RINGWOOD

URBAN DESIGN MANUAL

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Client

RINGWOOD Going Places

Maroondah City Council

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SECTION 1- BACKGROUND & APPROACH

1.1 INTRODUCTION

The Ringwood Urban Design Manual (RUDM) is intended as a primary reference document to establish a strategic direction for the installation of a new and distinctive suite of street furniture and urban infrastructure within the Ringwood Activity Centre.

In the context of the proposed significant level of development and associated investment proposed within Ringwood, the manual aims to provide clarity and consistency for core treatments, furnishings and materials used for works within the public and private realm. This manual proposes an aspirational level of change and has been developed to establish a consistent and distinctive palette of high quality furnishings and treatments within the Ringwood Activity Centre. The manual aims to establish a design vocabulary and integrated suite of treatments that are unique and vibrant and thereby reinforcing the Ringwood 'Going Places' notion.

1.2 BACKGROUND AND CONTEXT

Located 23 kilometres east of Melbourne CBD in the City of Maroondah, Ringwood is a suburban centre in transition. A priority of the Victorian Government's Plan Melbourne blueprint for Melbourne's growth, Ringwood is a designated Metropolitan Activity Centre (MAC) - the highest priority centres outside of the CBD.

Strategically located at the epicentre of a superb network of major arterial roads and transport nodes, Ringwood benefits from unsurpassed metropolitan road and rail connections, services a large catchment of Melbourne's eastern growth corridor, and is the gateway to the Yarra Valley – Victoria's hero food and wine destination.

Investment in integrated and sustainable development around first class transport services will position Ringwood as a key new urban destination with a vibrant city centre, active local economy and contemporary lifestyle options.

The Ringwood Metropolitan Activity Centre is bounded by Ringwood Bypass to the north, the Maroondah Highway, the railway line and Station Street to the east, the railway line to the south, and Eastlink to the west. It is approximately 120 hectares in size.

The vision for the Ringwood Metropolitan Activity Centre is:

'to establish Ringwood as the primary mixed use hub in Melbourne's outer east, boasting a vibrant and contemporary hilltop Town Centre with wholly integrated and sustainable retail, commercial, employment, leisure, civic and residential activities in a natural landscape setting connected through an advanced road and rail network."

The key Metropolitan Activity Centre in Melbourne's outer east, Ringwood is now the focus of significant public and private investment, employment growth and renewal.

Realising the vision for Ringwood is being achieved through innovative models of public-private-partnership and investment. Spanning over a decade, a tri-partisan approach and shared vision has resulted in over $1.2 billion of master-planned investment committed to develop Ringwood's retail, commercial, employment, residential and lifestyle futures.

Revitalising this strategic location will accrue significant benefits for all Victorians, spanning productivity improvements, congestion and infrastructure cost savings, better accessibility to jobs and services, improved amenity and more affordable housing.

1.3 STUDY AREA

1.4 AIMS

The Ringwood Urban Design Manual has been developed to provide clear and specific directions in relation to the design, selection and placement of furniture elements within Ringwood. It will assist Council Departments, property managers and consultants to establish the progressive and consistent upgrading of streetscape treatments within the Ringwood Activity Centre. From a functional perspective, the Manual will provide a framework to improve the quality, consistency and efficient fit out of the public realm. From an "activation" perspective, the Manual shall provide a guide to improve the vibrancy, image and appeal of Ringwood which is consistent with the 'Ringwood Going Places' initiative.

The manual will also;

- Establish a consistent suite of street furniture and treatments that relate to the proposed scale and future vision for Ringwood and the and combine to create positive impressions of the Activity Centre.
- Create a vibrant and elegant yet functional suite of furniture elements and treatments.
- Aim to eliminate inappropriate and ad-hoc installations, inappropriate and or dated furnishings.
- Reflect Council's sustainability objectives

- Provide a document that reflects a consensus across relevant Council Departments in terms of an agreed suite of urban landscape furnishings and treatments.
- Provide a strategy that informs and provides a reference point for future decision making.
- Is considerate of maintenance, replacement and whole of life costs.

From a design and infrastructure planning perspective, the preparation of the Ringwood Urban Design Manual will have a number of strategic benefits including:

- stream-lining of the furniture selection process;
- greater asset management control;
- easier and improved planning for maintenance regimes and resource allocation;
- better recording of Council's supply and installation procedures;
- more consistent application of construction standards and implementation procedures.

Improved selection, installation and maintenance procedures will also benefit the significant scale public and private developments and streetscape projects that are proposed within Ringwood.

1.5 DESIGN PRINCIPLES & CONSIDERATIONS

This project provides an opportunity to reference and reinforce the proposed significant level of improvement to the private and public realm that is proposed in Ringwood over the next five to ten years. High quality street furnishings and treatments improve the amenity, provide greater consistency and contribute to a more lively and active urban centre.

The following design principles and considerations were used to assist in the development of the Urban Design Manual for Ringwood. These should be applied to the further resolution of the suite and development of details for additional elements.

Distinctiveness
The manual aims to establish a 'design vocabulary' and unique, integrated suite of elements and treatments that are unique to Ringwood. The roll out of these elements within the streetscape will contribute to the vibrancy and contemporary design aesthetic of the rapidly changing Ringwood Activity Centre. This is particularly important as the urban spaces between the buildings, and often disparate architecture, provides an opportunity to create a strong, consistent and distinctive image for the Activity Centre.

Flexibility
The opportunity for elements to be used in different ways or adapted to suit particular applications of locations within the centre.

Consistency
The use of selected furniture elements within the Ringwood will help to unify the public and private areas of the streetscape.

Aesthetics, ergonomics and suitability-
The elements need to look good and be inviting to use but also be practical, 'fit for purpose' and comfortable. Each furniture element should be designed or detailed to achieve the fundamental outcome of being suitable for the intended purpose or application. A well considered suite of elements can be used as a 'kit of parts' whereby a furniture element may be able be accommodate or provide a support other integrated elements within the suite. The design and placement of furniture elements should also consider social behaviour, personal comforts and safety.

Sustainability
Considerations that reduce the ecological impact of furniture elements or urban treatments should be primary to the design and selection process. The design and choice of materials should consider the total impacts and benefits to the environment. This includes the environmental ethics and practices of suppliers, options for the use of recycled materials, plantation timbers and low embodied energy materials in the production process, capacity to recycle materials at end of life, use of local suppliers or manufacturers for reduced transport costs etc. These factors should be considered at all levels of the process in order to minimise environmental degradation and wastage.

Local production
The use of local manufacturers and suppliers is preferred. This will help to support the local economy, ensure a higher level of responsiveness and reduce the carbon footprint associated with importing or transporting furniture from other localities.

Branding
Furniture elements offer excellent opportunities to reinforce the brand or identity of a locality and municipality. It is intended that the suite of elements adopted for Ringwood is distinct however there also exists the opportunity to incorporate or creatively reflect the corporate identity of Maroondah within the elements.

Design standards, public safety and disability access
The implementation of the Manual will need to address all relevant standards or legislation to ensure that streetscape elements do not represent a hazard to either pedestrians or motorists.
The design, selection and placement of streetscape elements shall therefore conform to relevant Australian Standards and industry guides, including but not limited to:

- AS/NZS 1158 (2005) Guide to Residential Streets and Paths, Cement and Concrete Association of Australia (2004).
- AS 1742.15—2007 Manual of uniform traffic control devices—Direction signs, information signs and route numbering.
- AS 1428 Design for access and mobility.
- AS 1428.1 Part 1: General requirements for access—New building work.
- AS 1428.2 Part 2: Enhanced and additional requirements—Buildings and facilities.
- AS 1428.3 Part 3: Requirements for children and adolescents with physical disabilities.
- AS 1428.4.1 Part 4.1: Means to assist the orientation of people with vision impairment—Tactile ground surface indicators.
- AS 1428.5 Part 5: Communication for people who are deaf or hearing impaired.
- AS 2890.3-1993 : Parking facilities - Bicycle parking facilities

Cost
Given the pressures on Council for new assets and asset renewal, the cost effectiveness of furniture elements and public realm treatments is an important consideration. The expenditure on particular elements will vary according to the locality. High profile areas within the urban core of Ringwood warrant a special treatment or higher quality elements, hence the costs may be higher. Cost should be considered in relation to efficiency of manufacturing, production runs, availability and timing and delivery (i.e. the costs of some elements may be lower if ordered in larger quantities).

Supply
To ensure an efficient supply capacity it is preferable that street furniture items be commercially available or custom manufactured locally.

Placement and distribution
The standards and rationale for the placement of street furniture need to be considered to ensure the appropriate distribution of elements. For example, while there may be a standard notional spacing, the actual number of seats in a particular street may vary according to a range of factors such as the amount of pedestrian traffic, the presence of key facilities, path grades etc.

Life expectancy and durability
Elements should be selected and designed to consider issues of usage, durability and life expectancy. Highly durable materials may have a higher up front cost but this may be justified an extended product life expectancy.

Maintenance
The design and material selection should consider maintenance factors including the ease of replacement of the entire unit, the replacements of parts, the capacity to remove graffiti and whether maintenance can be carried out in-situ or off site. Costs and frequency of recurring maintenance should be assessed at the selection phase. The costs of ongoing maintenance may warrant higher initial expenditure to reduce costs over the long term.

Installation
If street furniture cannot be maintained in-situ, it should be installed to facilitate removal for off site maintenance. Installation and footing details will need to consider a range of situations including varying surface finishes, gradients and sub surface materials. If furniture is to be removed then any subsequent hazards must be minimised due to potential public liability issues.

Prototyping
The development of innovative and sustainable treatments and solutions should be encouraged within the Manual. As such, new furniture elements and construction details should be prototyped, tested and proven to be successful prior to being adopted as a standard.

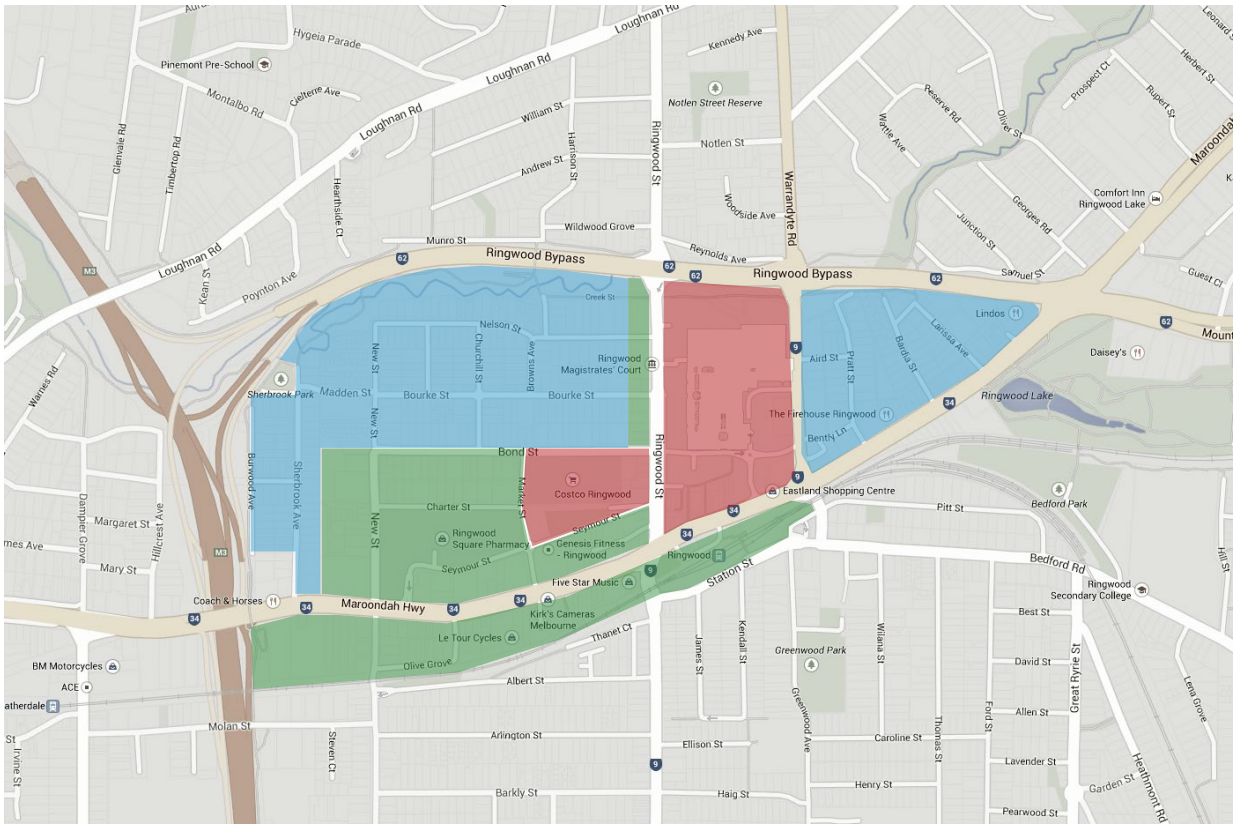
1.6 ACTIVITY CENTRE ZONES

The Ringwood Metropolitan Activity Centre has three distinct zones:

1. Town Centre civic, commercial and retail precinct
2. Commercial Precinct
3. Residential Precinct

The characteristics and aspirations for the zones determine the development and activity focus, and the urban design response.

ACTIVITY CENTRE ZONE MAP



Zone 1 - Town Square

This zone represents an area of intense development and a concentration of civic, commercial and retail activity within the Ringwood Metropolitan Activity Centre (RMAC)

This zone is the nucleus of the Ringwood Town Centre and is comprised of the Ringwood Bus Interchange and Railway station - an integrated transportation hub, the Town Centre – a civic and community space incorporating a Town Square and flagship library learning and cultural centre adjacent to a consolidated retail centre.

This area is defined by its highly considered aesthetic both architecturally and within urban design. The materials used within this zone are of high quality and robust and employed within a design suite of urban elements that present a refined and elegant aesthetic unique to the Ringwood MAC and representing a departure from generic, mass produced and commonly employed elements within many urban areas.

Zone 2 - Commercial Precinct

This zone represents an intermediate area between the intensely developed centre and the residential zones of the Ringwood MAC.

The Commercial Precinct is 'a living city'. It will no longer be the place to pass through, but entice visitors to explore, enjoy and relax on the Maroondah Highway Boulevard. Buildings will be integrated with the streetscape to develop a sense of pride along both the street and rail corridors.

These enhancements apply to both the public and private domain and seek to redefine the Maroondah Highway corridor as the city's boulevard, creating an improved and safe pedestrian setting as well as recognizing the railway line as an alternate 'gateway' to the city. Maroondah Highway will become a centre of activity that will attract high quality commercial enterprises while also offering affordable business opportunities.

This precinct employs the highly considered forms and design aesthetic implemented within zone 1, however, the material finish of the individual elements are not as highly defined presenting a more robust suite while still referencing the shape and forms used within zone 1.

Zone 3 - Residential Precinct

This zone represents the most informal area of the Ringwood MAC.

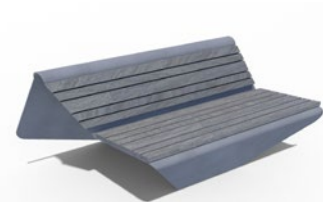
The vision for the precinct is for it to become 'Ringwood's leafy, city living' precinct, a forefront of 'new-urbanism' in the Metropolitan region, through integration of high quality urban design and ecologically sustainable development principles within a prominent, high-density residential region.
The precinct is distinguished by higher density residential area within Melbourne's outer east Metropolitan Activity Centre. It is a sustainable place to live, with convenient access to transport, shops, services, employment opportunities and open spaces.
New, higher density residential buildings range in height, but provide a human scale to the street. The changing built form and range of housing types allows an increased and diverse population access to everything the Metropolitan Activity Centre has to offer.

The Precinct's connection with the Mullum Mullum Creek open space is enhanced through improved pedestrian and cyclist access. Buildings overlook the creek interface, giving residents a pleasant outlook and providing passive surveillance. The green spaces that border the Precinct are reflected in the leafy streets and private open space areas, where innovative planting and the retention of canopy trees creates a landscape setting.

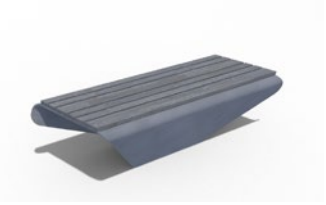
There is an increased amount of on-street activity, with improved safety for cyclists and pedestrians, continuous footpaths that lead people to key destinations and a social atmosphere that draws people out onto the street.

This area employs the forms and design aesthetic implemented within zones 1 and 2 to achieve design continuity throughout the Ringwood MAC, however, the material finish of the individual elements are more subdued and relaxed. While robust and referencing the shapes and forms used within the other zones the urban suite of elements in this area are less articulated and precise, weathered in appearance present as less contrived.

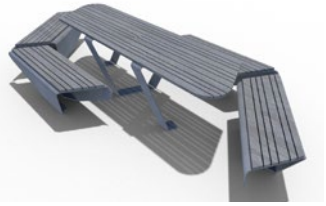
Zone 1 Town Square



RF001
Seat with back
Optional LED lighting



RF002
Bench Seat

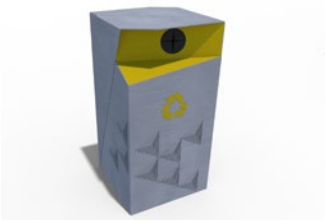


RF004
Table with benches

RF005
Bike rack

RF005a
Bike rack - single

RF006
Bin - Rubbish
Optional butt receptacle

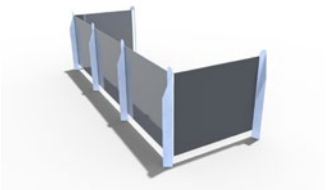


RF007
Bin - Recycle

RF008-009
Bollard fixed/ removable
Optional LED lighting

RF010
Drinking Fountain

RF011
Pedestrian Light

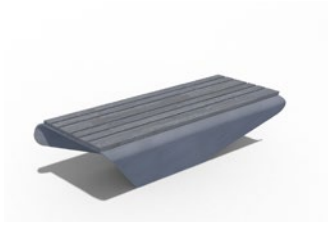


RF013
Cafe screens

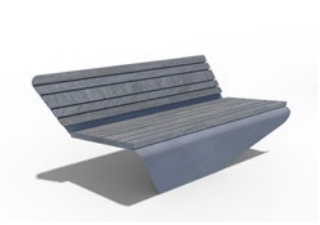
RF014
Tree guard

RF015
Tree grate

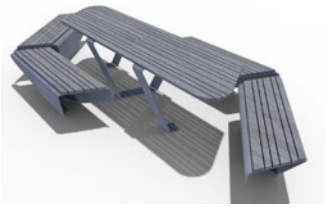
Zone 2 Commercial Precinct



RF002
Bench Seat



RF003
Freestanding seat

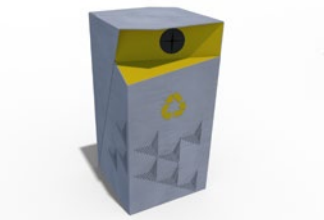


RF004
Table with benches

RF005
Bike rack

RF005a
Bike rack - single

RF006
Bin - Rubbish



RF007
Bin - Recycle

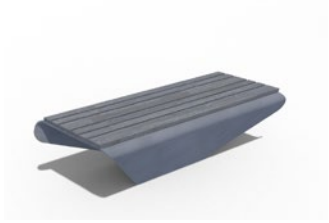
RF008-009
Bollard fixed/ removable

RF010
Drinking Fountain

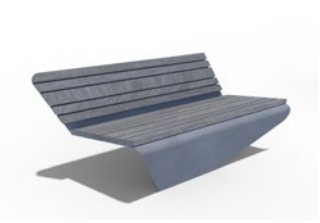
RF014
Tree guard

RF015
Tree grate

Zone 3 Residential Precinct



RF002
Bench Seat



RF003
Freestanding seat

RF005
Bike rack

RF005a
Bike rack - single

RF006
Bin - Rubbish

RINGWOOD

URBAN DESIGN MANUAL

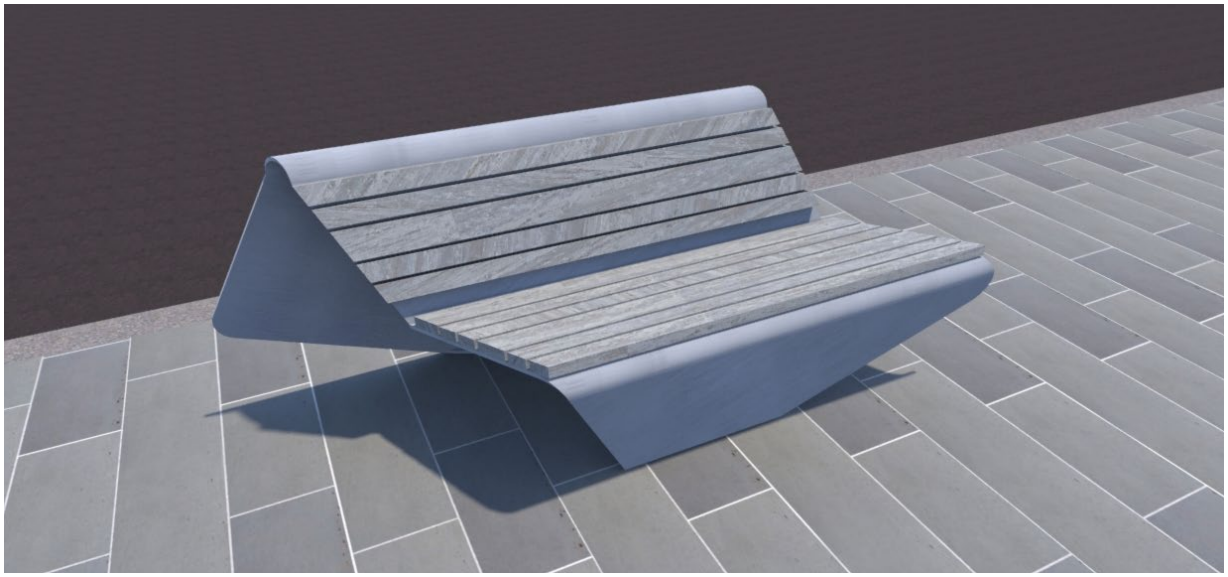
SECTION 2 - URBAN FURNITURE SUITE

This section includes custom designed furniture elements (including elements which will be developed in the future.)

