

D e s i g n b y

Chen

Mekelle University

Proposal Of Mekelle Culture Park



**Quest for
3D Curve Modeling in Digital Fabrication
Technic
& collect rainwater for circulation water**



Parametric Design + Humanity Design in Landscape Architecture



Research Background

A proposal small culture park at Mekelle City entrance, area around 2 hektare; Build a crosswalk bridge as Mekelle city landmark building; present Mekelle New City, New Life, New Spirit. The site location as following picture, near airport.

Technology

Using Rhino & Grasshopper software to fix the complex 3D curve form & component fractal

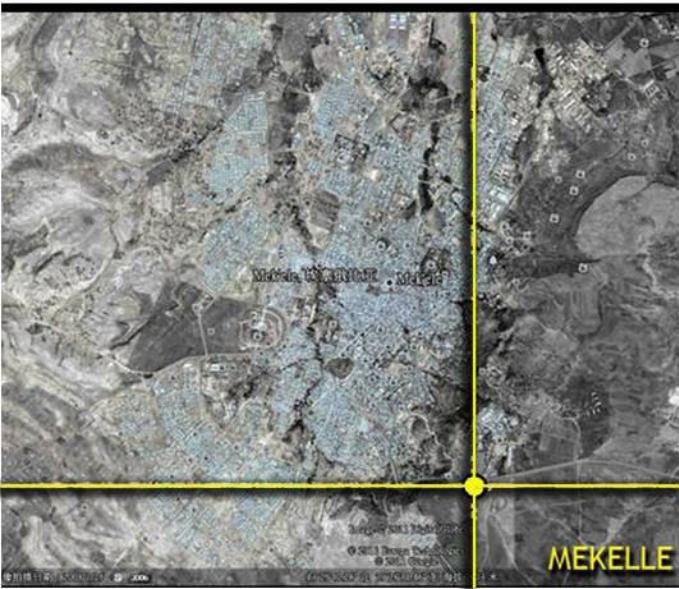
Collect rainwater for circulation water

ABSTRACT

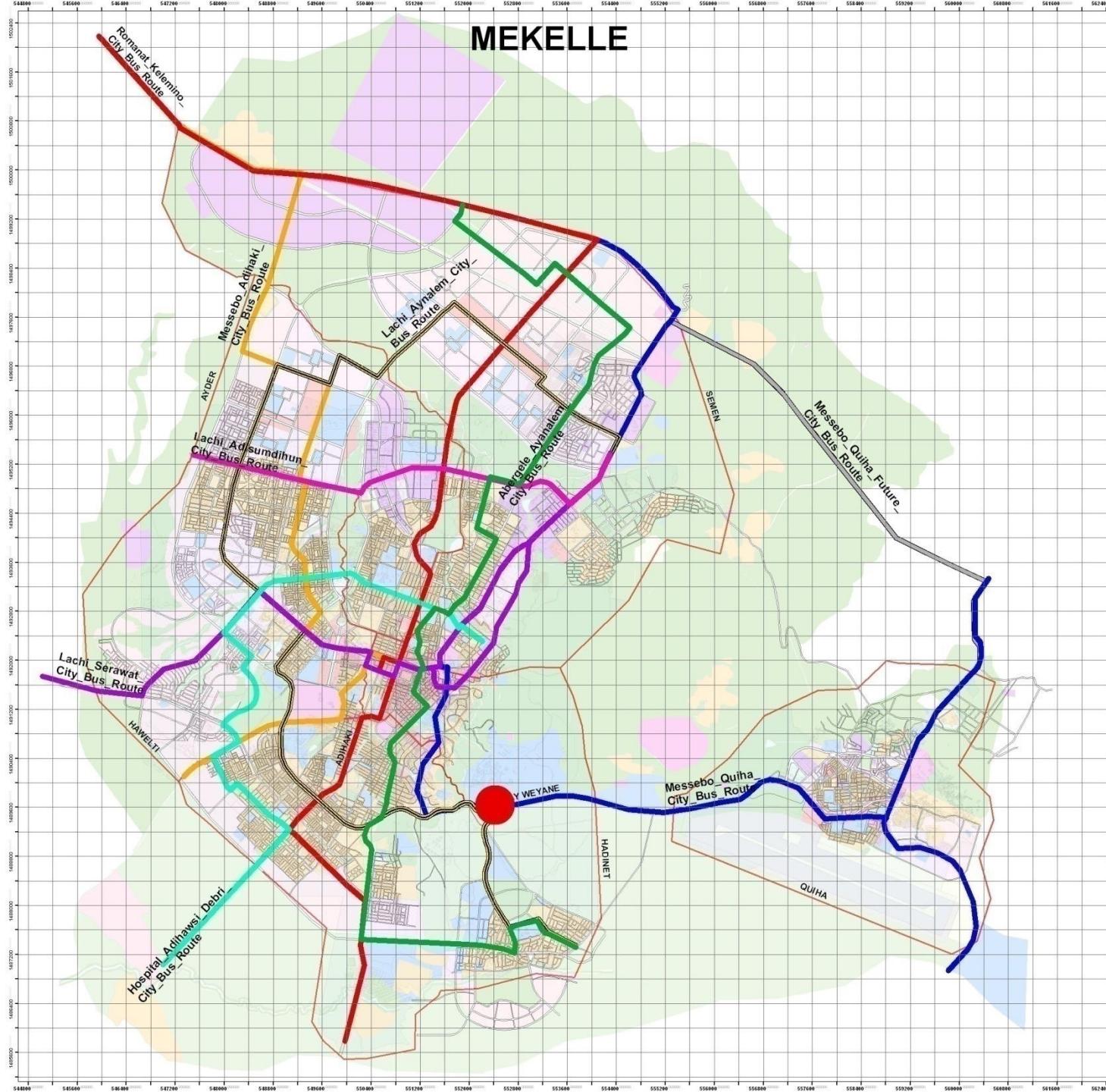
In the recent twenty years, architectural design method has changed from emphasis on result to emphasis on process, and this change is resulted from two philosophical thoughts: process and generation. The application of process concept in architectural design method considers architectural design as an organic evolving process of life, and generation, on the other hand, is an exploration of dynamics, which display the emerging and changing of things along time. this paper just quest for 3d curve model process and generation, to figure out form idea from concept by a park design project.



