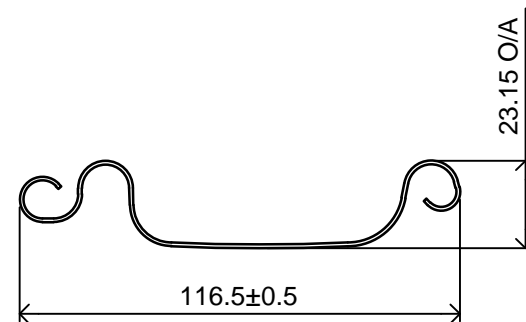


## ROLL-A-SHUTTER DOOR ELEVATION - TYPICAL

SCALE 1:50

DOOR DRUM SUPPORT BRACKETS.  
INSTALL TO B&D STANDARD  
INSTALLATION PROCEDURES.

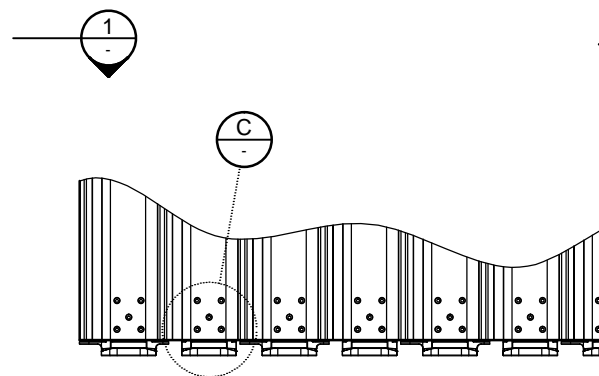
DOOR GUIDES, FIXED TO  
STRUCTURE (REFER TO  
SECTION 1)



## SECTION a SCALE = 1:2

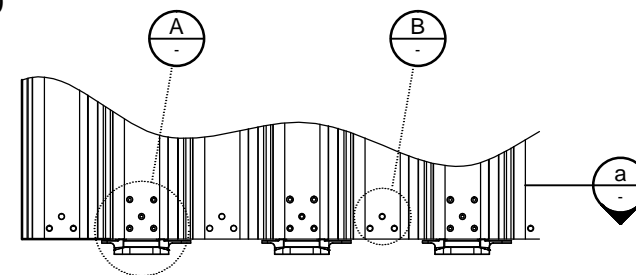
DETAILED DIMENSIONS OF  
CURTAIN SLAT AS PER  
DRAWING No. BD1630 Issue 5

**CURTAIN SLAT TYPES**  
4/100, 6/100, 8/100, 10/100 &  
12/100



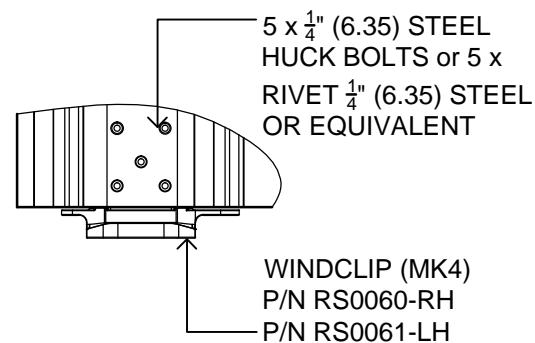
## CURTAIN WITH CLIPS - PART PLAN

(CLIPS AT EVERY SLAT)  
(SCALE 1:10)



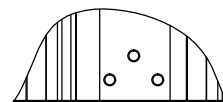
## CURTAIN WITH CLIPS - PART PLAN

(CLIPS AT EVERY SECOND SLAT)  
(SCALE 1:10)



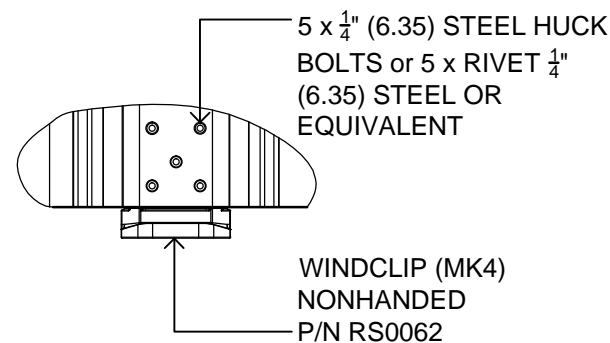
## DETAIL A SCALE = 1:5

RIGHT/LEFT HANDED  
WINDLOCK CLIP TO  
SLAT DETAIL



## DETAIL B SCALE = 1:5

UNCLIPPED SLAT DETAIL  
(WINDCLIPS AT EVERY  
SECOND SLAT)



## DETAIL C SCALE = 1:5

NONHANDED WINDLOCK  
CLIP TO SLAT DETAILS

### NOTES :

#### DESIGN CRITERIA

- (REFER ALSO TO NOTES COVERING BASIS OF DRAWINGS & 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 = 45m/s
    - REGION B: VR = 57m/s
    - REGION C: VR = 69.3m/s
    - REGION D: VR = 88m/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.
  - CURTAIN HEIGHT = OPENING HEIGHT
  - OPENING WIDTH = CURTAIN WIDTH - CURTAIN OVERLAPS (REFER SECTION 1 ON DRAWINGS S02 & S03).
- #### LIMITATIONS
- (REFER ALSO TO NOTES COVERING BASIS OF DRAWINGS AND DESIGN CRITERIA)
  - STEEL ABUTMENT POSTS TO BE 3mm (MIN.) IN THICKNESS WITH A MINIMUM STRESS GRADE OF 300.
  - CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH OF BLOCK WALL UNIT ( $f_{uc}$ ) = 15 MPa (MIN.).
  - CORE FILLING OF BLOCKWALL ( $f'c$ ) = 15 MPa (MIN.).
  - ALL DOOR COMPONENTS TO BE IN ACCORDANCE WITH STANDARD B&D ROLL-A-SHUTTER MANUFACTURING.
  - DOOR 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 LOADINGS 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 GALVANISED.
  - COEFFICIENT OF FRICTION ( $\mu$ ) BETWEEN ALL STEEL SURFACES HAS BEEN ASSUMED TO BE NO LESS THAN 0.3.

