY		
LIVE LOAD - INNER CANTILEVER			LIVE LOAD - INNER 1st BAY			LIVE LOAD - MAIN BIRDCAGE		
Platform 1	2	kN/m2	Platform 1	2	kN/m2	Platform 1	2	kN/m2
Platform 2	0	kN/m2	Platform 2	0	kN/m2	Platform 2	0	kN/m2
Lifts =	2	No.	Lifts =	2	No.	Lifts =	2	No.
Lift Of Boards	1	No.	Lift Of Boards	1	No.	Lift Of Boards	1	No.
Toe Boards	0	No.	Toe Boards	0	No.	Toe Boards	0	No.
Boards wide	0	No.	Boards wide	7.8	No.	Boards wide	7.8	No.
Width	0	m	Width	1.80	m	Width	1.80	m
Scaffold Max Transom Spacing			1 m			No. Transoms Per Ledger Spans = 1 No.		
Scaffold Max Ledger Bays			1.8 m			Base Height Max Lift Height 0.3 m High		
Max Lift Heights			3 m			Z = 3.3 m High		
Check the board spans for the design load, plus self weight of the boards.								
Live Load 2 kN/m2			Dead Load 0.25 kN/m2			TOTAL 2.25 kN/m2		
Maximum calculated bending moment, based upon board supports fixed at maximum 1 m centres								
$\frac{W * L^2}{8} =$			$\frac{2.25 * 0.225}{8} \times 1.1 =$			0.063 kN.m		
Permissible 0.475 kN.m			Therefore Ok					
Check Central Deck Transom Board Bearers, at maximum span of 1.8 Maximum calucated bending moment moment.								
Live Load 2 x 1.0 x 1.800 =			3.600 kN					
Dead Load = Tube = 0.079 + Boards= 0.45 =			0.529 kN					
Transom Bending Moment = TG20:21 - Section 5.11.1						Total Design Load 4.13 kN		
Main Transom Between Standards W L								
0.086 x 4.13 x 1.8 =			0.64 kNm					
Permissible 1.12 kN.m			Therefore Ok					
Check outer ring Transom Board bearers, at maximum span of 1.9 Maximum calucated bending moment moment.								
Live Load 2 x 1.0 x 1.86 =			3.720 kN					
Dead Load = Tube = 0.082 + Boards= 0.465 =			0.547 kN					
Transom Bending Moment = TG20:21 - Section 5.11.1						Total Design Load 4.27 kN		
Main Transom Between Standards W L								
0.086 x 4.27 x 1.9 =			0.68 kNm					
Permissible 1.12 kN.m			Therefore Ok					
Check Cantilever Transom Board bearers, at maximum span 0 Maximum calucated bending moment moment.								
Live Load 2 x 1.0 x 0.000 =			0.000 kN					
Dead Load = Tube = 0 + Boards= 0 =			0.000 kN					
Transom Bending Moment = TG20:21 - Section 5.11.1						Total Design Load 0.00 kN		
Inside Cantilever Transom W L								
0.5 x 0.00 x 0 =			0.00 kNm			ONLY IF APPLICABLE		
Permissible 1.12 kN.m			Therefore Ok					
Point load on Inner ledger, from transom (450 BEAM) TG20:13 Section 5.12 Function & Load Of Ledgers						Inc inside live & dead load		
Loads per transom at 0 m max ledger span								
0.172 x 1.8 x 2.06 =			0.64 kN.m					
Permissible 15 kN.m			Therefore Ok					
Point load on mid ledgers, BEAMS TG20:21 Section 5.12.1 Function & Load Of Ledgers								
Loads per transom at 1.8 m max ledger span								
0.172 x 1.8 x 4.13 =			1.28 kNm					
Permissible 15 kN.m			Therefore Ok					
Point load on Outer Leg Beam, from transom TG20:21 Section 5.12.1 Function & Load Of Ledgers						Inc inside live & dead load		
Loads per transom at 1.8 m max ledger span								
0.172 x 1.8 x 2.06 =			0.64 kNm					
Permissible 15 kN.m			Therefore Ok					

