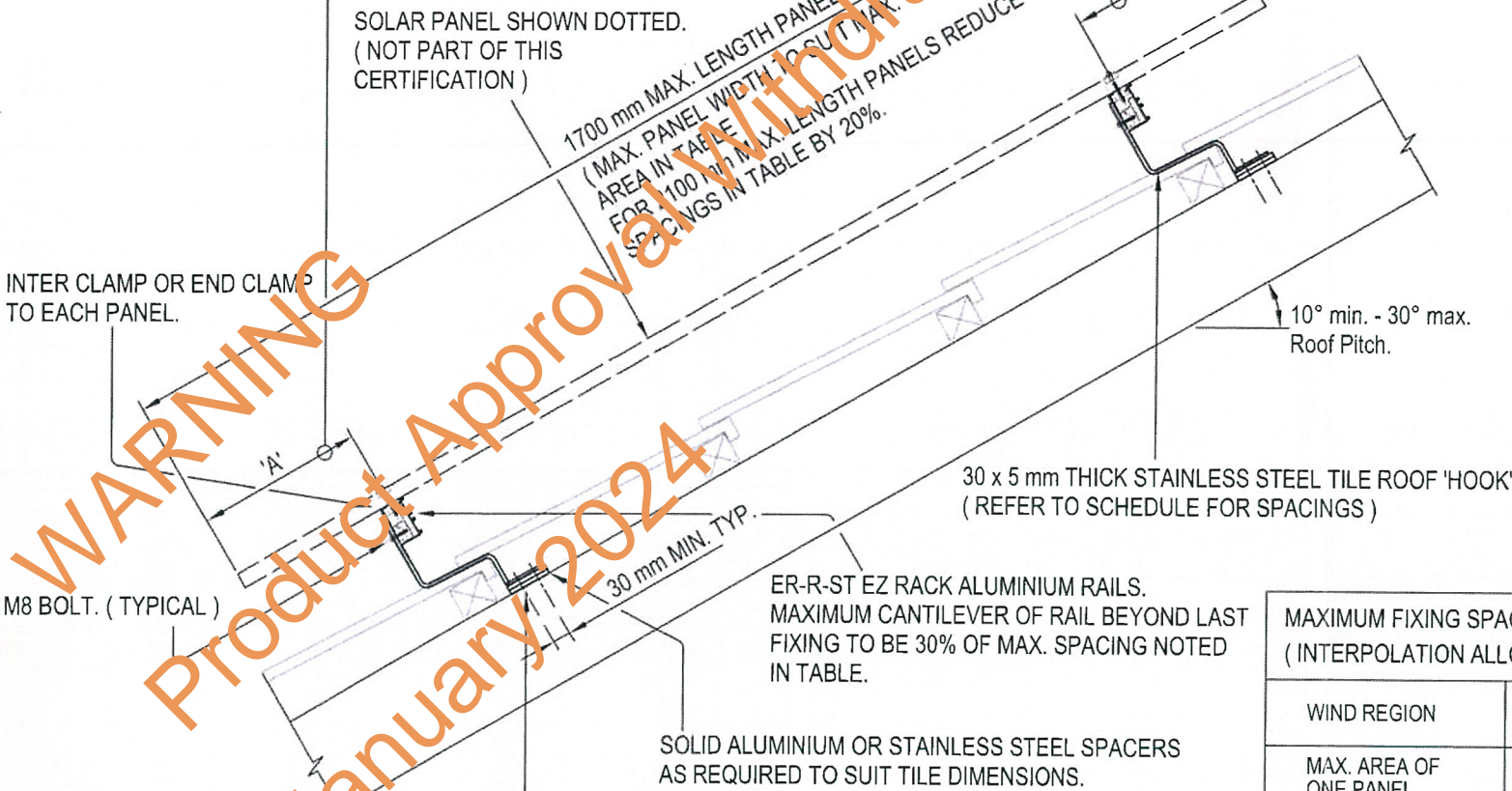


NOTE : DIMENSION 'A' TO BE THE SAME EACH END OF PANEL AND UP TO 450 mm MAX. DEPENDING ON SOLAR PANEL MANUFACTURER'S RECOMMENDATIONS.



FIX TO RAFTERS WITH MIN. 2 x 12 gauge ( 5.6 mm MIN. DIAMETER , 14 THREADS PER INCH FOR FIXING TO THIN STEEL , 10 THREADS PER INCH FOR FIXING TO TIMBER ) SCREWS THROUGH 0.55 mm MIN. THICKNESS ( B.M.T. ) OF STEEL OR 35 mm MIN. EMBEDMENT INTO TIMBER. REFER SCHEDULE FOR SPACINGS.

TILE HOOKS TO BE FITTED TO CLEAR EXISTING CYCLONE CLIPS IN REGION C. ANY CYCLONE CLIPS REMOVED TO INSTALL TILE HOOKS TO BE RE-INSTATED TO MATCH EXISTING.

FIXINGS INTO TOP OF TIMBER RAFTERS TO BE TO 45 mm MIN. WIDE TIMBERS. FOR THINNER TIMBERS USE TYPE 3 SIDE FIXING BRACKET WITH MIN 2 x 12 GAUGE (5.6mm MIN. DIAMETER, 10 THREADS PER INCH) TO SIDE OF RAFTER.

NOTE : FOR RAFTER SPACINGS GREATER THAN MIN. FIXING SPACINGS SHOWN IN TABLE, USE TYPE 2 FIXING BRACKETS WITH RAILS PARALLEL TO RAFTER OR, REGISTERED STRUCTURAL ENGINEER TO PROVIDE NOGGINGS BETWEEN RAFTERS TO SUIT.

