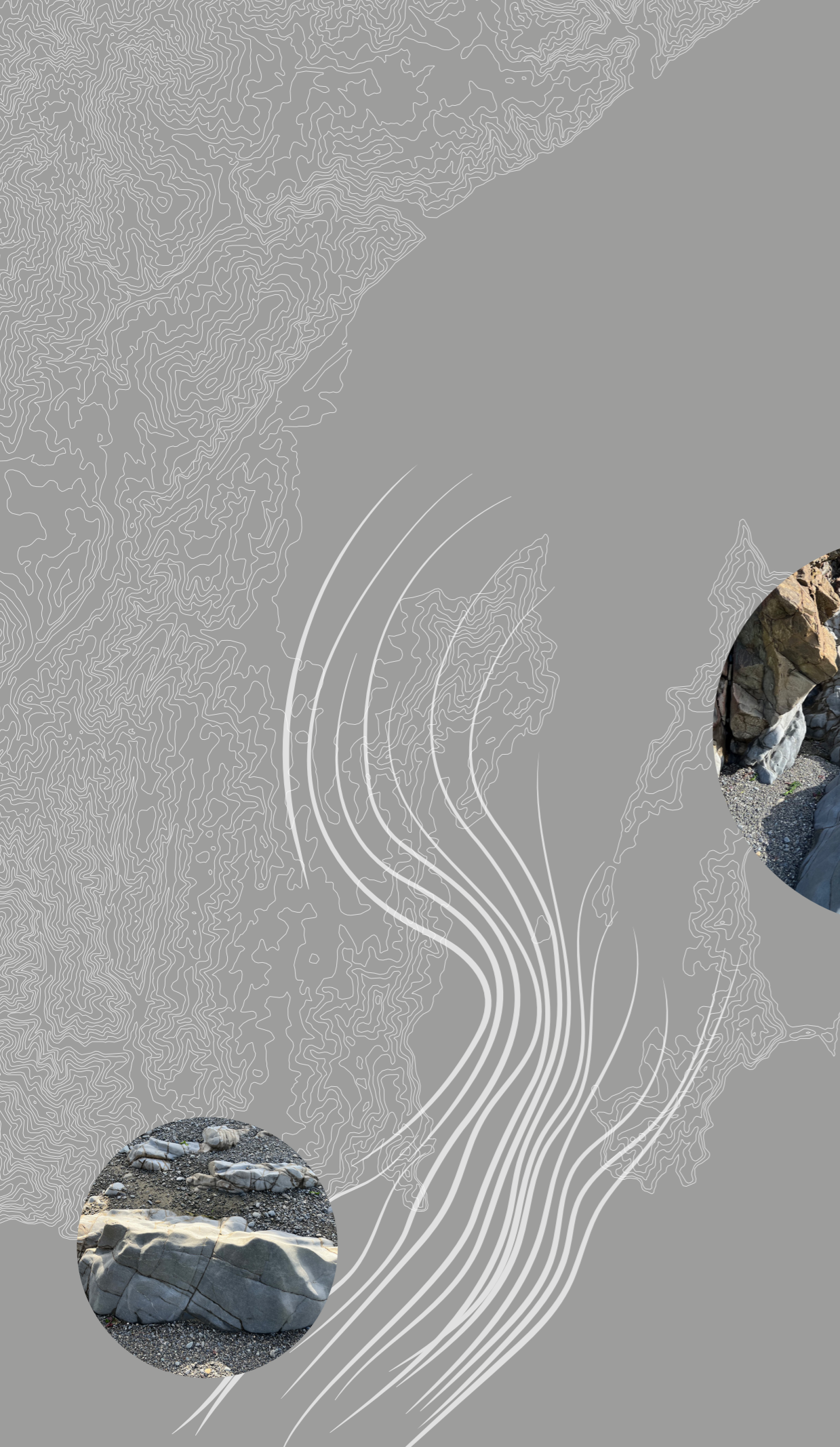


Cycleway Separation

Street Innovations Challenge

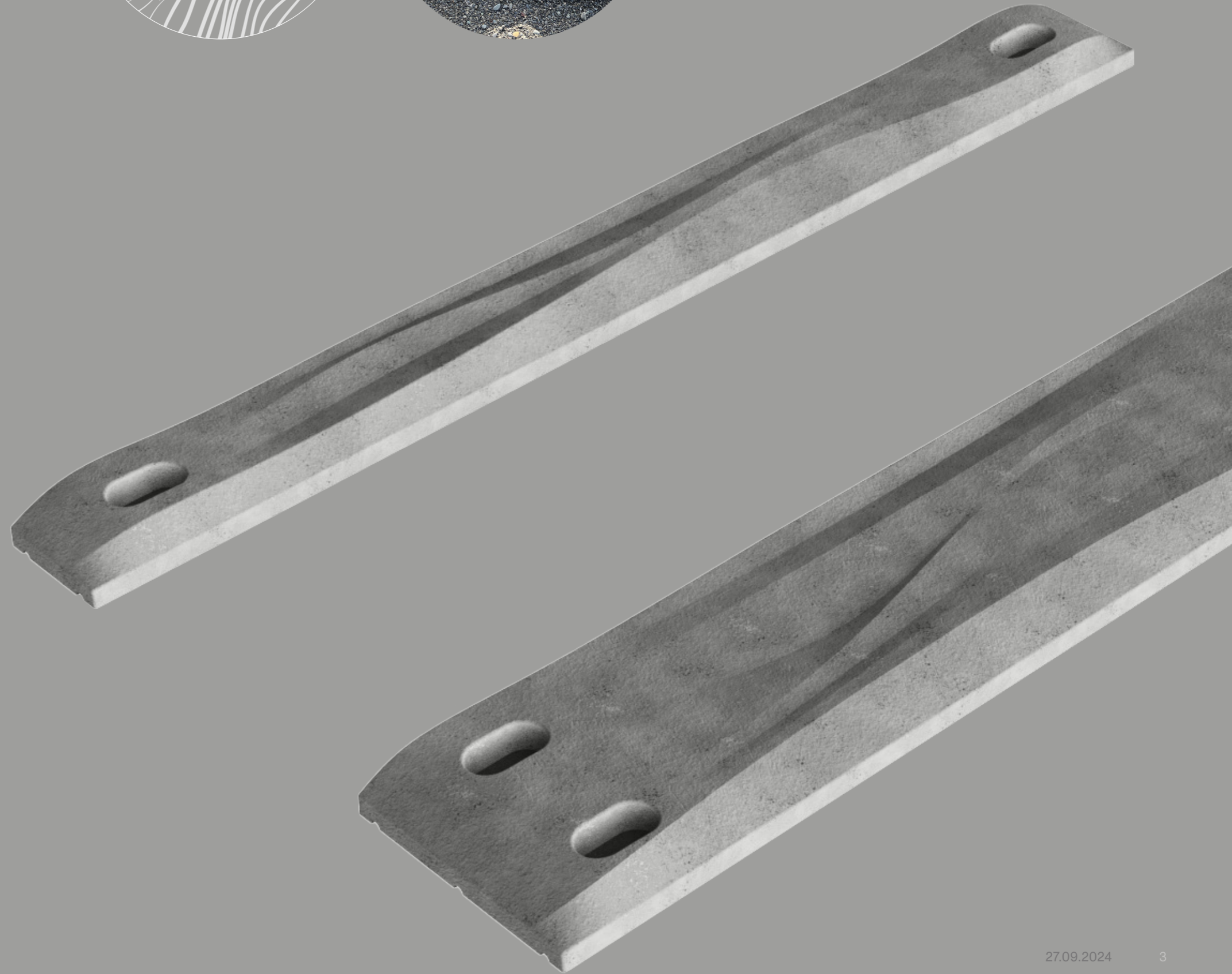
Wellington City Council



Inspired by Tāwhirimātea’s winds over the Pōneke landscape, and the geology of the south coast, the design we present is a modular and adaptable evolution of a familiar form.

Wind and topography are cited as a key reason “no one in Wellington will ever want to bike”. Despite this dictum often repeated in the media, the number of people riding continues to climb. Notably so on new, hilly routes. The weather and landscape are not the barriers some staunch challengers think they are, perhaps.

This design embraces the wind. Topography and geology are celebrated. It is a reminder of the surmountable challenge of riding in Wellington; with every headwind is a tailwind; with every climb is a coast down.



Concept Description

Modularity in both the separator and accessory system allows for a range of cycle facility use-cases: suburban village placemaking, scenic route celebration, inner-city arterial safety, urban parking lane separation, and temporary activation and trails. This proposed separation system is designed to be changeable before and after installation, enabling ongoing development and refinement of the cycling experience in Wellington.

Common Sizes

We researched separation devices used in Paneke Pōneke projects, including Thorndon Connections, Aro Valley connections, and Berhampore to Newtown, finding 250mm, 500mm, and 900mm as common widths, with 4000mm (or multiples of) as a common length. Some smaller 2500mm long devices are used in sharper bends on hilly roads.

The proposed system uses six separator modules: 250mm x 2500mm, 250x4000, 500x4000, 900x4000, and two that scale in width, collectively providing streetscape flexibility and considered design. They are intended for standalone placement or chaining together for continuous separation.

As these dimensions are already in use, the modules can be used by transport engineers with minimal adjustment to methodologies. Additionally, existing rubber separators can be easily replaced with new modules to upgrade the quality of a route.

Windswept Forms

Much like the sea-battered rocks on the south coast, our separators are imprinted with Pōneke's wind lines, creating forms that are unique visual reminders of the city where rivers of wind squeeze between the Tararua and Marlborough ranges. A consistent shallow gap on the cycleway side minimises 'pedal shyness', while the road-side edge matches WCC's standard kerb. The ends of the modules include recesses for standard reflectors at road-level when positioned standalone.

Options for Material

The modules are cast in both reinforced concrete and recycled rubber; the former provides a cost-effective proven long-term solution, while the latter may be used for temporary activation or streetscape testing. The ground and accessory fixing locations on the modules are the same between materials, allowing simple interchanging of material.

Accessorisation

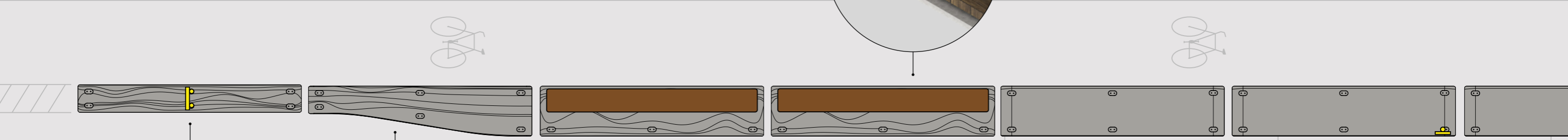
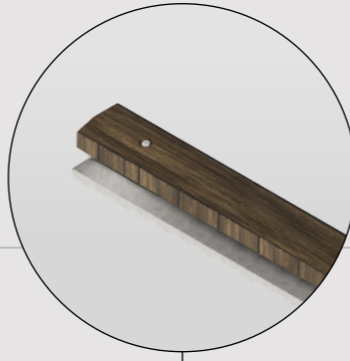
Integrated into the modules are accessory attachment points, aligned with ground fixing locations. These are compatible with off-the-shelf sockets and safety devices, including signage sockets, flexible or rigid bollards, handrails, and footrests. Intermittent vertical elements increase visibility.

Placemaking elements may also be attached: timber sleepers along Jervois Quay, planter boxes in Brooklyn village, or a crotchet-covered pole outside the Tawa Community Centre. The standardised system of modules allows for incredible variety, without requiring bespoke cycleway designs.



