**R O L L - A - S H U T T E RDoor Elevation - Typical**

**Scale 1:50**

- **Door Drum Support Brackets:** Install to B&D standard installation procedures.
- **Door Guides, Fixed to Structure (refer to Section 1)**
- **Opening Height:** Maximum
- **Opening Width:**
- **Roll-A-Shutter**

**ELEVATION**

- **Roll-A-Shutter Door Elevation - Typical**

**Drawings:**
- **100mm Series Roll-A-Shutter Door Elevation, Details and Notes**
- **Drawing No. S01 H**

**Notes:**
- Refer also to notes covering basis of drawings and limitations.
- Wind Region A-D
- Terrain Category 2-3 (AS/NZS 1170.2:2011)
- Door Height: 10m Max.
- Building Importance: Level 2
- Region Wind Speed
  - Region A: VR = 40m/s
  - Region B: VR = 57m/s
  - Region C: VR = 63.3m/s
  - Region D: VR = 80m/s
- Doors are rated up to an ultimate design wind pressure for a given opening width (L) as nominated in Table 1, as well as Figures 1 & 2.
- Curtail Height: Opening Height
- Opening Width: Curtain Width - Curtain Overlaps (refer Section 1 on drawings S02 & S03).

**Limitations:**
- Steel Abutment Posts to be 3mm (Min.) in thickness with a minimum stress grade of 30.
- Characteristic Unconfined Compressive Strength of Block Wall Unit (f'c) = 15 MPa (Min.).
- Core Filling of Blockwall (f'c') = 15-18MPa (Min.).
- All Door Components to be in accordance with standard B&D Roll-A-Shutter Manufacturing.
- Doors installation to be in accordance with standard B&D Roll-A-Shutter Installation and Procedures.
- The structure to which the door is attached shall be assessed and certified independently as required by a suitably qualified Engineer.
- Alternative design parameters to what are specified on these drawings along with alternative site specific local pressure factors may be adopted provided the calculated ultimate design wind pressures do not exceed the values given in Table 1 and Figures 1 & 2.
- The building design engineer is to ensure that the site specific design wind loads do not exceed the ultimate design wind pressure ratings provided in Table 1 and Figures 1 & 2 for any given span.
- Doors may be positioned at any location along the building envelope including all local pressure zones (ie. Corners of Buildings).
- Provided the calculated ultimate design wind pressures do not exceed the values provided in Table 1 and Figures 1 & 2.
- Mechanical bolts or ankascREW fixings to be galvanized.
- Coefficient of friction (µ) between all steel surfaces has been assumed to be no less than 0.3.

**Notes Covering Basis of Drawings:**
- Test Report No's TS914 & TS1001 (cyclone testing station, School of Engineering and Physical Sciences, James Cook University).
- Experiments conducted on the 9th April 2013, 2nd May 2013, 6th May 2013 and 16th October 2014.
- Principles of Mechanics.
- AS 3600:1989 Concrete Structures.
- AS 4100:1998 Steel Structures.
- Ramsay Specifiers Resource Bock.
- Refer to design criteria and limitations.

**Scale 1:10**

- **5 x ³/₈" (6.35) Steel Huck Bolts or 5 x Rivet ³/₈" (6.35) Steel or Equivalent**
  - **WindClip (MK4):** P/N RS0060-RH
  - **P/N RS0061-LH**

- **Detailed Dimensions of Curtain Slats as Per Drawing No. B/6130 Issue 5**

**100mm Series Roll-A-Shutter Door Elevation, Details and Notes**

**Consulting Structural Engineers**

James Ellis & Associates

B&D AUSTRALIA PTY LTD

B&D 100mm Roll-A-Shutter Doors

For Use in All Wind Regions

**Design:** J.E.

**Drawn:** AAB

**Checked:** J.E.

**Reviewed:** July 2015
50 x 25 x 6 STEEL LUG ANGLE (GRADE 300) (P/N 015950) PROVIDED AT CENTRES AS REQUIRED IN TABLE 2

FULL STRENGTH BUTT WELD ALONG FULL LENGTH OF LUG

GUIDE (PART No.’s RS0057, RS0058 OR RS0059 AS REQUIRED)

