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NCHRP 350 approved system meets FHWA Breakway Standard.
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Elite Bus Stop Overview

Overview

Patented Bus Stop Information System

- Contemporary ‘Modular’ Design
- Strong, Long Lasting Materials & Anodised Aluminium Finish
- Quality Presentation of Timetable Information
- Quick Release Fittings & Fixings (aids operation & maintenance)
- Robust, Boat Shaped Flag Sign with Quick Release Route Tiles
- No Visible Fixings for Tamperproof & Vandal Resistant Operation
- Post Designed to accept RTPI Power & Communications Cables
- Attractive Weather Resistant Materials (Stainless Steel & Aluminium)
- Solar Power Lighting & Illuminated Timetable Display Options
- Tactile Bumper foot for Visually Impaired & Pushchairs
- Many Safety Features & ADA/Mobility Group Features
- Compliant with all Relevant BSI Structural Standards and Legislation

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Elite Bus Stop Benefits

Design Features - Patented Design - A “Unique” System Protected by International Design Copyright

Industry leading Elite bus stop design – tried & tested performance.

The Elite bus stop is a ‘modular’ system.

It has been specifically designed for use in transit agencies. Thousands of Elite units have been successfully installed throughout the world.

The Elite bus stop has been specifically designed to offer the following marketing, performance, safety and operational benefits:-

Marketing & promotional features & benefits

- High profile tool for the promotion of bus routes and bus services
- High quality information display (day & night – solar power)
- Modern, contemporary design – raising the profile of bus travel
- Provides a 21st century ‘shop window’– the hub or gateway for transport
- The ultimate platform for the promotion of transport corporate identity
- Proven to increase bus usage
- Performance features & benefits (long lasting appearance & functionality)
- Robust, vandal, graffiti and weather resistant materials & finishes, rugged, anodised post, coloured items have special anti-graffiti paint (optional)
- Stainless steel & aluminium construction for long lasting appearance and zero corrosion
- Tamperproof fittings and fixings throughout

Future proofed – technology enabled

- RTPI electronic display flags
- Electronic timetables and touch screen journey planning systems
- Audio information and messaging systems
- Smart card & smart ticketing systems
- Mains power and / or solar power

Compliance with ADA regulations

- Designed in conjunction with disability & access user groups
- Tactile bumper foot for wheelchairs and the visually impaired
- Raised letter ‘B’ on bus stop display for visually impaired

Operational, installation & maintenance features & benefits

- Quick release, fastenings for quick assembly & maintenance
- Lightweight, modular components for fast, safe erection on street
- Wide range of special foundation options to suit all sites
- Vandal resistant, tamperproof fixings

Health & safety benefits

- Solar illumination - provides a safe, welcoming environment
- The Elite stop has no gaps or crevices in which to rest or hide bombs or incendiary devices
- Tactile bumper foot to guard strollers & pushchairs from overhanging timetables
- Structurally engineered, full compliance with required ADA & UK standards

Environmental benefits – Elite solar illumination

- Manufactured from 100% recyclable materials
- Some parts already made from pre-recycled materials
- Energy efficient, environmentally friendly solar energy solution

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Elite Bus Stop Currently installed

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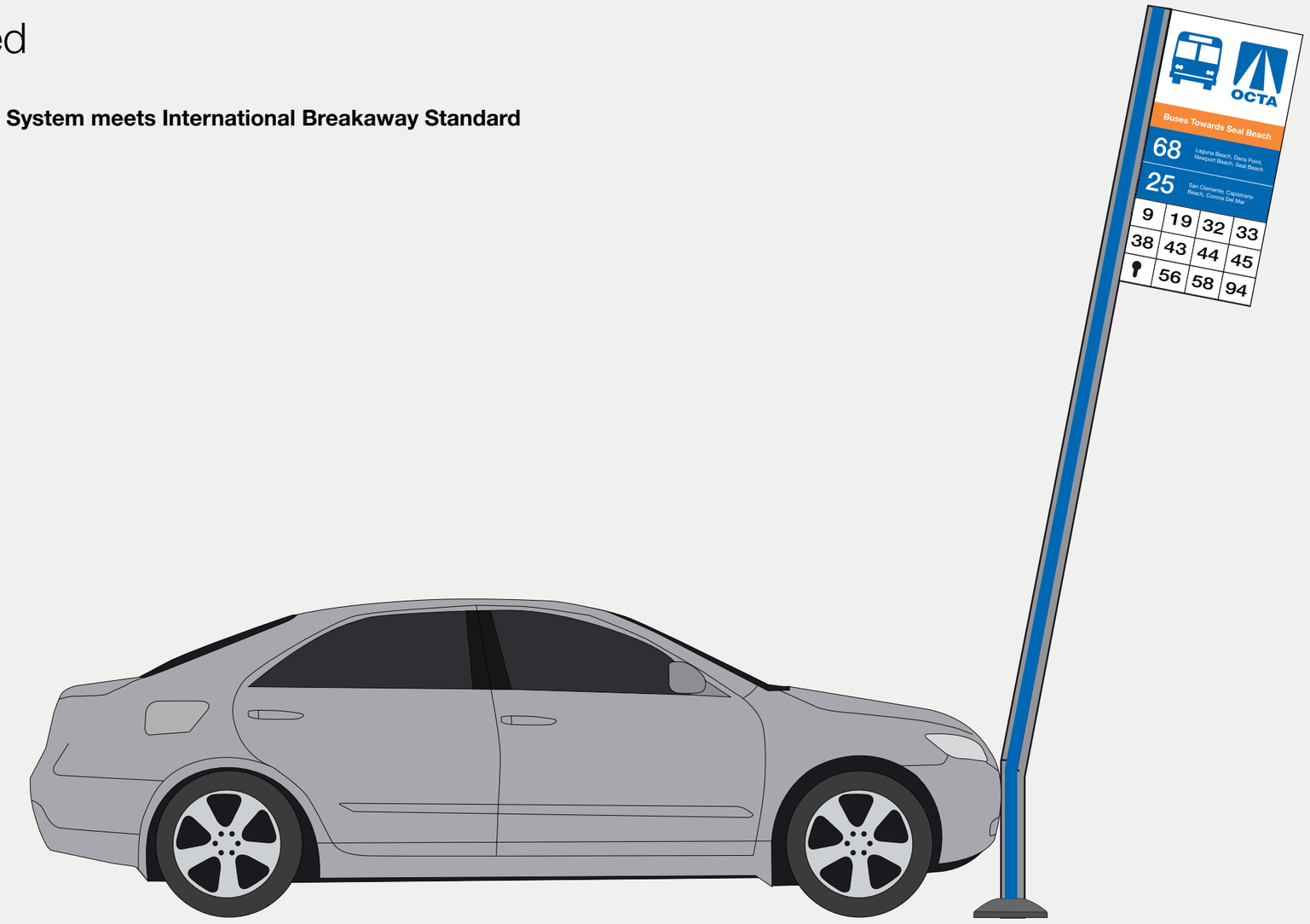
Impact Tested

NCHRP 350 Approved System meets International Breakaway Standard



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Elite Bus Stop System

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Elite Bus Stop Future Upgrades

Future Upgrades

Your journey starts here...

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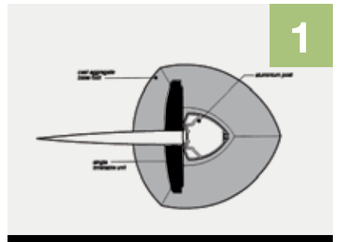
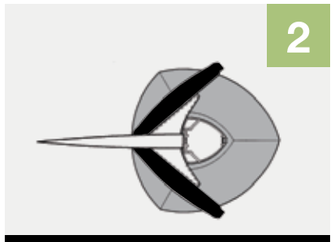
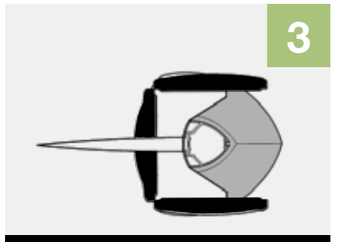
Elite Bus Stop Flag Options



1 **Single Display**

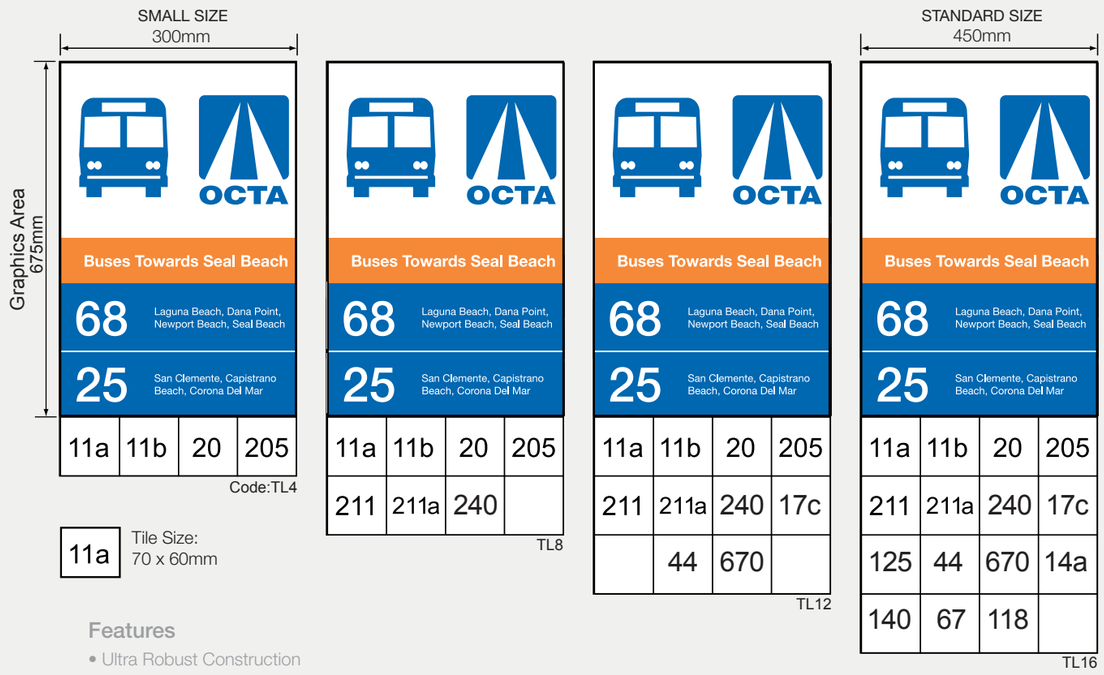


2 **Double Display**



3 **Triple Display**

Large Quick Release Flag
With Removeable Route Tiles



11a Tile Size:
70 x 60mm

11a Tile Size:
112 x 112mm

28 COLUMBIA STREET

Optional Long Size Tile:
450 x 125mm

Features

- Ultra Robust Construction
- Corrosion Resistant Stainless Steel
- Removable Injection Molded Route Tiles
- Quick Release Fitting
- Tamperproof
- Elegant, Modern Design
- Range of lengths & sizes available
- UV Stable, Exterior Grade Graphics
- Can be retroreflective materials

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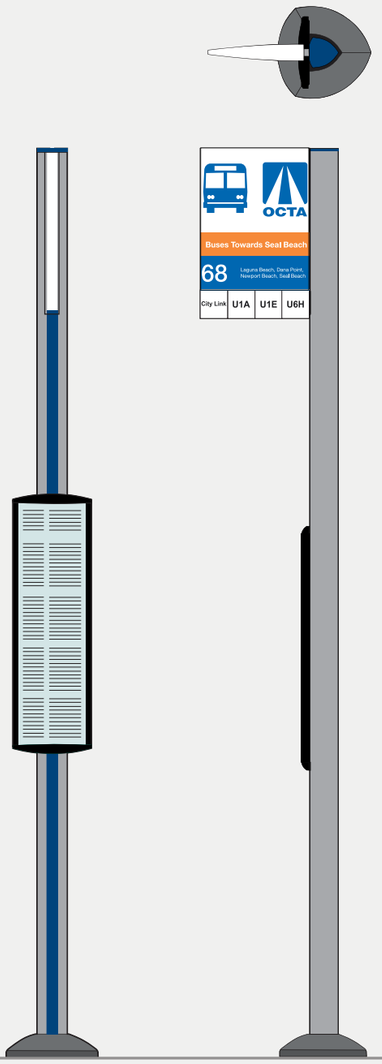
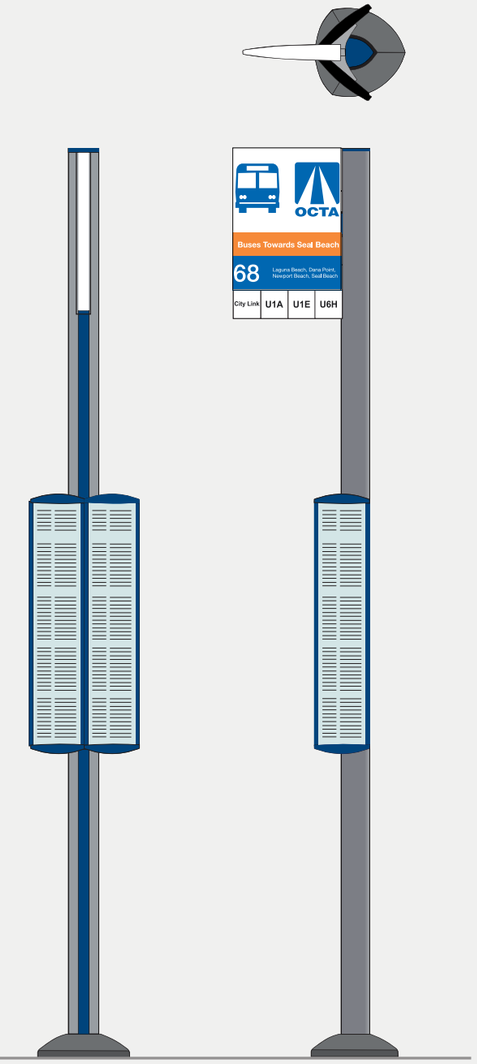
Elite Bus Stop Timetable Options

