PROSCAF GUIDELINES SECTION 09

SafeSmart Access
Reaching new heights

PROSCAF SAFETY GUIDELINES

The information in this document is generic and may not apply to all applications. For queries about specific applications, contact Proscaf.

Please ensure that all persons working with the scaffolding are familiar with these guidelines, and that they are kept in an easily accessible location.

IMPORTANT: Serious INJURY or DEATH can result from failure to follow all of Worksafe safety requirements, industry regulations and these Guidelines.

These Safety Guidelines are not a substitute for any current Worksafe regulations. They apply only to Proscaf modular scaffolding products and should be read in conjunction with industry regulations and best practice guidelines such as those published by the Scaffolding and Rigging Association of New Zealand (SARNZ).

Additional precautions apply when erecting suspended scaffolds: please contact SSA for more information.

IMPORTANT: Proscaf standards, (vertical uprights), must not be used with crimped spigots for suspended scaffolds. Use only standards with bolt-in spigots for this application.

Use the Proscaf Erection Manual for all Proscaf modular scaffolding.

Erection Manuals are available free from SSA.

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PROSCAF GUIDELINES

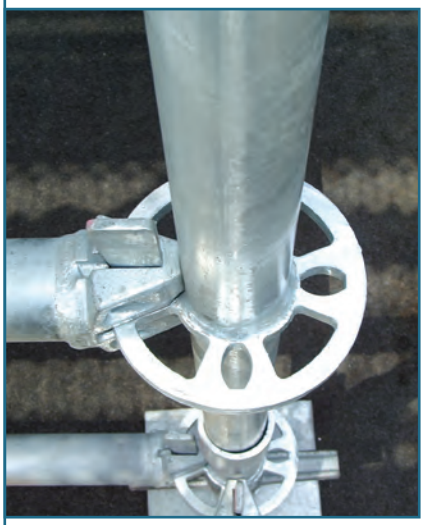
SCAFFOLD GUIDELINES

- Proscaf Scaffolding must be erected, shifted and dismantled under the supervision of a qualified/competent person.
- Hard hats and appropriate clothing must be worn by all personnel.
- Do not erect or work on scaffolds if you feel dizzy or unsteady or are under the influence of alcohol or drugs.
- If you are unsure about the safety regulations or safe use of any part of the scaffolding system, contact SSA before progressing.
- Qualified/competent staff should analyse load-carrying members during scaffold design and erection to ensure the members can support the intended load.
- Information relating to load bearing capacity and weight is available from SSA.

IMPORTANT: Wedges that are not fully seated or couplers that are not fully tightened will not support design loads.

Failure to FULLY KNOCK HOME WEDGES OR TIGHTEN COUPLERS could cause serious INJURY or DEATH.

- Assess the job site's ground conditions, and consider issues such as proximity of electric power lines, wind conditions and overhead and/or weather protection.
- Post/frame spacing and sole board size can be determined only after calculating the total loads on the scaffold and its weight and the condition of the support surface.
- A qualified/competent person must analyse any of building or structures used to support the scaffold to ensure it can adequately support the intended load.
- Stationary scaffolds more than 33 metres high must be designed by a professional engineer.
- Inspect all Proscaf Decks prior to erection, especially for structural damage, deformation rot, rust or other deterioration.
- Only use Proscaf components when erecting Proscaf scaffolds.
- Couplers must be tightened to a minimum torque reading as per instructions.



PROSCAF GUIDELINES

ERECTING A FIXED SCAFFOLD

- Use base jacks on all scaffolds, and centre them on the sole board. Take particular care when scaffolding is erected on soft or frozen ground.
- Use base jacks with sole boards and compensate for uneven ground. DO NOT USE objects such as blocks or bricks.
- Use tools recommended by SSA for erection and dismantling, such as a 500 gram hammer for knocking home the wedges.

IMPORTANT: FULLY KNOCK HOME WEDGES AND TIGHTEN COUPLERS IMMEDIATELY after putting a member in place.