6mm CONTINUOUS FILLET WELD, (25mm LONG) TO EACH SIDE OF LUG

6mm CONTINUOUS FILLET WELD ALONG FULL LENGTH OF LUG

SECTION

PLANNING

CHANNEL GUIDE WITH LUG DETAIL

SCALE 1:2

OPENING WIDTH

FULL STRENGTH BUTT WELD (50mm LONG) AT CENTRES AS SPECIFIED IN TABLE 3

CURTAIN OVERLAP

WIND CLIP

(Fy) (kN/m)

(Fx) (kN/m)

23mm x 2mm

29mm x 6mm

STRUCTURAL STEEL ABUTMENT POST (MINIMUM 3mm THICK) (TO BE DESIGNED BY OTHERS)

COMPOUND WELD (3mm MINIMUM CONTINUOUS FILLET WELD SUPERIMPOSED ON A FULL STRENGTH BUTT WELD) (50mm LONG) AT CENTRES AS SPECIFIED IN TABLE 3.

GUIDE (PART No.’s RS0057, RS0058 OR RS0059 AS REQUIRED)

6mm CONTINUOUS FILLET WELD, (25mm LONG) TO EACH SIDE OF LUG

6mm CONTINUOUS FILLET WELD ALONG FULL LENGTH OF LUG
REINFORCED CONCRETE PANELS
TO BE DESIGNED BY OTHERS

115mm MINIMUM

M10 GALV. "ANKASCREWS" OR EQUIVALENT AT CENTRES AS SPECIFIED IN TABLE 2 (75mm EMBEDMENT)

SECTION SCALE = 1:2

S01

TYPE 1 FIXING - CHANNEL GUIDE WITH LUGS SUPPORTED ONTO REINFORCED CONCRETE PANELS

REINFORCED CONCRETE BLOCK WALL TO BE DESIGNED BY OTHERS

115mm MINIMUM

M10 GALV. "ANKASCREWS" OR EQUIVALENT AT CENTRES AS SPECIFIED IN TABLE 2 (75mm EMBEDMENT)

SECTION SCALE = 1:2

S01

TYPE 1 FIXING - CHANNEL GUIDE WITH LUGS SUPPORTED ONTO REINFORCED CONCRETE CORE FILLED MASONRY UNITS

CURTAIN OVERLAP

WIND CLIP

(Fx) (kN/m)

CURTAIN

(23mm ±2mm)

6mm

23mm

115mm MINIMUM

OPENING WIDTH

(23mm ±2mm)

6mm

23mm

115mm MINIMUM

OPENING WIDTH

(23mm ±2mm)

6mm

23mm

115mm MINIMUM

OPENING WIDTH

(23mm ±2mm)

6mm

23mm

115mm MINIMUM

OPENING WIDTH

(23mm ±2mm)

6mm

23mm

115mm MINIMUM

OPENING WIDTH

(23mm ±2mm)

6mm

23mm

115mm MINIMUM

OPENING WIDTH

(23mm ±2mm)

6mm

23mm

115mm MINIMUM

OPENING WIDTH
NOTE: CURTAIN WIDTH = OPENING WIDTH + CURTAIN OVERLAP

FIGURE 1: ULTIMATE DESIGN WIND CAPACITY FOR A GIVEN SPAN (CLIPS AT EVERY SLAT)

FIGURE 2: ULTIMATE DESIGN WIND CAPACITY FOR A GIVEN SPAN (CLIPS AT EVERY 2nd SLAT)
## TABLE 1 - MAXIMUM ALLOWABLE OPENING WIDTHS (L) FOR A GIVEN WIND PRESSURE