Location
Mekelle Culture Park



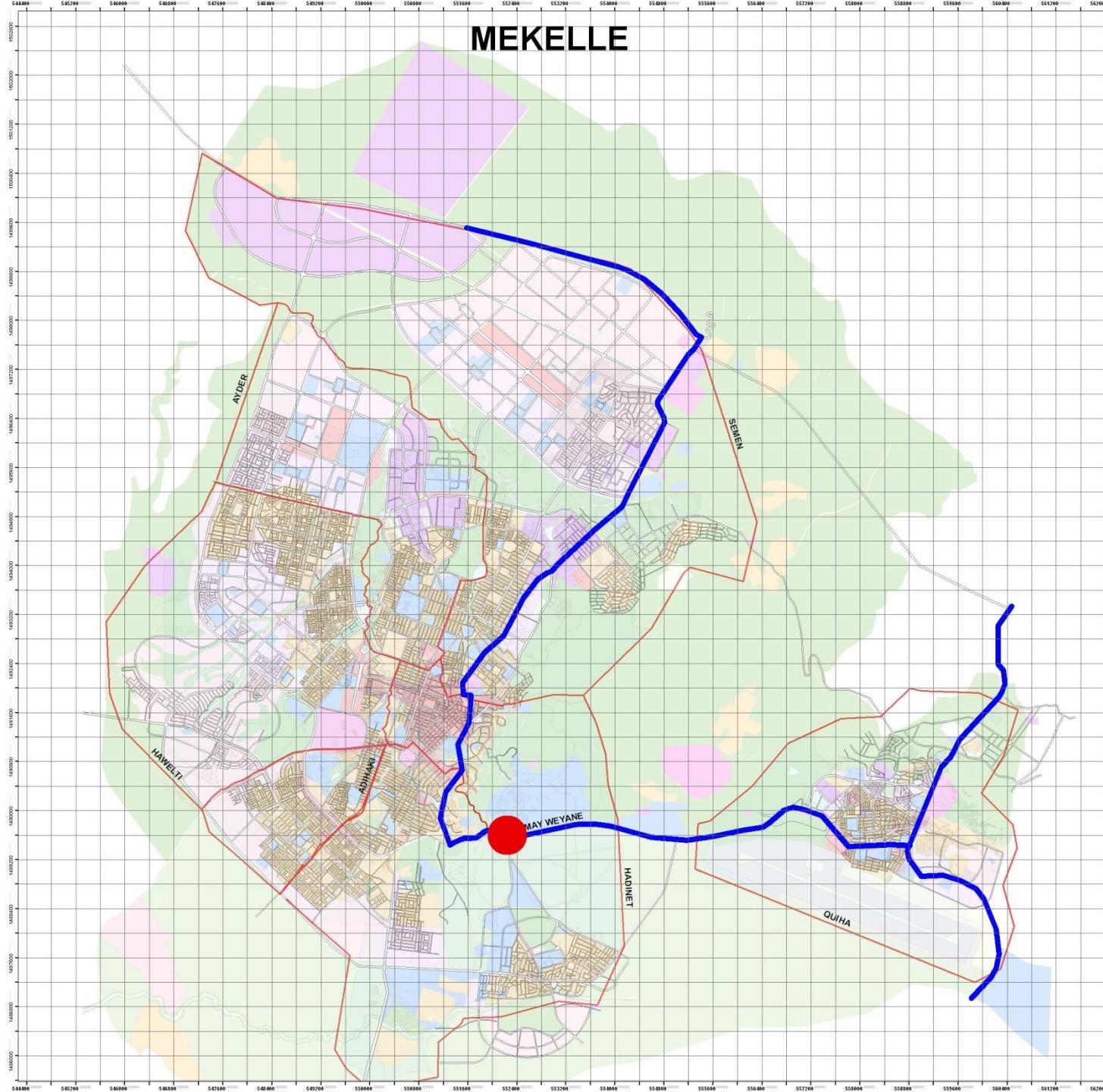
MEKELLE



Location

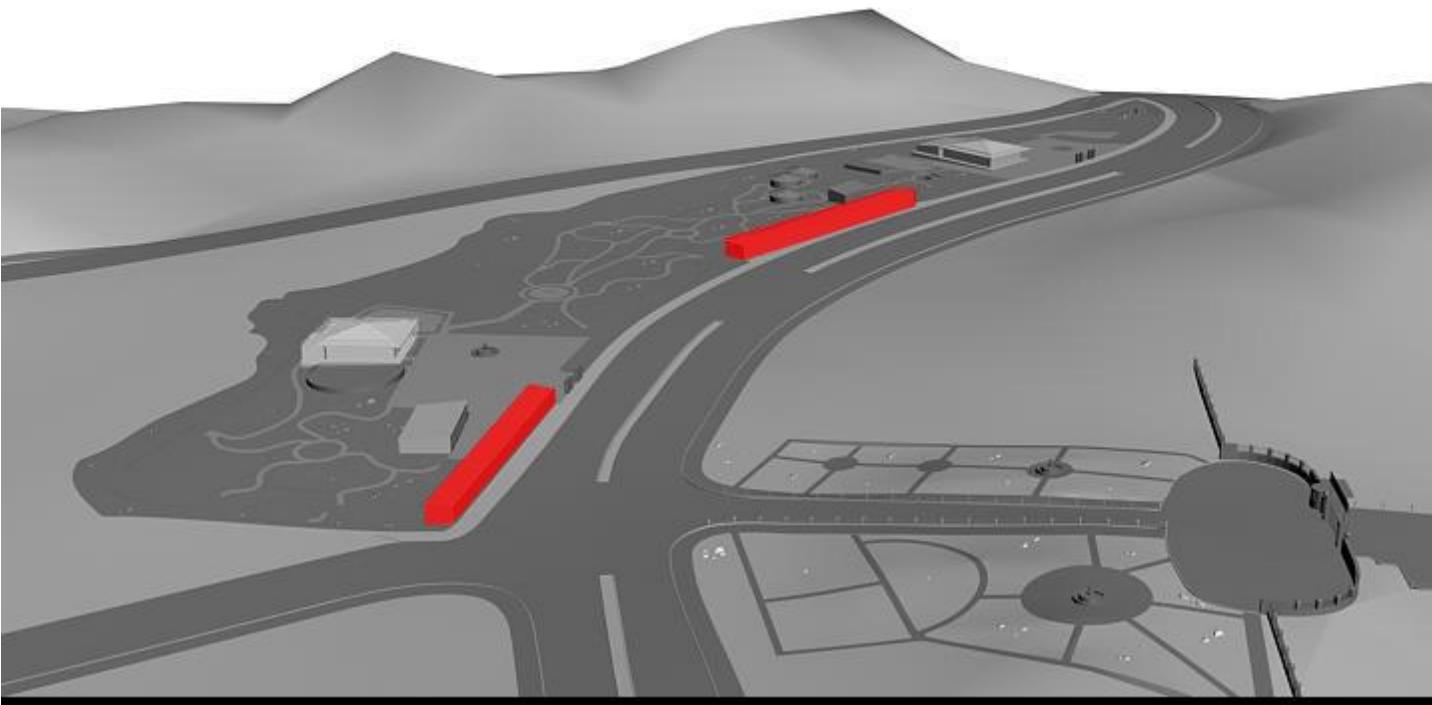
Mekelle Culture Park

MEKELLE



Location

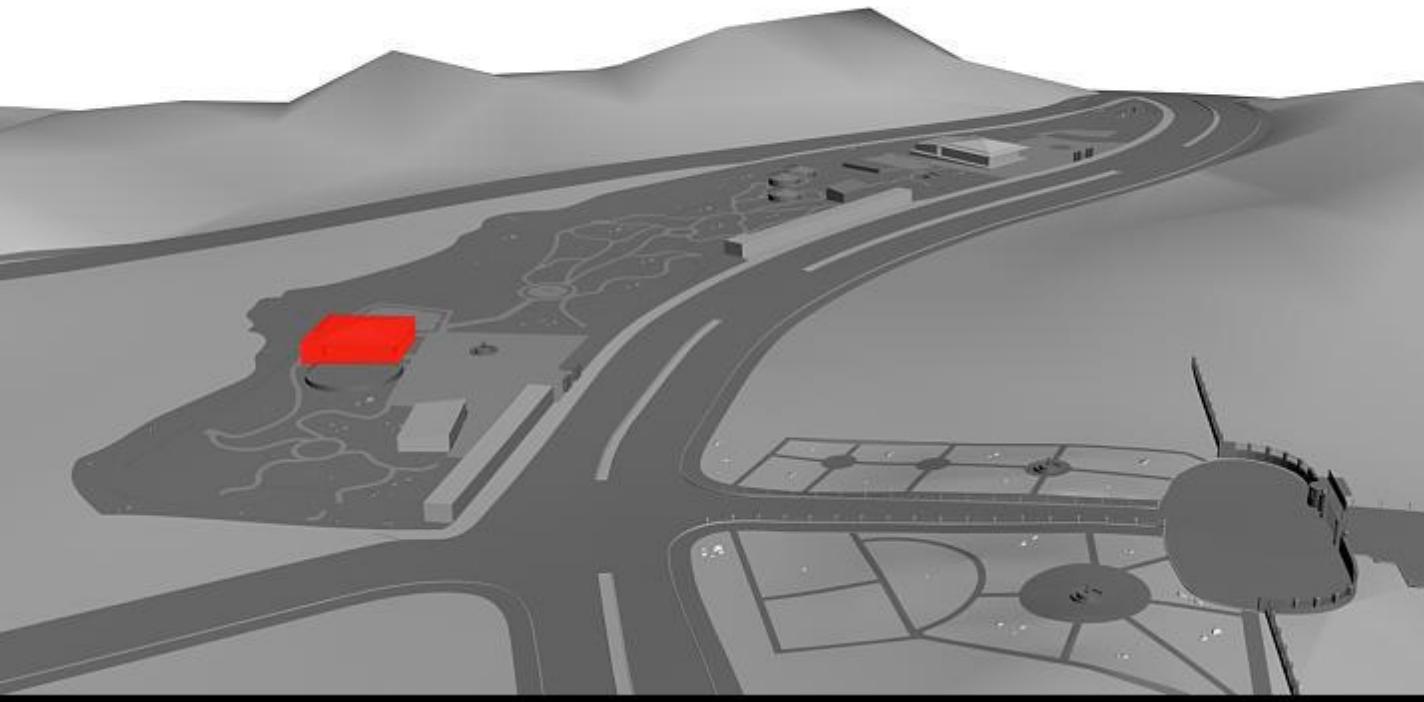
Mekelle Culture Park



Situation

