

Togetherness Football Pitch Project

GA Collaborative



*Design Development Meeting
June 18, 2018*



Budget & Fees

A. New topographical survey:
1,400,000 RWF

B. Geotechnical and structural work

We solicited 3 quotes for structural design:

1. Ephrem Musonera
not received
2. EDYS, Kennedy Omulindi
RWF 3,634,400/ \$4,226 @ 860
3. Alphonse Nilingiyimana
785,000 RWF

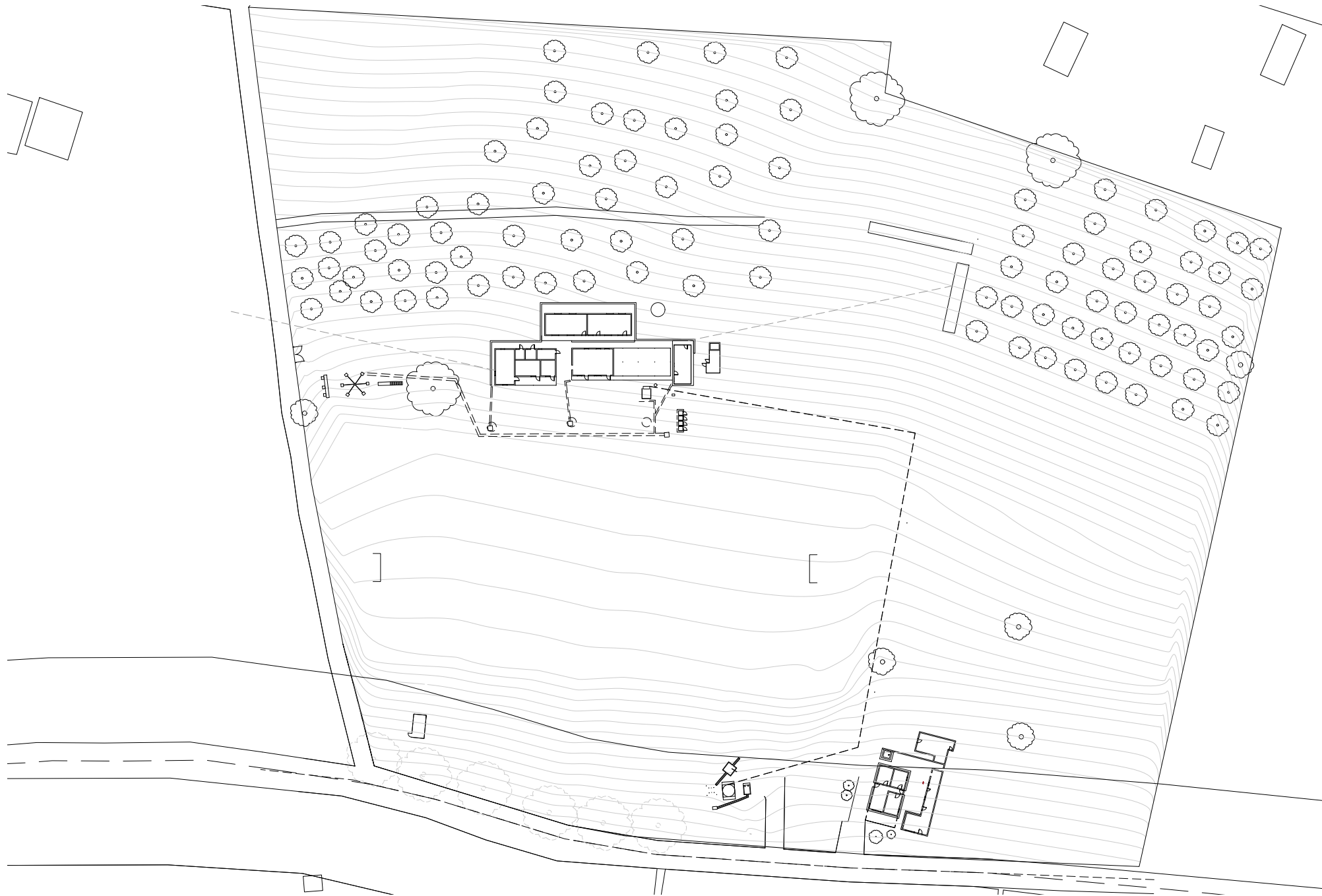
We solicited 1 quote for geotechnical work:

1. Alphonse Nilingiyimana
236,000 RWF

We recommend hiring Alphonse for both scopes. We have hired him for geotechnical work in the past with good results. His structural team is at a testing laboratory in Kigali, to explain why his fees are less.

Meeting Agenda

1. Water Management Strategies
 - Site Analysis
 - Existing Topography (plan & section)
 - Site Water Drainage
 - Building Structures Reservoirs
2. Proposed Design
 - Site Plans
 - Football Pitch Size
 - Retaining Wall Sections
 - Toilet & Waste Management
3. Next Steps
 - Cost
 - Schedule
 - Bid Documents
 - Specifications
 - Engineering
 - Geotechnical/ Structural
 - Topographical
 - Permitting



Site Information:

Province: Kigali City
District: Kicukiro
Sector: Ndera
Cell: ?
Site Area: xxxx sqm (xxx hectares)

Site Conditions:

The football pitch site displays extreme erosion and will require significant earth moving to achieve stability. We began our work by analysing the area beyond the site owned by Togetherness, as the water issue is caused by runoff from up the hill, we believe originating at the upper road. Therefore, our water management strategy begins beyond the boundaries of your site, and invest energy and time in the agricultural land on the upper hectares of your plot, in the form of trenching and water catch basins. The school structures are not in imminent danger, but slope stabilization is needed to ensure they are not threatened in the future. Pedestrian access will be maintained from the lower road, and vehicle access will be from adjacent to the school. Extensive erosion is seen everywhere on the school premises. A new water management strategy needs to be incorporated into the entire area, incorporating new drain gutters, planting, soil retaining and grading not only to manage the water at the site, but how water gets to the site.