**TILE ROOF INSTALLATION**  
( CLENERGY PV - EZ RACK SOLAR ROOF MOUNTING SYSTEM ) 15kg/m2 MAX. WEIGHT SOLAR PANELS  
( SCALE 1:10 )

MAXIMUM FIXING SPACINGS ALONG LENGTH OF ALUMINIUM RAILS. ( mm ) ( INTERPOLATION ALLOWED ) WIND REGION TO AS/NZS.1170.2 - 2011			
WIND REGION	A	B	C
MAX. AREA OF ONE PANEL.	2.75 m2	2.75 m2	1.9 m2
HEIGHT ABOVE GROUND ( METRES )			
5	1280	860	580
10	1160	780	530
15	1100	740	505
20	1040	700	480
MAX. ULTIMATE UPLIFT PER FIXING BRACKET ( kN ) EXISTING ROOF STRUCTURE TO BE VERIFIED TO SUPPORT UPLIFT LOAD.	2.21	2.21	2.21

NOTE : ALL SCREW / BOLT FIXINGS TO BE CLASS 4 FINISH

Product Name PV - EZ RACK SOLAR ROOF MOUNTING SYSTEM WITH ER-R-ST RAIL. ( TILE ROOF )

Product Description SOLAR PANEL ROOF MOUNTING RACK FOR TILE ROOFS.

Manufacturers Name

1/10 DUERDIN STREET , CLAYTON VIC. 3168

- Design Criteria
- ① 15 kg/m2 MAX. SOLAR PANEL WEIGHT.
  - ② AS/NZS.1170.2 - 2011 ( REC 2016 )  
ARI = 500  
CATEGORY 2 , VARIOUS WIND REGIONS.  
Ms = 1.0  
Mt = 1.0
  - ③ IMPORTANCE LEVEL 2
  - ④ VARIES FOR HEIGHTS UP TO 20 metres
  - ⑤ C fig = -1.7 OR +0.8

Limitations

ROOF STRUCTURE TO BE CHECKED AND CERTIFIED BY A NORTHERN TERRITORY REGISTERED STRUCTURAL ENGINEER AS SUITABLE FOR APPLIED BRACKET UPLIFT LOADS. SOLAR PANELS TO BE STRUCTURALLY CERTIFIED AS ABLE TO RESIST WIND LOADS IN ACCORDANCE WITH AS/NZS. 1170.2 - 2011

**CLIVE STEELE PARTNERS PTY LTD**  
CONSULTING ENGINEERS - STRUCTURAL & CIVIL

BUILDING 6  
62/195 WELLINGTON ROAD  
CLAYTON, VICTORIA  
AUSTRALIA. 3168  
Telephone (03) 9545 0223  
Facsimile (03) 9545 3022  
Email csp@clivesteele.com.au  
A.C.N. 005 363 735 A.B.N. 92 627 427 761

DRG. No. 16434-17-SR1P, Accepted for Inclusion

DTCM ref: M/577/01-06

Chairman's Signature:   
Chairman's Name: Paul Newland  
Date of Approval: 25-01-2019  
Expiry Date: 25-01-2024

REFER DRAWINGS 16434-17-SR4K,5K AND 6J FOR DETAILS OF RAILS , HOOKS , CLAMPS , TILT LEGS ETC.

SHEET 1 OF 6

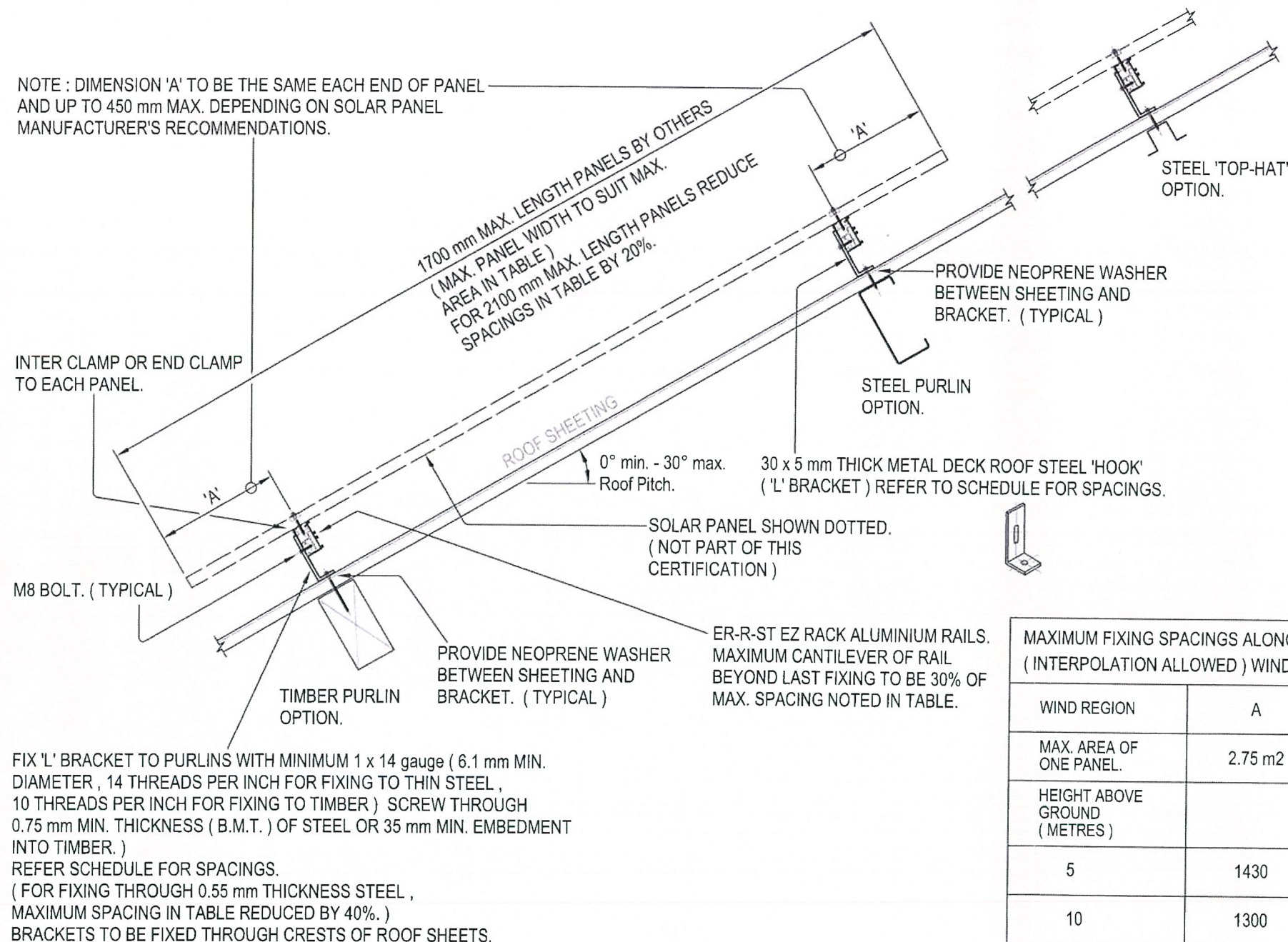
Notes covering basis of DTC ( Relevant test reports etc. )