Mekelle Culture Park



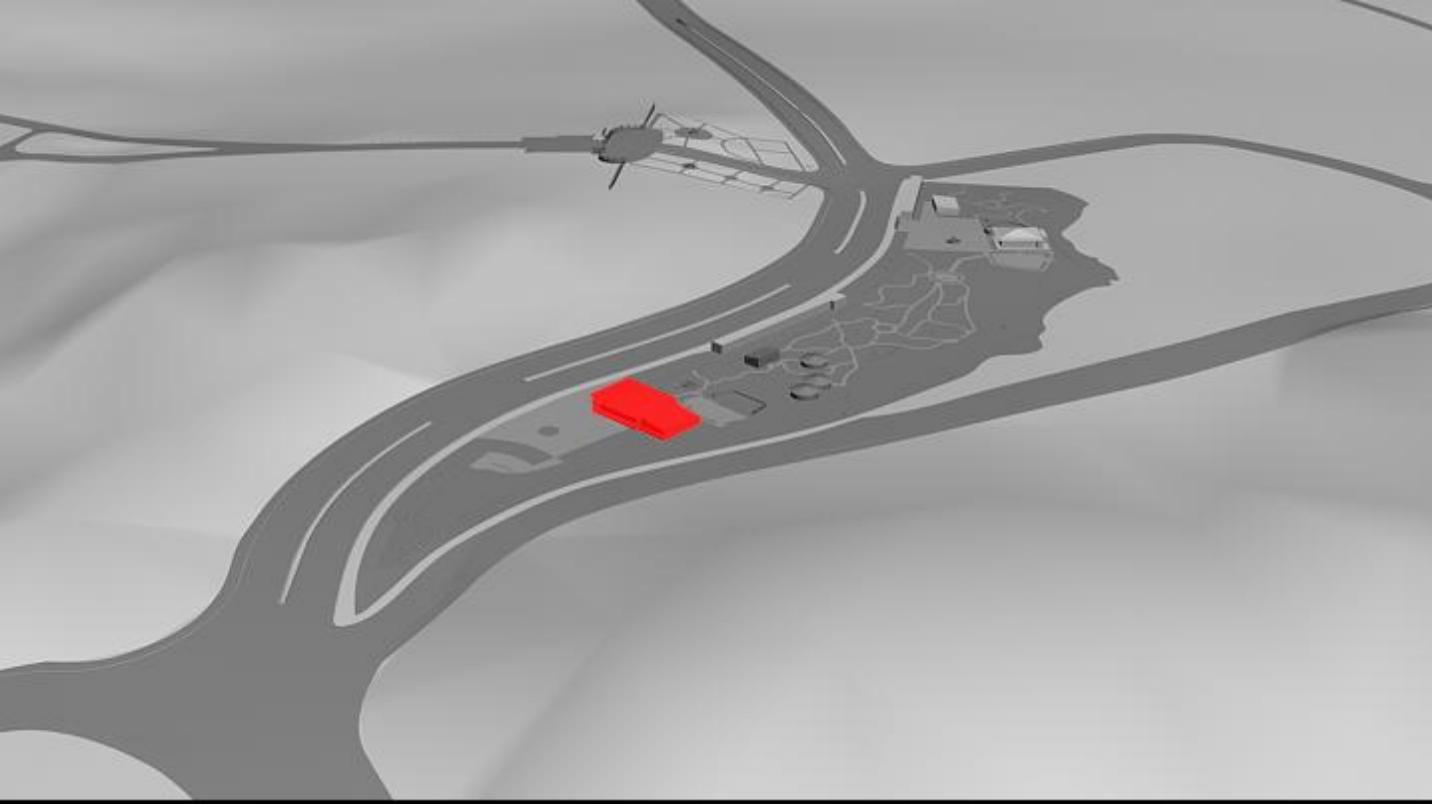


Situation

Mekelle Culture Park

Coffee bar



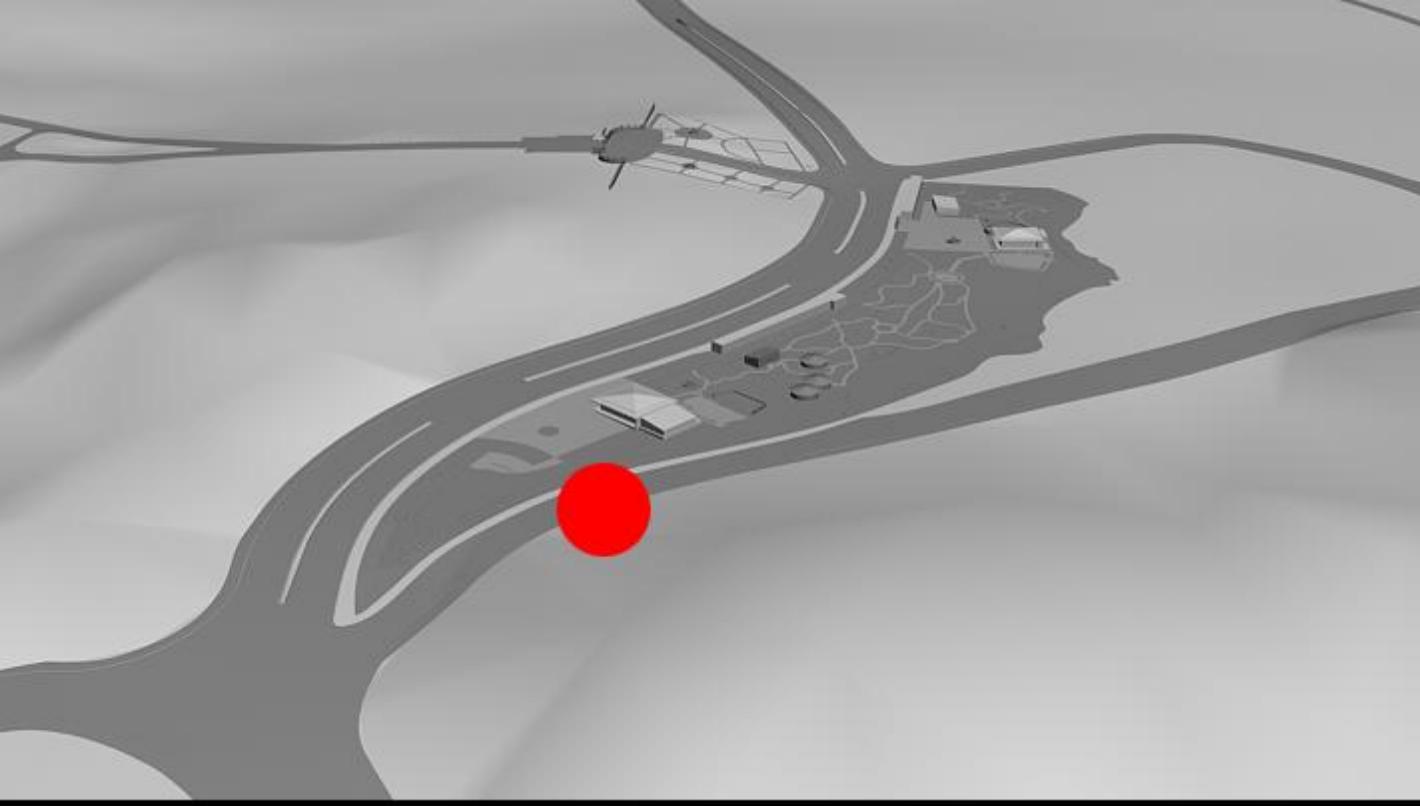


Situation

Mekelle Culture Park

Coffee bar



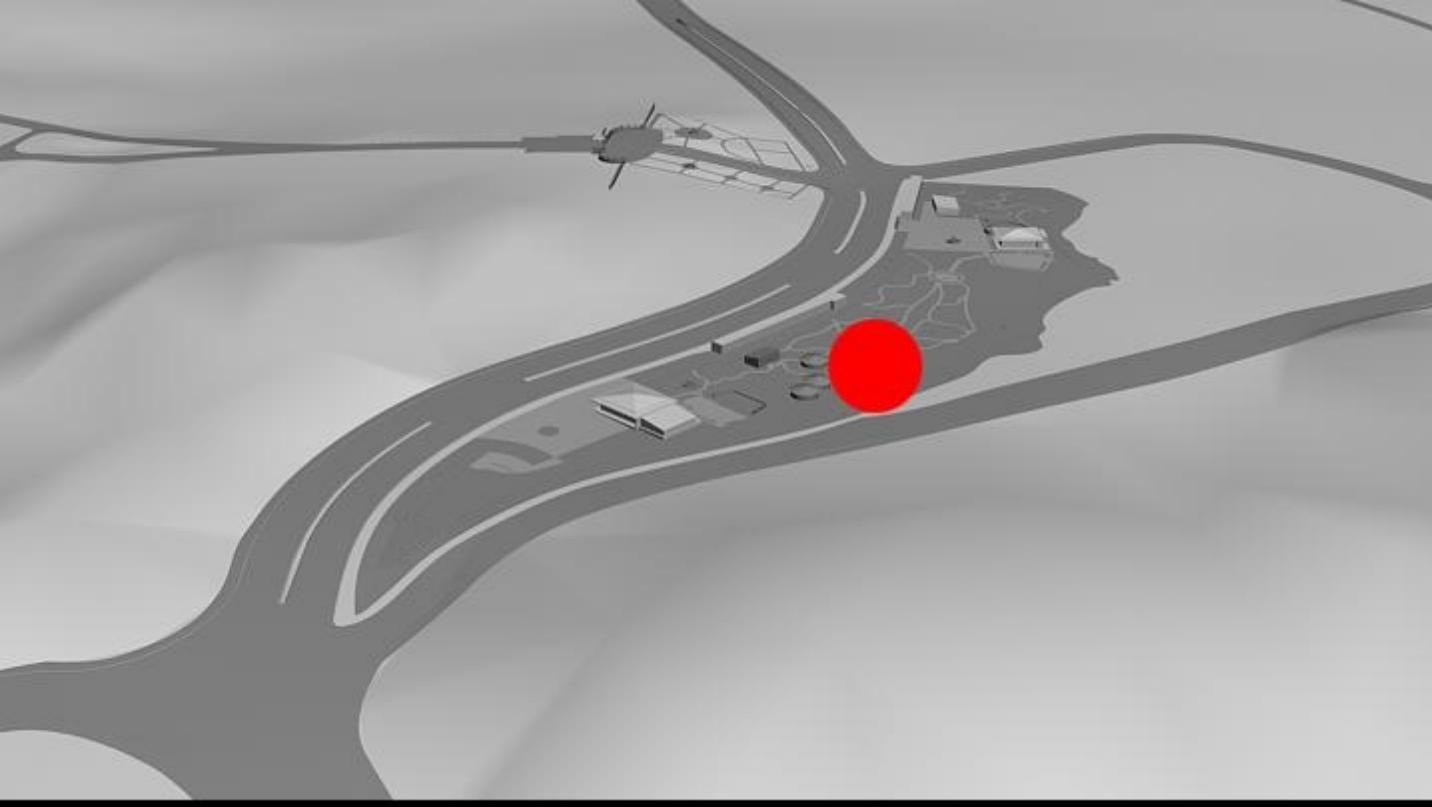


Situation