KEY

■ ■ Surface Water



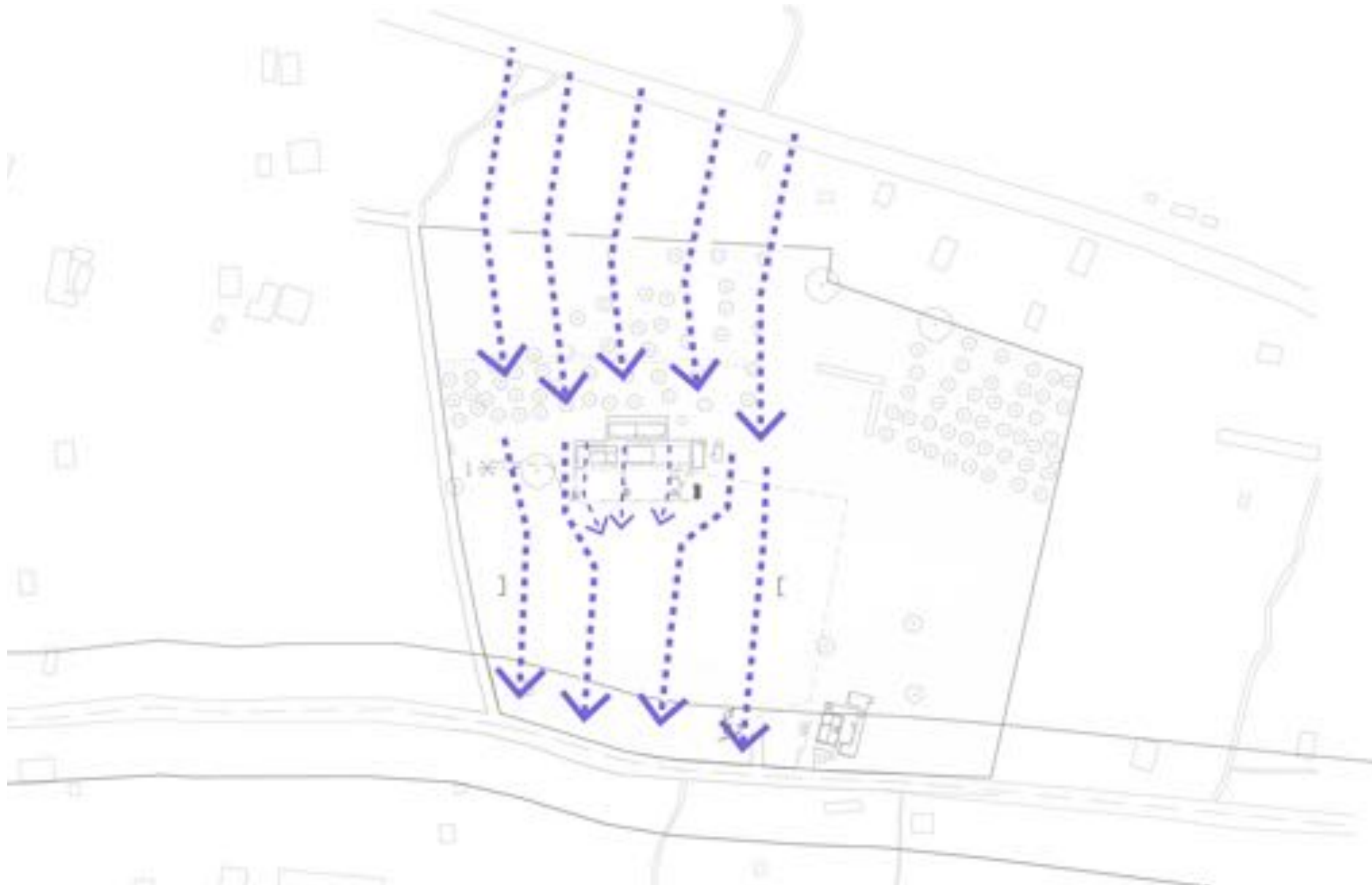
Design Criteria & Strategy:

- Minimize cut/fill but Football Pitch must be FIFA-class
- Redirect surface run-off water away from the field, existing structures, and try to capture it before it floods the road.
- Use planting to retain soil much as possible and reduce retaining walls.
- Create distinct zones, including property fencing, using native plant species
- Exploit retaining walls to incorporate program without adding cost or complexity

Our water management strategy begins beyond the boundaries of your site, and invest energy and time in the agricultural land on the upper hectares of your plot, in the form of trenching and water catch basins. We are proposing trenching above the school structures, and either a new catch basin or water tanks (above or below ground) to capture the water runoff from the roofs. Planted reservoir channels will be installed above the football pitch to catch and divert water runoff from the immediate area, taking pressure off the retaining walls that border the football pitch. Quality drainage channels will be established around the pitch to enable the swift draining required of all FIFA-certified football fields.