- DO NOT apply weight to horizontal members until the wedges are driven home and/or the couplers are tightened.
- Horizontal and/or vertical diagonal bracing is required for a square and plumb structure.
- Plumb and level the scaffold for a proper fit. Do not force members to fit. Ensure the scaffold stays plumb and level as erection progresses.
- Ties, guys, bracing and/or outriggers may be needed to create a safe assembly. Sway and stability bracing are a factor of the height of the scaffold in relation to the minimum base dimension (length or width), wind loads, and the use of brackets or cantilevered platforms, as well as scaffold loads.
- Information about tying or guying Proscaf Scaffolding is detailed in the Erection Manual.
- To increase the base width of freestanding towers, outrigger bays can be used and must be installed on both sides of the tower.
- Create work platforms with Proscaf platform units, and secure them to prevent lift-off.
- Guard railing must be on all open sides and ends of scaffold platforms.
- Guardrails and mid-rails and toe boards are required.

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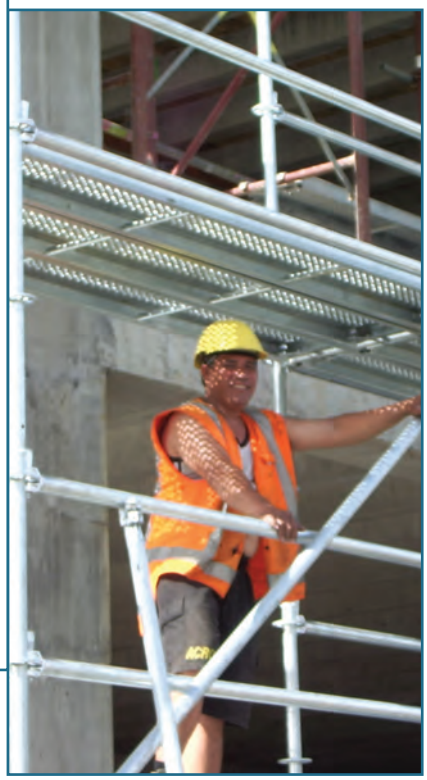
PROSCAF GUIDELINES

ERECTING A FIXED SCAFFOLD

- Install toe boards on all access and working platforms. Screening is required when materials are stacked higher than the toe board.
- Access must be provided to all work platforms. Refer to the Erection Manual.
- Never place materials on the cantilevered side of end bracket platforms, unless the assembly has been designed for this by a qualified/competent person.
- Do not install platforms between free-standing towers unless the assembly is designed by a qualified/competent person.
- Do not mount hoists and derricks on a scaffold unless its specifically designed for them.
- Check the entire assembly before use.
- Thoroughly inspect the completed assembly to see that all wedges are driven home and all couplers tightened, that it is level and plumb and that work platforms are fully decked. Ensure that guardrails and toe boards are in place and that safe access is provided.



USE OF FIXED SCAFFOLD

A qualified/competent person must inspect the scaffold assembly before each work shift to check its structural integrity. Tag the scaffolding, and only use scaffolds that have been properly tagged.

- Use the installed access. Do not climb any scaffold component. Use both hands and do not carry materials while you climb ladders if scaffold stairs are provided for access maintain three points of contact at all times while climbing.
- Do not throw or drop material from platforms.
- Do not jump onto planks or platforms.
- Do not work on slippery rungs or platforms.
- Do not overload platforms with materials or personnel.
- Do not loosen or remove any component of a scaffold assembly except under the supervision of a qualified/competent person.
- Do not stand on platform overhangs or on any platform not fitted with edge protection.

PROSCAF GUIDELINES

DISMANTLING SCAFFOLDS

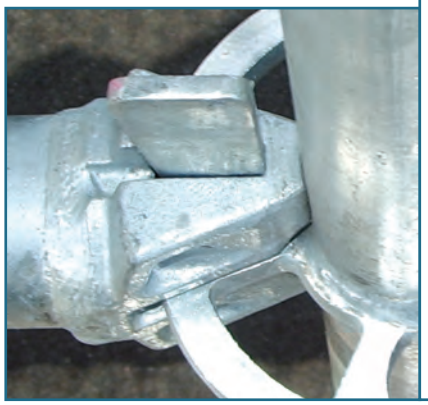
- Before removing or loosening any component, consider how this might affect the rest of the scaffold.
- Visually inspect each plank or deck to be sure that it is supported on both ends and is safe to stand or work on.
- Do not remove ties until the scaffolding above has been removed.
- Remove components immediately after loosening wedges or couplers.
- Do not pack removed components or equipment on the level being dismantled. Lower them as soon as they are dismantled.
- Stockpile dismantled equipment in an orderly manner.