### NOTES COVERING BASIS OF DRAWINGS

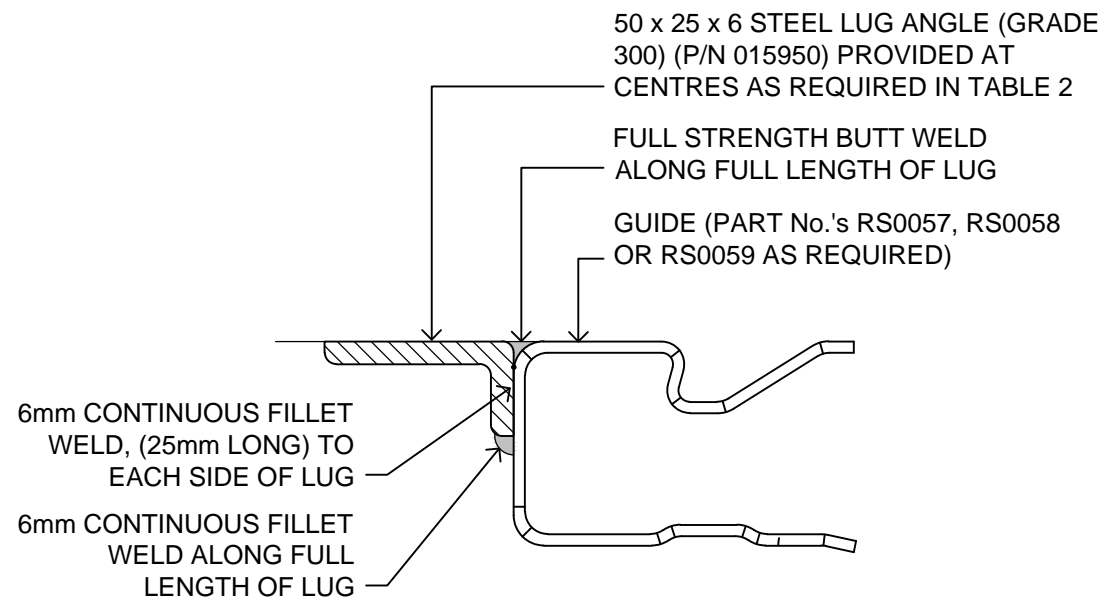
- TEST REPORT NO's TS914 & TS1001 (CYCLONE TESTING STATION, SCHOOL OF ENGINEERING AND PHYSICAL SCIENCES, JAMES COOK UNIVERSITY).
- EXPERIMENTS CONDUCTED ON THE 9th APRIL 2013, 2nd MAY 2013, 6th MAY 2013 AND 16th OCTOBER 2014.
- PRINCIPLES OF MECHANICS.
- AS/NZS 1170.2:2011 STRUCTURAL DESIGN ACTIONS-PART 2: WIND ACTIONS.
- AS/NZS 1170.0:2002 STRUCTURAL DESIGN ACTIONS-PART 0:GENERAL PRINCIPLES.
- AS/NZS 1170.1:2002 STRUCTURAL DESIGN ACTIONS PART 1: PERMANENT, IMPOSED AND OTHER ACTIONS.
- AS/NZS 4505:2012 GARAGE DOORS AND OTHER LARGE ACCESS DOORS
- AS 3700:2001 MASONRY STRUCTURES
- AS 3600-2009 CONCRETE STRUCTURES
- AS/NZS 4600:2005 COLD FORMED STEEL STRUCTURES
- AS 4100:1998 STEEL STRUCTURES.
- RAMSET SPECIFIERS RESOURCE BOOK.
- REFER TO DESIGN CRITERIA AND LIMITATIONS.

ISSUE	DATE	AMENDMENTS
D	30.10.13	ISSUED FOR FINAL DISCUSSION
E	02.11.13	CONSTRUCTION ISSUE
F	02.06.14	GENERAL REVISION
G	08.06.15	GENERAL REVISION
H	04.07.15	GENERAL REVISION

