

Optimast

a new name in dynamic passive
safety products from the UK's
most experienced provider



Optimast tested and approved to BS EN12767 at MIRA 28.6.12 (Achieved highest result; 100, NE, 3)

FROM SignPost
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Optimast

- A new passive sign mast range from the SignPost Solutions team
- Recyclable aluminium construction
- Crash tested to EN12767 - achieved highest safety level!
- Standard dimensions - standard clip sizes
- Extensive range for cost effective design

102



127



168



219



244

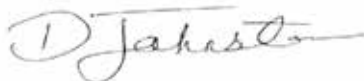


Commercial in Confidence

Test Laboratory	MIRA Ltd
Date of Report	26 th September 2012
Client	Signpost Solutions Ltd
Test Item	Optimast 244 Two Leg Signpost
Date of Test	28 th June 2012
Test Number	L0057
Report Number	1033700-001 Rev 02
Test Type	Vehicle Impact to EN 12767-2007
Number of Pages	27



Prepared By:



Dave Johnstone

Senior Engineer

Approved By:



Alistair Crooks

Head of High Energy Facility

Date

16/10/2012

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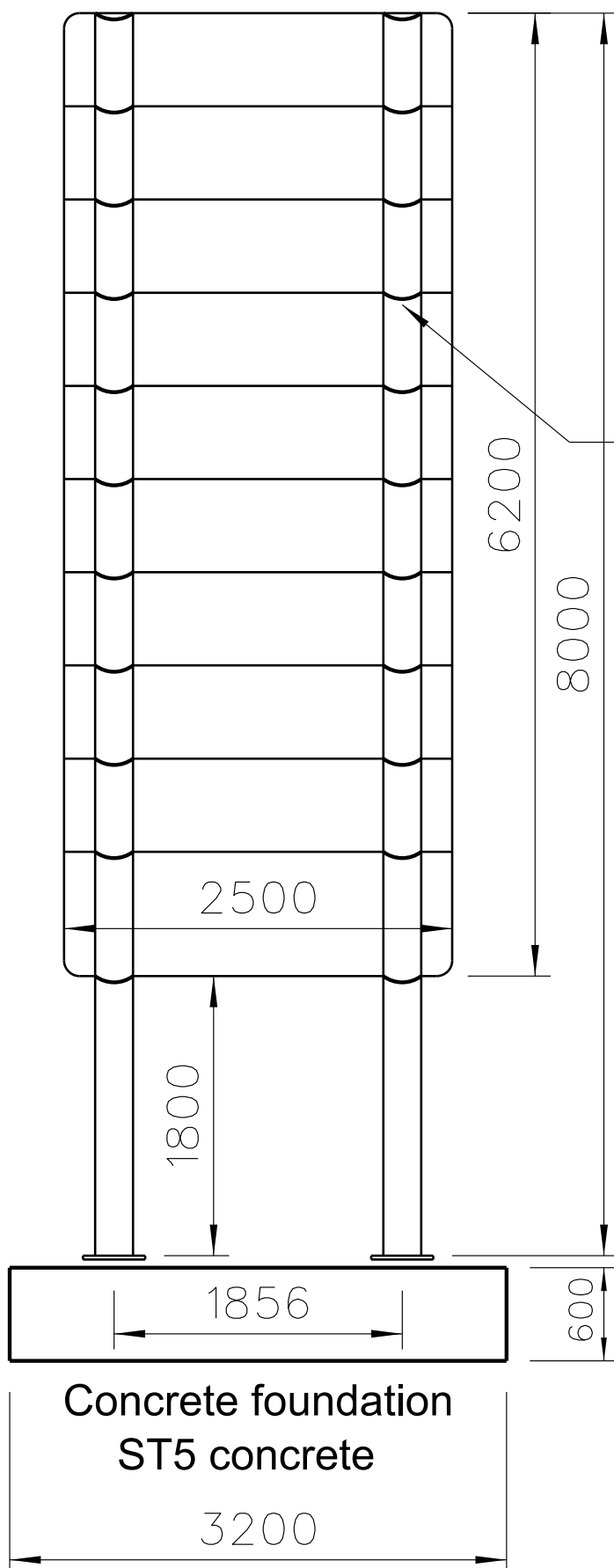
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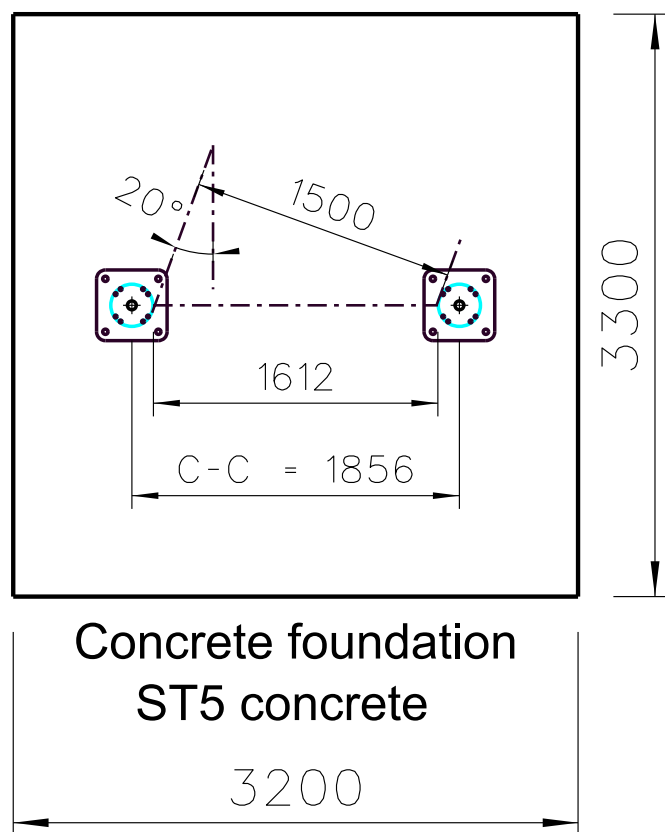
Tests marked "Not UKAS Accredited" in this report are not included in the UKAS Accreditation Schedule for this laboratory. Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation



1105



Fixings:
HDTB244
Heavy Duty 2-Bolt 'D' Clip with Insert



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8 Cherry Close
South Wonston
Winchester
SO21 3HU

Tel 01962 881777
12 October 2012

Jim Gallagher
Highways Agency
Piccadilly Gate,
Store Street,
Manchester,
M1 2WD

Dear Jim

Third Party Review of OPTIMAST 244 crash testing to EN 12767 at MIRA

Signpost Solutions have developed a new product range of passively safe aluminium sign masts, the OPTIMAST range.

