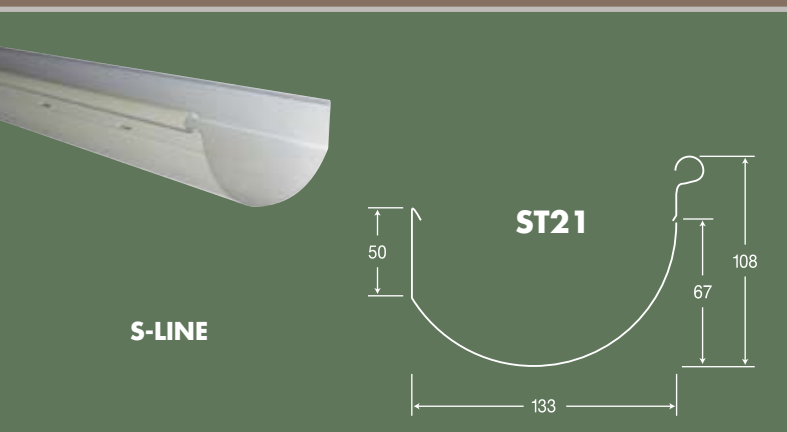
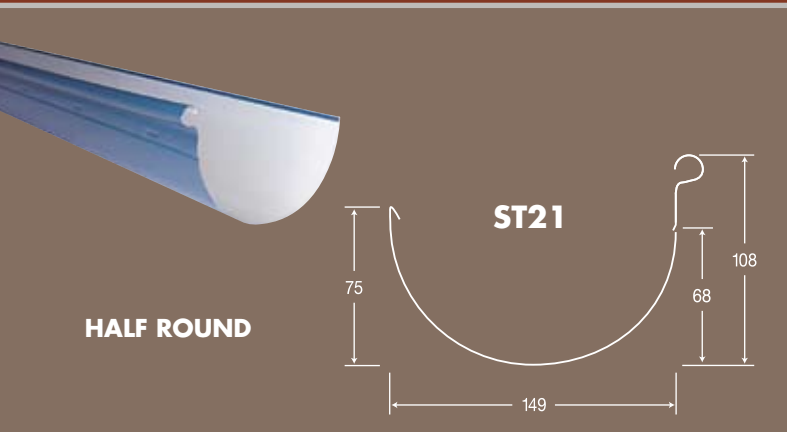
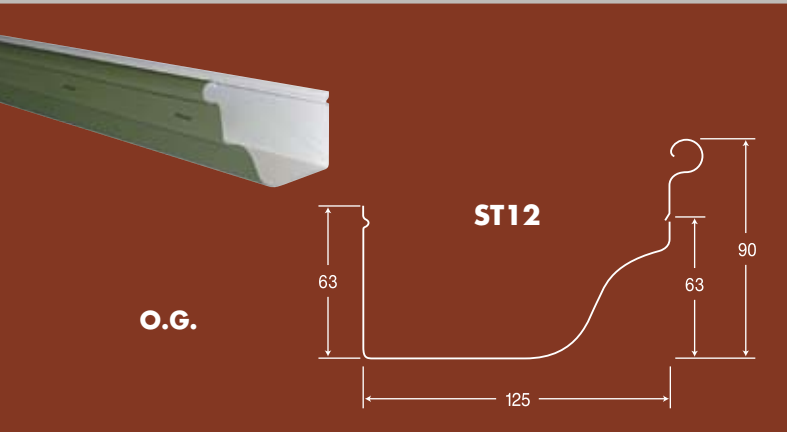
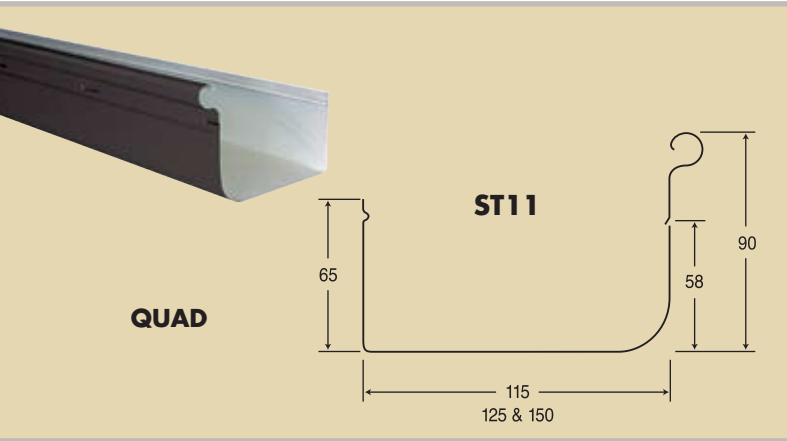




