

Podium Decks

Activities on Rooftops

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Typically: -



Podium Decks But Also More Aspirational: -



Substantial
Trees



Play Areas



Cycle Paths



Running Track 15th Floor



Sports Pitches

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More Importantly



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More Importantly

Create

A Nice Place To Be !



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Challenges With Traditional Construction Methods

- Requires falls for drainage - (weight and cost)
- Limited flow capacity in drainage layers and effectively no attenuation capacity, therefore:
 - Require supplementary drainage pipework beneath the deck
 - Multiple outlets required through the deck (potential leak points)
- Extensive Large Diameter Pipework – limiting headroom.
- Finishes need to be as slender as possible to restrict loadings – therefore limited in choice.
- Granular sub-bases increase the loading issue
- Irrigation and/or other water re-use invariably pumped

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Recognise the potential

- Roofs are ideal as a source control system to control discharge
- Roofs are ideal for collecting roof run-off / wash down / condensate
- Roof run-off water is much 'cleaner' than run-off from ground level hardstandings
- Water is more readily harvested for re-use/recycling using gravity drainage and/or passive irrigation via capillary
- Water volumes stored on the roof replaces the equivalent volume at or below ground level

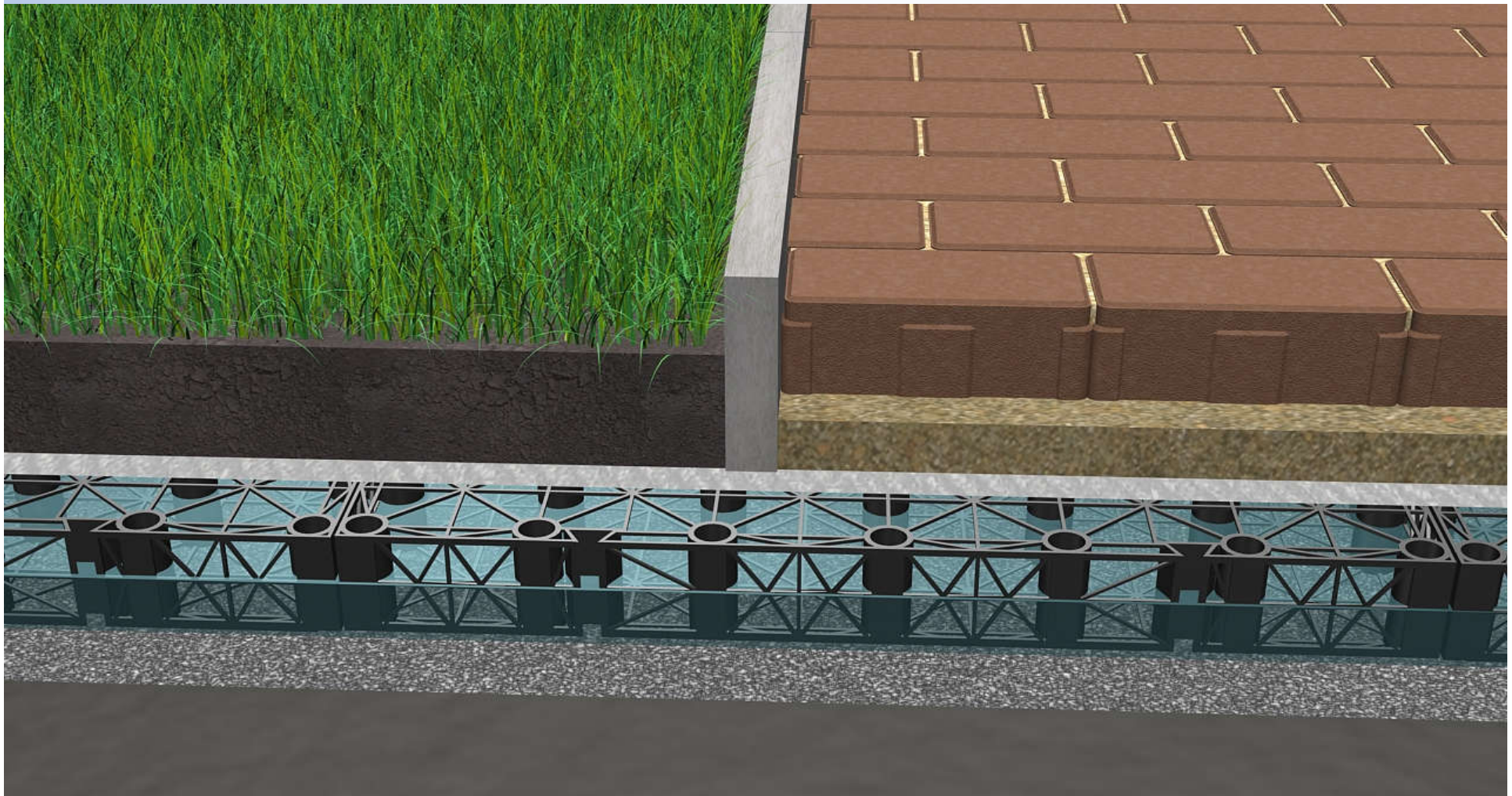
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The ideal (and cost effective) combination

- Flat deck / no falls
- Flat finishes
- Avoid multiple outlets through the slab/deck
- Minimal diameter under-slung pipework
- Lightweight construction
- Compatible protection of waterproofing layer
- Maintainable & accessible
- Create a resource – harvest rainwater – provide irrigation
- Reduce urban heat island effect.
- Provide a nice place to be!