COMPUTATION SHEETS , PROJECT No. 16434 , SHEETS A1 - A9 ( INCL. )  
PREPARED BY CLIVE STEELE PARTNERS , DATED 28/09/18  
TILE HOOKS TEST REPORT No. MT-18/997-A , DATED 21/09/18  
TILT LEG STRUTS TEST REPORT No. MT-17/906-A , DATED 9/10/17

Design Engineer's Certification :  
Name : IAN FLANDERS  
Registration No. EC-1353  
Date : 18th. DEC. 2018  
Signature:   
Registered as a Structural Engineer in Victoria

Certifying Engineer's Certification :  
Name : JIANZENG GENG  
Registration No. 239858ES  
Date : 18th. DEC. 2018  
Signature:   
Registered as a Structural Engineer in Northern Territory





## CORRUGATED OR TRAPEZOIDAL METAL DECK INSTALLATION

( CLENERGY PV - EZ RACK SOLAR ROOF MOUNTING SYSTEM )

15kg/m2 MAX. WEIGHT SOLAR PANELS  
( SCALE 1:10 )

MAXIMUM FIXING SPACINGS ALONG LENGTH OF ALUMINIUM RAILS. ( mm ) ( INTERPOLATION ALLOWED ) WIND REGION TO AS/NZS.1170.2 - 2011			
WIND REGION	A	B	C
MAX. AREA OF ONE PANEL.	2.75 m2	2.75 m2	1.9 m2
HEIGHT ABOVE GROUND ( METRES )			
5	1430	890	605
10	1300	810	550
15	1235	770	520
20	1170	730	490
MAX. ULTIMATE UPLIFT PER FIXING BRACKET ( kN ) EXISTING ROOF STRUCTURE TO BE VERIFIED TO SUPPORT UPLIFT LOAD.	2.29	2.29	2.29

NOTE : ALL SCREW / BOLT FIXINGS TO BE CLASS 4 FINISH


REFER DRAWINGS 16434-17-SR4K,5K AND 6J FOR DETAILS OF RAILS , HOOKS , CLAMPS , TILT LEGS ETC.

SHEET 2 OF 6

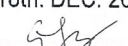
Notes covering basis of DTC ( Relevant test reports etc. )

COMPUTATION SHEETS , PROJECT No. 16434 , SHEETS A1 - A9 ( INCL. )  
PREPARED BY CLIVE STEELE PARTNERS , DATED 28/09/18  
TILT HOOKS TEST REPORT No. MT-18/997-A , DATED 21/09/18  
TILT LEG STRUTS TEST REPORT No. MT-17/906-A , DATED 9/10/17

Design Engineer's Certification :

Name : IAN FLANDERS  
Registration No. EC-1353  
Date : 18th. DEC. 2018  
Signature:   
Registered as a Structural Engineer in Victoria

Certifying Engineer's Certification :

Name : JIANZENG GENG  
Registration No. 239858ES  
Date : 18th. DEC. 2018  
Signature:   
Registered as a Structural Engineer in Northern Territory

Product Name PV - EZ RACK SOLAR ROOF MOUNTING SYSTEM WITH ER-R-ST RAIL. ( CORRUGATED & TRAPEZOIDAL METAL DECK )

Product Description SOLAR PANEL ROOF MOUNTING RACK FOR ( CORRUGATED & TRAPEZOIDAL METAL DECK )

Manufacturers Name

**Clenergy**

1/10 DUERDIN STREET , CLAYTON VIC 3168

Design Criteria

- 15 kg/m2 MAX. SOLAR PANEL WEIGHT.
- AS/NZS.1170.2 - 2011 ( REC 2016 )  
ARI = 500  
CATEGORY 2 , VARIOUS WIND REGIONS.  
Ms = 1.0  
Mt = 1.0
- IMPORTANCE LEVEL 2
- VARIES FOR HEIGHTS UP TO 20 metres
- C fig = -1.7 OR +0.8

Limitations ROOF STRUCTURE TO BE CHECKED AND CERTIFIED BY A NORTHERN TERRITORY REGISTERED STRUCTURAL ENGINEER AS SUITABLE FOR APPLIED BRACKET UPLIFT LOADS. SOLAR PANELS TO BE STRUCTURALLY CERTIFIED AS ABLE TO RESIST WIND LOADS IN ACCORDANCE WITH AS/NZS. 1170.2 - 2011. NOT SUITABLE FOR TRAY TYPE DECK PROFILES WHERE CREST WIDTH LESS THAN 20 mm.

CLIVE STEELE PARTNERS PTY LTD  
CONSULTING ENGINEERS - STRUCTURAL & CIVIL

**CSP**

BUILDING 6  
62/195 WELLINGTON ROAD  
CLAYTON, VICTORIA  
AUSTRALIA. 3168  
Telephone (03) 9545 0223  
Facsimile (03) 9545 3022  
Email csp@clivesteele.com.au  
A.C.N. 005 363 735 A.B.N. 92 627 427 761

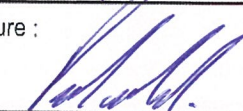
DRG. No. 16434-17-SR2P.