1



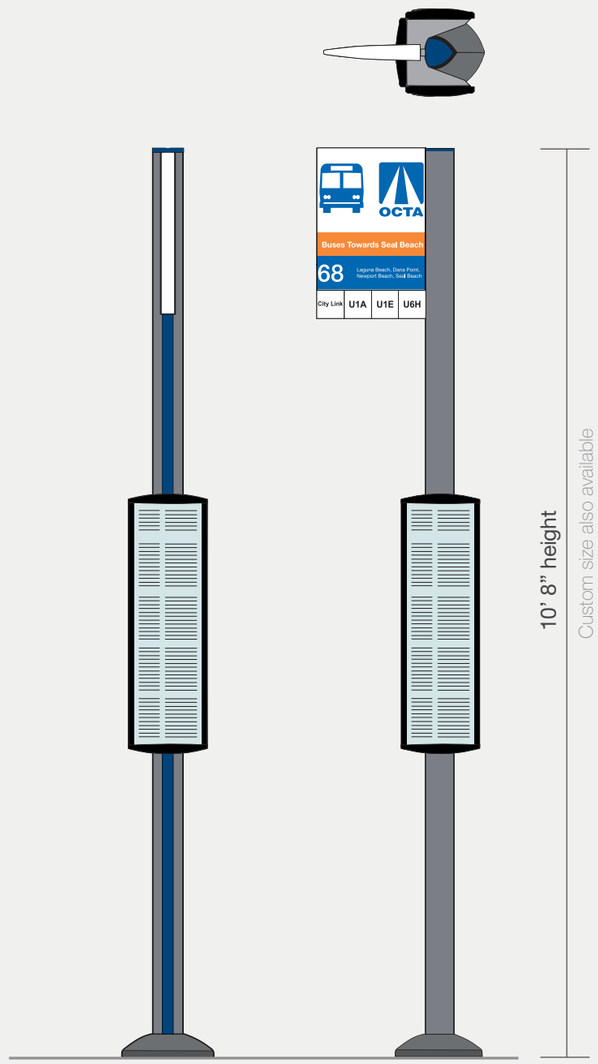
Single Timetable Display

2



Double Timetable Display

3



Triple Timetable Display

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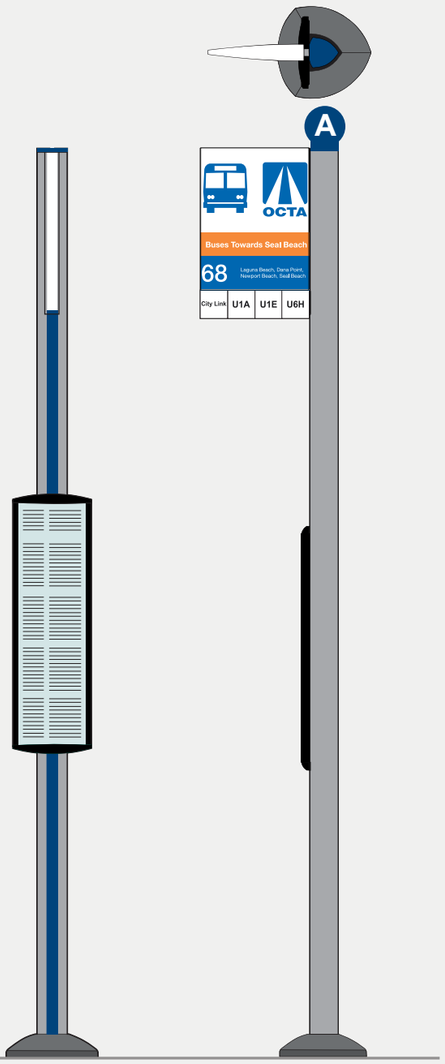
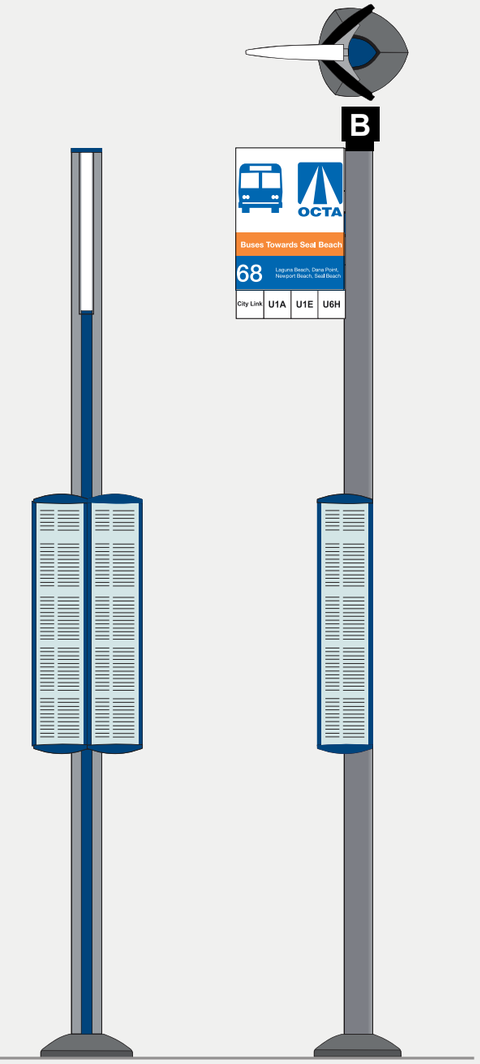
Elite Bus Stop Marker/Finial Options

1



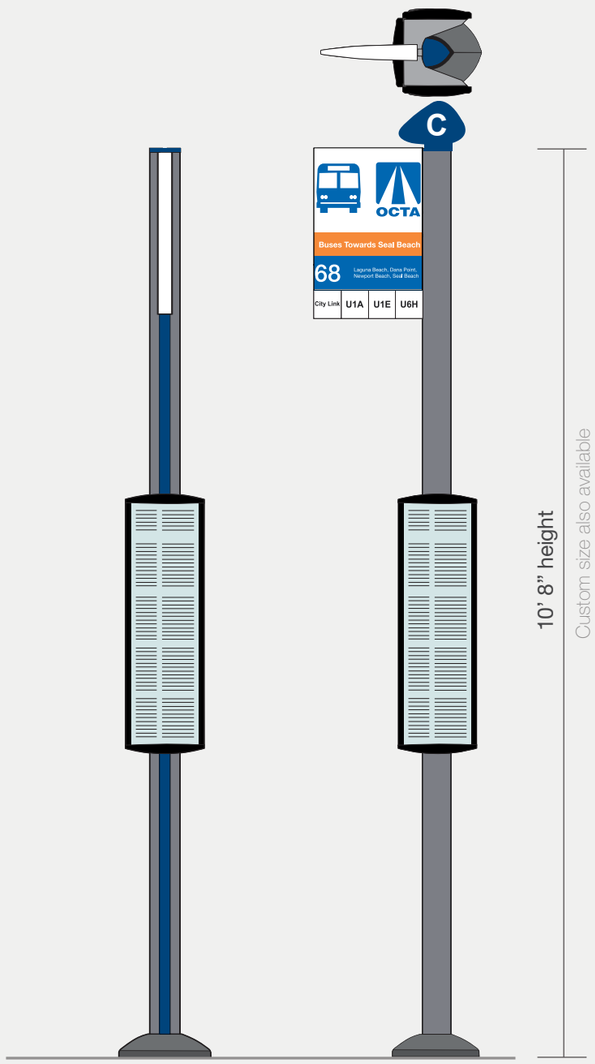
Round Marker/Finial

2



Square Marker/Finial

3



Arc Marker/Finial

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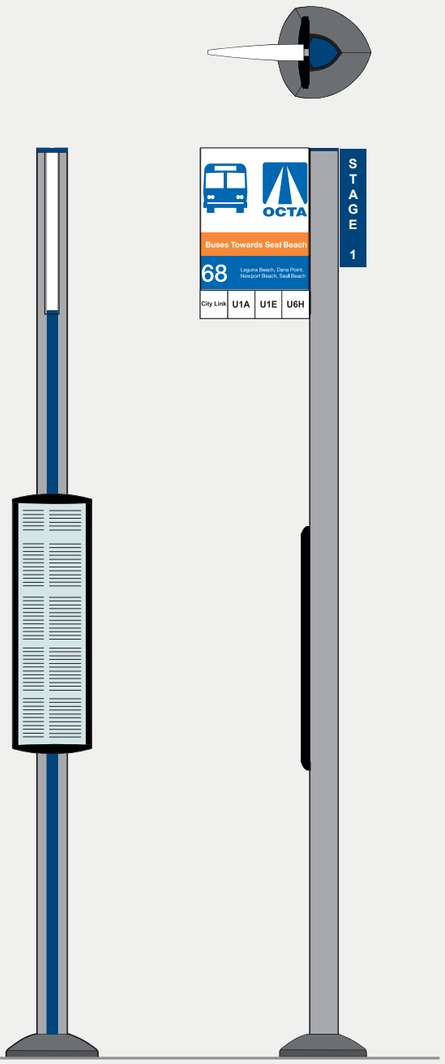
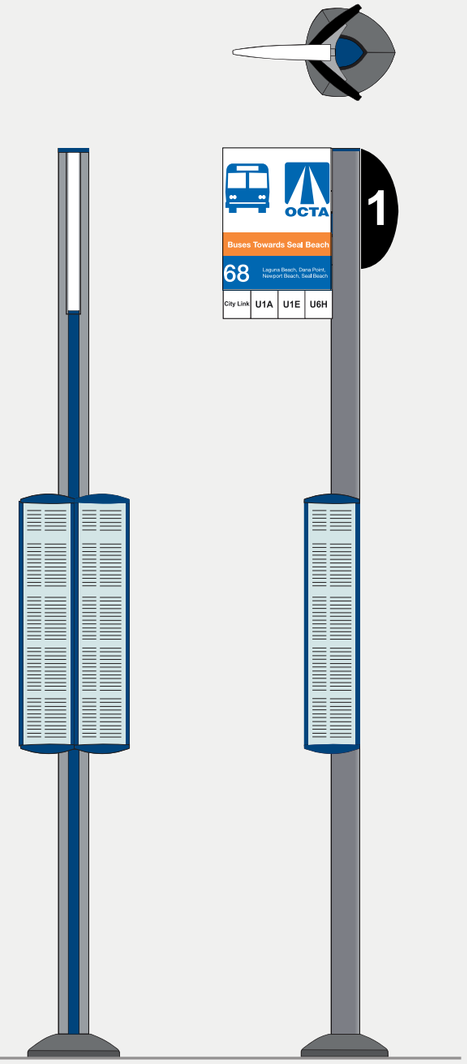
Elite Bus Stop Marker/Finial Options

1



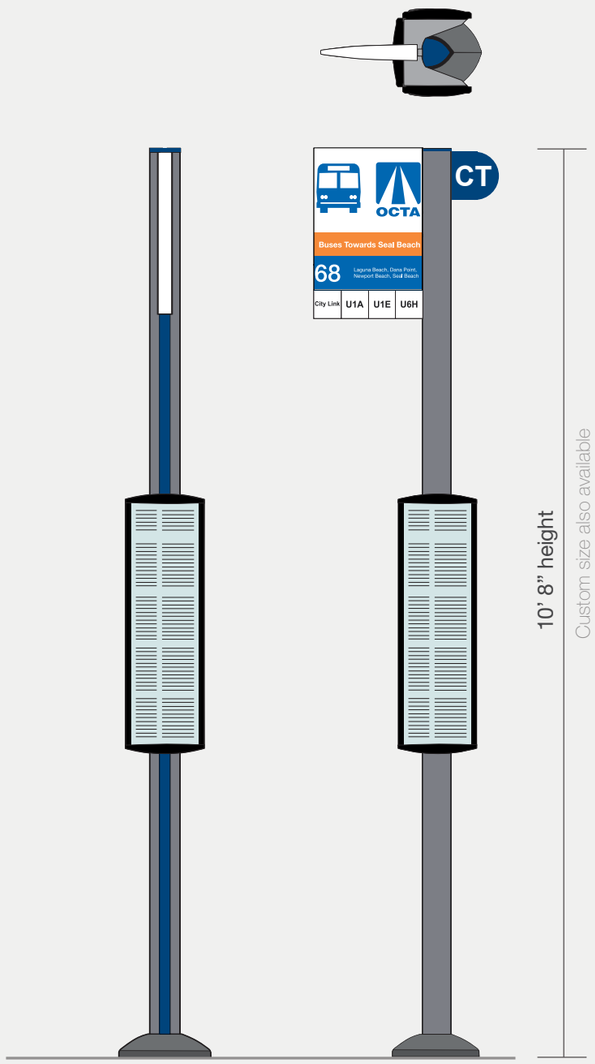
Rectangle Marker/Finial

2



Curved Marker/Finial

3



Bespoke Marker/Finial

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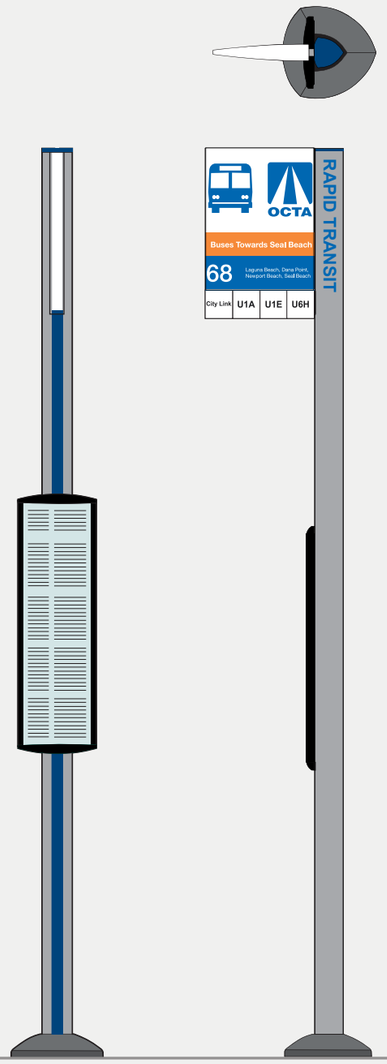
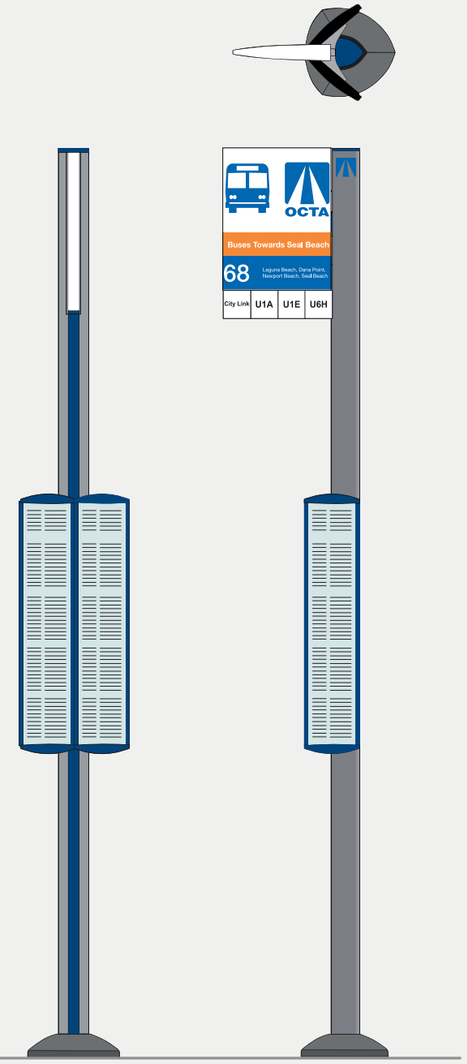
Elite Bus Stop Post Graphic Options