Mekelle Culture Park



Drainage

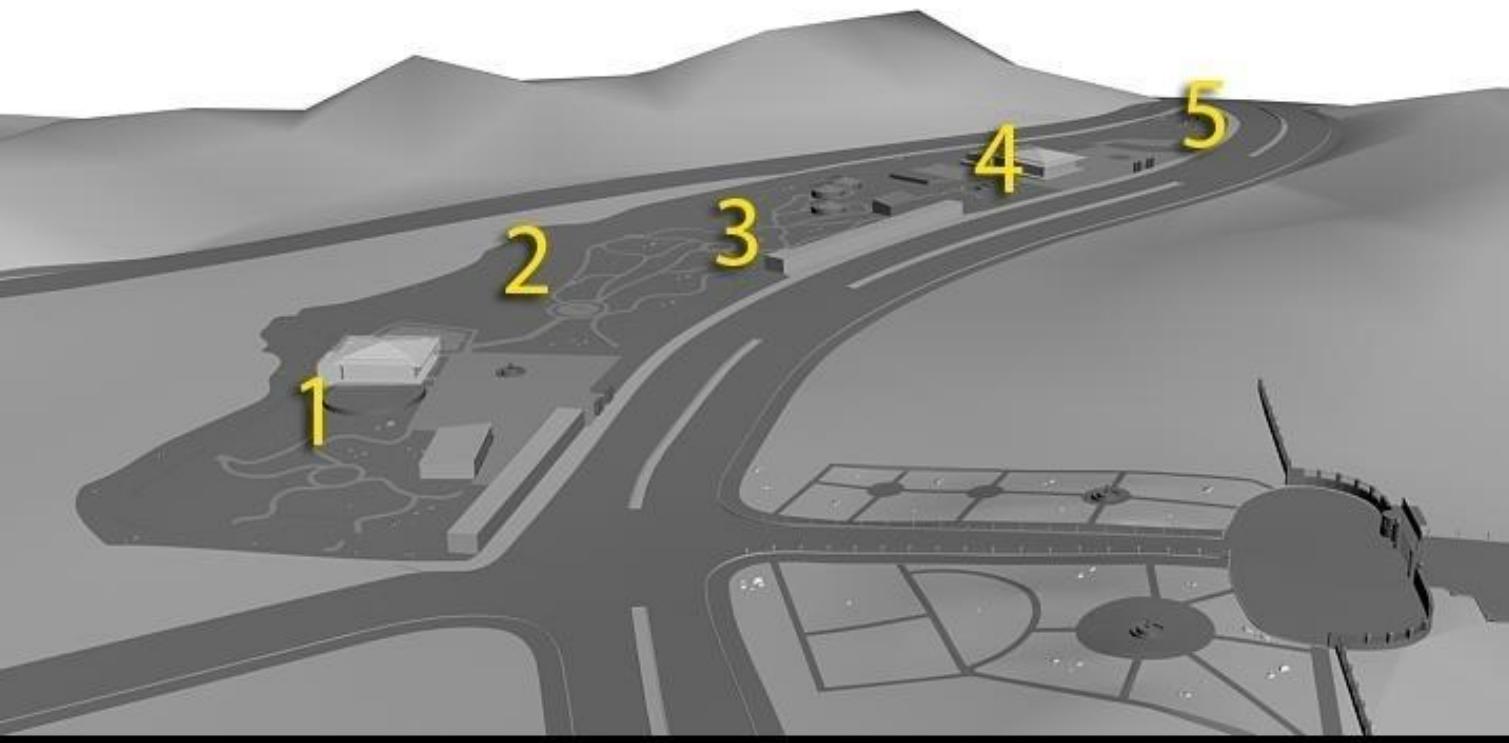


Situation

Mekelle Culture Park

Barbecue





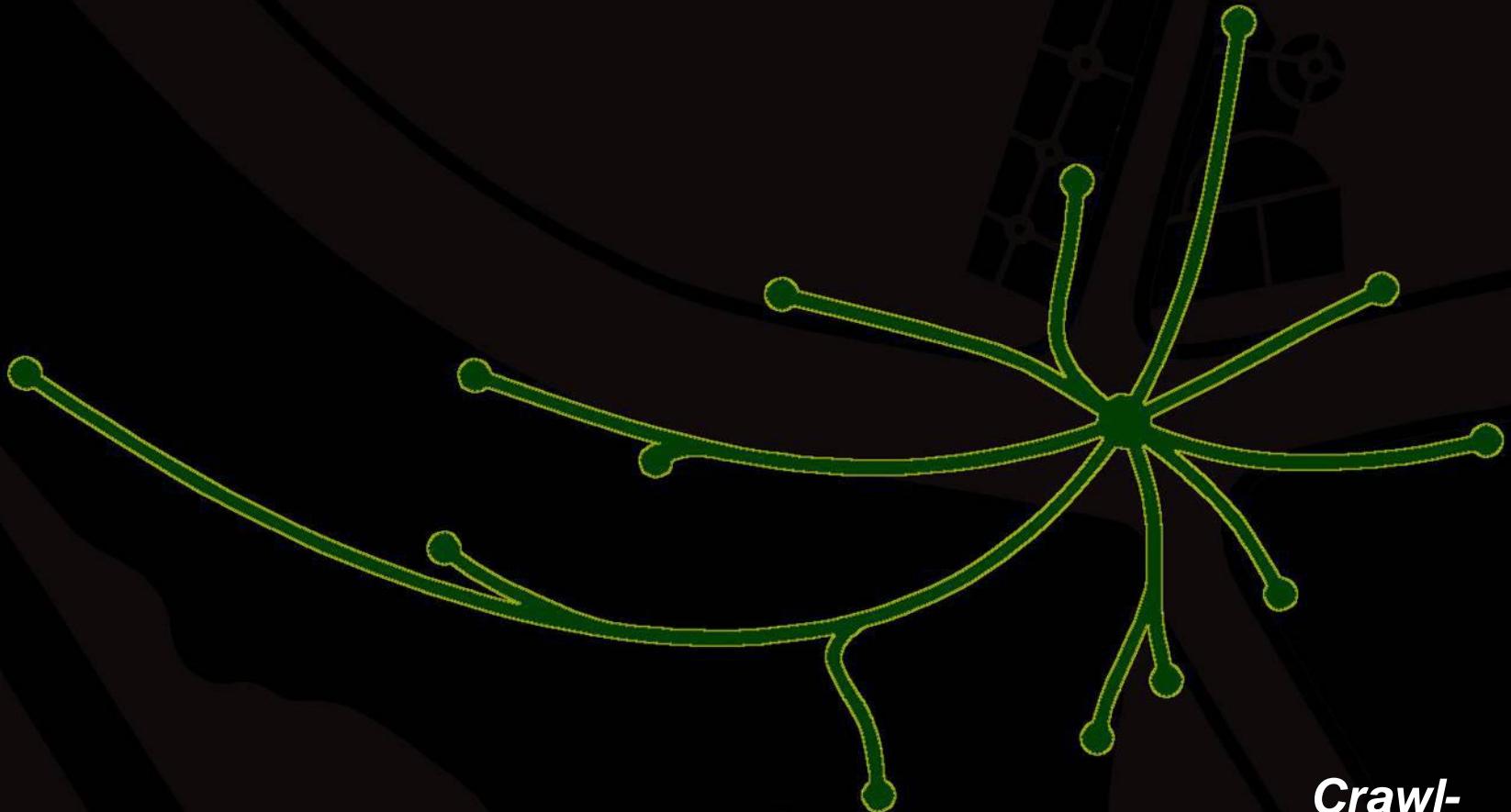
Situation

Mekelle Culture Park

Plants

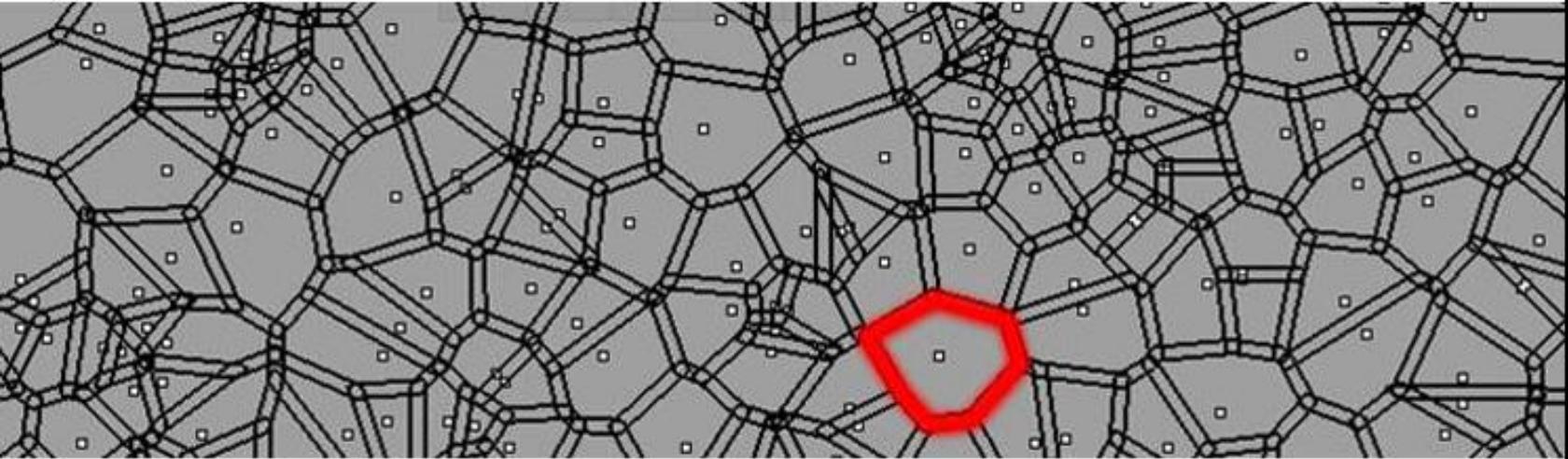