Accepted for Inclusion

DTCM ref:

M/577/02

Chairman's Signature :



Chairman's Name :

Paul Nowland

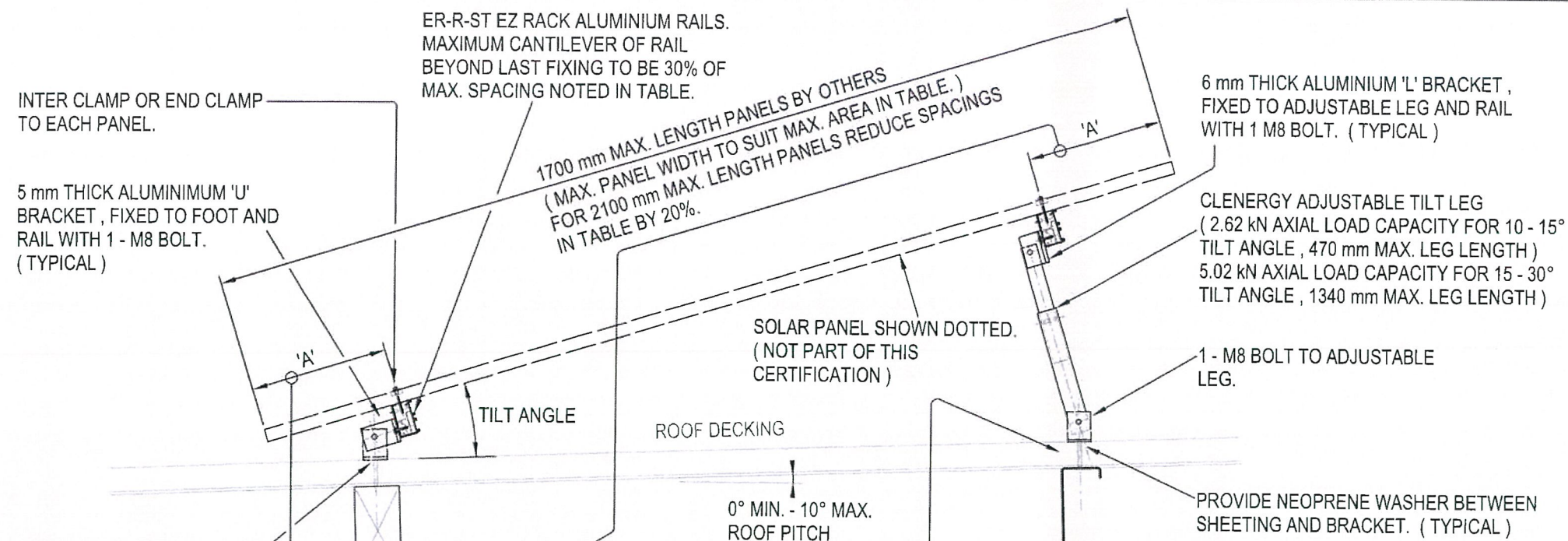
Date of Approval :

25-01-2019

Expiry Date :

25-01-2020





PROVIDE NEOPRENE WASHER BETWEEN SHEETING AND BRACKET. ( TYPICAL )

NOTE : DIMENSION 'A' TO BE THE SAME EACH END OF PANEL AND UP TO 450 mm MAX. DEPENDING ON SOLAR PANEL MANUFACTURER'S RECOMMENDATIONS.

8 mm THICK ALUMINIUM SHAPED FIX FOOT BRACKET. ( OR CORRUGATED ADAPTER. FOR CUSTOM ORB ONLY ) FIXED TO PURLINS WITH 2 x 12 GAUGE ( 5.6 mm MIN. DIAMETER , 14 THREADS PER INCH FOR FIXING TO THIN STEEL , 10 THREADS PER INCH FOR FIXING TO TIMBER ) SCREWS THROUGH 0.55 mm MIN. THICKNESS ( B.M.T. ) OF STEEL OR 35 mm MIN. EMBEDMENT INTO TIMBER. REFER SCHEDULE FOR SPACINGS. BRACKETS TO BE FIXED THROUGH CRESTS OF ROOF SHEETS. ( REFER ALTERNATIVE DETAIL BELOW )

MT RAIL PACKING IF REQUIRED x LENGTH TO ENABLE 2No. FIXINGS THROUGH CRESTS OF SHEETS TO PURLINS UNDER.

PROVIDE NEOPRENE WASHER BETWEEN SHEETING AND BRACKET. ( TYPICAL )

TIMBER OR STEEL PURLIN.

VIEW 'A'

MAXIMUM FIXING SPACINGS ALONG LENGTH OF ALUMINIUM RAILS. ( mm ) ( INTERPOLATION ALLOWED ) WIND REGION TO AS/NZS.1170.2 - 2011

#### 10 - 15° TILT LEGS

WIND REGION	A	B	C
MAX. AREA OF ONE PANEL	2.75 m <sup>2</sup>	2.75 m <sup>2</sup>	1.9 m <sup>2</sup>
UP TO 5 m	1240	770	530
UP TO 10 m	1130	700	480
UP TO 15 m	1075	665	455
UP TO 20 m	1020	630	430
MAX. ULTIMATE UPLIFT PER FIXING BRACKET ( kN ) EXISTING ROOF STRUCTURE TO BE VERIFIED TO SUPPORT UPLIFT LOAD.	1.98	1.98	1.98

## CORRUGATED OR TRAPEZOIDAL METAL DECK ROOF INSTALLATION ONLY

( CUSTOM ORB TRIMDECK OR SPANDEK OR SIMILAR PROFILES )

( CLENERGY PV - EZ RACK SOLAR ROOF )

15kg/m<sup>2</sup> MAX. WEIGHT SOLAR PANELS ( SCALE 1:10 )

### ALTERNATIVE ROOF FIXING DETAIL WHERE SHEETING CRESTS DO NOT MATCH FOOT BRACKET FIXING HOLES.

NOTE : ALL SCREW / BOLT FIXINGS TO BE CLASS 4 FINISH

REFER DRAWINGS 16434-17-SR4K,5K AND 6J FOR DETAILS OF RAILS , HOOKS , CLAMPS , TILT LEGS ETC.