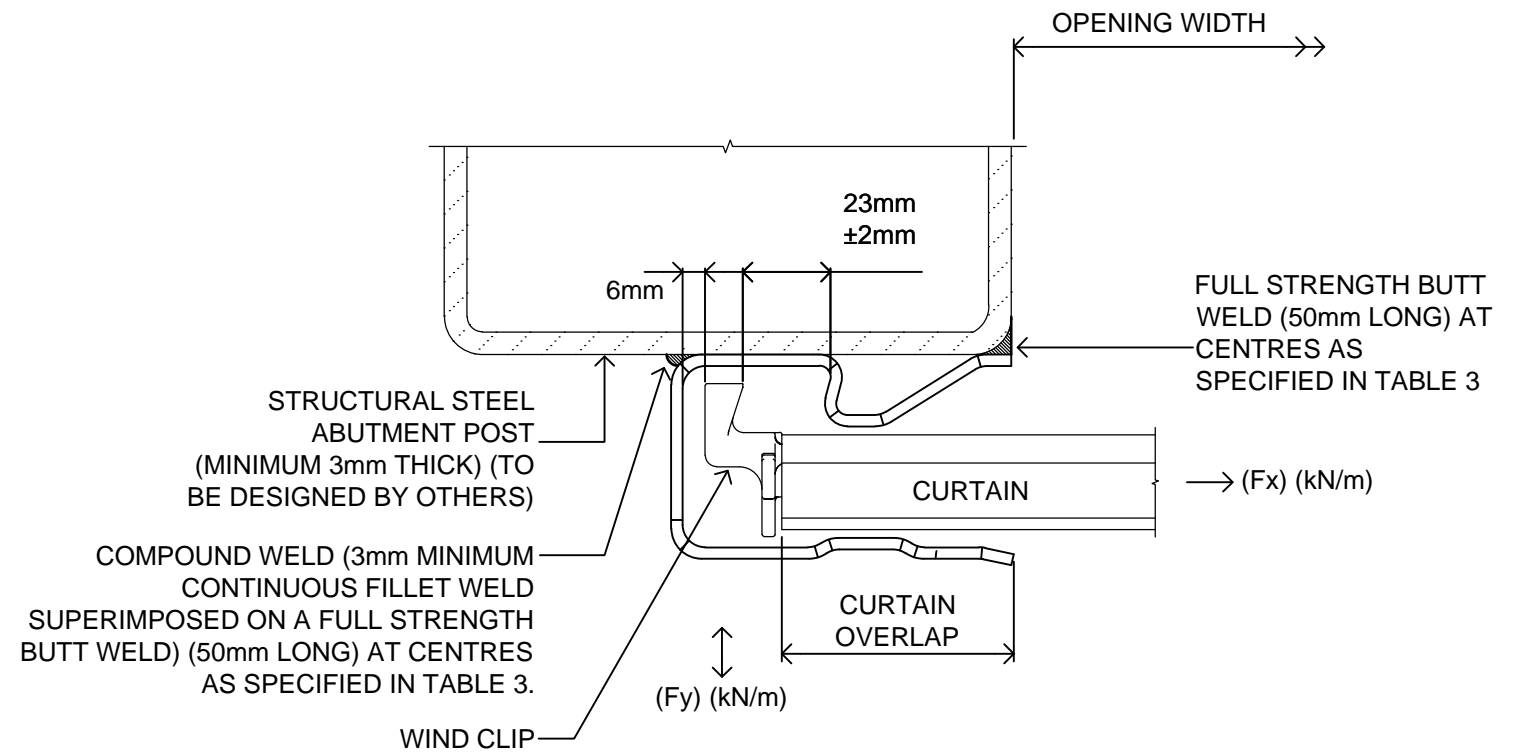
CLIENT	B&D AUSTRALIA PTY LTD
PROJECT	B&D 100mm ROLL-A-SHUTTER DOORS FOR USE IN ALL WIND REGIONS

DRAWING	100mm SERIES ROLL-A-SHUTTER DOOR ELEVATION, DETAILS AND NOTES
DESIGNED	J.E.
DRAWN	AAB
CHECKED & APPROVED	