They crash tested the largest mast in the range, the OPTIMAST 244, at MIRA in June. Two OPTIMAST 244's supporting a large sign of area 15.5m² were subjected to BSEN 12767 crash tests (at 100 kph and 35 kph).

The MIRA reports (L0057 and L0058) are attached and they conclude the mast is passively safe to the classification 100 NE 3 in BS EN 12767.

Signpost Solutions asked me to review the test reports for the 100 kph and 35 kph tests and associated photographs and video footage.

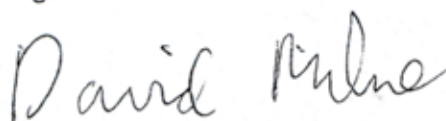
My firm view is the tests have been responsibly and professionally executed and reported. The tests fully support the conclusion that the OPTIMAST 244 is passively safe with an EN12767 classification of 100 NE 3. This safety classification is the best available for such a product.

The OPTIMAST 244 is the largest and strongest of a family of masts (with a diameter of 244 mm). Mast diameters and shear bolt numbers are progressively reduced for the smaller members of the family. The same shear bolts are used across the range. I consider the rating of 100NE 3 is applicable to the full OPTIMAST range as the masts form a family of products in accordance with EN 12767 with the largest and strongest member being successfully crash tested.

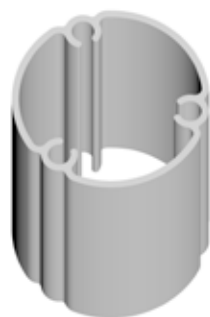
Please advise if you are content with the 100 NE3 rating to BSEN 12767 for the OPTIMAST 244 in particular and the OPTIMAST range in general.

Warm Regards

David Milne



Enclosures: MIRA REPORTS FOR CRASH TESTS L0057 and L0058 (to include video clips and photographs)



Ø102mm



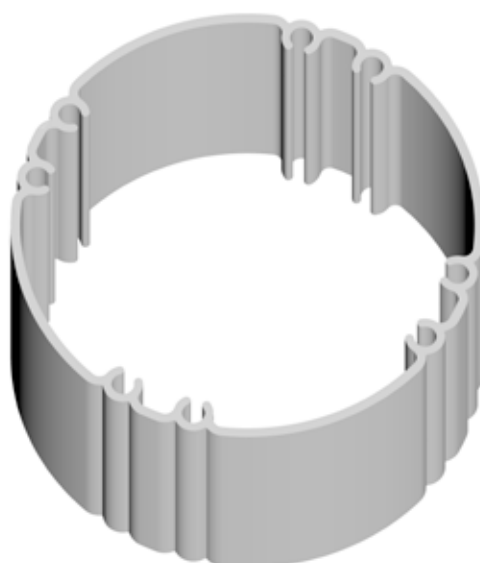
Ø127mm



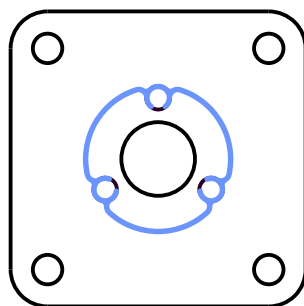
Ø168mm



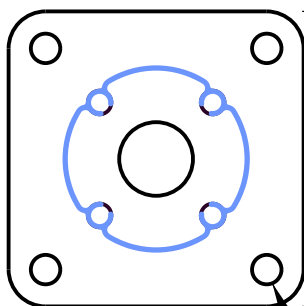
Ø219mm



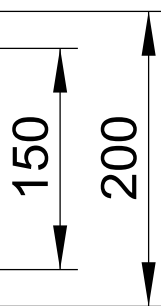
Ø244mm



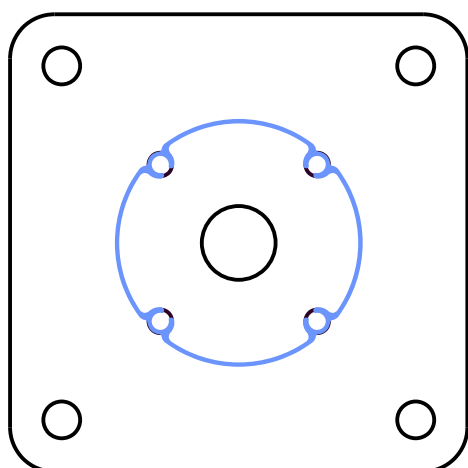
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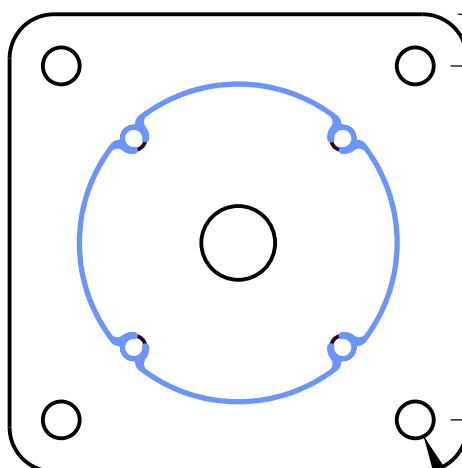
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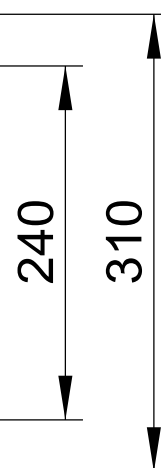
Ø20 to suit
M16 foundation set