Notes covering basis of DTC ( Relevant test reports etc. )

COMPUTATION SHEETS , PROJECT No. 16434 , SHEETS A1 - A9 ( INCL. )  
PREPARED BY CLIVE STEELE PARTNERS , DATED 28/09/18  
TILE HOOKS TEST REPORT No. MT-18/997-A , DATED 21/09/18  
TILT LEG STRUTS TEST REPORT No. MT-17/906-A , DATED 9/10/17

Design Engineer's Certification :

Name : IAN FLANDERS  
Registration No. EC-1353  
Date : 18th. DEC. 2018  
Signature: *[Signature]*  
Registered as a Structural Engineer in Victoria

Certifying Engineer's Certification :

Name : JIANZENG GENG  
Registration No. 239858ES  
Date : 18th. DEC. 2018  
Signature: *[Signature]*  
Registered as a Structural Engineer in Northern Territory

Product Name PV - EZ RACK SOLAR ROOF MOUNTING SYSTEM ER-R-ST RAIL. TILT LEGS. ( CORRUGATED OR TRAPEZOIDAL METAL DECK )

Product Description SOLAR PANEL ROOF MOUNTING RACK FOR CORRUGATED ROOFS

Manufacturers Name

**Clenergy**

1/10 DUERDIN STREET , CLAYTON VIC. 3168

Design Criteria

- 15 kg/m<sup>2</sup> MAX. SOLAR PANEL WEIGHT.
- AS/NZS.1170.2 - 2011 ( REC 2016 )  
ARI = 500  
CATEGORY 2 , VARIOUS WIND REGIONS.  
Ms = 1.0  
Mt = 1.0
- IMPORTANCE LEVEL 2
- VARIES FOR HEIGHTS UP TO 20 metres
- C fig = -1.7 min. , -2.7 max.

Limitations

ROOF STRUCTURE TO BE CHECKED AND CERTIFIED BY A NORTHERN TERRITORY REGISTERED STRUCTURAL ENGINEER AS SUITABLE FOR APPLIED BRACKET UPLIFT LOADS. SOLAR PANELS TO BE STRUCTURALLY CERTIFIED AS ABLE TO RESIST WIND LOADS IN ACCORDANCE WITH AS/NZS. 1170.2 - 2011 APPLICABLE TO CUSTOM ORB, TRIMDEK OR SPANDEK OR SIMILAR SHEETING PROFILES

CLIVE STEELE PARTNERS PTY LTD  
CONSULTING ENGINEERS - STRUCTURAL & CIVIL

**CSP**

BUILDING 6  
62/195 WELLINGTON ROAD  
CLAYTON, VICTORIA  
AUSTRALIA. 3168  
Telephone (03) 9545 0223  
Facsimile (03) 9545 3022  
Email csp@clivesteele.com.au  
A.C.N. 005 363 735 A.B.N. 92 627 427 761

DRG. No. 16434-17-SR3P.

Accepted for Inclusion

DTCM ref:

4/577/03

Chairman's Signature :

Chairman's Name : *Paul Nowland*

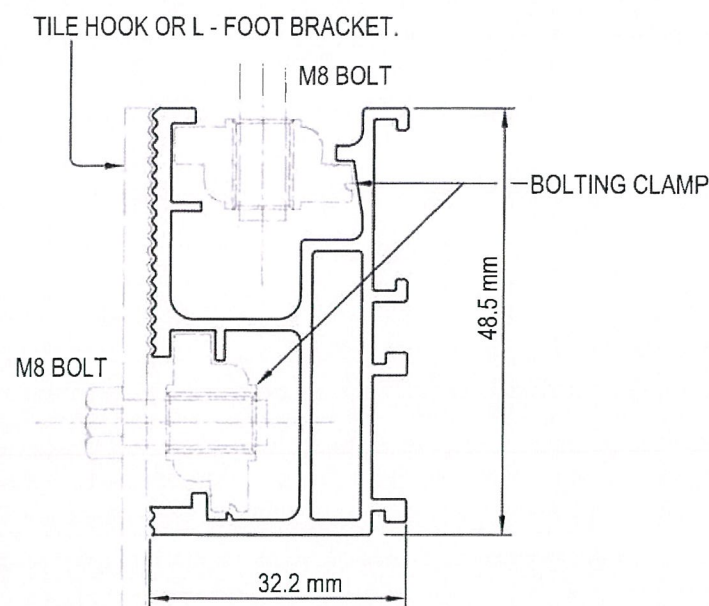
Date of Approval :

25-01-2019

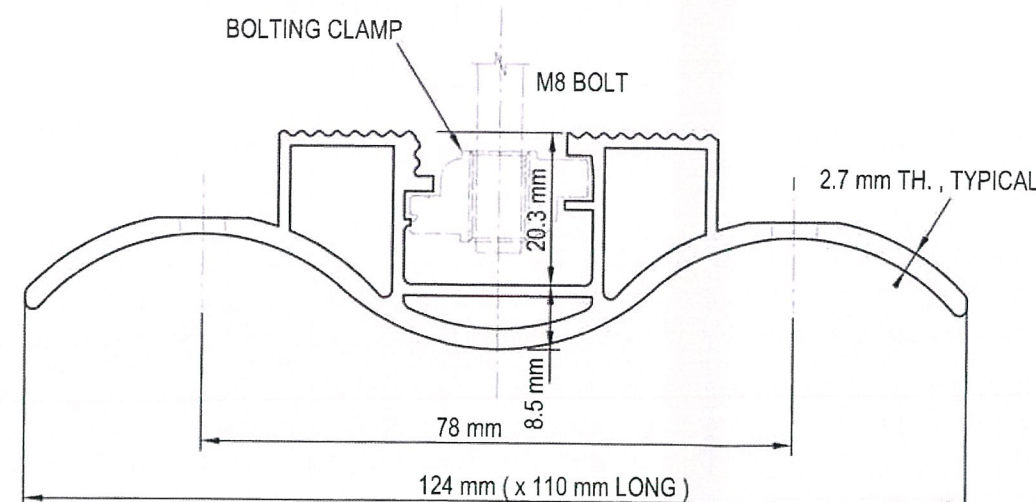
Expiry Date :

