AUSTRALIAN STEEL INSTITUTE
STEEL SHED GROUP

Engineering Checklist Cold Formed Portal Frame Sheds

August 2013

References and Values

Building Code Australia References				
BCA version being referenced:	Year			
BCA classification and importance level				
Comments				
Design Loads				
Permanent Loads – AS/NZS Reference	AS/NZS	Year		
	Calculation Sheet No:			
Imposed Loads - AS/NZS Reference	AS/NZS	Year		
	Calculation Sheet No:			
Snow Loads				
Snow Loads – AS/NZS Reference	AS/NZS	Year		
Is snow loading required?	Yes	No		
	If yes, Calculation Sheet No:			
	W_S =	ARI =		
Wind Loads				
Wind Loads – AS/NZS Reference	AS/NZS		Year	
Wind Region *(circle)*	A	B	C	D
	If Region A, specify sub-region:			
Average Recurrence Interval	Strength R_{ST} =			
	Service R_{SV} =			
Based on R_{ST} R_{SV} evaluate regional wind speeds				
Ultimate Strength Case (m/s)	V_{RST} =			
Serviceability Case (m/s)	V_{RSV} =			

MULTIPLIERS

Multipliers		
Is direction multiplier being used? *(circle)*	Yes	No
If yes and Region A, then site plan showing building orientation, *Site Details Sheet No:*		
Terrain Category *Definitions in AS4055-2012 and AS/NZS 1170.2.2011 Amendment 2-2012 must be used.*		
Terrain category selection based on what evidence?		
Building Reference height (m)	Mid Roof =	
Terrain / height multiplier	m_{3CAT} =	
Shielding multiplier	m_S =	
If m_S is used (i.e. $m_S \neq 1.0$) then:	*Calculation Sheet No:* *Site Details sheet No:*	
Topographic multiplier	m_T =	
Topographic multiplier selection based on what evidence?		

SITE WIND SPEED - $V_{SIT}\beta$

Complete Table. *If adopting max. $V_{SIT}\beta$ as V_{DES},θ, skip this step.*

DIRECTION	V_R (m_S -1)	m_D	m_{3CAT}	m_S	m_T	$V_{SIT}\beta$ (m_S -1)
N						
NE						
E						
SE						
S						
SW						
W						
NW						

Building design wind speeds (m/s)	V_{DES},0 =
	V_{DES},90 =
	V_{DES},180 =
	V_{DES},270 =
If adopting max. $V_{SIT}\beta$ as V_{DES},θ	V_{DES},θ =

Internal		
Does shed have windows or PA doors?	Yes	No
Does shed have roller doors?	Yes	No
If yes, is there a change of a dominant opening forming from roller doors?	Yes	No
If yes, use Table 5.1 (B), either	CPL= (min)	(max)
or	Varies – *Calculation Sheet No:*	
If no, then provide documentation (including of support structure) that proves adequacy. Note, in Regions C and D, consider impact loads. *Documentation Reference No:*		
Comments:		
Area reduction factor (k_a)		
Is area reduction factor being used?	Yes	No
If yes, calculation sheet number:		
Does shed have roller doors?	Yes	No
Combination factor (k_c)		
Is K_c reduction being applied?	Yes	No
	If yes, Calculation Sheet No:	
k_a x k_c Check		
Are k_a and k_c being applied within same load case to the same elements?	Yes	No
If yes, refer to check:	k_a x k_c ≥ 0.8 *Calculation Sheet No:*	

DESIGN PHASE

If diaphragm bracing used, see 'Bracing' also.

Sheeting – General		
Does sheeting require Lo-Hi-Lo testing?	Yes	No
If yes, has this been completed?	Yes	No
If no, is it used in Region C or D?	Yes	No
If no, then provide documentation (including of support structure) that proves adequacy. Note, in Regions C and D, consider impact loads. *Documentation Reference No:*		
Roof Sheeting *(ensure local pressure zone is checked)*		
Roof Sheeting specifications	Type	
	Thickness	
	Fixings	
	Spans	
Refer to drawings where sheeting wall sheeting is specified as designed.	*Drawing Sheet Reference No:*	
Roof Sheeting capacity (kPa)		
Maximum pressure (kPa)		
Max. pressure based on:	cpe =	
	cpi =	
	k_L =	
	P_{DES} =	
Or, calculation sheet no:	*Calculation Sheet No:*	
Wall Sheeting *(ensure local pressure zone is checked)*		
Wall Sheeting specifications	Type	
	Thickness	
	Fixings	
	Spans	
Refer to drawings where wall sheeting is specified as designed.	*Drawing Sheet Reference No:*	
Wall Sheeting capacity (kPa)		
Maximum pressure (kPa)		
Max. pressure based on:	cpe =	
	cpi =	
	k_L =	
	P_{DES} =	
Or, calculation sheet no:	*Calculation Sheet No:*	

DESIGN PHASE

Purlins		
Roof purlins / battens specifications	Type	
	Spacing	
	Fixings	
	Support material thickness	
Refer to drawings where purlins are specified as designed. *Drawing Sheet No:*		
Design load – member critical (kNm^{-1})		
Design load – fixing critical (kNm^{-1})		
If using different spacing's, note max. and refer to Calculation Sheet No:		
Design member capacity (kNm^{-1})		
Design fixing capacity (kNm^{-1})		
Is member critical load ≤ member capacity?	Yes	No
Is fixing critical load ≤ fixing capacity?	Yes	No
If no, then how is overload justified? Comment:		

Girts		
Girt specifications	Type	
	Spacing	
	Fixings	
	Support material thickness	
Refer to drawings where girts are specified as designed. *Drawing Sheet No:*		
Design load – member critical (kNm^{-1})		
Design load – fixing critical (kNm^{-1})		
If using different spacing's, note max. and refer to *Calculation Sheet No:*		
Design member capacity (kNm^{-1})		
Design fixing capacity (kNm^{-1})		
Is member critical load ≤ member capacity?	Yes	No
Is fixing critical load ≤ fixing capacity?	Yes	No
If no, then how is overload justified? Comment:		
In areas around doors/openings, have any single span girts been checked?	Yes	No
If no, refer to justification, *Calculation Sheet No:*		

PORTAL FRAMES

Analysis and Design Methodology		
How will frames be modeled?	2D	3D
2D modeling will be taken to mean that load sharing **does not** occur between frames.		
3D modeling will be taken to mean that load sharing **can** occur between frames. Analysis must account for this.		
If 3D, what is the mechanism allowing load sharing / transfer?	Fully braced floor	Diaphragm
If battens sheeting are used to transfer load, have they been designed to carry their co-existing loads?	Yes	No
	Calculation Sheet No:	
How has the sensitivity been investigated?		
What is this based on?		
How bad is overload is assumptions are wrong?		
How is the roof diaphragm stiffness modeled?		
Is some degree of base fixity being assumed?	Yes	No
If yes, what is the stiffness?		
How is this value justified?	*Calculation Sheet No:*	
Have both the footing and the column base been designed to carry/transfer this load?	Yes	No
If yes, refer to calculations sheet no:		
If no, how is this being justified?		