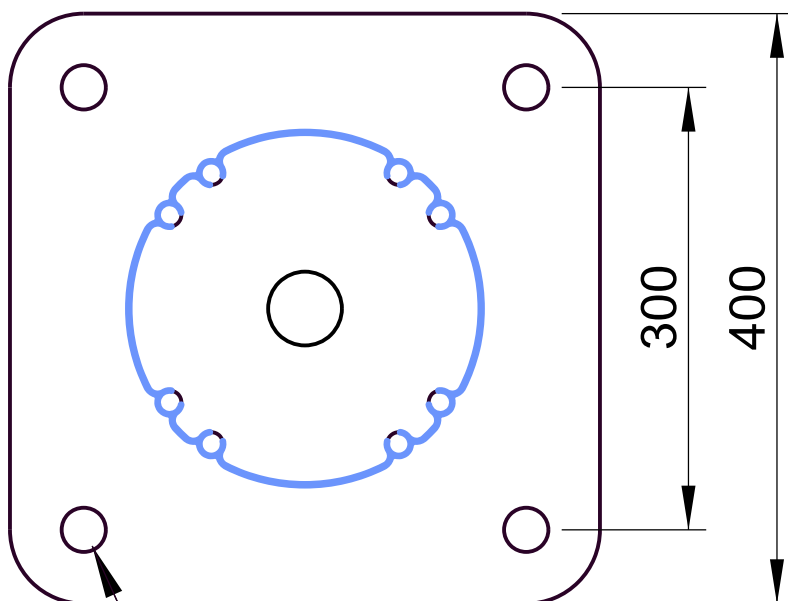
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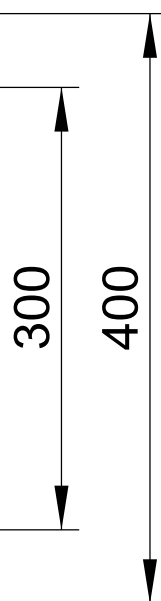
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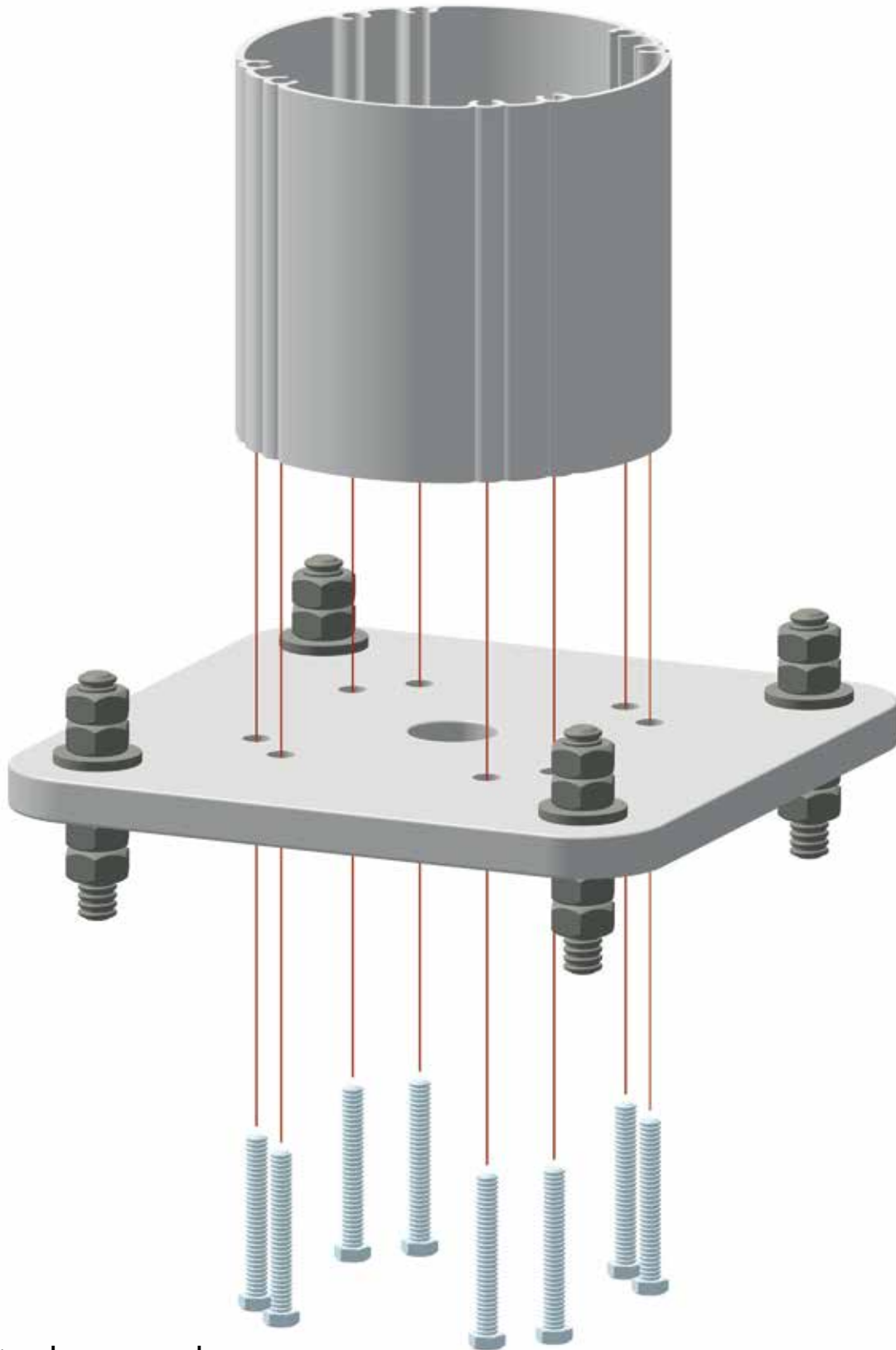
Ø25 to suit
M20 foundation set



244

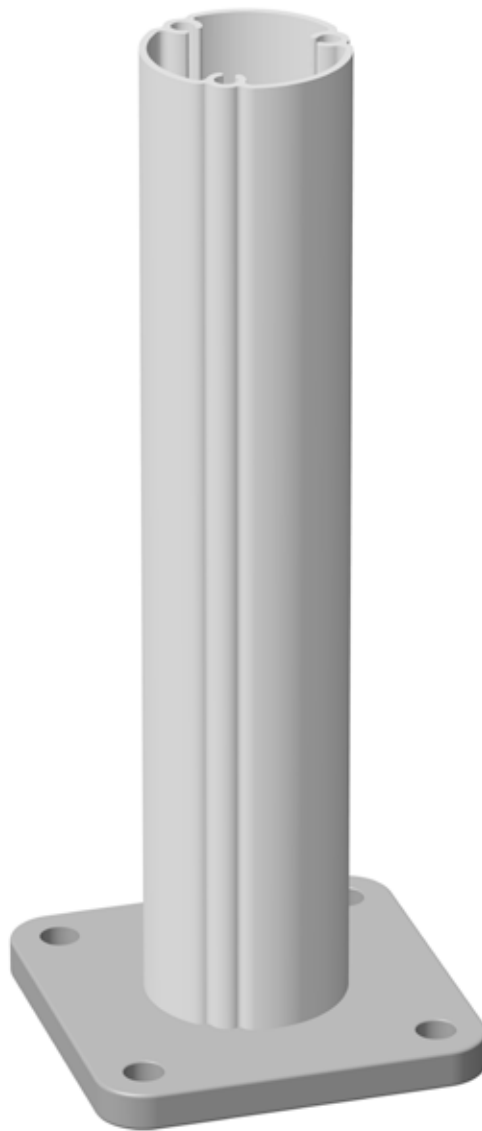


Ø30 to suit
M24 foundation set



Main parts, always used:

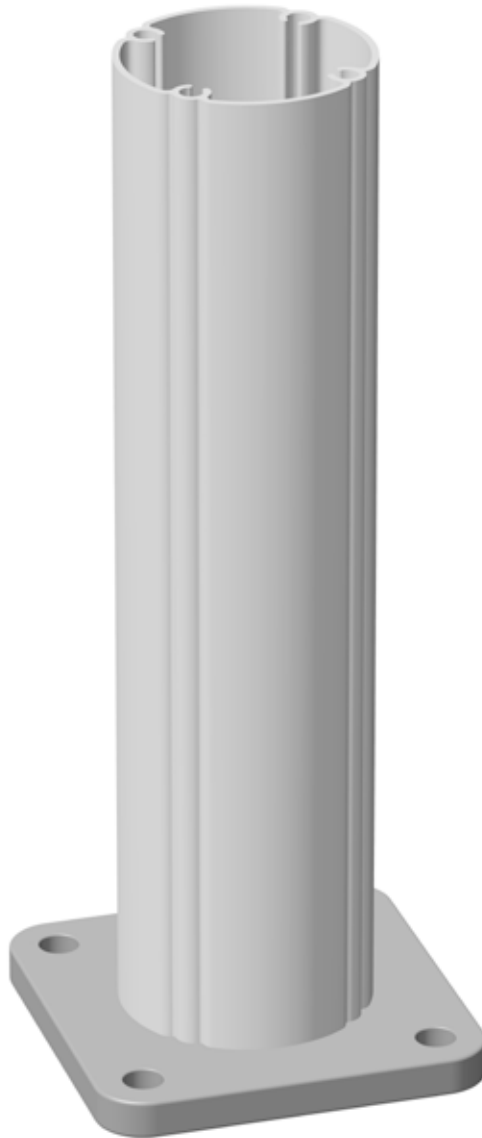
- 1. Mast
 - 2. Shear bolts
 - 3. Base plate
 - 4. Foundation bolts
 - 5. Anchor cradle
- Delivered fully assembled