Service over and above

# Overflow Methods for High Fronted Eaves Gutters



**Gutter and downpipe systems must comply with the National Construction Code 2016:**

In Victoria, roof drainage is regulated as plumbing work by the Victorian Building Authority (VBA) and NCC Volume 3 (Plumbing Code of Australia) applies, which references AS/NZS 3500.3 2015

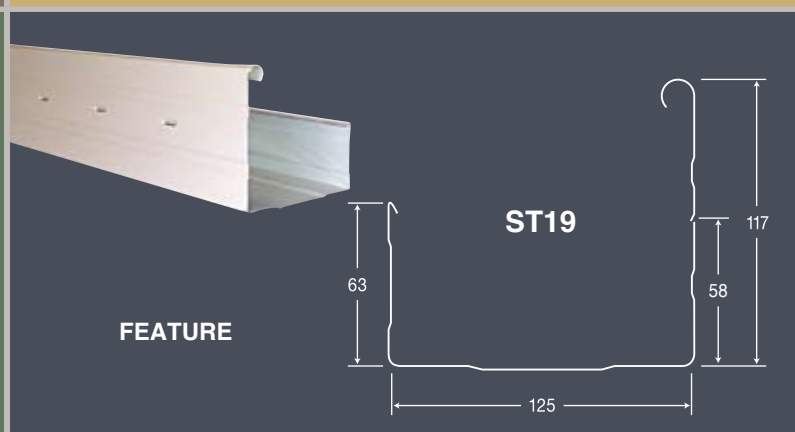
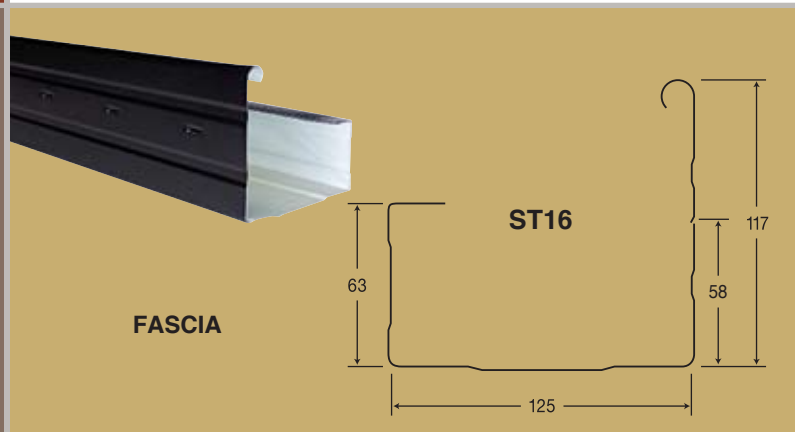
**Performance Requirements (DP1.2)**

The roof drainage system, must be designed, installed and maintained to dispose of stormwater flows due to extreme rainfall events by the installation and maintenance of overflow devices or measures of required capacity.

**Overflow Performance Solutions**

Provide a guaranteed stated average back gap using spacers at 600mm centres.

Rainfall duration intensities vary throughout Australia (Ref Table 4).



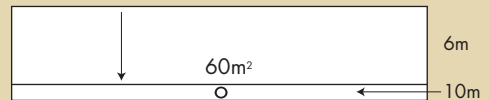
**Table 1 - OVERFLOW VOLUME FOR CONTINUOUS MEASURE L/s/m**

