

Vertical Meadow Planning Information

The challenge we all share

Nature and its vital contributions to people, which together embody biodiversity and ecosystem services, are deteriorating worldwide. Nature is essential for human existence and a good quality of life. Most of nature's contributions to people are not fully replaceable, and some are irreplaceable. In 2019, driven by overwhelming scientific evidence, the UK and World declared a Biodiversity and Ecological emergency.

Linked to climate change, but in the main, due to loss of habitat, insects are disappearing 8x faster than larger animals and 41% of species face extinction. In England, butterfly species fell by 57% between 2000 and 2009, while every single square kilometre in the UK lost an average of 11 species of bee between 1980 and 2013. Insects are essential for the proper functioning of all ecosystems. They pollinate three quarters of our food crops, as well as being the main food source for many birds, small mammals and fish.

Loss of habitat is a major problem in the UK – with habitat fragmentation exacerbating the issue. As of 2021, meadows and other species-rich grasslands now cover less than 1% of the UK. This in part, is due to pressure on existing green spaces from developments and the cost of good quality new green spaces are high. Denser developments can also exacerbate the urban heat island effect and storm-water flooding.

A route to recovery

It is widely acknowledged that green infrastructure will play a critical role in increasing the UK's capacity to adapt to climate change but, increasingly, we will look for it to help protect and increase biodiversity. Green infrastructure will also play a role in reducing urban heat islands and support sustainable urban drainage. Furthermore, there is growing evidence of measurable net positive impacts on physical health and mental wellbeing.

The Environment Bill 2020 will create legislation to support urban greening:

- Introducing a mandatory requirement for biodiversity net gain in the planning system, to ensure new developments enhance biodiversity.
- Requiring public authorities to actively carry out assessments of the actions they can take to enhance and conserve biodiversity.
- Supporting Local Nature Recovery Networks through consistent tools and requirements.

Nature Recovery Networks would allow plants, animals, seeds, nutrients and water to move from place to place and enable the natural world to adapt to change, providing plants and animals with places to live, feed and reproduce.

A Nature Recovery Network could extend into every part of our towns, cities and countryside, bringing wildlife and the benefits of a healthy natural world into every part of life. Letting flowers bloom along road verges, installing green roofs and green walls. A network that brings wildlife into every neighbourhood would also provide fairer access to nature for people. Studies have shown the benefits of living close to nature, but many people are deprived of these benefits. There is already a need for more inclusive urban greening to share the natural equity.

- **Boris Johnson, Prime Minister:** "The planet faces two immense threats: climate change and biodiversity loss. These are two sides of the same coin – its impossible to solve one challenge without fixing the other".
- **Savid Javid, Secretary of State for Health:** "Protecting nature's biodiversity has both environmental and economic benefits".
- **Marvin Reeves, Mayor of Bristol:** "Our commitment will extend beyond parks and green spaces. We need our buildings, streets and open spaces to support wildlife and create a more nature friendly city, and we need new developments to do the same."
- **Sir David Attenborough:** "Every space in Britain must be used to help wildlife".

Product Overview

Vertical Meadow (VM) is Clear Channel's new green wall system that once installed, will grow into a beautiful meadow of wild flowers directly underneath the digital panel. Its purpose is to help increase the natural capital in towns and cities, as part of the Nature Recovery Networks, helping to increase local habitat and biodiversity by creating spaces for native plants and flowers that attract wildlife as well as providing other benefits that comes with urban greening including the beautification of urban environments.

The VM solution has been developed to ensure it will grow easily in the majority of environments – plants and flower seeds are sewn in to a special mat and are then grown in-situ, kept moist by the self-contained irrigation system. The mat is easily and quickly fixed in to place and replaced just as easily when necessary. Within 2-3 weeks the first shoots start to appear, before growing into a verdant meadow. It is the only green wall currently endorsed by The Wildlife Trusts due to its biodiversity benefits.

Product Features

- Unique seeded mat grows easily in to verdant meadow of native grass and wildflower.
- Seasonality closely mimics and works in harmony with existing natural systems.
- Scalable, modular lightweight structure (available in a range of heights), is quick to assemble & install.
- Self-contained irrigation system and IOT sensors report health to prevent the VM drying out
- Attractive design, featuring sustainable and upcycled materials.
- Optional Buglife endorsed Bug/Bat/Bird Hotel can be mounted close to the meadow.

Product Benefits

- **Increases local biodiversity** – VM uses a large number of different native wildflowers and wild grass to support ecosystems, attract pollinators, butterflies and other insects and birds, helping to create wildlife corridors. Natural seasonality means the VM provides habitats for fauna that varies throughout the year.
- **Visual Impact from Beautiful, Natural, Seasonally Changing Colours** – A lush green in spring to colourful flowers across the summer, varying in heights, before autumn leads to the annual die back and deep winter green. Over the years different species of plants will feature in the display inviting other species to also leave their seeds in it. It also shares its seeds to the surroundings.
- **Measurable Health and Wellbeing Benefits** – Evidence from a range of disciplines shows the numerous social, psychological and health benefits of human exposure to green spaces. These include stress and anxiety reduction, and overall greater mental and physical wellbeing.
- **Heat Island Reduction** – Foliage is also a natural cooling system through increased albedo and transpiration.
- **Reduces Rainwater Run-off** – Rainwater will be absorbed by the VM, captured in the gutter and recirculated.
- **Contributes to Cleaner Air** – Vegetation traps small amounts of air pollutants (PM and dust) that will eventually be removed via precipitation into the drainage system, accompanied by limited carbon sequestering.
- **Acoustic Insulation** – Supplier tests indicate through thickness attenuation of up to 15dB).
- **Sustainable Production** – Recycled/recyclable/renewable materials are used throughout including natural materials, timber from PEFC sources with low embodied carbon, upcycled waste, and non-toxic finishes. Screws are used for easy of disassembly and re-use.
- **Low maintenance** – The VM is self-irrigated via a tank, its health is remotely monitored and water is topped up when necessary. There is also only one annual trim in October and the mat is easily replaced should the meadow require refreshing.
- **Endorsed by Experts** – The Vertical Meadow was developed with and endorsed by expert ecologists with the principle to provide real biodiversity benefits at its core.

Quotes

The Wildlife Trusts: “Wildlife Trusts’ expert ecologists have assessed Vertical Meadow and consider it to be ‘an innovative, flower rich and structurally diverse habitat’ which ‘would make a valuable contribution to national biodiversity programmes’.”