Proposed System

Placemaking and urban design opportunities



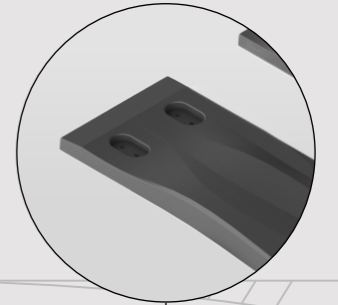
No more than 85mm high to allow for straddling by service and emergency vehicles

Width options that align with existing uses of cycle separators

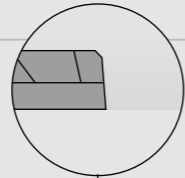
Flat-top options for standard car park or bus stop kerbs



Integrated socket attachment system



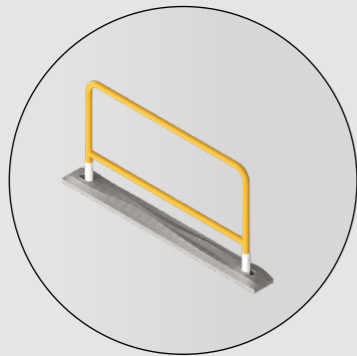
Concrete or rubber material



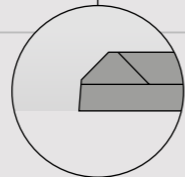
Road-side kerb profile matching WCC standard

Ground-level reflectors

Length options that align with existing uses of cycle separators, enabling upgrading of existing routes



Integrated accessory system

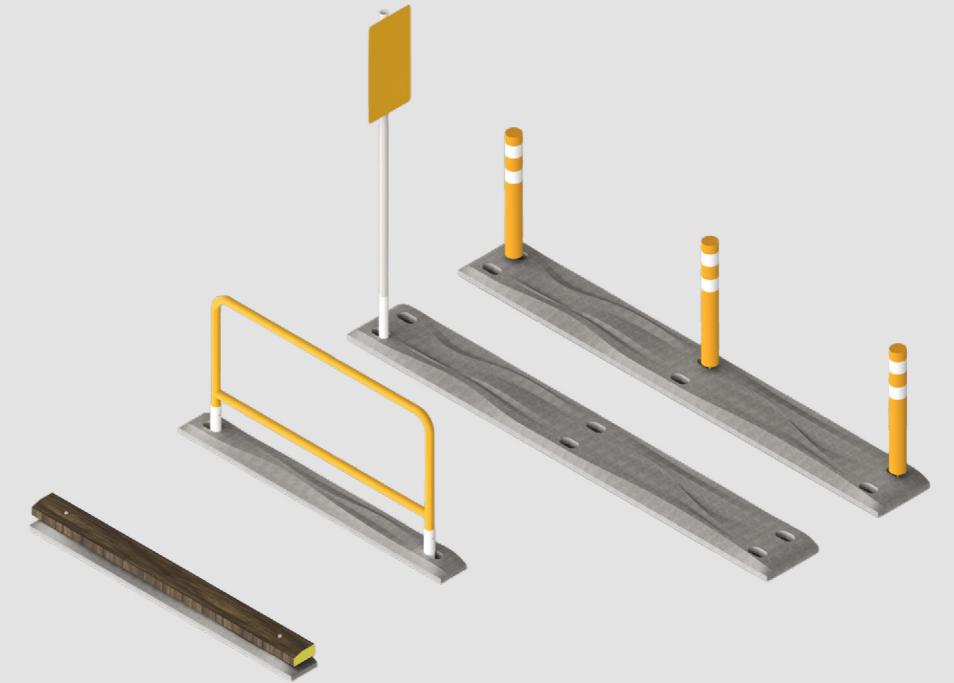
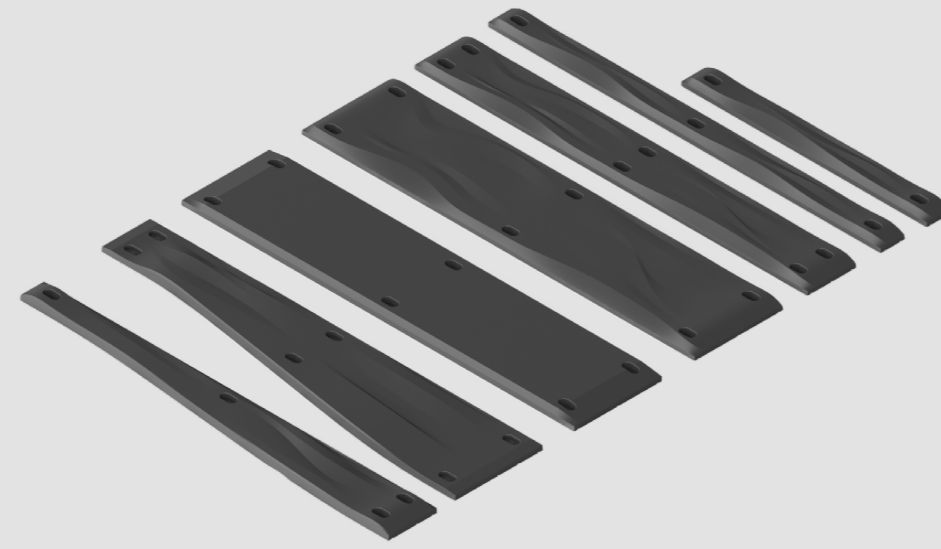
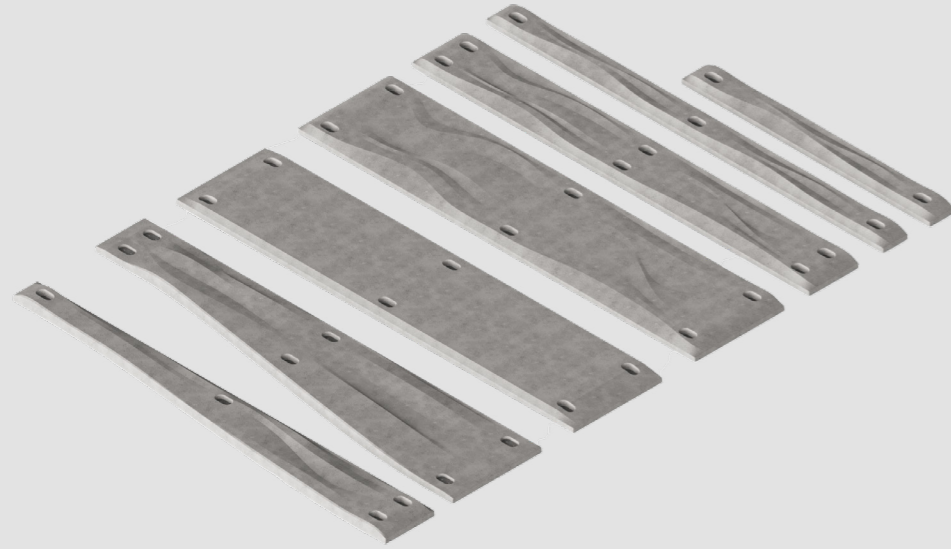