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The solution – The Permavoid motherboard.



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The solution – The Permavoid motherboard.

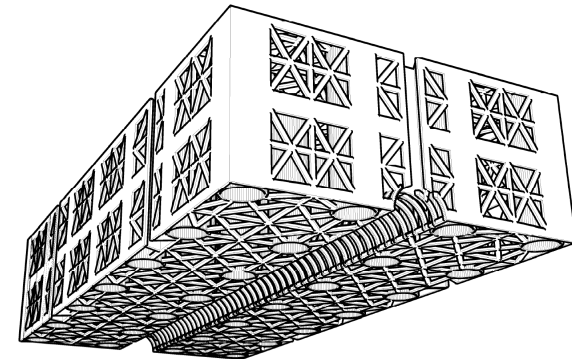
- 85 or 150mm thick
- 95% Void ratio
- Drainage, attenuation and conveyance all in one.
- Strong and Lightweight
- Interlocking to create high strength structural raft
- Manufactured from PP
- Recycleable
- Reusable



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The ideal (and cost effective) combination

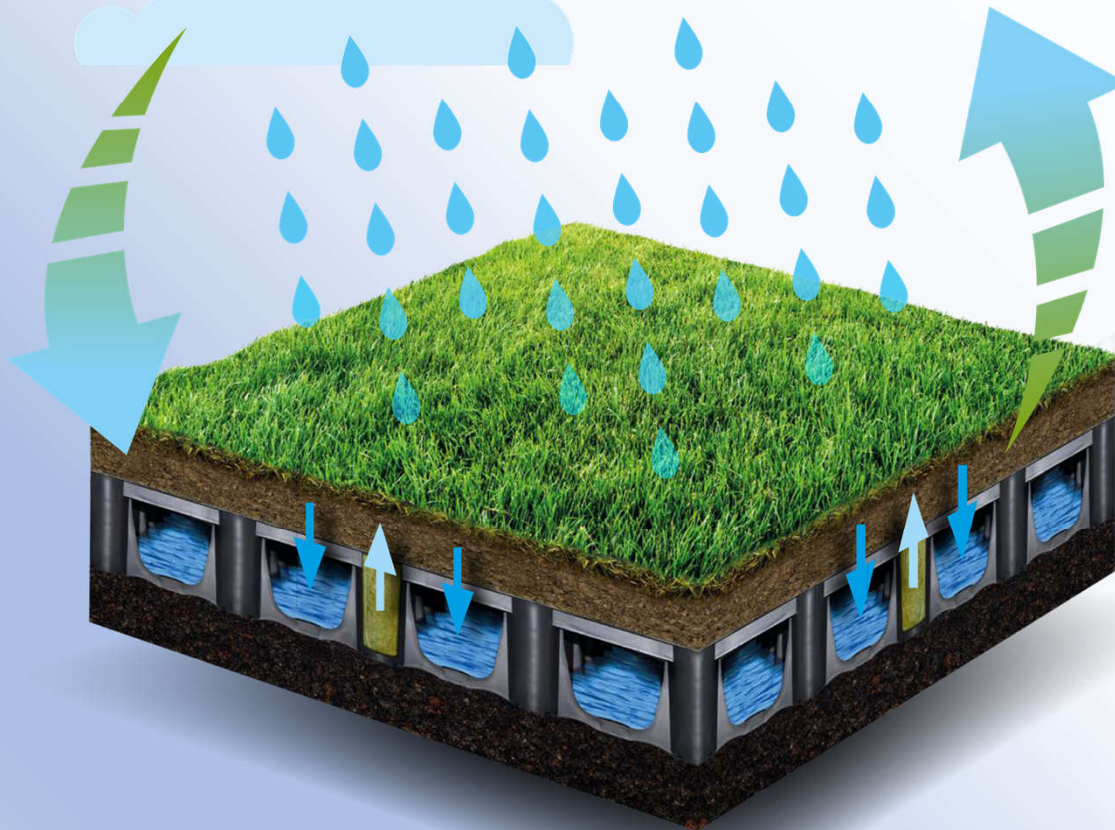
- Has sufficient capacity to create hydraulic gradient without need of supporting pipework
- Has sufficient capacity to attenuate extreme storm events (typically up to 100 year + 30% climate change allowance)
- Eliminates need for multiple deck penetrations
- Minimises extent of underslung pipework
- Can accommodate HGV loading
- Can provide harvesting facility for reuse such as toilet flushing or soft landscape irrigation
- Can provide passive 'on-demand; irrigation via capillary cone system
- Is a lightweight system
- Enhances life of underlying membranes by acting as a protection layer that insulates the membrane from climatic effects such as solar gain, UV exposure and temperature variations etc