Concept

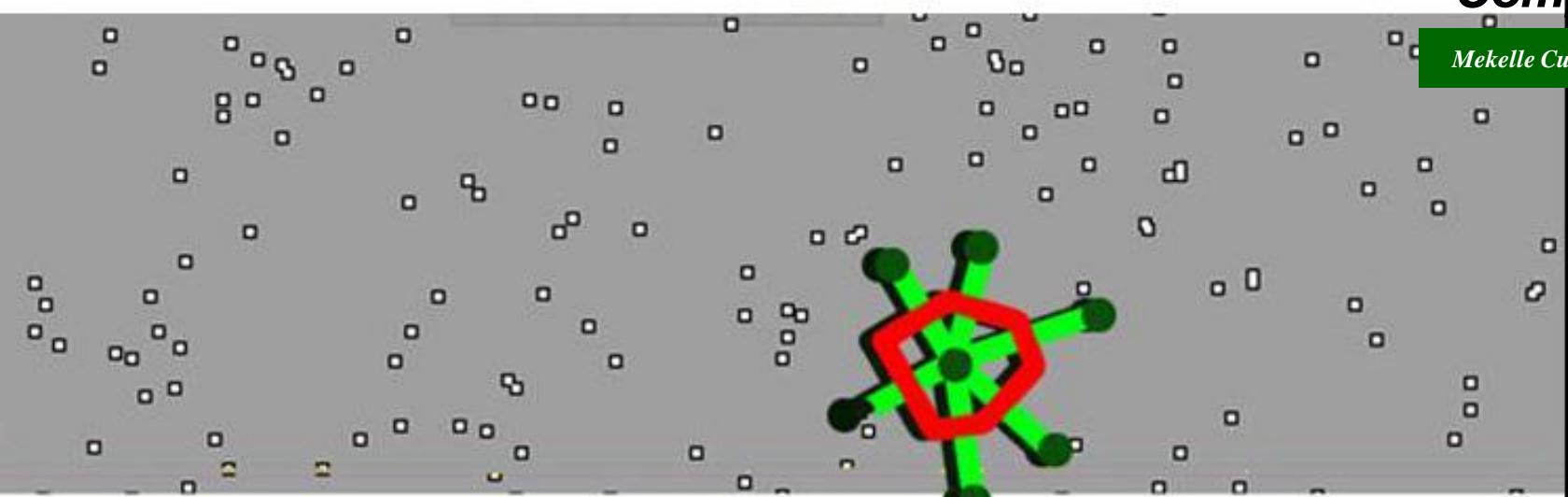


Crawl-Creeper

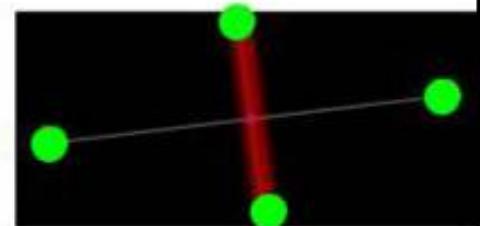
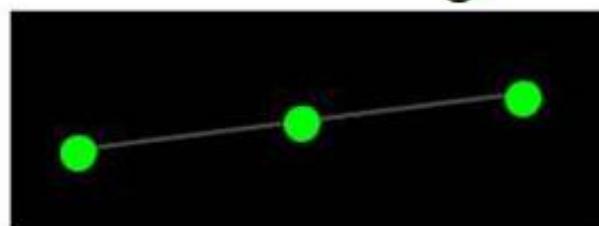
Mekelle Culture Park

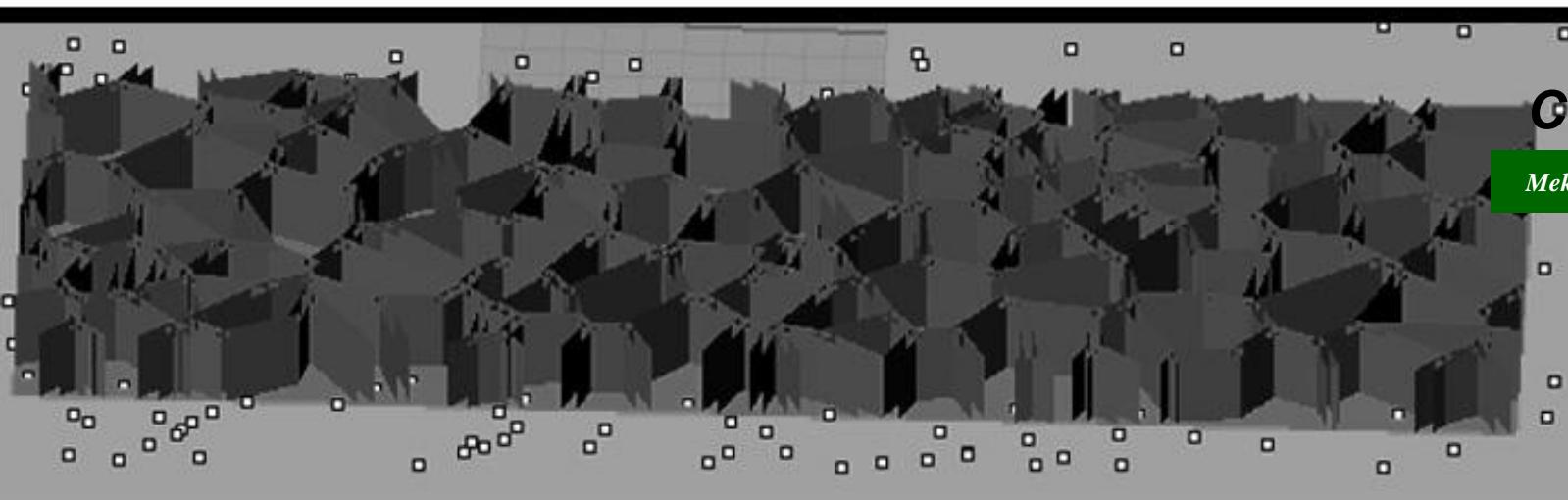
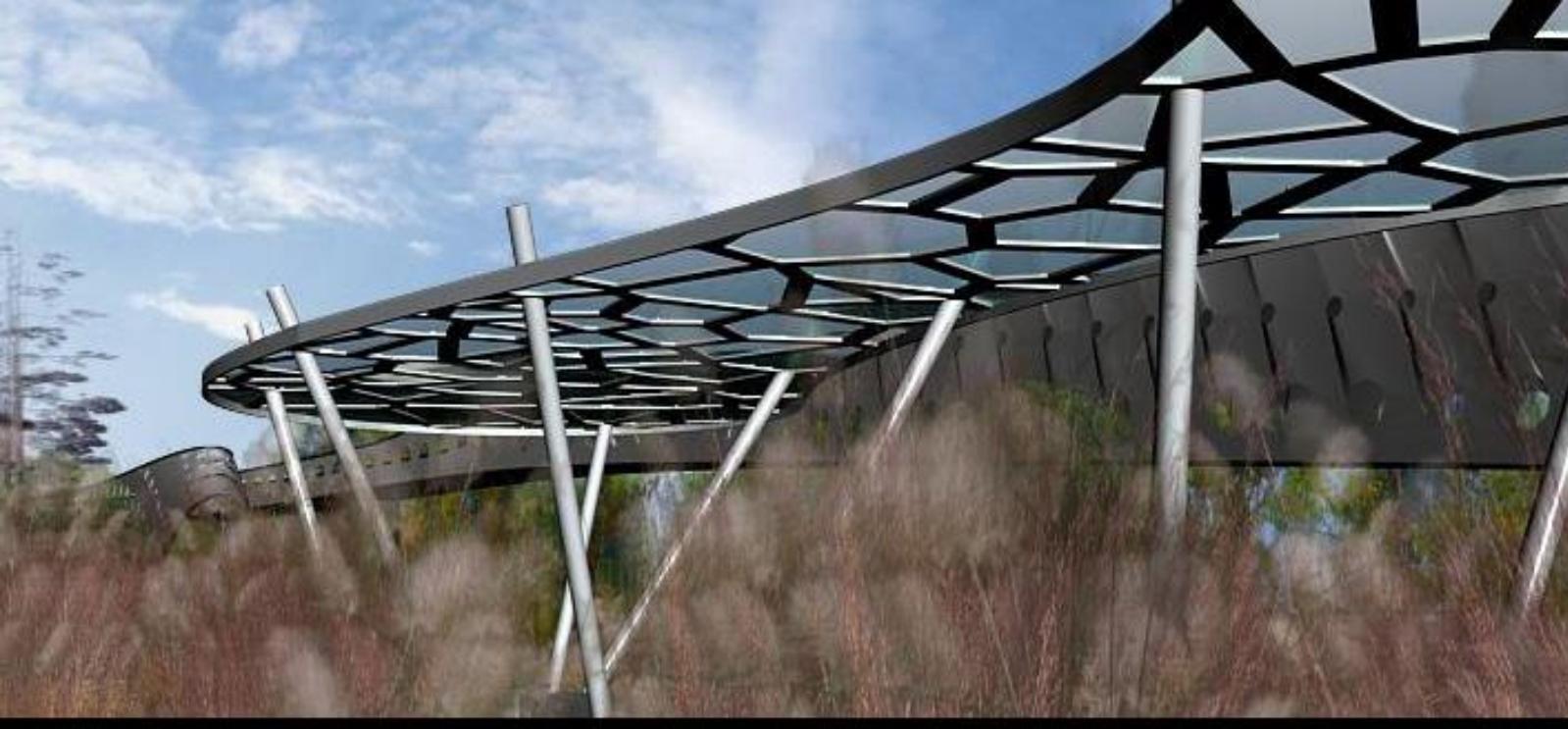