Mathew Frith, [Director of Conservation] of London Wildlife Trust: “The Vertical Meadow’s design using the natural regeneration of wildflowers has shown how means to enhance ecological resilience and visual screening can work hand in hand.”

Biodiversity Assessment of Vertical Meadow undertaken by Middlemarch Environmental concludes:

“The Vertical Meadow is an innovative flower rich and structurally diverse habitat that would support a number of faunal species. This in turn would make a valuable contribution to a number of national programmes such as B-Lines and the National Pollinator Strategy.

The proposed Environment Bill suggests a mandatory Biodiversity Net Gain of 10% of baseline value. In such instances where space is limited, being able to provide biodiversity units in three dimensions to achieve planning can be invaluable.

The Vertical Meadow habitat will increase in value where grasslands and green walls are referenced within Biodiversity Action Plans or strategies (e.g. London).”

Images



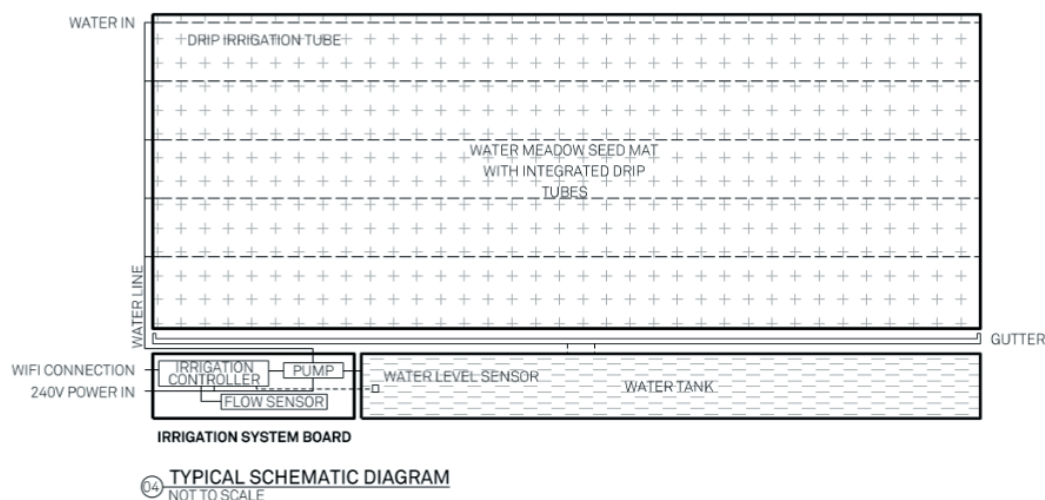
Materials/Parts

Seeded mat (coir – coconut fibre, recycled polyester, waterproof membrane), Timber fascia, timber subframe, upcycled plastic backboard and steel fittings. Sensors and drip lines fitted inside the mat. Tank and irrigation system are attached separately underneath, so water can drip down in to the tank.

Seed (flower/grass/plant) Mix

Achillea Millefolium, Yarrow, Anthemis Austriaca, Corn Chamomile, Armeria Maritima, Sea Thrift, Centaurea Cyanus, Cornflower (perennial), Dianthus deltoides, Maiden Pink, Anthyllis Vulneraria, Kidney Vetch, Ranunculus Acris, Meadow Buttercup, Galium Verum, Lady's Bedstraw, Inula Conyzae, Ploughman's Spikenard, Hypericum Perforatum, St. John's Wort, Knautia Arvensis, Field Scabious, Leucanthemum Vulgare, Oxeye Daisy, Linaria Vulgaris, Common Toadflax, Origanum Vulgare, Wild Marjoram, Poterium Sanguisorba, Salad Burnet, Prunella Vulgaris, Selfheal, Silene Dioica, Red Campion, Silene uniflora, Sea Campion, Verbascum Nigrum, Dark Mullein, Silene noctiflora, Night Flowering Atchfly, Verbena Bonariensis, Verbena, Plantago Lanceolate, Ribwort Plantain, Potentilla Anserine, Silverweed, Agrostis Capillaris, Common Bent, Anthoxanthum Odoratum, Sweet Vernal Grass, Briza Media, Quaking Grass, Cynosurus Cristatus, Crested Dogstail, Festuca Rubra, Red Fescue.