IMPORTANT: It may be NECESSARY TO ADD PARTS to a scaffold before it can be dismantled safely.

ADDITIONAL GUIDELINES

Prior to erection, inspect all wooden planks to see that they are graded for scaffold use, are in good condition and free from cracks, splits, delamination and holes.

ERECTION- PROSCAF FABRICATED SCAFFOLD DECKS



U-transom

- If using Proscaf scaffold decks with U-transoms, use the lift-off lock.

Tubular

- If using Proscaf fabricated decks (which connect to tubular transoms), use the integrated lift-off lock.

Following these Guidelines will increase your personal safety and that of your fellow workers.

For any other safety questions please call us on 0800 000 448

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PROPPING WITH PROSCAF

PROPPING USING PROSCAF SCAFFOLDING

Safe working loads for standards are tabled for the various configurations of plan layout, lift height and bracing patterns.

Safe working loads for Head jacks and base jacks are tabled for various extensions and horizontal loads.

Tables cover propping heights up to 6 metres and the maximum permissible vertical load that a standard can withstand relative to the lift heights.

- With lifts of 2.0 metres… up to **45 kN** per standard
- With lifts of 1.5 metres… up to **60 kN** per standard
- With lifts of 1.0 metres… up to **70 kN** per standard

For each propping project load concentrations shall be considered and if necessary double props shall be used.

Where the project engineer considers it appropriate to include environmental loads in the propping design then a specific analysis must be undertaken to determine whether standard bracing configurations are adequate or whether outrigger towers should be incorporated.

The tables give safe loads in conjunction with assumed horizontal loads applied at the top level of the propping and are given as a percentage of the applied load up to 5%.

As a general rule propping towers of up to 6.5 M should be subject to a horizontal load of 2% and above 6.5 M, 3% of the applied load.

As a general rule the height of a tower should not exceed 4 x the minimum base dimension.

Propping towers shall be erected on timber sole boards having a ground contact area of not less than 0.25 m^2 and laid on compacted or firm virgin ground. Care shall be taken to evaluate the consistency of the ground supporting the tower to guard against differential settlements that could de-stabilize the tower.

PROSCAF

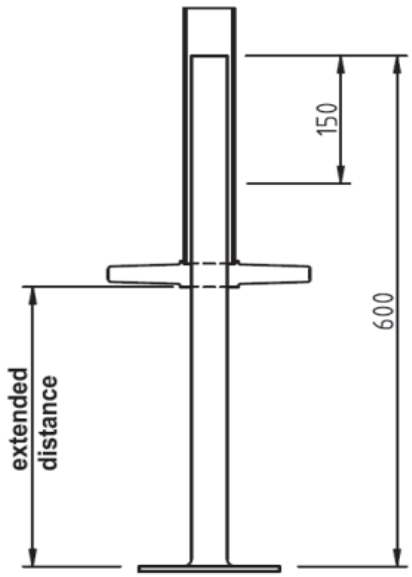
PERMISSIBLE LOADINGS ON PROSCAF HEAD AND BASE JACKS

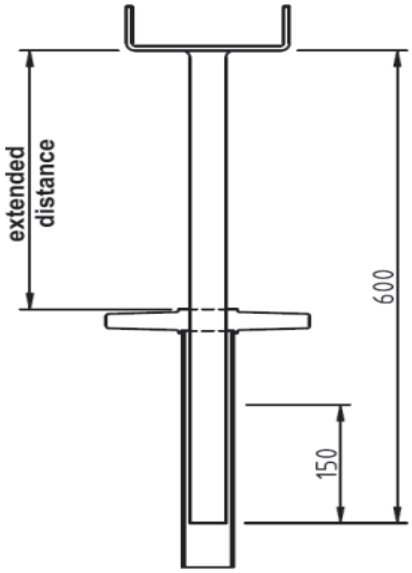
TABLE 1

HORIZONTAL LOAD	LOAD BEARING CAPACITY OF PROSCAF BASE JACK			
	EXTENDED DISTANCE (MM)			
	100	200	300	370
0%	62	59	54	48
1%	59	54	47	41
2%	54	46	38	32
3%	50	40	32	26
4%	47	36	27	23
5%	44	32	24	20