Component



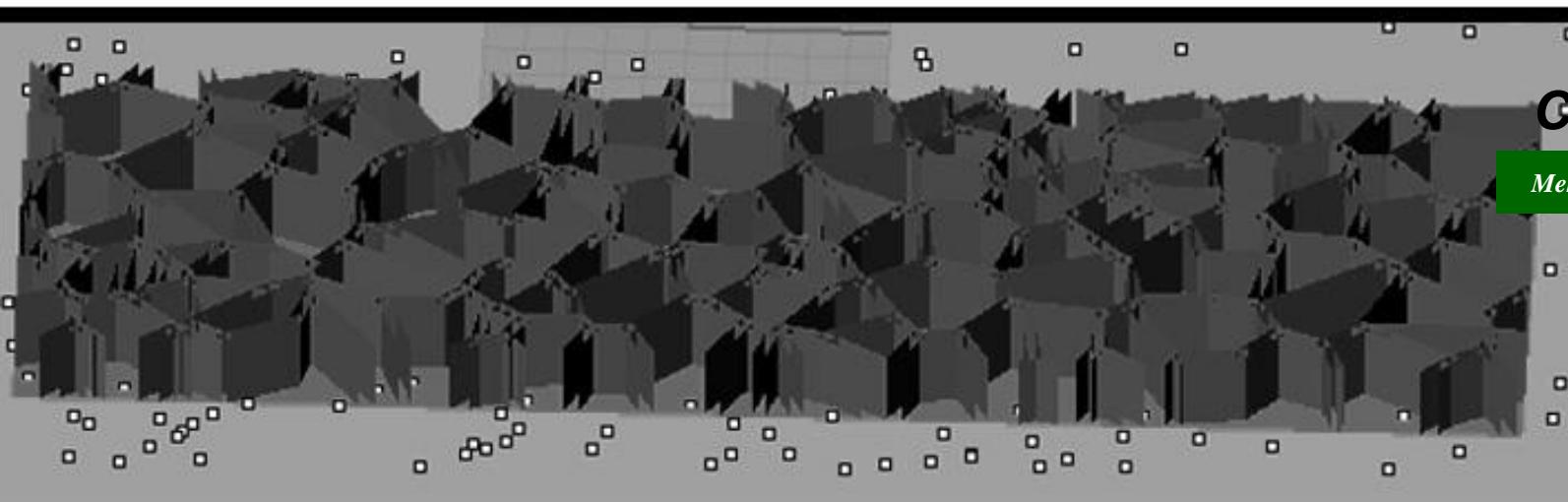
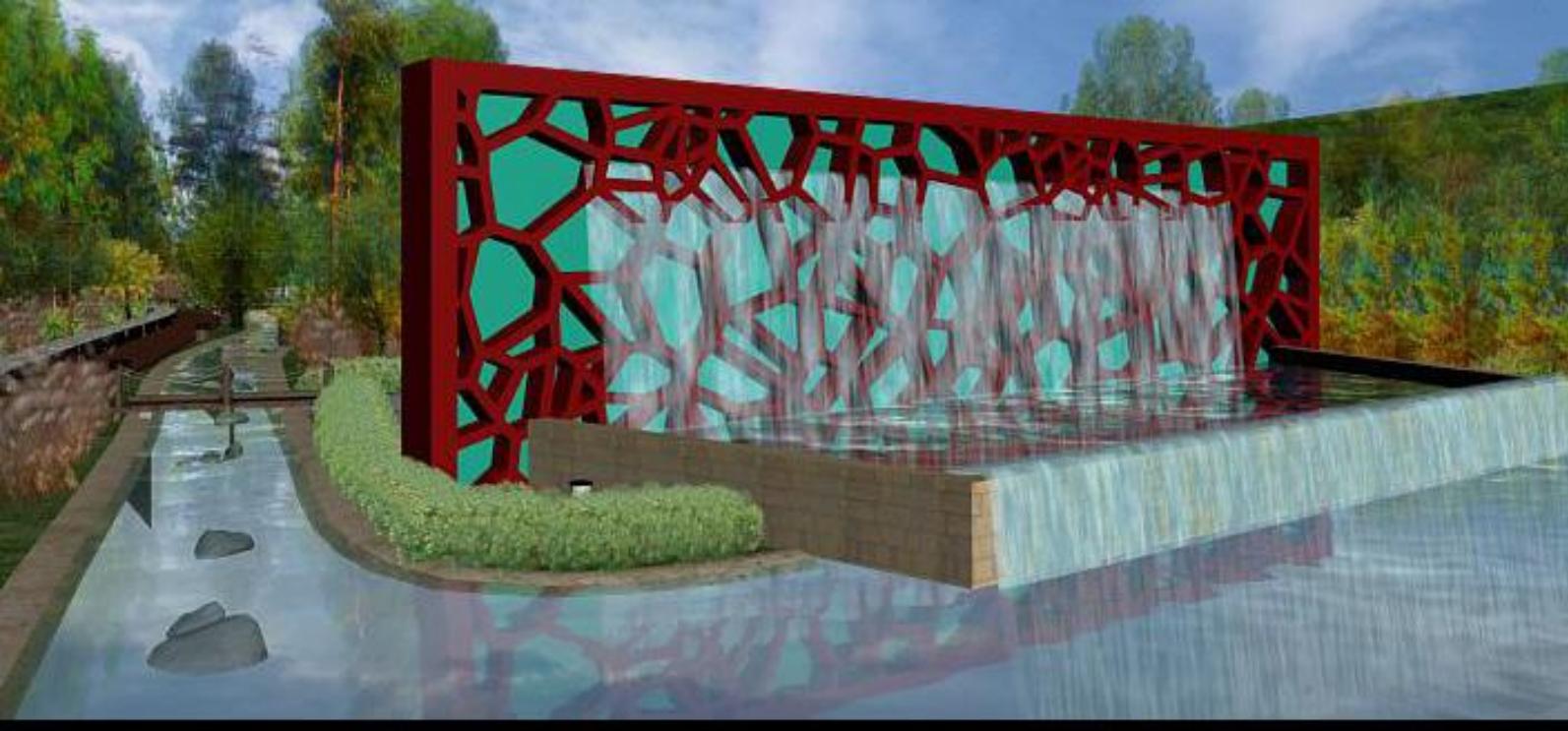
Mekelle Culture Park





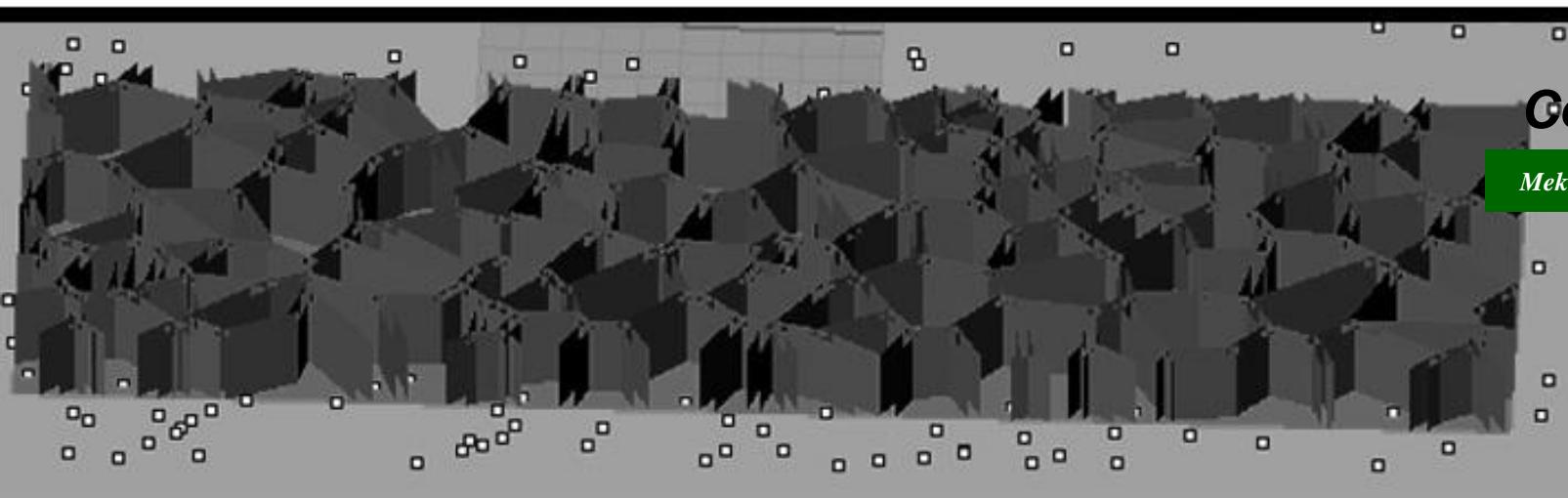
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Mekelle Culture Park