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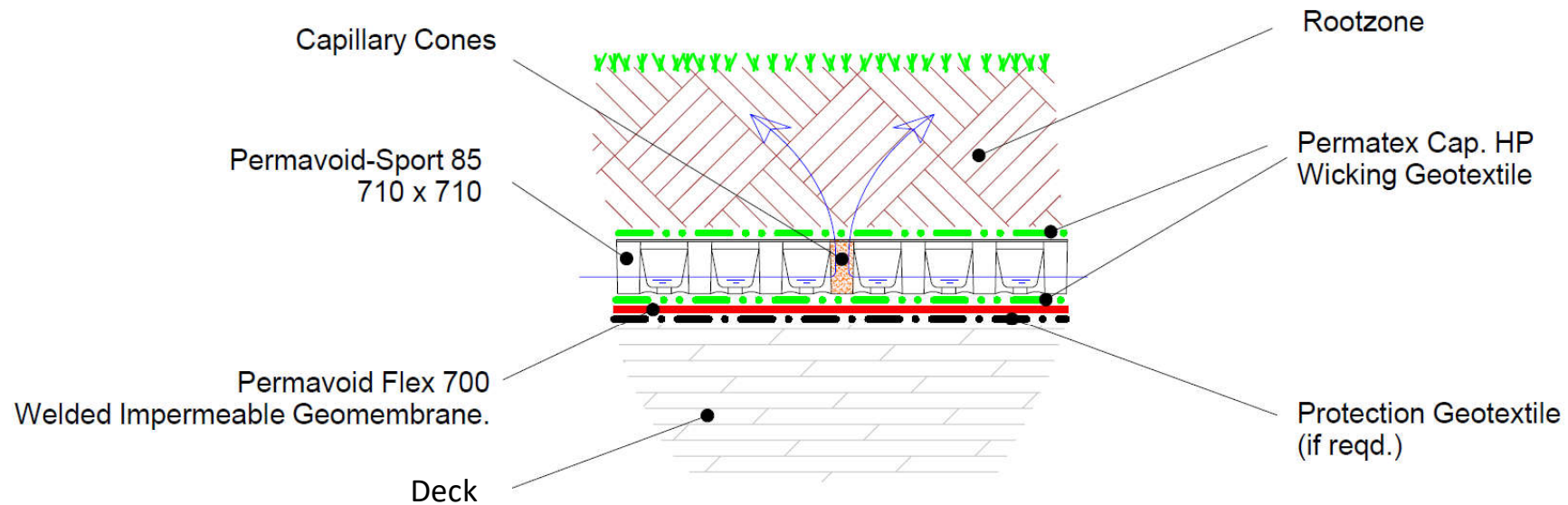
Introducing.....

The On-demand Passive Capillary Irrigation



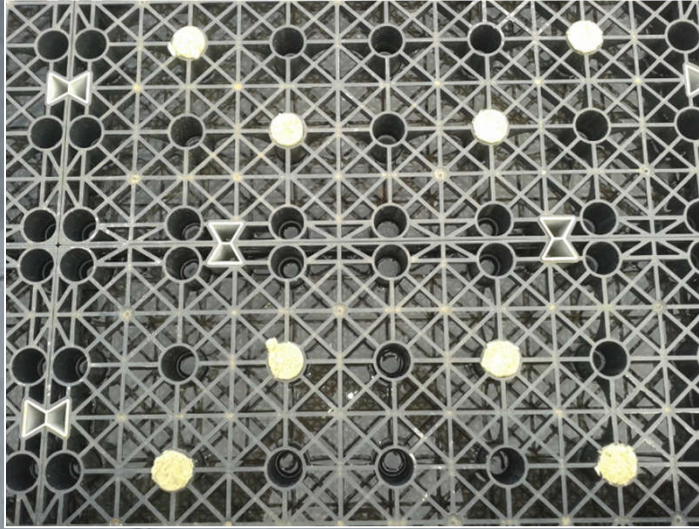
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Passive Capillary Irrigation The Components