FURNITURE SUITE INDEX

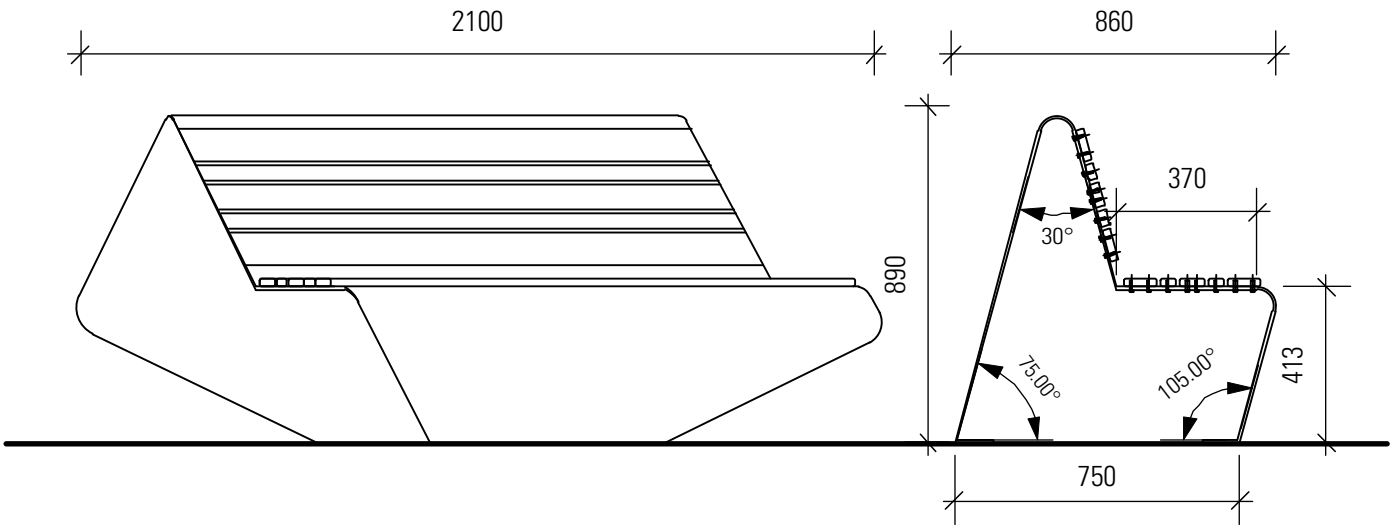
SEAT with back

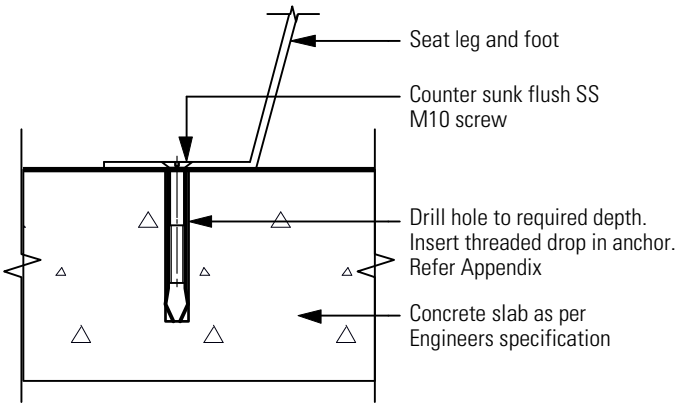
RF 001



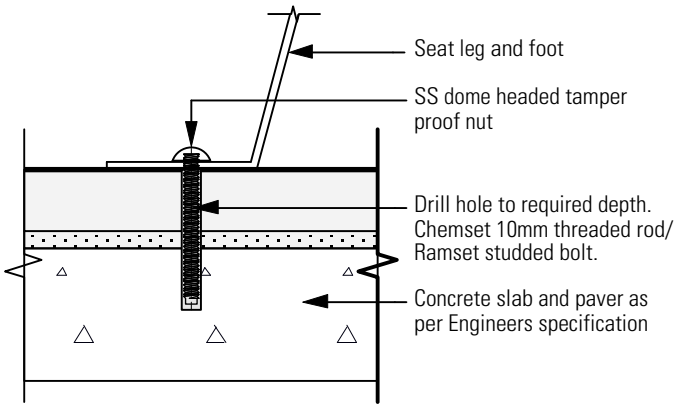
Design Statement	This unique contemporary urban seat applies simplicity and durability during fabrication to produce a robust architectural street feature. The sophisticated seat, folded from a single plate of stainless steel, offers flexibility and functionality with the back face providing an opportunity for wayfinding signage.
Style	Custom designed press folded urban seat
Materials	6mm folded plate No.4 stainless steel Urbanline Duro Screen® slats
Finish	Stainless steel - Pickle Passivate Satin Electropolish Urbanline Duro Screen® slats - Natural mill finish
Installation	Generally face seat inwards towards buildings Seat to be bolted down as per details
Maintenance	Hand or pressure clean as required. Slats to be replaced individually as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Periodically (6 monthly)
Recommended Use	Recommended to be used in all general streetscape areas. Seats should face shops along the length of the street, except at bus stops where seats are to face the street.
Supplier	Via Maroondah City Council Elliott Engineering or Draffin Street Furniture

RF 001

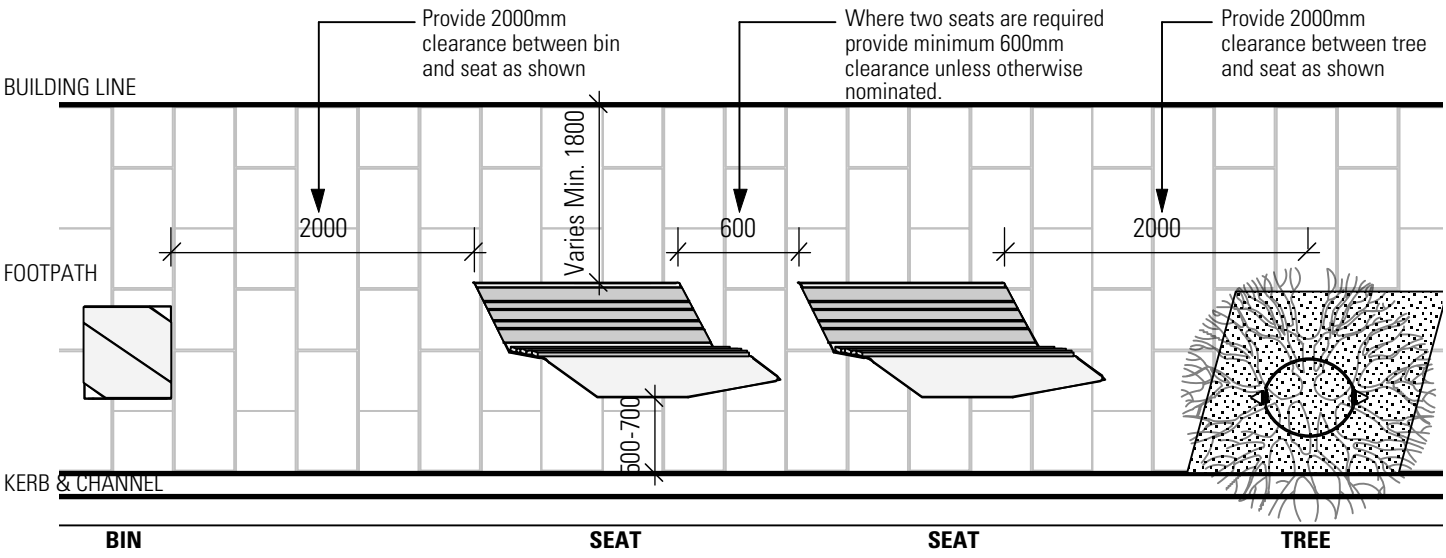




FIXING DETAIL (DROP IN ANCHOR)

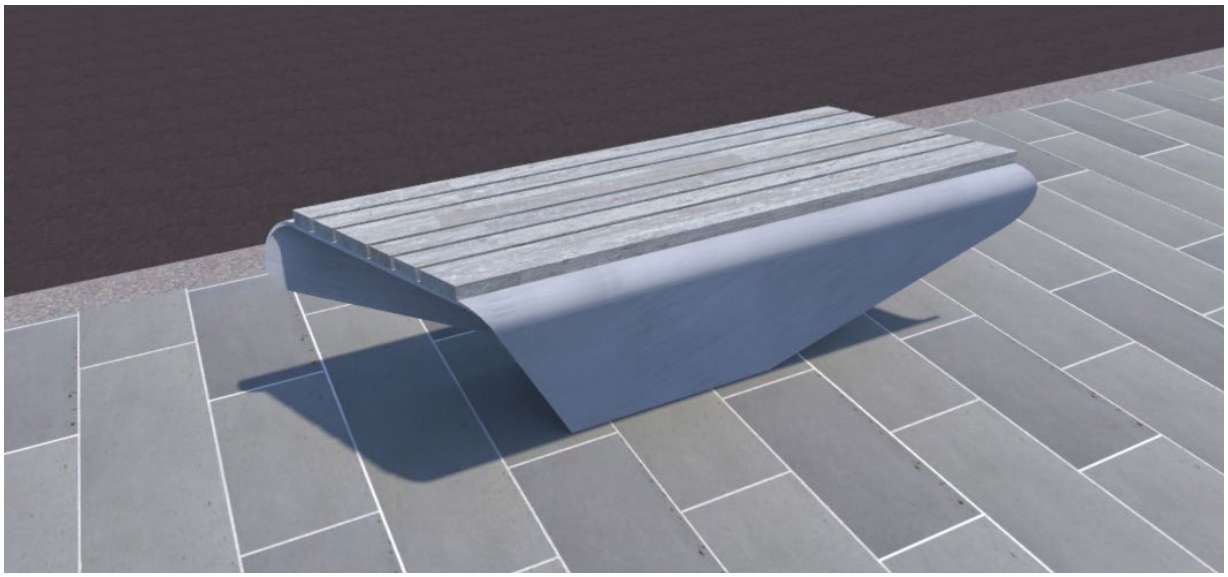


FIXING DETAIL (CHEMSET)



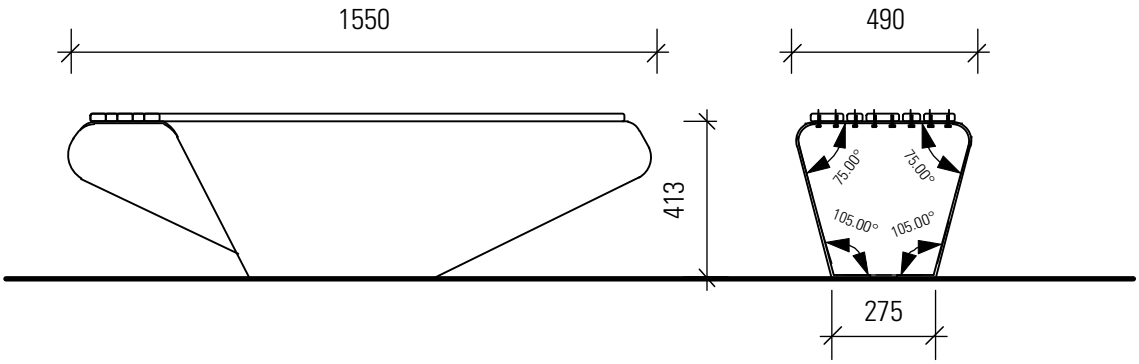
BENCH seat

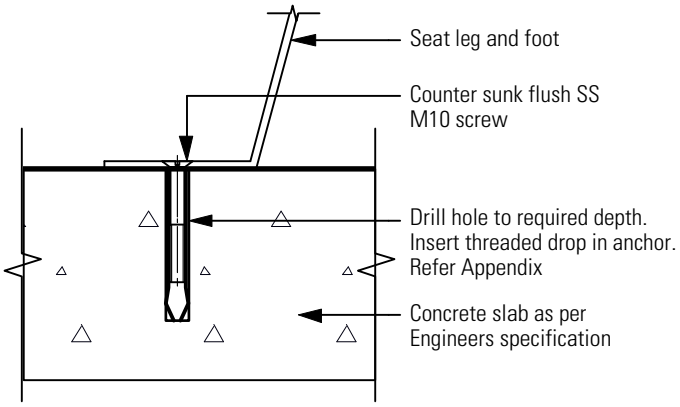
RF 002



Design Statement	This press folded stainless steel urban bench offers a versatile and robust seating feature in locations where facing both directions is desirable. The composite timber slats are an ideal combination with stainless steel to minimise vandalism and maintenance requirements.
Style	Custom designed bench seat
Materials	6mm folded plate No.4 stainless steel Urbanline Duro Screen® slats
Finish	Stainless steel - Pickle Passivate Satin Electropolish Urbanline Duro Screen® slats - Natural mill finish
Installation	Bench to be bolted down as per details
Maintenance	Hand or pressure clean as required. Slats to be replaced individually as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Periodically (6 monthly)
Recommended Use	Recommended to be used in all general streetscape areas where option to face both directions is desirable and at bus stops.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 002





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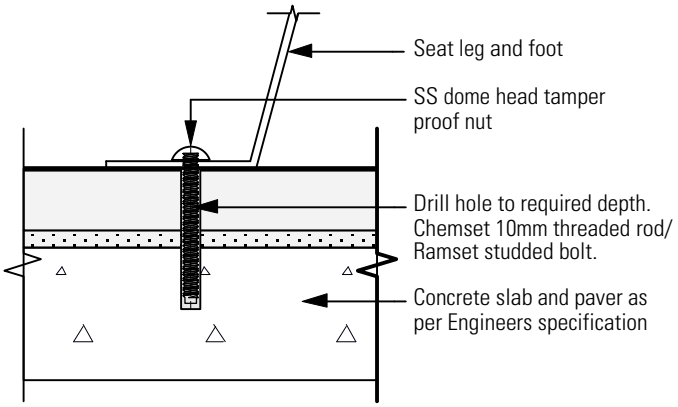

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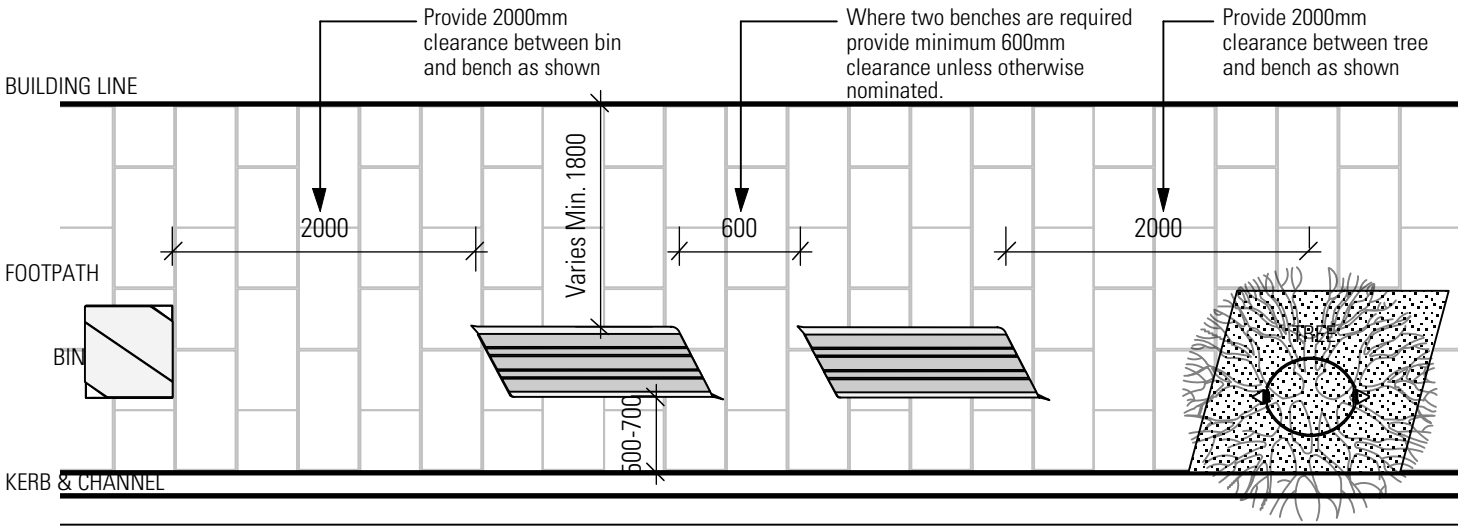
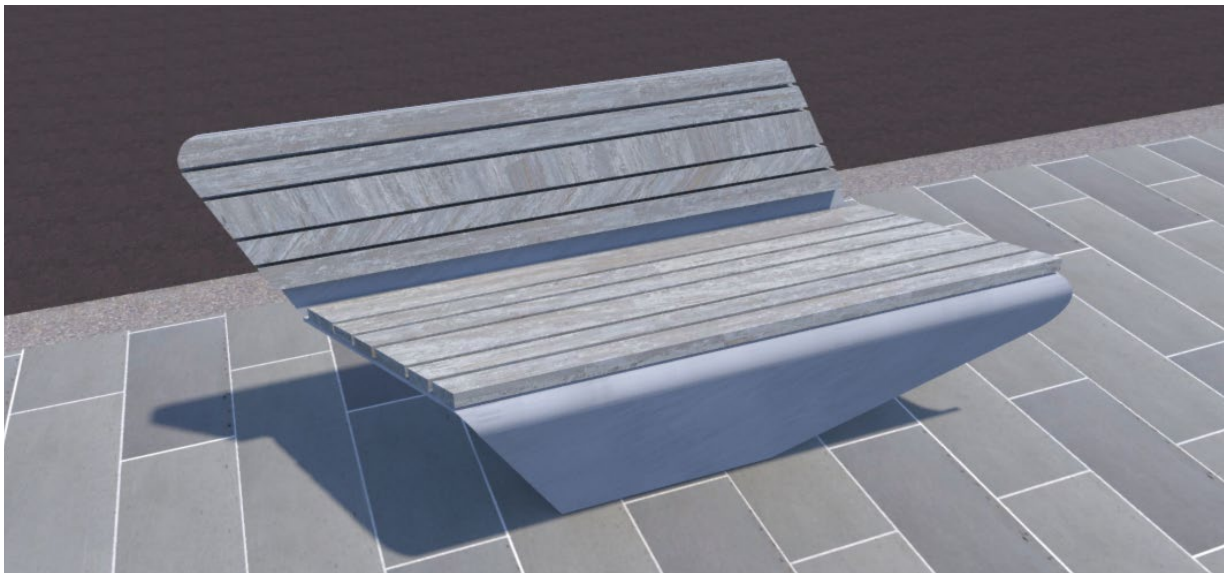


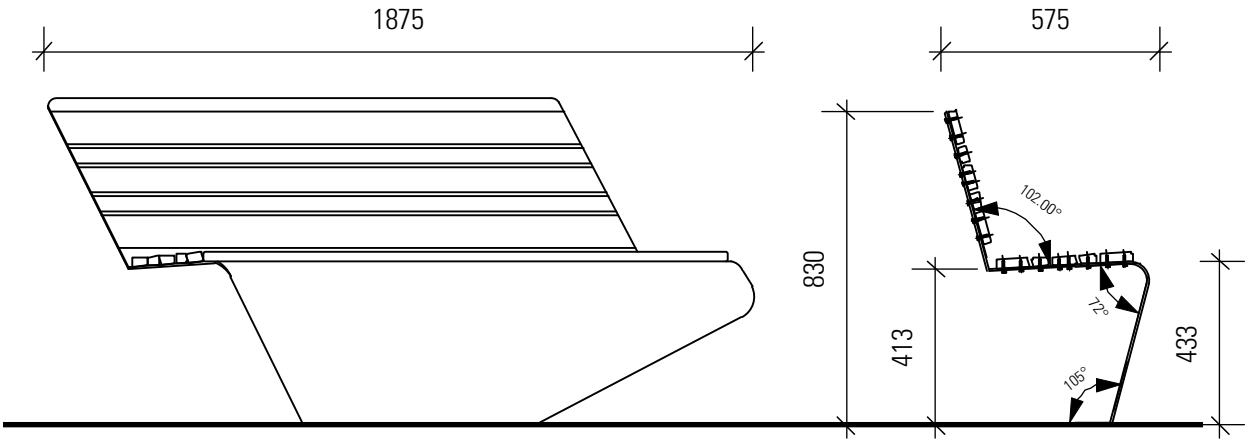
FREESTANDING seat

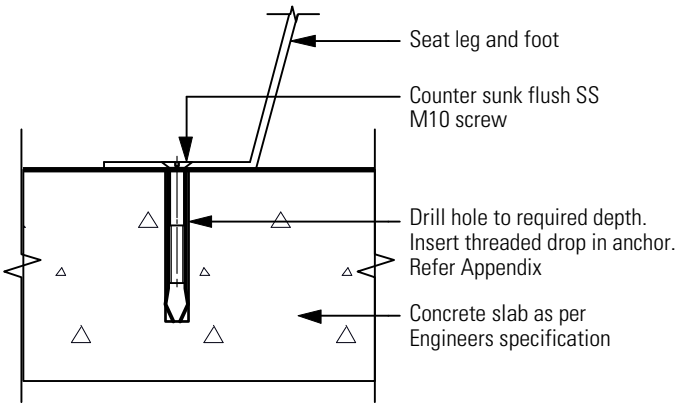
RF 003



Design Statement	This custom design seat comprises of a single piece of press folded stainless steel which cantilevers to provide an ergonomic seating feature. The seat offers a smaller footprint to the seat with back and is suitable in areas, such as narrow footpaths where clearance is required.
Style	Custom designed seat without back
Materials	6mm folded plate No.4 stainless steel Urbanline Duro Screen® slats
Finish	Stainless steel - Pickle Passivate Satin Electropolish Urbanline Duro Screen® slats - Natural mill finish
Installation	Generally face seat inwards towards buildings Seat to be bolted down as per details
Maintenance	Hand or pressure clean as required. Slats to be replaced individually as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Periodically (6 monthly)
Recommended Use	Recommended to be used in all general streetscape areas. Seats should face shops along the length of the street, except at bus stops where seats are to face the street.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 003





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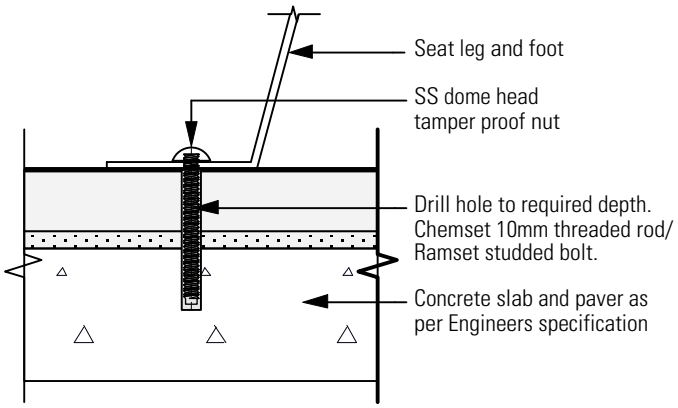