TABLE 2

HORIZONTAL LOAD	LOAD BEARING CAPACITY OF PROSCAF HEAD JACK			
	EXTENDED DISTANCE (MM)			
	100	200	300	370
0%	107	93	76	60
1%	103	86	69	54
2%	94	75	58	45
3%	86	66	50	38
4%	80	58	44	34
5%	74	53	38	30
NOTE: THESE VALUES ASSUME THAT THE BEARERS ARE LOCATED CENTRALLY OVER THE HEAD SHAFT				





DIAGONAL BRACING CONFIGURATIONS AND ALLOWABLE PROSCAF STANDARD LOADINGS

TABLE 3

Permissible loading to Proscaf standards depending on diagonal bracing systems.

BAY SIZE MM	DIAGONAL BRACING PATTERN	PERMISSIBLE LOADINGS ON STANDARDS [KN] FOR TOTAL STANDARD HEIGHT 6.0 M AND LIFT HEIGHT 2.0 M	
		MIDDLE STANDARD	EXTERIOR STANDARD
730	A	34	34
	B	31	31
	C	29	29
	D	27	27
1090	A	43	35
	B	39	34
	C	38	32
	D	36	31
1400	A	44	36
	B	42	35
	C	40	34
	D	38	33
1570	A	45	37
	B	43	36
	C	41	35
	D	40	34
2070	A	45	37
	B	44	36
	C	42	36
	D	41	35
2570	A	44	37
	B	43	37
	C	42	36
	D	41	36
3070	A	44	37
	B	43	37
	C	42	36
	D	41	36

All propping towers shall be braced to resist horizontal loads according to the bracing patterns shown and in both directions as illustrated on the next page.

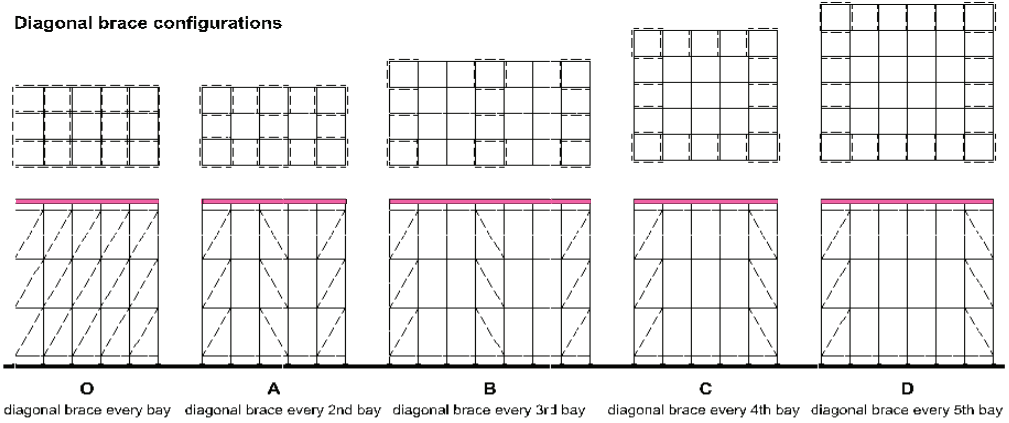
PROSCAF

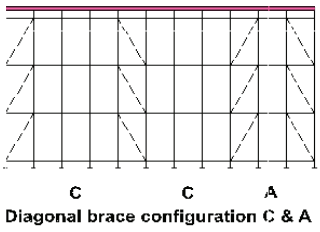
DIAGONAL BRACING CONFIGURATIONS AND ALLOWABLE PROSCAF STANDARD LOADINGS

TABLE 4

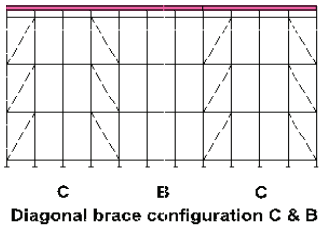
Lift heights 1.5 M and 1.0 M.