| RIDGE TO GUTTER LENGTH (m)                         |      |      |      |      |      |      |      |      |
|----------------------------------------------------|------|------|------|------|------|------|------|------|
| Design 5 minute duration rainfall intensity (mm/h) | 2    | 4    | 6    | 8    | 10   | 12   | 14   | 16   |
| 150                                                | 0.08 | 0.17 | 0.25 | 0.33 | 0.42 | 0.50 | 0.58 | 0.67 |
| 175                                                | 0.10 | 0.19 | 0.29 | 0.39 | 0.49 | 0.58 | 0.68 | 0.78 |
| 200                                                | 0.11 | 0.22 | 0.33 | 0.44 | 0.56 | 0.67 | 0.78 | 0.89 |
| 225                                                | 0.13 | 0.25 | 0.38 | 0.50 | 0.63 | 0.75 | 0.88 | 1.0  |
| 250                                                | 0.14 | 0.28 | 0.42 | 0.56 | 0.69 | 0.83 | 0.97 | 1.1  |
| 275                                                | 0.15 | 0.31 | 0.46 | 0.61 | 0.76 | 0.92 | 1.1  | 1.2  |
| 300                                                | 0.17 | 0.33 | 0.50 | 0.67 | 0.83 | 1.0  | 1.2  | 1.3  |
| 325                                                | 0.18 | 0.36 | 0.54 | 0.72 | 0.90 | 1.1  | 1.3  | 1.4  |
| 350                                                | 0.19 | 0.39 | 0.58 | 0.78 | 0.97 | 1.2  | 1.4  | 1.6  |
| 375                                                | 0.21 | 0.42 | 0.63 | 0.83 | 1.0  | 1.3  | 1.5  | 1.7  |
| 400                                                | 0.22 | 0.44 | 0.67 | 0.89 | 1.1  | 1.3  | 1.6  | 1.8  |

**Table 2 - OVERFLOW VOLUME FOR DEDICATED MEASURE L/s**

| ROOF CATCHMENT AREA (m²)                           |     |     |     |     |     |
|----------------------------------------------------|-----|-----|-----|-----|-----|
| Design 5 minute duration rainfall intensity (mm/h) | 30  | 40  | 50  | 60  | 70  |
| 150                                                | 1.3 | 1.7 | 2.1 | 2.5 | 2.9 |
| 175                                                | 1.5 | 1.9 | 2.4 | 2.9 | 3.4 |
| 200                                                | 1.7 | 2.2 | 2.8 | 3.3 | 3.9 |
| 225                                                | 1.9 | 2.5 | 3.1 | 3.8 | 4.4 |
| 250                                                | 2.1 | 2.8 | 3.5 | 4.2 | 4.9 |
| 275                                                | 2.3 | 3.1 | 3.8 | 4.6 | 5.3 |
| 300                                                | 2.5 | 3.3 | 4.2 | 5.0 | 5.8 |
| 325                                                | 2.7 | 3.6 | 4.5 | 5.4 | 6.3 |
| 350                                                | 2.9 | 3.9 | 4.9 | 5.8 | 6.8 |
| 375                                                | 3.1 | 4.2 | 5.2 | 6.3 | 7.3 |
| 400                                                | 3.3 | 4.4 | 5.6 | 6.7 | 7.8 |

**Example:** Roof Area - 60m<sup>2</sup>      Rainfall Intensity - 175 mm/h  
 Continuous Measure = 0.29 L/s/m Table 1  
 Dedicated Measure = 2.9 L/s Table 2



**Table 3 - GUTTER BACK GAP OVERFLOW CAPACITY L/s/m**

| STEELINE OVERFLOW SYSTEMS                       |                                                                               | S2                                        | S25   | S3   | S4   | S5   | S6   | S8   |
|-------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------|-------|------|------|------|------|------|
| Declared Average Bottom Back Gap (mm) - Minimum |                                                                               | 1.50                                      | 1.875 | 2.25 | 3.00 | 3.75 | 4.50 | 6.00 |
| Effective Head of Rainwater (mm)                | Required Height from Top of Back of Gutter to Top of Fascia (mm) at Highpoint | Gutter Back Gap Overflow Capacity (L/s/m) |       |      |      |      |      |      |
| 4                                               | 7                                                                             | 0.6                                       | 0.65  | 0.7  | 0.8  | 0.8  | 0.8  | 0.8  |
| 5                                               | 8                                                                             | 0.8                                       | 0.85  | 0.9  | 1.0  | 1.02 | 1.05 | 1.05 |
| 6                                               | 9                                                                             | 1.0                                       | 1.05  | 1.1  | 1.2  | 1.25 | 1.3  | 1.3  |
| 7                                               | 10                                                                            | 1.2                                       | 1.25  | 1.3  | 1.4  | 1.45 | 1.5  | 1.55 |
| 8                                               | 11                                                                            | 1.4                                       | 1.45  | 1.5  | 1.6  | 1.65 | 1.7  | 1.8  |
| 9                                               | 12                                                                            | 1.6                                       | 1.65  | 1.7  | 1.8  | 1.85 | 1.9  | 2.0  |
| 10                                              | 13                                                                            | 1.8                                       | 1.85  | 1.9  | 2.0  | 2.05 | 2.1  | 2.2  |
| 11                                              | 14                                                                            | 1.9                                       | 1.95  | 2.05 | 2.2  | 2.25 | 2.3  | 2.4  |
| 12                                              | 15                                                                            | 2.0                                       | 2.1   | 2.2  | 2.4  | 2.3  | 2.5  | 2.6  |