Cycleway kerb profile allowing space for 'pedal shyness'



Threads for rigid or flexi bollards

Modules and Materials



Pre-stressed cast concrete

Concrete is one of the cheapest whole-of-life materials for cycle separators. Pre-stressing greatly enhances the durability.

The expected asset lifespan is 50–80 years, with materials readily available in New Zealand from a range of suppliers and manufacturers.

Based on past separator installations in New Zealand, the estimated full product and installation cost is \$350 per metre.

Modules:

- 250mm x 2500mm
- 250mm x 4000mm
- 500mm x 4000mm
- 900mm x 4000mm
- 900mm x 4000mm (flat top, for car park barriers or bus boarding)
- 250mm widening to 500mm x 4000mm
- 500mm widening to 900mm x 4000mm

Recycled rubber

Rubber is intended for trials or temporary facilities. If made permanent, modules can be swapped out for concrete given the exact same form and bolt locations.

Rubber separators may also be used on bends where more vehicle strikes are expected, to make full replacements cheaper and easier.

The expected asset lifespan is 5–10 years, with materials readily available in New Zealand from a range of suppliers and manufacturers.

Based on past separator installations in New Zealand, the estimated full product and installation cost is \$200 per metre.

Modules:

- 250mm x 2500mm
- 250mm x 4000mm
- 500mm x 4000mm
- 900mm x 4000mm
- 900mm x 4000mm (flat top, for car park barriers or bus boarding)
- 250mm widening to 500mm x 4000mm
- 500mm widening to 900mm x 4000mm

Accessory system

The module bolt fixing holes are co-located with standardised threads, to allow attachment of a range of accessories using off-the-shelf components.

Attachments:

- Sockets can be attached into the threads, which allows for signage and holding rails.
- Flexible and rigid bollards can be directly screwed into the threads.
- Spacers provide anchor points for timber sleepers, elevating the barrier and providing streetscape enhancement.
- Further opportunities for placemaking may be explored in the future, such as planter boxes anchored on spacers.

Installation

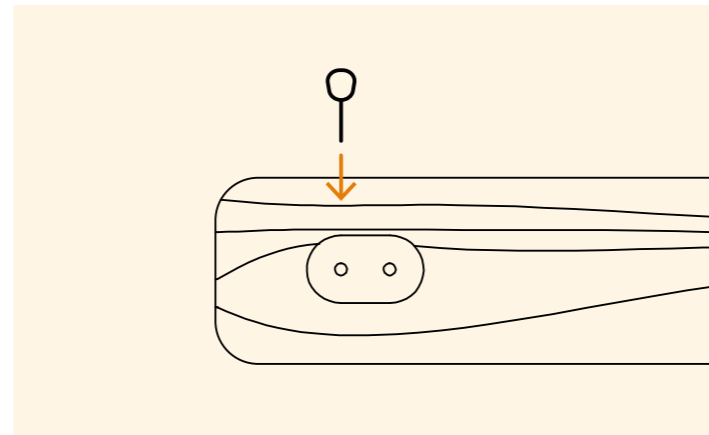
Recycled rubber modules can be installed in place from within the cycle lane, without the need for traffic management.

Concrete modules will require traffic management for a crane to unload, however this process will be quickened though integrated eyelet fastening points.

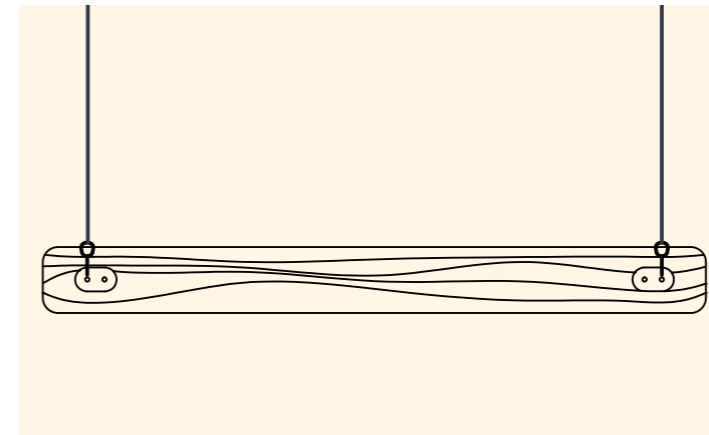
Once separators are on the ground, standardised M16 Dynabolts are used to fasten them, with an option for mortar if the surface requires it.

The accessories can be attached once all separators are in place.

