Climate Positive Design

Pathfinder cheat sheet • Issue B • 08/02/2022

Australian Institute of Landscape Architects

Outlined here are the Pathfinder materials in Green and the closest Australian equivalents noted below in black. It will be periodically updated.

PAVING

Loose Aggregate paving

loose gravel paving material such as Pea gravel or Decomposed granite gravel paving.

Aggregate base compacted

Dense Graded Base (DGB)

Compacted Roadbase

Compacted Crusher dust

Concrete pedestrian - Cement substitutes

Lower carbon Concrete, such as a polymer concrete. Assumed to be 20Mpa. Refer to Q&A about how to specify lower carbon concrete. Currently the pathfinder app has an error on this element a it is reflecting the same footprint as normal concrete. Suggest you make a custom element using manufacturers EPD for embodied carbon +15% loading to make it comparable with other pathfinder values..

Based on the EPiC database, a lower carbon 20MPa concrete including 15% loading is in the order of 290KgCO_2e/m3

Add - reinforcing and sub base as separate elements

Concrete previous

No fines concrete that allows water to percolate through. Has a high embodied carbon content 625KgCO_2e/m3 reflecting perhaps additional cement binder.

Concrete Pedestrian

Pedestrian grade 20MPa concrete. Note embodied carbon in concrete is dependent upon the concrete strength. 30 and 40 MPa concrete all have higher carbon due to greater cement content.

Add - reinforcing and sub base as separate elements

Concrete subslab

This element has a high embodied carbon content. This reflects a high strength concrete such as 40 to 50MPa

Reinforcing. US nomenclature

Each reinforcing size number represents 1/8" in diameter, e.g., a #3 bar is 3/8" diameter and a #8 bar is 1" diameter.

Australian equivalents shown below.

#4rebar is @ 24"OC

12.7mm @ 600mm Centres

N12 - 600

#3rebar @18"' OC

9.5mm @ 475mm CC

N9.5 – 475

#4rebar @18"' OC

12mm @ 475mm CC

N12 – 475

#4rebar @16"' OC

12mm @ 406mm CC

N12 – 400

Steel reinforcement – welded wire mesh.

In the US this is usually 4-inch-by-4-inch up to 8-inch-by-8-inch. Assumed to be 8"x8"

Australian equivalent

SL82 mesh = square mesh 8mm x200mm spacing

WALLS

Concrete site wall and Concrete structural wall

Further information being sought here from app developer on why both of these elements have a lower embodied carbon (312KgCO_2e/m3) than pedestrian concrete.

SUBSURFACE ELEMENTS

Drain Rock – Class 2 Permeable

This is a graded aggregate that has a mix of fines so it can be compacted for use as a subbase. There is no gap graded Australian equivalent like a nominal 20mm stone aggregate or similar in the app. Suggest a custom element.

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Building a complex custom element **331.5kg Co_2e per linear m**

10m long Concrete site wall 450x600mm high @ 312.6 kg CO2e/m3 = **1097kg**

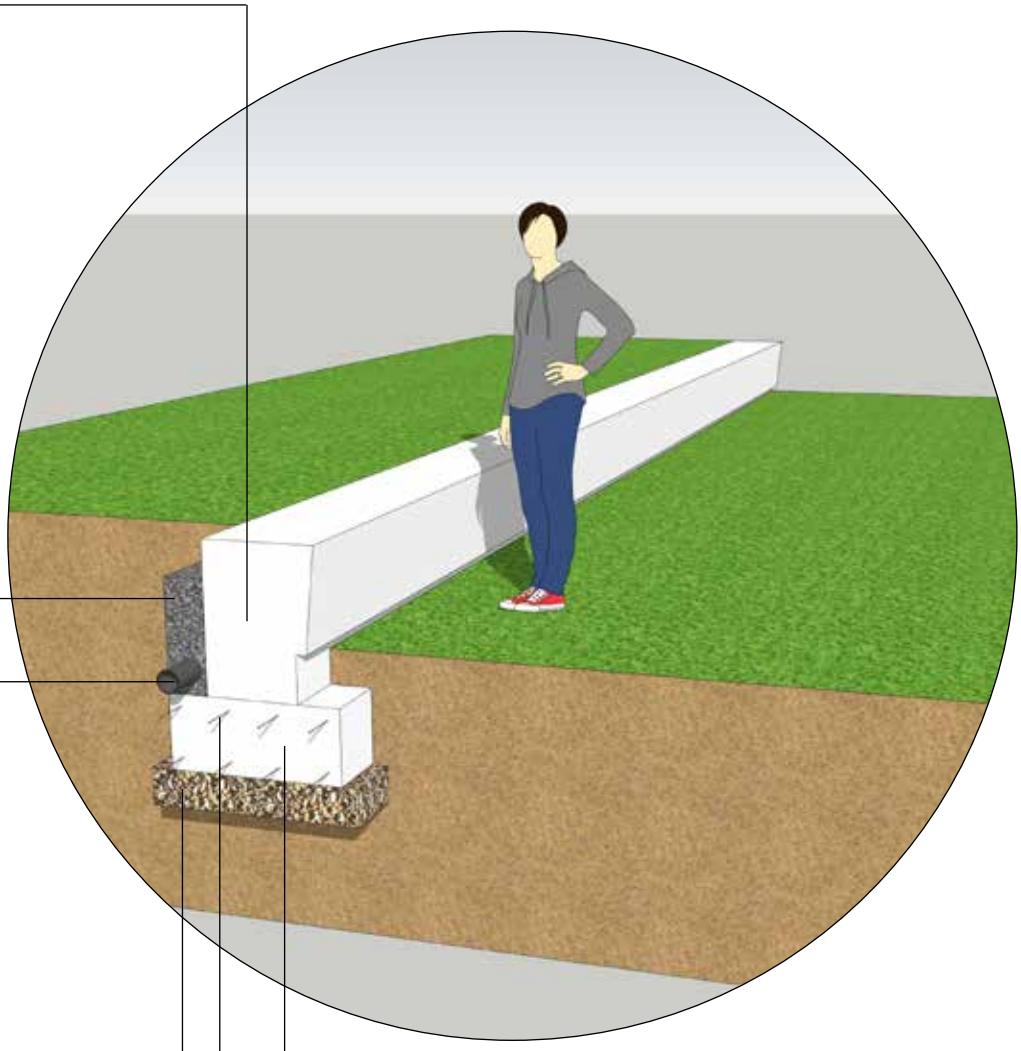
Reinforcing - Custom element
10x N12 bars x10m = 100m