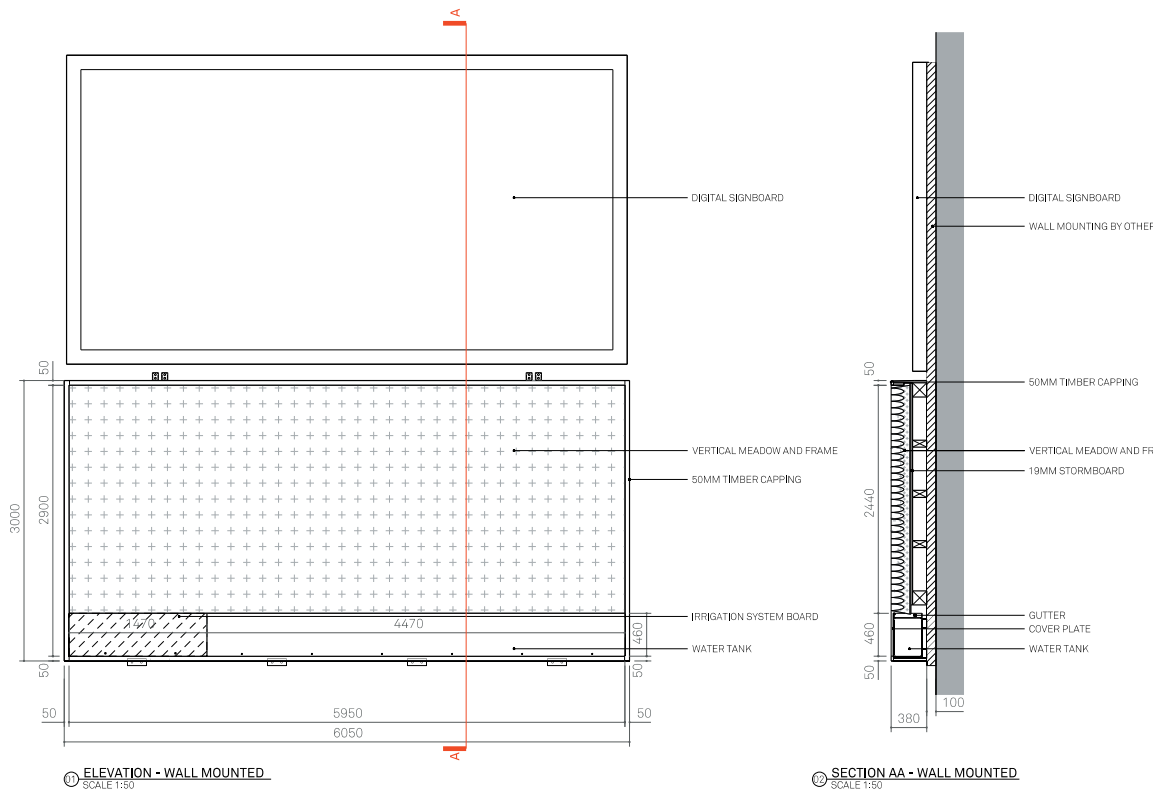
Schematic Diagram



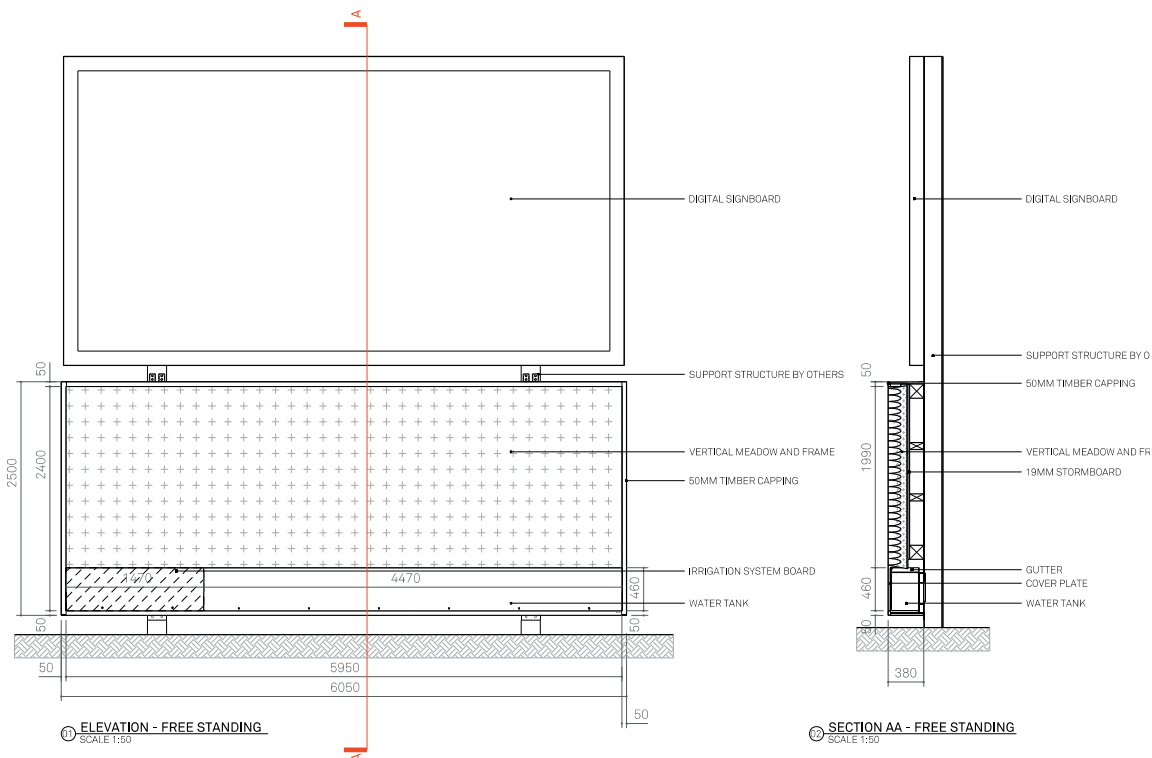
Operations/Maintenance

- Site visits to top up the tank with water and nutrients required every 2-4 weeks.
- Visits scheduled with screen inspections. Access required to front of tank.
- Annual trim back every September / October.
- Site is remotely monitored for changes in moisture/temperature/failures in overall system.
- Mat is replaced every 3 years so ensure VM looks fresh & avoid accumulation of invasive plant species.
- Majority of works are completed offsite to ensure minimal activity at site.

2500mm height Vertical Meadow Deployment on to 'Gable Wall'



2500mm Vertical Meadow Deployment on to 'Free Standing' Locations



Frequently Asked Questions

What is a Vertical Meadow (VM)?

- This is Clear Channel's new green wall system, that once installed, will grow in to a beautiful meadow of wild flowers directly underneath the digital panel.
- A green wall, sometimes called a living wall, is a wall of plants, enclosed within a specially designed structure.

How does it work?

- The VM works like one huge rectangular planter turned on its side and fixed to the wall, except instead of being planted in soil, the seeds are sown in to a special horticultural mat.
- The seeded mat also contains drip irrigation lines that carry water to the seeds and ensures the mat stays moist as the plants grow.
- The structure and mat are made from recycled sustainable materials.

Why are we installing them?

- We want to add an extra, visually exciting, functional element to our advertising screens.
- At a time when natural habitat is decreasing, we want to encourage local biodiversity by adding in plants and flowers - the seed mix is specially chosen to include plants/wildflowers/grass that attract wildlife.
- Create a visual impact to help with the beautification of urban environments.
- The product is endorsed by the London Wildlife Trust.
- It contributes to cleaner air via some air pollution/dust/carbon trapping.
- Green walls provide acoustic insulation – reducing through noise by up to 15dB.
- Can help with rainwater run-off – rainwater absorbed by the wall.

What plant species are in the Vertical Meadow?

- There is a mix of around 25 different types of native wildflower and wild grass seeds embedded in the mat. These are predominantly perennial wildflower plants with a few annuals for colour in the first year.

- The species are chosen to encourage local biodiversity such as bees, butterflies and other insects. They have been specified by a collaboration with the University of Sheffield and expert ecologists from the London Wildlife Trust.

How do you install them and how long does it take to install them?

- Most work is completed off site at our factory, so installation is quick and takes place with the screen.
- The construction is simple – a seeded mat is fitted to a backboard, which is then fitted to the Vertical Meadow structure. When we go to install on site, the structure is lifted in to place and fitted to the wall.
- Underneath the meadow, sits a hidden water tank & irrigation system.
- The overall structure is framed by an attractive fascia that conceals the water tank and irrigation system. This fascia effectively encloses the backboard to create a box where the meadow will grow.
- Although it is installed underneath, the VM is independent of the screen.

Does it need power or water connecting to the site?

- The VM has a water tank that is designed to last for a period long enough to be manually filled by our maintenance team.
- The Pump and irrigation system need a small amount of power from the mains.