DATE	July 2015

DRAWING No.	S01 H
PROJECT No.	2288



**CHANNEL GUIDE  
WITH LUG DETAIL**  
SCALE 1:2



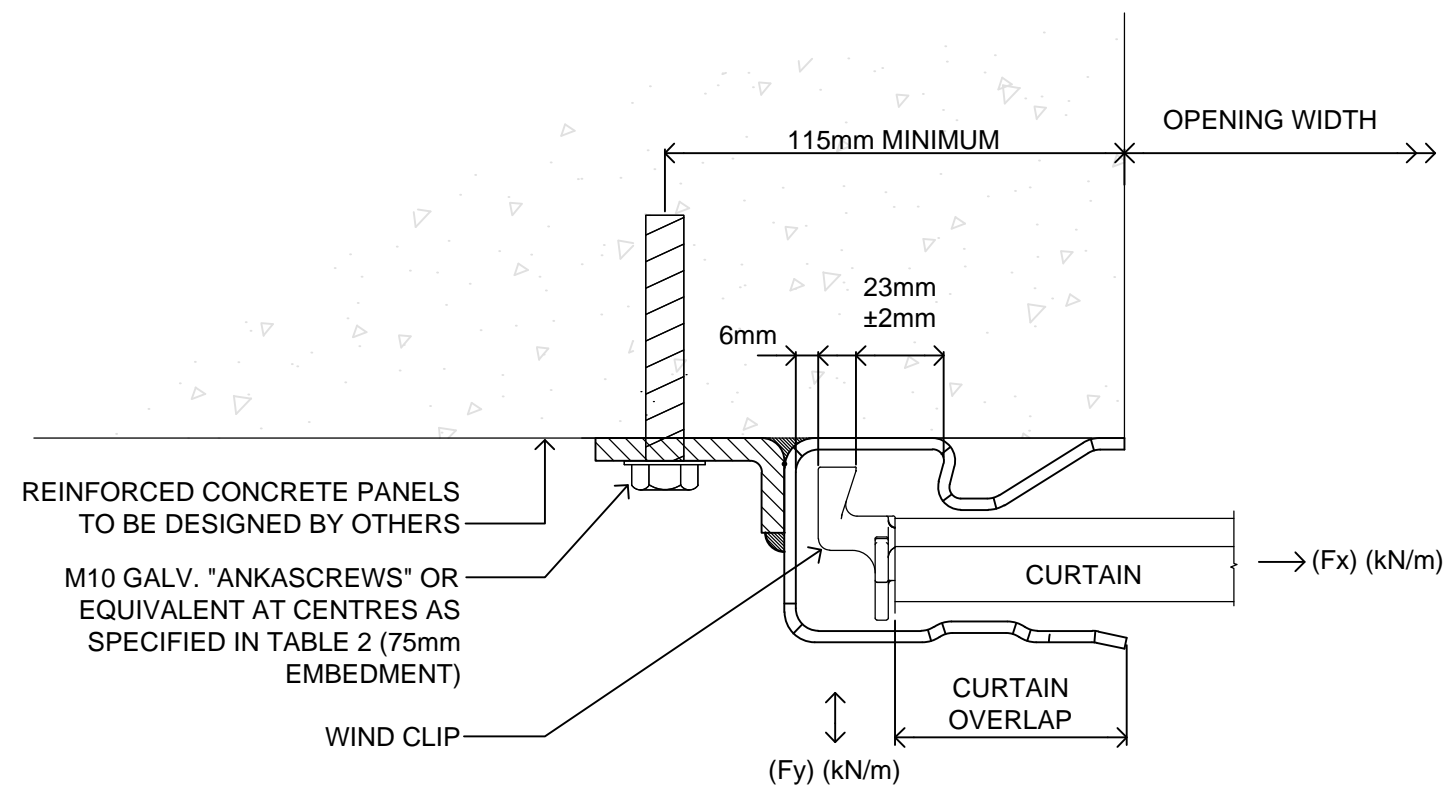
**SECTION 1 PLAN**  
SCALE = 1:2  
TYPE 2 FIXING - CHANNEL GUIDE WITHOUT LUGS WELDED TO STRUCTURAL STEEL ABUTMENT