BAY SIZE MM	DIAGONAL BRACING PATTERN	PERMISSIBLE LOADINGS ON STANDARDS [KN] FOR TOTAL STANDARD HEIGHT TO 6.0 M			
		LIFT HEIGHT 1.5 M		LIFT HEIGHT 1.0 M	
		MIDDLE STANDARD	EXTERIOR STANDARD	MIDDLE STANDARD	EXTERIOR STANDARD
1570	O	61	53	73	63
	A	58	51	69	62
	B	57	50	67	60
	C	55	48	64	58
	D	54	47	61	55
2070	O	61	53	73	62
	A	59	52	70	62
	B	58	51	68	61
	C	57	50	67	60
	D	55	49	65	58
2570	O	60	52	72	63
	A	58	52	70	62
	B	57	51	69	61
	C	57	50	67	61
	D	56	49	67	59
3070	O	59	52	72	62
	A	58	51	70	62
	B	57	51	69	62
	C	57	50	68	61
	D	56	49	66	58





Diagonal brace configuration C & A



Diagonal brace configuration C & B

PROPPING WITH PROSCAF

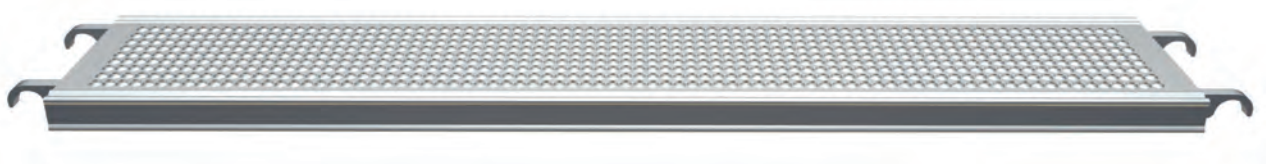
LOAD BEARING CAPACITIES OF MAIN COMPONENTS

Allowable loading of decks: Steel decks that connect with tubular ledgers.

BAY LENGTH	DUTY LIVE LOAD
0.73 metre	≤ 6.6 kN / Bay (Heavy Duty)
1.09 metre	≤ 6.6 kN / Bay (Heavy Duty)
1.57 metre	≤ 6.6 kN / Bay (Heavy Duty)
2.07 metre	≤ 6.6 kN / Bay (Heavy Duty)
2.57 metre	≤ 6.6 kN / Bay (Heavy Duty)
3.07 metre	≤ 6.6 kN / Bay (Heavy Duty)

DO NOT EXCEED THE LOADINGS SHOWN IN THE ABOVE TABLE

Complies with AS/NZS 1576.3 Requirements for heavy duty load.

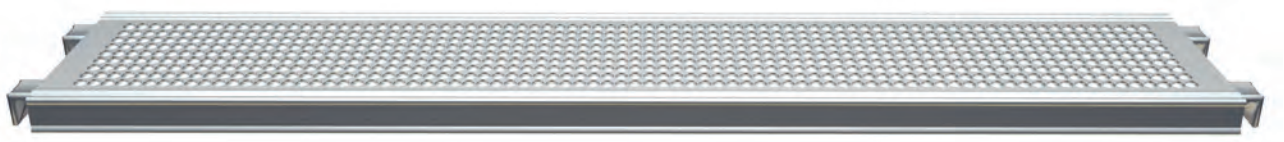


Allowable loading of decks: Steel decks that connect with U transoms.

BAY LENGTH	DUTY LIVE LOAD
0.73 metre	≤ 6.6 kN / Bay (Heavy Duty)
1.09 metre	≤ 6.6 kN / Bay (Heavy Duty)
1.57 metre	≤ 6.6 kN / Bay (Heavy Duty)
2.07 metre	≤ 6.6 kN / Bay (Heavy Duty)
2.57 metre	≤ 6.6 kN / Bay (Heavy Duty)
3.07 metre	≤ 6.6 kN / Bay (Heavy Duty)

DO NOT EXCEED THE LOADINGS SHOWN IN THE ABOVE TABLE

Complies with AS/NZS 1576.3 Requirements for heavy duty load.