1



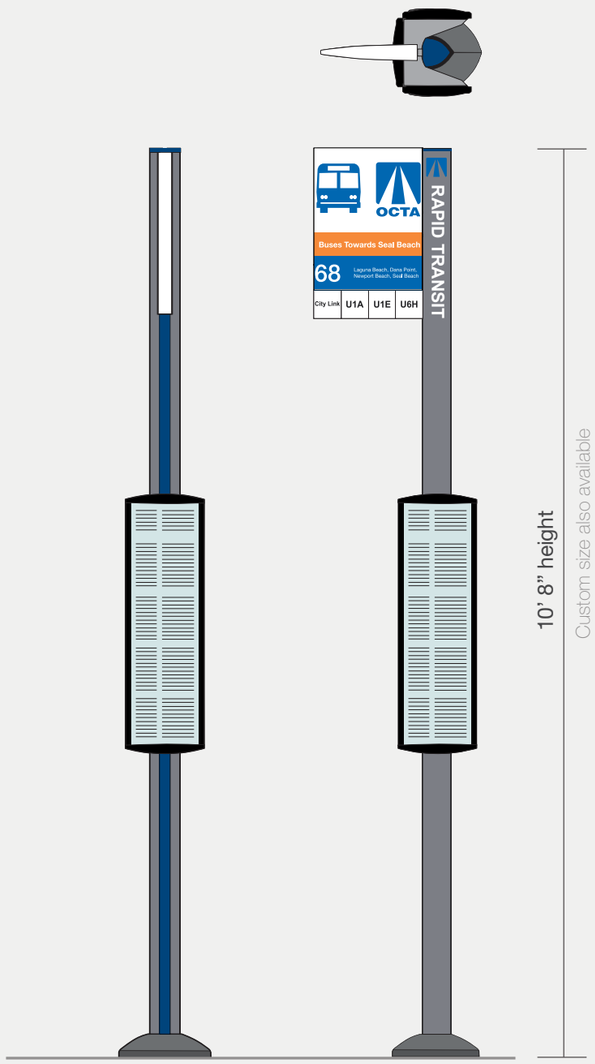
Post Graphic Option 1

2



Post Graphic Option 2

3



Post Graphic Option 3

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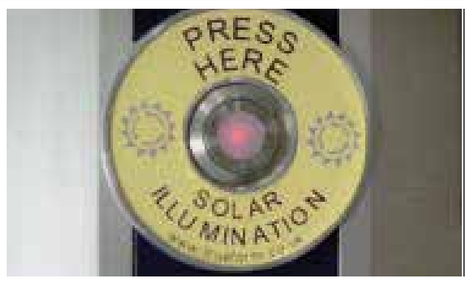
Elite Bus Stop Solar Power



Solar Power

Solar Power Kit for Elite Poles

State of the art solar energy collection, utilising industry leading energy management electronics and charge regulation, robust, high efficiency mono crystalline solar collection cell (positioned discreetly on top of pole), rechargeable battery pack, LED illuminator lights (front illumination of timetable media), special push button activator (with night visibility LED for easy location (glowing button!).

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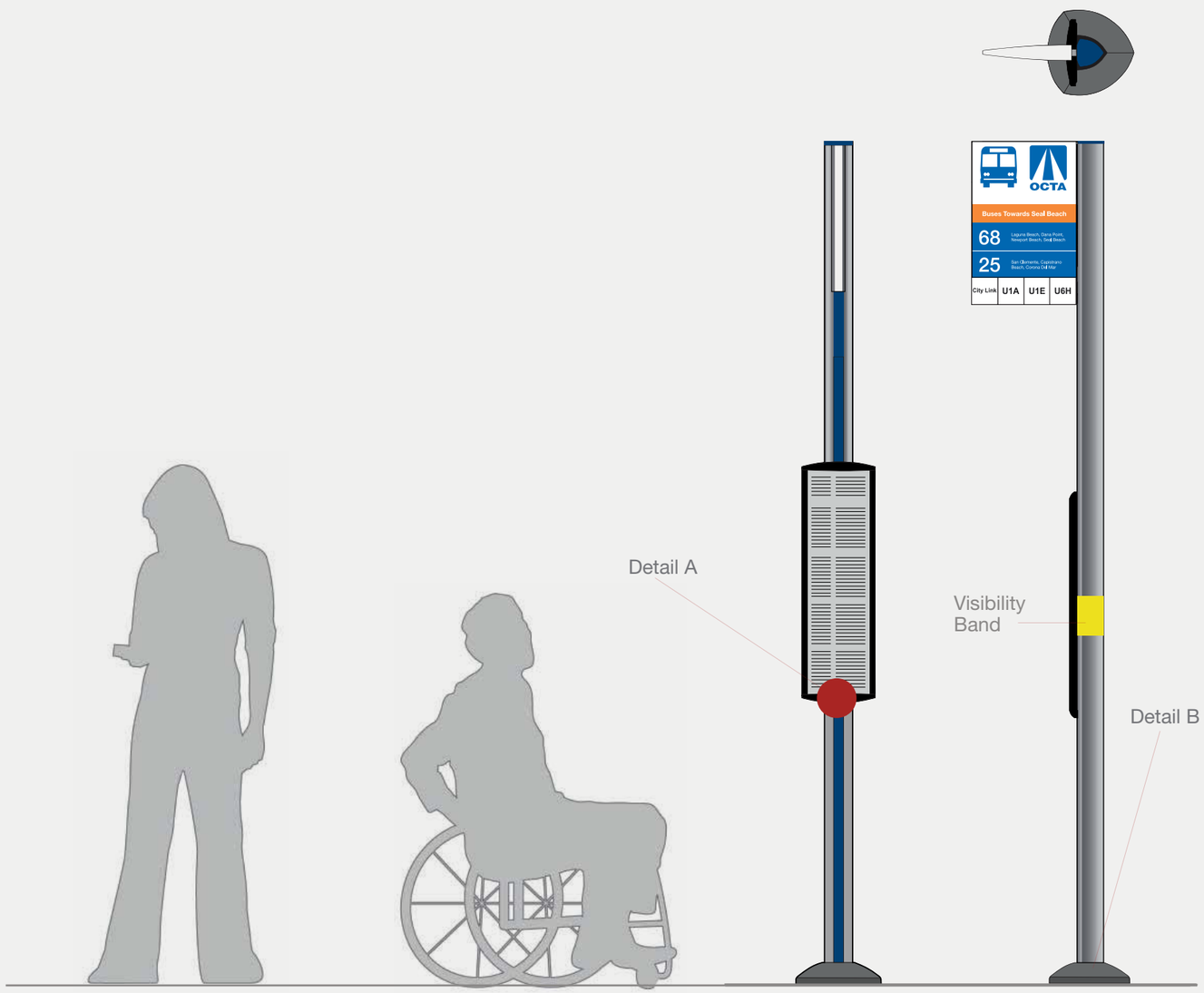
Elite Bus Stop Accessibility & ADA

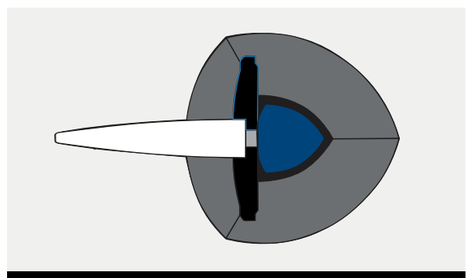


Accessibility & ADA

Features

- Special tactile raised letter 'B'
- Contrasting coloured band (tamperproof vinyl applied to post)
- Bumper foot – wards sticks, wheelchairs, strollers & pushchairs away from overhanging timetables
- Illumination at night – safety and clarity of information– solar power options

Detail A



Detail B

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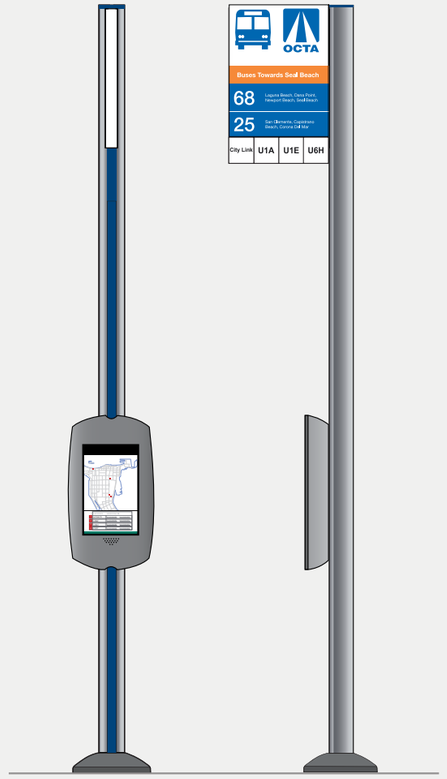
Elite Bus Stop Electronic Screens

Electronic Screens

The Elite bus stop has been specifically designed to incorporate future technologies. It can readily accept additional equipment such as electronic timetables, touch screens and journey planning kiosk displays.



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Elite Bus Stop RTI Flags

RTI Flags

Future Systems's Elite bus stop system has been specifically designed to accept RTI display flags.

Future Systems's sister company Ferrograph, is the UK's leading manufacturer of these digital flag display signs, and supplied these to the bus stop, shelter and real time display market.

These flag signs have been designed to work in harmony with the Elite bus stop pole.

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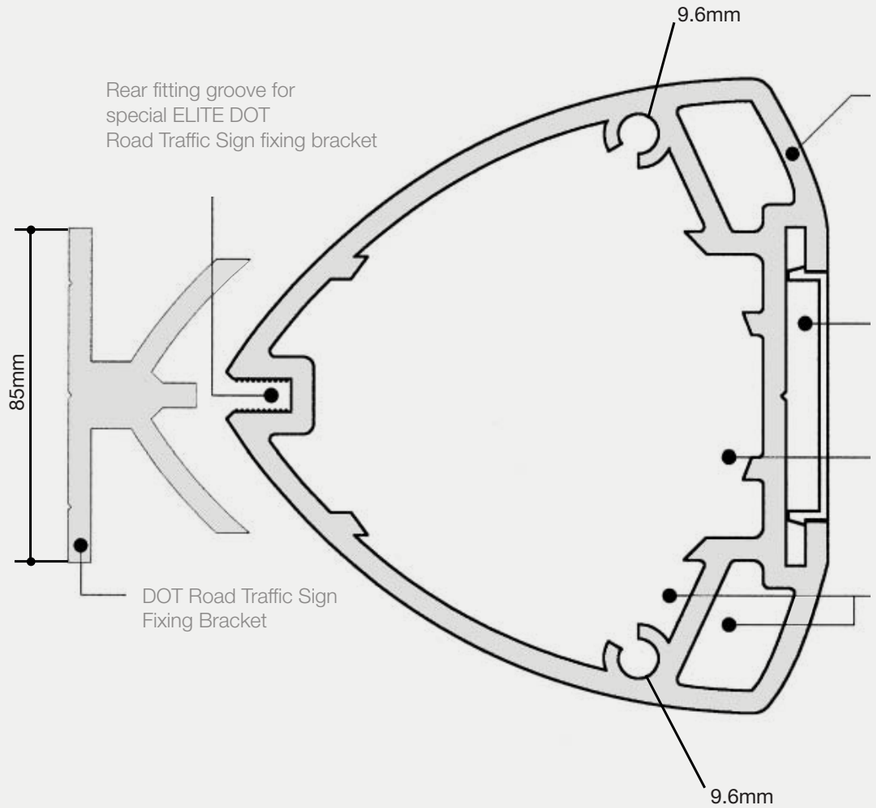
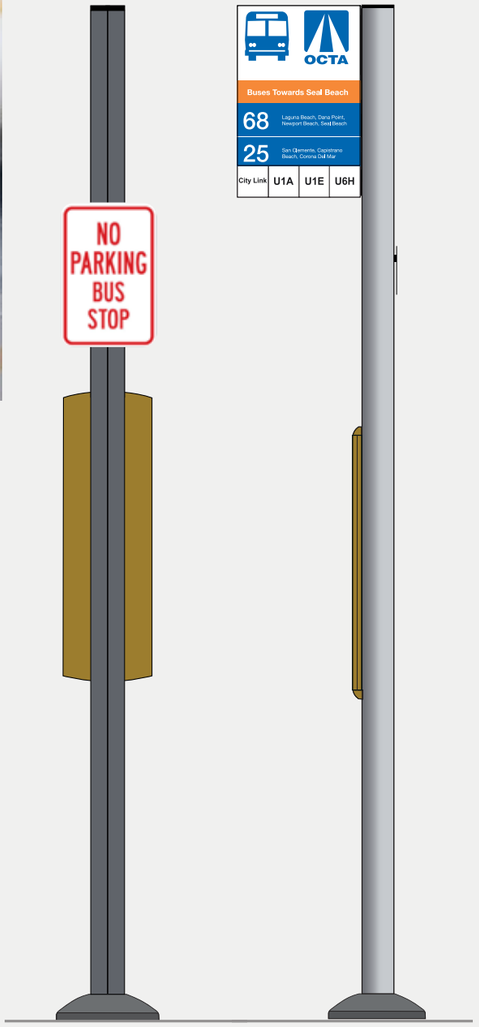
Elite Bus Stop No Parking Sign

Fitting of DOT - No Parking Road Signs





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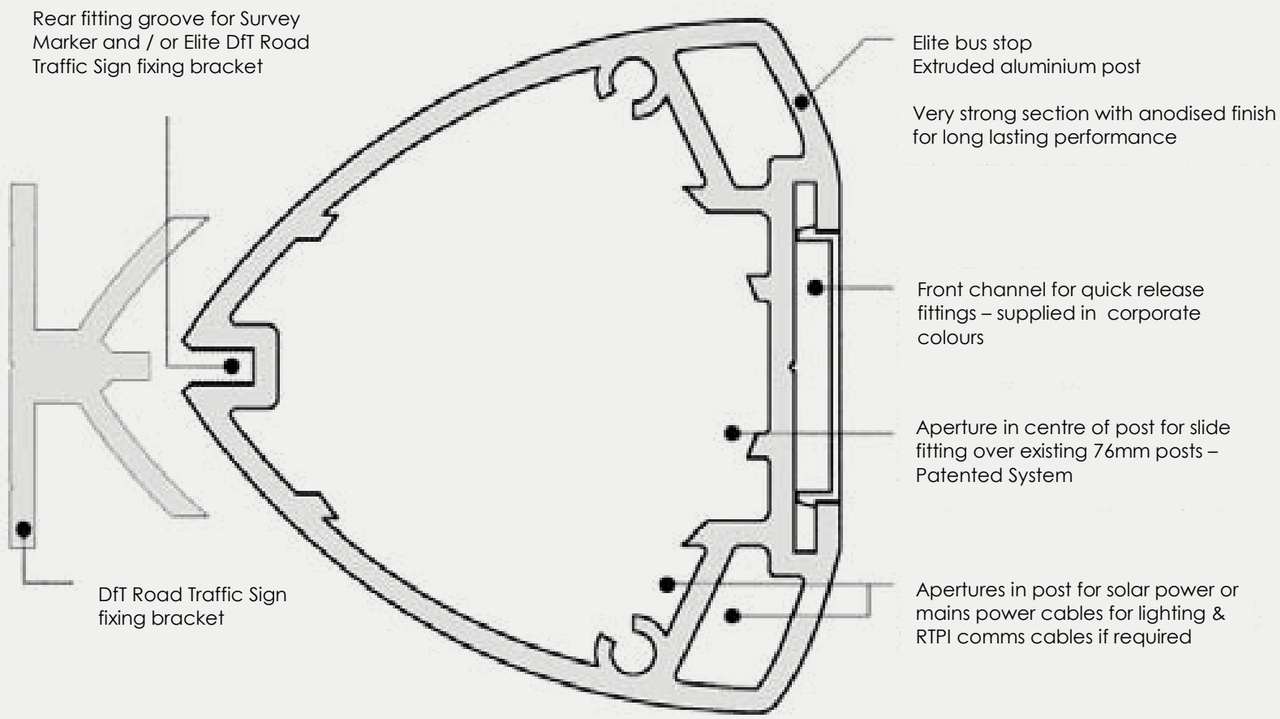
Elite Bus Stop No Parking Sign



Fitting of DOT - No Parking Road Signs

Future Systems's Elite bus stop post has been designed to offer a robust cross sectional area.