**Example Highlighted in Table 3.**

- Using the **S2 Overflow System**, with a **Declared Average Bottom Back Gap of 1.5mm Minimum**, and with the high point of the gutter installed **10mm** below the top of the fascia, the design Back Gap Overflow Capacity will be at least **1.2 L/s/m** which satisfies the overflow requirements for most areas and applications.
- Overflow Capacity of 1.2 L/s/m** meets the 100 Yr ARI overflow Performance Requirements, for Ridge to Gutter Lengths up to 16.0m (Ref Table 4 next page) for all areas in Victoria, in the vast majority of residential applications.

**Eaves gutter system must be designed and installed in accordance with AS/NZS 3500.3**

Draft Research Report: Investigation of Back Gap Overflow Capacity of Residential Eaves Gutters © Copyright 2016 C.J. Seccombe & M.H. Kelly. This report has been prepared for the sole use of Australian Steel Institute (ASI) and its contributing project sponsors.

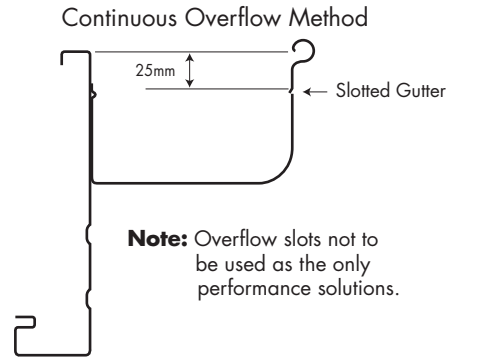
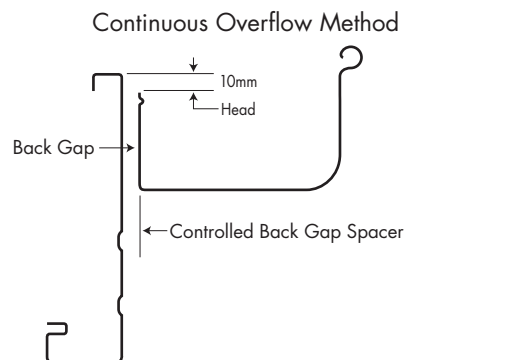
The finding and recommendations apply only to the products specified in the report – which include Steeline. Use by other parties or in connection with products and systems not specified in the report is not permitted.