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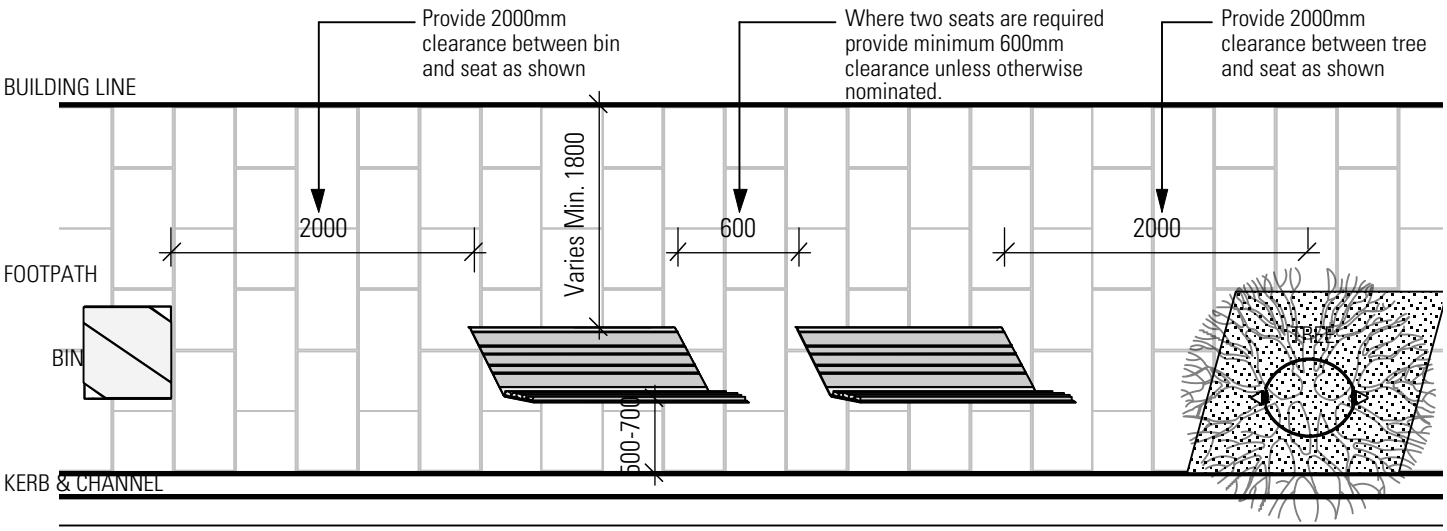
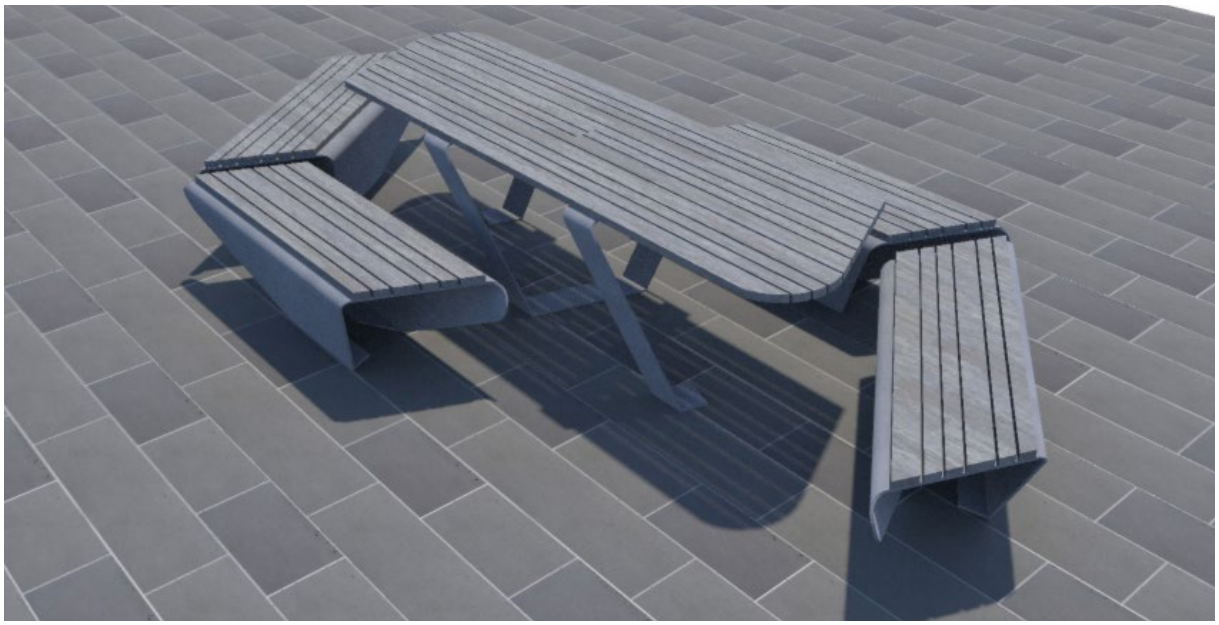


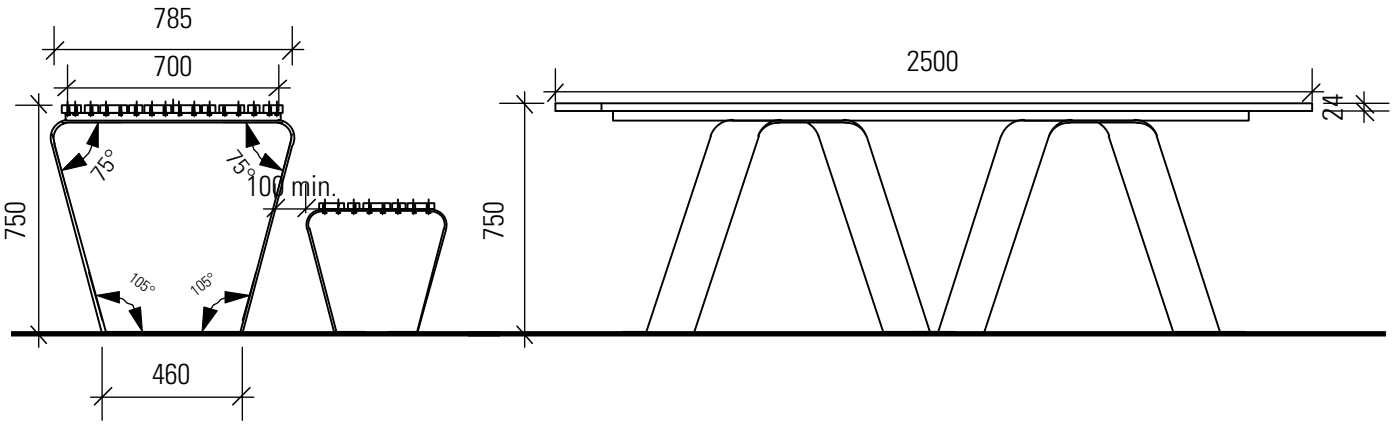
TABLE with seats

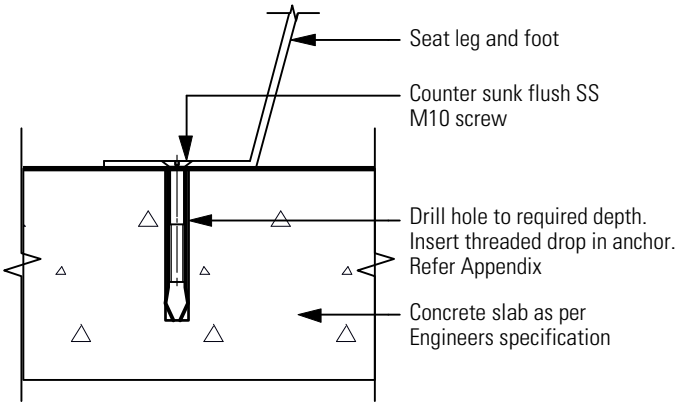
RF 004



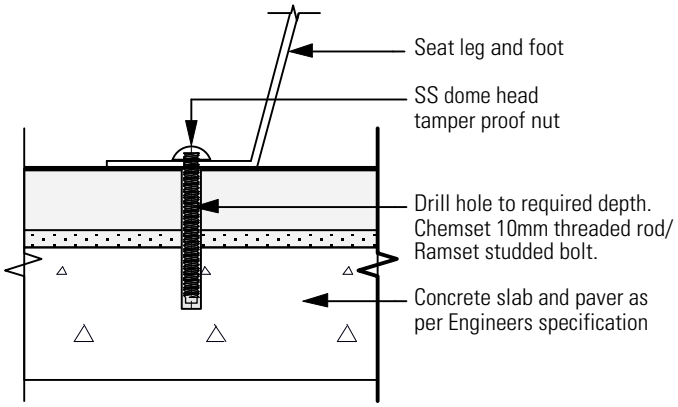
Design Statement	This uniquely designed table has a clear transparent profile and offers opportunities for multiple setting arrangements. The table is wheelchair accessible and is durable against the toughest of conditions.
Style	Custom designed accessible urban table with flexible seating arrangement
Materials	8mm folded plate No.4 stainless steel Urbanline Duro Screen® slats
Finish	Stainless steel - Pickle Passivate Satin Electropolish Urbanline Duro Screen® slats - Natural mill finish
Installation	Table to be located in urban areas with footing to Engineers detail and bolted down as per associated details. Bench seats (Refer RF002)
Maintenance	Hand or pressure clean as required. Slats to be replaced individually as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Periodically (6 monthly)
Recommended Use	Recommended to be used in urban squares and plazas where eating is encouraged.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 004

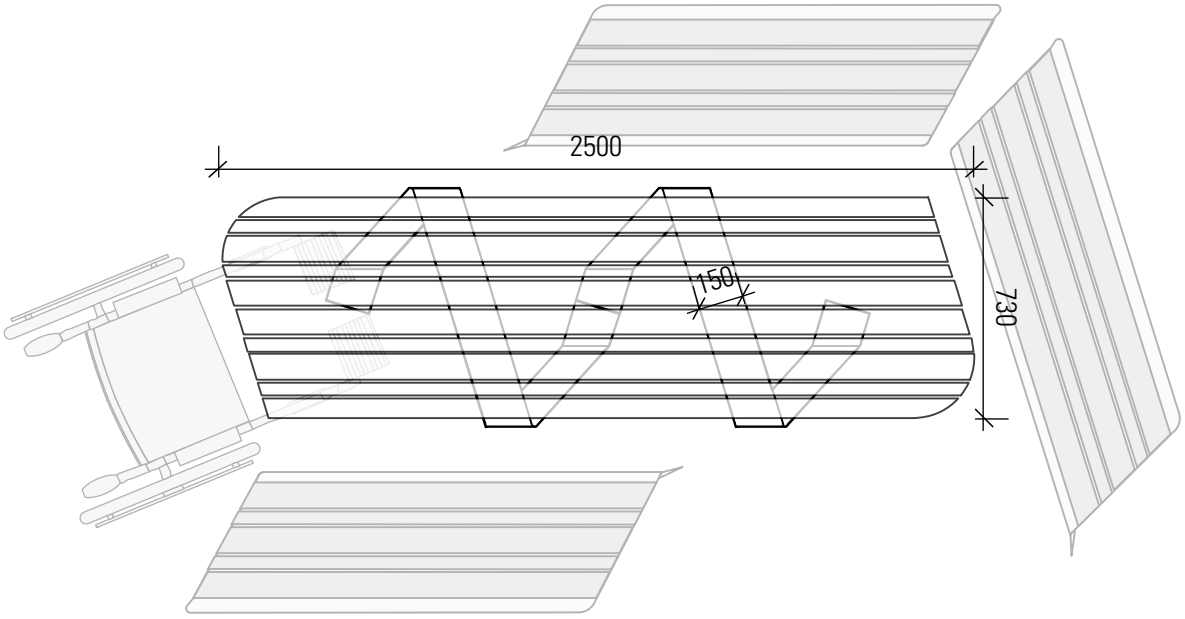




FIXING DETAIL (DROP IN ANCHOR)



FIXING DETAIL (CHEMSET)

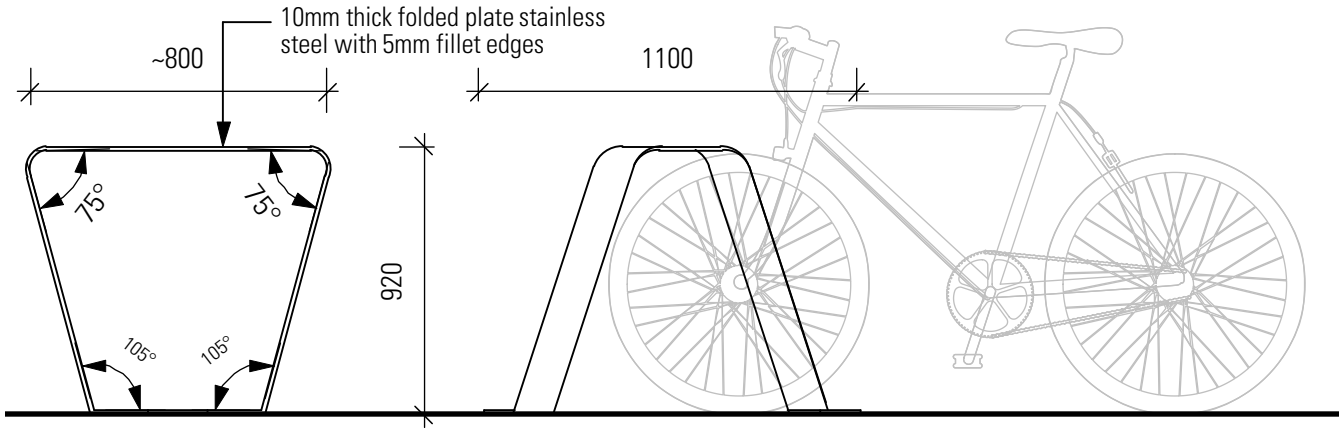


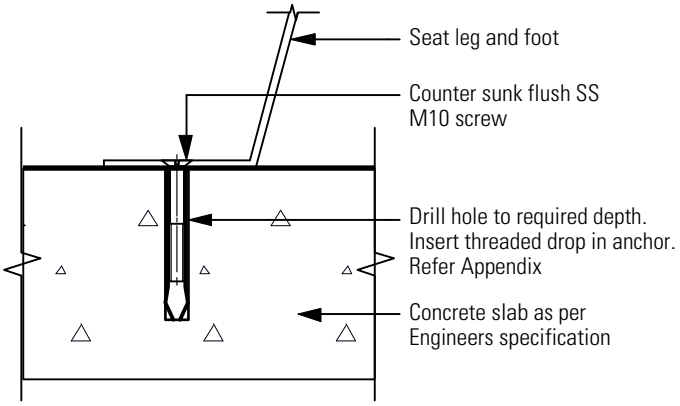
BIKE RACK modular

RF 005

Design Statement	This modular bike rack provides a unique sculptural feature in any urban setting as well as offering flexibility for both user and passer by. By installing a single or multiple combination the rack promotes a friendly bike environment within the Ringwood Centre.
Style	Custom designed modular bike rack with flexible arrangement and parking options
Materials	10mm folded plate No.4 stainless steel
Finish	Stainless steel - Pickle Passivate Satin Electropolish 10mm Filleted edges
Installation	Install perpendicular (single only) or parallel to kerb (multiple). Bolted down as per associated details on footing to Engineers detail.
Maintenance	Hand or pressure clean as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Infrequently (Annually)
Recommended Use	Recommended to be used in all general areas throughout Ringwood, including urban plazas, streetscapes and Ringwood train station.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 005





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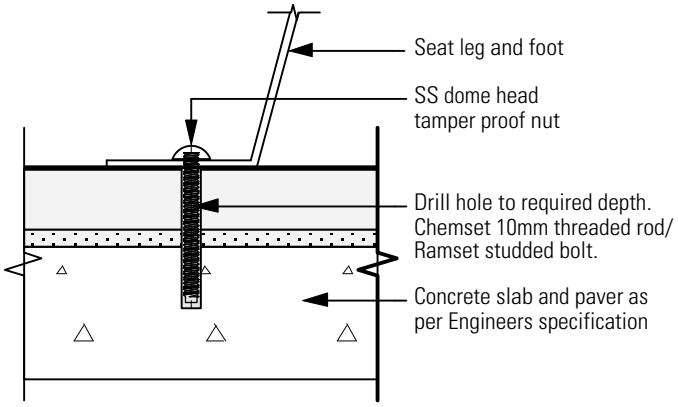

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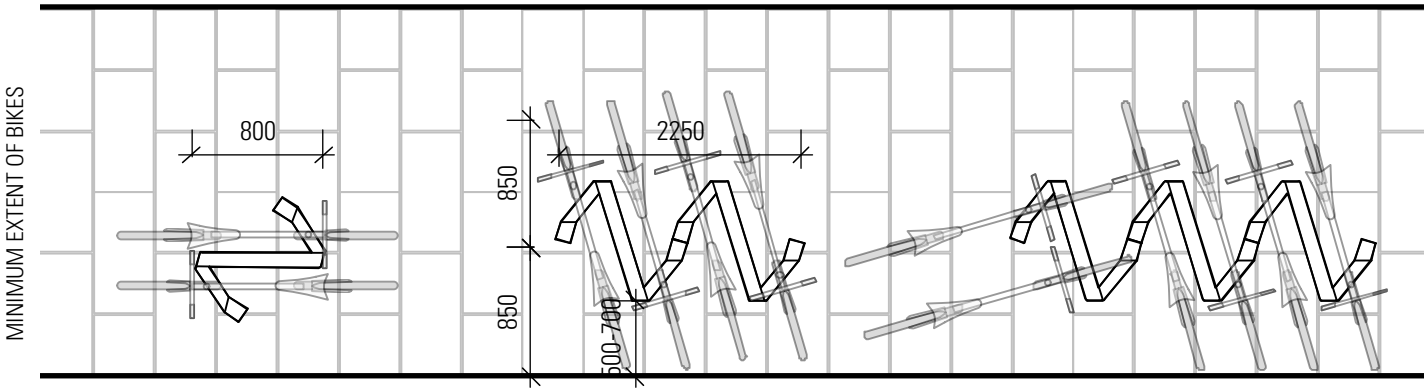


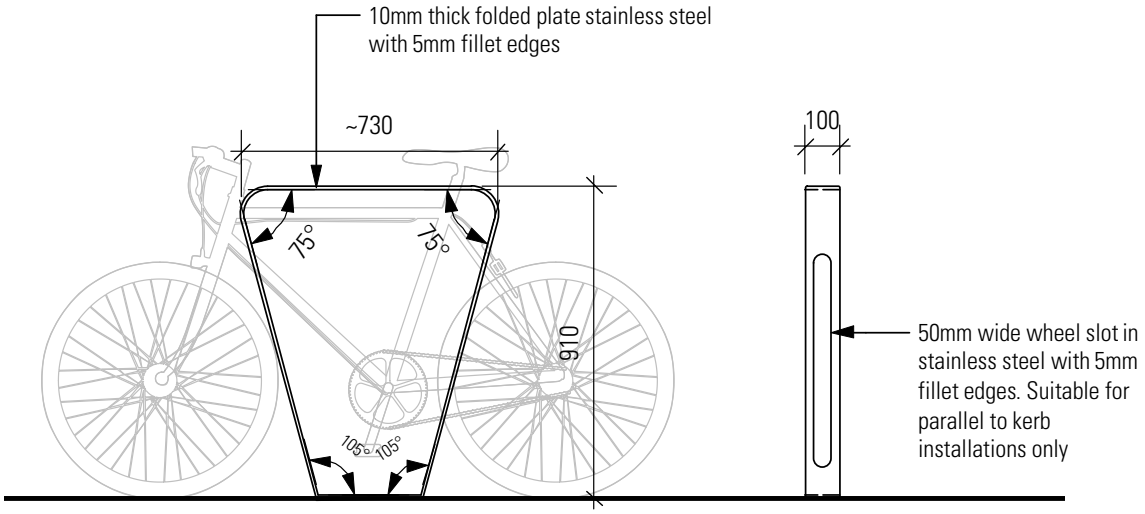
SINGLE HOOP **DOUBLE HOOP** **TRIPLE HOOP**

BIKE RACK single

RF 005a

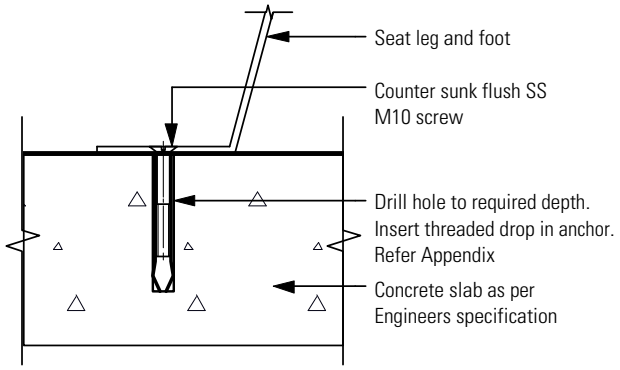
Design Statement	This stand alone bike rack provides a compact multi interface unit in a narrow urban setting or in combination in larger spaces. By installing a single or multiple combination the rack provides a secure and friendly bike environment within the Ringwood Centre.
Style	Custom designed modular bike rack with flexible arrangement and parking options
Materials	10mm folded plate No.4 stainless steel
Finish	Stainless steel - Pickle Passivate Satin Electropolish 10mm Filleted edges
Installation	Install perpendicular, 45˚ or parallel to kerb. Bolted down as per associated details on footing to Engineers detail.
Maintenance	Hand or pressure clean as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Infrequently (Annually)
Recommended Use	Recommended to be used in all narrow pedestreian areas throughout Ringwood, including urban plazas, streetscapes and Ringwood train station.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 005a

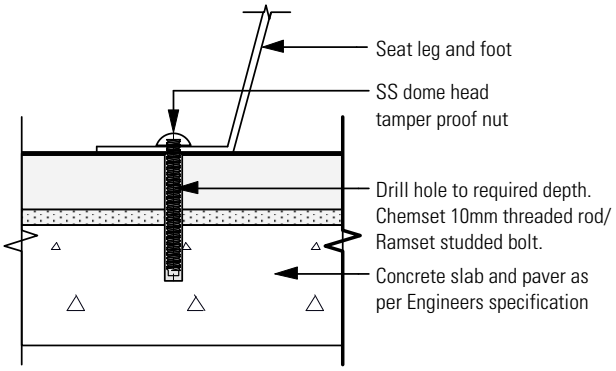


BIKE RACK ELEVATION (FRONT)

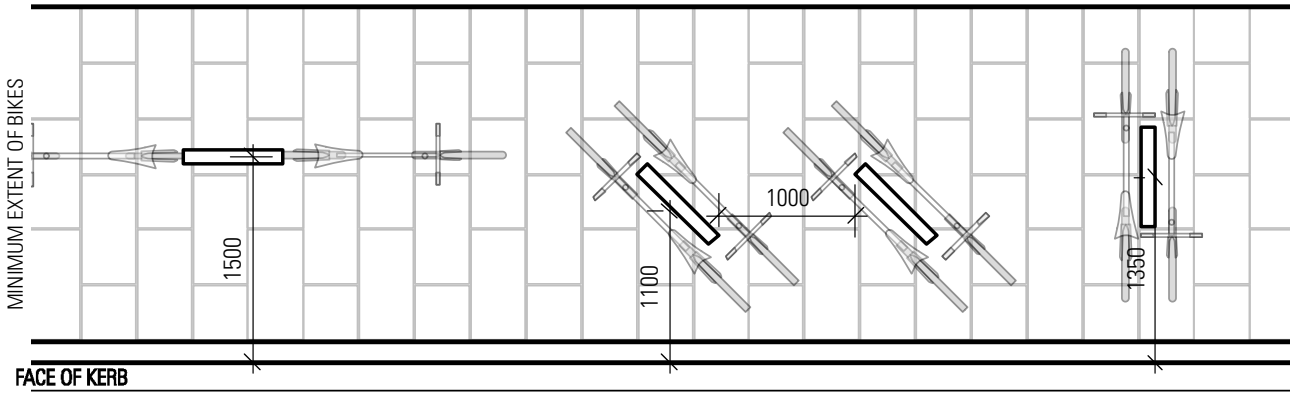
BIKE RACK ELEVATION (SIDE)