N12 cage 1.3m long @ 200 centres = 50 cages in wall.

50x1.3m = 65m

= 165m @2.6kg/m from Epic data base

550.9kg CO2e



Waterproof membrane.

29kg CO2e

Drain rock - class 2 permeable.

54kg CO2e

Pipe - PVC Schedule 40

137kg CO2e

10m wall

3315 kg Co_2e

Concrete foundation / footing 700x300mm deep **975.3 kg** CO2e

Reinforcing - custom element
6x Rebar N12 top and bottom =12x10=120m
@2.6kg/m from Epic data base = **405.6kg**CO2 e
1.5m long folded R10 cages @400cc = **67kg**CO2 e

Aggregate base compacted. @0.39kg CO2e/m3
800mm x 150mm deep= **0.46**kg

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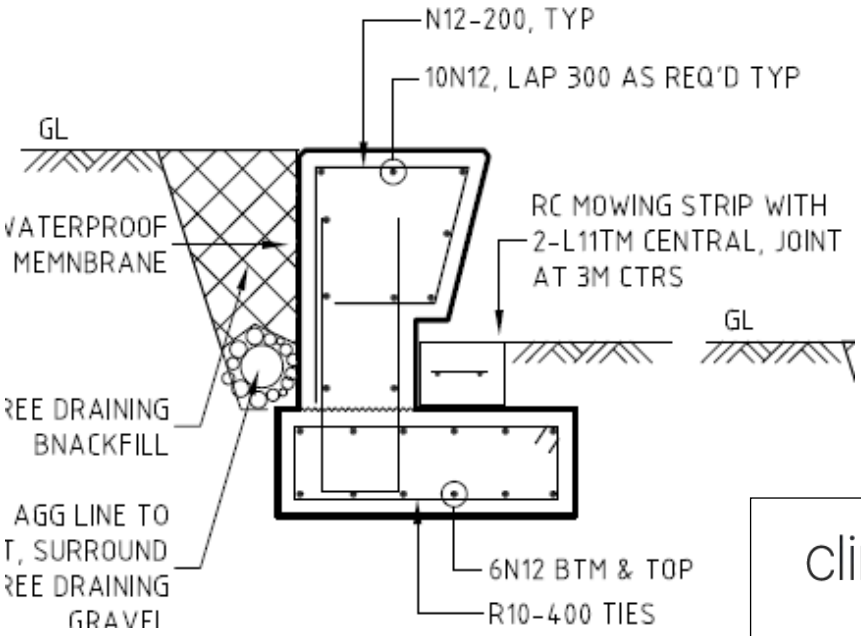

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Climate Positive Design **Scorecard**

Materials

Element	Total impact
Pipe - PVC Schedule 40	136.6 kg
Aggregate Base - Compacted	0.1 kg
Drain Rock - Class 2 Permeable	53.7 kg
Sub-surface HDPE liner, 30 mil	28.5 kg
Concrete Site Wall	1,097.2 kg
Concrete Foundation / Footing	975.3 kg
Reinforcing cage and bards for seat wall	550.9 kg
Reinforcing bars for footing 6 N12 bottom and top	405.6 kg
Reinforcing cage for footings 1.2m long R10 @ 400centres	67 kg
Subtotal	3,315 kg

For 10m long wall