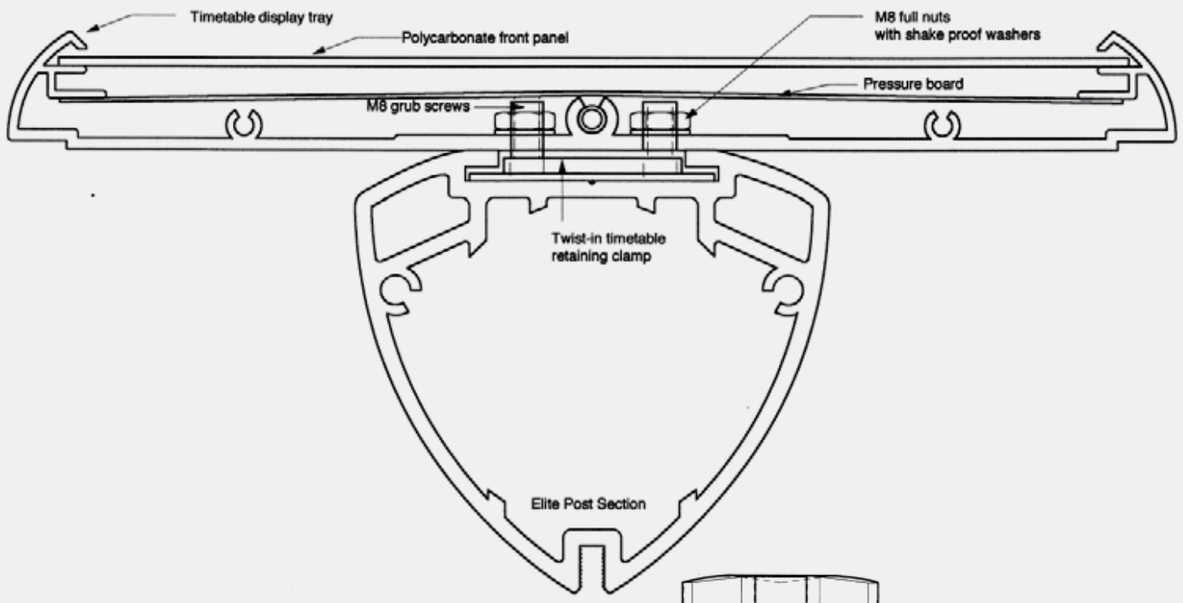
To conform with the most stringent of installations throughout the UK. The Elite bus stop post is recognised as the strongest bus stop post on the market, a fact that enables the Elite bus stop to accept heavier RTI bus stop flags and a host of other additional items on the pole without compromising the structural integrity.

Material & Finish

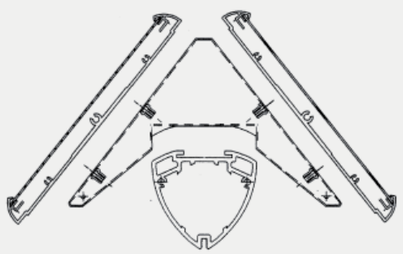
Elite Post:- Extruded Aluminium alloy – fully heat treated and anodised to AA25

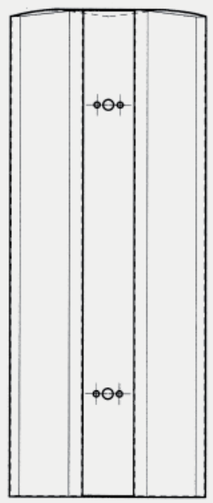
Infill Cover Strip:- Extruded Aluminium alloy – fully heat treated, alachomed and powder coated anti-graffiti paint

Elite Bus Stop Adaptor Details



Stainless steel double connector spine





Rear view of connector spine – NO Gaps to trap litter or bombs.

Stainless steel! Non-rust!

This enclosed system is Trueform's design and protected. Trueform is the only supplier that can offer this enclosed system.

Timetable & Double/Triple Adaptor Details

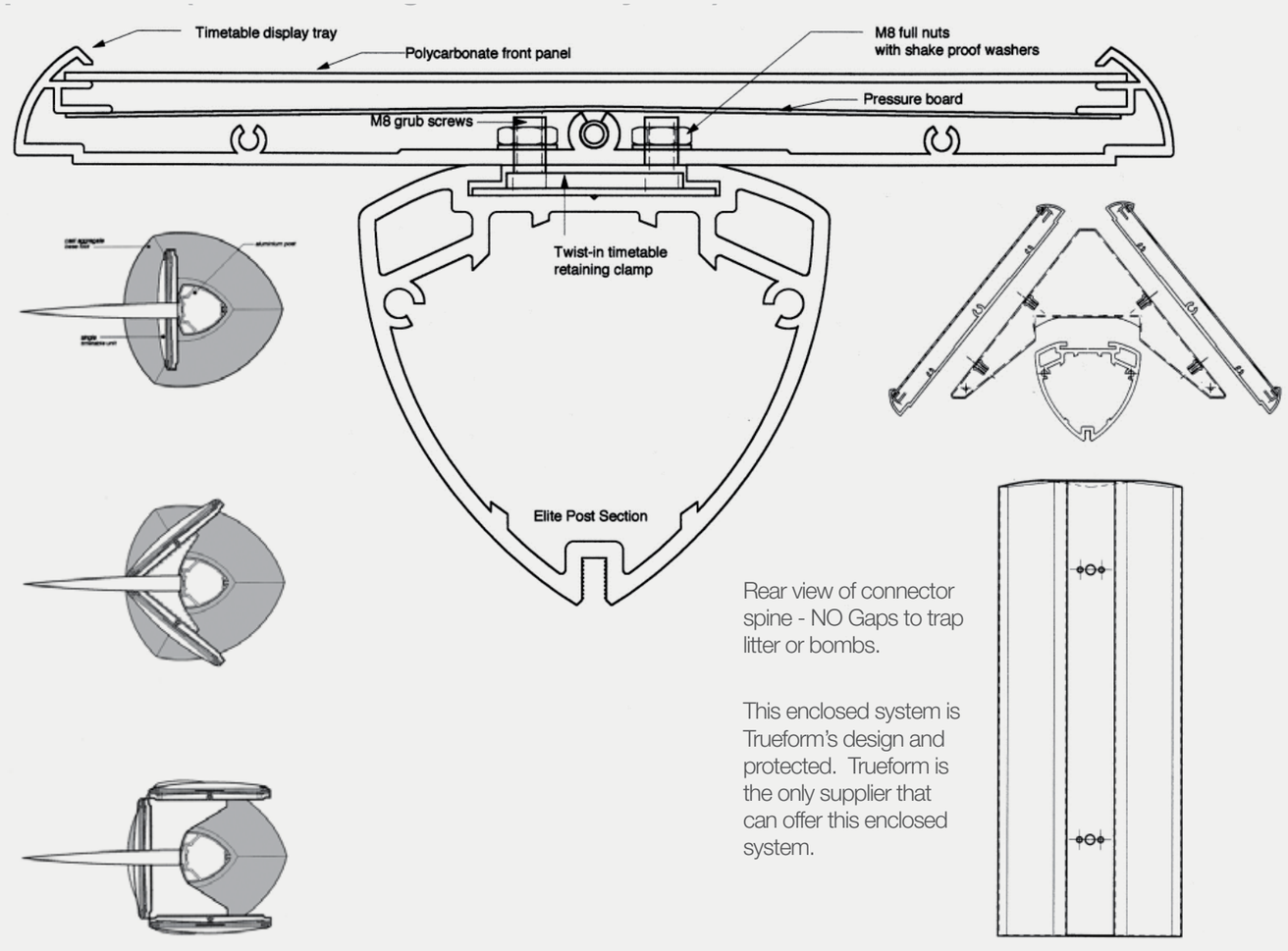
Features:

- Robust and attractive timetable case design
- Anti-tamper security screw entry
- Innovative (design protected) double & triple case connector
- No gaps of crevices left (no litter traps, no Coke cans on top of cases)
- Designed in conjunction with the Metropolitan Police (no gaps or crevices for bombs)
- Smooth, curved edges
- Quick and easy fitting of display material
- Raised letter 'B' option for partially sighted
- High quality display presentation
- Cases can be upgraded to be illuminated

Material & finish

- Timetable tray:- extruded aluminium alloy
- Top caps:- exterior quality polycarbonate
- Top cap (alternative):- also available in die cast aluminium alloy
- Display lens:- 2mm thick clear polycarbonate
- Pressure board:- 1.2mm thick aluminium alloy
- Double & triple spine:- stainless steel

Multiple Timetable Connector



Rear view of connector spine - NO Gaps to trap litter or bombs.

This enclosed system is Trueform's design and protected. Trueform is the only supplier that can offer this enclosed system.

Note: Can be fitted to ANY & Future Systems's Elite, Streamline and Slimline poles and well as lamp columns

Multiple Timetable Connector (Fully enclosed)

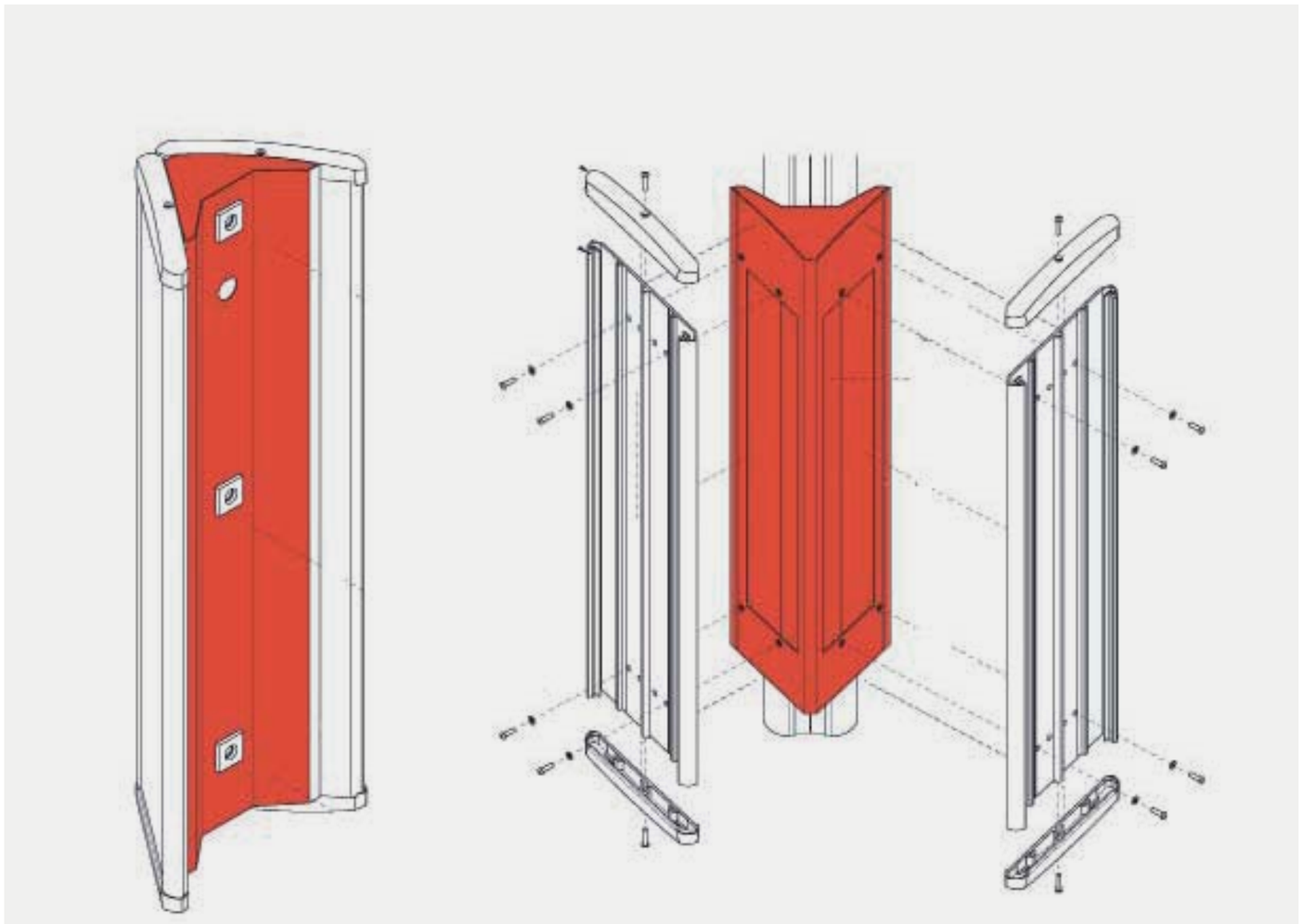
Features:

- Robust and attractive timetable case design
- Anti-tamper security screw entry
- Innovative (design protected) double & triple case connector
- No gaps of crevices left (no litter traps, no Coke cans on top of cases)
- Designed in conjunction with the Metropolitan Police (no gaps or crevices for bombs)
- Smooth, curved edges
- Quick and easy fitting of display material
- Raised letter 'B' option for partially sighted
- High quality display presentation
- Cases can be upgraded to be illuminated

Material & finish

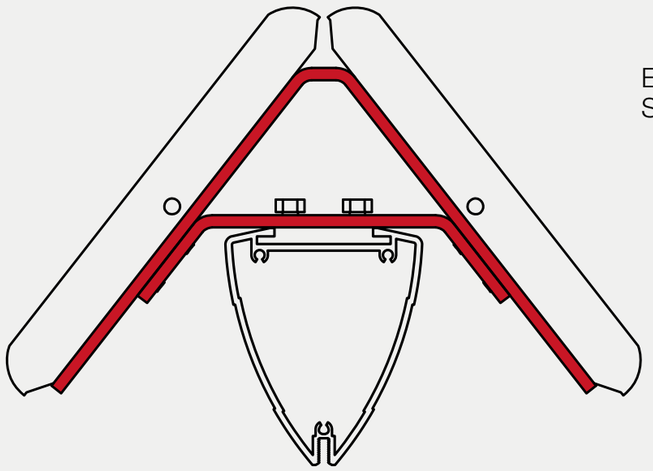
- Timetable tray:- extruded aluminium alloy
- Top caps:- exterior quality polycarbonate
- Top cap (alternative):- also available in die cast aluminium alloy
- Display lens:- 2mm thick clear polycarbonate
- Pressure board:- 1.2mm thick aluminium alloy
- Double & triple spine:- stainless steel