Will water leak – will it damage my wall?

- No, the back of the Vertical Meadow has a waterproof layer as well as a recycled plastic backing board with falling water directed in to the tank via a gutter.

How is the VM watered?

- The water tank will pump water in to drip irrigation lines embedded in the green wall.
- The water tank will collect any run-off from the green wall and the pump will recirculate the water from the pump back in to the drip irrigation lines.
- Sensors in the tank allow us to monitor the condition of the wall and amount of water in the tank, meaning we can attend when necessary.

Do you need access to my property for maintenance?

- Limited access will be required to refill the tanks.

How big is it? Is it heavy?

- Range of sizes: 1.5m-3.0m high x 6m wide x 0.4m deep
- It's the same width as the digital panel above and slightly deeper at 0.4m deep. The height varies according to the available space beneath the digital screen. Generally, we'll use all the available space (up to 3.0m) for the VM.
- The VM will weigh 1000kg-1750kg.

How often to do you check and access it?

- We expect to visit the site once every two weeks once the plants have grown.
- We may require weekly visits or more often in the very early stages of the growth.

How long does it take to grow?

- 10 days to grow shoots (1cm).
- 12-16 weeks for full growth (if installed pre-July) to 0.4m.
- Flowers/meadow will bloom from April/May until October.
- The seeded mat will be replaced every 2-3 years to avoid the accumulation of invasive plant species.

What will it look like?

- In Spring / Summer a lush verdant wild meadow, with plants varying in colours and height.
- Every September / October the VM will brown over when the plants/flower heads are dropping/die back. This is when an annual prune is due. The site is then left with a dull green, winter lawn effect, until spring.

It is weather dependent?

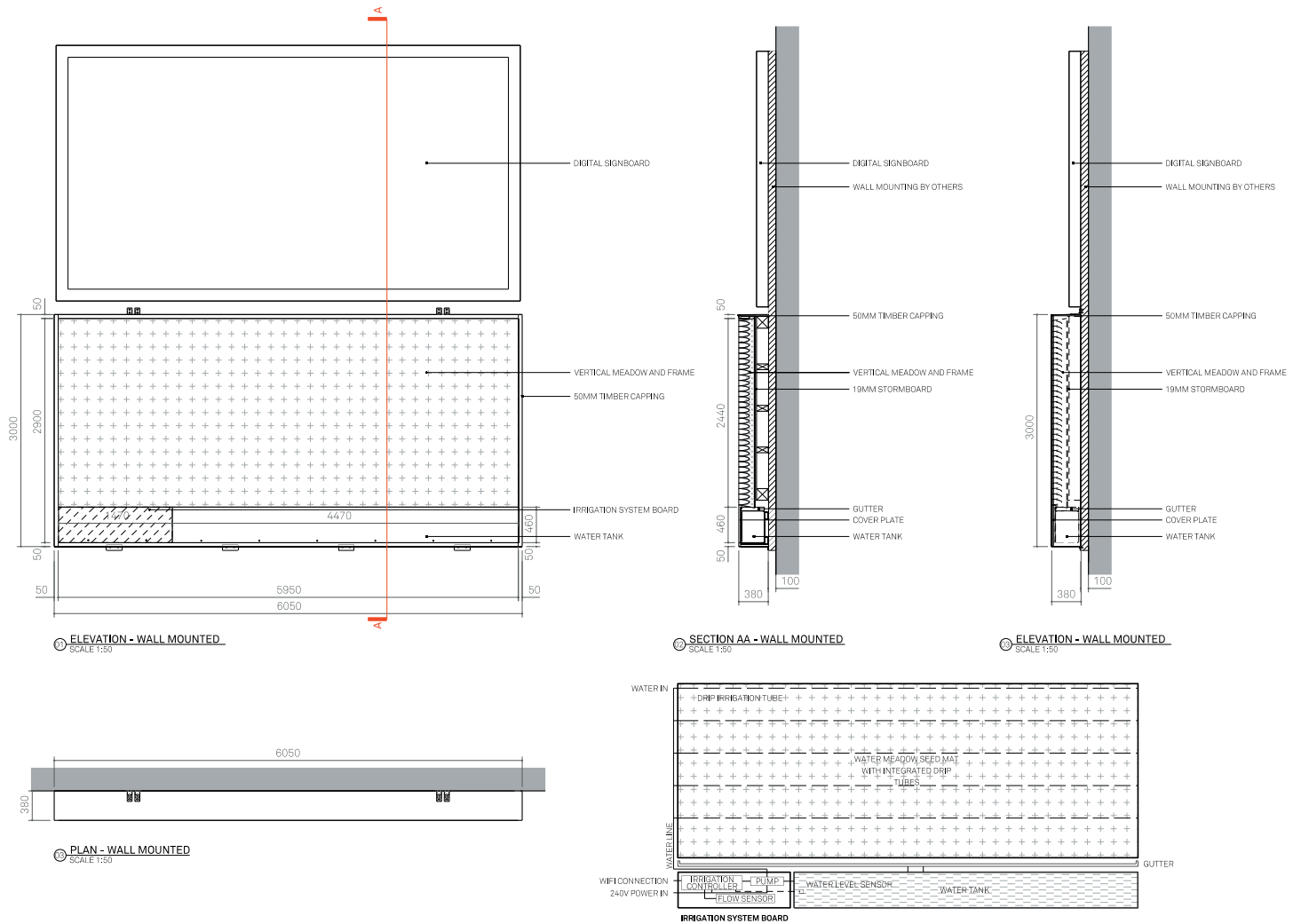
- Yes, it still needs the sun like any healthy green plant.
- It doesn't need rain though as the system will use the tank for water.

Will it collect rainwater?

- It will only collect the rainwater that runs off the meadow.
- Rainwater from nearby roof is not collected due to potential overflow of the tank with fertilizer.
- Overflow is mitigated by monitoring tank levels while filling.