Diameter: 102mm

Weight: 3,8 kg/m

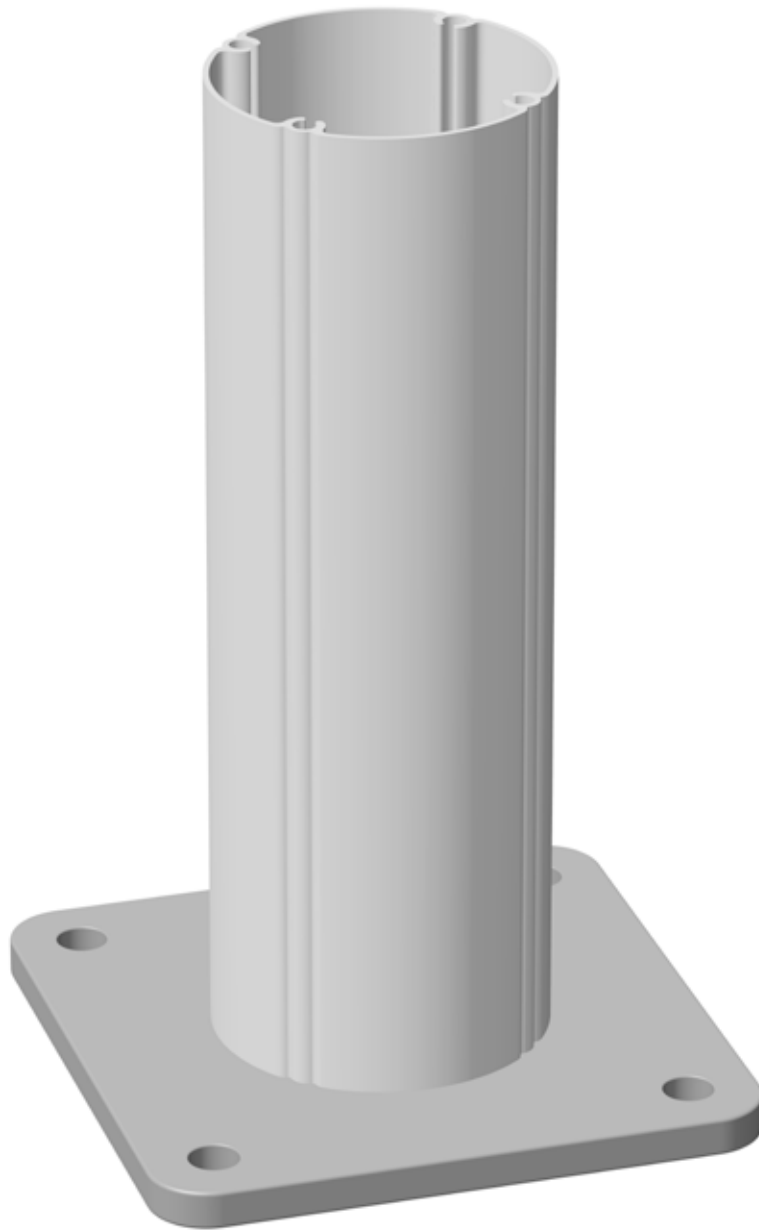
Bending capacity: 7,0 kNm



Diameter: 127mm

Weight: 4,7 kg/m

Bending capacity: 11,1 kNm



Diameter: 168mm

Weight: 5,5 kg/m

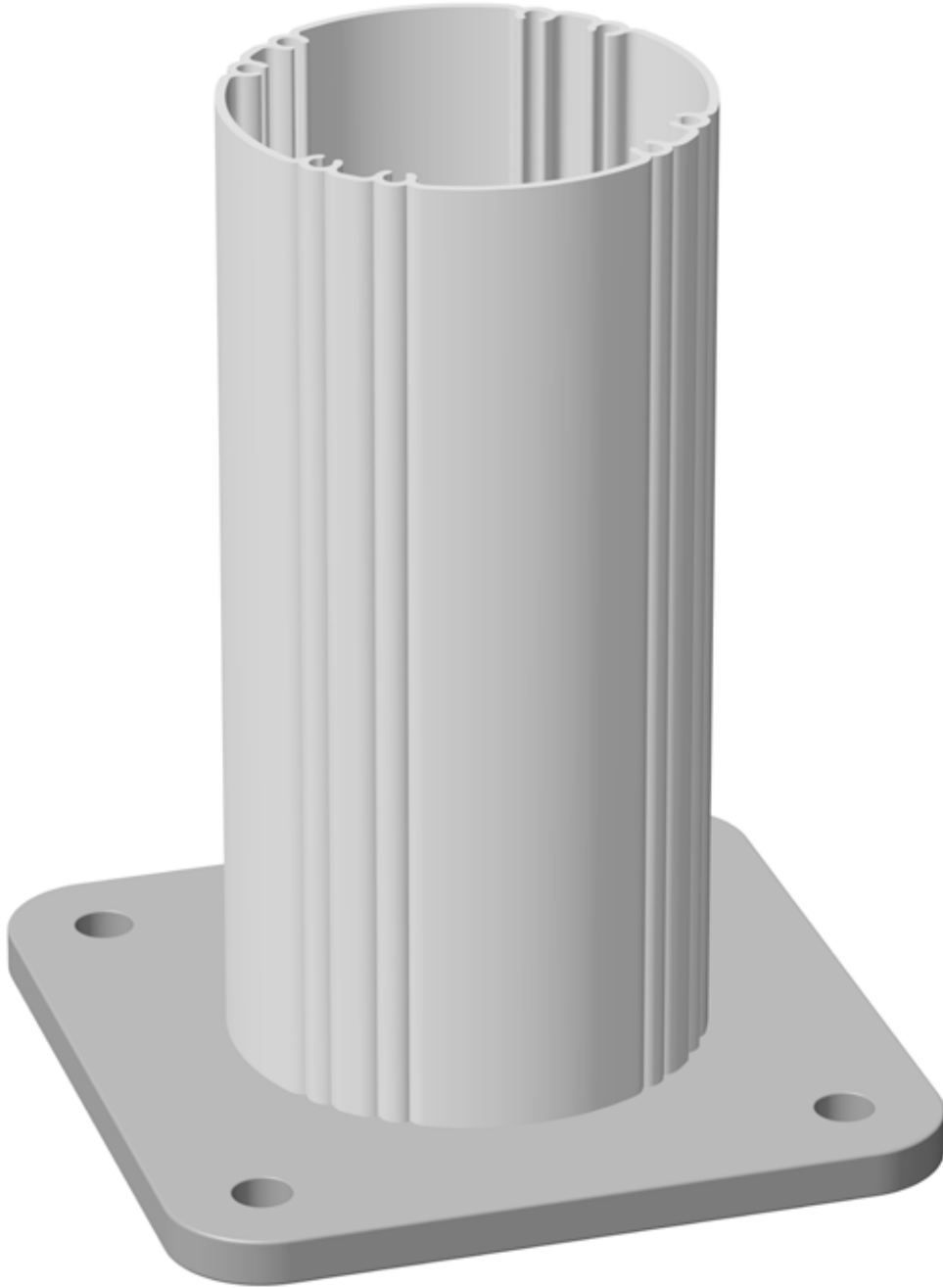
Bending capacity: 17,7 kNm



Diameter: 219mm

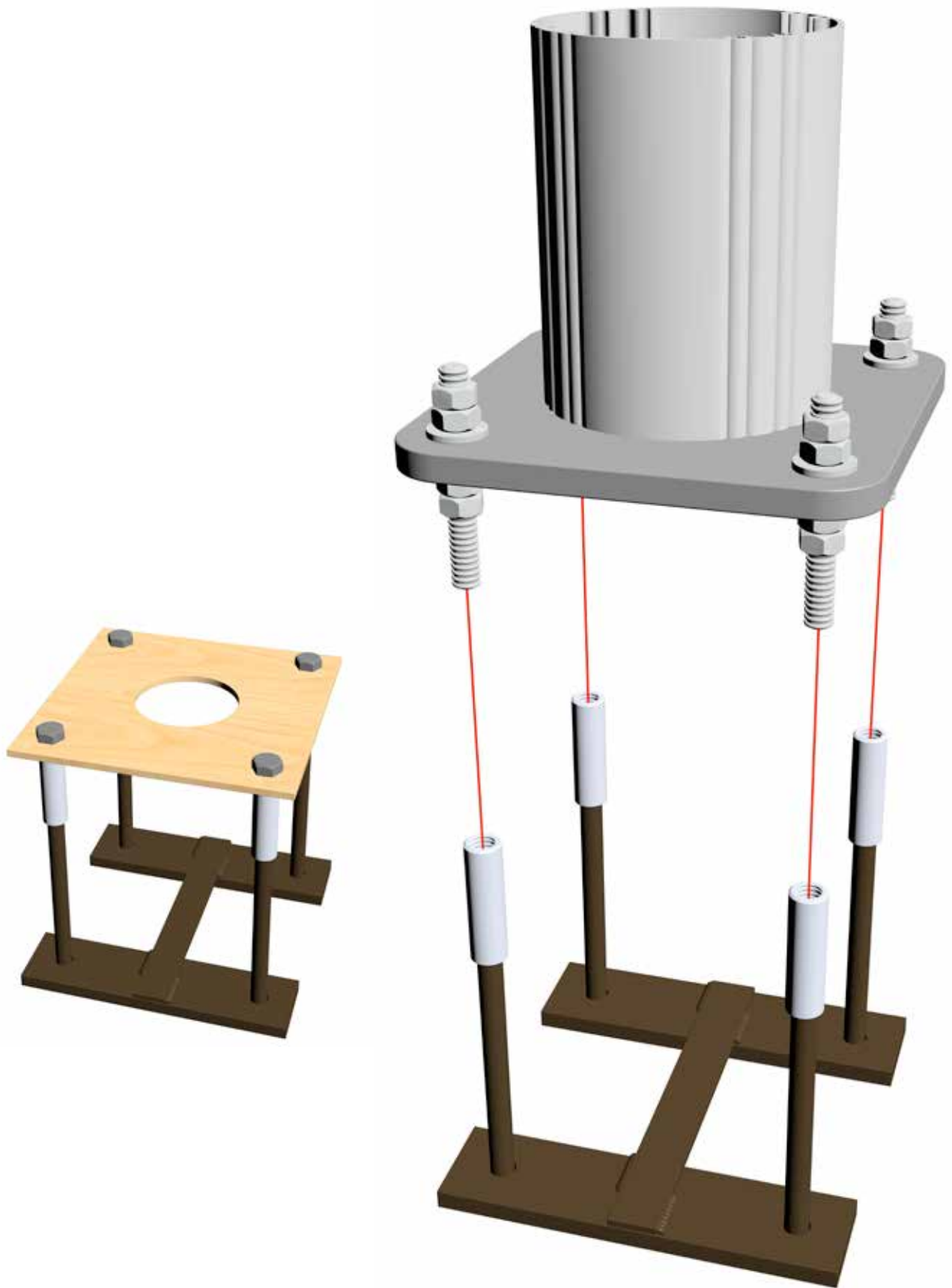
Weight: 8,2 kg/m

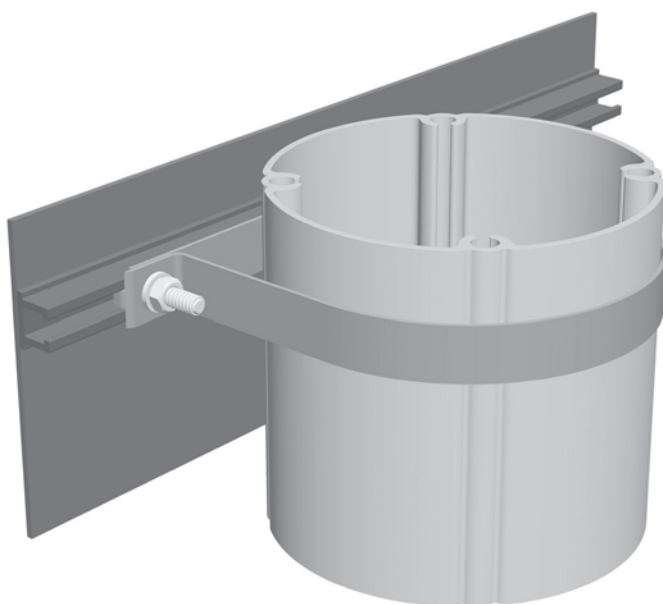
Bending capacity: 32,0 kNm



Diameter: 244mm
Weight: 12,6 kg/m
Bending capacity: 60,0 kNm

Optimast ANCHOR CRADLE





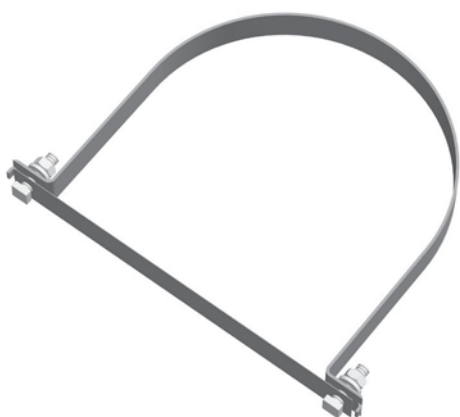
OPTIFIXING102



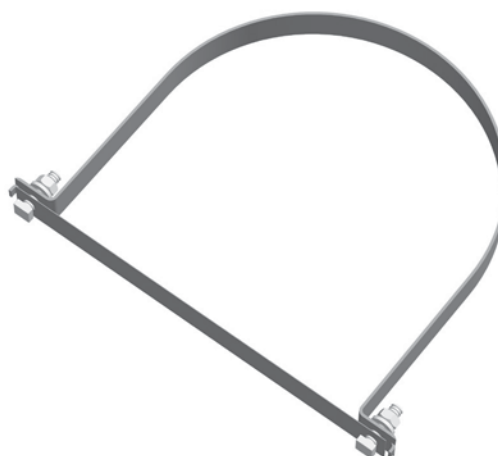
OPTIFIXING127



OPTIFIXING168



OPTIFIXING219



OPTIFIXING244

**Third party reviewed & tested
to prove mast strengths & capacities**



OPTIMAST INSTALLATION METHOD STATEMENT

Groundwork

1. Excavate hole/trench either mechanically or by hand to suitable dimensions.
2. The anchor cradles are to be suspended in the correct plane with the use of wooden battens / shuttering. Care should be given at this stage to ensure that the relative centres of the mast/anchor cradles are maintained & that the anchor cradles are level & upright. Care should also be observed when installing the anchor cradle to ensure that the orientation of the cradle is in the correct plane, relative to the front of the signface. This is particularly important on the triangular mast design, as the sign will not fit to the masts if the anchor is installed incorrectly. All anchor cradle assemblies will be labelled 'Front' as an aid to the site installation team.

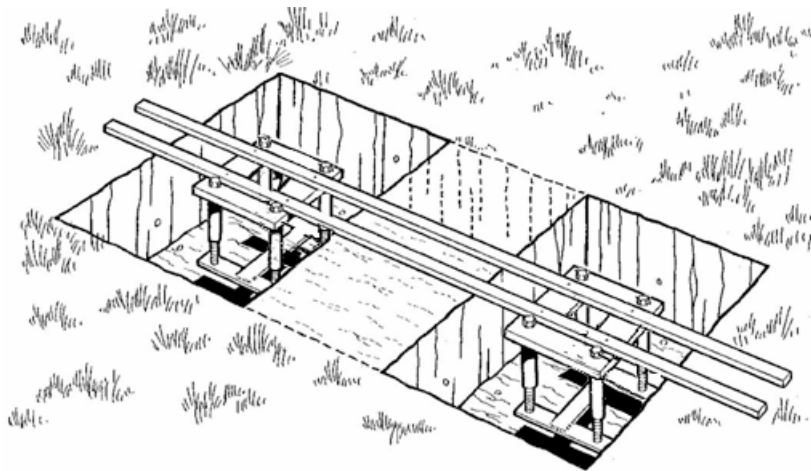