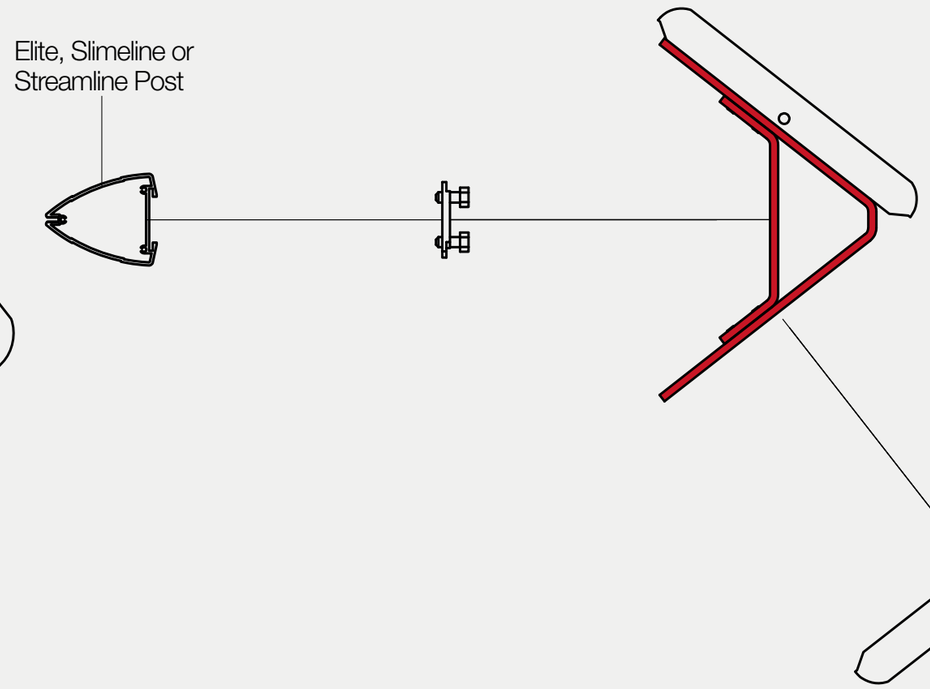
Connector Brackets Double & Triple

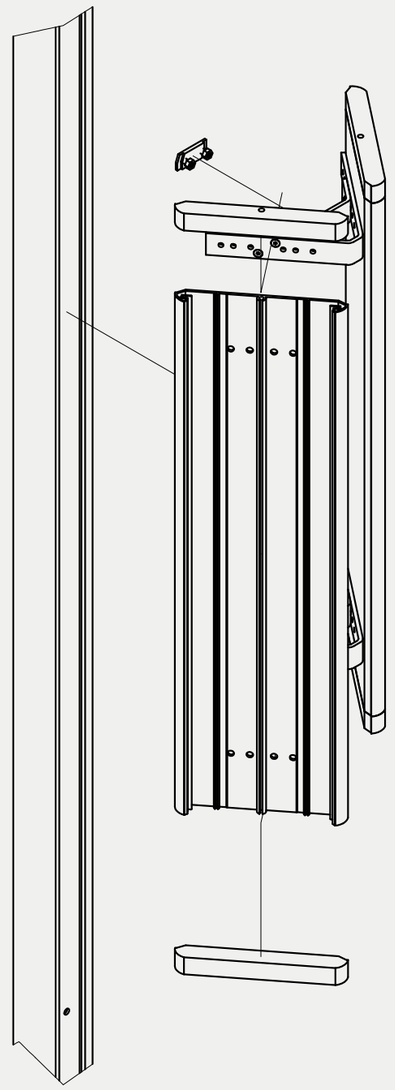


Note: Can be fitted to ANY & Future Systems's Elite, Streamline and Slimline poles and well as lamp columns

Double Display Carrier Butterfly

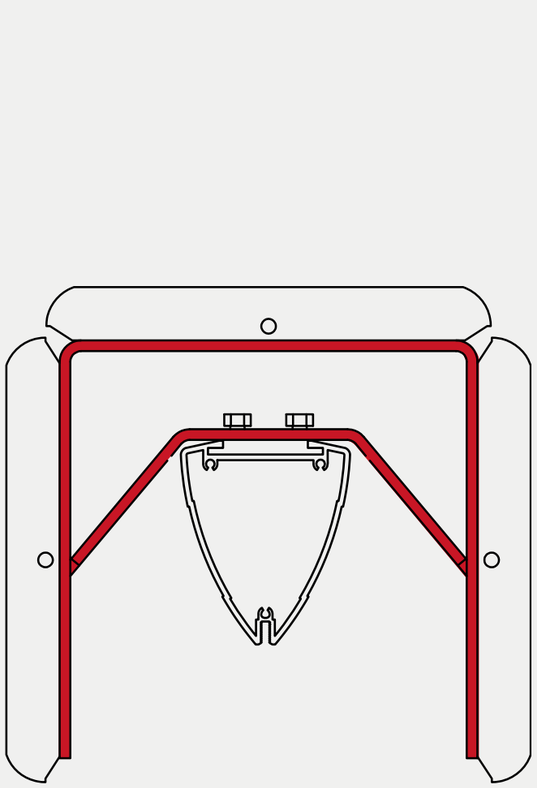


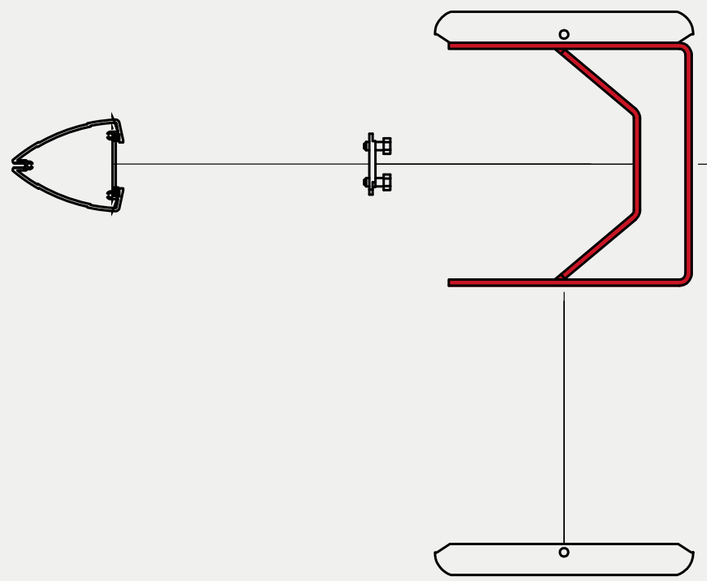


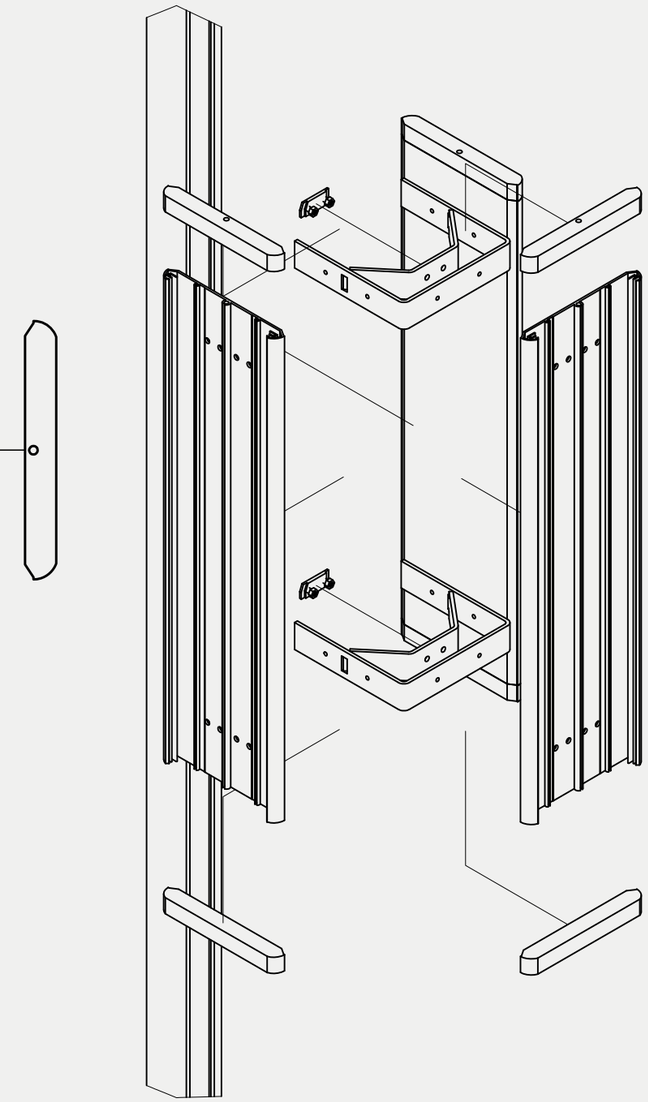


Note: Can be fitted to ANY & Future Systems's Elite, Streamline and Slimline poles and well as lamp columns

Triple Display Carrier Butterfly

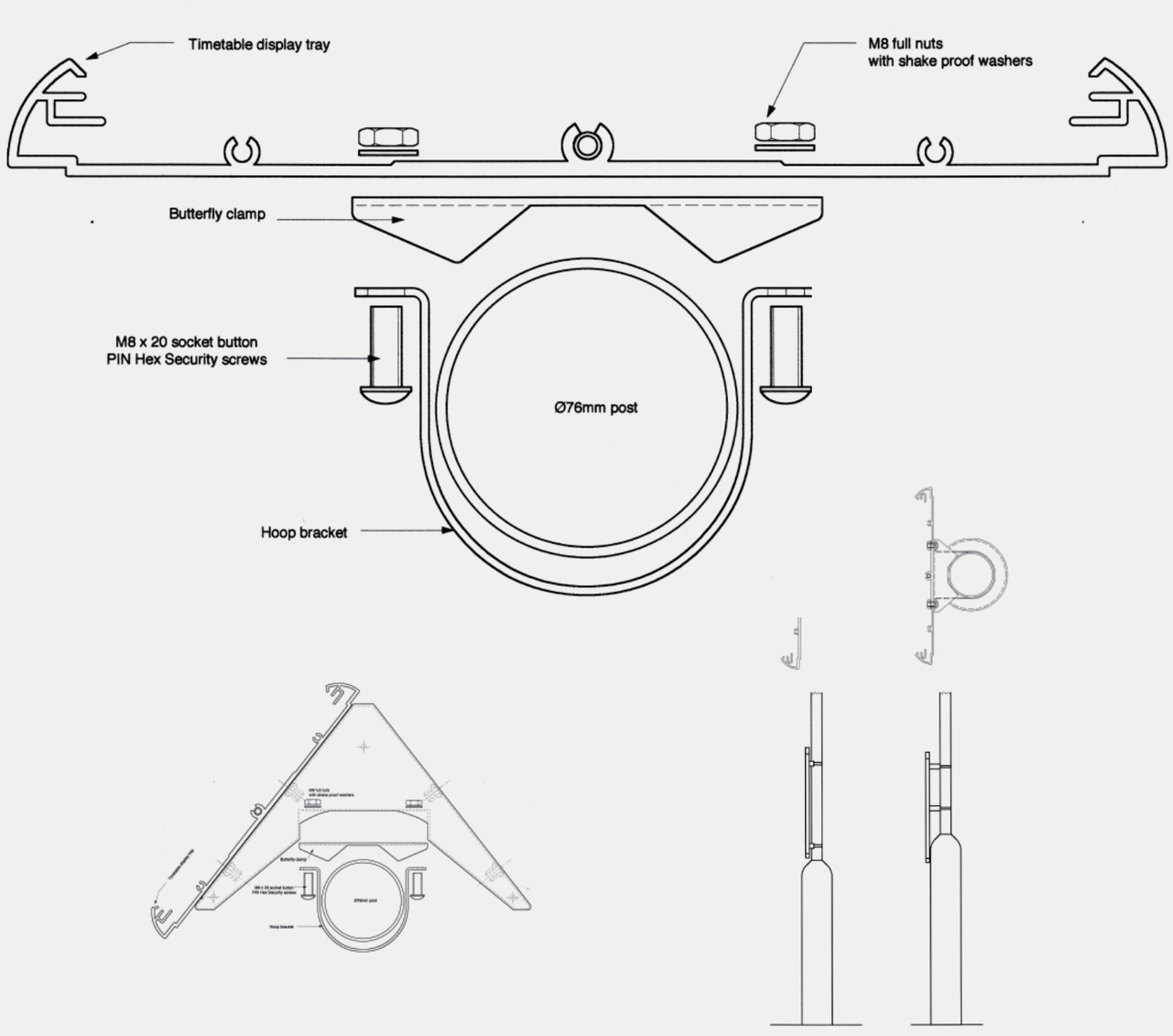






Note: Can be fitted to ANY & Future Systems's Elite, Streamline and Slimline poles and well as lamp columns

Elite Bus Stop Fixing Details



Timetable to Lamp Column Fixing Details

Notes:

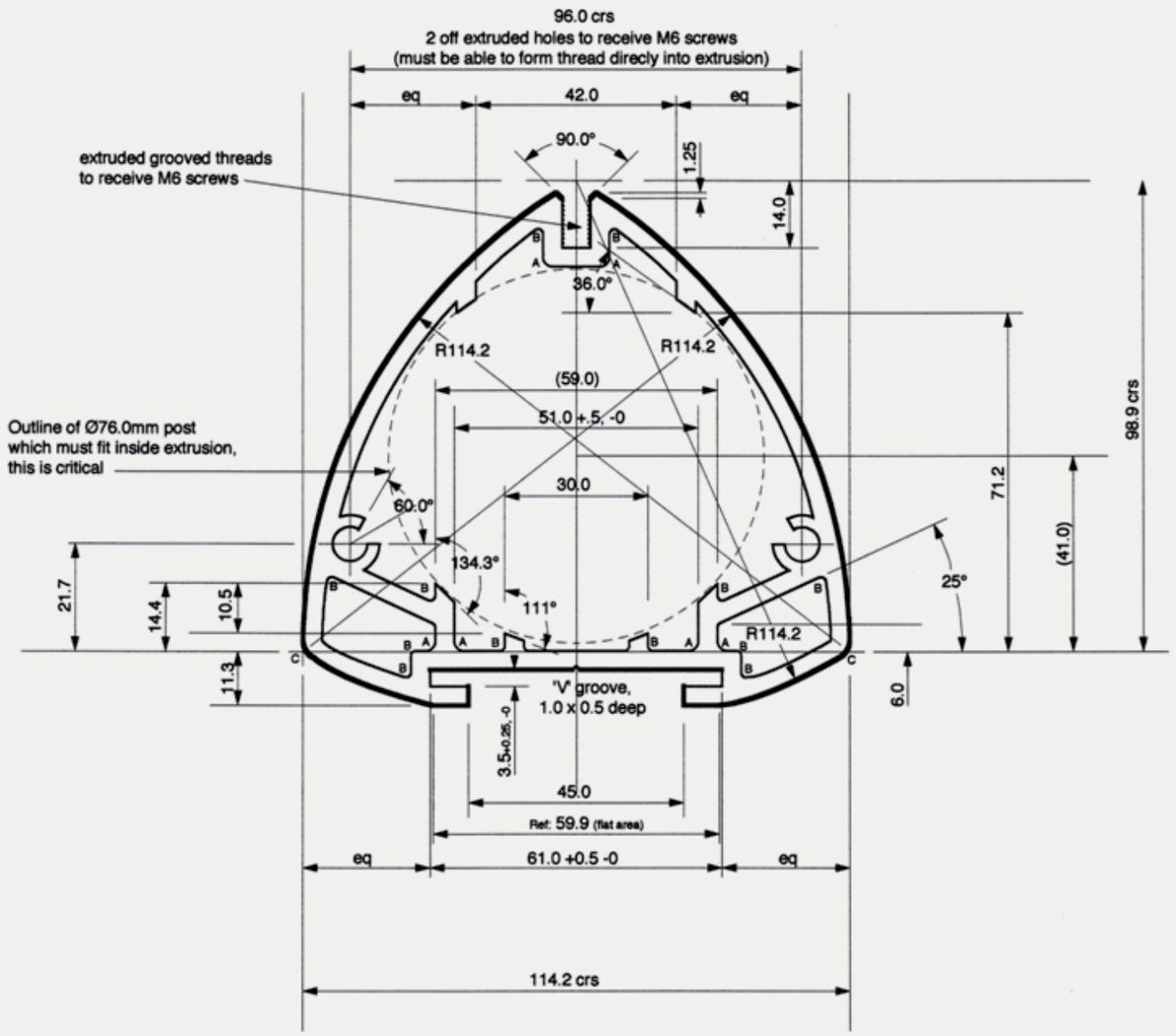
Future Systems have a wide range of tried and tested brackets available for the secure fitting of display cases to 76mm posts and lamp standards.