PROSCAF

PROPPING WITH PROSCAF

ALLOWABLE LOADING OF CANTILEVER BRACKETS

Tubular cantilever brackets 0.39m for 1 steel deck 0.32m wide.

Note: For steel decks with hooks that connect with tubular ledgers.

BAY LENGTH	DUTY LIVE LOAD
0.73 metre	≤ 2.2 kN / Bay (Light Duty)
1.09 metre	≤ 2.2 kN / Bay (Light Duty)
1.57 metre	≤ 2.2 kN / Bay (Light Duty)
2.07 metre	≤ 2.2 kN / Bay (Light Duty)
2.57 metre	≤ 2.2 kN / Bay (Light Duty)
3.07 metre	≤ 2.2 kN / Bay (Light Duty)

DO NOT EXCEED THE LOADINGS SHOWN IN THE ABOVE TABLE

Complies with as/nz51576.3 Requirements for heavy duty load.

U cantilever brackets 0.73m for 2 steel decks 0.32m wide.

BAY LENGTH	DUTY LIVE LOAD
0.73 metre	≤ 2.2 kN / Bay (Light Duty)
1.09 metre	≤ 2.2 kN / Bay (Light Duty)
1.57 metre	≤ 2.2 kN / Bay (Light Duty)
2.07 metre	≤ 2.2 kN / Bay (Light Duty)
2.57 metre	≤ 2.2 kN / Bay (Light Duty)
3.07 metre	≤ 2.2 kN / Bay (Light Duty)

DO NOT EXCEED THE LOADINGS SHOWN IN THE ABOVE TABLE

Complies with as/nz51576.3 Requirements for heavy duty load.

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TRUSS PAIR WORKING LOAD/SPAN

FOR LATERALLY BRACED TRUSS PAIRS. DISTRIBUTE LOAD EVENLY

	TOTAL WORKING LOAD (KG) LATERAL BRACE CENTRES (mm) 1500	 3000
12 m SPAN	844	211
	844	211
	1,021	255
	1,266	317
11 m SPAN	970	243
	970	243
	1,230	308
	1,552	388
10 m SPAN	1,130	283
	1,130	283
	1,534	384
	1,978	495
9 m SPAN	1,341	335
	1,341	335
	2,028	507
	2,682	671

	TOTAL WORKING LOAD (KG) LATERAL BRACE CENTRES (mm) 1500	 2000	 3000
8 m SPAN	1,634	919	409
	1,634	919	409
	2,186	1,230	547
	2,723	1,532	681
7 m SPAN	2,069	1,164	517
	2,069	1,164	517
	2,416	1,359	604
	2,759	1,552	690
6 m SPAN	2,789	1,569	697
	2,789	1,569	697
	2,789	1,569	697
5 m SPAN	3,188	2,376	1,056
	3,188	1,982	881
	3,188	1,901	845

