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JOHNSON & COUZINS

Louvre System

Revised Structural Tables

9426
September 2012

1. JOHNSON & COUZINS LOUVRE SYSTEM

Johnson & Couzins have developed an opening louvre system primarily for use in Greater Christchurch and Auckland areas. The system is manufactured out of Aluminum and consists of a perimeter 250x50x3 RHS frame with either a heavy or light grade louvre spanning in one direction loading up one of the frame members. The Louvre roof is typically supported on SHS posts and braced against the existing structures.

Maximum spans for the perimeter beams and louvers are set out in tables 3.1 & 4.1 below.

2. DESIGN SCOPE

Richards consulting engineers have designed and presented maximum spans for specific wind loadings as per the design parameters outlined below. The design of the structure is in compliance with the New Zealand Building Code (NZBC) section B1. The attached Producer Statement covers the maximum spans only and excludes connections, lateral support

2.1. DESIGN SCOPE

The tables presented below apply to louvres within the following limits:

- The louvre frame is braced laterally
- The louvre roof will not be easily accessed i.e. adjacent to a deck.
- The site wind speed needs to be determined before designing louvre system.
- Located in areas with design snow loads lower than 0.9kPa.
- Be positioned with at least one edge adjacent to a building that is higher than the louvers.
- Louvres installed horizontally.
- Areas considered sensitive to deflections should be specifically designed.

Dynamic performance has not been assessed and relies on the proven in-service performance to date.

2.2. DESIGN LOADINGS

The member tables have been designed to withstand the following loadings:

Wind – 37m/s and 44m/s design wind speed
Earthquake – Exclude from scope as lateral resistance of frame assumed.
Snow – 0.9kPa open ground snow load (equivalent of up to 100m altitude in Canterbury region)
Live load – Roof load - 0.25 kPa and 1.1kN point load on louvers shared between two louvers (treated as a cladding) and 1.4kN point load for perimeter beam.

2.3. SERVICEABILITY CRITERIA

A maximum deflection of 60mm has been designed for as requested by Johnson & Couzins. This limit should be reconsidered where the environment is sensitive to deflections.

2.4. MATERIAL AND SECTION PROPERTIES

The louvers will be made from aluminium with a 6060 alloy and a T5 temper.

The structural members are as follows:

200x50x3 RHS	$I_x = 6.56 \times 10^6 mm^4$
Light louvre	$I_x = .0538 \times 10^6 mm^4$
Heavy louvre	$I_x = 1059\ 0 \times 10^6 mm^4$

2.5. DURABILITY

Aluminum provides adequate durability for the life of the structure (50 years) as outlined in E1/AS2.

2.6. REFERENCES

The following documents were referenced for the design:

- AS/NZS 1170 – Design actions
- AS/NZS 1664.1: 1997
- Section data provided by Johnson and Couzins

3. LOUVRE

Table 3.1 – Johnson & Couzins Maximum Louvre Spans

Louvre	Medium wind zone (37m/s)	High wind zones (44m/s)
Light	3.4m	3.0m
Heavy	4.4m	4.0m

Note:

1. Includes allowance to resist 0.9kpa open ground snow load
2. Site wind speed to be verified by others
3. Numbers in brackets are deflections experienced for the spans specified.

4. PERIMETER FRAME BEAM

Table 4.1 – Johnson & Couzins Maximum Perimeter Beam (200x50x3 RHS) Spans

Beam Location	Medium wind zone (37m/s)		High wind zones (44m/s)	
	Light Louvre	Heavy Louvre	Light Louvre	Heavy Louvre
Perimeter	6.0m	5.7m	5.6m	5.4m
Central	5.0m	4.7m	4.8m	4.5m

Note:

1. Includes allowance to resist 0.9kpa open ground snow load.
2. Site wind speed to be verified by others.
3. Perimeter beam supports half louvre span.
4. Central beam supports louvers on both sides.
5. Spans calculated from rely on correct selection of louvre.
6. A deflection limit of 60mm has been used. Protected areas sensitive to deflections should consider specific design

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Building Code Clause(s) .....

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on the reverse side)*

ISSUED BY: Richards Consulting Engineers Limited
(Design Firm)

TO: Johnson & Couzins Limited
(Owner/Developer)

TO BE SUPPLIED TO: Christchurch City Council
(Building Consent Authority)

IN RESPECT OF: Johnson & Couzins louvres span table -Refer attached structural report for detailed scope.
(Description of Building Work)

AT: Within areas outlined in attached report dated September 2012
(Address)

..... **LOT** - ..... **DP** - ..... **SO** - .....

We have been engaged by the owner/developer referred to above to provide .....

Refer attached structural report/assessment .....services in respect of the requirements of
(Extent of Engagement)

Clause(s) B1 ..... of the Building Code for

○ All or ⊘ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☑ Compliance Documents issued by Department of Building & Housing B1/VM1 .....
(verification method / acceptable solution)

..... or

☐ Alternative solution as per the attached schedule .....

The proposed building work covered by this producer statement is described on the drawings titled.....

Refer attached structural report/assessment ... and numbered Refer attached structural report/assessment .....;

together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

(i) Site verification of the following design assumptions Refer attached structural report/assessment .....

(ii) All proprietary products meeting their performance specification requirements;

I **believe on reasonable grounds** the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

I, Sam Richards .....am: ☑ CPEng 228315 .....#
(Name of Design Professional)

☐ Reg Arch .....#

I am a Member of : ☑ IPENZ ☐ NZIA and hold the following qualifications: Be(hons) .....

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.

The Design Firm is a member of ACENZ ○ **YES** ◉ **NO**

SIGNED BY Sam Richards ..... ON BEHALF OF Richards Consulting Engineers Limited .....
(Design Firm)

Date September 2012 (*signature*) .....

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.