Future Systems's Elite bus stop cluster has 3 designated fixing points to enable fixing to lamp standards of varying thickness and can even cope with the large defence in diameter at the base of the lamp standard.

The main timetable display and double and triple cluster connector is the same component as used on standard Elite bus stop installations.

Elite Bus Stop Performance

Structural Performance / Calculations



Hurst Peirce + Malcolm
CHARTERED CIVIL & STRUCTURAL ENGINEERS
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London, WC1N 2QL
020 7242 3593

FOUNDATION DESIGN FOR CANTILEVER POSTS

DESIGN CODES

Wind Load

There are several possible design codes which can be used for calculating the wind load on the bus stop post.

BS EN 12899 - Fixed Vertical Road Traffic Signs, is mainly aimed at large motorway signs. It is very difficult to use and results in the wind load being grouped into Classes WL1 to WL7. These are basic wind pressures and vary from 400N/m2 to 1600N/m2. For a typical location in the UK, excluding Scotland and for low altitudes, the wind load on the post would fall into Class WL2 or WL3 covering the range 400N/m2 to 800N/m2. These would then be multiplied by a shape factor to give wind pressures of 680N/m2 to 1370N/m2.

BS 873 - Road Traffic Signs and Internally Illuminated Bollards, call for signs to be designed for a globally applied load of 1500N/m2 wherever the sign is located.

BS 6399 Part 2 - Code of Practice for Wind Loads, is the traditional code of practice used in the UK for calculating wind loads on structures and provides the greatest detail and most accurates assessment of the wind load. The use of this code results in the most economic structures and foundations. However, the wind load varies with geographical location and altittude it is therefore necessary to design the foundations for each particular location.

This program uses BS 6399 for the wind load assessment and gives a user friendly way of inputting the location and altitude to enable a quick assessment of the foundation size.

Foundation Design

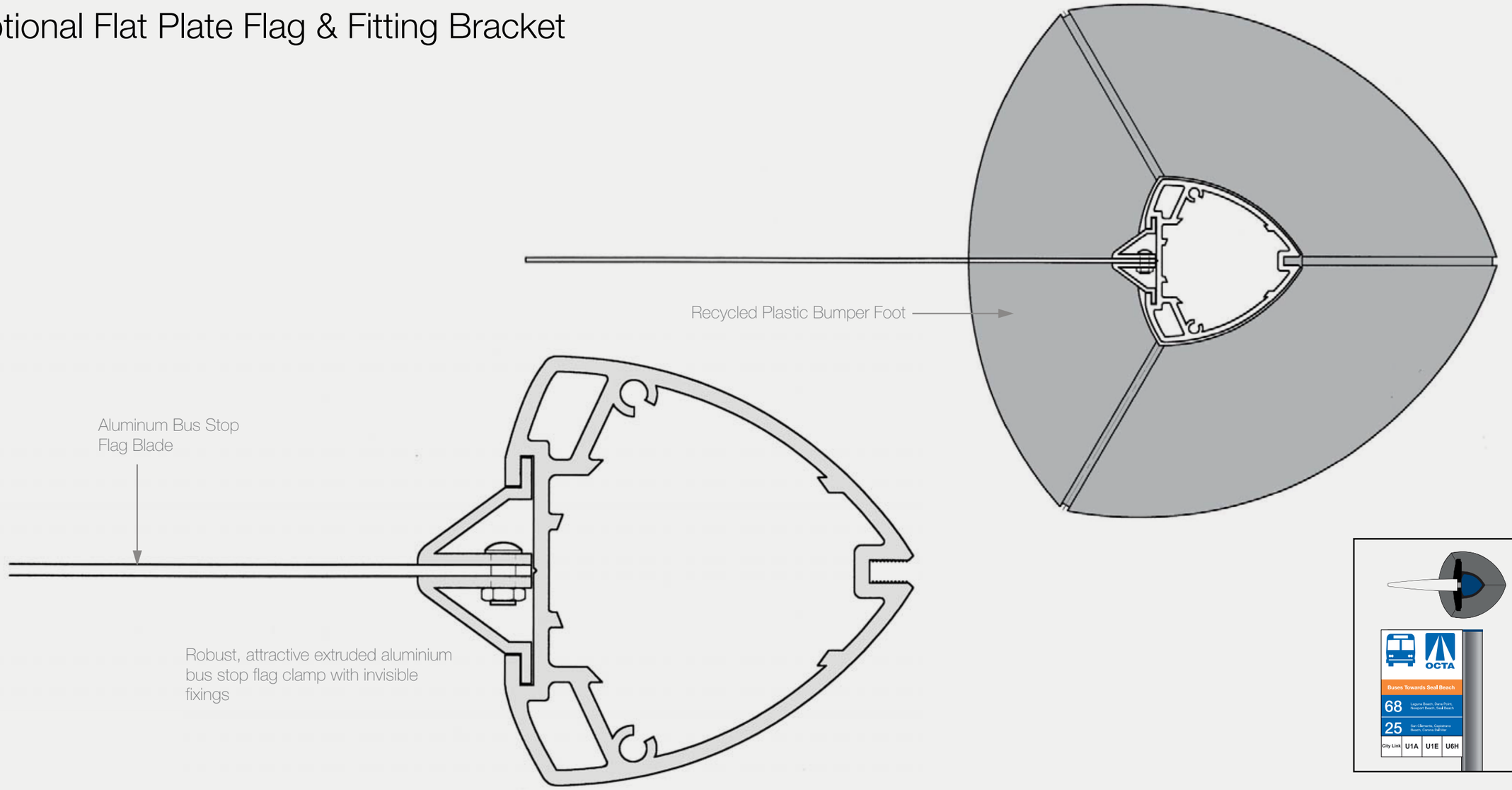
The program uses BS 8004 - Code of Practice for Foundations, for assessing the capacity of the foundation. The program calculates active and passive pressures on the foundation together with a triangular or trapezoidal bearing pressure beneath the base.

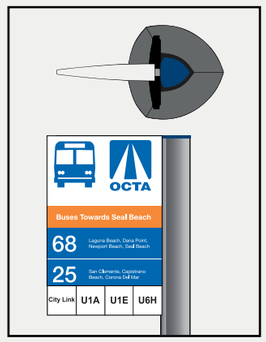
The bearing pressures vary according to the type of soil which the program user can select. The program assumes that for short term gust loads the soil is at least as strong as a granular material.

The foundations are designed for a factor of safety of 1.4 against overturning.

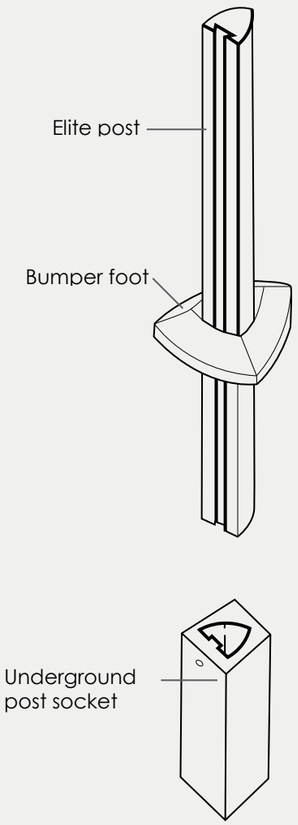
Elite Bus Stop Flat Plate

Optional Flat Plate Flag & Fitting Bracket



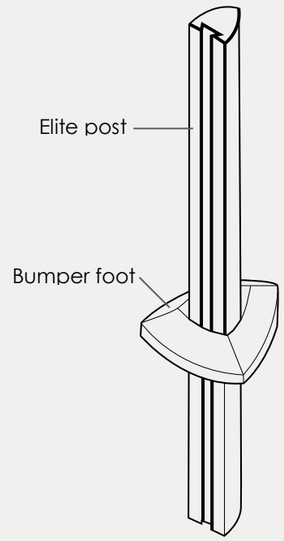


Elite Bus Stop Foundation Options



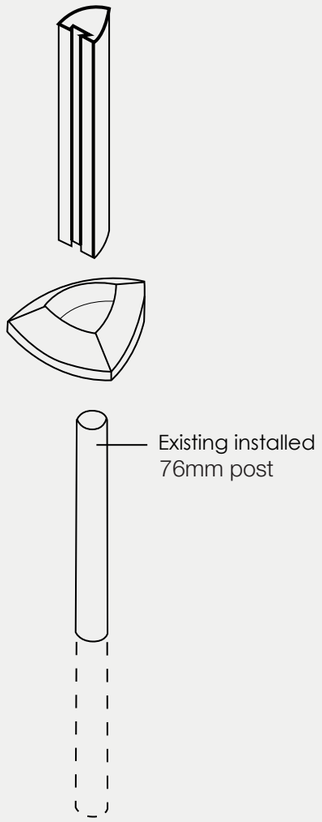
Standard Foundation
Special underground socket system

Option 1



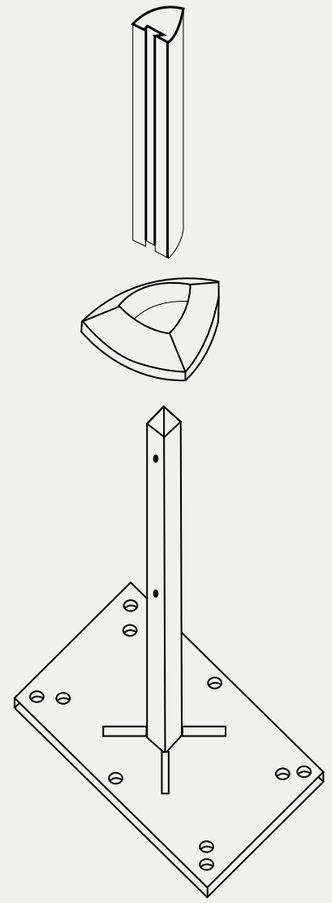
Post cast directly into ground

Option 2



Future Systems Patented Design
Post over post (sleeve) option
3” diameter

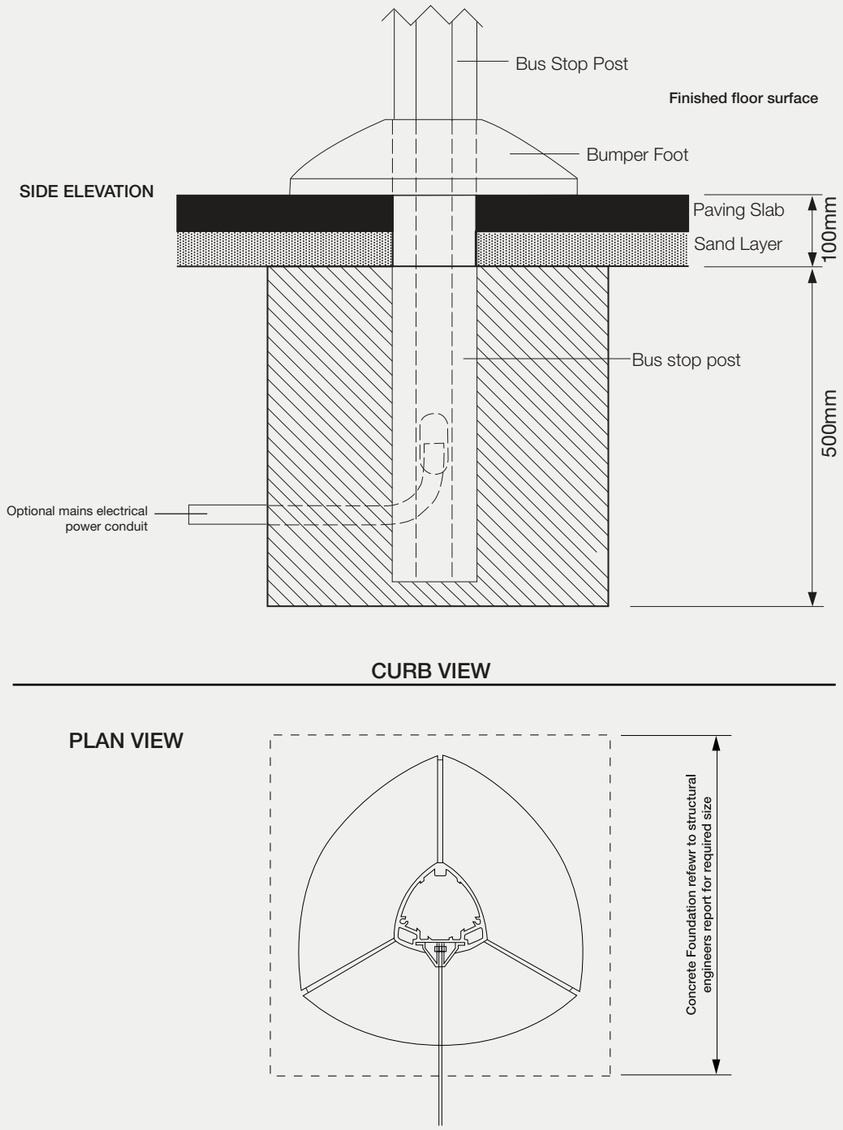
Option 3



Restricted Depth Foundation
(used over services, cellers etc.)