Appendix A

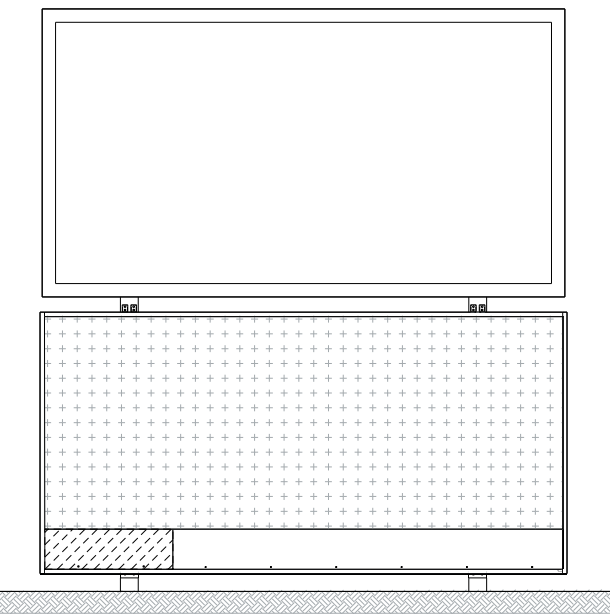
Vertical Meadow general arrangement



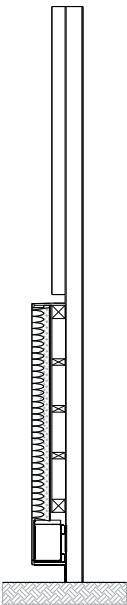
Vertical Meadow – Wall Mounted (3000mm height)

Appendix A

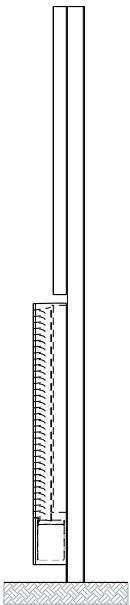
Vertical Meadow general arrangement



① ELEVATION - FREE STANDING
SCALE 1:50



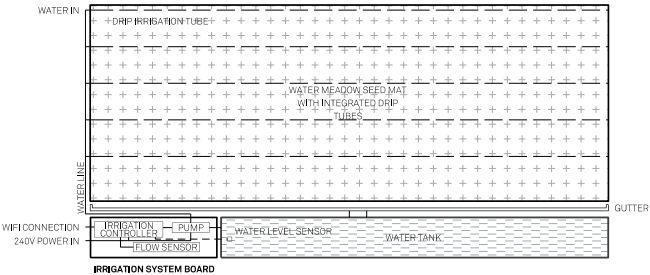
② SECTION AA - FREE STANDING
SCALE 1:50



③ ELEVATION - FREE STANDING
SCALE 1:50



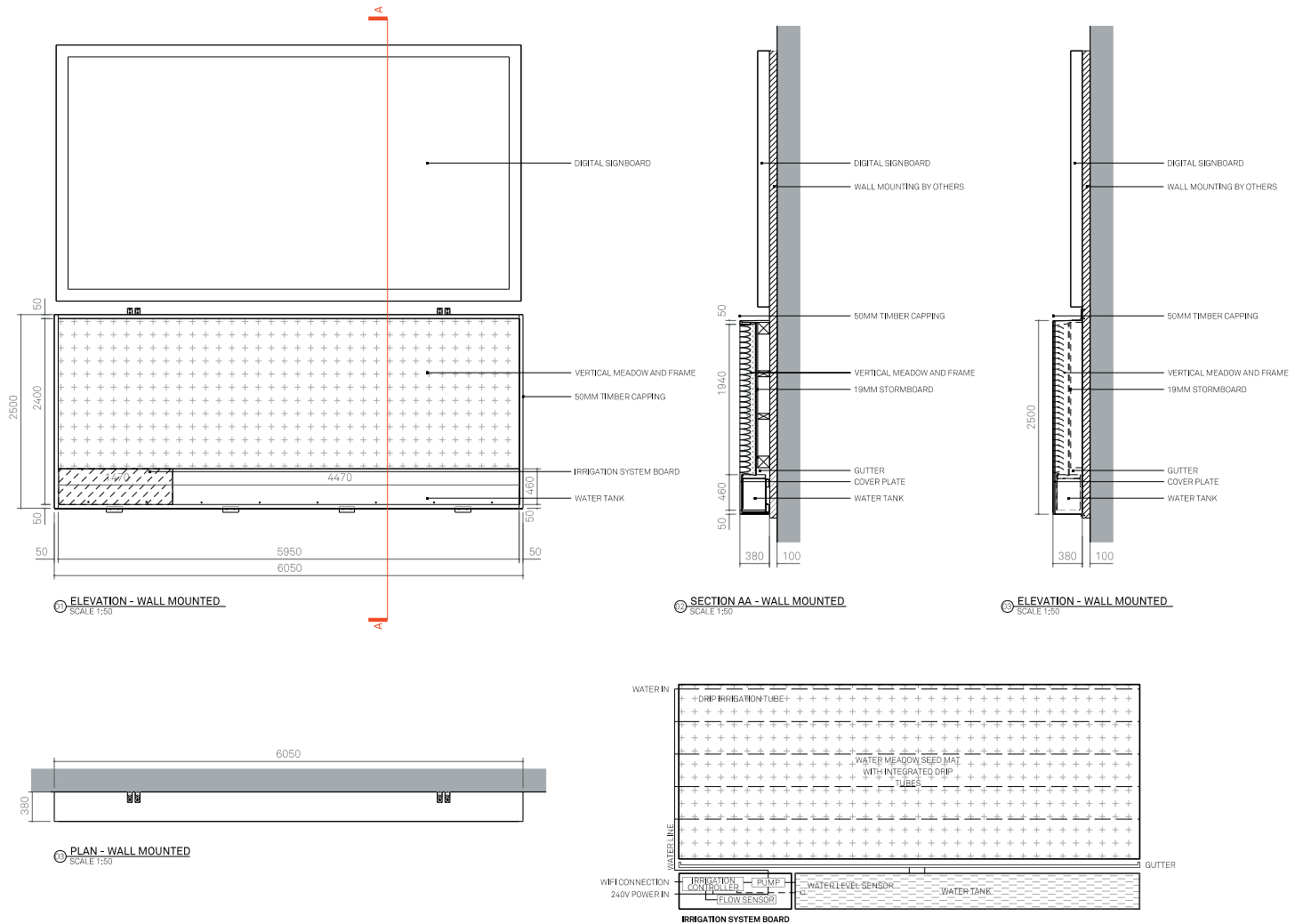
④ PLAN - FREE STANDING
SCALE 1:50



Vertical Meadow – Freestanding (3000mm height)