ISSUE	DATE	AMENDMENTS
D	30.10.13	ISSUED FOR FINAL DISCUSSION
E	02.11.13	CONSTRUCTION ISSUE
F	02.06.14	GENERAL REVISION
G	08.06.15	GENERAL REVISION
H	04.07.15	GENERAL REVISION

CLIENT	B&D AUSTRALIA PTY LTD
PROJECT	B&D 100mm ROLL-A-SHUTTER DOORS FOR USE IN ALL WIND REGIONS

DRAWING	100mm SERIES ROLL-A-SHUTTER DOOR DETAILS. SHEET 1	SCALE	
		DESIGNED	J.E.
		DRAWN	AAB
		CHECKED & APPROVED	
		DATE	July 2015

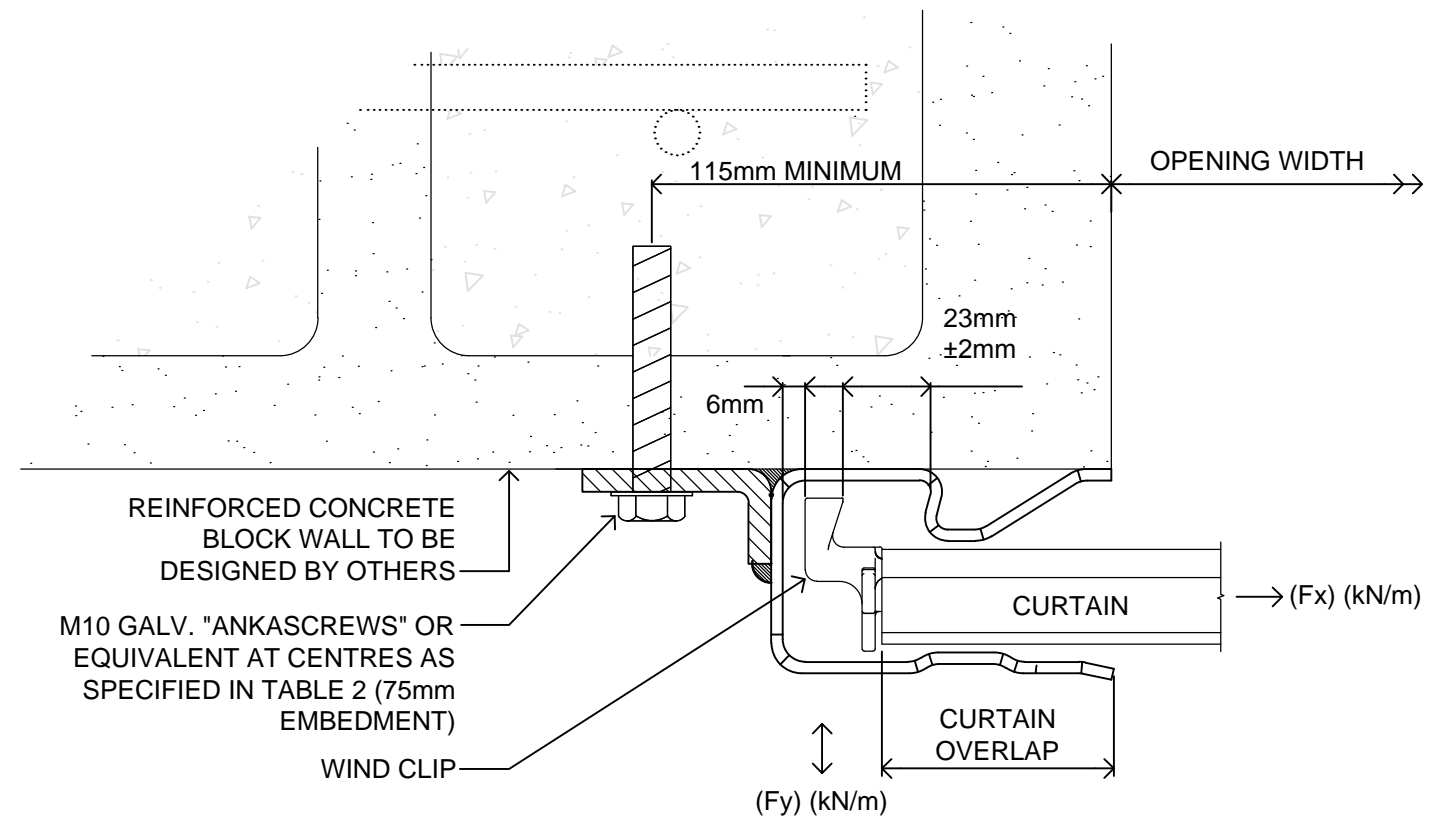
DRAWING No.	S02 H
PROJECT No.	2288



## SECTION 1 PLAN

SCALE = 1:2

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



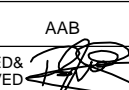
## SECTION 1 PLAN

SCALE = 1:2

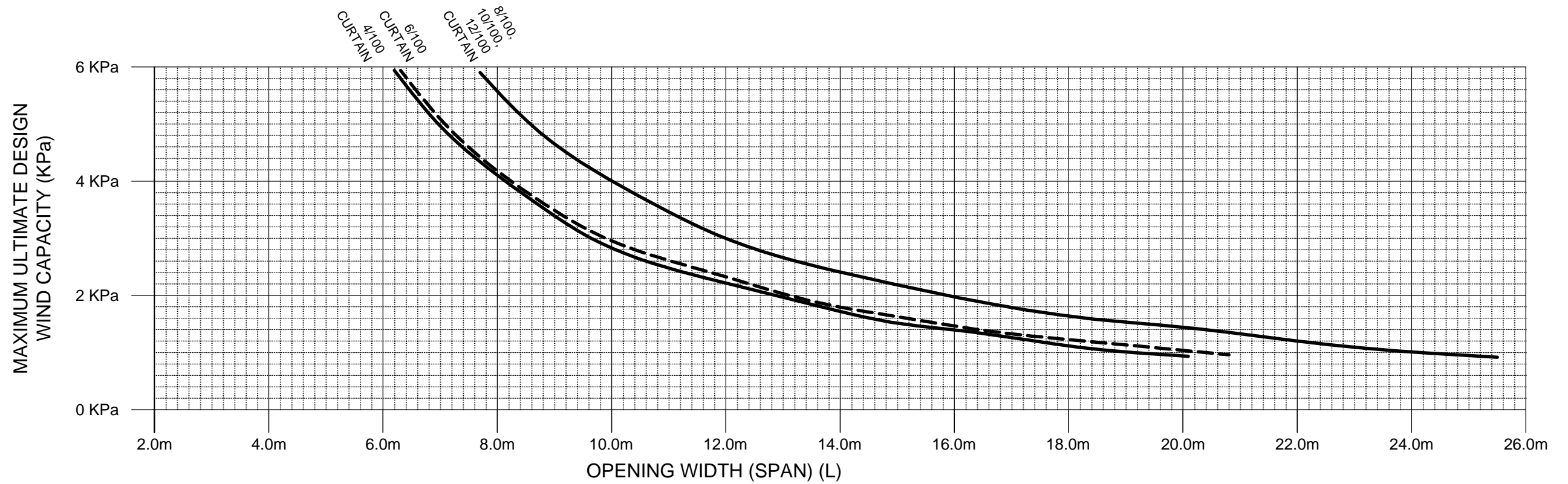
TYPE 1 FIXING - CHANNEL GUIDE WITH LUGS  
SUPPORTED ONTO REINFORCED CONCRETE CORE  
FILLED MASONRY UNITS

ISSUE	DATE	AMENDMENTS
D	30.10.13	ISSUED FOR FINAL DISCUSSION
E	02.11.13	CONSTRUCTION ISSUE
F	02.06.14	GENERAL REVISION
G	08.06.15	GENERAL REVISION
H	04.07.15	GENERAL REVISION