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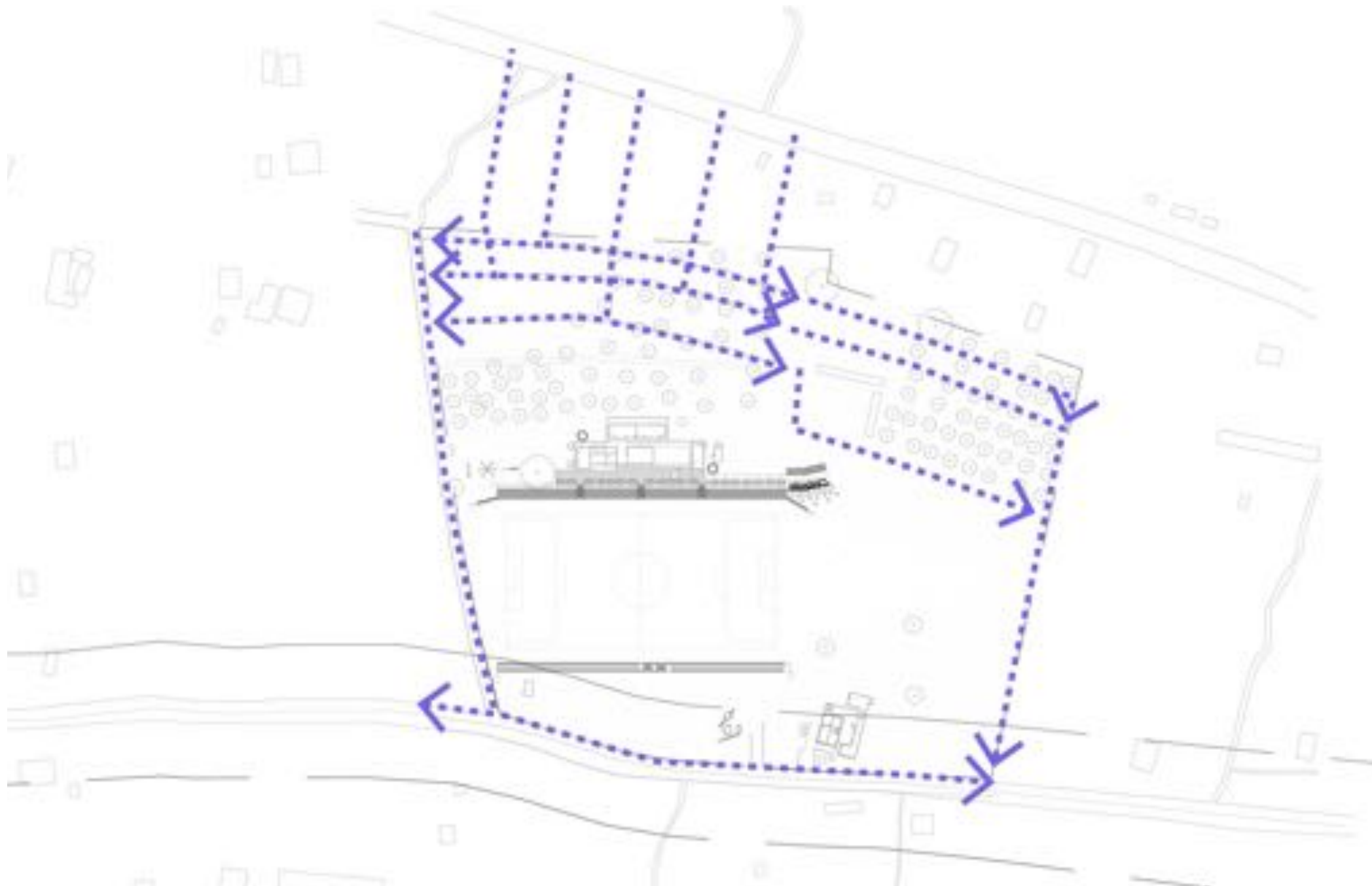
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