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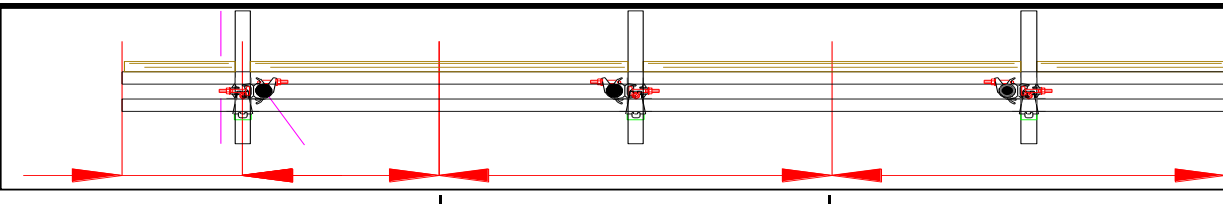
SECTION E-E - 3 Lift Saddle Scaffold Erected Off Roof

LIVE LOAD - INNER CANTILEVER	LIVE LOAD - INNER 1st BAY	LIVE LOAD - MAIN BIRDCAGE
Platform 1 2 kN/m ²	Platform 1 2 kN/m ²	Platform 1 2 kN/m ²
Platform 2 0 kN/m ²	Platform 2 0 kN/m ²	Platform 2 0 kN/m ²

Additional Bay Detail					
Inner Leg Inc Inner Cantilever		Inner Ring Leg (2nd)		Main Central Bay / End Leg	
Total No. Handrails	2	Total No. Handrails	0	Total No. Handrails	2
No. Ledger Brace / Bay	1	No. Ledger Brace / Bay	1	No. Ledger Brace / Bay	1
No. Lifts Face Brace / Bay	1	No. Lifts Face Brace / Bay	1	No. Lifts Face Brace / Bay	1
No. Lifts Plan Brace / Bay	0	No. Lifts Plan Brace / Bay	0	No. Lifts Plan Brace / Bay	0

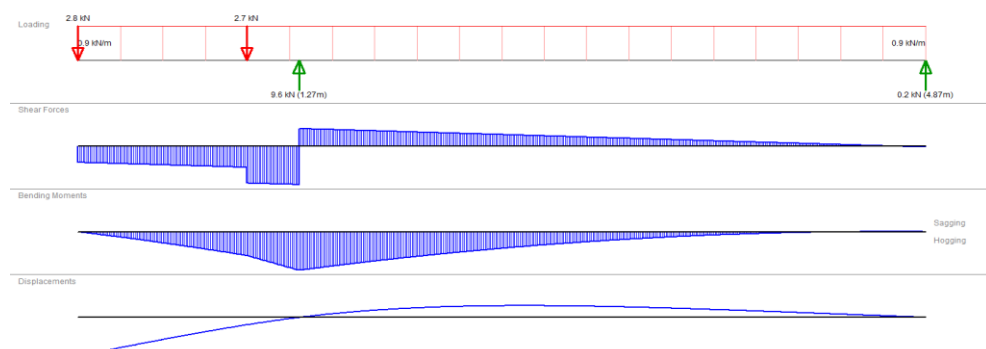
Slip On The Platform Couplers		Maximum Permitted Slip Load Per Fitting = 9.1 kN	
		Maximum Slip Load Per Check Fitting = 6 kN	
Ledger Slip Load - Inner Leg		Ledger Slip Load - Inner 2nd Leg	Ledger Slip Load - Inner Legs
Live Load = 3.24 kN		Live Load = 6.48 kN	Live Load = 3.24 kN
Tube = 0.12 kN		Tube = 0.16 kN	Tube = 0.12 kN
Fittings = 0.02 kN		Fittings = 0.02 kN	Fittings = 0.02 kN
Boards = 0.40 kN		Boards = 0.79 kN	Boards = 0.40 kN
3.77 kN		7.45 kN	3.77 kN
No. Check Fittings = 0		No. Check Fittings = 0	No. Check Fittings = 0