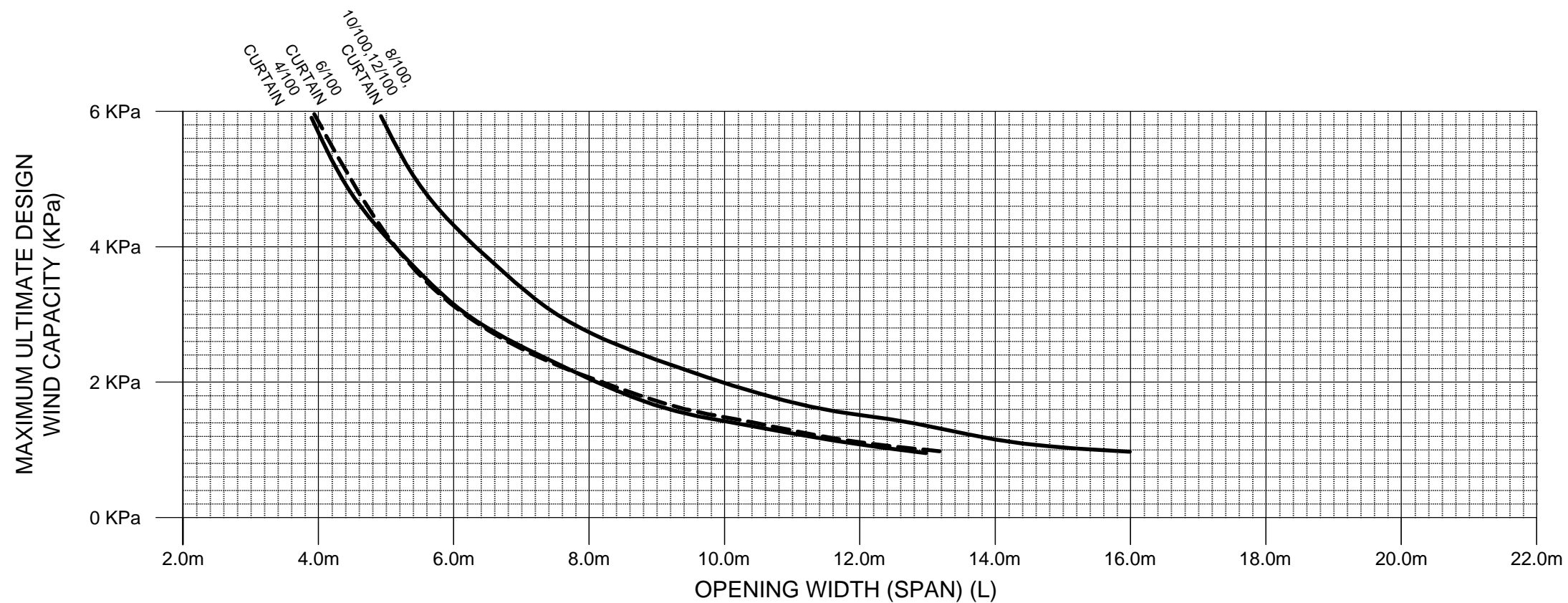
CLIENT	B&D AUSTRALIA PTY LTD
PROJECT	B&D 100mm ROLL-A-SHUTTER DOORS FOR USE IN ALL WIND REGIONS

DRAWING	100mm SERIES ROLL-A-SHUTTER DOOR DETAILS. SHEET 2
DESIGNED	J.E.
DRAWN	AAB
CHECKED & APPROVED	
DATE	July 2015

DRAWING No.	S03 H
PROJECT No.	2288



NOTE: CURTAIN WIDTH = OPENING WIDTH + CURTAIN OVERLAP  
FIGURE 1: ULTIMATE DESIGN WIND CAPACITY FOR A GIVEN SPAN (CLIPS AT EVERY SLAT)



NOTE: CURTAIN WIDTH = OPENING WIDTH + CURTAIN OVERLAP  
FIGURE 2: ULTIMATE DESIGN WIND CAPACITY FOR A GIVEN SPAN (CLIPS AT EVERY 2nd SLAT)

ISSUE	DATE	AMENDMENTS
D	30.10.13	ISSUED FOR FINAL DISCUSSION
E	02.11.13	CONSTRUCTION ISSUE
F	02.06.14	GENERAL REVISION
G	08.06.15	GENERAL REVISION
H	04.07.15	GENERAL REVISION

CLIENT	B&D AUSTRALIA PTY LTD
PROJECT	B&D 100mm ROLL-A-SHUTTER DOORS FOR USE IN ALL WIND REGIONS

DRAWING	100mm SERIES ROLL-A-SHUTTER DOOR TABLES AND DETAIL	SCALE
		DESIGNED J.E.
		DRAWN AAB
		CHECKED & APPROVED
		DATE July 2015

DRAWING No.	S04 H
PROJECT No.	2288

TABLE 1 - MAXIMUM ALLOWABLE OPENING WIDTHS (L) FOR A GIVEN WIND PRESSURE

MAXIMUM ALLOWABLE OPENING WIDTHS FOR DOOR HEIGHTS UP TO 10m												
REGION	TERRAIN CATEGORY	ULTIMATE DESIGN WIND PRESSURE	4/100 SLAT		6/100 SLAT		8/100 SLAT		10/100 SLAT		12/100 SLAT	
			WINDCLIPS AT EVERY SLAT	WINDCLIPS EVERY 2nd SLAT	WINDCLIPS AT EVERY SLAT	WINDCLIPS EVERY 2nd SLAT	WINDCLIPS AT EVERY SLAT	WINDCLIPS EVERY 2nd SLAT	WINDCLIPS AT EVERY SLAT	WINDCLIPS EVERY 2nd SLAT	WINDCLIPS AT EVERY SLAT	WINDCLIPS EVERY 2nd SLAT
A	2	1.42 KPa	16.1m	10.1m	16.3m	10.25m	19.9m	12.5m	19.9m	12.5m	19.9m	12.5m
	2.5	1.19 KPa	18.1m	11.4m	18.4m	11.5m	22.4m	14.0m	22.4m	14.0m	22.4m	14.0m
	3	0.98 KPa	20.6m	13.0m	20.8m	13.2m	25.5m	16.0m	25.5m	16.0m	25.5m	16.0m
B	2	2.28 KPa	11.75m	7.4m	11.9m	7.5m	14.5m	9.1m	14.5m	9.1m	14.5m	9.1m
	2.5	1.91 KPa	13.2m	8.3m	13.4m	8.4m	16.3m	10.3m	16.3m	10.3m	16.3m	10.3m
	3	1.57 KPa	15.0m	9.45m	15.3m	9.6m	18.6m	11.7m	18.6m	11.7m	18.6m	11.7m
C	2	3.66 KPa	8.5m	5.4m	8.7m	5.45m	10.6m	6.65m	10.6m	6.65m	10.6m	6.65m
	2.5	3.07 KPa	9.6m	6.0m	9.8m	6.1m	11.9m	7.5m	11.9m	7.5m	11.9m	7.5m
D	2	5.91 KPa	6.2m	3.9m	6.3m	3.9m	7.7m	4.85m	7.7m	4.85m	7.7m	4.85m
	2.5	4.95 KPa	7.0m	4.4m	7.1m	4.4m	8.65m	5.45m	8.65m	5.45m	8.65m	5.45m