Figure 1 – Installation of Anchor Cradle(s)

Anchor Cradle Assembly Details

The Anchor Cradle Assembly comprises of a pre-fabricated socket type anchor, a wooden 'template' that can be used for shuttering/battening purposes & either 3 or 4, dependent upon mast type, securing bolts. These bolts are used simply as an aid to cast the anchor cradle & as a means of preventing site debris from entering the socket(s). After completion of the ground works, the bolts & wooden template can be disposed of, as they will no longer be required.

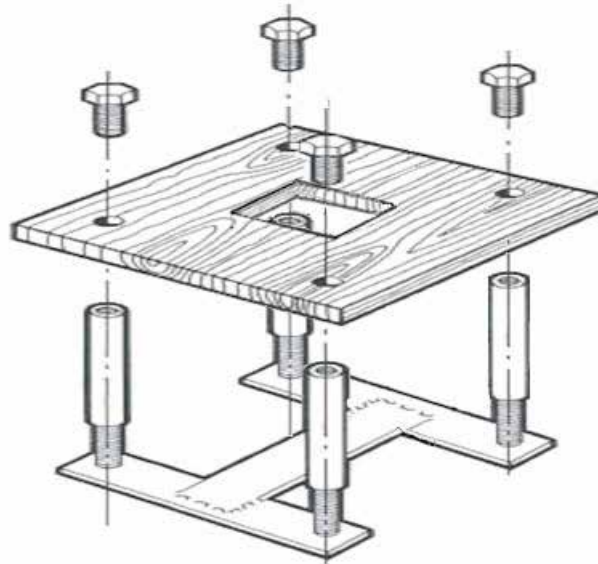


Figure 2

3. Optimast anchor cradles have been designed for use using un-reinforced concrete. However, reinforcement of the foundation **may** be required if a designer determines that the specific size or shape of an individual base requires additional strength.

Concrete Specification

A minimum concrete mix of 25N/mm² (ST5) should be used in all installations. However, a qualified civil engineer should check each individual installation, as a higher strength concrete mix may on occasions be required.

It is recommended that the Optimast baseplate should be installed with the foundation bolts exposed, as this makes removal much easier in the event of replacement. However, if an earth covering of the baseplate is required, the maximum depth of earth coverage should not generally exceed more than 150mm from top of foundation. It is also recommended that when using earth coverage that any exposed threads be protected by Denso Tape or similar to prevent ingress of dirt.