IF STRUCTURAL TRANSOM PLACED BELOW LEDGER - THIS FITTING ACTS AS ONE No. CHECK FITTING

Maximum Leg Loads Down Node Point			
			
Inner Leg Inc Inner Cantilever	Inner Ring Leg (2nd)	Main Central Bay / End Leg	
Live Load = 3.24 kN	Live Load = 6.48 kN	Live Load = 3.24 kN	
Tube = 0.77 kN	Tube = 0.92 kN	Tube = 0.77 kN	
Fittings = 0.17 kN	Fittings = 0.15 kN	Fittings = 0.17 kN	
Boards = 0.40 kN	Boards = 0.79 kN	Boards = 0.40 kN	
TOTAL = 4.58 kN	8.34 kN	4.58 kN	
DEAD LOAD TOTAL = 1.34 kN	1.86 kN	1.34 kN	

TG20:13 5.7 Effective Lengths Of Scaffold Tube Members - 5.7.1 Effective Lengths For Fully Braced Scaffold - Swivel Couplers Connected At Maximum 300mm From Node = $1.10 \times \text{Lift Height} = L_E$			
Bay Length = 1.8 m	Max Bay Width = 1.8 m		
Effective Standard Length L_E = 3.3 m	Max Permissible Leg Load 12.9 kN		

INNER LEG INC. CANTILEVER	2nd INNER BAY LEG	MAIN BIRDCAGE / END LEG
No. Lifts Double Standards = 0	No. Lifts Double Standards = 0	No. Lifts Double Standards = 0

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		CENTRE BEAM - Cantilever Drop Lift Beam		
ANALYSIS FOR SINGLE 450mm ALLOY BEAM				
Uniformly Distributed Load At Beam Level		Span =	4.87 m	
Bay Width (m) = 1.8		BEAM SW =	0.430 kN/m	
Board SW 0.25 kN/m2 x 1.8		=	0.45 kN/m	
Total Linear metre Load Applied Onto Inside Beam		=	0.88 kN/m	
Point Loads Imposed From Standards Onto Beams			Support Leg Locations	
	Leg 1	Leg 2	Leg	Leg 2
Imposed Load (kN)	2.8	2.7		
Distance (m)	0.0	0.97	1.27	4.87
Beam Analysis below				
				
Beam Length	=	4.87	m	
Second Moment of Area	=	4800	cm ⁴	
Elastic Modulus	=	70000	N/mm ²	
APPLIED LOADING				
Point Loads	2.8 kN	at	0 m	
	2.7 kN	at	0.97 m	
Distributed Loads	0.88 kN/m @	0 m -->	0.88 kN/m @	4.87 m
REACTIONS (+ve Upward)				
9.61 kN @	1.27 m	No upward reaction – Therefore no uplift to scaffold		
0.17 kN @	4.87 m			
RESULTS SUMMARY				
Max. Reaction	=	9.61 kN @	1.27 m	
Max. Sag Bending Moment	=	0.02 kN.m @	4.67 m - Permissible =	15 kN - OK
Max. Hog Bending Moment	=	5.08 kN.m @	1.27 m - Permissible =	15 kN - OK
Max. Shear Force	=	6.62 kN @	1.27 m - Permissible =	13.2 kN - OK
Max. Downward Displacement	=	2.35 mm @	0.0 m	
Max. Upward Displacement	=	0.71 mm @	2.56 m	
ALL RESULTS WITHIN SINGLE BEAM LIMITS				
Check End Reaction To Supporting Standard Tube				
29.1 kN	Permitted Standard Axial Load For Fully Braced Supporting Standard			
9.61 kN	End Reaction To Beam At End Support			
1.0 kN	Remaining Standard Loads Below Beam			
10.6 kN	End Reaction Onto Standard Therefore	1	Standard(s) Required	
Check Fitting Loads Onto Supporting Standard At End Beam Location = 9.61 kN				
End Reaction To Leg (s) = 9.6	Permissible Slip Load To Fitting =			9.1 kN
2 x Fittings On Beam & 2 x Transom =	4 x fittings fixed at each leg	=	36.4 kN	
Therefore 0	Check Fitting(s) Required Fixed Directly Under Beam Node Point			