FIXING DETAIL (DROP IN ANCHOR)



FIXING DETAIL (CHEMSET)



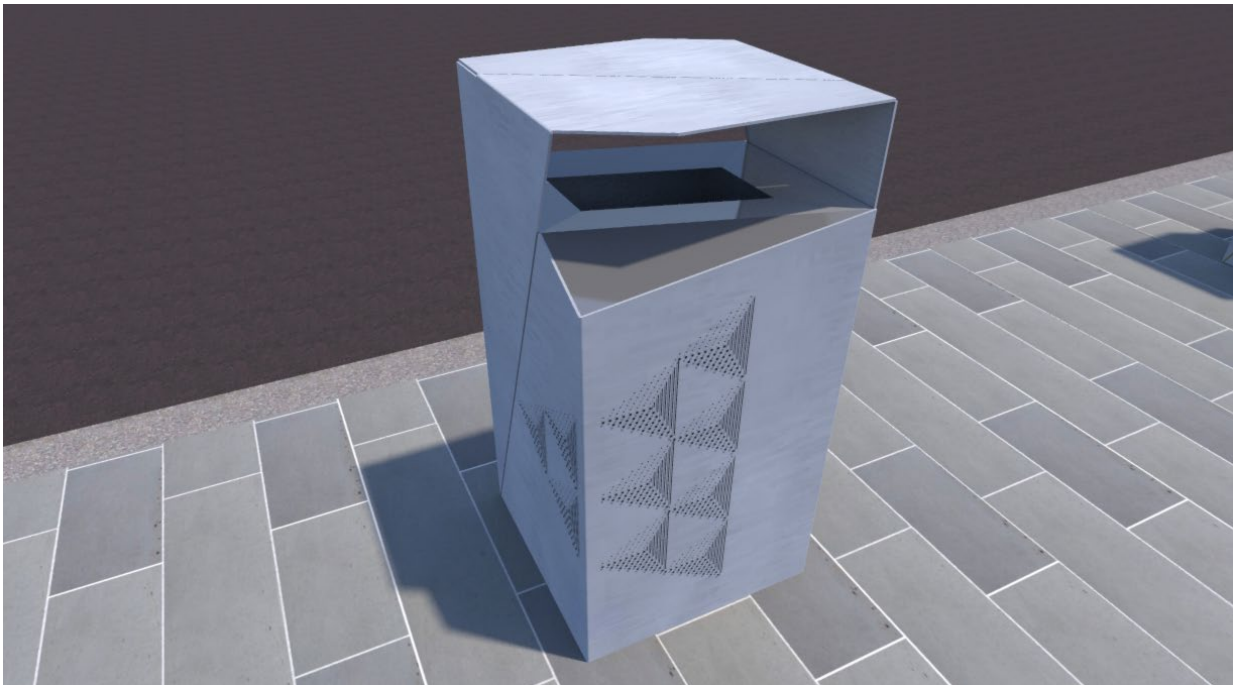
SINGLE RACK (PARALLEL TO KERB)

SINGLE RACK (45 DEGREE TO KERB)

SINGLE RACK (PERPENDICULAR TO KERB)

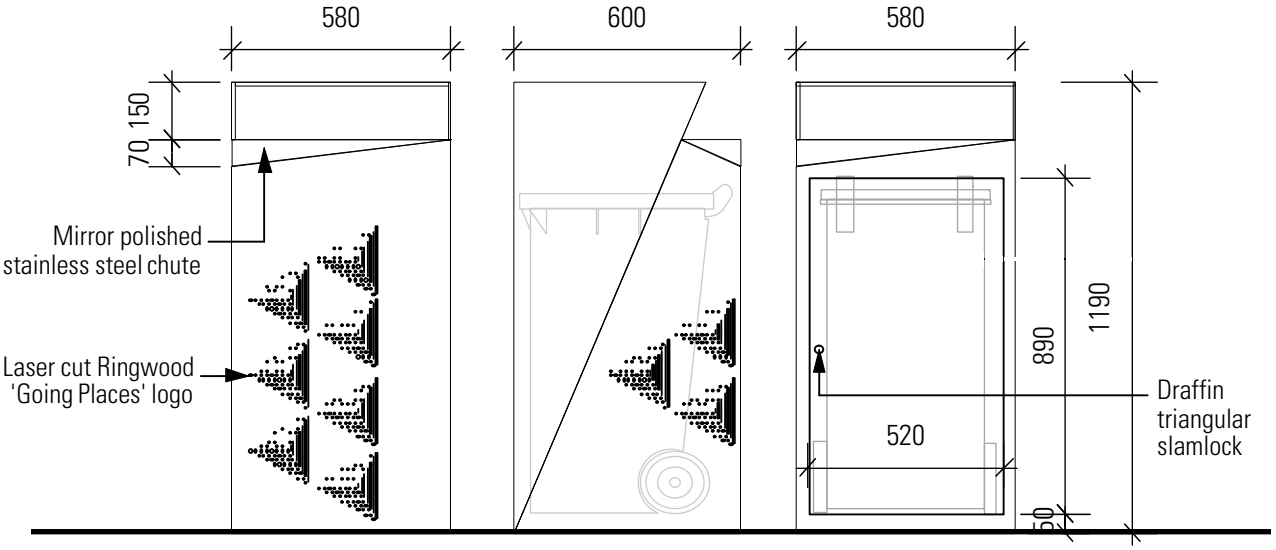
BIN rubbish

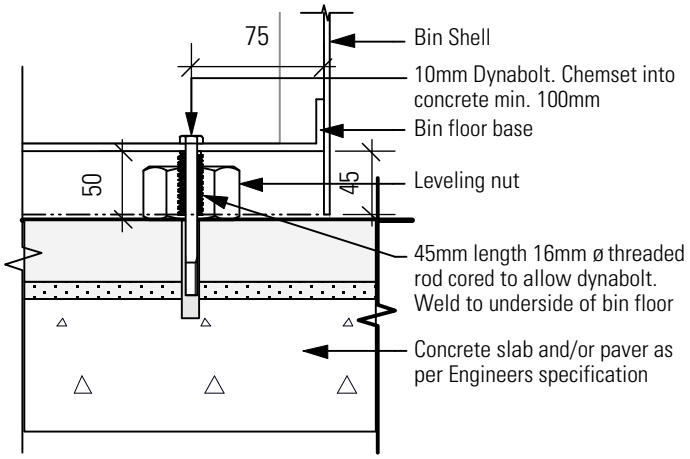
RF 006



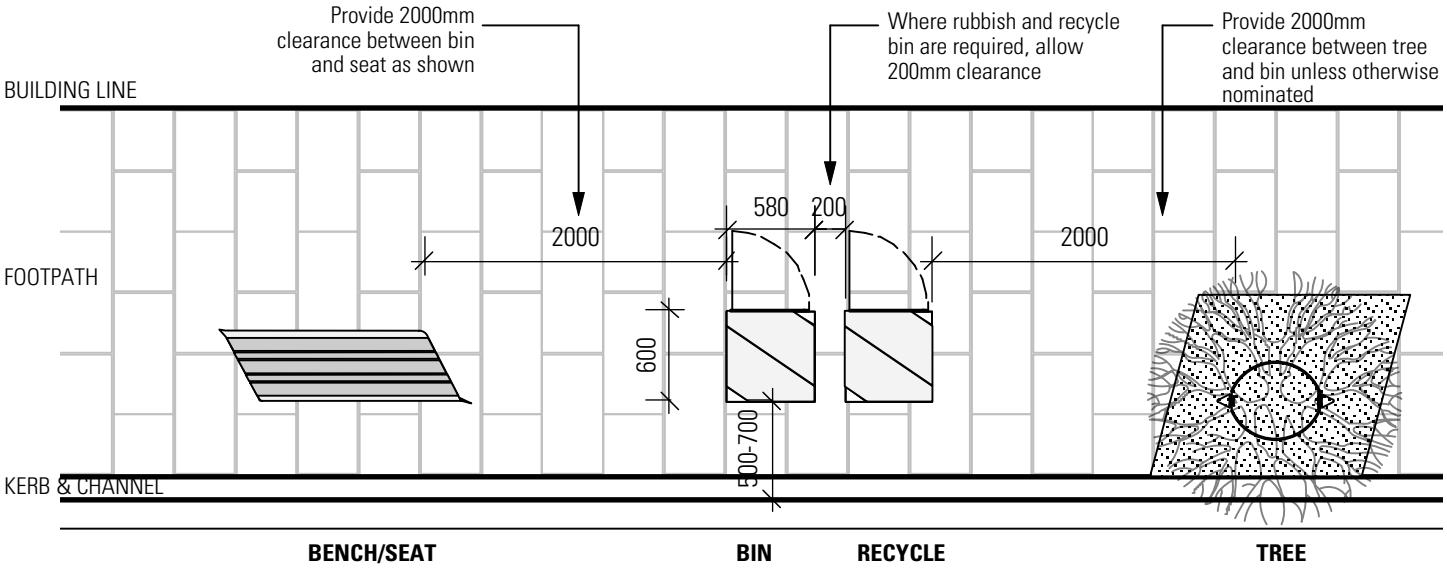
Design Statement	This custom rubbish receptacle is constructed with press folded stainless steel for low maintenance and ultimate durability. The bin is simple in style and complements the contemporary streetscape in Ringwood and associated elements.
Style	Custom designed rubbish receptacle (120 Ltr).
Materials	3mm folded plate No.4 stainless steel Draffin triangular Slamlock (Tri-key 8mm)
Finish	Stainless steel outer shell - Pickle Passivate Satin Electropolish Stainless steel rubbish chute - Mirror polished Laser cut 'Ringwood going places' logo
Installation	Install parallel to kerb with logo and opening facing buildings. Door to open towards footpath. Bolt down as per associated details on footing to Engineers detail. Adjust levelling nut to level enclosure
Maintenance	Hand or pressure clean interior and exterior regularly or as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Frequently (3 Monthly)
Recommended Use	Recommended to be used in all general areas throughout Ringwood, including urban plazas, streetscapes and Ringwood train station.
Supplier	Via Maroondah City Council -Eliott Engineering or Draffin Street Furniture

RF 006





FIXING DETAIL

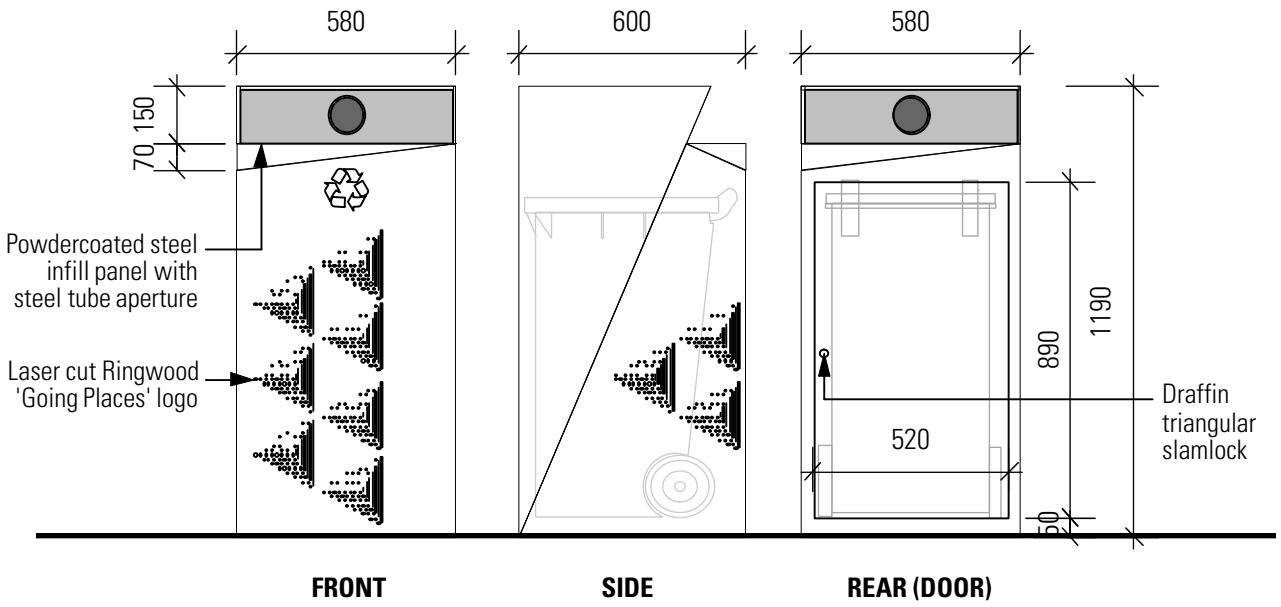


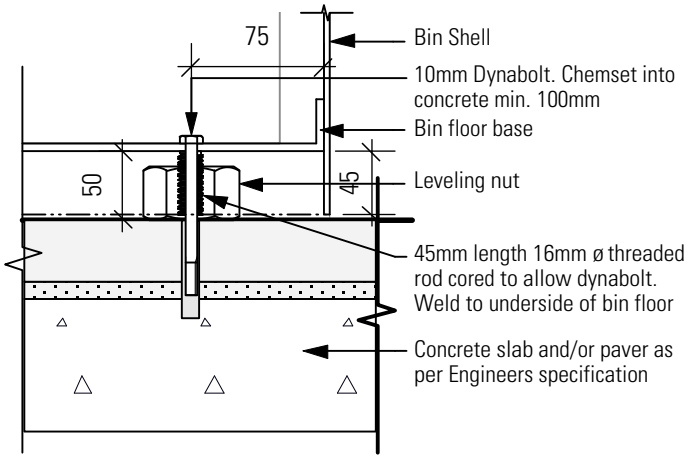
BIN recycle

RF 007

Design Statement	This custom designed recycle unit is constructed with press folded stainless steel for low maintenance and ultimate durability. The bin complements the contemporary streetscape in Ringwood and considers user and collector.
Style	Custom designed recycle receptacle (120 Ltr)
Materials	3mm folded plate No.4 stainless steel 2mm powdercoated steel infill with steel tube aperture Draffin triangular Slamlock (Tri-key 8mm)
Finish	Stainless steel outer shell - Pickle Passivate Satin Electropolish Stainless steel infill panel - Powdercoat Safety Yellow (Gloss) Laser cut 'Ringwood going places' logo and "Recycle' logo
Installation	Install parallel to kerb with logo and opening facing buildings. Door to open towards footpath. Bolt down as per associated details on footing to Engineers detail. Adjust levelling nut to level enclosure
Maintenance	Hand or pressure clean interior and exterior regularly or as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Frequently (3 Monthly)
Recommended Use	Recommended to be used in all general areas throughout Ringwood, including urban plazas, streetscapes and Ringwood train station in conjunction with rubbish receptacle.
Supplier	Via Maroondah City Council -Eliott Engineering or Draffin Street Furniture

RF 007





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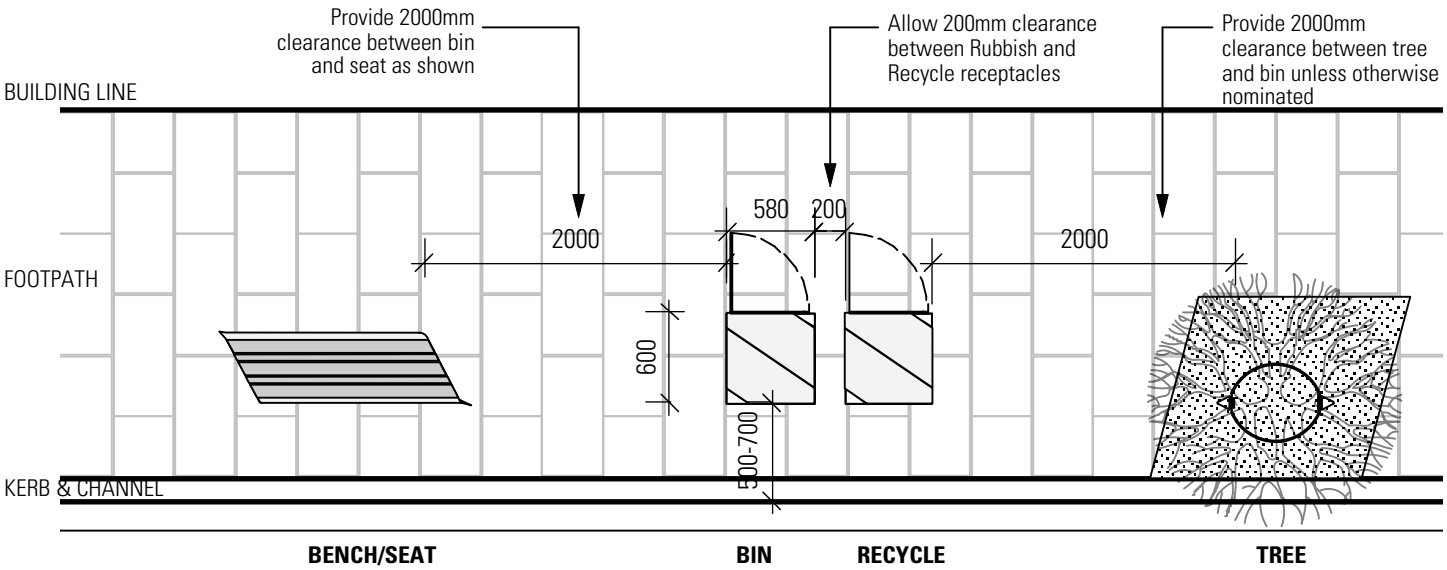
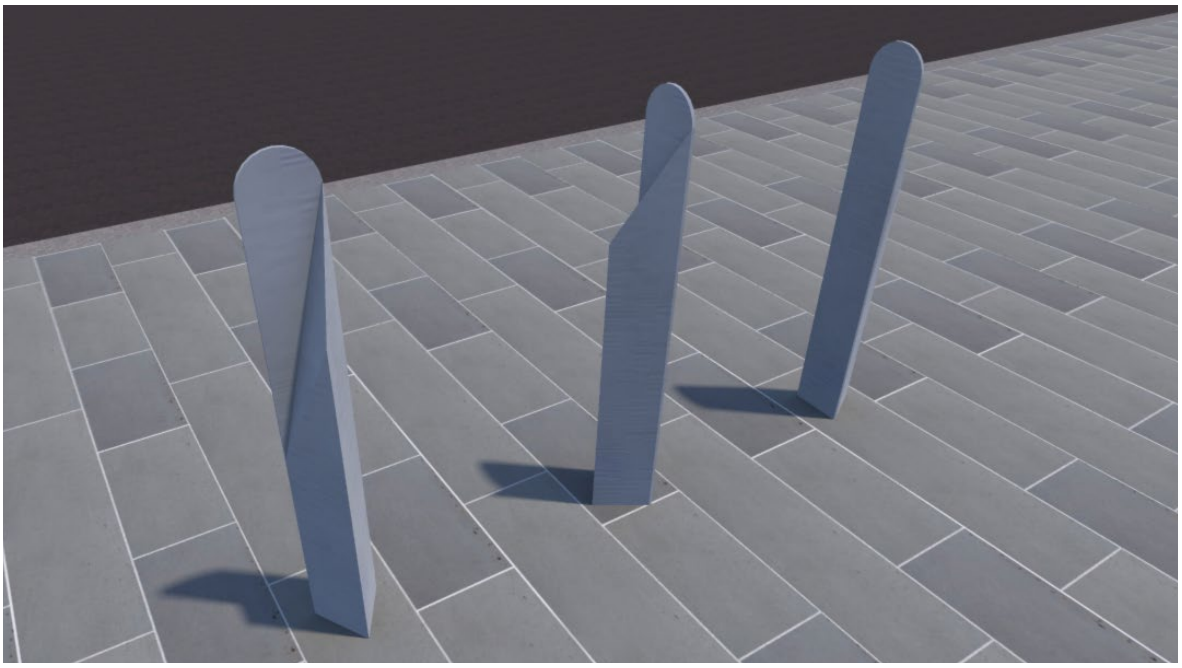


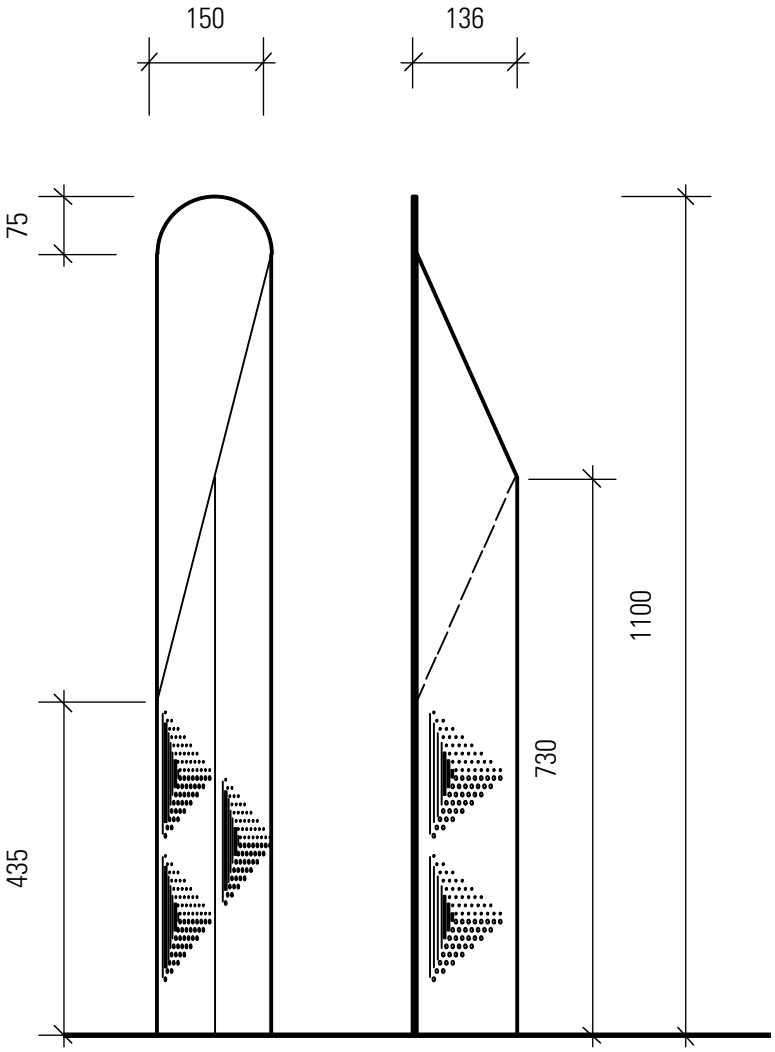
BOLLARD removable

RF 008

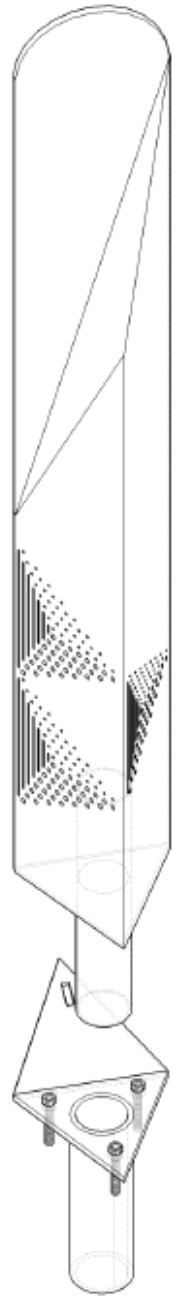


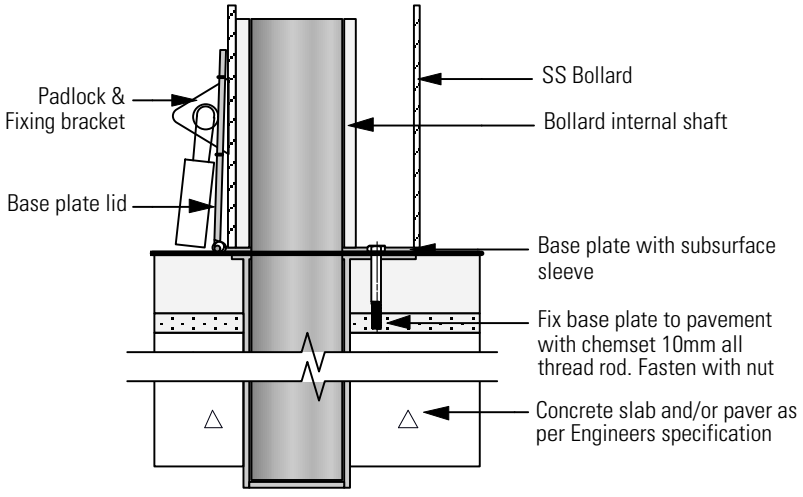
Design Statement	This unique shard bollard is an architectural feature within the landscape which functions individually or in combination. The simple fabrication provides strong structural integrity and also folded plate stainless steel complements the other elements.
Style	Custom designed removable bollard
Materials	4mm folded plate No.4 stainless steel
Finish	Stainless steel - Pickle Passivate Satin Electropolish Laser cut 'Ringwood going places' logo
Installation	Bolt down subsurface sleeve as per associated details on footing to Engineers detail. Place bollard shaft into sleeve and lock as required.
Maintenance	Hand or pressure clean as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Infrequently (Annually)
Recommended Use	Recommended to be used in all general urban areas throughout Ringwood. This includes urban plazas, streetscapes and Ringwood train station as required in to control and allow access.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 008