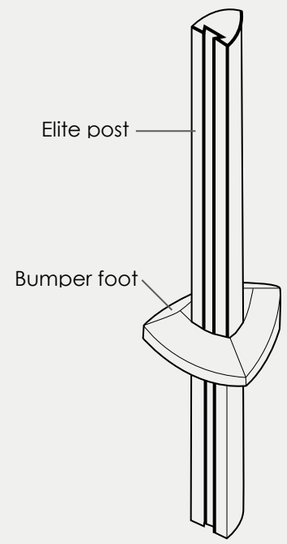
Option 4

Elite Bus Stop Foundation Option 2

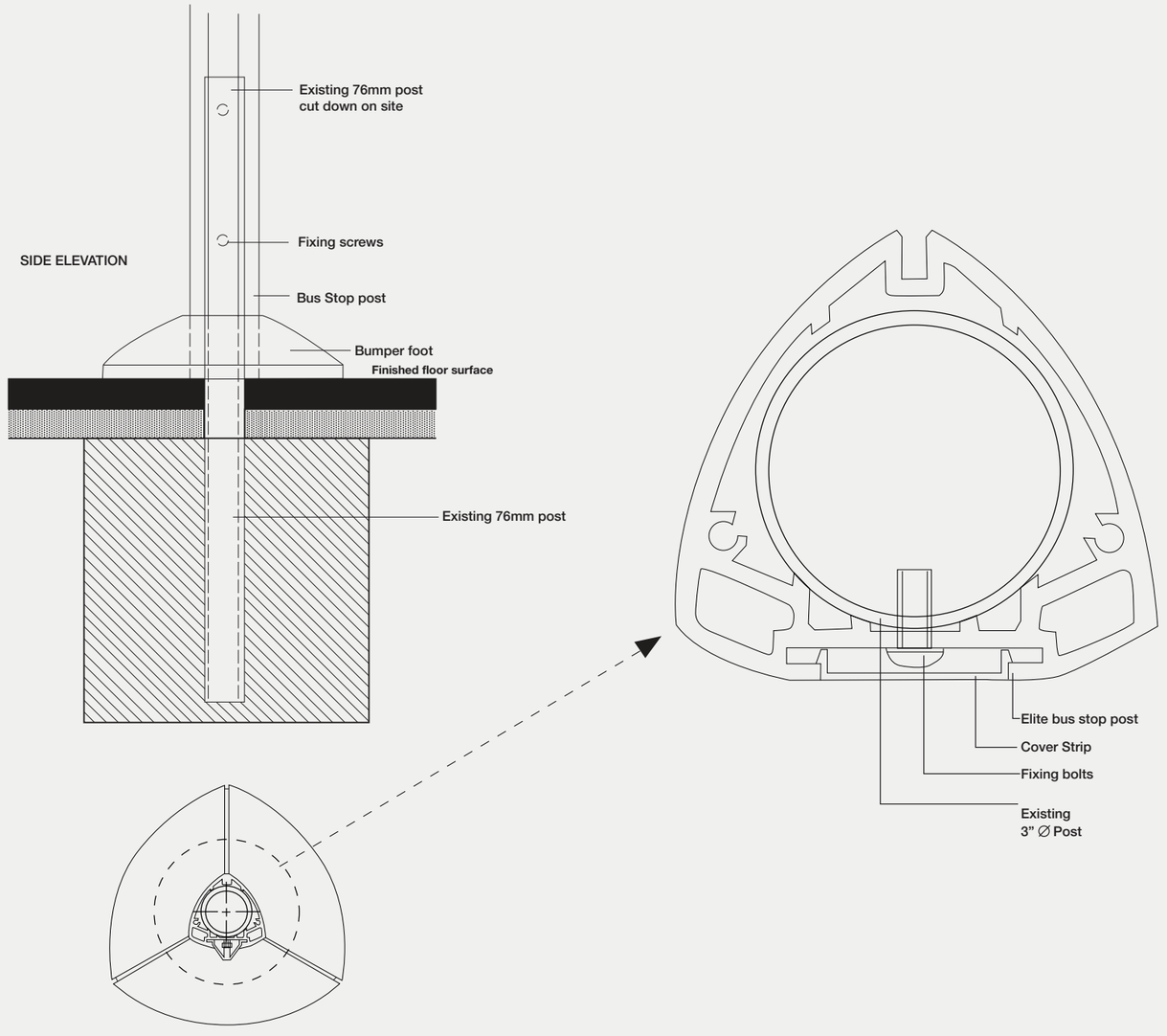


Elite Foundation Option 2

Future Systems's Elite bus stop poles can be installed directly into the ground. The lower (underground) section of the pole is treated with bitumen paint and rapid setting cements are recommended to aid quick, accurate setting of post.



Elite Bus Stop Foundation Option 3

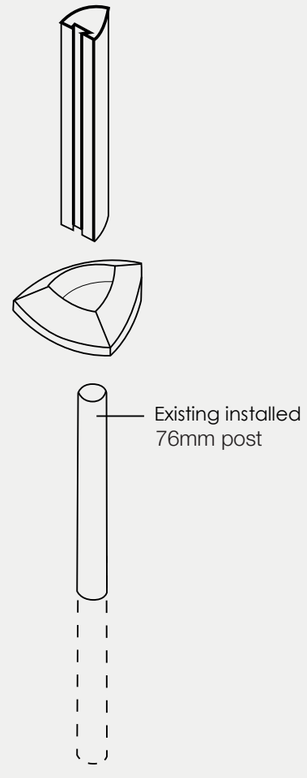


Elite Foundation Option 3

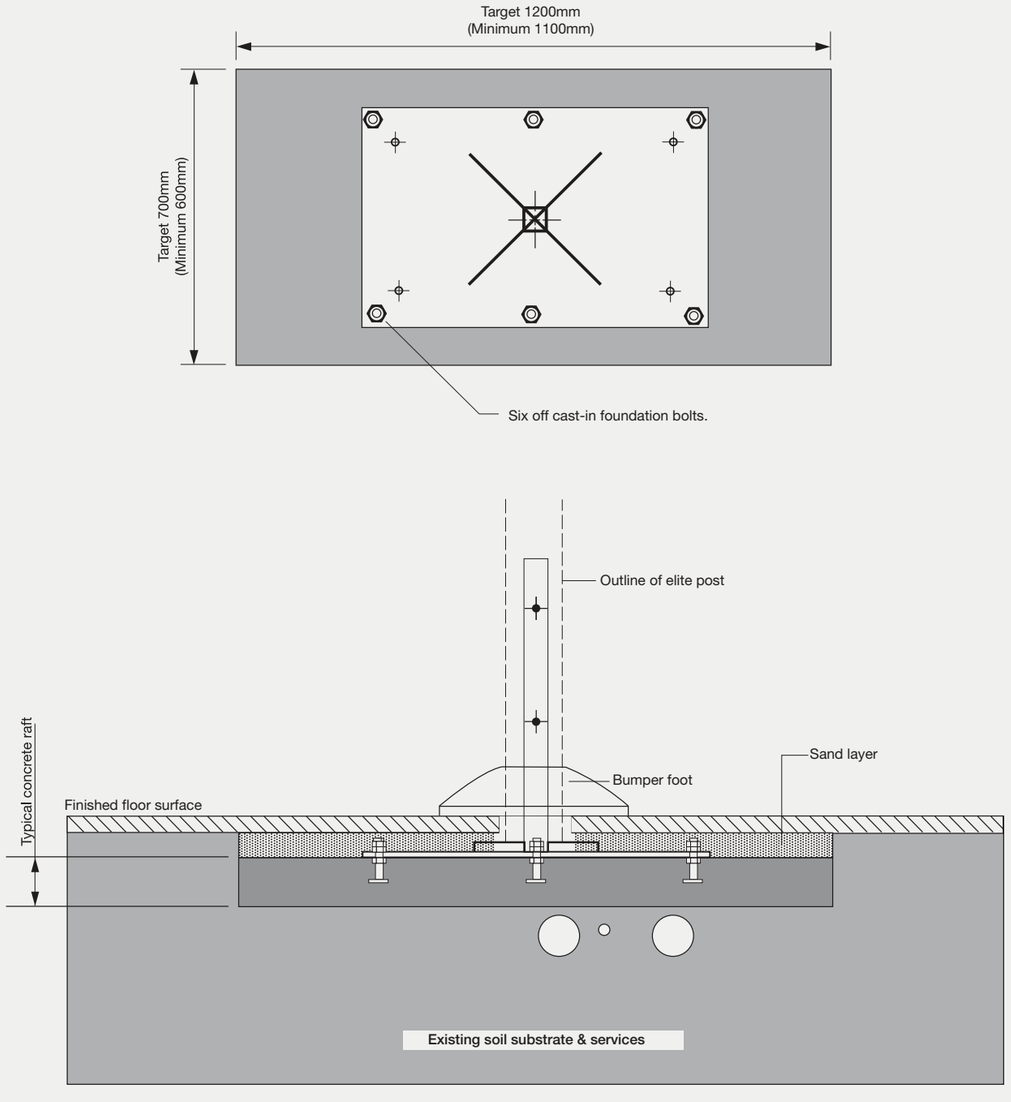
Future Systems's patented post over post system enables the rapid erection of bus stop poles, without having to break into the finished floor surface. Designed for low cost, rapid erection of bus stop poles, the post over post system has been used successfully in many applications.

Advantages of the socket system include:

- Rapid erection of bus stop poles,
- Low cost
- Opening notices and utilities information not required
- No civils work and re-instatement required
- Can use non-civils erection teams



Elite Bus Stop Foundation Option 4

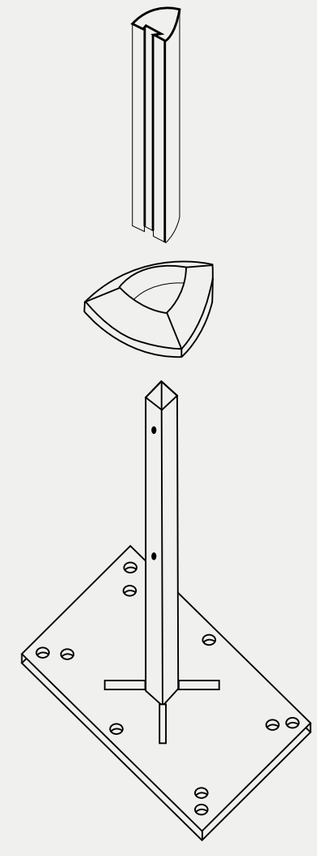


SIDE ELEVATION

Elite Foundation Option 4

Future Systems's restricted depth foundation system enables the safe, secure erection of bus stop poles at difficult locations which would otherwise inhibit installation, including:-

- Underground services,
- Very hard digs / concrete rafts
- Cellars
- Underground car parks
- Bridges
- Large tree roots



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NCHRP 350 approved system meets FHWA Breakway Standard.
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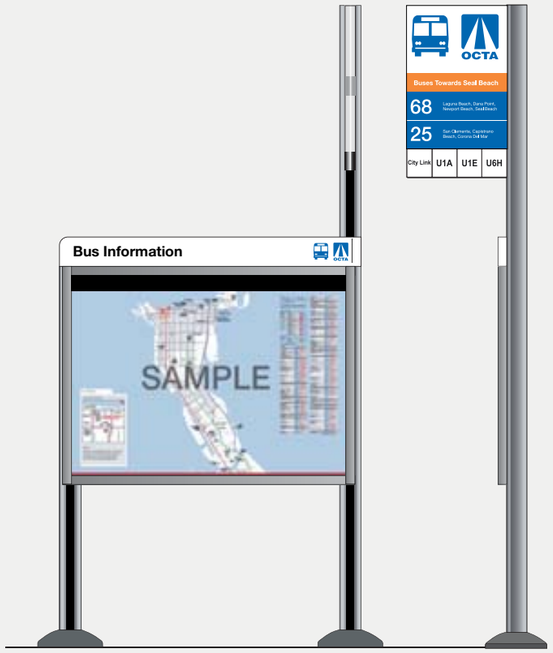
Elite Bus Stop Extended Range



Advertising Display

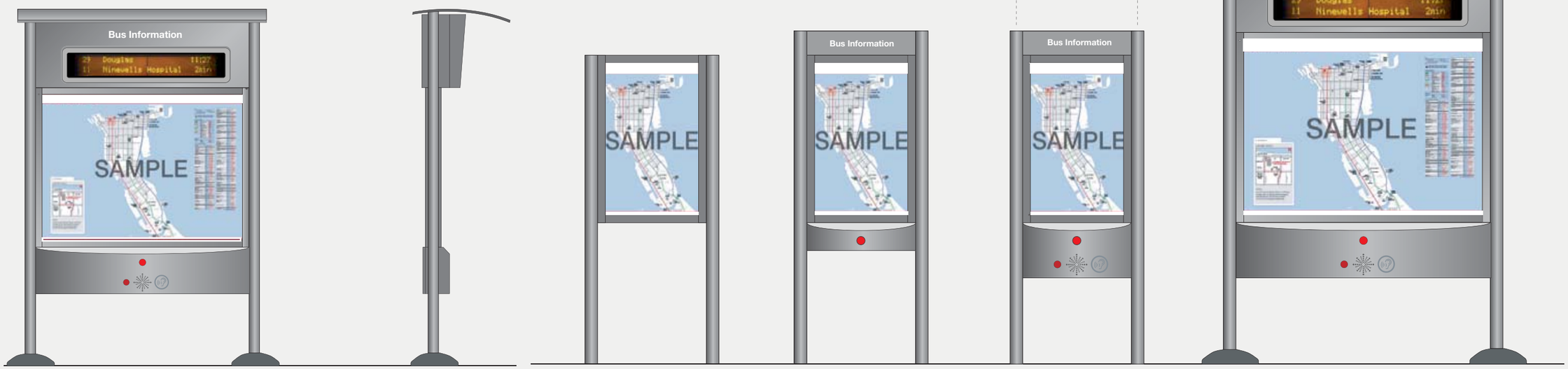
Advertising Display

Totem with RTPI and Audio

Totem with Audio

Elite Bus Stop Extended Range

Different post shapes available



Extended model with illumination audio system with RTPI & sun canopy

Basic freestanding poster frame

Extended model with illumination

Extended model with illumination and audio system

Extended model with illumination audio system and RTPI

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Elite Bus Stop Extended Range

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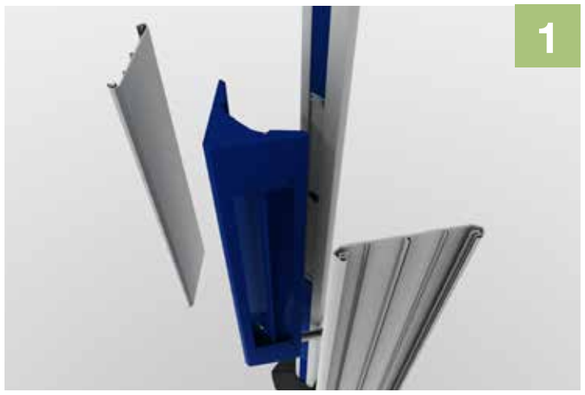
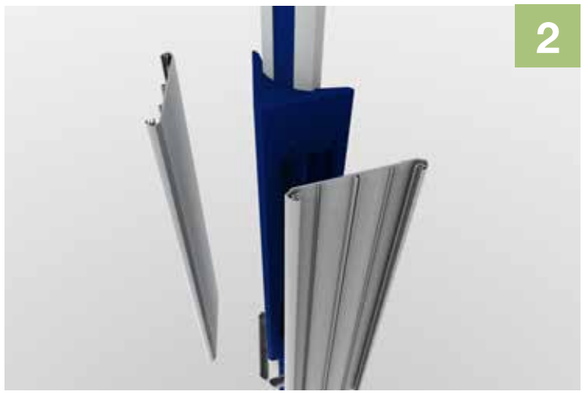
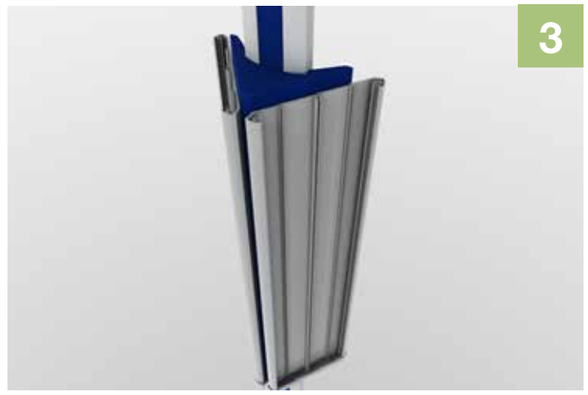
Elite Bus Stop Anatomy of an Elite Solar Stop