<table>
<thead>
<tr>
<th>REGION</th>
<th>TERRAIN CATEGORY</th>
<th>4/100 SLAT</th>
<th>6/100 SLAT</th>
<th>8/100 SLAT</th>
<th>10/100 SLAT</th>
<th>12/100 SLAT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ULTIMATE DESIGN WIND PRESSURE</td>
<td>WINDCLIPS AT EVERY SLAT</td>
<td>WINDCLIPS AT EVERY 2nd SLAT</td>
<td>WINDCLIPS AT EVERY SLAT</td>
<td>WINDCLIPS AT EVERY 2nd SLAT</td>
<td>WINDCLIPS AT EVERY SLAT</td>
</tr>
<tr>
<td>A</td>
<td>2 1.42 kN/m</td>
<td>16.1m</td>
<td>10.1m</td>
<td>16.3m</td>
<td>10.25m</td>
<td>19.9m</td>
</tr>
<tr>
<td></td>
<td>2.5 1.79 kN/m</td>
<td>18.1m</td>
<td>11.4m</td>
<td>18.4m</td>
<td>11.5m</td>
<td>22.4m</td>
</tr>
<tr>
<td></td>
<td>3 0.98 kN/m</td>
<td>20.6m</td>
<td>13.9m</td>
<td>20.9m</td>
<td>13.2m</td>
<td>25.5m</td>
</tr>
<tr>
<td>B</td>
<td>2 2.28 kN/m</td>
<td>11.75m</td>
<td>7.4m</td>
<td>11.9m</td>
<td>7.9m</td>
<td>14.5m</td>
</tr>
<tr>
<td></td>
<td>2.5 1.91 kN/m</td>
<td>13.2m</td>
<td>8.3m</td>
<td>13.4m</td>
<td>8.4m</td>
<td>16.3m</td>
</tr>
<tr>
<td></td>
<td>3 1.37 kN/m</td>
<td>15.0m</td>
<td>9.45m</td>
<td>15.3m</td>
<td>9.6m</td>
<td>18.0m</td>
</tr>
<tr>
<td>C</td>
<td>2 3.68 kN/m</td>
<td>8.5m</td>
<td>4.6m</td>
<td>8.7m</td>
<td>5.0m</td>
<td>10.6m</td>
</tr>
<tr>
<td></td>
<td>2.5 0.07 kN/m</td>
<td>9.6m</td>
<td>6.0m</td>
<td>9.8m</td>
<td>6.1m</td>
<td>11.9m</td>
</tr>
<tr>
<td>D</td>
<td>2 5.91 kN/m</td>
<td>8.2m</td>
<td>3.9m</td>
<td>8.3m</td>
<td>3.9m</td>
<td>7.7m</td>
</tr>
<tr>
<td></td>
<td>2.5 4.85 kN/m</td>
<td>7.0m</td>
<td>4.4m</td>
<td>7.1m</td>
<td>4.5m</td>
<td>8.65m</td>
</tr>
</tbody>
</table>

## TABLE 2 - FASTENING SPECIFICATIONS FOR FIXING INTO REINFORCED BLOCKWORK OR REINFORCED CONCRETE ABUTMENTS - TYPE 1

<table>
<thead>
<tr>
<th>ABUTMENT TYPE</th>
<th>CURTAIN TYPE</th>
<th>WINDCLIPS AT EVERY SLAT</th>
<th>WINDCLIPS AT EVERY 2nd SLAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 MPa REINFORCED BLOCK WALL</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 200 CTS</td>
<td></td>
</tr>
<tr>
<td>6/100</td>
<td>M10 ANKASCREWS AT 70 CTS</td>
<td>M10 ANKASCREWS AT 180 CTS</td>
<td></td>
</tr>
<tr>
<td>8/100</td>
<td>M10 ANKASCREWS AT 50 CTS</td>
<td>M10 ANKASCREWS AT 125 CTS</td>
<td></td>
</tr>
<tr>
<td>10/100</td>
<td>M10 ANKASCREWS AT 50 CTS</td>
<td>M10 ANKASCREWS AT 125 CTS</td>
<td></td>
</tr>
<tr>
<td>12/100</td>
<td>M10 ANKASCREWS AT 50 CTS</td>
<td>M10 ANKASCREWS AT 125 CTS</td>
<td></td>
</tr>
<tr>
<td>20 MPa CONCRETE WALL</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 100 CTS</td>
<td></td>
</tr>
<tr>
<td>6/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 125 CTS</td>
<td></td>
</tr>
<tr>
<td>8/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 125 CTS</td>
<td></td>
</tr>
<tr>
<td>10/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 125 CTS</td>
<td></td>
</tr>
<tr>
<td>12/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 125 CTS</td>
<td></td>
</tr>
<tr>
<td>25 MPa CONCRETE WALL</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 150 CTS</td>
<td></td>
</tr>
<tr>
<td>6/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 150 CTS</td>
<td></td>
</tr>
<tr>
<td>8/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 150 CTS</td>
<td></td>
</tr>
<tr>
<td>10/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 150 CTS</td>
<td></td>
</tr>
<tr>
<td>12/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 150 CTS</td>
<td></td>
</tr>
<tr>
<td>32 MPa CONCRETE WALL</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 200 CTS</td>
<td></td>
</tr>
<tr>
<td>6/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 175 CTS</td>
<td></td>
</tr>
<tr>
<td>8/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 175 CTS</td>
<td></td>
</tr>
<tr>
<td>10/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 175 CTS</td>
<td></td>
</tr>
<tr>
<td>12/100</td>
<td>M10 ANKASCREWS AT 60 CTS</td>
<td>M10 ANKASCREWS AT 175 CTS</td>
<td></td>
</tr>
</tbody>
</table>