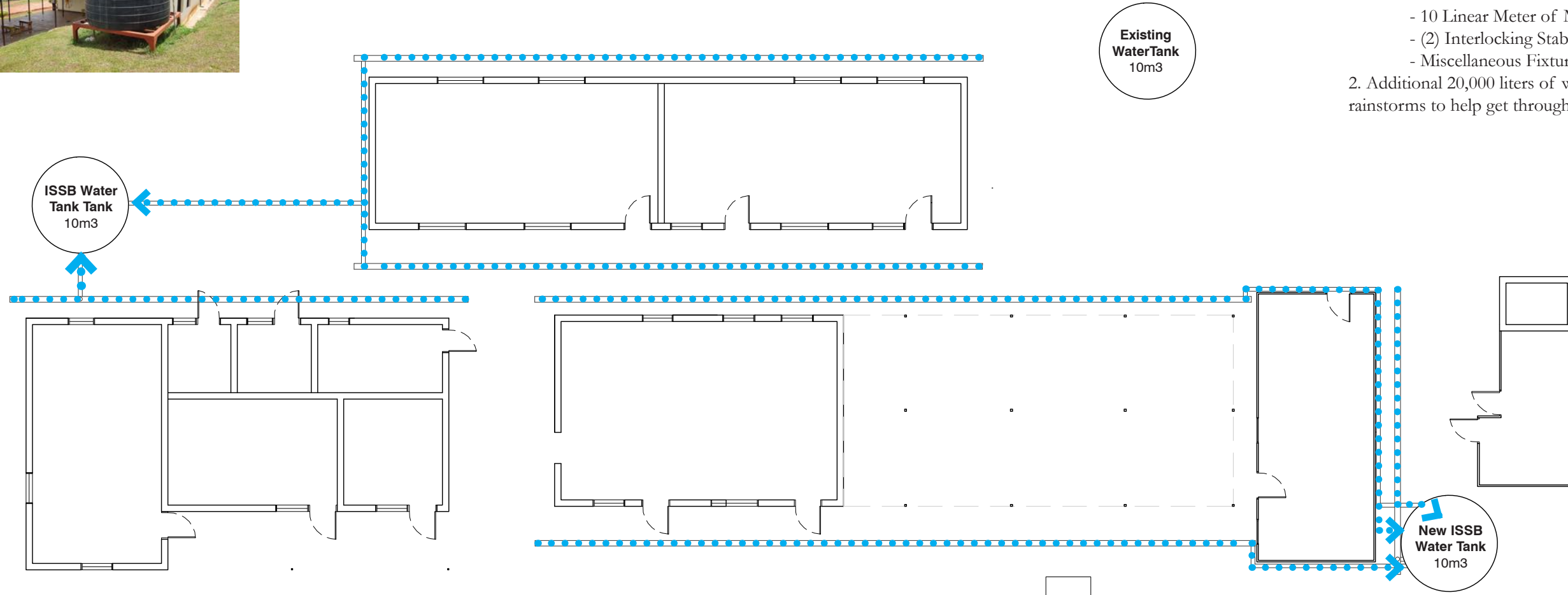
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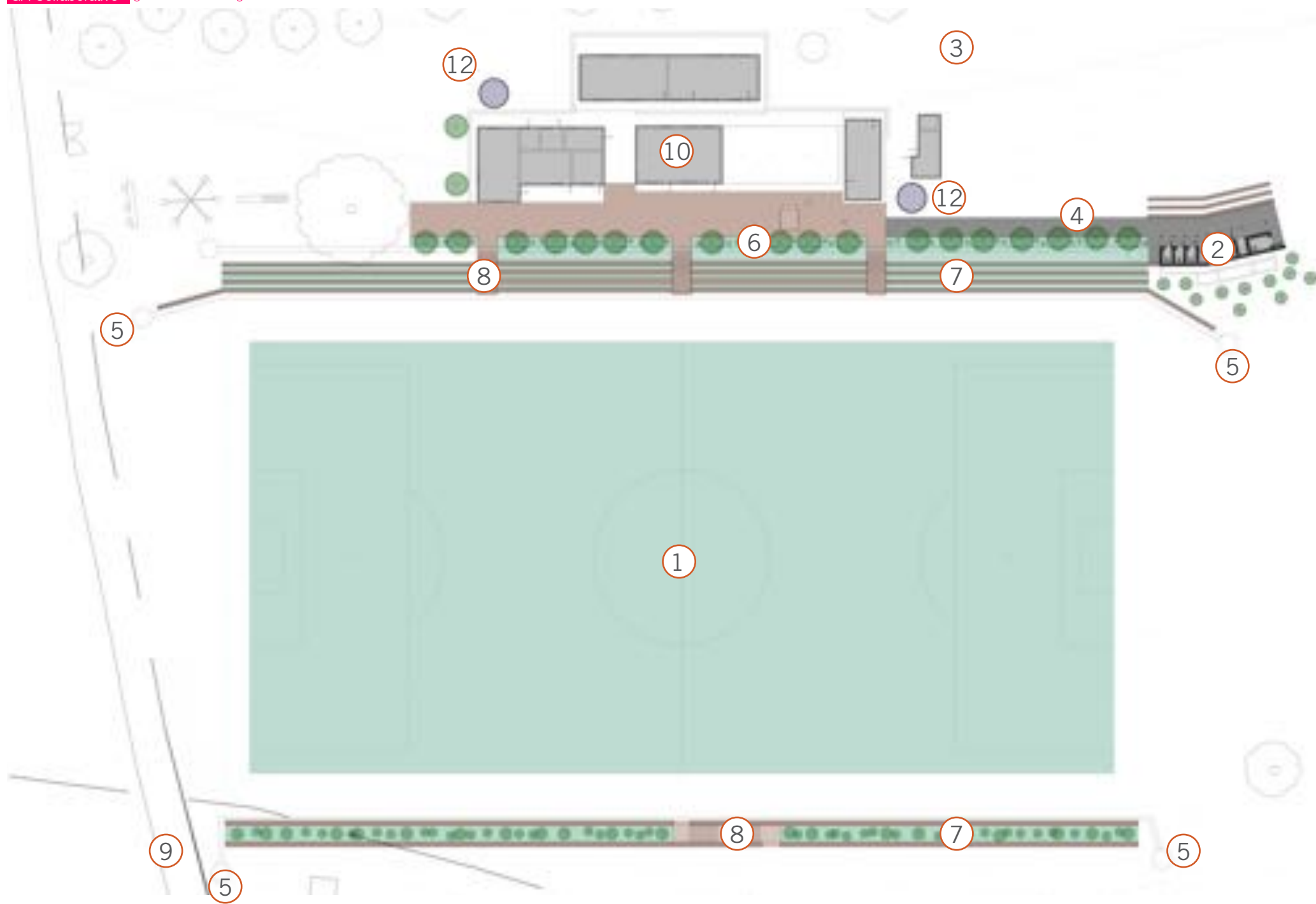
KEY