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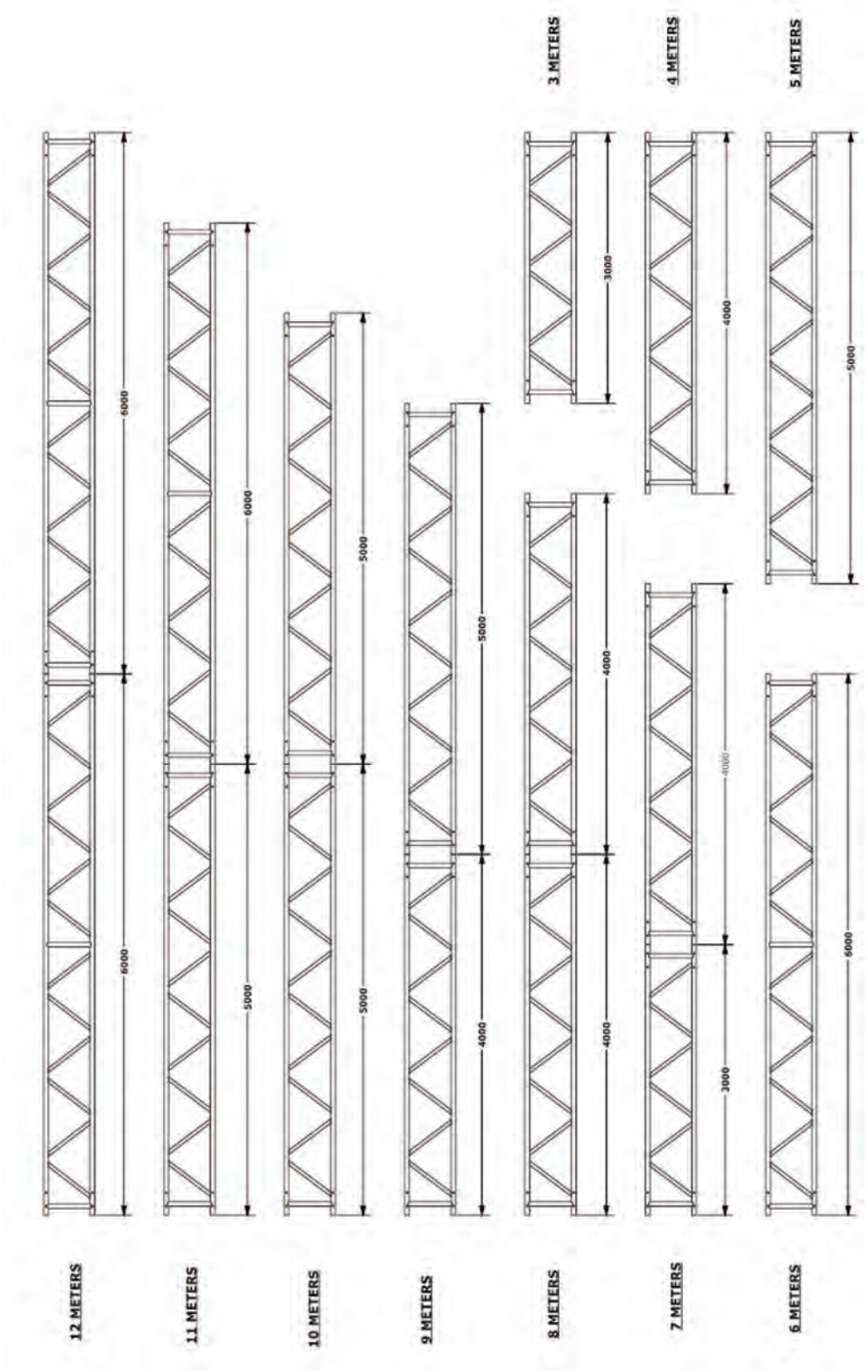
WORKING LOADS HAVE BEEN ASSESSED IN ACCORDANCE WITH AS/NZS 1664.2:1997
CONSULT ENGINEER FOR ANY VARIATION OF LOADING OUTSIDE OF THESE LOAD/SPAN TABLES
JOE BAIN - PhD, BE(HONS), INTPE(NZ), CPENG # 248672

TRUSS SINGLES AND COMBINATIONS



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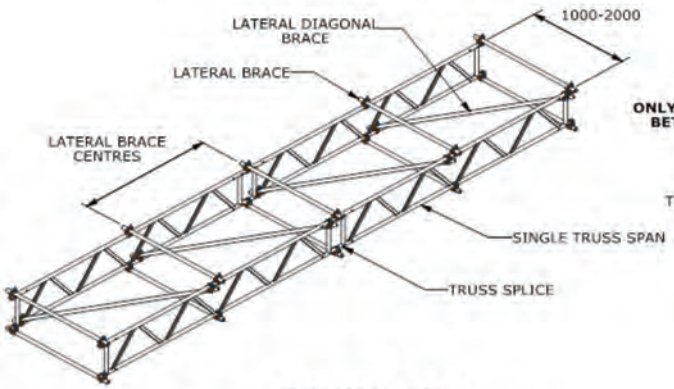
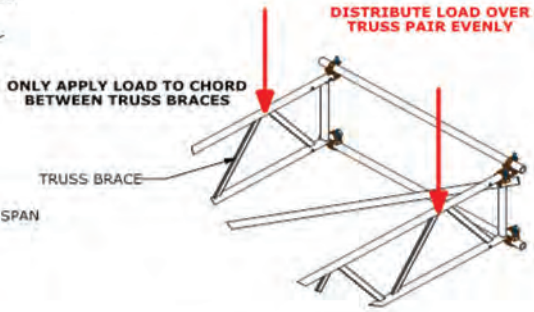
TRUSS PAIR CONSTRUCTION DETAILS