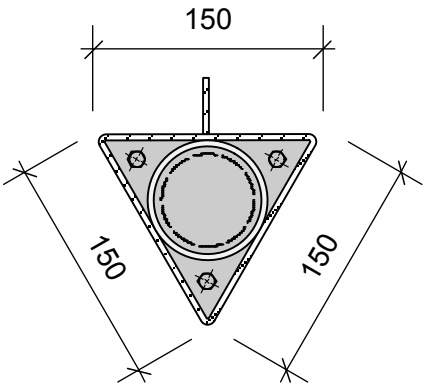


FRONT **SIDE**





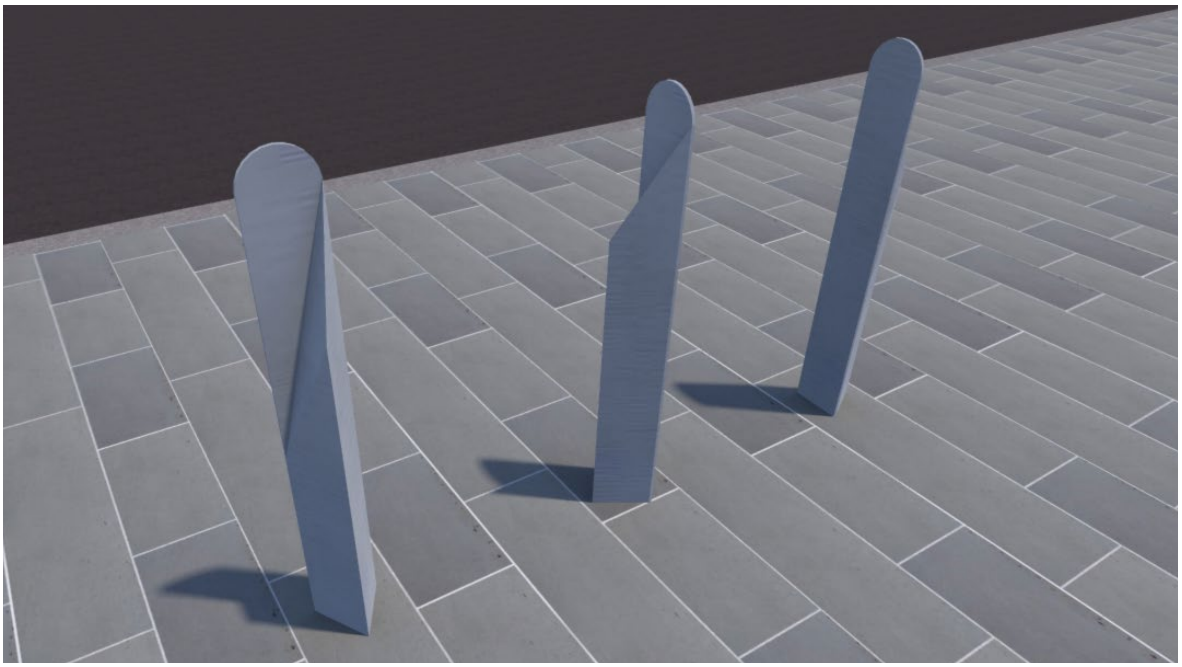
FIXING DETAIL SECTION



FIXING DETAIL PLAN

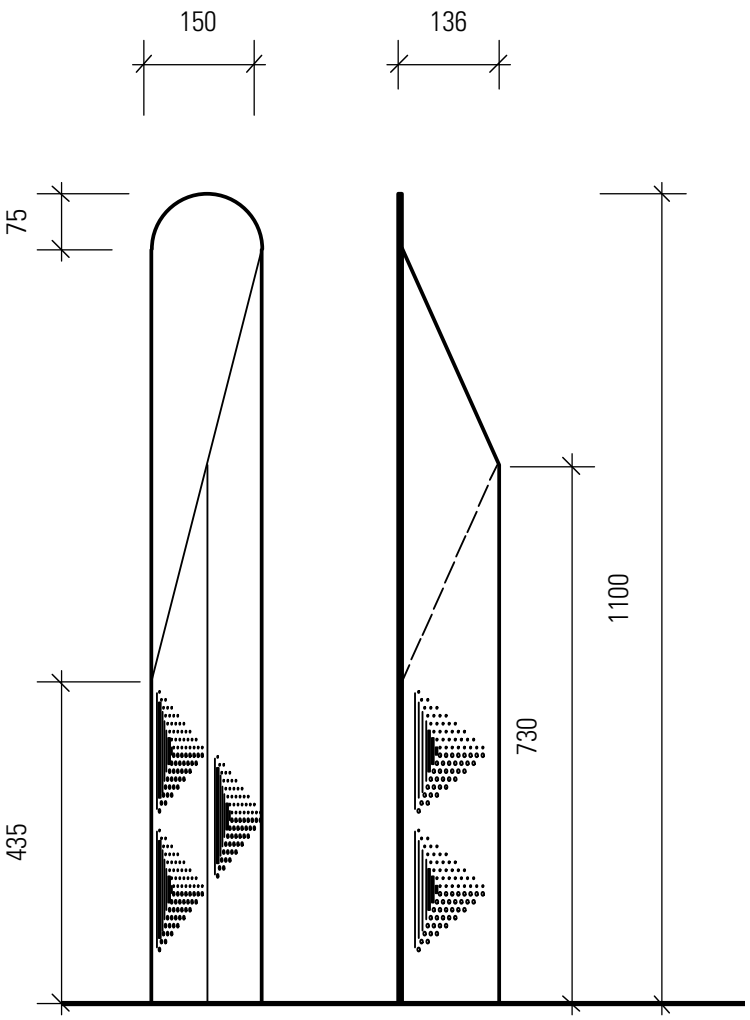
BOLLARD fixed

RF 009

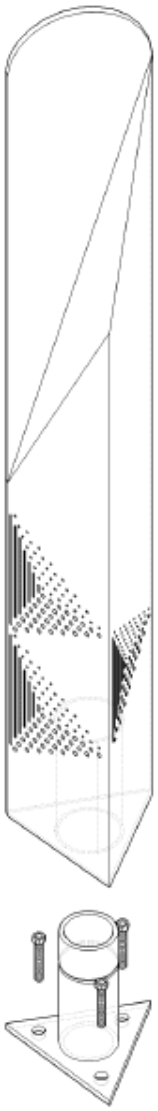


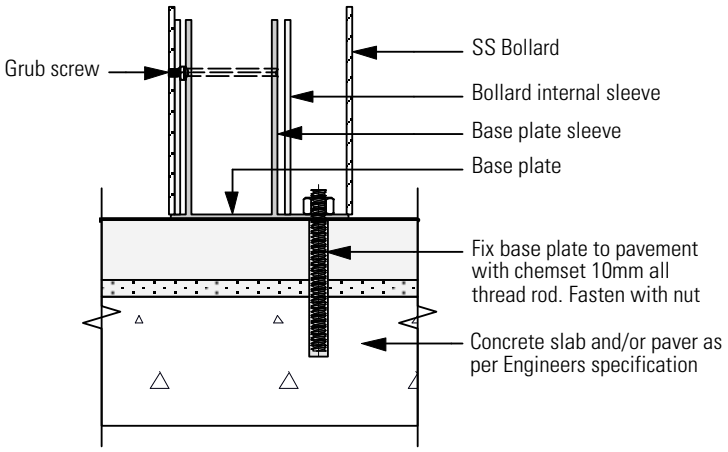
Design Statement	This unique shard bollard is an architectural feature within the landscape which functions individually or in combination. The simple fabrication provides strong structural integrity and also opportunities to implement small wayfinding elements and feature lighting.
Style	Custom designed fixed bollard with folded plate stainless steel to match other elements. **Chain connection available.**
Materials	4mm folded plate No.4 stainless steel
Finish	Stainless steel - Pickle Passivate Satin Electropolish Laser cut 'Ringwood going places' logo
Installation	Bolt down as per associated details on footing to Engineers detail. Place bollard over base plate, set orientation and fix in place with grub screws.
Maintenance	Hand or pressure clean as required. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Infrequently (Annually)
Recommended Use	Recommended to be used in all general urban areas throughout Ringwood, including urban plazas, streetscapes and Ringwood train station as required to control access.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 009



FRONT **SIDE**





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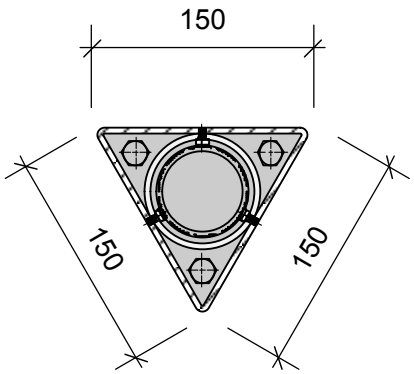
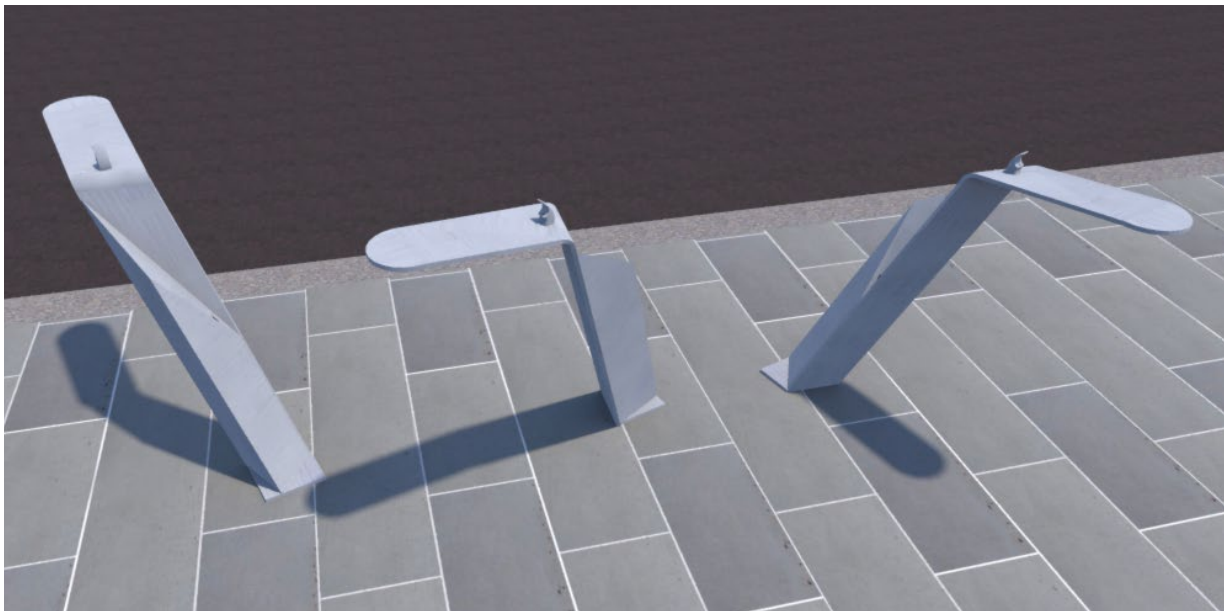


FIXING DETAIL PLAN

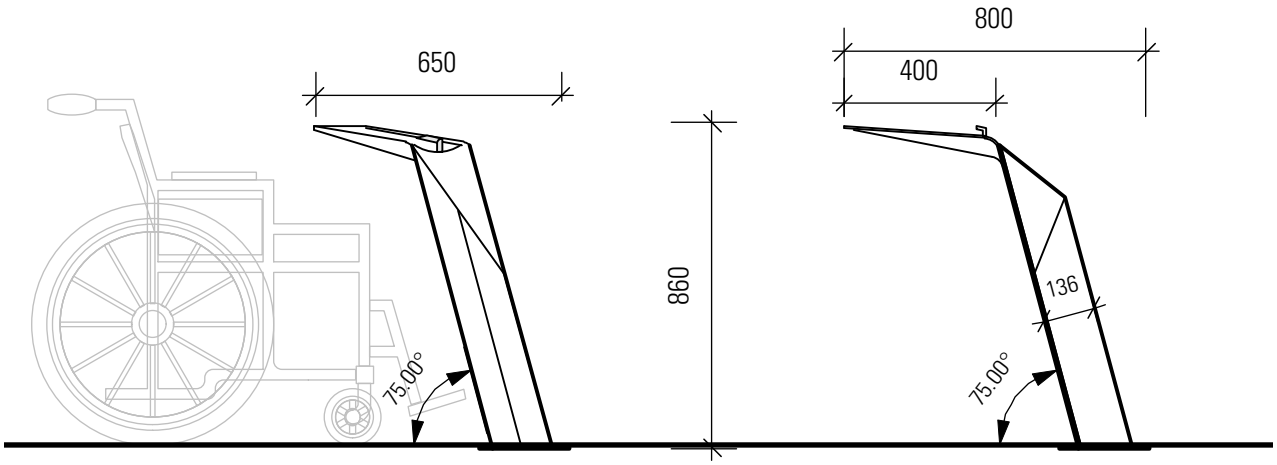
DRINKING fountain

RF 010

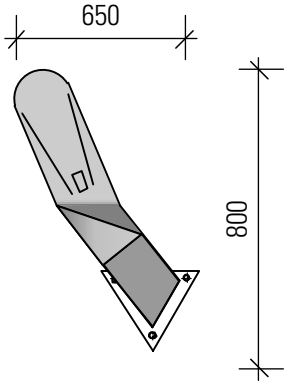


Design Statement	This unique wheelchair accessible drinking fountain is a sculptural installation within any urban setting. Made up entirely of fold pressed stainless steel, the fountain is low maintenance and robust.
Style	Custom designed accessible drinking fountain
Materials	6mm folded plate No.4 stainless steel Stainless steel bubbler mechanism.
Finish	Stainless steel - Pickle Passivate Satin Electropolish
Installation	In-ground rag bolt assembly as per associated details on footing to Engineers detail. Connections to mains water and stormwater to performed by qualified plumber
Maintenance	Hand or pressure clean as required. Components to be replaced if damaged. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Periodically (6 Monthly)
Recommended Use	Recommended to be used in all general urban areas throughout Ringwood, including urban plazas and streetscapes.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

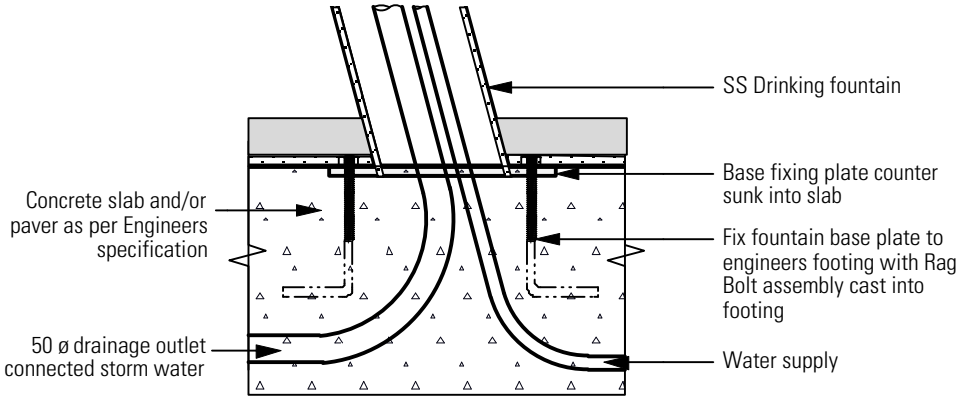
RF 010



REAR **SIDE**



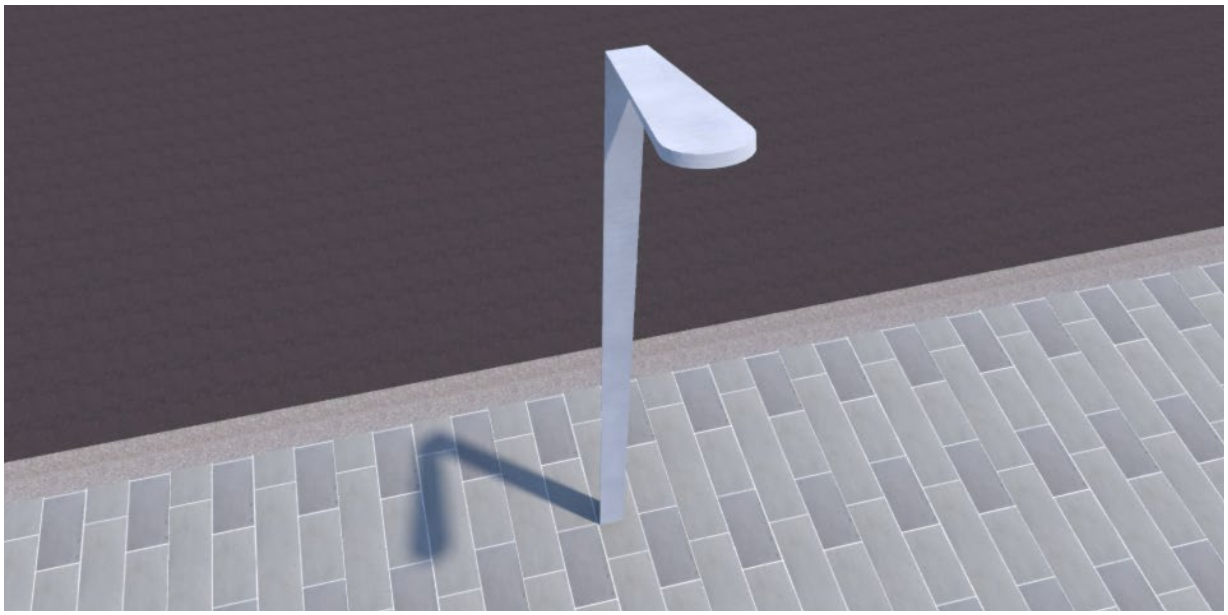
DETAIL PLAN



FIXING DETAIL SECTION

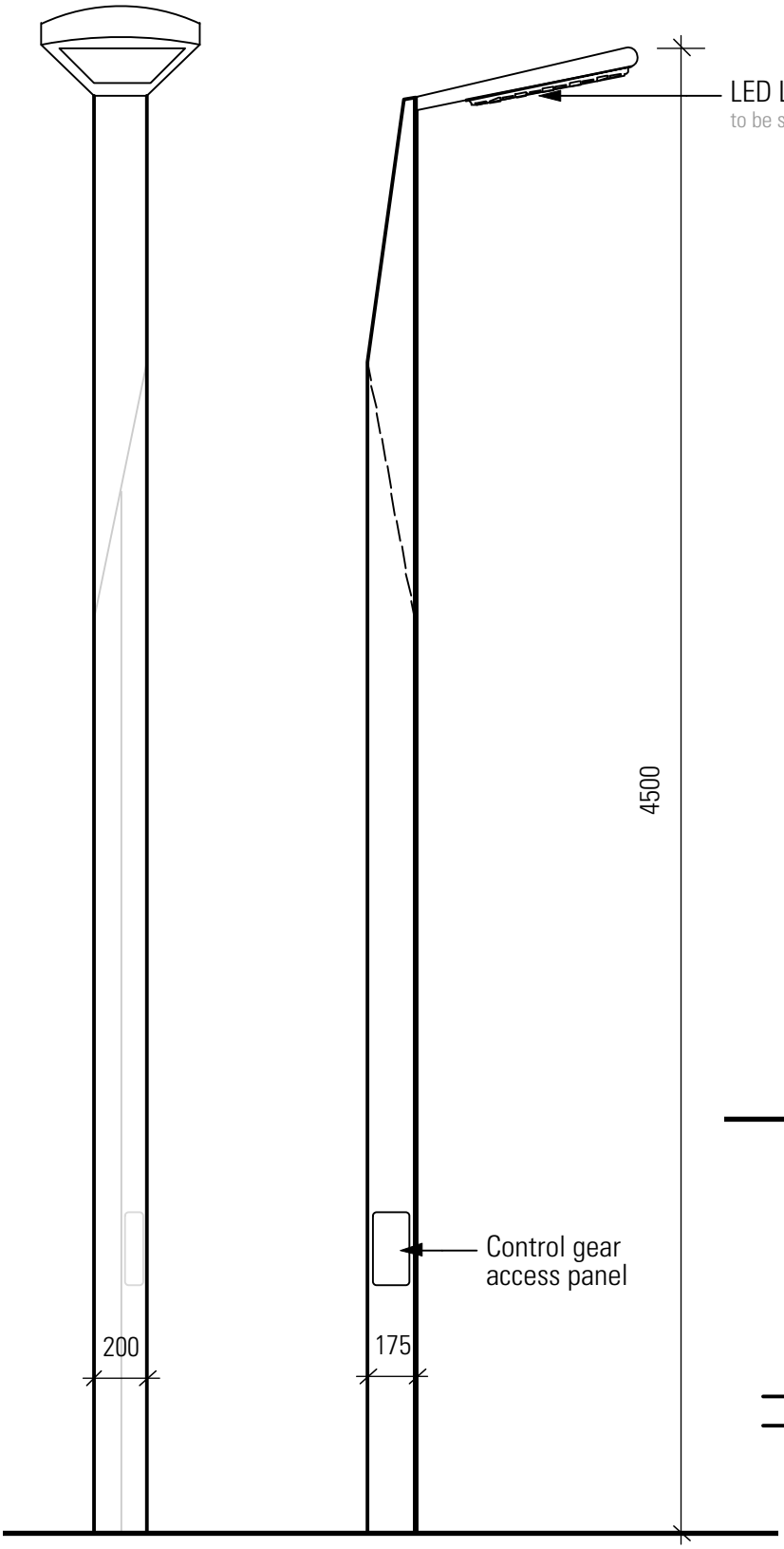
PEDESTRIAN light

RF 011



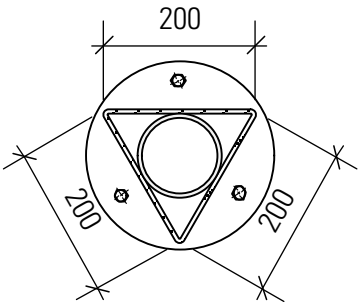
Design Statement	This minimalist profile pedestrian light pole is a low maintenance, contemporary light fixture suitable in all urban areas. It is designed to complement and blend into the location whilst providing energy efficient AS standard lighting.
Style	Custom designed LED pedestrian light
Materials	8mm folded plate No.4 stainless steel LED light fitting
Finish	Stainless steel - Pickle Passivate Satin Electropolish
Installation	In-ground rag bolt assembly as per associated details on footing to Engineers detail. Installation of all electrical items to be performed by a licensed electrician and shall be accompanied with an electrician's certificate upon completion of installation. Placement and design to comply with AS 1158 - Lighting of Roads and Public Spaces.
Maintenance	Replacement of illuminares as required Hand or pressure clean as required. Components to be replaced if damaged. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Infrequently (Annually)
Recommended Use	Recommended to be used in all general areas throughout Ringwood, including urban plazas and streetscapes where pedestrian level lighting is required.
Supplier	Maroondah City Council