— Surface Water



Building Structure Water Management Plan

1. New Work:
 - 35 Linear Meter of PVC Pipe Downspouts
 - 10 Linear Meter of Metal Gutter
 - (2) Interlocking Stabilized Soil Block Water Tanks
 - Miscellaneous Fixtures
2. Additional 20,000 liters of water storage available after rainstorms to help get through the dry season.



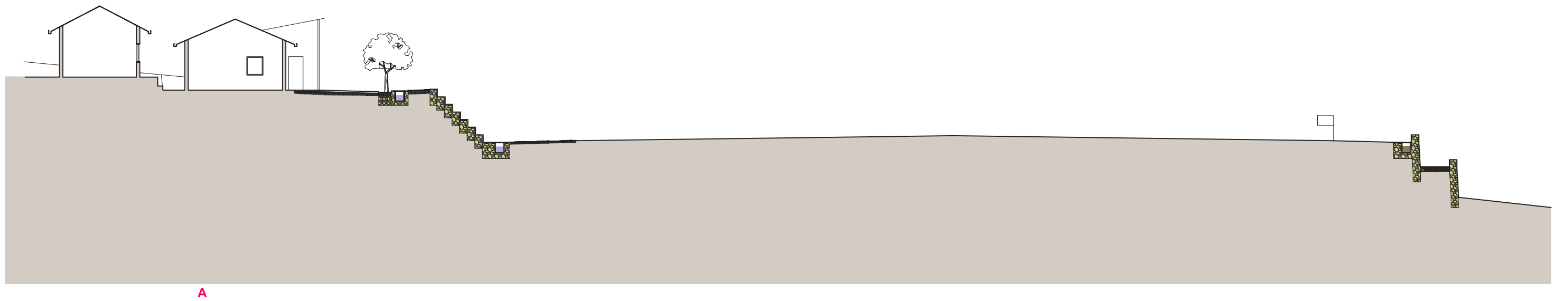
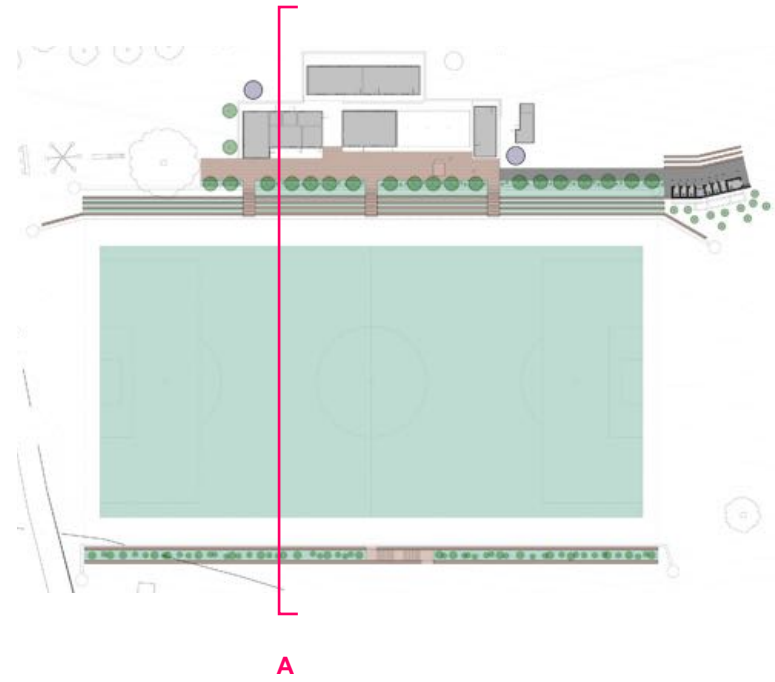
Proposed Detail Plan