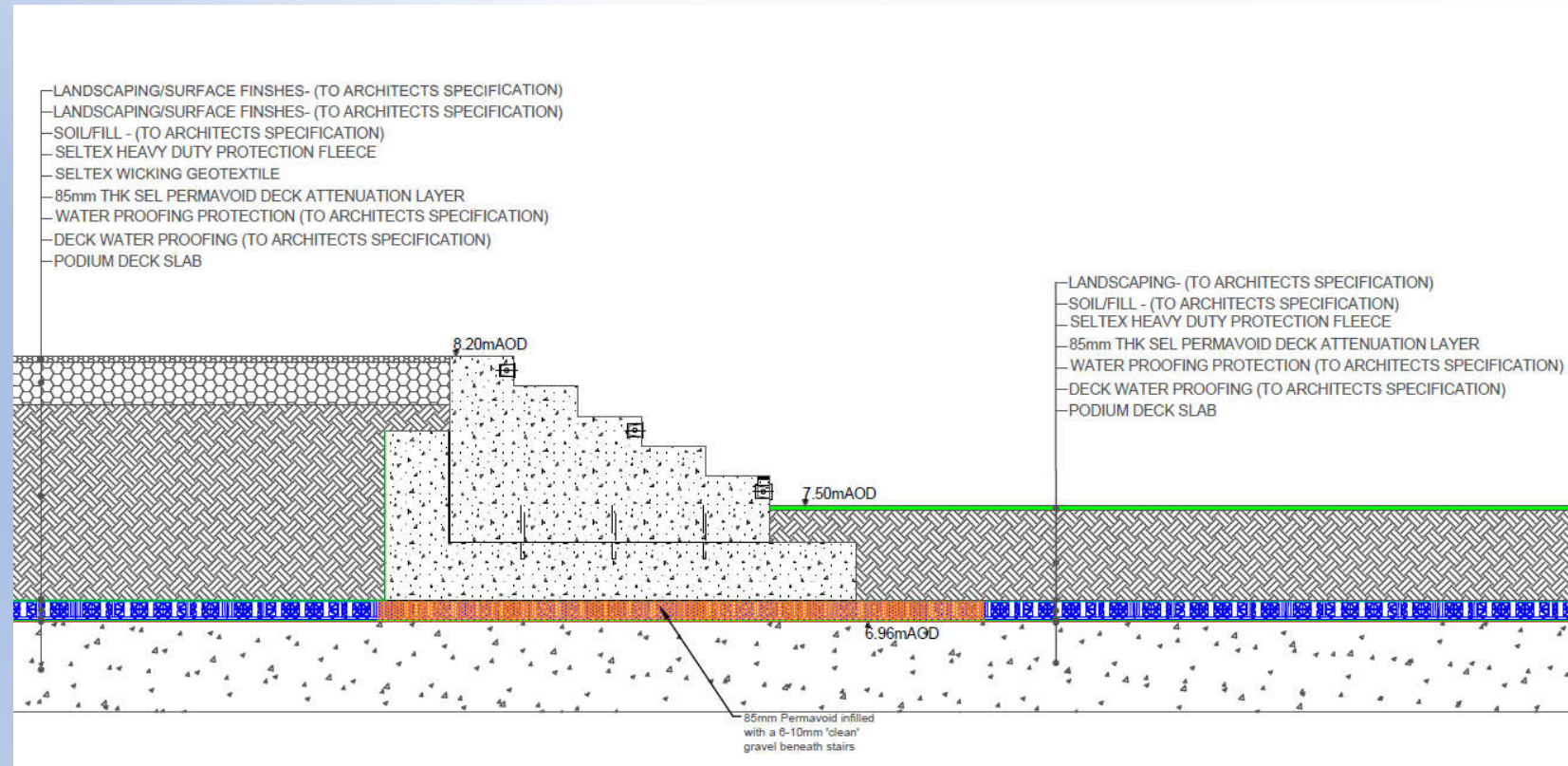
Typical Section Through

On-demand Passive Capillary Irrigation



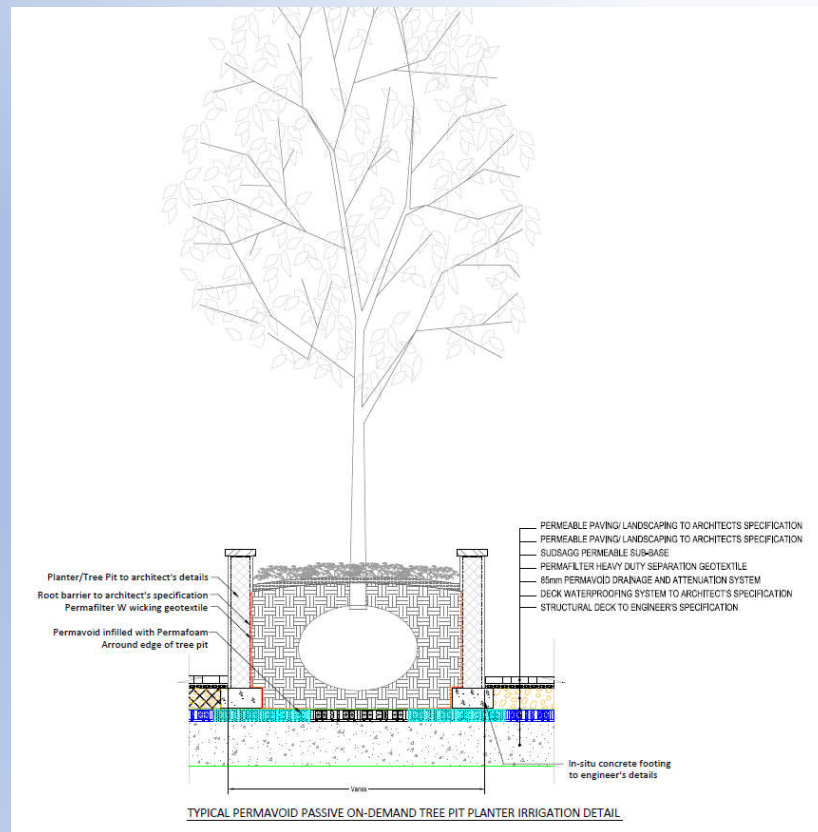
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Construction Details - Foundations