**Table 4 - RAINFALL INTENSITY**

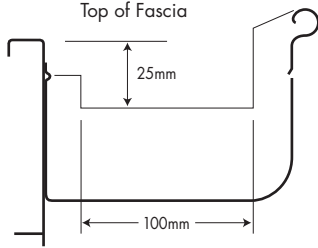
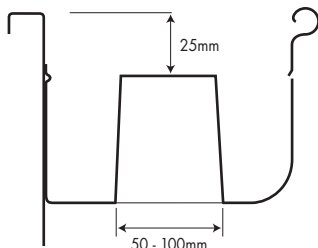
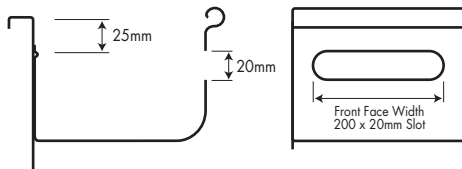
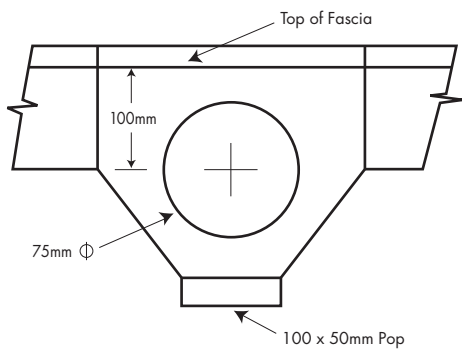
| 5 MINUTE RAINFALL INTENSITY (mm/h) |                                         |           | 5 MINUTE RAINFALL INTENSITY (mm/h) |                                         |           |
|------------------------------------|-----------------------------------------|-----------|------------------------------------|-----------------------------------------|-----------|
| LOCALITY                           | Average recurrence interval, once in... |           | LOCALITY                           | Average recurrence interval, once in... |           |
|                                    | 20 years                                | 100 years |                                    | 20 years                                | 100 years |
| <b>ACT</b>                         |                                         |           | <b>SOUTH AUSTRALIA</b>             |                                         |           |
| Canberra                           | 143                                     | 193       | Adelaide                           | 124                                     | 184       |
| Gungahlin                          | 137                                     | 179       | Gawler                             | 110                                     | 158       |
| Tuggeranong                        | 148                                     | 210       | Mt Gambier                         | 103                                     | 144       |
| <b>NEW SOUTH WALES</b>             |                                         |           | Murray Bridge                      | 120                                     | 178       |
| Albury                             | 139                                     | 180       | Port Augusta                       | 133                                     | 199       |
| Broken Hill                        | 143                                     | 219       | Port Pirie                         | 122                                     | 181       |
| Goulburn                           | 121                                     | 156       | Yorke town                         | 155                                     | 166       |
| Kiama                              | 226                                     | 319       | <b>TASMANIA</b>                    |                                         |           |
| Newcastle                          | 226                                     | 316       | Burnie                             | 128                                     | 180       |
| Orange                             | 142                                     | 186       | Flinders Island                    | 122                                     | 166       |
| Sydney                             | 200                                     | 262       | Hobart                             | 85                                      | 116       |
| Avalon                             | 206                                     | 278       | Launceston                         | 90                                      | 121       |
| Campbelltown                       | 167                                     | 222       | Queenstown                         | 94                                      | 120       |
| Penrith                            | 180                                     | 244       | St Marys                           | 146                                     | 203       |
| Windsor                            | 175                                     | 233       | <b>VICTORIA</b>                    |                                         |           |
| Tweed Heads                        | 252                                     | 330       | Ballarat                           | 131                                     | 188       |
| Wollongong                         | 217                                     | 308       | Benalla                            | 146                                     | 194       |
| <b>NT</b>                          |                                         |           | Geelong                            | 102                                     | 144       |
| Alice Springs                      | 166                                     | 239       | Horsham                            | 120                                     | 173       |
| Darwin                             | 233                                     | 274       | Lakes Entrance                     | 145                                     | 198       |
| Katherine                          | 216                                     | 250       | Melbourne                          | 132                                     | 187       |
| <b>QUEENSLAND</b>                  |                                         |           | Hastings                           | 117                                     | 145       |
| Bamaga                             | 252                                     | 298       | Sorrento                           | 106                                     | 140       |
| Brisbane                           | 234                                     | 305       | Mildura                            | 142                                     | 218       |
| Ipswich                            | 211                                     | 278       | Stawell                            | 130                                     | 186       |
| Victoria Point                     | 245                                     | 320       | <b>WESTERN AUSTRALIA</b>           |                                         |           |
| Bundaberg                          | 265                                     | 340       | Albany                             | 125                                     | 178       |
| Cairns                             | 229                                     | 278       | Broome                             | 232                                     | 287       |
| Cloncurry                          | 218                                     | 278       | Bunbury                            | 147                                     | 199       |
| Innisfail                          | 248                                     | 301       | Derby                              | 211                                     | 256       |
| Mackay                             | 250                                     | 316       | Geraldton                          | 138                                     | 193       |
| Mt Isa                             | 199                                     | 260       | Kalgoorlie                         | 137                                     | 204       |
| Noosa Heads                        | 258                                     | 331       | Perth                              | 130                                     | 172       |
| Rockhampton                        | 229                                     | 300       | Joondalup                          | 133                                     | 180       |
| Toowoomba                          | 203                                     | 268       | Midland                            | 122                                     | 163       |
| Townsville                         | 235                                     | 300       | Port Headland                      | 168                                     | 230       |
| Weipa                              | 239                                     | 283       | Tom Price                          | 138                                     | 182       |

**Note:** Locations used in this table are based on the Bureau of Meteorology grid cell latitude and longitude to the central Post Office of each city or town, with the exception of Tom Price in WA, which uses the Police Station.