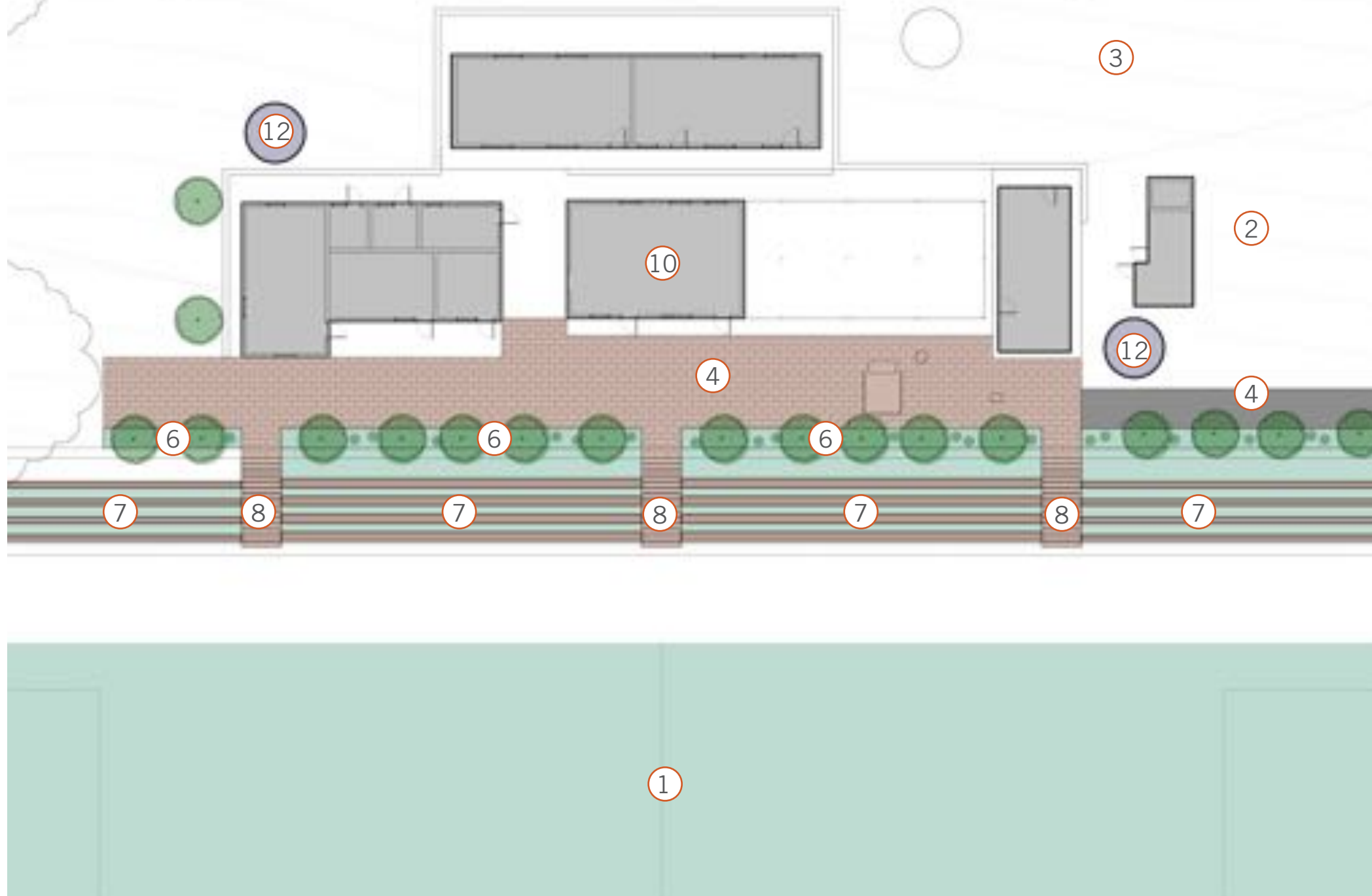
- ① Football Pitch - Junior
- ② Toilet Block
- ③ Agricultural Land
- ④ Paving/ Compacted Gravel Area
- ⑤ Water Drainage/ Soak Pits
- ⑥ Planter
- ⑦ Retaining Walls
- ⑧ Stairs
- ⑨ Road Setback Zone
- ⑩ Existing Buildings
- ⑪ New Water Reservoirs
- ⑫ New Water Tank



Proposed Site Plan

- ① Football Pitch - Senior
- ② Toilet Block
- ③ Agricultural Land
- ④ Paving/ Compacted Gravel Area
- ⑤ Water Drainage/ Soak Pits
- ⑥ Planter
- ⑦ Retaining Walls
- ⑧ Stairs
- ⑨ Road Setback Zone
- ⑩ Existing Buildings
- ⑪ New Water Reservoirs



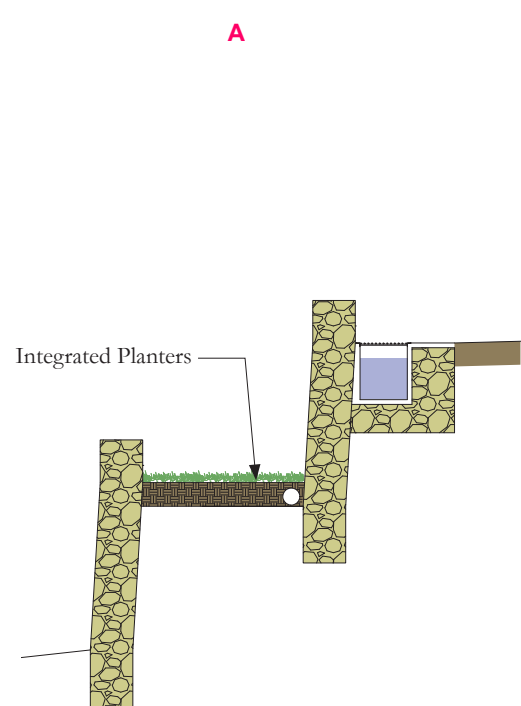
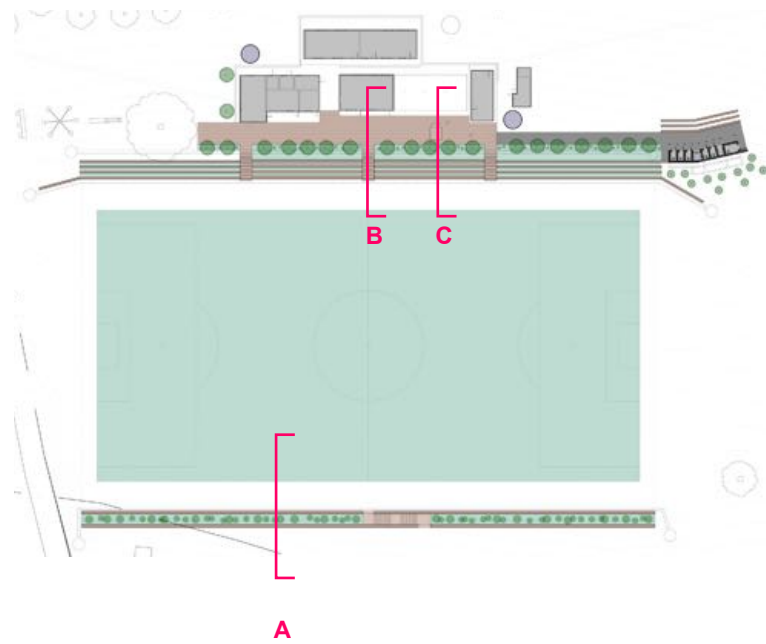