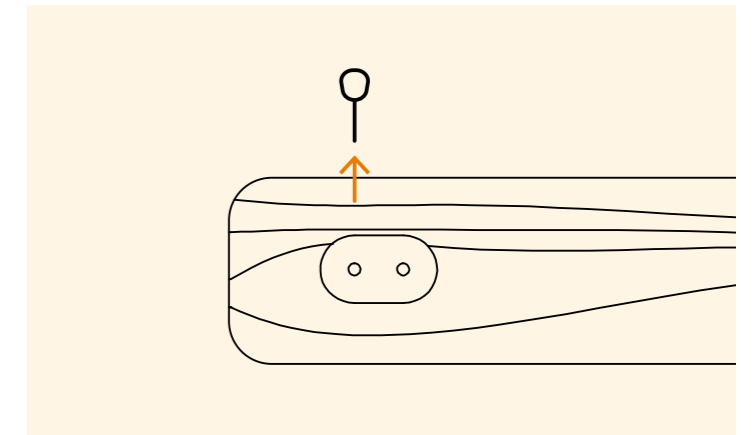
Installing a concrete module



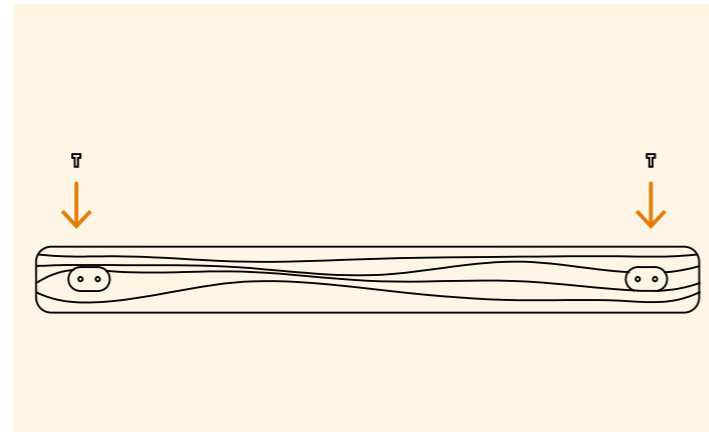
1. Insert crane hooks into integrated points



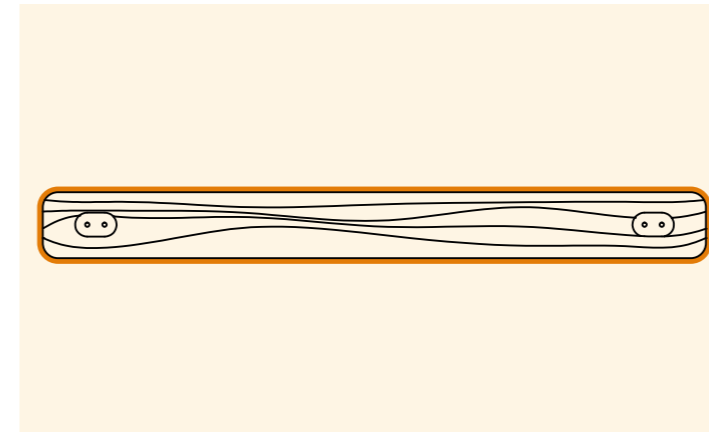
2. Lift into position



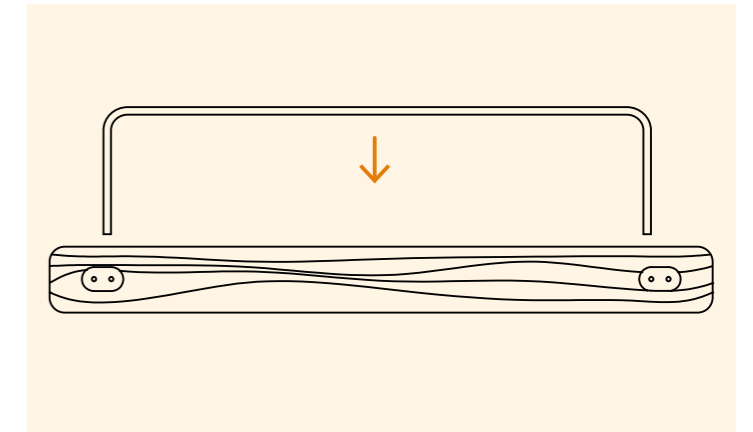
3. Remove crane hooks



4. Secure to road surface with M16 Dynabolts



5. Mortar if required



6. Attach accessories

Repair

The visibility and chamfered edges will lower risk of damage. However, if repair is required, there are two modes available.

Full Replacement

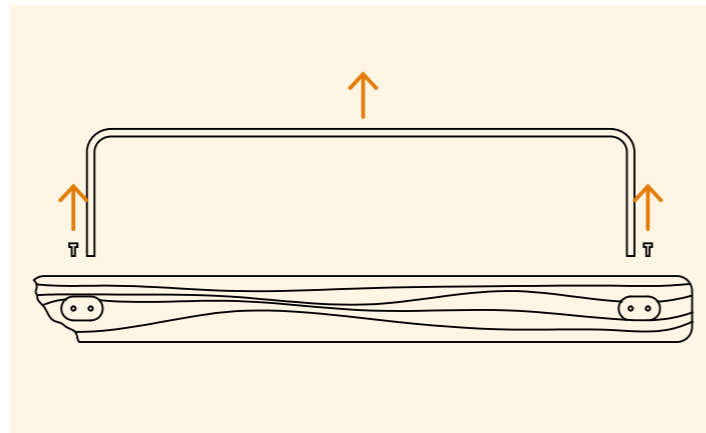
The modular, standardised nature allows for simple removal of accessories from the top, followed by removing and replacing the full module.

If the separator is rubber this can be achieved quickly from inside the cycle lane, while concrete will require a crane truck and traffic management. The removal process is the reverse of the installation process on the previous page.