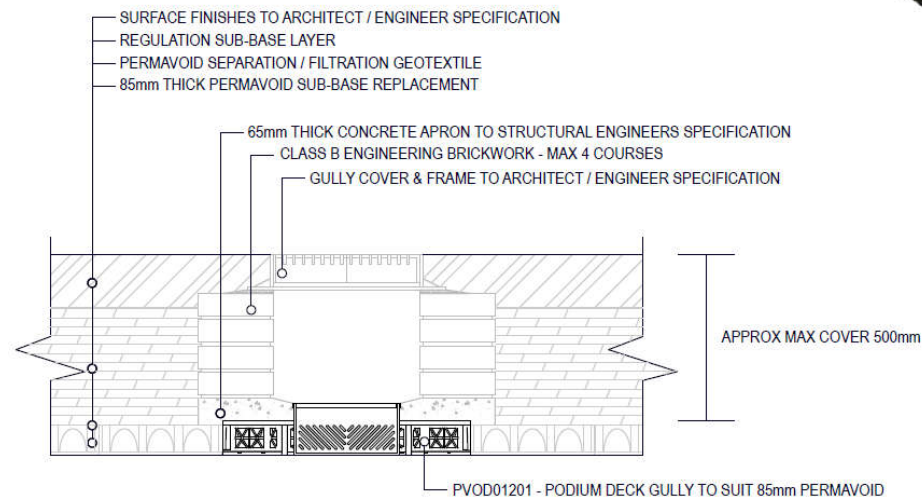
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Construction Details – tree pits



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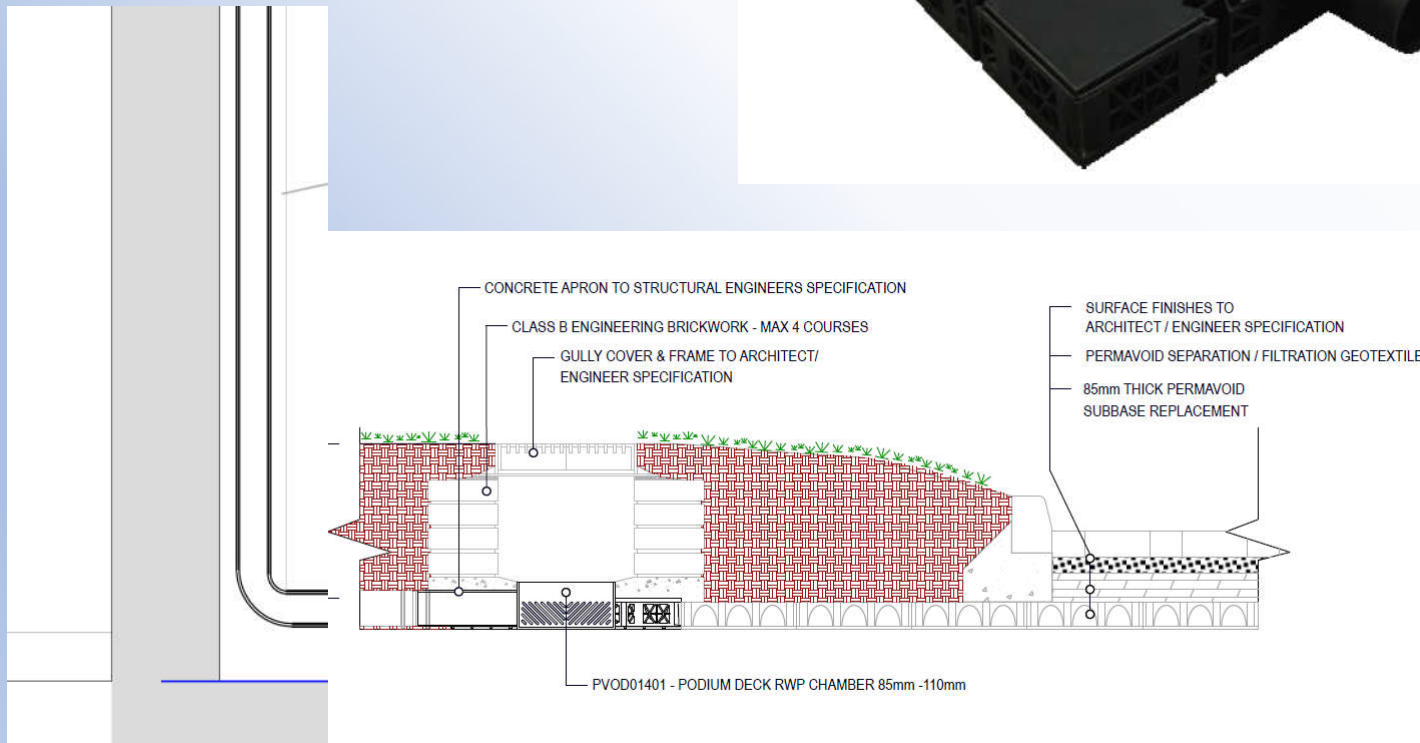
Construction Details - gulleys