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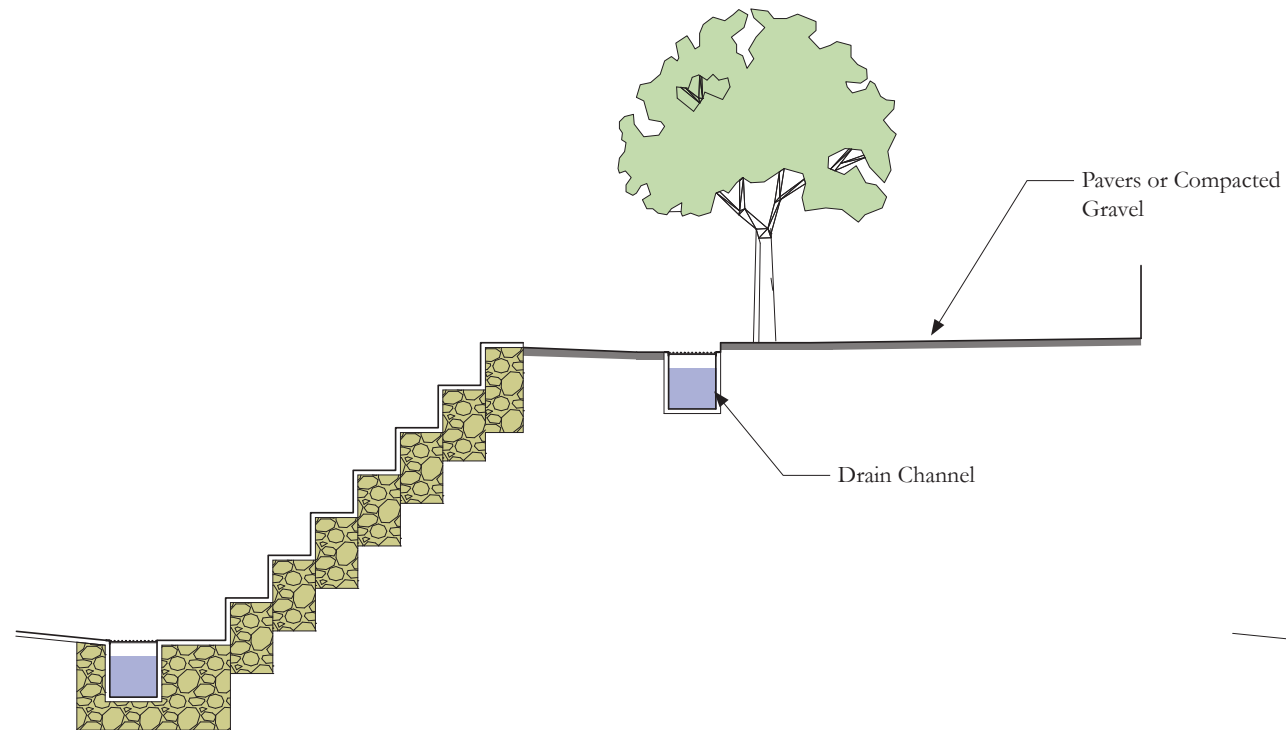
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- ⑦ Retaining Walls/ Seating
- ⑧ Stairs
- ⑨ Road Setback Zone
- ⑩ Existing Buildings
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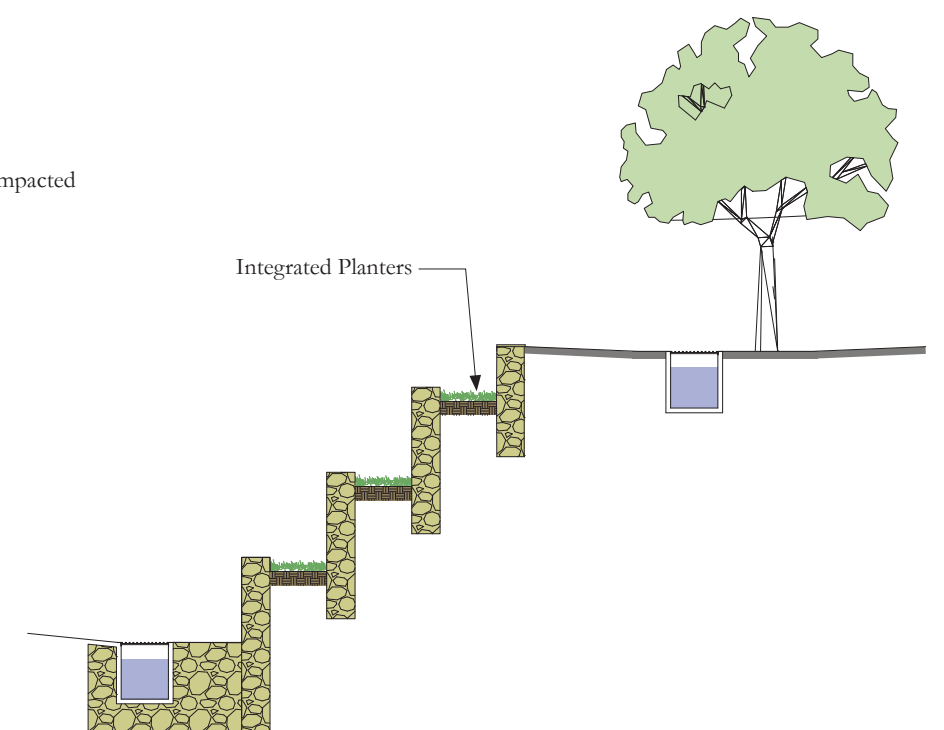
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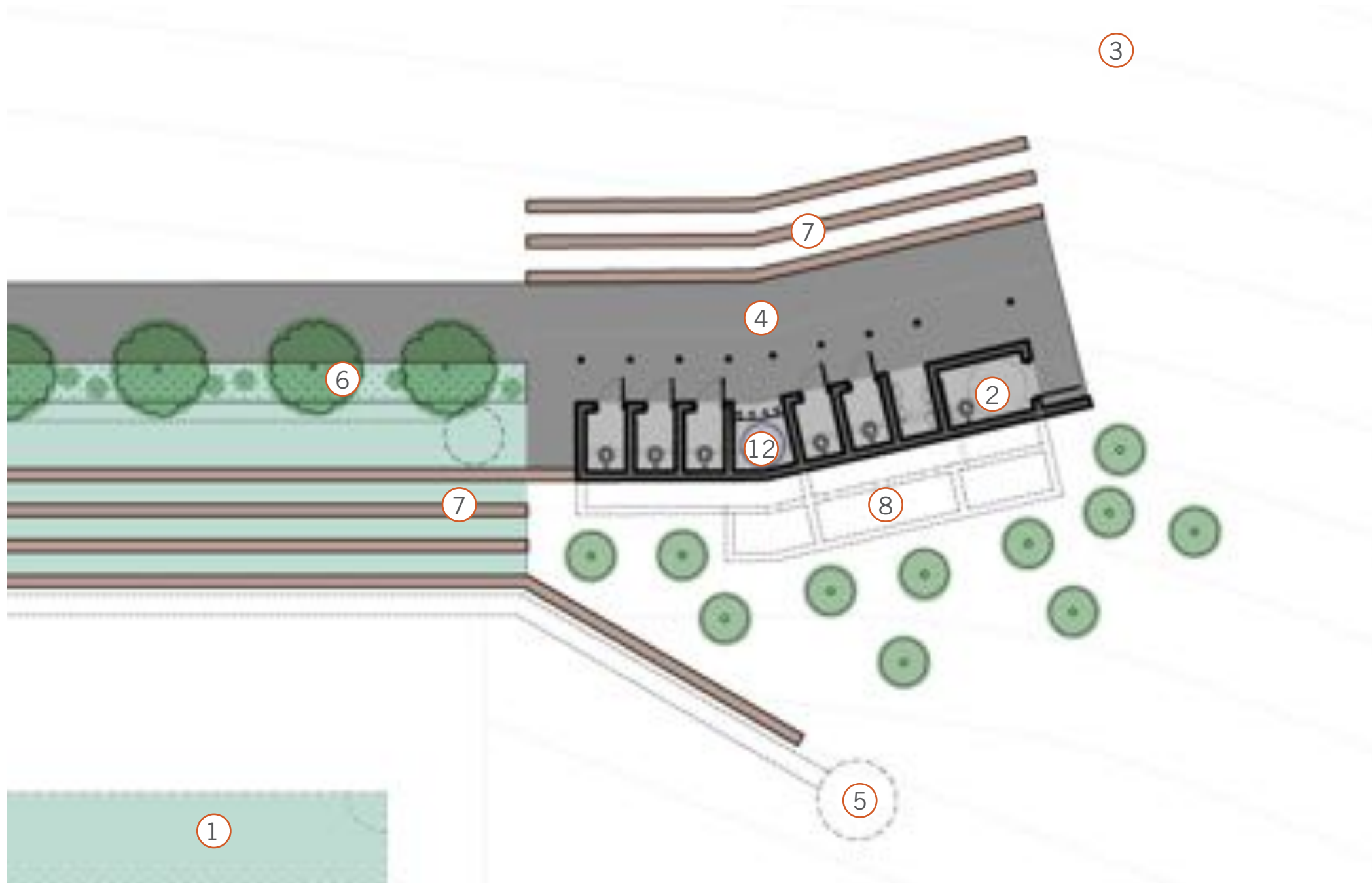
A. At bottom of pitch facing street