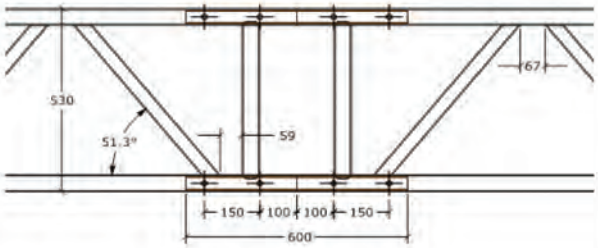
TYPICAL ASSEMBLY & LATERAL BRACING DETAILS



ISOMETRIC VIEW
TYPICAL LATERAL BRACING DETAIL



ISOMETRIC VIEW
LOAD APPLICATION DETAIL



TRUSS SPLICE DETAILS

MECHANICAL SPECIFICATIONS

TOP & BOTTOM CHORDS: 48.6 x 4.5 CHS
TRUSS BRACES: 40 x 15 x 3.0 RHS
ALUMINIUM GRADE: 6261 T6
E = 69 GPa
MIN YIELD: 255 MPa
ULTIMATE TENSILE STRENGTH: 295 MPa

SPLICE: NB40 x 3.2 GALV LINE PIPE
BOLTS: M12 Cl. 8.8 (AS 1110)

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BEAMS ARE TO BE MANUFACTURED TO THE REQUIREMENTS OF AS/NZS 1576
ALL WELDING TECHNICIANS ARE TO BE CERTIFIED TO THE REQUIREMENTS OF AS/NZS 1665:2004
TRUSS BEAM WORKING LOADS HAVE BEEN ASSESSED IN ACCORDANCE WITH AS/NZS 1664.2:1997
SITE SPECIFIC LOADING INCLUDING EARTHQUAKE AND WIND SHALL BE VERIFIED BY AN ENGINEER ON AN INDIVIDUAL BASIS WHERE REQUIRED
TRUSS BEAM WORKING LOADS ARE NOT TO EXCEED RECOMMENDATIONS SET OUT ON THESE LOAD TABLES

TRUSS BEAMS SHALL BE VISUALLY INSPECTED FOR ANY SIGN OF BUCKLING, CRACKING OF EXTRUSIONS AND/OR WELDS OR UNDUE DEFLECTION AT LEAST ONCE PER WEEK WHILE IN SERVICE

TRUSS BEAMS MUST BE INSPECTED BY A TRAINED COMPETENT PERSON EVERY SIX MONTHS FOLLOWING DATE OF PURCHASE. THIS INSPECTION MUST INCLUDE APPLICATION OF SUITABLE DYE PENETRANT ON AT LEAST 10% OF THE WELDS ON THE TRUSS. THE WELDS MUST BE SELECTED AT RANDOM. IF ANY CRACKING IS OBSERVED IN ANY WELD, THE AFFECTED TRUSS MUST BE IMMEDIATELY REMOVED AND REPAIRED. THE REPAIR WELD MUST BE TESTED WITH DYE PENETRANT BEFORE TRUSS IS PUT BACK INTO SERVICE.

THESE SPAN TABLES HAVE BEEN PREPARED WITH DUE CARE BASED ON NOMINAL DESIGNS OF TRUSSES AND TYPICAL LOADING/BRACING CONFIGURATIONS. NO RESPONSIBILITY IS TAKEN FOR INSTALLATIONS THAT DO NOT SATISFY THE CONDITIONS OUTLINED IN THIS DOCUMENT.

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JOE BAIN, PRINCIPAL ENGINEER
BVT ENGINEERING PROFESSIONAL SERVICES

DATE: 12/6/15

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