4. Pour concrete until ground level is achieved. **It is vitally important that the concrete is vibrated, or tamped to ensure that all air pockets & voids are removed from the concrete mass.** Failure to undertake this procedure will severely affect the mechanical strength of the foundation & may result in the installation not performing as designed.

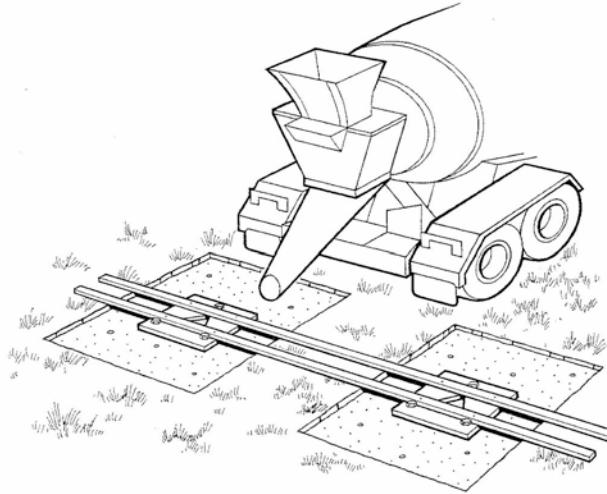


Figure 3 – Pouring of Concrete

5. It is recommended that the concrete is fully cured prior to installation of the Optimast Masts & Signfaces

Foundation Bolt Detail

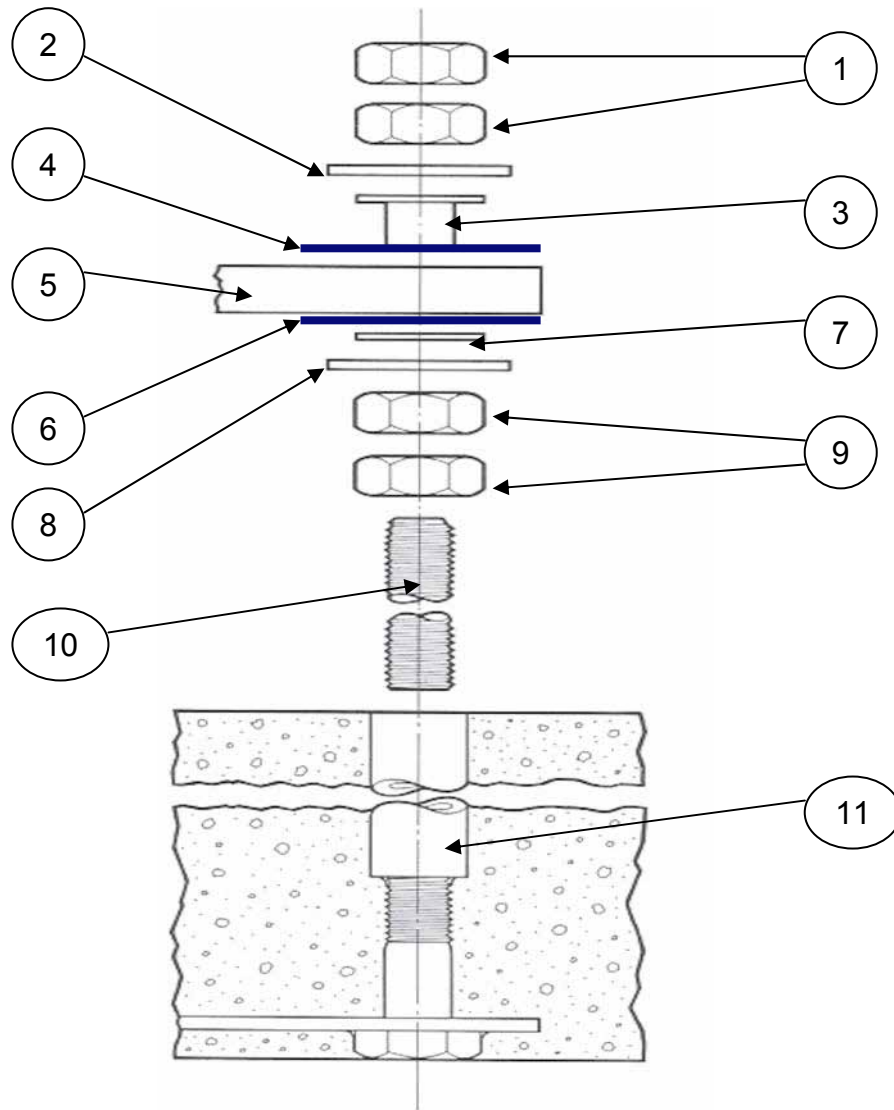


Figure 5 – Foundation Bolt Assembly

KEY

1	Adjustment Nuts
2	Securing Washer(SS)
3	Nylon 'Top-Hat'
4	Galvanised Washer
5	Optimast Base plate (fitted to Mast)
6	Galvanised Washer
7	Nylon Washer
8	Securing Washer(SS)
9	Adjustment Nuts
10	Anchor Stud
11	Anchor Cradle

6. Prior to installation of the mast(s), remove the shuttering, battens, fixing bolts & wooden templates from the foundation. Immediately pack the sockets with a copper based grease to prevent 'cold welding' of the anchor stud. When fitting the anchor stud, it is recommended that the stud is inserted a minimum of 2 x diameter of the stud into the socket ie. M16=32mm Insertion, M20 = 40mm Insertion, M24 = 48mm Insertion, M30 = 60mm Insertion.
7. The base plate is manufactured with large round holes to aid alignment of the mast during installation. It is particularly important to ensure that on multi-mast sign assemblies, the masts are true & plumb, to prevent distortion of the sign panels upon fitment. It is also crucial to follow the Foundation Bolt Assembly as detailed below: -

Prior to erection of the masts, 2 nuts are fitted to the exposed thread. A stainless steel washer is then fitted complete with nylon washer, a larger galvanized washer & then the mast itself. A galvanized washer, a nylon 'top hat' inserted through the washer & base plate, a second stainless steel washer & 2 nuts will then prevent the mast toppling while alignment takes place. The two nuts on either side of the washers are for alignment purposes only, and should be adjusted to ensure that the Optimast(s) are true and upright. The nuts on either side of these aligning nuts are for locking purposes only. Alignment of the masts is easily achieved by utilizing a spirit level, & plumb line. After final tightening, it is advisable that a 'Loctite' Thread Sealant is utilized on the foundation anchorages to prevent any possible loosening of the Locking Nuts.