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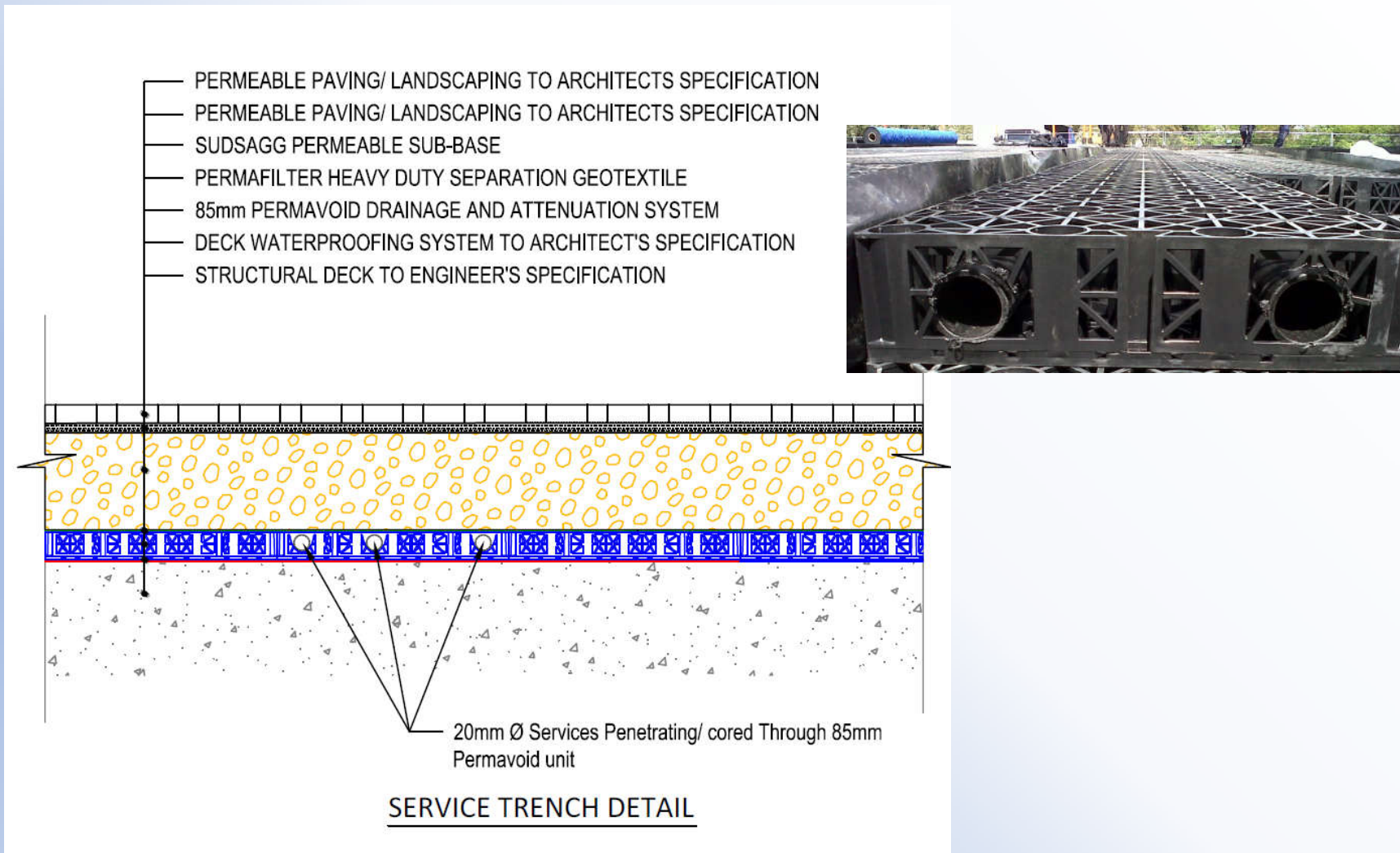
Construction Details

- RWP's from above.