RF 011

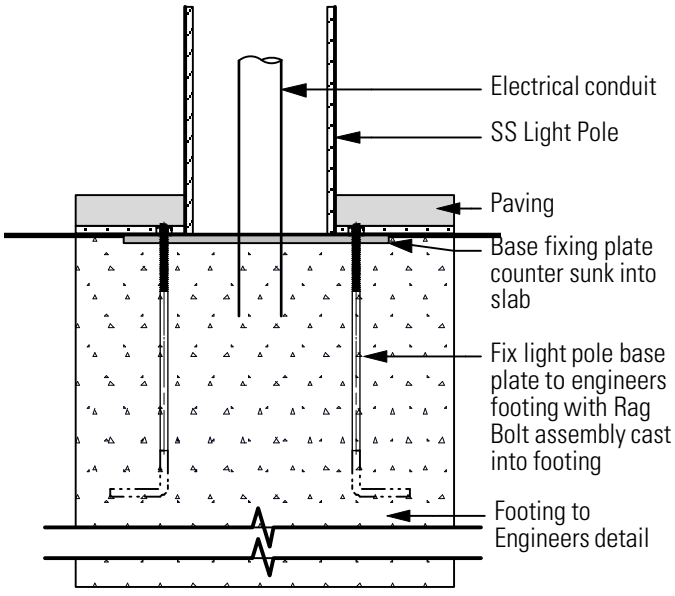


FRONT

SIDE



POLE PLAN



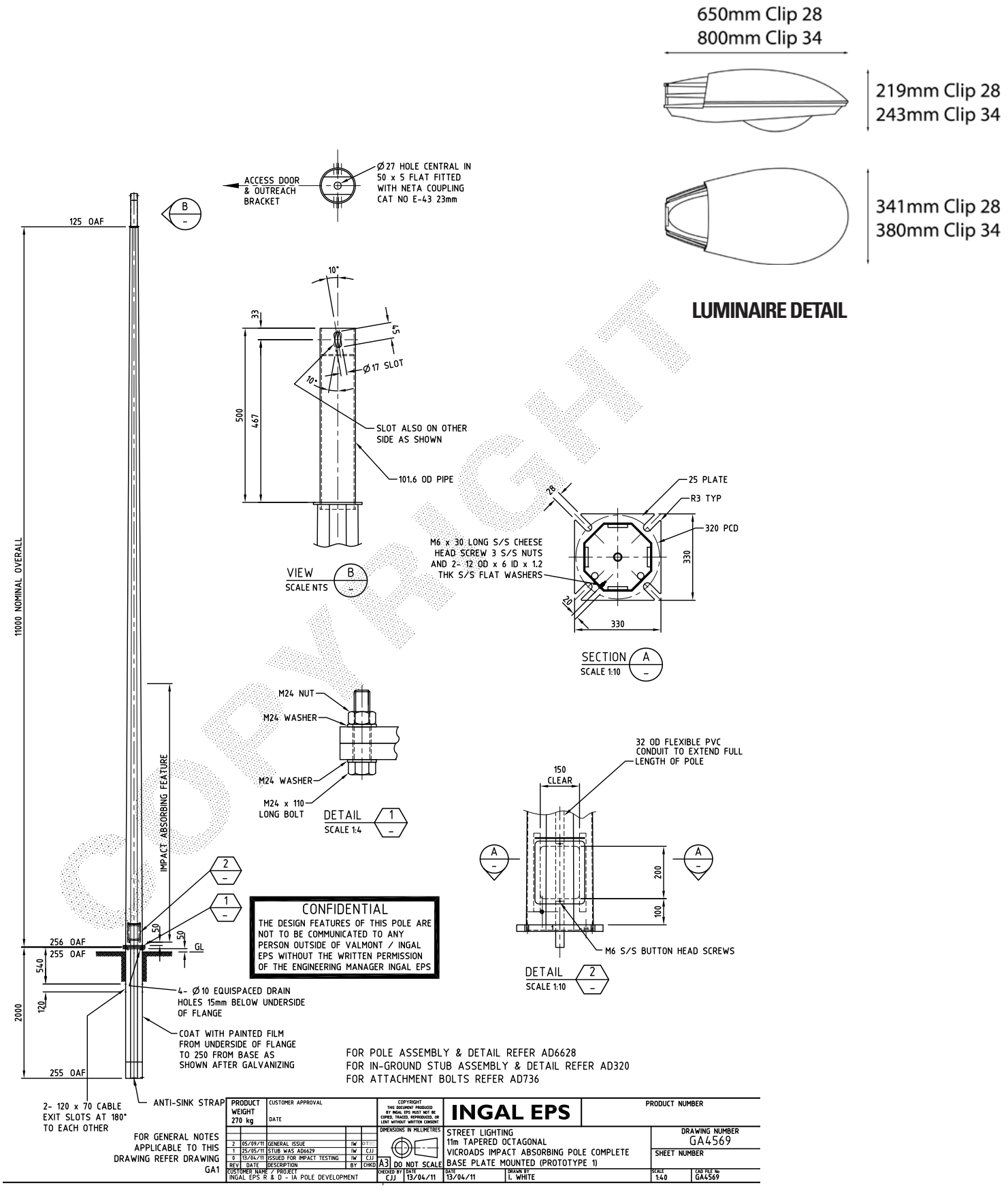
FIXING DETAIL SECTION

STREET light

RF 012

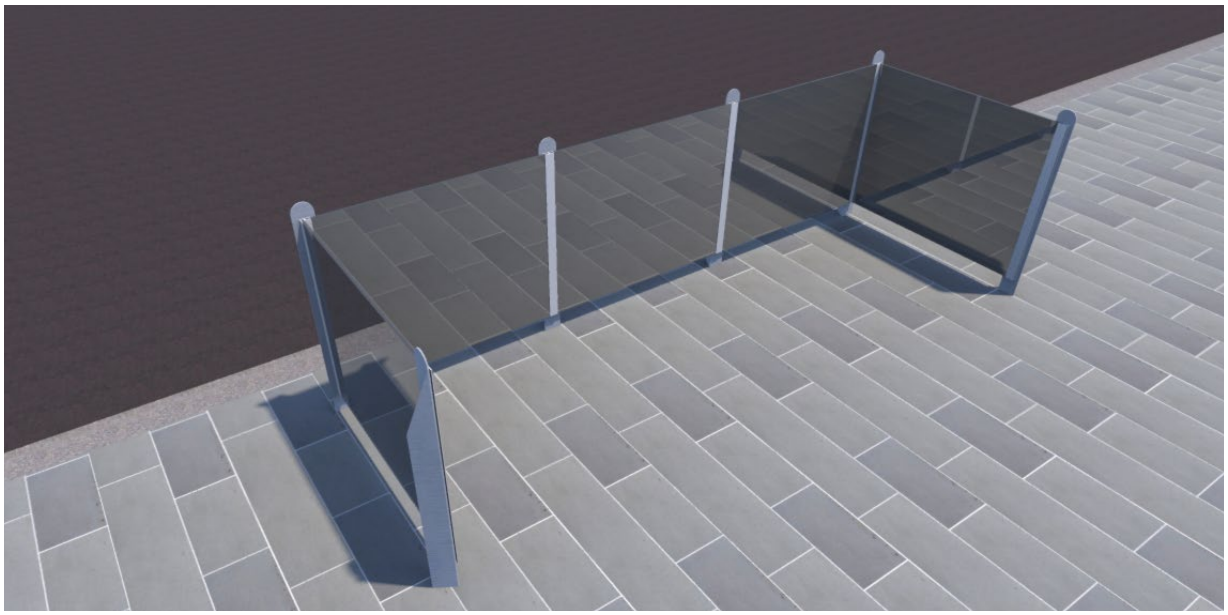
Design Statement	This light fitting is a commonly used, widely available, low maintenance light fixture suitable in all urban roads. It is a VicRoads and SP Ausnet approved fitting.
Style	Standard aluminium housing with metal halide lamp
Materials	Die cast aluminium housing. Maroondah Highway / Warrandyte Road (Arterial Roads) - Sylvania Roadster 250W high pressure sodium (HPS) globes. Ringwood Street - Clip 34 with 150W high pressure sodium (HPS) globes.
Finish	Housing to be powdercoated Dulux ' Anotec XT Dark Grey' 51275 Matt. Street lighting poles & mast arms to be powdercoated Dulux ' Anotec XT Dark Grey' 51275 Matt.
Installation	Clip installation to manufacturers specification. Installation of all electrical items to be performed by a licensed electrician and shall be accompanied with an electrician's certificate upon completion of installation. Placement and design to comply with AS 1158 - Lighting of Roads and Public Spaces.
Maintenance	Removable gear tray contains all electrical components, easily removable and interchangeable. Lamp is directly accessible after opening lid.
Frequency	Replace light fitting as required
Recommended Use	Recommended to be used in all areas throughout Ringwood MAC where road lighting is required

RF 012



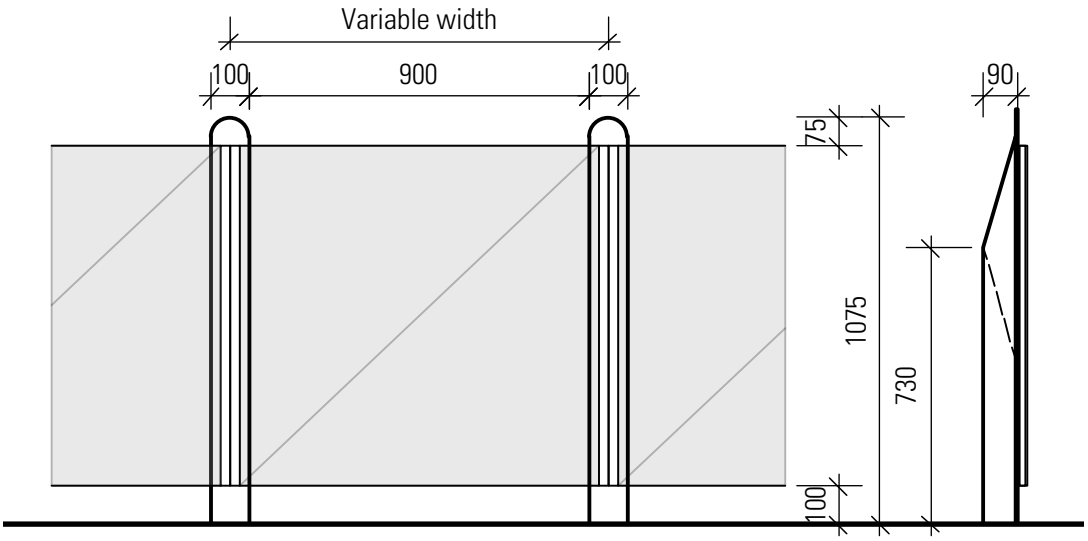
CAFE screens

RF 013

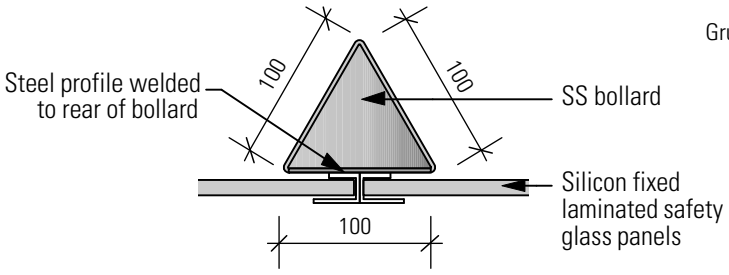


Design Statement	This custom designed cafe screens are durable fixed stainless steel posts with safety laminated glass panels. The panels are flexible to suit any urban installation and offer a canvas for cafe/ restaurant promotion. Suitable in outdoor cafe and restaurant areas.
Style	Custom designed modular cafe screens
Materials	4mm folded plate No.4 stainless steel 10mm thick laminated safety glass panel (To glazing code)
Finish	Stainless steel - Pickle Passivate Satin Electropolish Glass - Laminated with option for advertising or Ringwood logo
Installation	Bolt down as per associated details on footing to Engineers detail. Laminated glass to be installed by qualified glazier.
Maintenance	Cleaning and maintenance by cafe/ restaurant owners as required
Frequency	Frequently (Monthly)
Recommended Use	Recommended to be used in outdoor street cafe dining areas.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

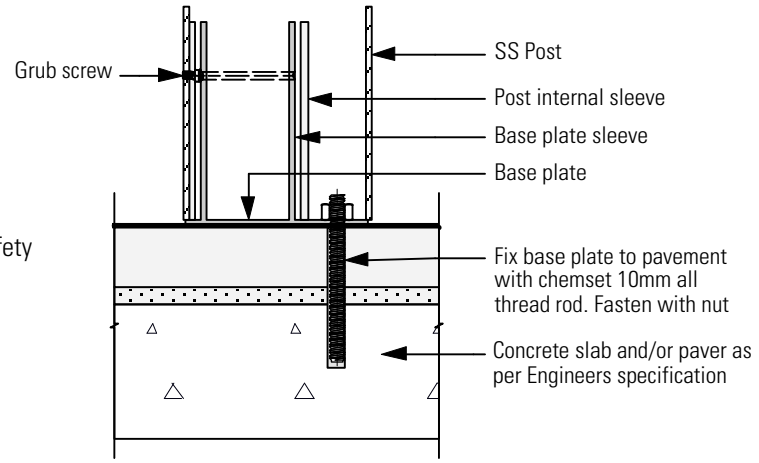
RF 013



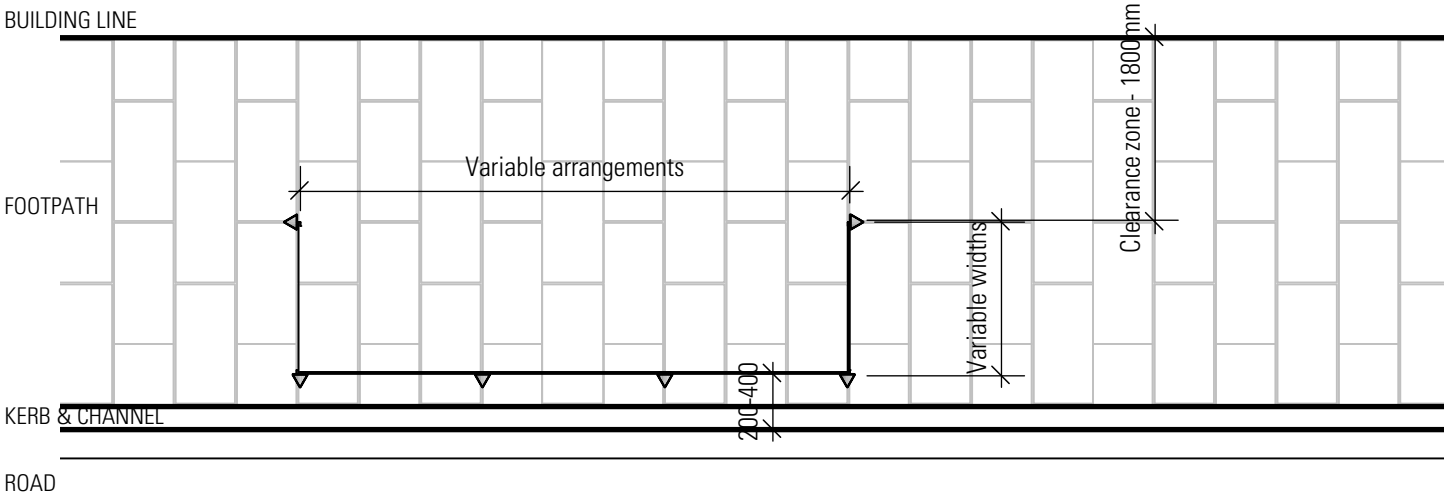
FRONT **SIDE**



PLAN



FIXING DETAIL SECTION

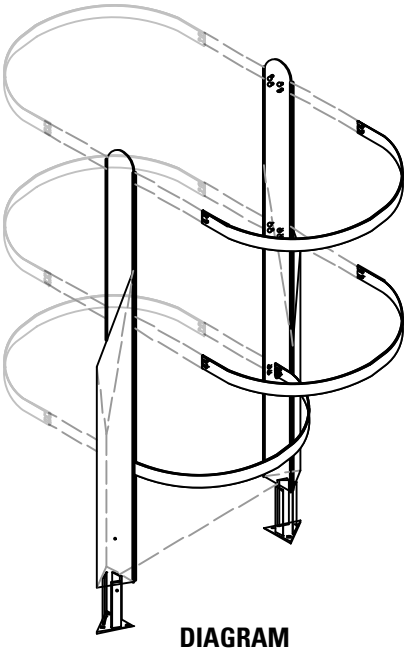


TREE guard

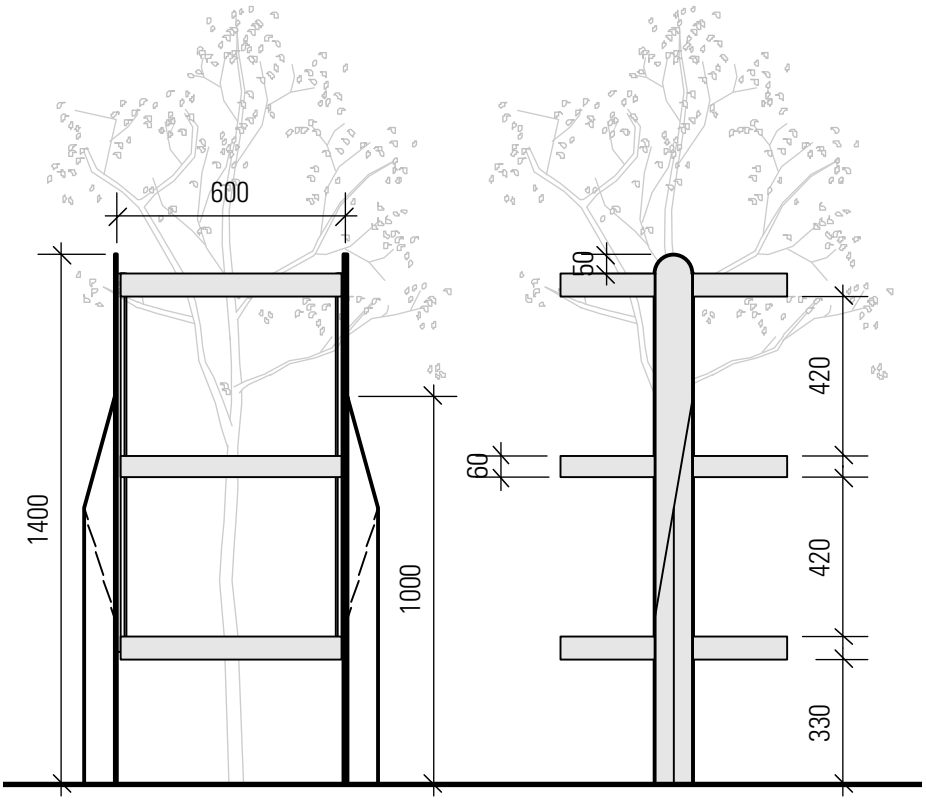
RF 014

Design Statement	This custom designed tree guard is simple to install and low maintenance. The stainless steel post and rings provide robust protection for newly planted trees in high trafficable urban areas.
Style	Custom designed urban tree guard
Materials	4-6mm folded plate No.4 stainless steel
Finish	Stainless steel - Pickle Passivate Satin Electropolish
Installation	Bolt down as per associated details on footing to Engineers detail. Place tree guard rings into place over threaded rod and fix with dome nut.
Maintenance	Hand or pressure clean as required. Components to be replaced if damaged. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems.
Frequency	Infrequently (Annually)
Recommended Use	Recommended to be used in high traffic urban areas where new tree planting may be susceptible to damage.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 014