25-01-2024



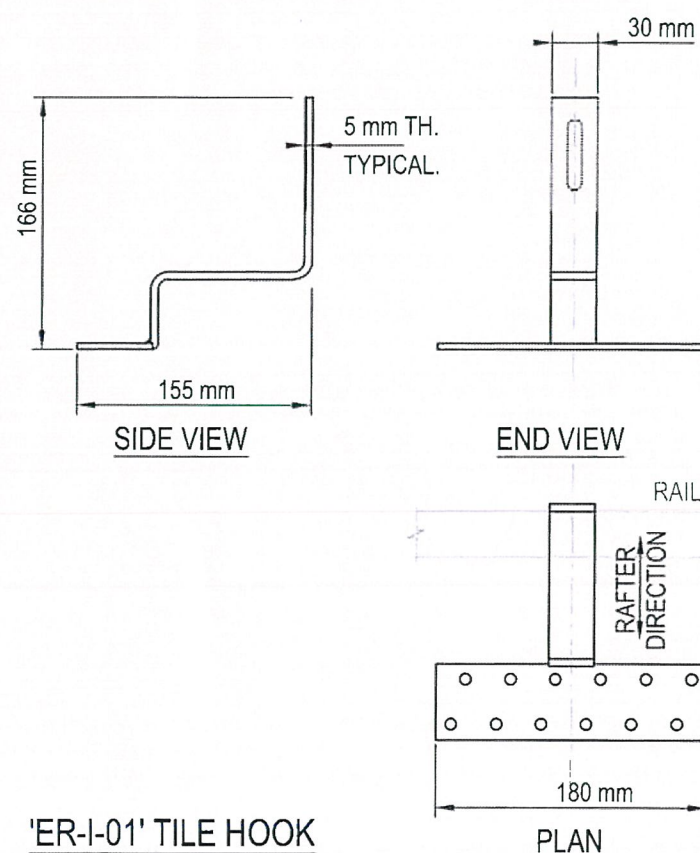


**'ER-R-ST' EZ RACK ALUMINIUM RAILS.**  
GRADE 6005-T5 ALUMINIUM  
( SCALE 1:1 )

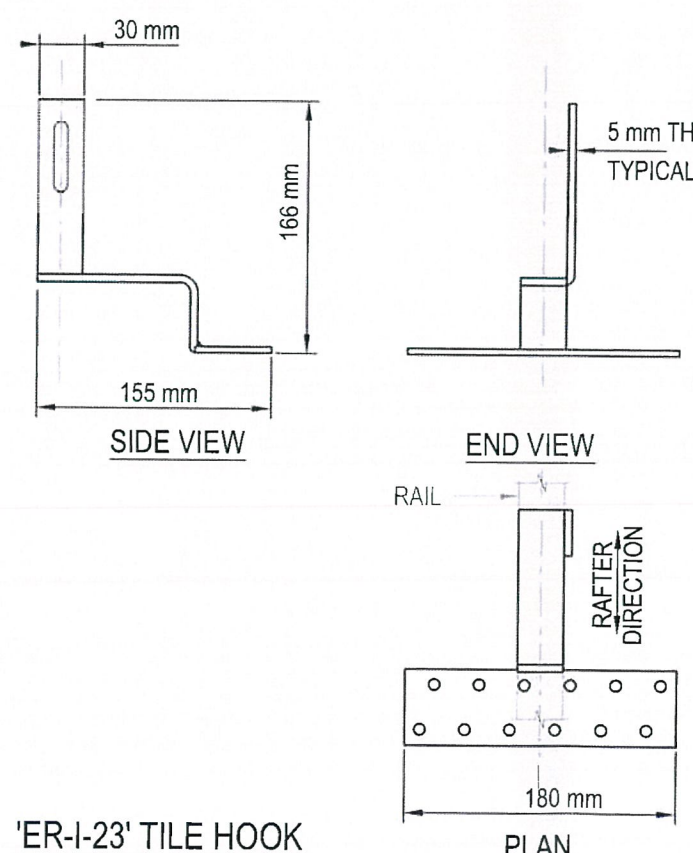


**'EZ-AD-C110' CORRUGATED ADAPTER**  
GRADE 6005-T5 ALUMINIUM  
( SCALE 1:1 )

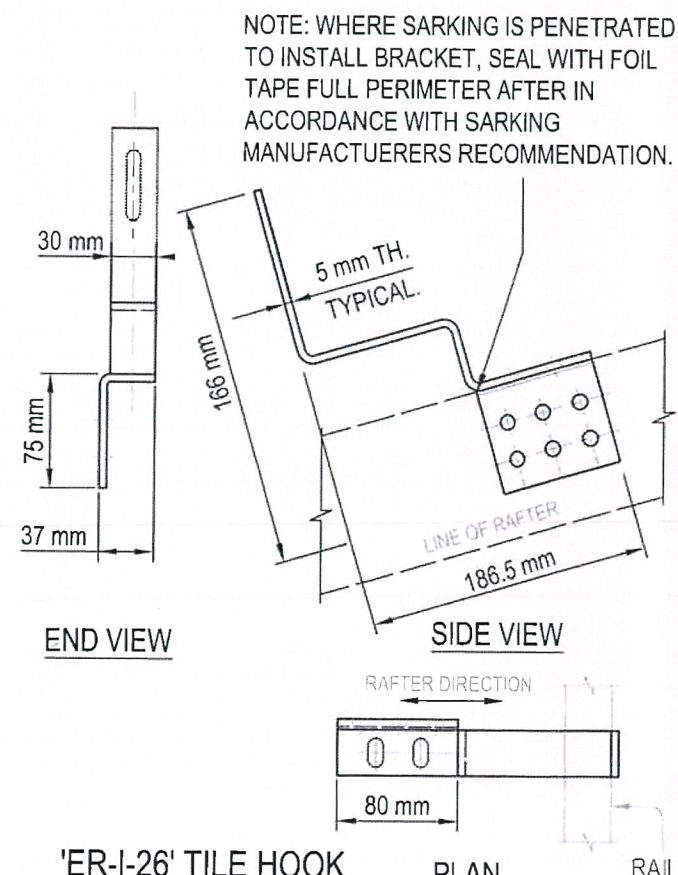
**'EZ-Z-ST' BOLTING CLAMP FOR FIXING**  
OF 'ER-R-ST EZ' RAIL TO BRACKETS  
GRADE 6005-T5 ALUMINIUM  
( SCALE 1:1 )



**'ER-I-01' TILE HOOK**  
DETAILS ( TYPE 1 )  
GRADE 304 MIN. STAINLESS STEEL  
( SCALE 1:5 )  
( USED WHEN RAILS PERPENDICULAR TO RAFTER DIRECTION )



**'ER-I-23' TILE HOOK**  
DETAILS ( TYPE 2 )  
GRADE 304 MIN. STAINLESS STEEL  
( SCALE 1:5 )  
( USED WHEN RAILS PARALLEL TO RAFTER DIRECTION )



**'ER-I-26' TILE HOOK**  
DETAILS ( TYPE 3 )  
GRADE 304 MIN. STAINLESS STEEL  
( SCALE 1:5 ) ( USED WHEN RAILS PERPENDICULAR TO RAFTER DIRECTION )

Product Name **PV - EZ RACK SOLAR ROOF MOUNTING SYSTEM WITH ER-R-ST RAIL.**  
( BRACKET / FIXING DETAILS )

Product Description **SOLAR PANEL ROOF MOUNTING RACK.**

Manufacturers Name

**Clenergy**

1/10 DUERDIN STREET, CLAYTON VIC. 3168

Design Criteria

REFER TO RACK DRAWINGS  
16434-17-SR1P, SR2P AND SR3P  
FOR DESIGN CRITERIA AND  
GENERAL ARRANGEMENTS.