**CONTINUOUS OVERFLOW MEASURES L/s/m**

|                                                                                                                                                                                                                                                                           | OVERFLOW CAPACITY L/s/m                                                               | 115 QUAD GUTTER                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Slot Area</b></p> <p>1200mm<sup>2</sup><br/>600mm<sup>2</sup></p> <p>Lower edge of slot 25mm below top of fascia.</p>                                                                                                                                               | <p>.50 L/s/m<br/>.25 L/s/m</p> <p>Overflow capacity is proportional to slot area.</p> | <p>Continuous Overflow Method</p>  <p>25mm<br/>← Slotted Gutter</p> <p><b>Note:</b> Overflow slots not to be used as the only performance solutions.</p> |
| <p><b>Back Gap</b></p> <p>2mm Gap Spacer</p>                                                                                                                                                                                                                              | <p>1.2 L/s/m</p>                                                                      | <p>Continuous Overflow Method</p>  <p>10mm<br/>← Head</p> <p>← Back Gap</p> <p>← Controlled Back Gap Spacer</p>                                          |
| <p>High end of the gutter a minimum of 10mm below the top of the fascia required.</p> <ul style="list-style-type: none"> <li>• Minimum fall 1– 500.</li> <li>• Spacers – maximum spacer centres 600mm.</li> <li>• Roofing membranes trimmed above gutter back.</li> </ul> |                                                                                       |                                                                                                                                                                                                                                              |

## DEDICATED OVERFLOW MEASURES L/s

| DESCRIPTION                                                                                                                                   | OVERFLOW CAPACITY | 115 QUAD GUTTER                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Stop End Weir</b></p> <p>Clear Width 100mm</p> <p>25mm below top of fascia.</p>                                                         | 0.5 L/s           |  <p style="text-align: center;">Top of Fascia</p> <p style="text-align: center;">25mm</p> <p style="text-align: center;">100mm</p>                                                                       |
| <p><b>Inverted Nozzle</b></p> <p>Installed within 500mm of gutter high point.</p> <p>100 x 50 Nozzle lengthways 25mm below top of fascia.</p> | 1.2 L/s           | <p style="text-align: center;">Dedicated Overflow Measure</p>  <p style="text-align: center;">25mm</p> <p style="text-align: center;">50 - 100mm</p>                                                     |
| <p><b>Front Face Weir</b></p> <p>Minimum 200 x 20 Slot</p> <p>Installed 25mm below top of fascia.</p>                                         | 1.2 L/s           |  <p style="text-align: center;">25mm</p> <p style="text-align: center;">20mm</p> <p style="text-align: center;">Front Face Width<br/>200 x 20mm Slot</p>                                               |
| <p><b>Rain Head</b></p> <p>75mm Overflow</p> <p>Centre line of hole 100mm below top of fascia.</p>                                            | 3.5 L/s           |  <p style="text-align: center;">Top of Fascia</p> <p style="text-align: center;">100mm</p> <p style="text-align: center;">75mm <math>\Phi</math></p> <p style="text-align: center;">100 x 50mm Pop</p> |

Ref Table 3.5,2.4B National Construction Code

## STEELINE EAVES GUTTER INSTALLATION GUIDE VICTORIA

**It is the responsibility of designers and installers to comply with the NCC2016 requirements (Page 2).**

|                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NCC2016 Volume 3 Plumbing Code of Australia.                                                                                                                      |
| AS/NZS 3500.3                                                                                                                                                     |
| Research Report - Investigation of Back Gap Overflow Capacity of Residential Eaves Gutters. Cam Seccombe and Mike Kelly (Parametric Developments). 31st May 2016. |
| Steeline Roofing Products Test for Average Bottom Back Gap using a 2.0mm spacer while under Load (Full Gutter). 12th September 2016.                              |

### **Overflow Performance Solution using the Back Gap method.**

- Fixing Eaves Gutter to Steel Fascia.
- Maximum Rafter Bracket centres must not exceed 1200mm for steel roofing and 600mm for tile roofing application.
- Maximum Spring Clip centres: 1200mm.
- Maximum Gutter Stiffener centres: 1200mm.
- Maximum Spacer centres: 600mm.
- Gutter Stiffeners and Spacers to be located next to Spring Clip.  
**Note:** Spacers required at 600mm centres maximum to maintain the average required back gap.
- Steeline Eaves Gutters should be installed with the high end of the gutter 10mm minimum from the top of the fascia.
- Gutter fall: 1:500 minimum.
- Maximum gutter run to a downpipe: 12.0m.
- Roofing membrane must be trimmed to finish above the back of the gutter.
- Gutter installation to timber fascia requires gutter brackets at 1200mm centres maximum with spacers at 600mm centres.

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