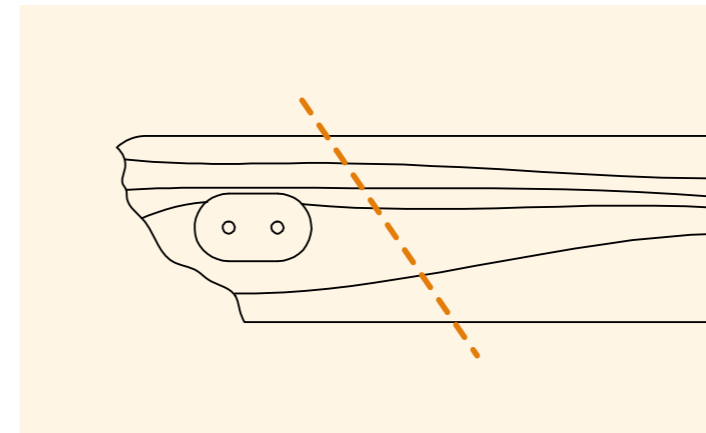
End Cap Replacement

As the separator ends are the most likely to be struck and damaged, a bespoke repair mode has been developed for them. In addition to moulding the full modules, the end caps may be moulded individually in rubber. This allows repairing the modules in place from the cycleway, with less disruption required and no crane trucks.