Limitations

REFER TO RACK DRAWINGS  
16434-17-SR1P, SR2P AND SR3P  
FOR DESIGN CRITERIA AND  
GENERAL ARRANGEMENTS.

**CLIVE STEELE PARTNERS PTY LTD**  
CONSULTING ENGINEERS - STRUCTURAL & CIVIL

**CSP**

BUILDING 6  
62/195 WELLINGTON ROAD  
CLAYTON, VICTORIA  
AUSTRALIA. 3168  
Telephone (03) 9545 0223  
Facsimile (03) 9545 3022  
Email csp@clivesteele.com.au  
A.C.N. 005 363 735 A.B.N. 92 627 427 761

DRG. No. 16434-17-SR4K

Accepted for Inclusion

DTCM ref:

M/577/04

Chairman's Signature :

Chairman's Name :

Paul Nowland

Date of Approval :

Expiry Date :

25-01-2019

25-01-2024

Notes covering basis of DTC ( Relevant test reports etc. )

COMPUTATION SHEETS, PROJECT No. 16434, SHEETS A1 - A9 ( INCL. )  
PREPARED BY CLIVE STEELE PARTNERS, DATED 28/09/18  
TILE HOOKS TEST REPORT No. MT-18/997-A, DATED 21/09/18  
TILT LEG STRUTS TEST REPORT No. MT-17/906-A, DATED 9/10/17

Design Engineer's Certification :

Name : IAN FLANDERS  
Registration No. EC-1353  
Date : 18th. DEC. 2018  
Signature : *[Signature]*  
Registered as a Structural Engineer in Victoria

Certifying Engineer's Certification :

Name : JIANZENG GENG  
Registration No. 239858ES  
Date : 18th. DEC. 2018  
Signature : *[Signature]*  
Registered as a Structural Engineer in Northern Territory

SHEET 4 OF 6



4 mm THICK STAINLESS STEEL  
(GRADE 304 MIN.)  
WASHER TAPPED FOR M8 BOLT.

22 mm

40 mm

2.8 mm

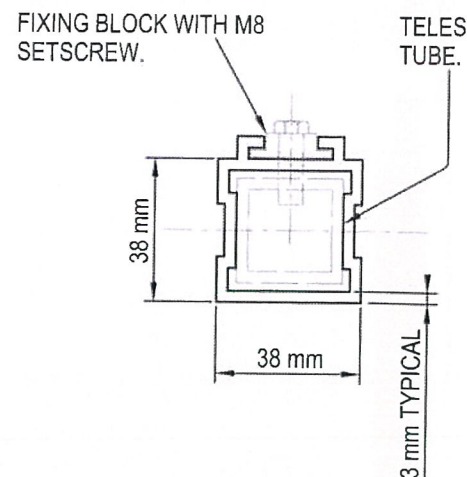
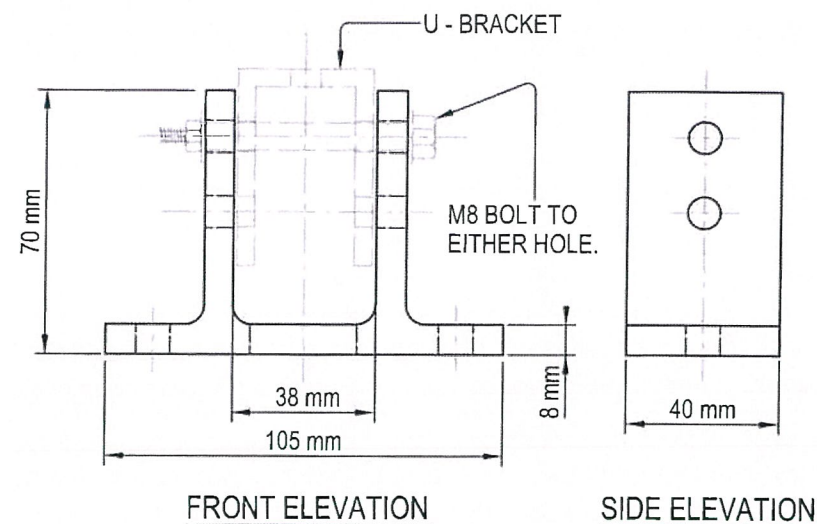
1.8 mm

40 mm

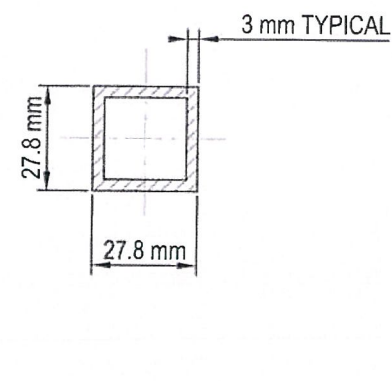
SHEET 5 OF 6

Date of Approval:	25-01-2019	Expiry Date:	25-01-2024
-------------------	------------	--------------	------------