## TABLE 3 - FASTENING SPECIFICATIONS FOR FIXING INTO STRUCTURAL STEEL ABUTMENTS - TYPE 2

<table>
<thead>
<tr>
<th>ABUTMENT TYPE</th>
<th>CURTAIN TYPE</th>
<th>WINDCLIPS AT EVERY SLAT</th>
<th>WINDCLIPS AT EVERY 2nd SLAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEEL</td>
<td>4/100</td>
<td>WELDED AT 200 CTS</td>
<td>WELDED AT 400 CTS</td>
</tr>
<tr>
<td>6/100</td>
<td>WELDED AT 175 CTS</td>
<td>WELDED AT 350 CTS</td>
<td></td>
</tr>
<tr>
<td>8/100</td>
<td>WELDED AT 190 CTS</td>
<td>WELDED AT 300 CTS</td>
<td></td>
</tr>
<tr>
<td>10/100</td>
<td>WELDED AT 190 CTS</td>
<td>WELDED AT 300 CTS</td>
<td></td>
</tr>
<tr>
<td>12/100</td>
<td>WELDED AT 190 CTS</td>
<td>WELDED AT 300 CTS</td>
<td></td>
</tr>
</tbody>
</table>

## TABLE 4 - MAXIMUM ULTIMATE DESIGN CATENARY FORCE (Fx) PER METRE HEIGHT BASED ON MAXIMUM ALLOWABLE OPENING WIDTHS

<table>
<thead>
<tr>
<th>CURTAIN TYPE</th>
<th>WINDCLIPS AT EVERY SLAT</th>
<th>WINDCLIPS AT EVERY 2nd SLAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/100</td>
<td>2.54 KN/m</td>
<td>4.05 KN/m</td>
</tr>
<tr>
<td>6/100</td>
<td>2.54 KN/m</td>
<td>4.05 KN/m</td>
</tr>
<tr>
<td>8/100</td>
<td>2.54 KN/m</td>
<td>4.05 KN/m</td>
</tr>
<tr>
<td>10/100</td>
<td>2.54 KN/m</td>
<td>4.05 KN/m</td>
</tr>
<tr>
<td>12/100</td>
<td>2.54 KN/m</td>
<td>4.05 KN/m</td>
</tr>
</tbody>
</table>

**NOTE:** FOR WELD TYPE REFER TO SECTION 1 ON DRAWING 5/S2

**WHERE:**
- Fy = MAXIMUM OUT OF PLANE ULTIMATE DESIGN ABUTMENT FORCE (PER METRE HEIGHT)
- W = ULTIMATE DESIGN WIND PRESSURE (kPa)
- L = OPENING WIDTH (SPAN) (m)
FIGURE 3: ULTIMATE DESIGN CATENARY FORCE FOR A GIVEN SPAN AND WIND PRESSURE

NOTE 1:  
\[ F_y = \frac{W}{L} \]
WHERE \( F_y \) = MAXIMUM OUT OF PLANE ULTIMATE DESIGN ABUTMENT FORCE (PER METRE HEIGHT)
\( W \) = ULTIMATE DESIGN WIND PRESSURE (kPa)
\( L \) = OPENING WIDTH (SPAN) (m)