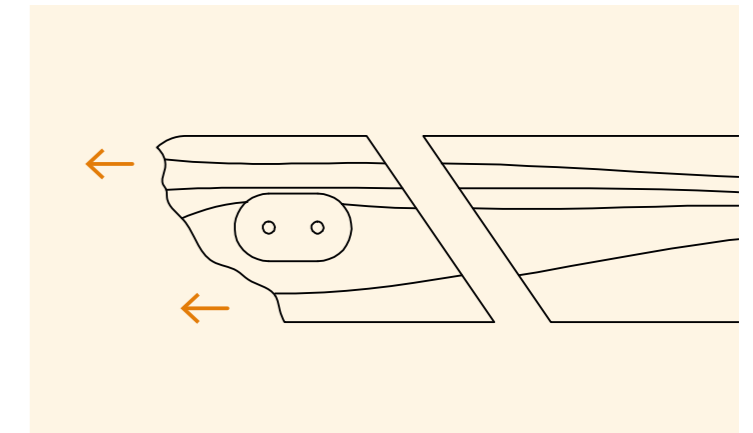
Repairing a module end cap



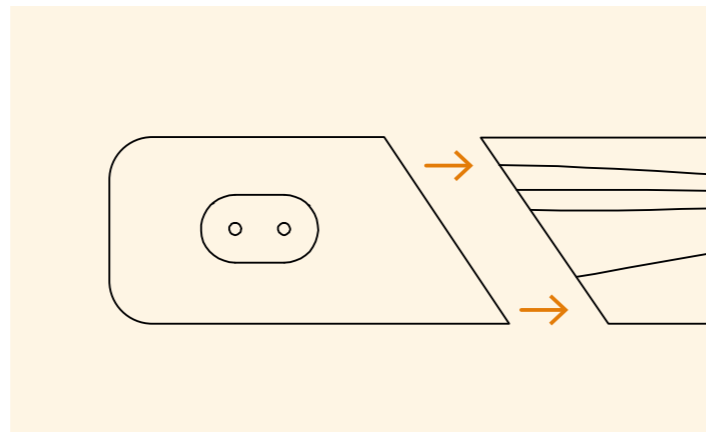
1. Remove bolts and accessories



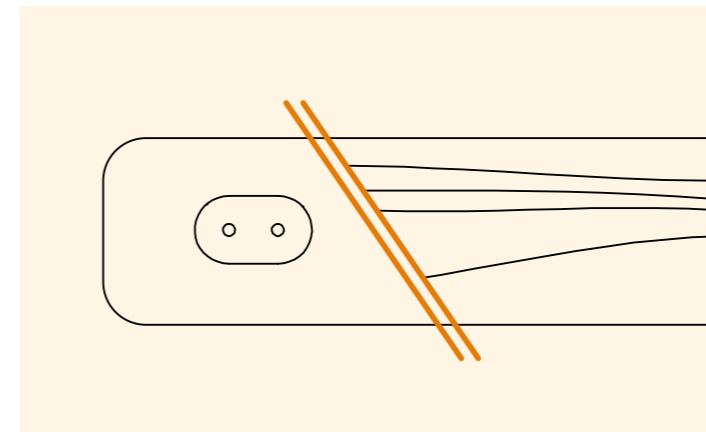
2. Cut module at cut line



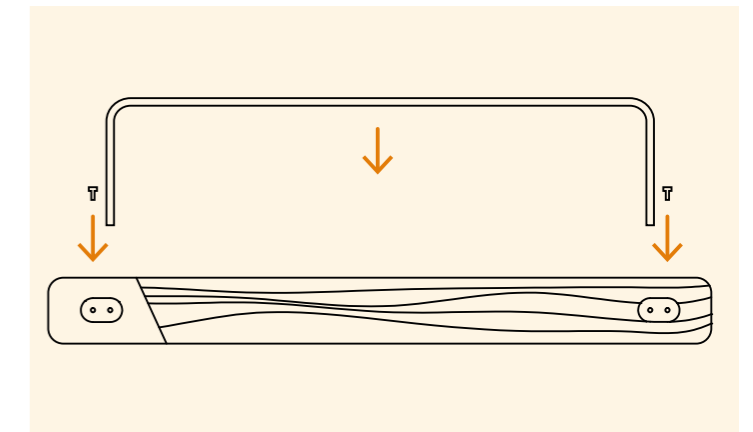
3. Remove damaged concrete end cap