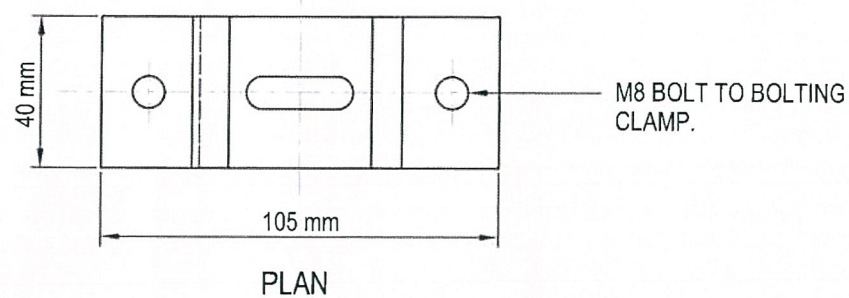




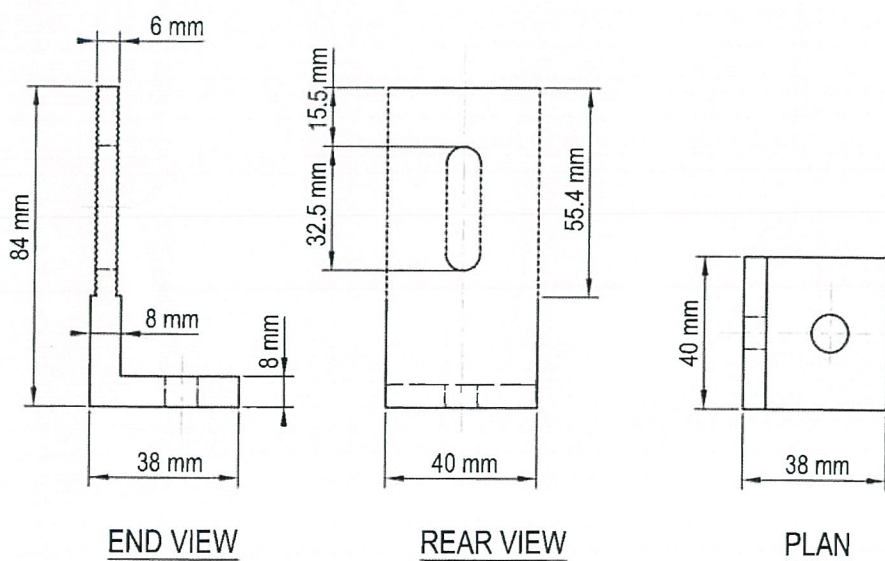
**TILT LEG STRUT**  
GRADE 6005-T5 ALUMINIUM  
( SCALE 1:2 )



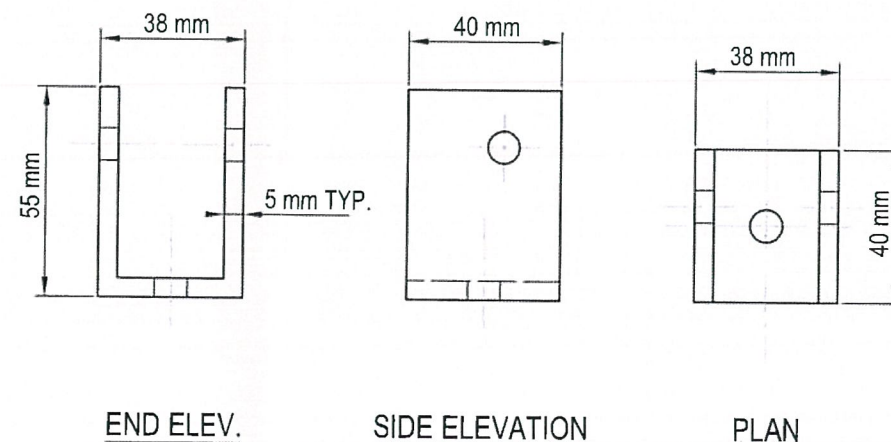
**TILT LEG TUBE**  
GRADE 6005-T5 ALUMINIUM  
( SCALE 1:2 )



**'ER-TL' FIX - FOOT BRACKET DETAIL**  
GRADE 6005-T5 ALUMINIUM  
( SCALE 1:2 )



**'ER-I-05' L-FOOT BRACKET DETAIL**  
GRADE 6005-T5 ALUMINIUM  
( SCALE 1:2 )



**'U' BRACKET DETAIL**  
GRADE 6005-T5 ALUMINIUM  
( SCALE 1:2 )

SHEET 6 OF 6

Product Name **PV - EZ RACK SOLAR ROOF MOUNTING SYSTEM WITH ER-R-ST RAIL.**  
( BRACKET / FIXING DETAILS )

Product Description **SOLAR PANEL ROOF MOUNTING RACK FOR CORRUGATED ROOFS**

Manufacturers Name

**Clenergy**

1/10 DUERDIN STREET , CLAYTON VIC. 3168

Design Criteria

REFER TO RACK DRAWINGS  
16434-17-SR1P , SR2P AND SR3P  
FOR DESIGN CRITERIA AND  
GENERAL ARRANGEMENTS.

Limitations

REFER TO RACK DRAWINGS  
16434-17-SR1P , SR2P AND SR3P  
FOR DESIGN CRITERIA AND  
GENERAL ARRANGEMENTS.

**CLIVE STEELE PARTNERS PTY LTD**  
CONSULTING ENGINEERS - STRUCTURAL & CIVIL

**CSP**

BUILDING 6  
62/195 WELLINGTON ROAD  
CLAYTON, VICTORIA  
AUSTRALIA. 3168  
Telephone (03) 9545 0223  
Facsimile (03) 9545 3022  
Email csp@clivesteele.com.au  
A.C.N. 005 363 735 A.B.N. 92 627 427 761

DRG. No. 16434-17-SR6J

Accepted for Inclusion

DTCM ref:

M/577/06

Chairman's Signature :

*Paul Nowland*

Chairman's Name :

*Paul Nowland*

Date of Approval :

Expiry Date :

25-01-2019 25-01-2024

Notes covering basis of DTC ( Relevant test reports etc. )

COMPUTATION SHEETS , PROJECT No. 16434 , SHEETS A1 - A9 ( INCL. )  
PREPARED BY CLIVE STEELE PARTNERS , DATED 28/09/18  
TILE HOOKS TEST REPORT No. MT-18/997-A , DATED 21/09/18  
TILT LEG STRUTS TEST REPORT No. MT-17/906-A , DATED 9/10/17

Design Engineer's Certification :

Name : IAN FLANDERS  
Registration No. EC-1353  
Date : 18th. DEC. 2018  
Signature: *Ian Flanders*  
Registered as a Structural Engineer in Victoria

Certifying Engineer's Certification :

Name : JIANZENG GENG  
Registration No. 239858ES  
Date : 18th. DEC. 2018  
Signature: *Jianzeng Geng*  
Registered as a Structural Engineer in Northern Territory