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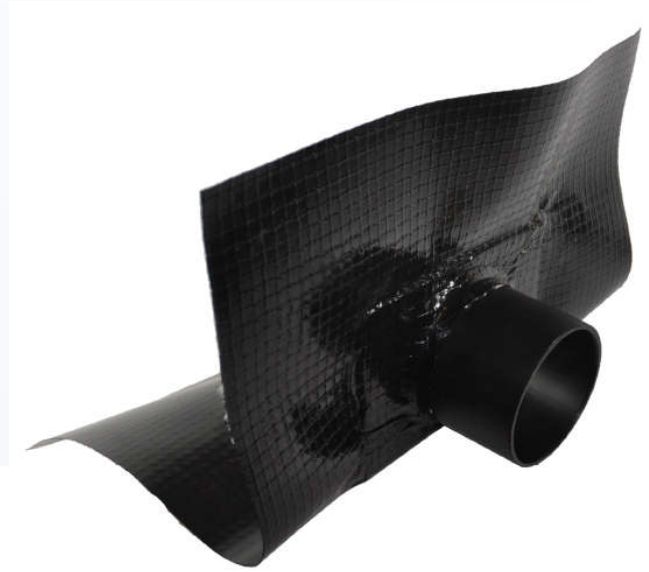
Construction Details - services



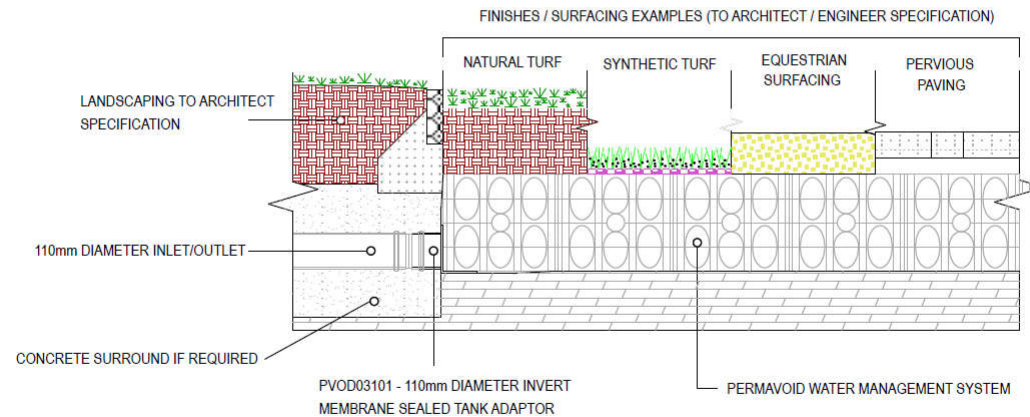
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Construction Details

- Pipe entry seal detail



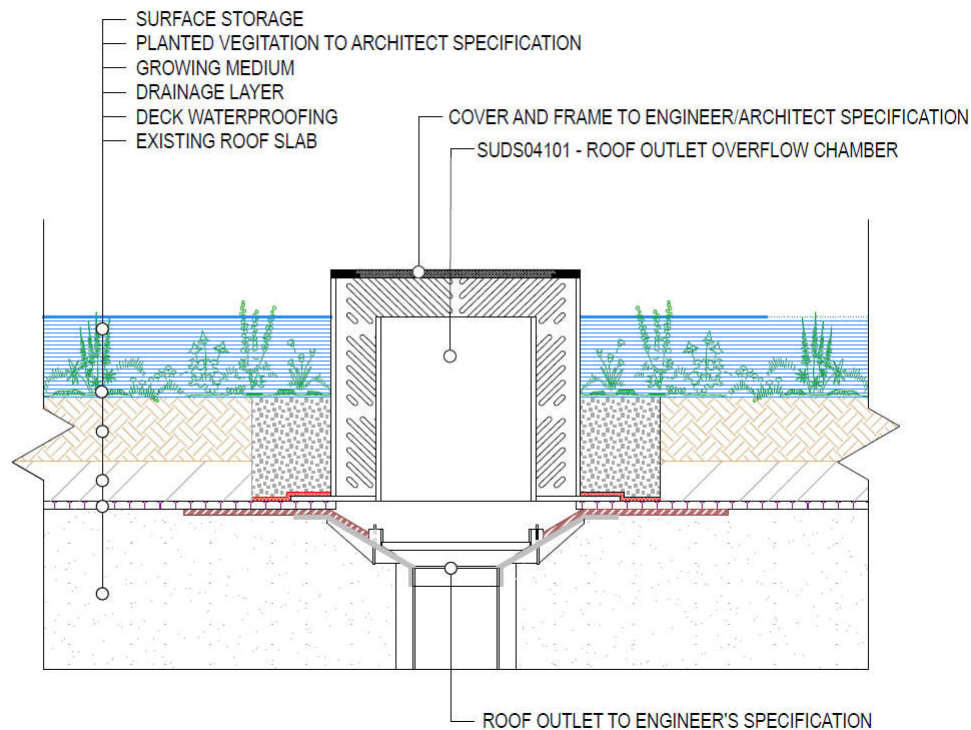
APPLICATION 1 - 300mm PERMAVOID WATER MANAGEMENT SYSTEM