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Elite Bus Stop Anatomy of an Elite Solar Stop

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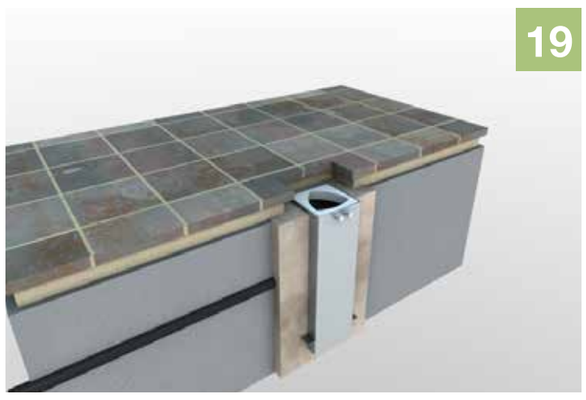

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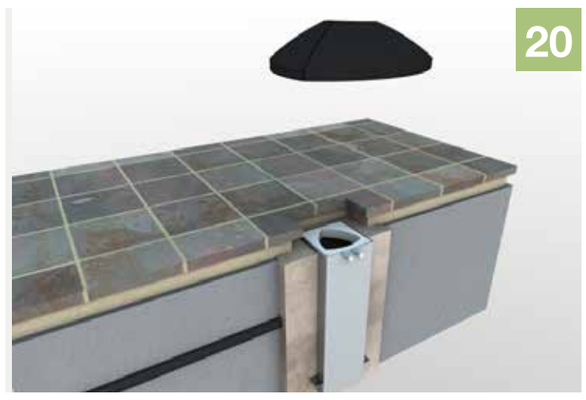

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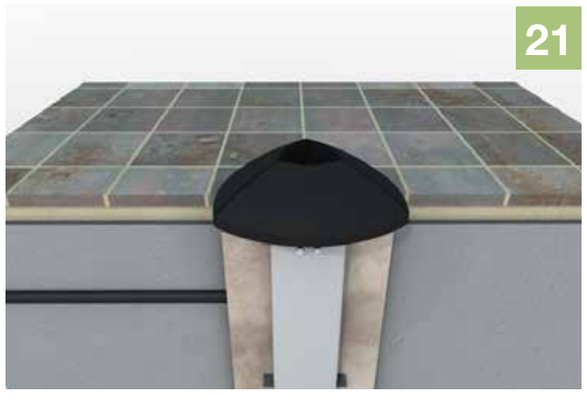

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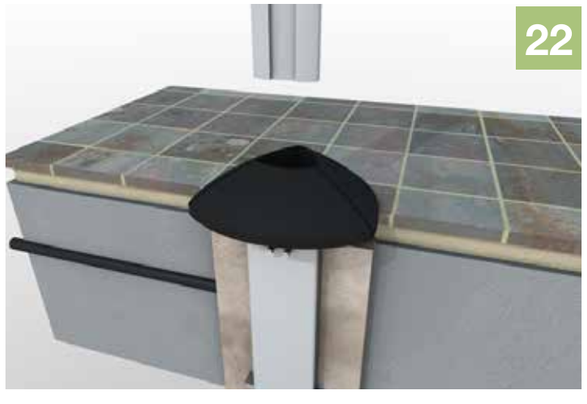

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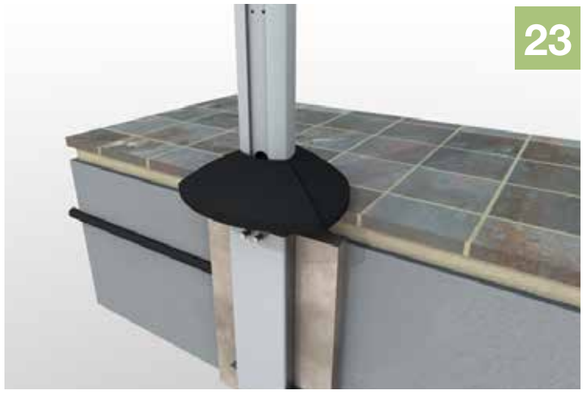

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Elite Bus Stop Case Study - TfL

Examples of TfL bus stops manufactured, installed and maintained by Future Systems

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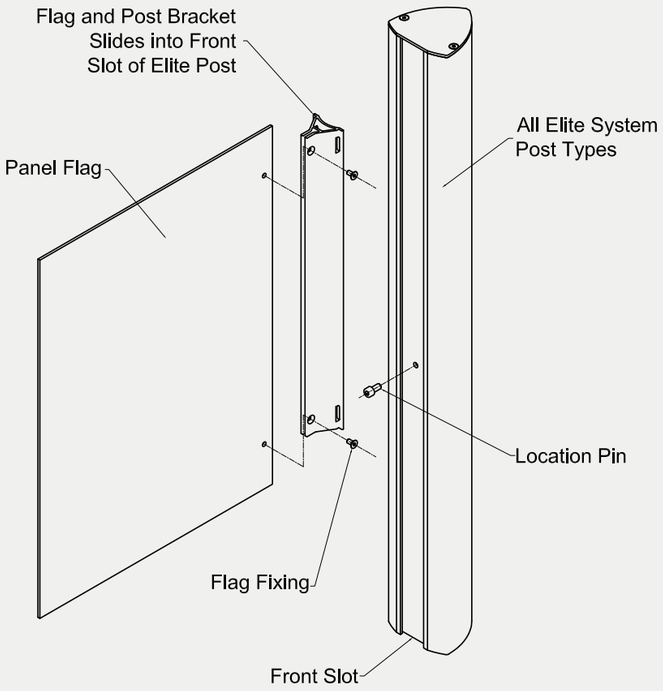
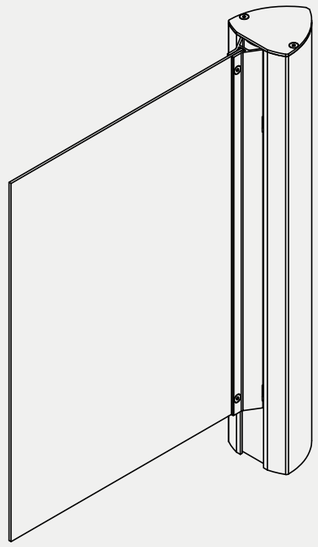
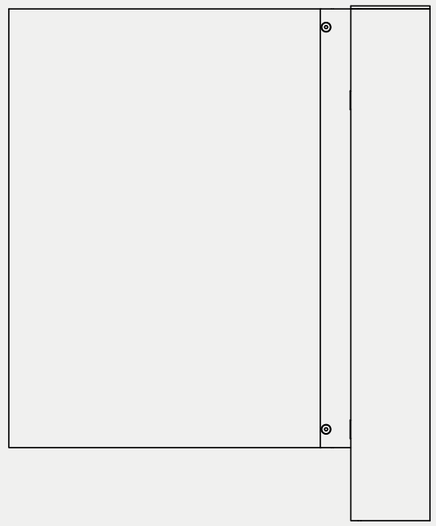
Flag Options Flag Option 1



Exploded Isometric



Front Isometric

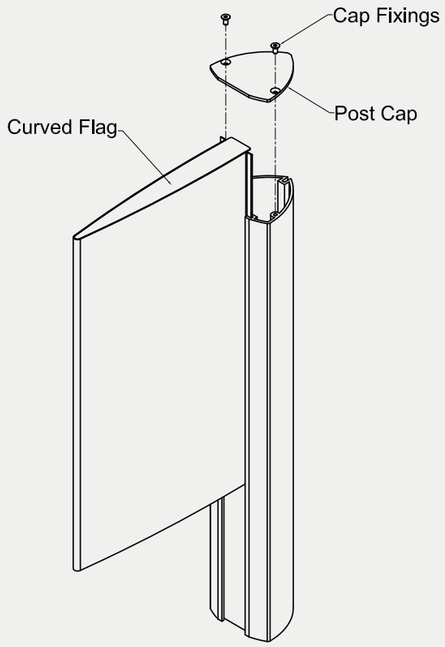


Front Elevation

Plan Elevation

Shown on Elite post - also fits onto Slimline post

Flag Options Flag Option 2



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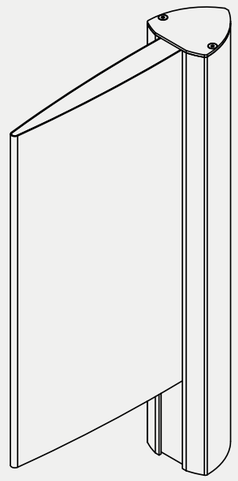
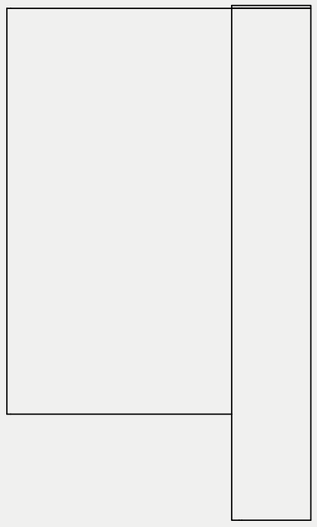


Front Isometric

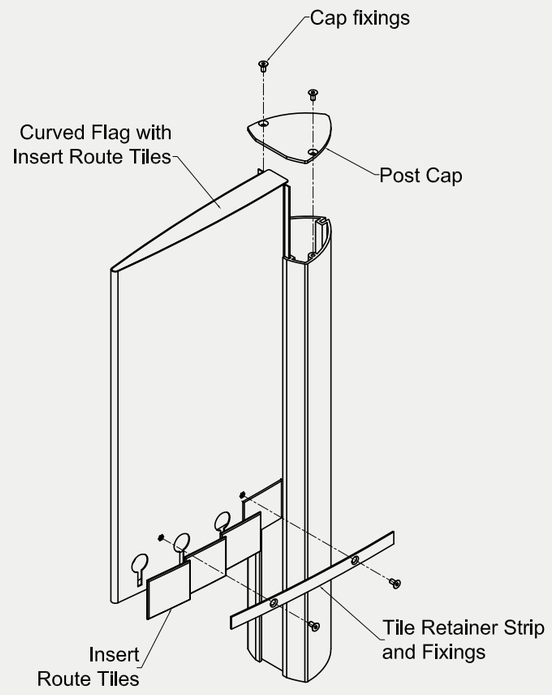


Front Elevation

Plan Elevation

Shown on Elite post - also fits onto Slimline post

Flag Options Flag Option 3



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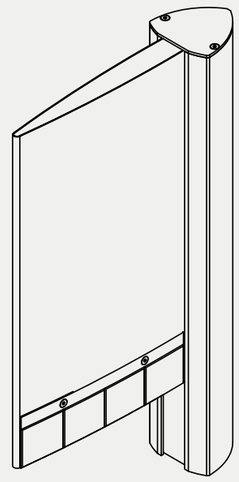
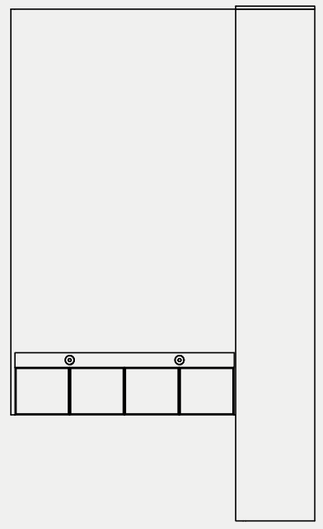


Front Isometric



Front Elevation

Plan Elevation

Curved route tile flag shown on Elite post - also fits onto Slimline post

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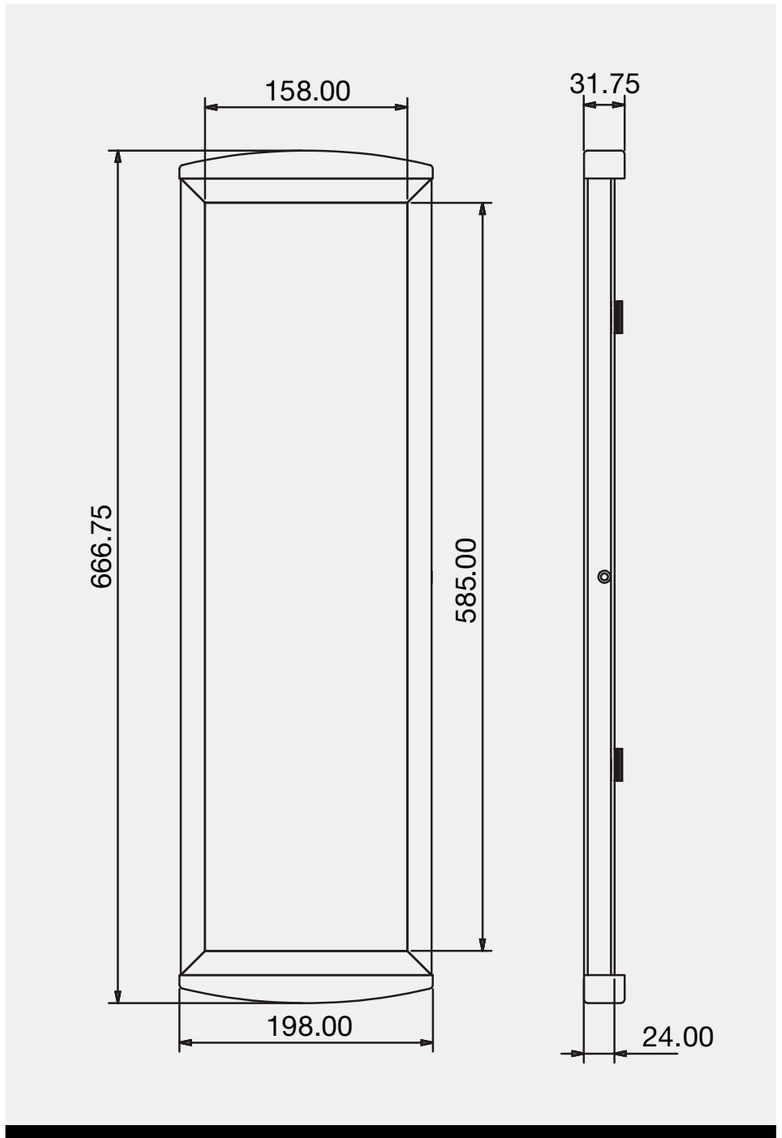
Hinged Door Option

PTE Side Hinge Timetable Case



Elite Side Hinged (winnipeg) Timetable Case

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