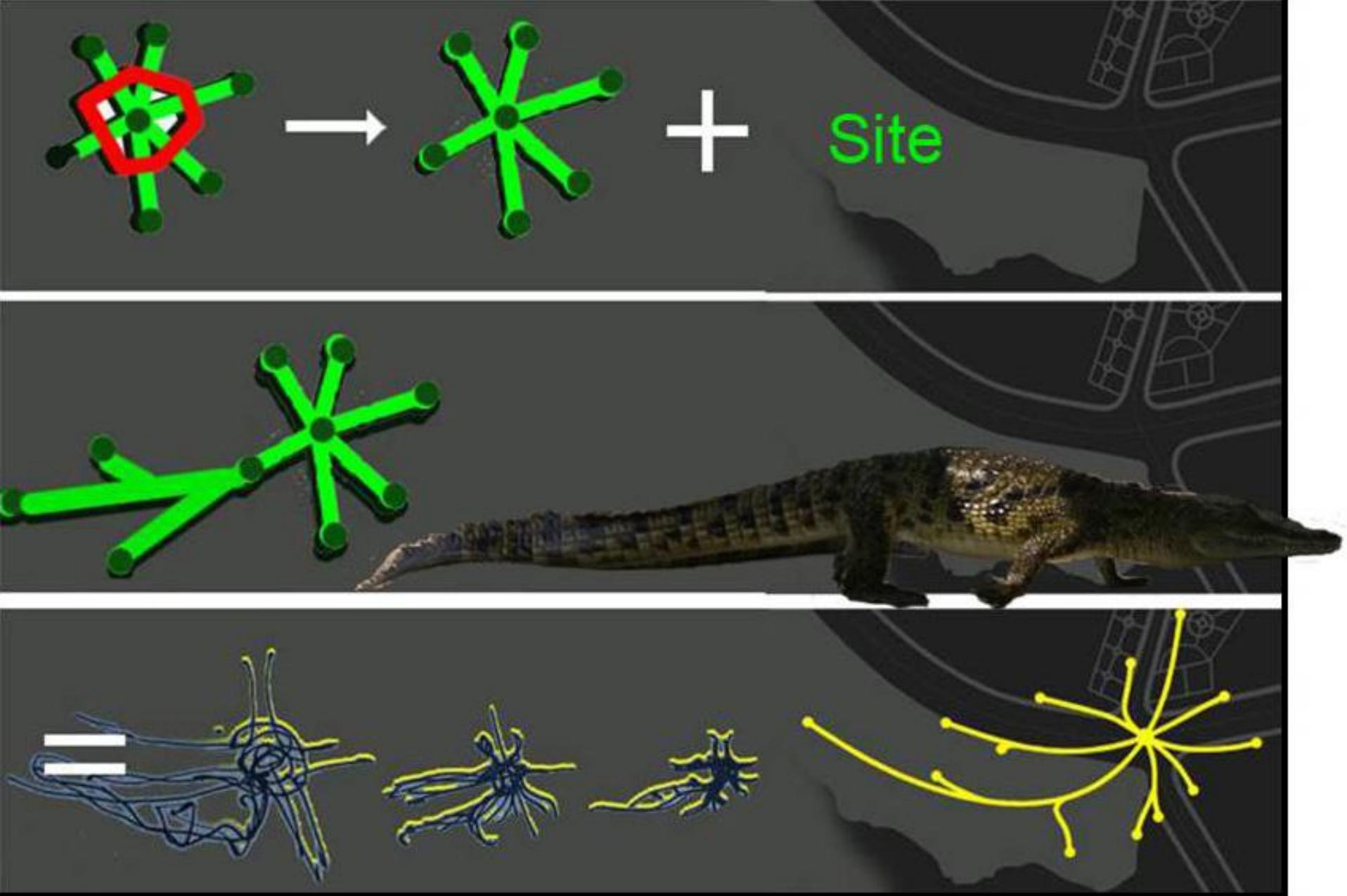
Component

Mekelle Culture Park

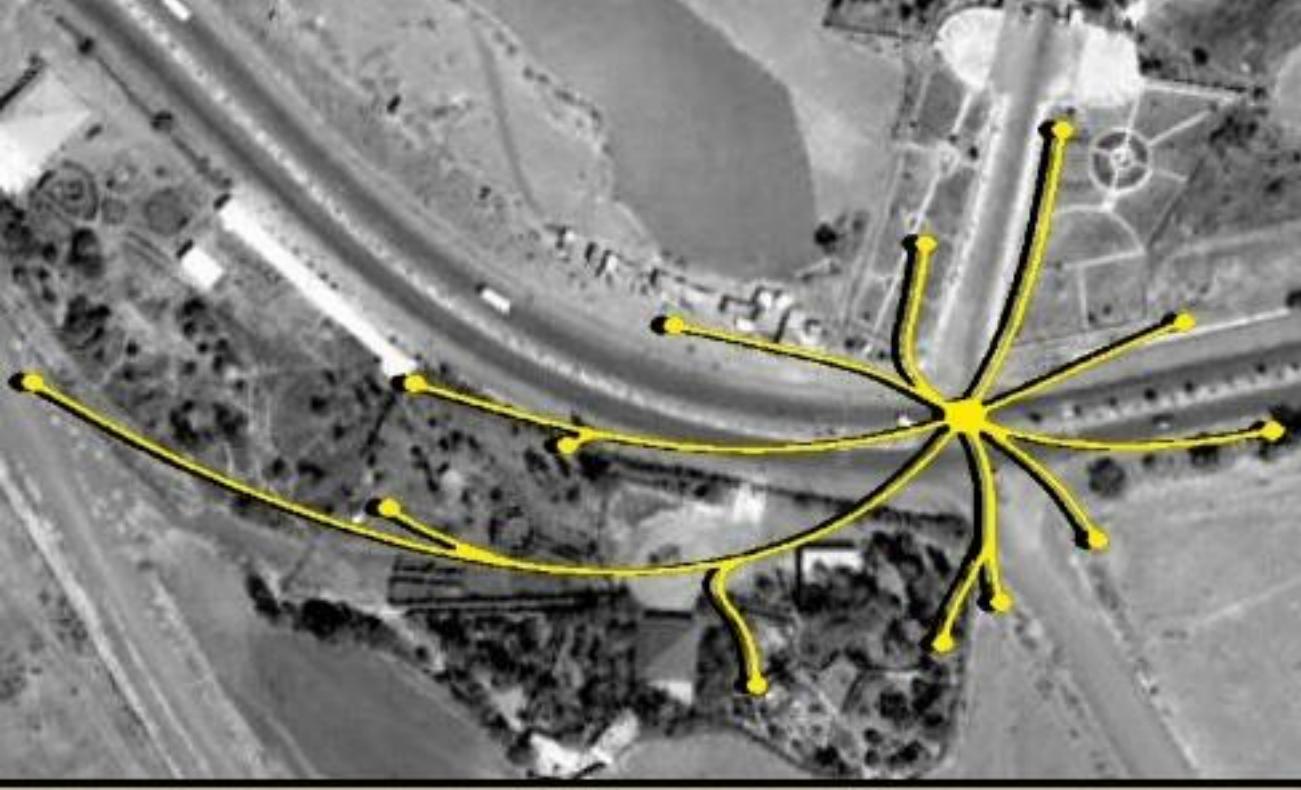


Component

Mekelle Culture Park



Component
Mekelle Culture Park



Crawl- Creeper

Mekelle Culture Park





Crawl- Creeper

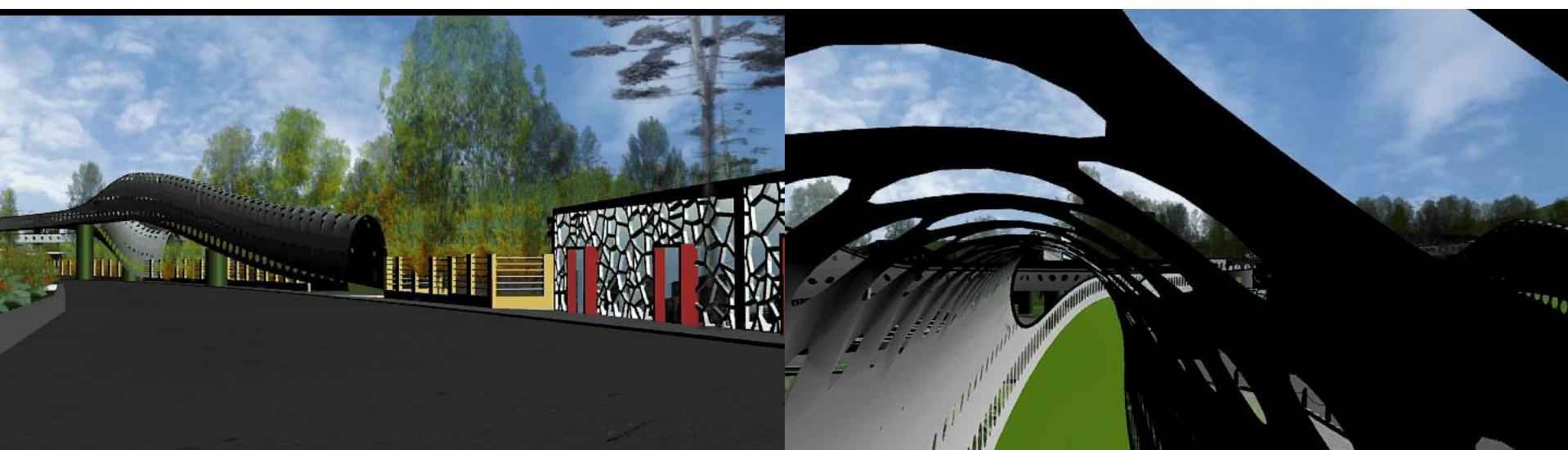