4. Replace with pre-cast rubber end cap



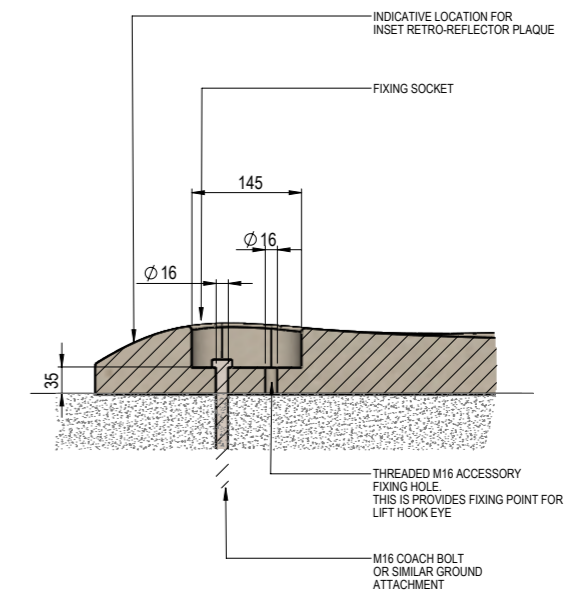
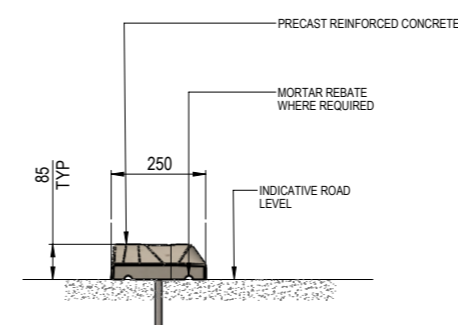
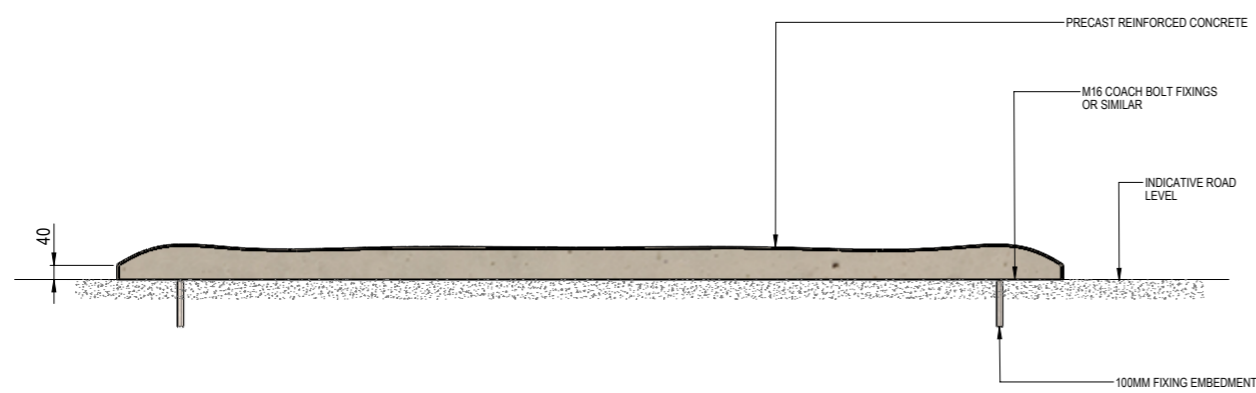
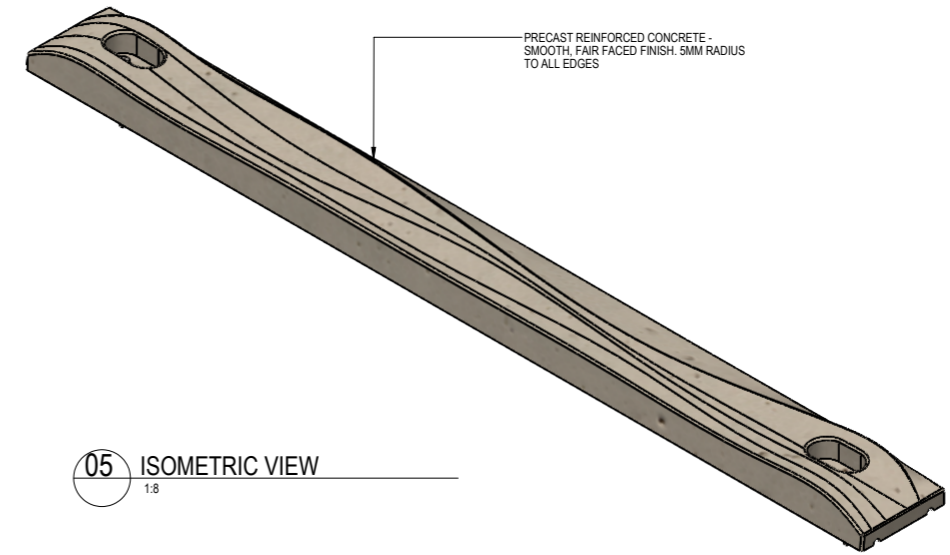
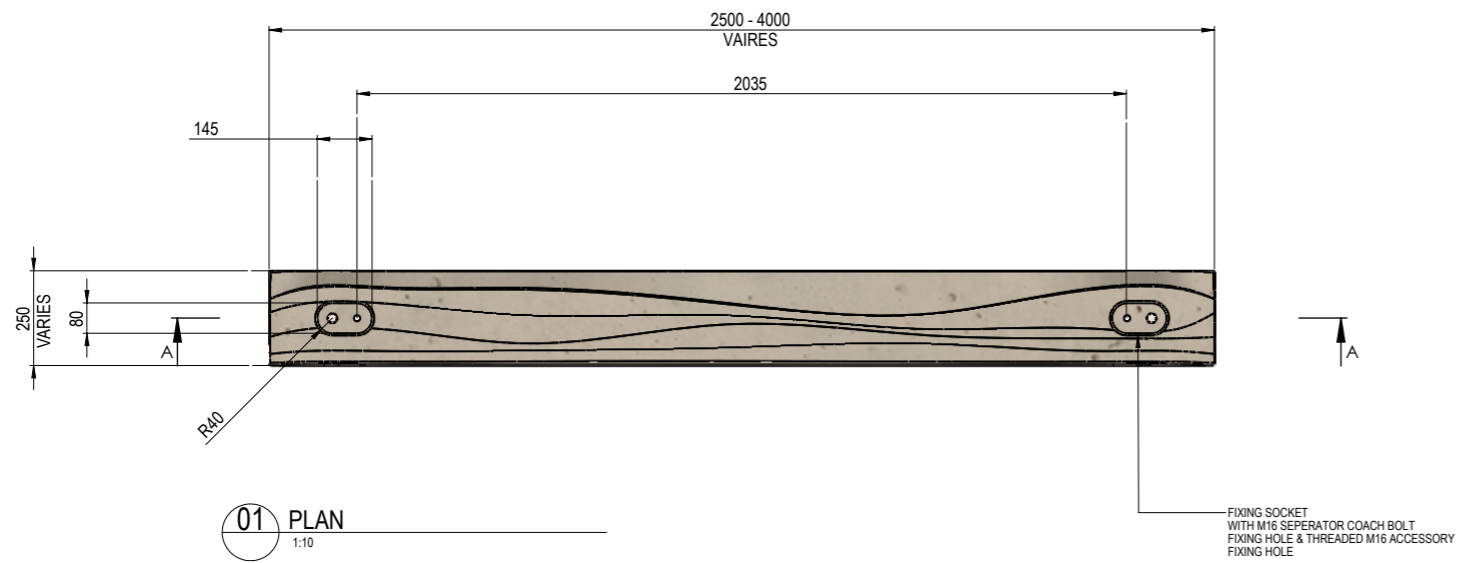
5. Bind new end cap to existing module with a polyurethane glue