Figure 6 – Fitting of Optimast(s)

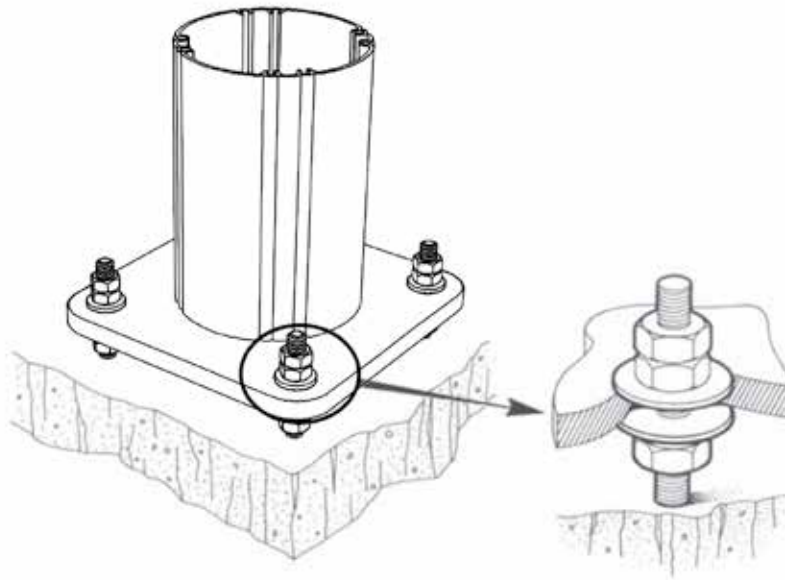


Figure 7 – Foundation Bolt Arrangement

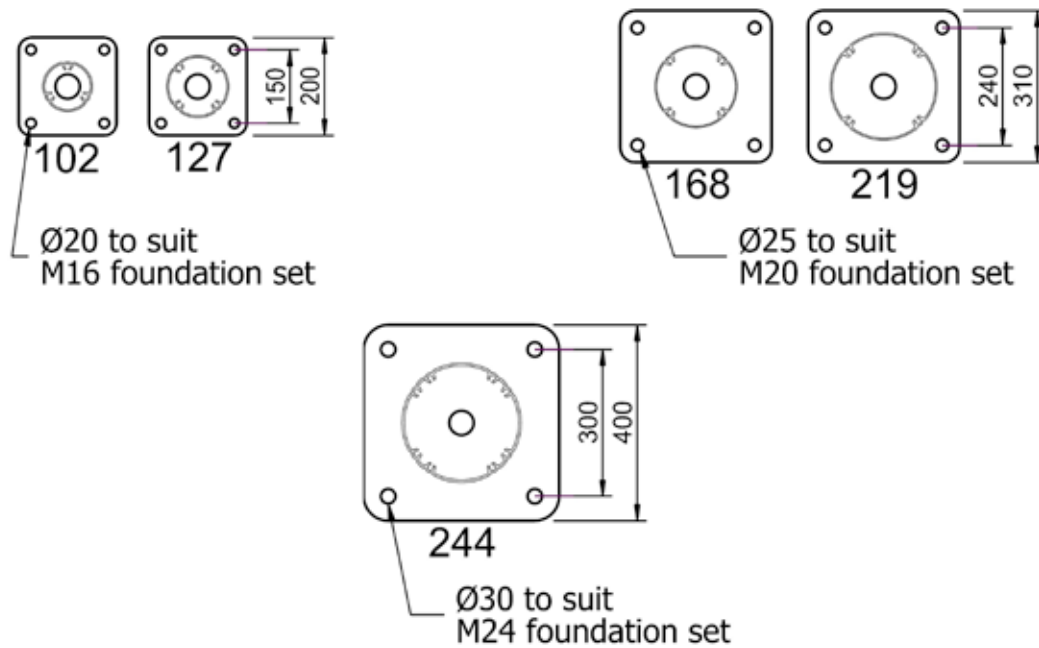


Figure 8 – Optimast Profiles

8. For identification and guidance purposes please note the illustrations above which identify the different Optimast types.

Sign Installation

9. The supplied Optimast clamps, nuts bolts & washers are to be used when erecting the sign. If 'Interlocking' Channels are used on the rear of the sign assembly, Optimast Clamps are to be used on the "Lower" channel position of any joint. For connection of the "Upper" channel to its mating section, Butting Plates are to be used.

When the sign is mounted in the current position, the supplied bolts are to be tightened to the correct torque settings of 18 Nm. (18Nm refers to Signfix channel – please refer to other manufacturers guidelines if alternative channel is used)

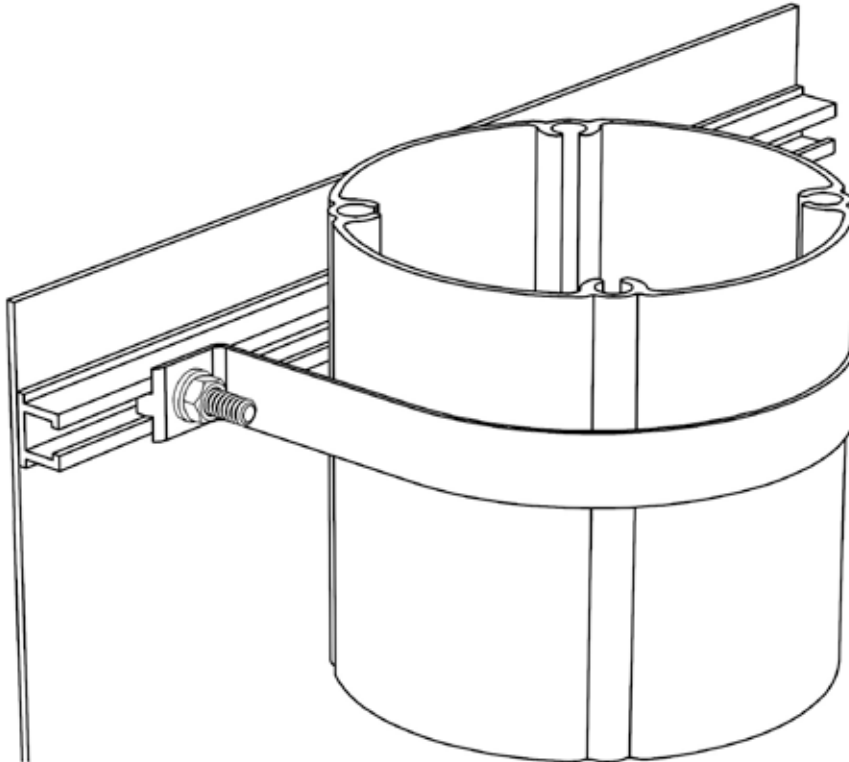


Figure 9, Showing Mast, Clamp & Sign Channel arrangement

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