Appendix A

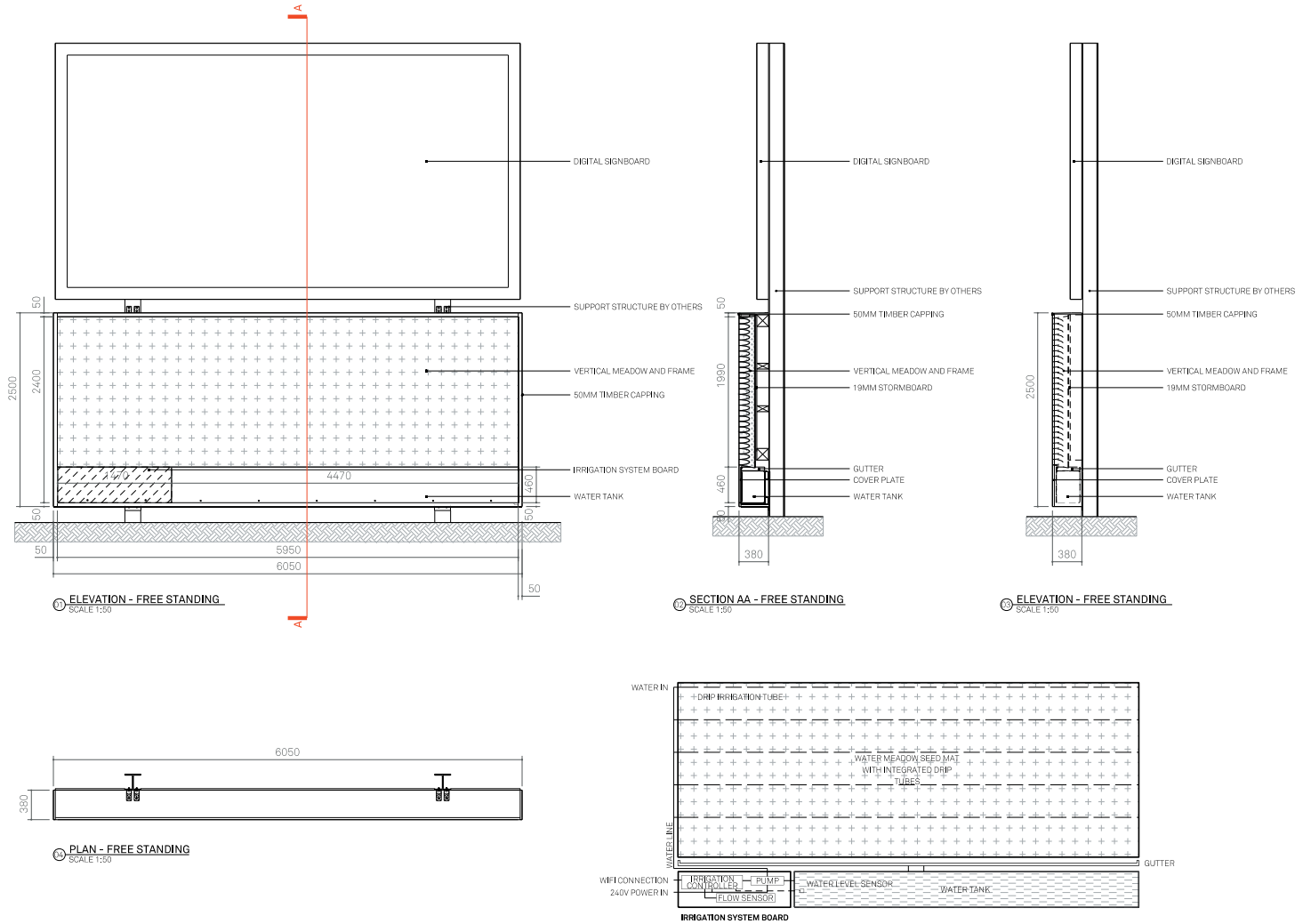
Vertical Meadow general arrangement



Vertical Meadow – Wall Mounted (2500mm height)

Appendix A

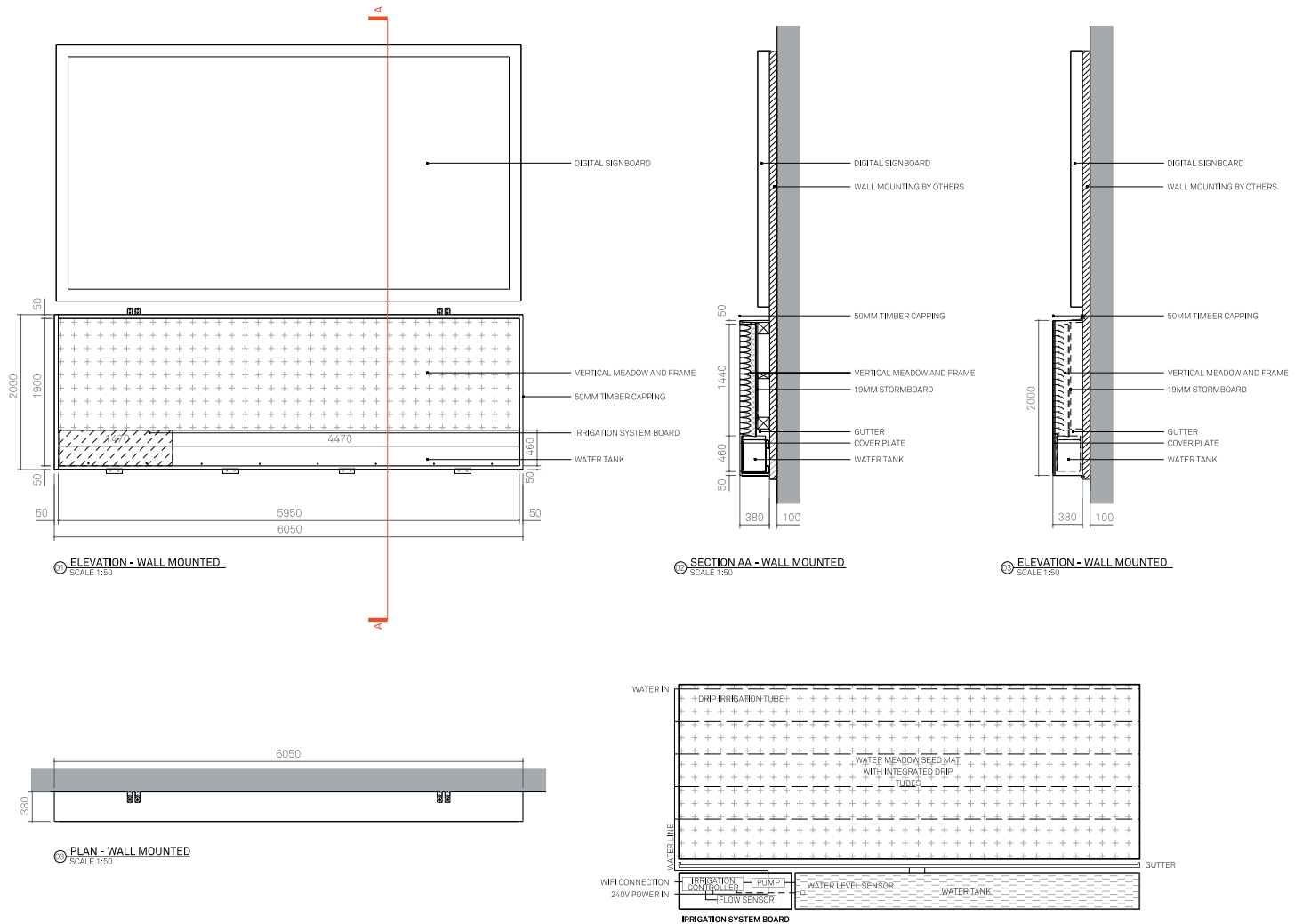
Vertical Meadow general arrangement



Vertical Meadow – Freestanding (2500mm height)