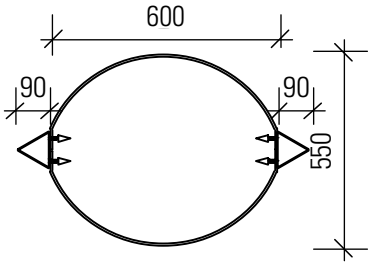


DIAGRAM

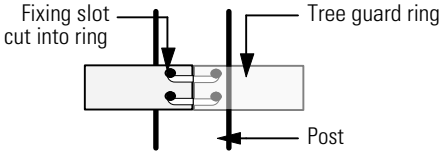


FRONT

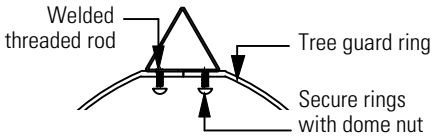
SIDE



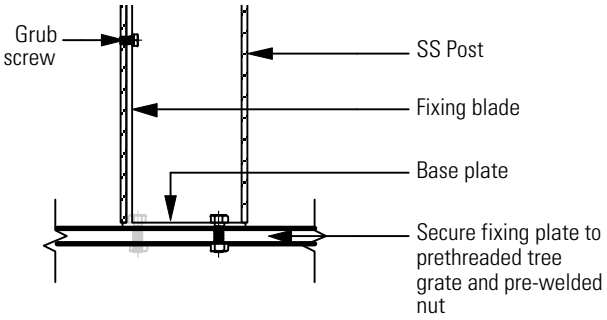
PLAN



CONNECTION ELEVATION

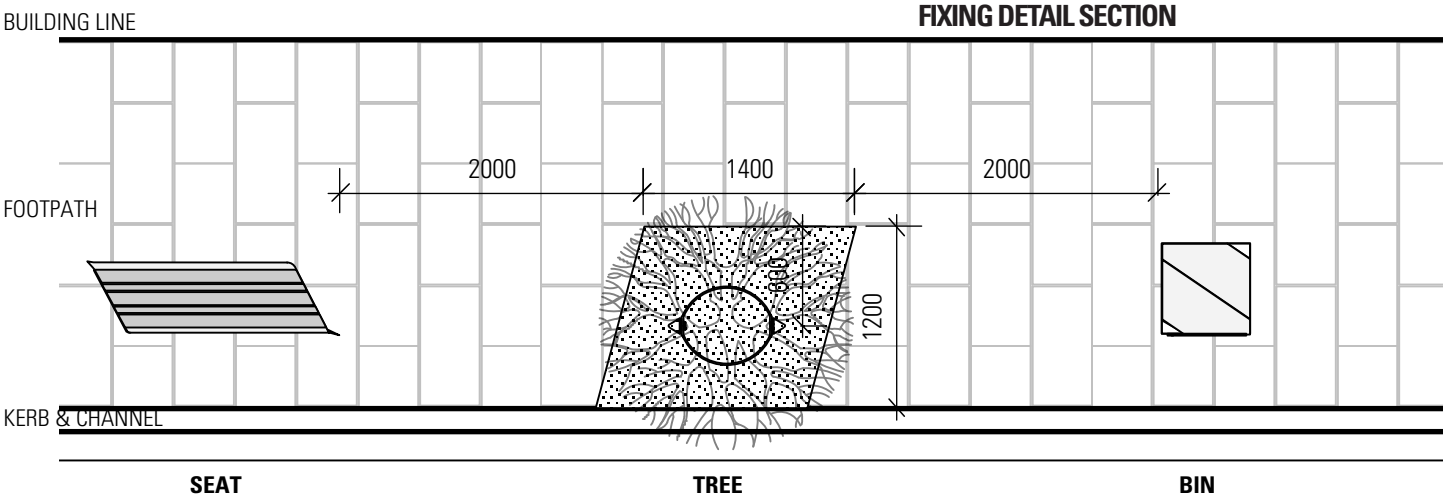


CONNECTION PLAN



BASE PLATE ELEVATION

FIXING DETAIL SECTION



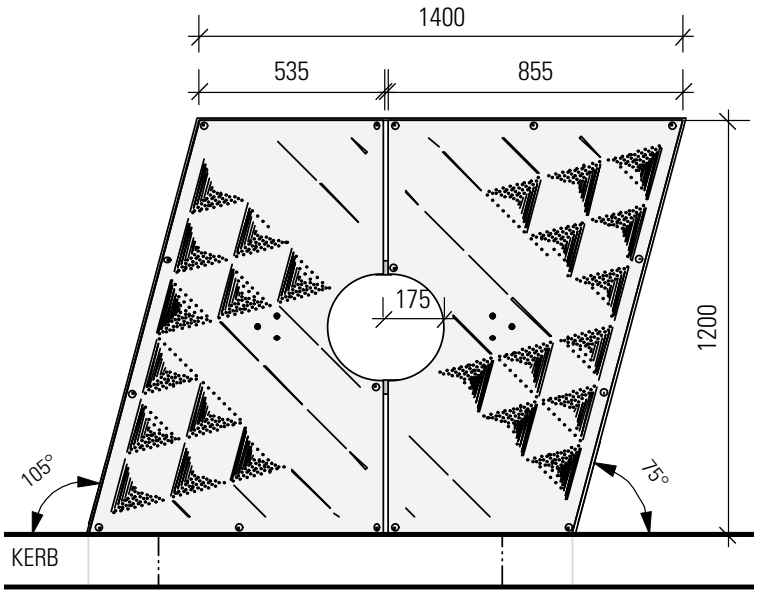
SEAT TREE BIN

TREE grate

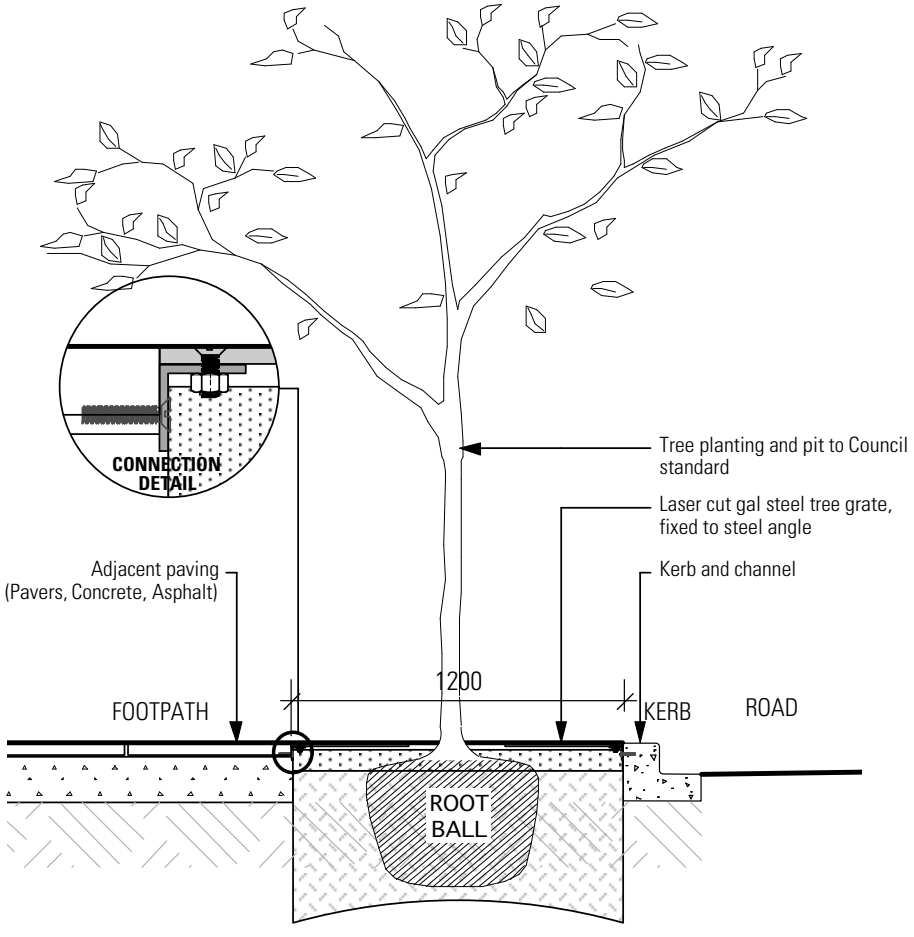
RF 015

Design Statement	This laser cut tree grate shape provides a subtle difference in the streetscape while being low maintenance and durable to withstand a high trafficable urban area.
Style	Custom designed urban tree grate
Materials	Laser cut 10mm galvanised mild steel plate
Finish	Galvanised
Installation	Fix down to framing as per associated details on adjacent paving to Engineers detail.
Maintenance	Hand or pressure clean as required to ensure laser cut holes are clear. Graffiti removal by pressure clean or with non-toxic product such as Graffiti Removal Systems. Ensure tree is protected at all times
Frequency	Annually
Recommended Use	Recommended to be used in high traffic urban areas where tree compaction damage may occur.
Supplier	Via Maroondah City Council Eliott Engineering or Draffin Street Furniture

RF 015



PLAN



SECTION

FLAGSTONE - Bluestone

Materials	795 x 395 x 40mm sawn blueston pavers.
Finish	All faces wearing surface to be gang frame shot sawn, sandblasted diamond sawn or shot rubbed diamond sawn. Pavers with vesiculations, veinging or fracture lines considered injurious to strength will be rejected. Total area of top surface perforations ('catspaws') per slab must not exceed 30% and no top surface perforations should exceed 5mm dia.
Installation	Pavers are to installed on a 3-50mm stiff mortar mix over a reinforced concrete slab. Slab design and reinforcement details are to be in accordance with the requirements of Council's engineering department. Pavement joints - other than expansion joints - should not exceed 5mm. After laying, apply a non-shrink grout to all joints. Grout to be raked to finish 2mm below pavement surface level. Colour of grout to be obtained through addition of 'Abilox' CAF-X2 @ 4.15% dosage rate in grey cement. Expansion joints shall be located according to engineer's design. Fill expansion joints with 10mm wide 'Bitumastic', 'Comprebond', 'Abelflex' or other approved jointing material, pre-cut to size and so placed that the top of the jointing material shall be 7mm below the finished pavement level. Width of expansion joint should not exceed 13mm.
Maintenance	Normal pavement cleaning. Relay if base fail. Replace if paver is broken. Reinstate to match existing after works to underground services.
Frequency	As required
Recommended Use	Recommended to be used in high traffic urban areas within Zone 1 of the Ringwood MAC.
Supplier	Local Approved Supplier of Victorian Bluestone

(Continued)

KERB & CHANNEL - Bluestone

Materials	300 x 300 x 450mm sawn bluestone kerb. 300 x 150mm in-situ concrete gutter (25MPa @ 28 days)
Finish	All faces wearing surface to be gang frame shot sawn, sandblasted diamond sawn or shot rubbed diamond sawn. 25mm bullnose radius to road edge. Steel trowel finish to gutter
Installation	Kerb stones are to be installed on minimum 100mm depth stiff concrete setting bed. Gutter to be installed on 100mm depth compacted 3% cement stablised 20mm Class 2 FCR. Distinct and complete transverse joints shall be made at intervals not exceeding 2.5 metres.
Maintenance	Clean as necessary. Relay if base fails. Replace if broken. Reinstate to match existing after works to underground services.
Frequency	As required
Recommended Use	Recommended to be used in high traffic urban areas within Zone 1 of the Ringwood MAC.
Supplier	Maroondah City Council

(Continued)

TREE PIT INFILL - Porous Pavement

Materials	Porous pavement comprising bonded 10mm blue metal aggregate mix. 'Hillview' 10mm minus Dromana granite gravel within 600mm dia. collar around base of tree.
Finish	Porous pavement should be finished flush with adjacent pavement levels
Installation	Porous pavement mix is to be poured in-situ to a depth minimum 40mm. Decomposed granite gravel is to the backfilled around base of tree and lightly compacted.
Maintenance	Reinstate to match existing after works to tree, adjacent pavement or underground services.
Product	'Soak Thru' Porous paving, or approved equivalent.
Recommended Use	Recommended to be used in high traffic urban areas within Zone 1 of the Ringwood MAC.
Supplier	Widely available - Council Approved Supplier

(Continued)

TACTILE GROUND SURFACE INDICATORS - TGSI

Materials	Extruded 316 marine grade stainless steel buttons
Finish	Milled finish. Finish to achieve minimum slip resistance rating of R11 in accordance with AS 4586 and HB 197
Installation	Install to AS/NZ1428.4 (2002). TGSI's are required to be installed on a kerb ramp if the distance between the building line/ boundary and the top of the kerb ramp is less than 3 metres, if the gradient of the kerb is between 1:8 and 1:8.5 or if the kerb ramp is aligned with the building line in the direction of travel.
Maintenance	Clean as necessary. Replace if dislodged or broken. Reinstate to match existing after works to underground services.
Recommended Use	Recommended to be used in all areas where required as per AS/NZ1428.4 within Zone 1 of the Ringwood MAC.
Supplier	Widely available - Council Approved Supplier

(Continued)

KERBSIDE TRADING INDICATORS - Paving indicators

Materials	90mm diameter x 10mm thick aluminium disks with engraved Maroondah City Council logo.
Finish	Finish to achieve a minimum slip resistance rating of R11 in accordance with AS 4586 and HB197.
Installation	Rebate paver to sufficient depth to allow for epoxy adhesive and 10mm thick disk finished flush with pavement surface. Epoxy adhesive fix disks into rebate in paver and apply non-shrink grout to surround. Grout specification as per Flagstone RF16.
Maintenance	Clean as necessary Replace if dislodged or broken.
Recommended Use	Recommended to be used in high traffic urban areas within Zone 1 where kerbside trading occurs.
Supplier	Maroondah City Council

(Continued)

BICYCLE PATH SURFACE MATERIAL - Emerald Plazicote

Materials	Integrally-coloured surface treatment.
Finish	Preferred colour is G13 Emerald (AS2700 S 1996) in accordance with Vicroads Cycle Notes No. 14 April 2005.
Installation	Application by specialist contractor only. Installation is to be in accordance with Vicroads Cycle Notes No. 14 April 2005.
Maintenance	Clean as necessary. Reinstate to match existing after works to underground services.
Recommended Use	Recommended to be used on all road designated cycle paths within Zone 1 of the Ringwood MAC.
Supplier	'Plazicote' specialist surface coating by Zaganite Industries or approved equivalent.

FLAGSTONE - Concrete Paver

Materials	800 x 400 x 50mm coloured pre-cast concrete pavers.
Finish	Wearing surfaces shall have a sand finish and be 'charcoal' in colour to match bluestone. Pavers to be cast with chamferred edge allowing for a 7mm joint at finished surface level after laying. Maximum joint width should not exceed 13mm.
Installation	Pavers are to installed on a 4:1 sand:cement wet mortar bed with an approved bonding agent. Underside of all pavers to be primed with an approved bonding agent. Masonry saw shall be used to cut pavers where necessary. Pavers are to laid butt-jointed. After laying, apply a non-shrink grout to all joints. Grout is to be raked to finish 2mm below pavement surface level. Colour of grout to be obtained through addition of 'Abilox' CAF-X2 @ 4.15% dosage rate in grey cement. Expansion joints shall be located according to engineer's design. Fill expansion joints with 10mm wide 'Bitumastic', 'Comprebond', 'Abelflex' or other approved jointing material, pre-cut to size and so placed that the top of the jointing material shall be 7mm below the finished pavement level.
Maintenance	Normal pavement cleaning. Relay if base fail. Replace if paver is broken. Reinstate to match existing after works to underground services.
Frequency	As required
Recommended Use	Recommended to be used in high traffic urban areas within Zone 2 and 3 of the Ringwood MAC.
Supplier	SVC - 'SVC Gattistone' PC 04.346S2 or approved equivalent.

(Continued)

KERB & CHANNEL - Insitu Concrete

Materials	Cast Insitu concrete kerb
Finish	Steel trowel finish
Installation	Minimum 75mm layer of bedding material consisting of 20mm Class 2 FCR is to be provided beneath kerb and channel. Where radial returns of less than 3 metres radius are encountered, approved framework shall be used. Installation is to be undertaken using an approved kerb making machine. Distinct and complete transverse joints shall be made at intervals not exceeding 2.5 metres.
Maintenance	Clean as necessary. Relay if base fails. Replace if broken. Reinstate to match existing after works to underground services.
Frequency	As required
Recommended Use	Recommended to be used in high traffic urban areas within Zone 2 and 3 of the Ringwood MAC.

(Continued)

TREE PIT INFILL - Garden bed, Mulch

Materials	Garden bed, comprising imported topsoil, approved mulch and plant species as recommended in **Street Tree Planting Guidelines Sheets.**
Installation	Refer **Street Tree Planting Guidelines Sheets.**
Maintenance	Refer **Street Tree Planting Guidelines Sheets.**
Recommended Use	Recommended to be used in high traffic urban areas within Zone 2 and 3 of the Ringwood MAC.
Supplier	Maroondah City Council

TREE PIT INFILL - Gravel Mulch

Materials	Garden bed, comprising imported topsoil, approved gravel mulch and tree species as recommended in **Street Tree Planting Guidelines Sheets.**
Installation	Refer **Street Tree Planting Guidelines Sheets.**
Maintenance	Refer **Street Tree Planting Guidelines Sheets.**
Recommended Use	Recommended to be used in high traffic urban areas within Zone 2 and 3 of the Ringwood MAC.

(Continued)

TACTILE GROUND SURFACE INDICATORS - TGSI

Materials	Insitu surface treatment
Finish	'Ivory' colour. Finish to achieve minimum slip resistance rating of R11 in accordance with AS 4586 and HB 197
Installation	Install to AS/NZ1428.4 (2002). TGSI's are required to be installed on a kerb ramp if the distance between the building line/ boundary and the top of the kerb ramp is less than 3 metres, if the gradient of the kerb is between 1:8 and 1:8.5 or if the kerb ramp is aligned with the building line in the direction of travel.
Maintenance	Clean as necessary. Replace if dislodged or broken. Reinstate to match existing after works to underground services.
Recommended Use	Recommended to be used in all areas where required as per AS/ NZ1428.4 within Zone 2 & 3 of the Ringwood MAC.
Supplier/ Product	'Tac-pave' insitu tactile ground surface indicator or approved equivalent

(Continued)

BICYCLE PATH SURFACE MATERIAL - Emerald Plazicote

Materials	Integrally-coloured surface treatment.
Finish	Preferred colour is G13 Emerald (AS2700 S 1996) in accordance with Vicroads Cycle Notes No. 14 April 2005.
Installation	Application by specialist contractor only. Installation is to be in accordance with Vicroads Cycle Notes No. 14 April 2005.
Maintenance	Clean as necessary. Reinstate to match existing after works to underground services.
Recommended Use	Recommended to be used on all road designated cycle paths within Zone 2 & 3 of the Ringwood MAC.
Supplier	'Plazicote' specialist surface coating by Zaganite Industries or approved equivalent.

TYPICAL STREET TREE planting

RF 018

TOWN CENTRE TREES - Zone 1

Species	Common Name	Mature Size (H x W)	Installation	Culture
Eucalyptus pauciflora 'Little Snowman'	Snow Gum	8 - 12 x 5 -7 metres	100 Litres	Evergreen
Eucalyptus mannifera ssp. Maculosa	Red Spotted Gum	8 - 20 x 8 - 13 metres	100 Litres	Evergreen
Ulmus parvifolia	Chinese Elm	8 - 10 metres (H)	4m height (60mm cal)	Deciduous

OTHER AREAS TREES - Zone 2 & 3

Species	Common Name	Mature Size (H x W)	Installation	Culture
Eucalyptus cephalocarpa	Silver Stringybark	5 - 8 metres (H)	100 Litres	Evergreen
Lophostemon confertus	Queensland Brush Box	10 - 30 x 6 - 20 metres	100 Litres	Evergreen
Eucalyptus radiata	Narrow-Leafed Peppermint	10 - 15 metres (H)	100 Litres	Evergreen
Angophra costata	Smooth-barked Apple Myrtle	20 metres (H)	100 Litres	Evergreen
Acacia implexa	Hickory Wattle/ Lightwood	10 x 5 metres	45 Litres	Evergreen

OTHER AREAS TREES - Town Entry

Species	Common Name	Mature Size (H x W)	Installation	Culture
Eucalyptus radiata	Narrow Leafed Peppermint	10 - 15 metres (H)	100 Litres	Evergreen

OTHER AREAS TREES - Boulevard Trees

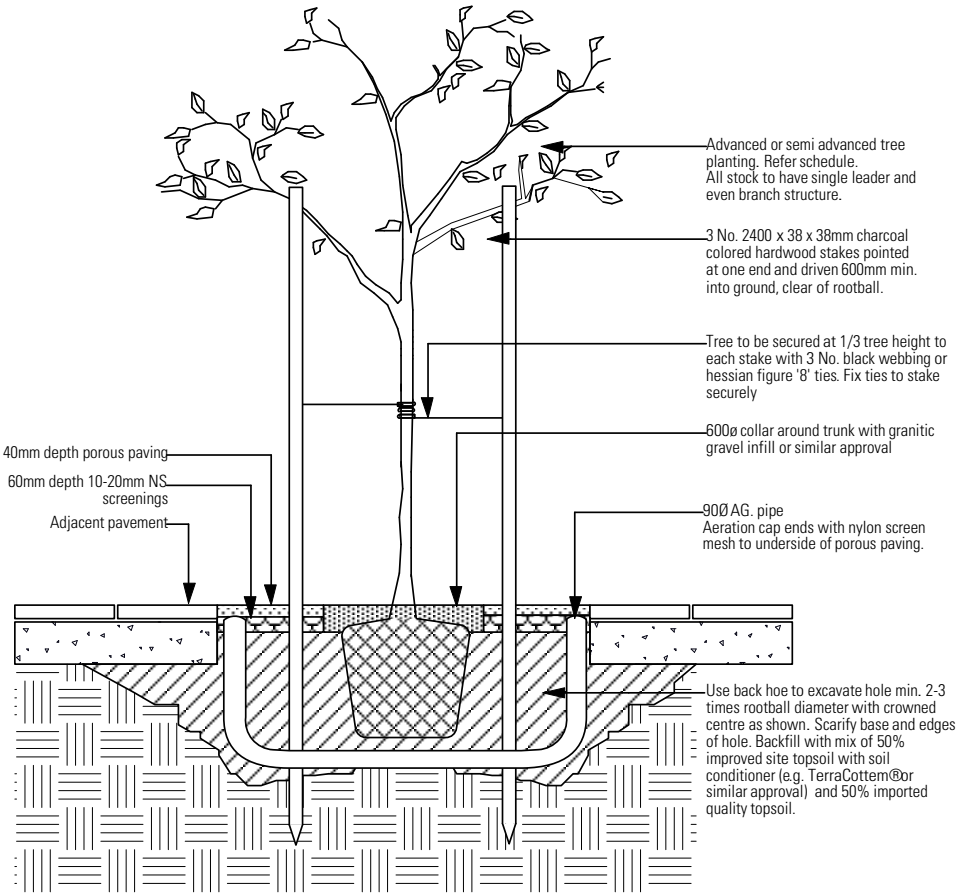
Species	Common Name	Mature Size (H x W)	Installation	Culture
Platanus x acerifolia	Plane Tree	20 - 25 x 15 - 20 metres	4m height (60mm cal)	Deciduous

OTHER AREAS TREES - Tree Pit Groundcover Plants

Species	Common Name	Mature Size (H x W)	Installation	Culture
Dietes bicolor	Dietes	1 x 1 metres	150mm pot	Evergreen
Anigozanthus sp. cultivars	Kangaroo Paw	1 x 1 metres	150mm pot	Evergreen
Phormium 'Surfer Boy'	Flax	0.5 x 0.7 metres	150mm pot	Evergreen