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

FASTENING SPECIFICATIONS FOR FIXING INTO REINFORCED BLOCKWORK OR REINFORCED CONCRETE ABUTMENTS - TYPE 1			
ABUTMENT TYPE	CURTAIN TYPE	WINDCLIPS AT EVERY SLAT	WINDCLIPS AT EVERY 2nd SLAT
15 MPa REINFORCED BLOCK WALL	4/100	M10 ANKASCREWS AT 80 CTS.	M10 ANKASCREWS AT 200 CTS.
	6/100	M10 ANKASCREWS AT 70 CTS.	M10 ANKASCREWS AT 180 CTS.
	8/100	M10 ANKASCREWS AT 50 CTS.	M10 ANKASCREWS AT 125 CTS.
	10/100	M10 ANKASCREWS AT 50 CTS.	M10 ANKASCREWS AT 125 CTS.
	12/100	M10 ANKASCREWS AT 50 CTS.	M10 ANKASCREWS AT 125 CTS.
20 MPa CONCRETE WALL	4/100	M10 ANKASCREWS AT 90 CTS.	M10 ANKASCREWS AT 250 CTS.
	6/100	M10 ANKASCREWS AT 80 CTS.	M10 ANKASCREWS AT 225 CTS.
	8/100	M10 ANKASCREWS AT 60 CTS.	M10 ANKASCREWS AT 150 CTS.
	10/100	M10 ANKASCREWS AT 60 CTS.	M10 ANKASCREWS AT 150 CTS.
25 MPa CONCRETE WALL	4/100	M10 ANKASCREWS AT 100 CTS.	M10 ANKASCREWS AT 275 CTS.
	6/100	M10 ANKASCREWS AT 90 CTS.	M10 ANKASCREWS AT 250 CTS.
	8/100	M10 ANKASCREWS AT 70 CTS.	M10 ANKASCREWS AT 175 CTS.
	10/100	M10 ANKASCREWS AT 70 CTS.	M10 ANKASCREWS AT 175 CTS.
32 MPa CONCRETE WALL	12/100	M10 ANKASCREWS AT 70 CTS.	M10 ANKASCREWS AT 175 CTS.
	4/100	M10 ANKASCREWS AT 110 CTS.	M10 ANKASCREWS AT 300 CTS.
	6/100	M10 ANKASCREWS AT 100 CTS.	M10 ANKASCREWS AT 275 CTS.
	8/100	M10 ANKASCREWS AT 80 CTS.	M10 ANKASCREWS AT 200 CTS.
	10/100	M10 ANKASCREWS AT 80 CTS.	M10 ANKASCREWS AT 200 CTS.
	12/100	M10 ANKASCREWS AT 80 CTS.	M10 ANKASCREWS AT 200 CTS.

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

FASTENING SPECIFICATION FOR FIXINGS ONTO STRUCTURAL STEEL ABUTMENTS - TYPE 2			
ABUTMENT TYPE	CURTAIN TYPE	WINDCLIPS AT EVERY SLAT	WINDCLIPS AT EVERY 2nd SLAT
STEEL	4/100	WELDED AT 200 CTS.	WELDED AT 400 CTS.
	6/100	WELDED AT 175 CTS.	WELDED AT 350 CTS.
	8/100	WELDED AT 150 CTS.	WELDED AT 300 CTS.
	10/100	WELDED AT 150 CTS.	WELDED AT 300 CTS.
	12/100	WELDED AT 150 CTS.	WELDED AT 300 CTS.

NOTE: FOR WELD TYPE REFER TO SECTION 1 ON DRAWING S02

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

MAXIMUM ULTIMATE DESIGN CATENARY FORCE (Fx) PER METRE HEIGHT		
CURTAIN TYPE	WINDCLIPS AT EVERY SLAT	WINDCLIPS AT EVERY 2nd SLAT
4/100	91.6 KN/m	45.8 KN/m
6/100	93.2 KN/m	46.6 KN/m
8/100	125.8 KN/m	62.9 KN/m
10/100	125.8 KN/m	62.9 KN/m
12/100	125.8 KN/m	62.9 KN/m

NOTE: THE MAXIMUM ULTIMATE DESIGN CATENARY FORCES HAVE BEEN DERIVED USING THE MAXIMUM ALLOWABLE OPENING WIDTHS (L) FOR THE GIVEN WIND PRESSURES IN TABLE 1.