Appendix A

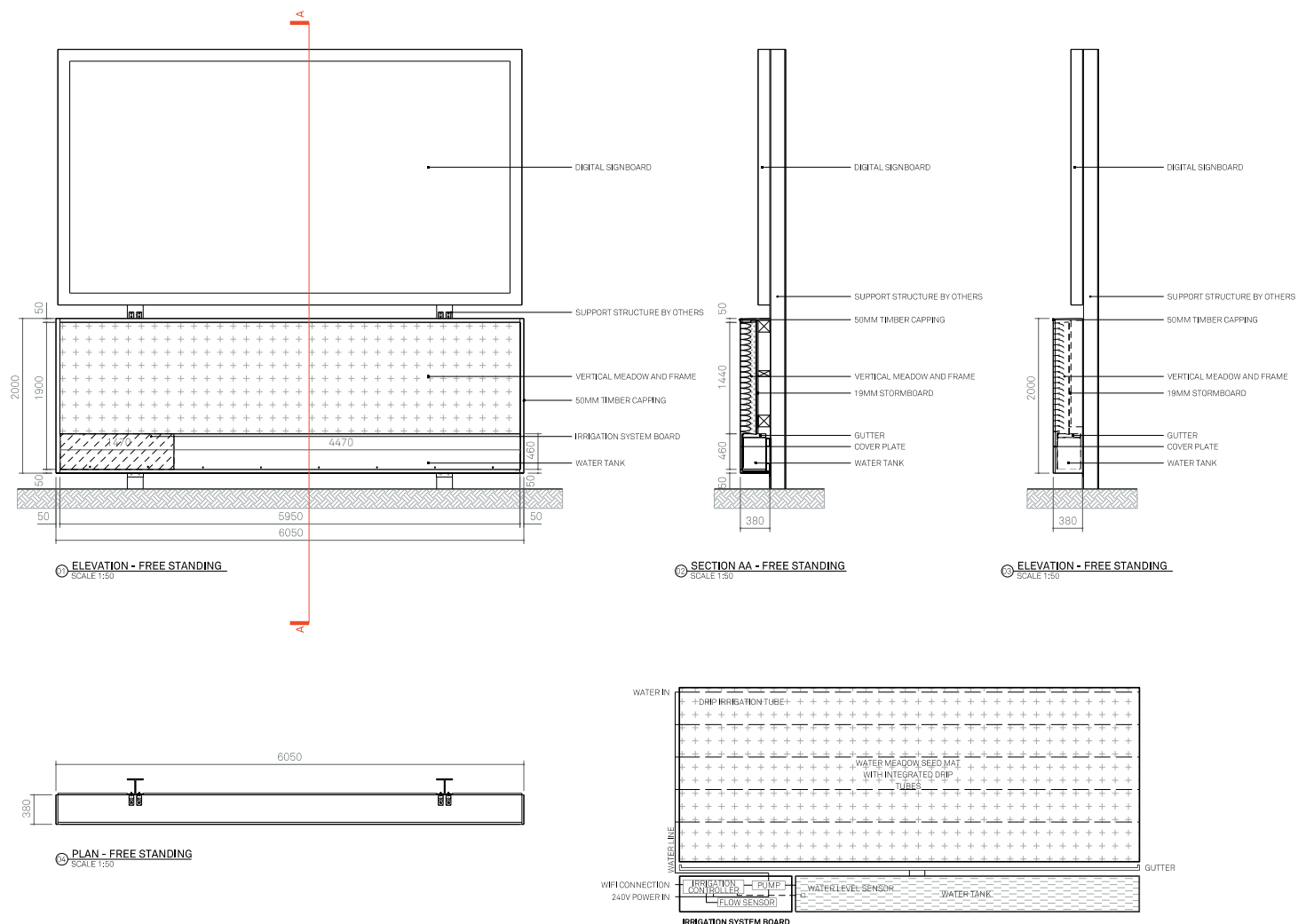
Vertical Meadow general arrangement



Vertical Meadow – Wall Mounted (2000mm height)