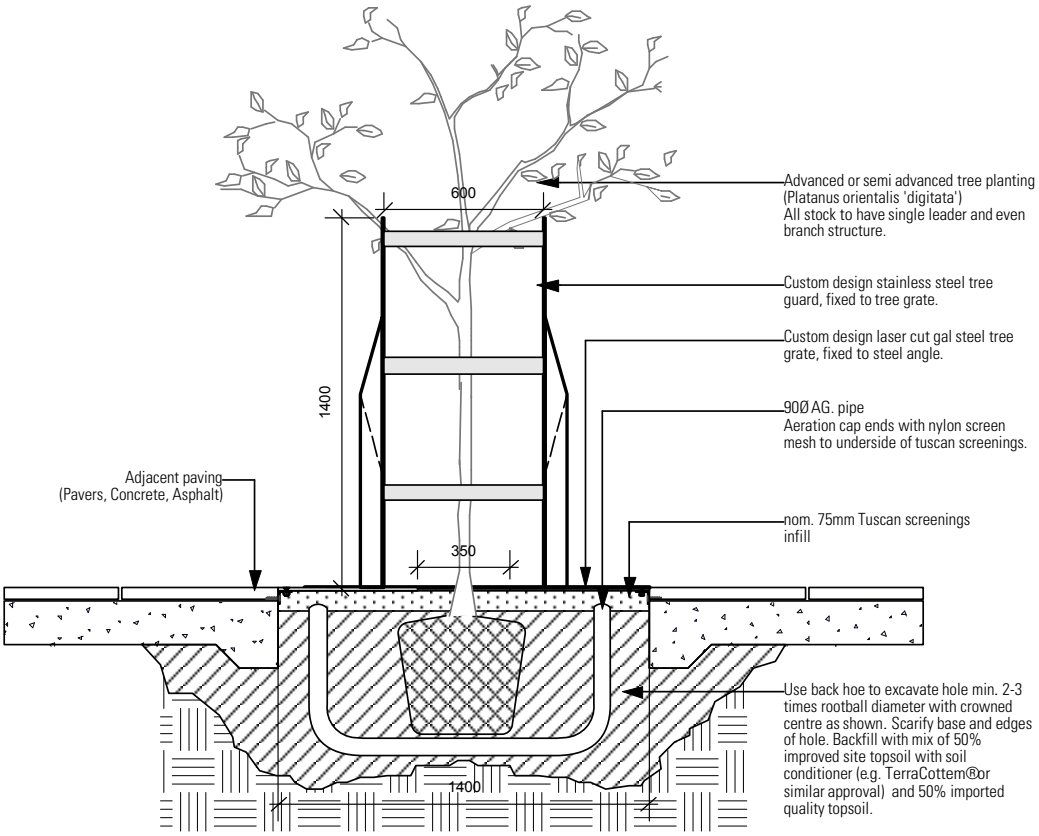
RF 018 **TYPICAL STREET TREE** planting detail

with Porous paving

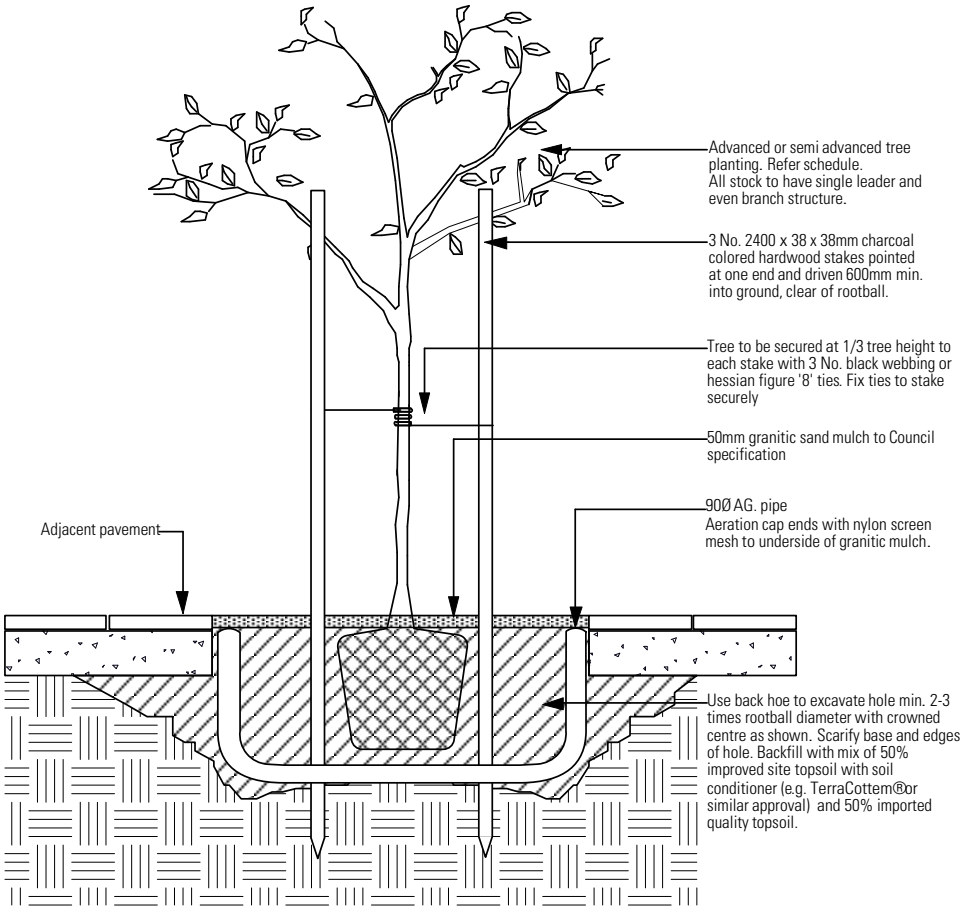


TYPICAL STREET TREE planting detail
with tree grate and tree guard

RF 018

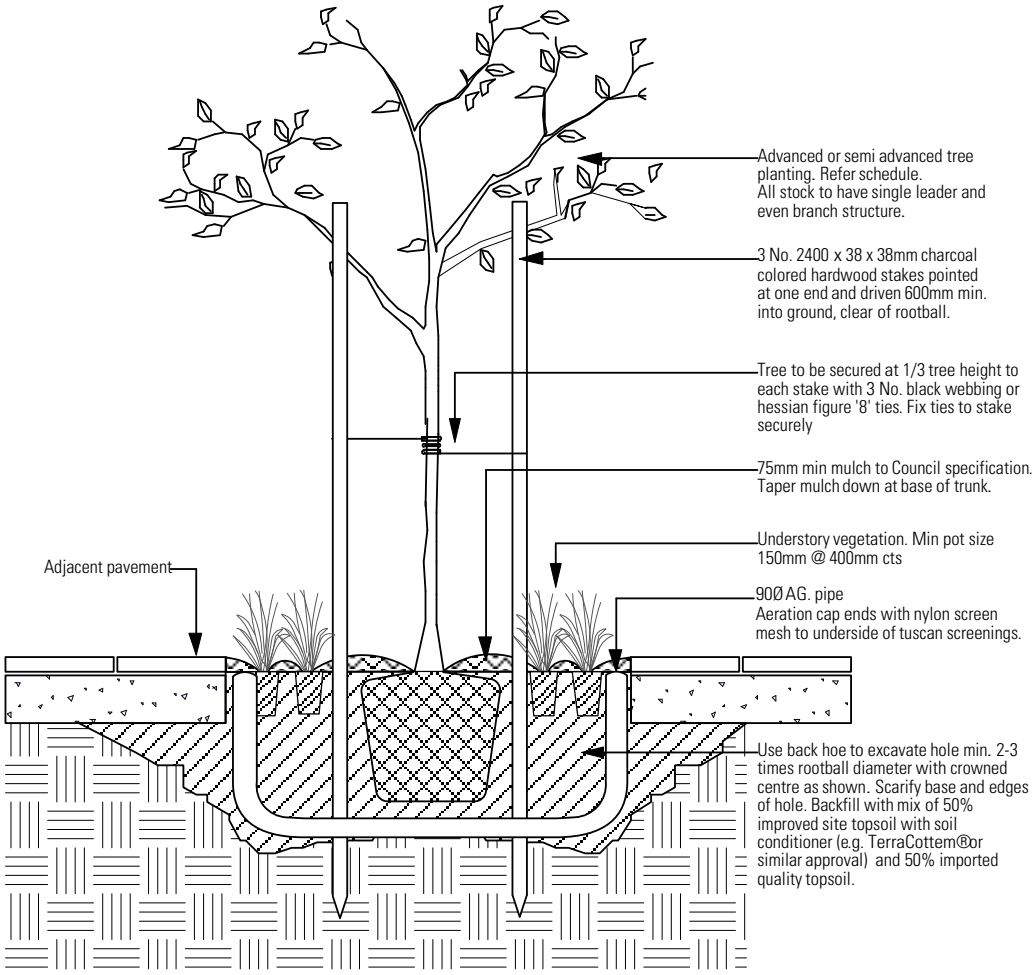


RF 018 **TYPICAL STREET TREE** planting detail with gravel mulch

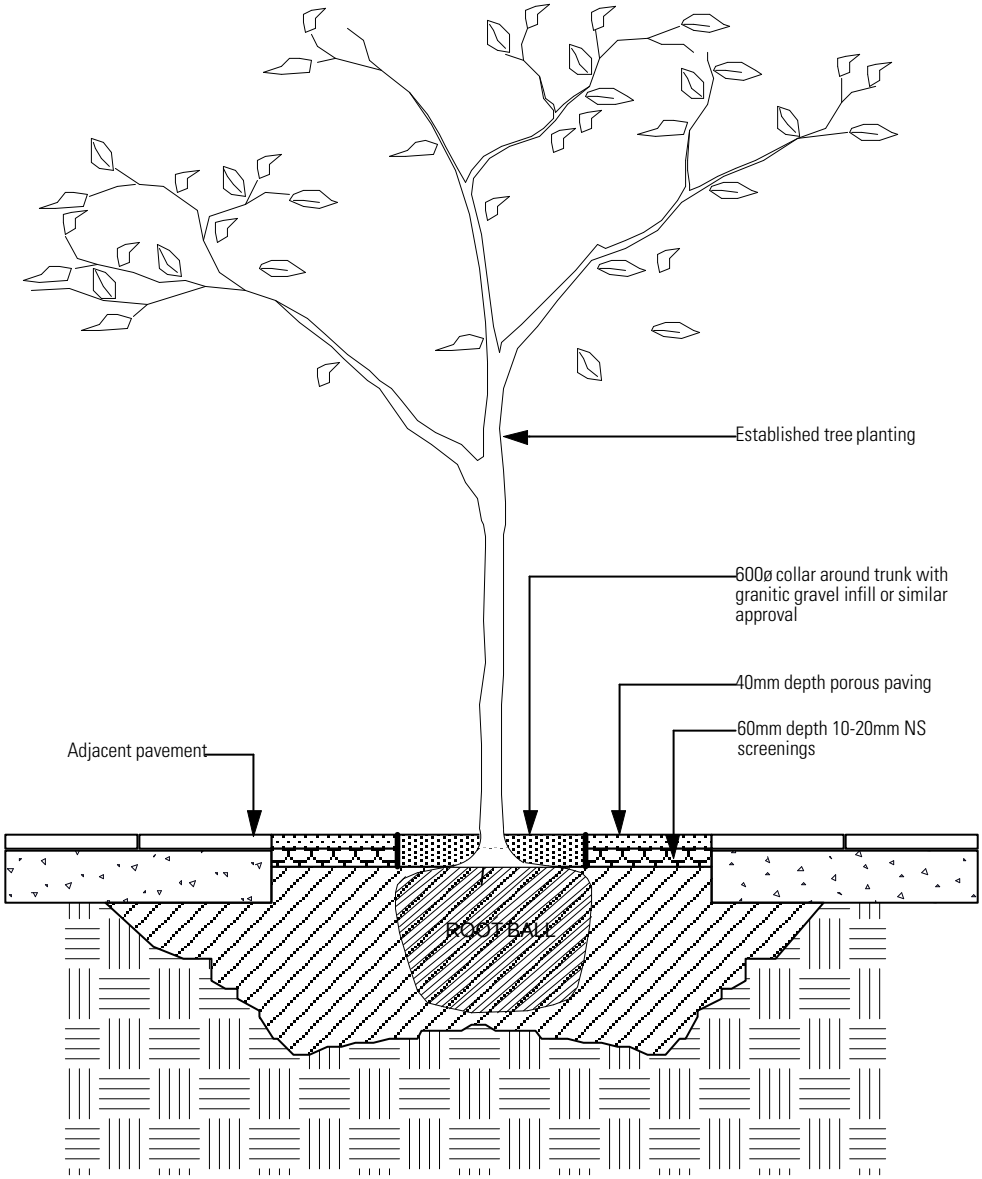


TYPICAL STREET TREE planting detail
with ground cover planting

RF 018



RF 018 **EXISTING STREET TREE** planting detail



STORMWATER PIT Lid

RF 019

Design Statement	Galvanised steel frame storm water pit and lightweight durable cover.
Materials	Galvanised steel frame Composite fibreglass cover
Finish	Composite fibreglass color to match adjacent pavement
Installation	Cover and frame to be installed in accordance with the manufacturer's recommendations.
Maintenance	Lift occasionally and reseal.
Recommended Use	Recommended to be used where stormwater access is required throughout the Ringwood MAC.
Supplier	Widely available - Council Approved Supplier

RINGWOOD

URBAN DESIGN MANUAL

SECTION 3 - APPENDIX

3.1 FIXING SPECIFICATIONS

Ramset™

Concrete Results™

CHEMSET® INJECTION 101

zChemset Injection 101 is a chemical anchor system based on a polyester mortar. The two parts are dispensed and mixed in one action through a static mixing nozzle, which allows accurate mixing with no mess.

Chemset 101 is a cost effective solution to anchoring jobs close to edges where there is a need to avoid bursting stress on the surrounding substrate.
Chemset 101 is suitable for normal loads in benign environments. Chemset 101 mortar can be used to fix starter bars, wall ties, threaded studs, bolts and large screws into concrete, brickwork, masonry and stone. Fixtures can be installed into hollow blockwork using Chemset 101 in conjunction with the appropriate sleeve or sieve.

Chemset 101 is designed to provide rapid cure with adequate working time in temperate climates.

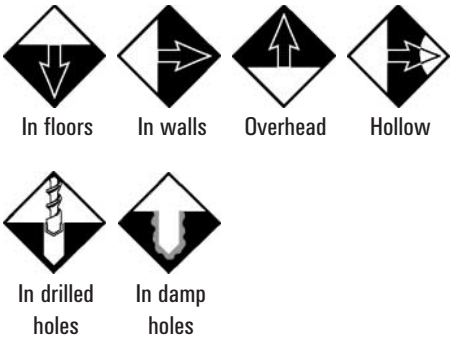
For fixing to
Concrete, solid brick, hollow brick, hollow block stone

Features
- ~ Stress free anchoring with good durability-ideal for a variety of materials and hollow sections with the use of accessories.
- ~ Can be used close to the edge.
- ~ Close anchor spacing.
- ~ Chemical bonding-highly resistant to dynamic loading.
- ~ Portable delivery system – no need for power tool adaptors to set the anchors.
- ~ Suitable for immersion when cured.

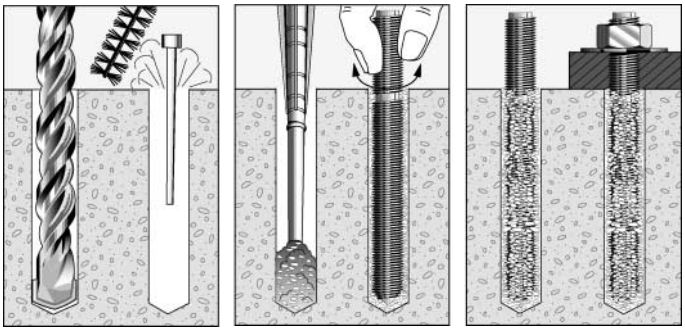
Applications
Chemset Injection is ideal suited for; structured fixings, holding down fixings, fixings into moderate corrosive environment, anchors under cyclic loadings, adhering remedial anchors and into hollow material with use of accessories.

Storage
Store in a cool dry place between 5ºC and 25ºC. Keep out of direct sunlight.

Materials
Polyester Mortar



INSTALLATION

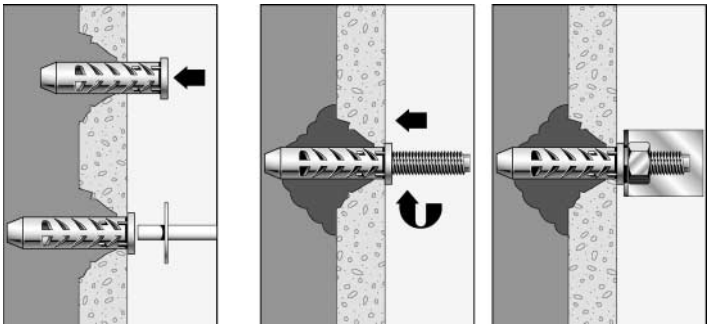


1. Drill correct diameter hole to recommended depth. Clean hole thoroughly with a nylon brush. Remove debris by way of vacuum pump, compressed air, hand pump etc.

2. Insert Mixer Nozzle and inject mixture into hole. Insert the stud into the bottom of the hole using a slow twisting motion.

3. Allow resin to cure as per recommendations. Attach fixture.

INSTALLATION INTO HOLLOW BLOCK



1. Drill hole and insert correct sleeve. Insert mixer nozzle into sleeve and inject resin to form a solid body of mortar behind the block.

2. Push stud into sleeve with a twisting motion.

3. Allow time to cure and attach fixture.

CHEMSET® INJECTION 101

INSTALLATION AND PERFORMANCE DETAILS

Anchor Size	Thread Size	Installation: Hole Ø (mm)	Embedded Depth (mm)	Fixture Clearance Ø (mm)	Fixture thickness (mm)	Tight Torque (Nm)	Structural Limits: Minimum Edge Distance (mm)	Minimum Anchor Spacing (mm)	Minimum Structural Thickness (mm)	Rec. Working Load (kN) See Safety Factors: Hollow concrete block 10MPa Tensile	Hollow concrete block 10MPa •Shear	Perforated bricks 20MPa Tensile	Perforated bricks 20MPa •Shear	Solid concrete block 30MPa Tensile	Solid concrete block 30MPa •Shear
8	M8	10	80	11	15	8	30	50	100	0.4	0.4	2.5	3.0	4.3	4.4
10	M10	12	90	13	25	15	40	60	120	0.4	0.4	3.0	4.0	5.9	7.1
12	M12	14	110	15	30	30	50	70	140	0.4	0.4	3.0	5.0	8.4	10.5
16	M16	18	125	19	40	70	65	100	160	-	-	-	-	12.2	19.8
20	M20	24	150	25	75	140	80	120	190	-	-	-	-	19.5	30.0
	M20	24	**170	25	55	140	80	120	220	-	-	-	-	22.1	30.0
24	M24	26	160	30	105	230	95	145	200	-	-	-	-	22.6	43.4
	M24	26	**210	30	55	230	95	145	270	-	-	-	-	29.6	43.4

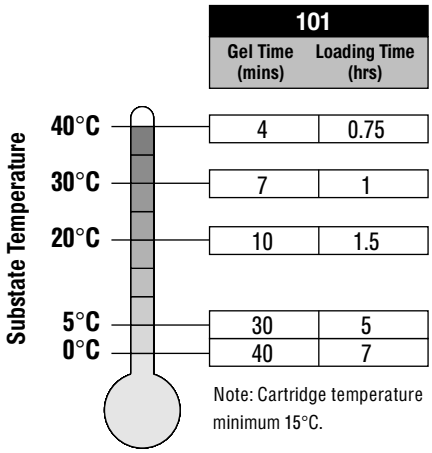
• For shear loads acting toward the edge(s) of the concrete, the above edge distances and spacings are not applicable, please consult Ramset Technical Consultant.

FIXINGS PER CARTRIDGE

Anchor Size	Nominal Hole Ø (mm)	Nominal Hole Depth (mm)	Number of Fixings* 150ml	380ml	750ml	Trigger Pulls per Hole† 380ml	750ml
8	10	80	37	96	195	1	1
10	12	90	26	66	133	1	1
12	14	110	17	43	87	1.5	1.5
16	18	125	11	27	55	2.5	2
20	24	150	6	11	22	6	5
24	26	160	4	12	24	6	5

Note: *Approximately based on continuous installation without interruptions or nozzle changes.
†Trigger Pulls using Chemset Universal Applicator (CUA). Provided as a guide and will vary with temperature.

SETTING TIMES



Note: Cartridge temperature minimum 15°C.

PACK SIZES AND ORDER NO'S

Pack Size	Order No.
150ml Mini	C101M
380ml Cartridge	C101C
750ml Jumbo	C101J

***All packs supplied with x1 Static Mixing Nozzle**

FACTOR OF SAFETY

In this document, recommended working loads are the characteristic ultimate load carrying capacity divided by a factor of safety which varies according to the direction of the load and the material.
The factor of safety applied for steel is 2.2 in tension and 2.5 in shear.
The factor of safety applied for concrete tension is 3.0.

DYNASET® DROP-IN ANCHORS

Dynaset is an internally threaded socket Anchor for use with bolts or threaded rod of any length. Dynaset may be set at any depth or flush to the surface. The correct setting tool for each size should be used to guarantee full expansion of the anchor body.

For fixing to
Concrete, solid brickwork.

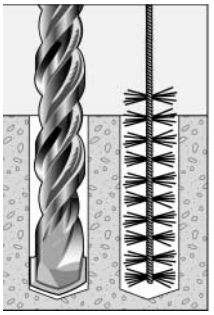
Features
~ Thin walled-smaller drill sizes used.
~ Flush fitting-no protrusions when not in use.
~ Shallow embedment - less chance of drilling into rebar, and faster drilling.
~ Permanent anchorage - removal of fixture leaves anchor undisturbed.

Application
Suspended services stadium seating, holding down machinery, racking, light to medium duty.

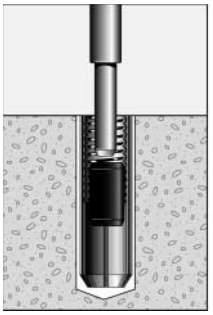
Materials
Carbon Steel
Stainless Steel: AISI 316.

Surface Finish
Zinc electro-plated with chromate conversion coating.

INSTALLATION



1. Drill hole at recommended diameter, to at least the anchor length in depth. Clean hole thoroughly with a brush. Remove debris by way of a vacuum pump, compressed air, hand pump etc.



2. Insert anchor and push to required depth. Using the special setting tool, drive the expander plug down until shoulder of the setting punch meets top of the anchor.

3. Position fixture then insert the bolt and tighten with spanner. The Dynaset anchor remains set in position if the bolt is removed.

A4 316

INSTALLATION AND PERFORMANCE DETAILS

Anchor Size	Thread Size	Hole Ø mm	Installation Embedded Depth (mm)	Tight Torque (Nm)	Edge Dist. Min. (mm)	Structural Limits Anchor Spacing Dist. Min. (mm)	Structural. Thick. Min (mm)	Rec. Working load (kN) 20MPa Tensile	20MPa •Shear	30MPa Tensile	30MPa •Shear	40MPa Tensile	40MPa •Shear
6	M6	8	30	3	95	70	60	2.9	2.0	3.5	2.0	3.9	2.0
8	M8	10	35	6	100	70	70	3.1	2.6	3.8	2.6	4.4	2.6
10	M10	12	45	12	135	95	80	4.8	3.3	5.9	3.3	6.3	3.3
12	M12	16	55	21	175	125	100	7.0	8.1	8.6	8.1	9.9	8.1
16	M16	20	75	51	230	165	130	10.6	10.4	13.0	10.4	15.1	10.4
20	M20	25	90	98	285	205	160	14.8	13.1	18.1	13.1	20.9	13.1

• For shear loads acting toward the edge(s) of the concrete, the above edge distances and spacings are not applicable, please consult Ramset Technical Consultant. This table should be read in conjunction with the Ramset Engineers Design Manual.

RINGWOOD
URBAN DESIGN MANUAL

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