6. Reattach bolts and accessories

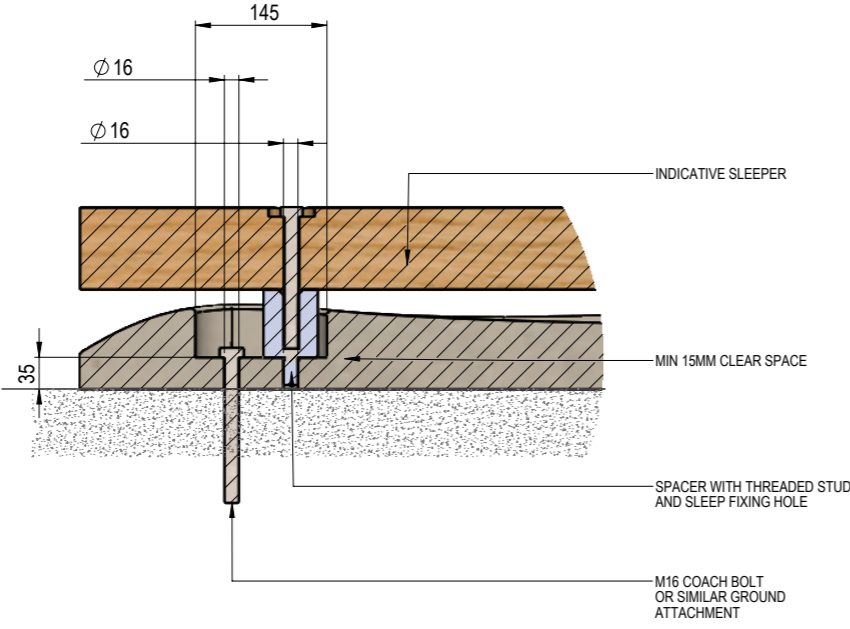
Dimensioned Drawings

Module general assembly

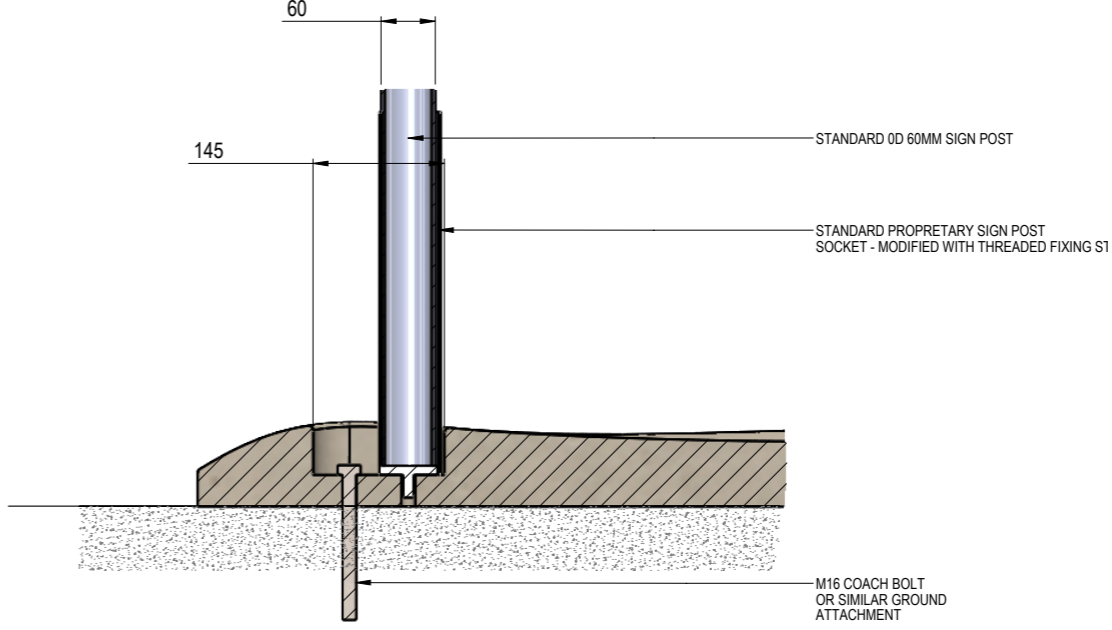


Dimensioned Drawings

Accessory attachments



01 TYPICAL SLEEPER ATTACHMENT
1:5



02 TYPICAL SIGN ATTACHMENT
1:5

Ngā mihi.

Jordan Henderson

Noor Alshawa

Sam van der Weerden

Maynard.