B. Access Stairs



C. Stepped Retaining Wall/ Planters

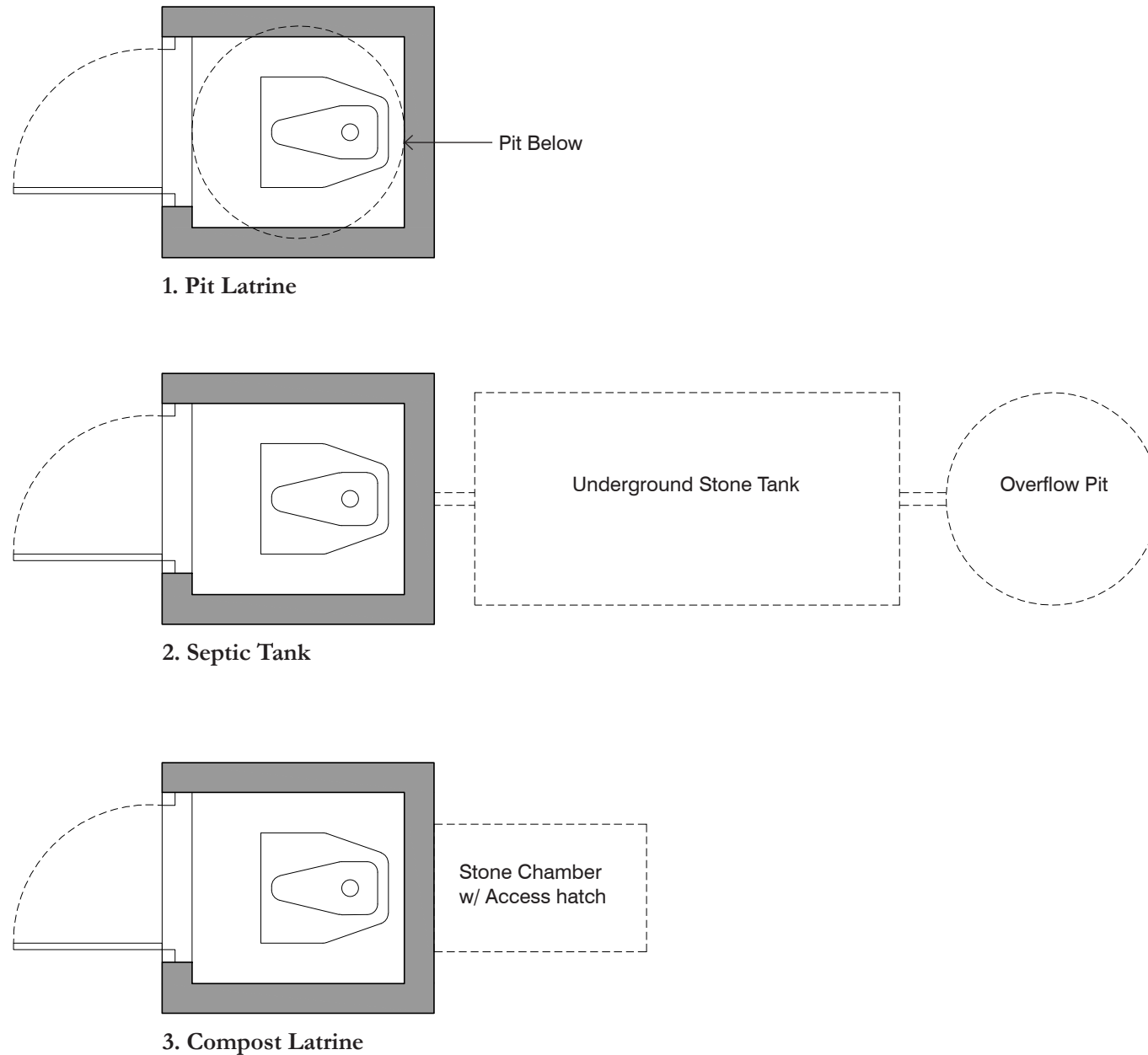


Proposed Detail Plan

- ① Football Pitch - Junior
- ② ADA Accessible Toilet
- ③ Agricultural Land
- ④ Paving/ Compacted Gravel Area
- ⑤ Water Drainage/ Soak Pits
- ⑥ Planter
- ⑦ Retaining Walls/ Seating
- ⑧ Waste Storage Chambers
- ⑨ Road Setback Zone
- ⑩ Existing Buildings
- ⑪ New Water Reservoirs
- ⑫ New Water Tank



Proposed Toilet Waste Management - Pros & Cons



1. Pit Latrine est. \$700

- PROS
- Very Cheap
- CONS
- Bad Smell
- Damages the environment

2. Septic Tank est. \$5,000

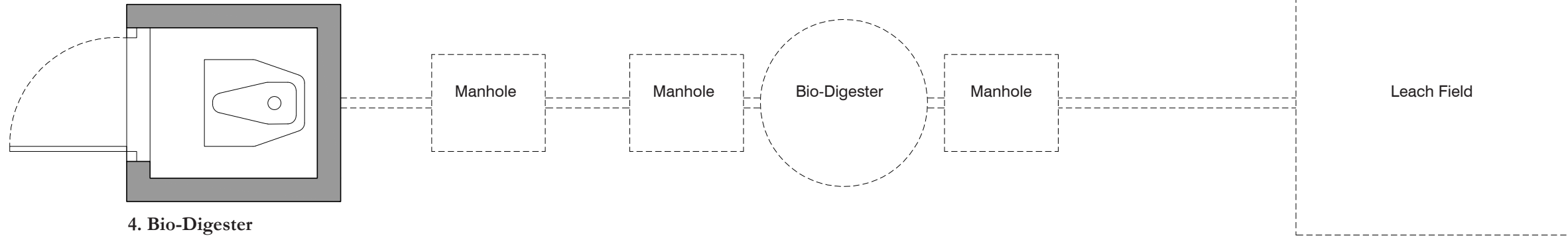
- PROS
- Well-known, common option
- CONS
- Requires ongoing maintenance
- Smelly if not properly maintained
- Requires periodic cleaning by city truck

3. Compost Toilet est. less than Septic Tank

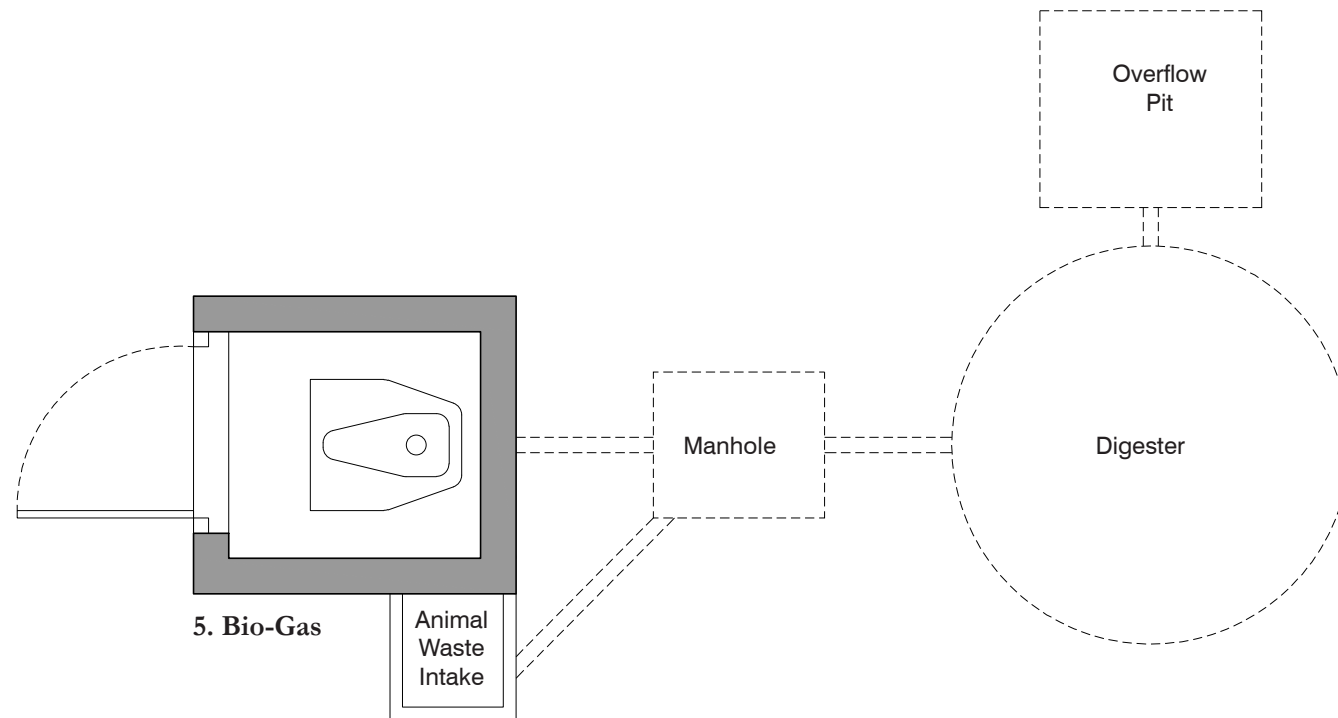
- PROS
- Produces fertilizer for agricultural land
- Doesn't require much space
- Relatively cheap to build
- CONS
- Requires ongoing maintenance
- Smelly if not properly maintained



Proposed Toilet Waste Management - Pros & Cons



4. Bio-Digester



5. Bio-Gas

4. **Bio-Digester** est. \$8,100

PROS

Self-emptying

Good for environment

No bad smells

CONS

Requires ongoing maintenance

Takes up land area

5. **Bio-Gas** est. \$30,000/ 50 cubic meters

PROS

Produces usable gas for cooking and electricity

Self-emptying

Good for environment

CONS

Most expensive option

Ongoing expensive maintenance

Requires human and animal waste input

Requires steep slopes