NOTE 1:  $F_y = \frac{WL}{2}$



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)

ISSUE	DATE	AMENDMENTS
D	30.10.13	ISSUED FOR FINAL DISCUSSION
E	02.11.13	CONSTRUCTION ISSUE
F	02.06.14	GENERAL REVISION
G	08.06.15	GENERAL REVISION
H	04.07.15	GENERAL REVISION

CLIENT	B&D AUSTRALIA PTY LTD
PROJECT	B&D 100mm ROLL-A-SHUTTER DOORS FOR USE IN ALL WIND REGIONS

DRAWING	100mm SERIES ROLL-A-SHUTTER DOOR TABLES	SCALE	
 James Ellis & Associates Consulting Structural Engineers		DESIGNED	J.E.
		DRAWN	AAB
		CHECKED & APPROVED	
		DATE	July 2015

DRAWING No.	S05 H
PROJECT No.	2288

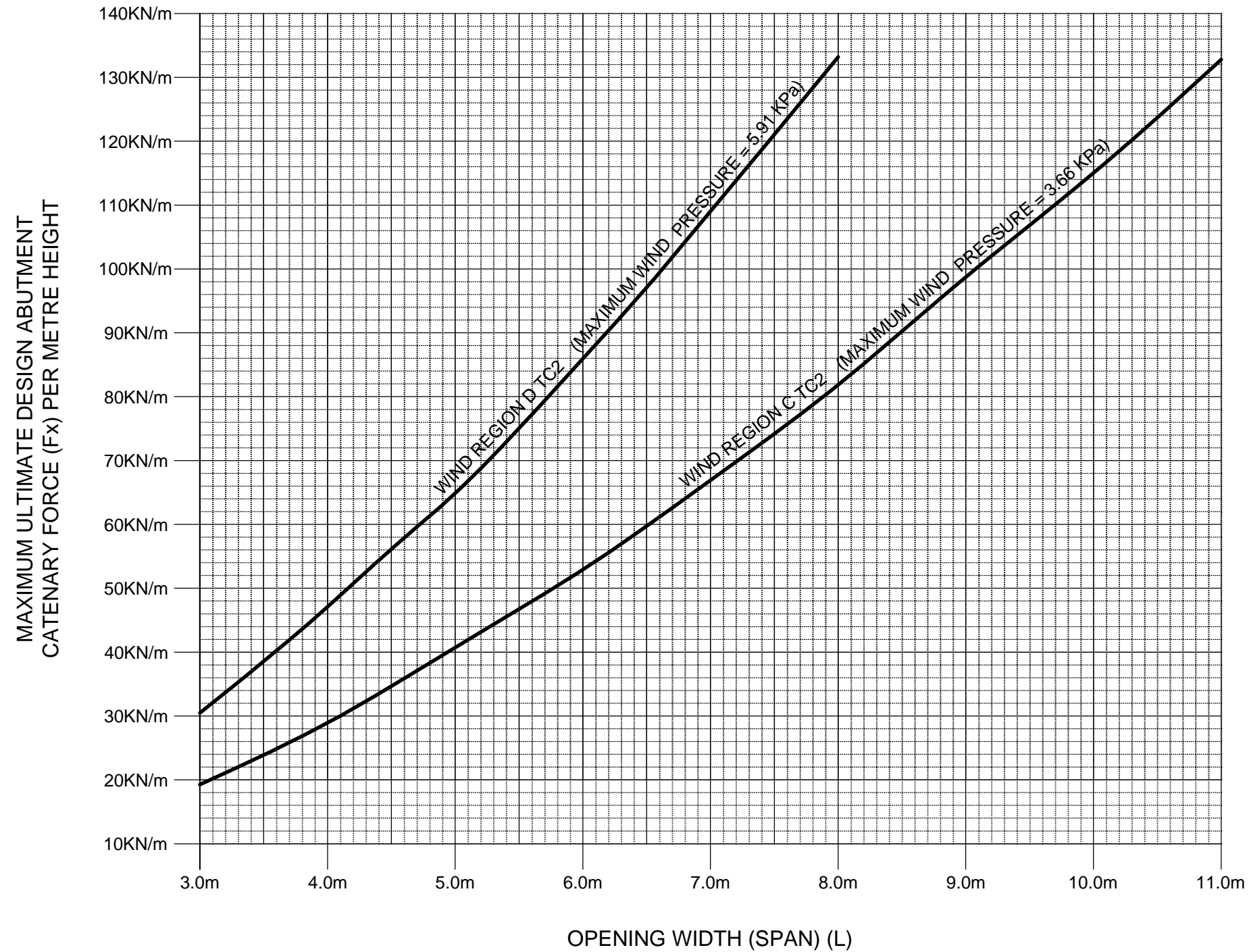


FIGURE 3: ULTIMATE DESIGN CATENARY FORCE FOR A GIVEN SPAN AND WIND PRESSURE

NOTE 1:  $F_y = \frac{WL}{2}$   
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)

ISSUE	DATE	AMENDMENTS
D	30.10.13	ISSUED FOR FINAL DISCUSSION
E	02.11.13	CONSTRUCTION ISSUE
F	02.06.14	GENERAL REVISION
G	08.06.15	GENERAL REVISION
H	04.07.15	GENERAL REVISION

CLIENT	B&D AUSTRALIA PTY LTD
PROJECT	B&D 100mm ROLL-A-SHUTTER DOORS FOR USE IN ALL WIND REGIONS

DRAWING	100mm SERIES ROLL-A-SHUTTER DOOR TABLES. SHEET 1	SCALE
	James Ellis & Associates	DESIGNED J.E.
	Consulting Structural Engineers	DRAWN AAB
		CHECKED & APPROVED
		DATE July 2015

DRAWING No.	S06 H
PROJECT No.	2288