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Construction Details

Controlled limited flow outlets



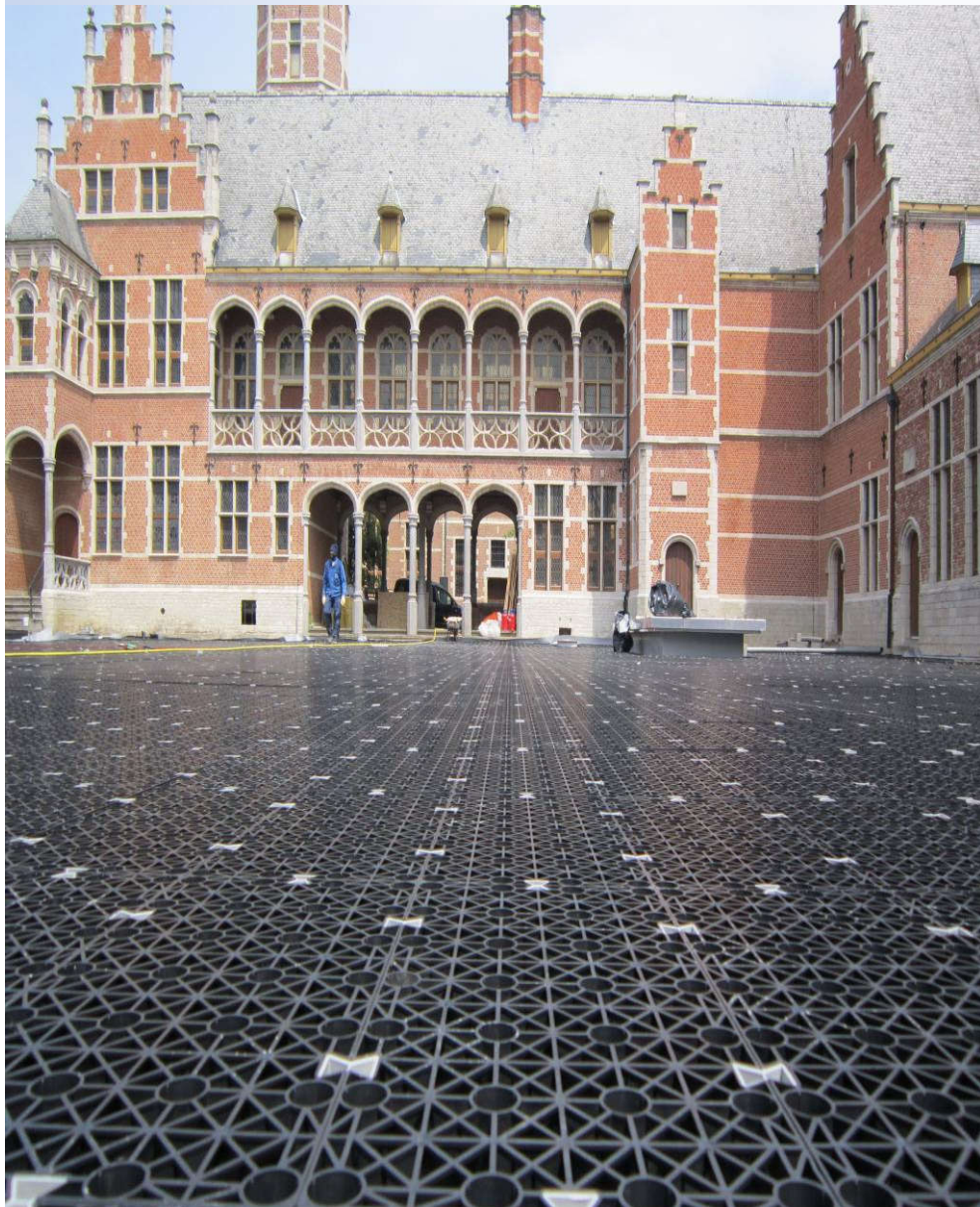
Examples

Greenwich
Wharf



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Examples - Belgium



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Examples - Ireland



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Examples - Netherlands



Sel Environmental
Real Innovation.



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Examples – London Olympics 2012



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London Olympics 2012



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During Construction



After

[Installation video](#)

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Thanks for viewing

Ring 01254 589987

Or email

sales@selenvironmental.com

For more information