Appendix A

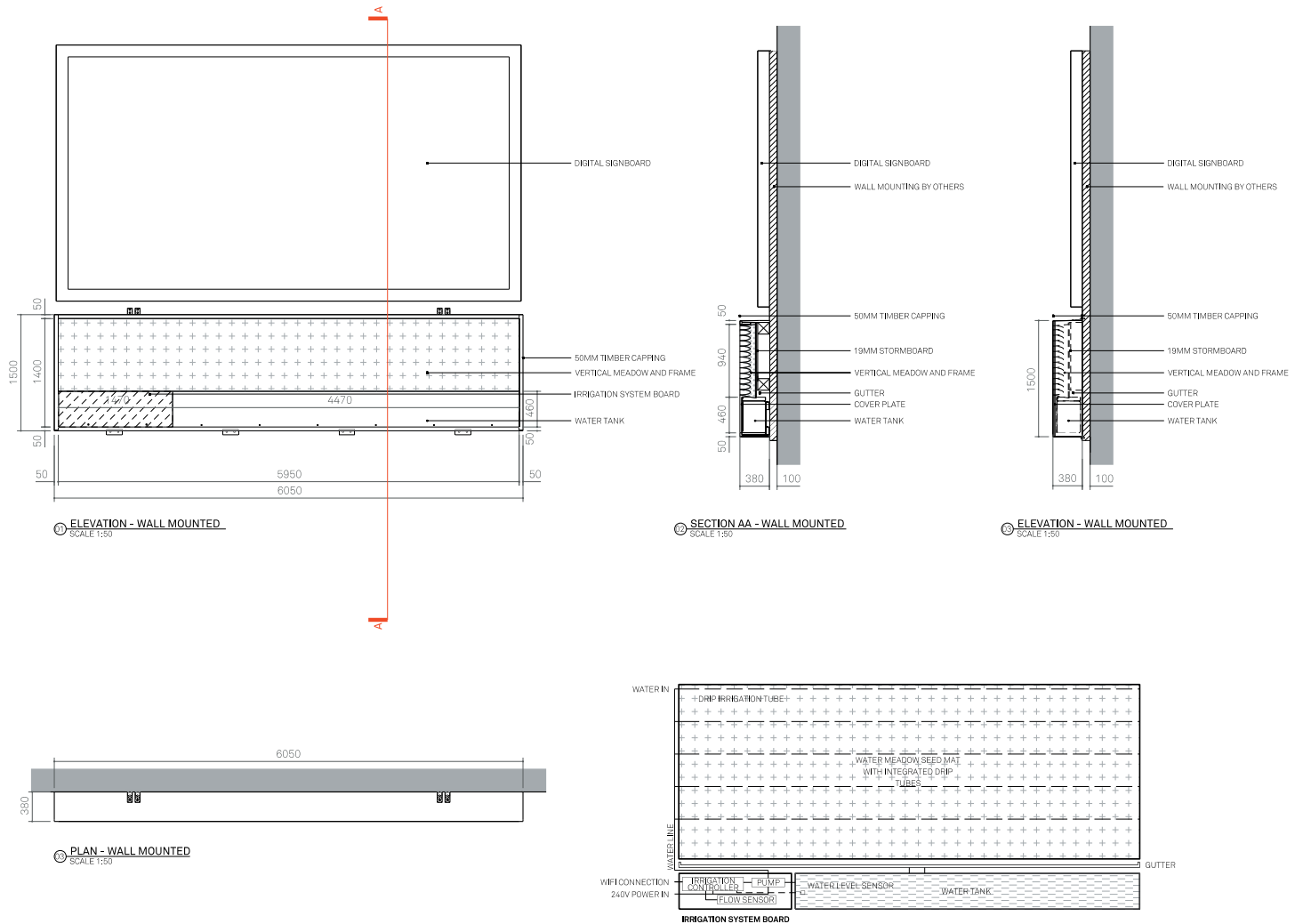
Vertical Meadow general arrangement



Vertical Meadow – Freestanding (2000mm height)

Appendix A

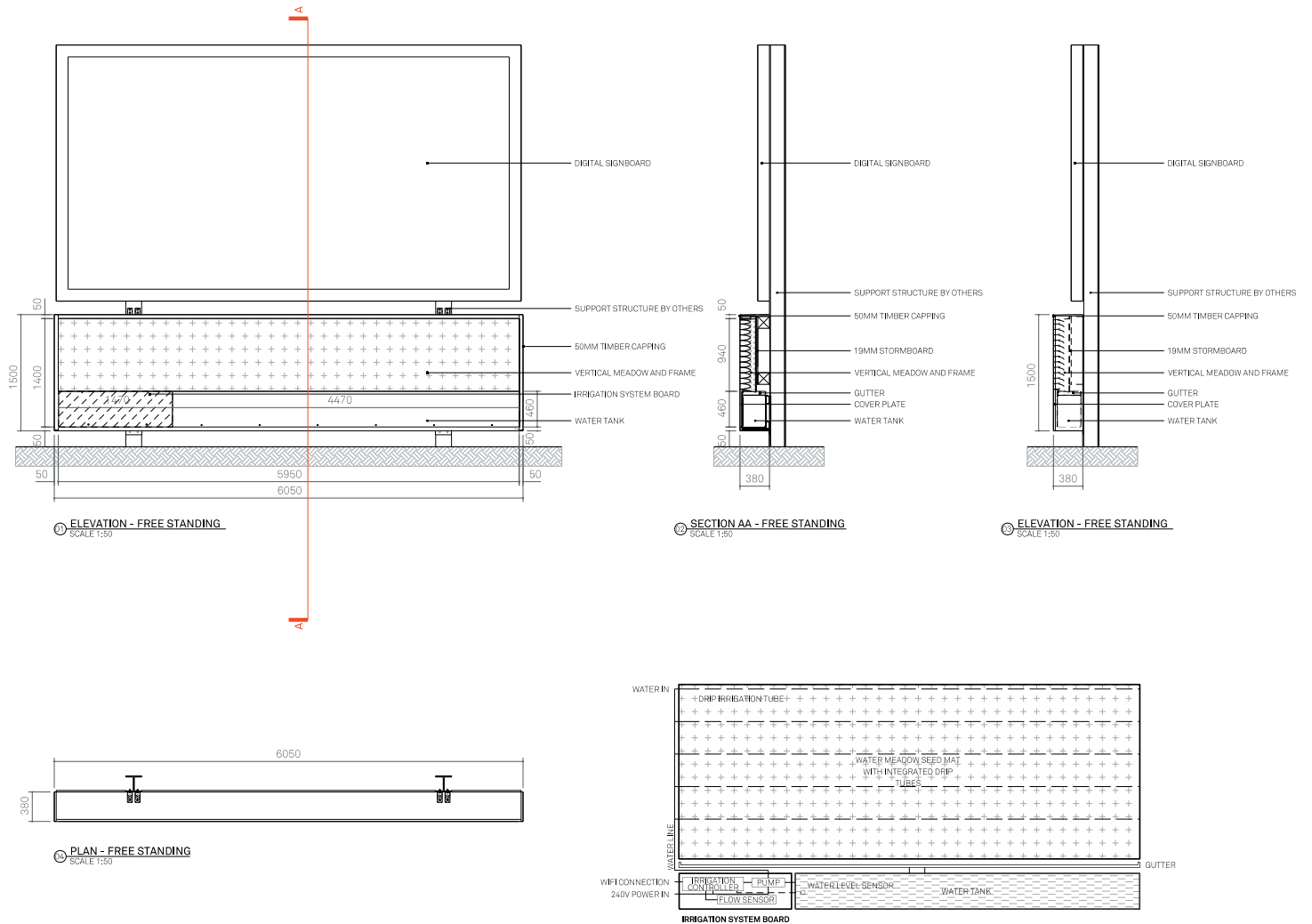
Vertical Meadow general arrangement



Vertical Meadow – Wall Mounted (1500mm height)

Appendix A

Vertical Meadow general arrangement



Vertical Meadow – Freestanding (1500mm height)

Appendix B

D48 billboard size and general arrangement