Mekelle Culture Park

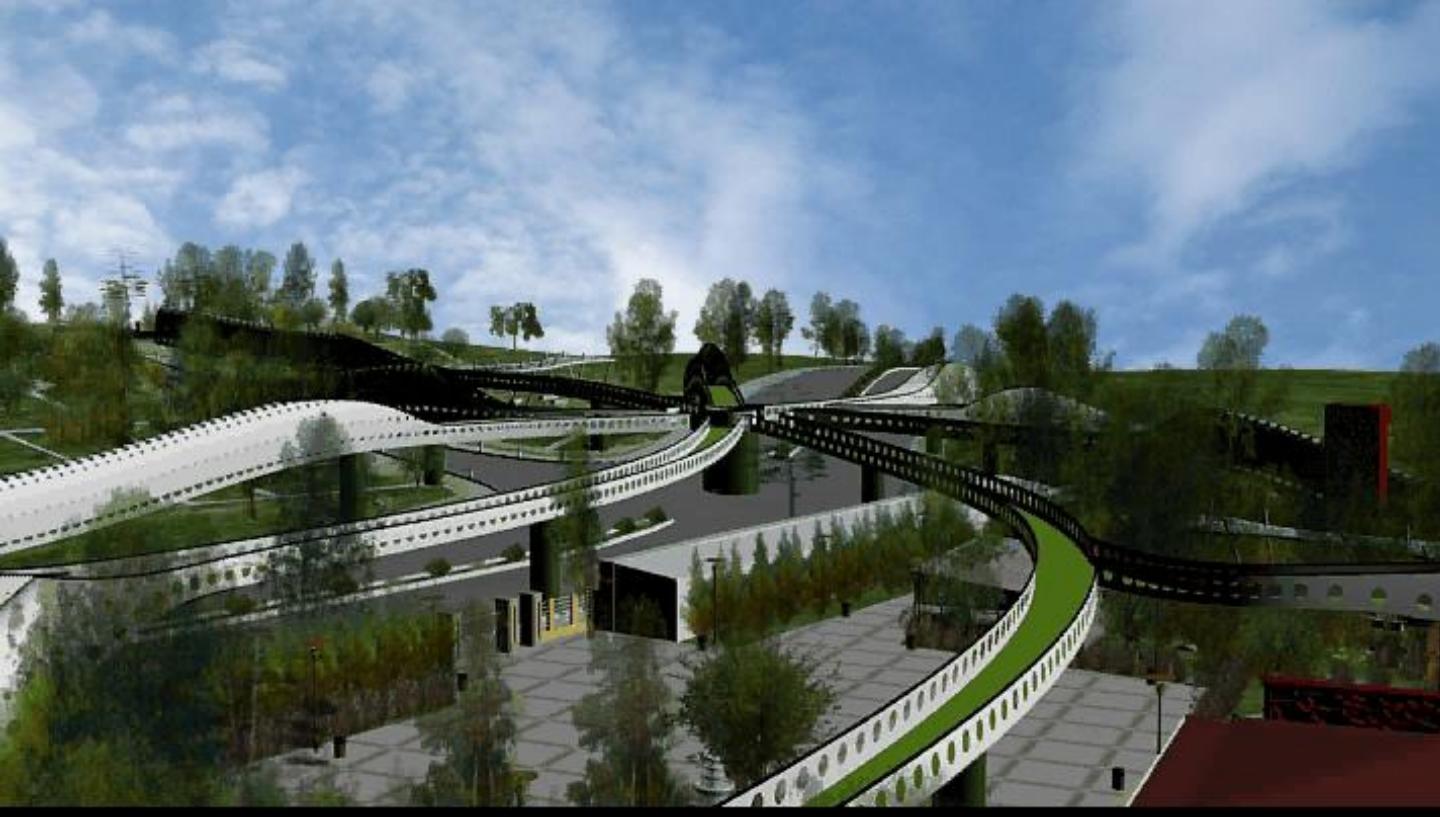




Crawl- Creeper

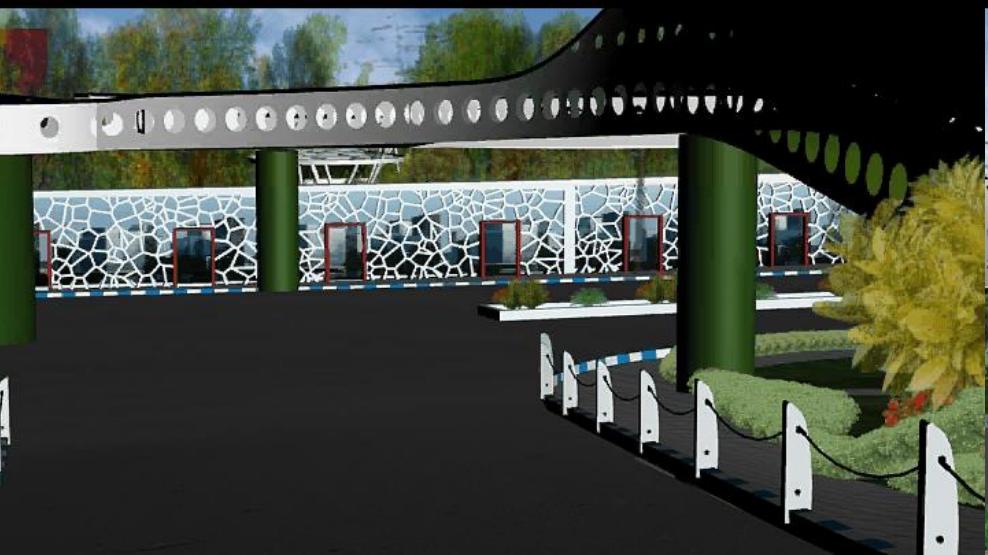
Mekelle Culture Park





Crawl- Creeper

Mekelle Culture Park





Stormwater

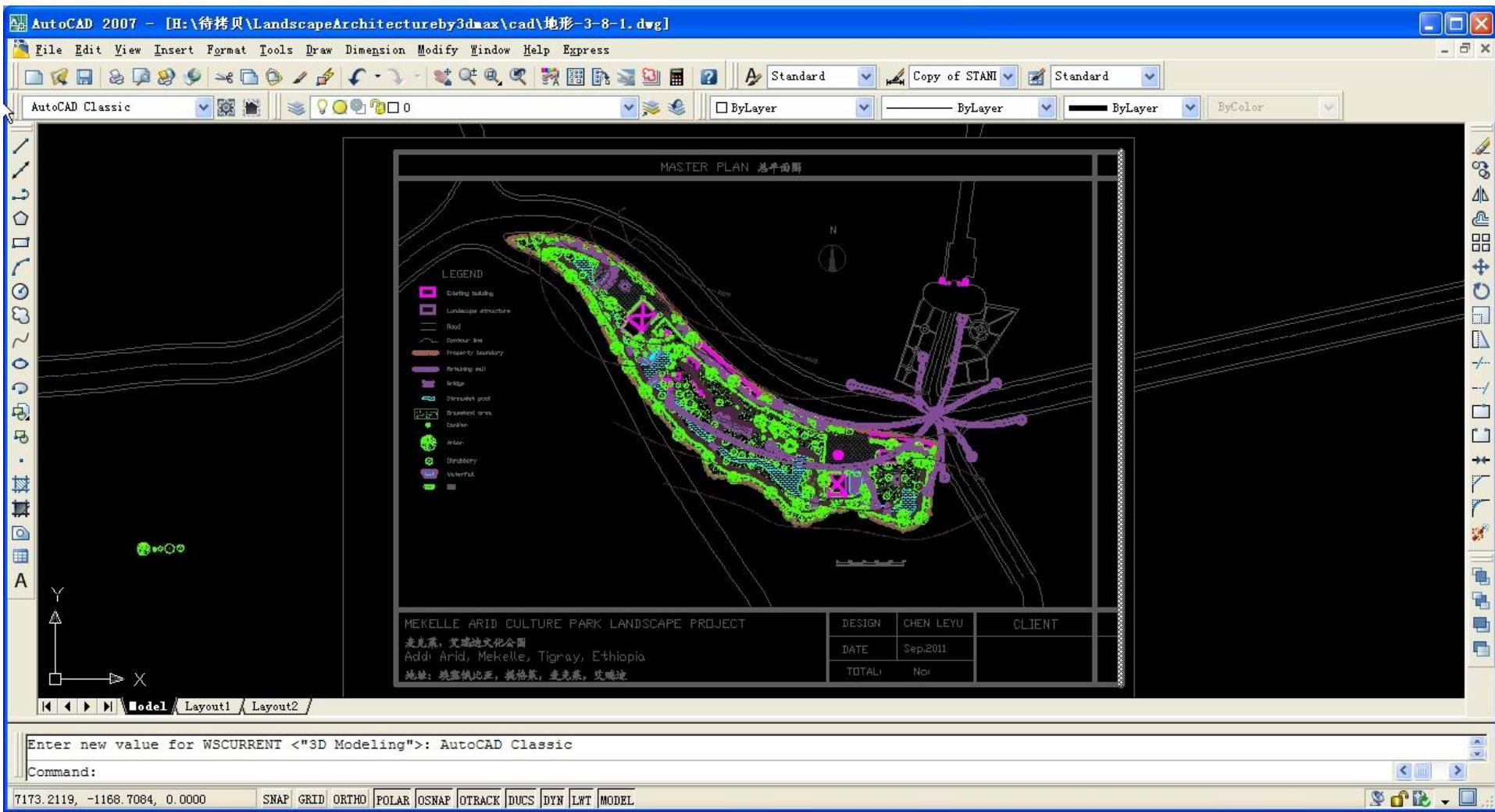
Mekelle Culture Park

3D model process

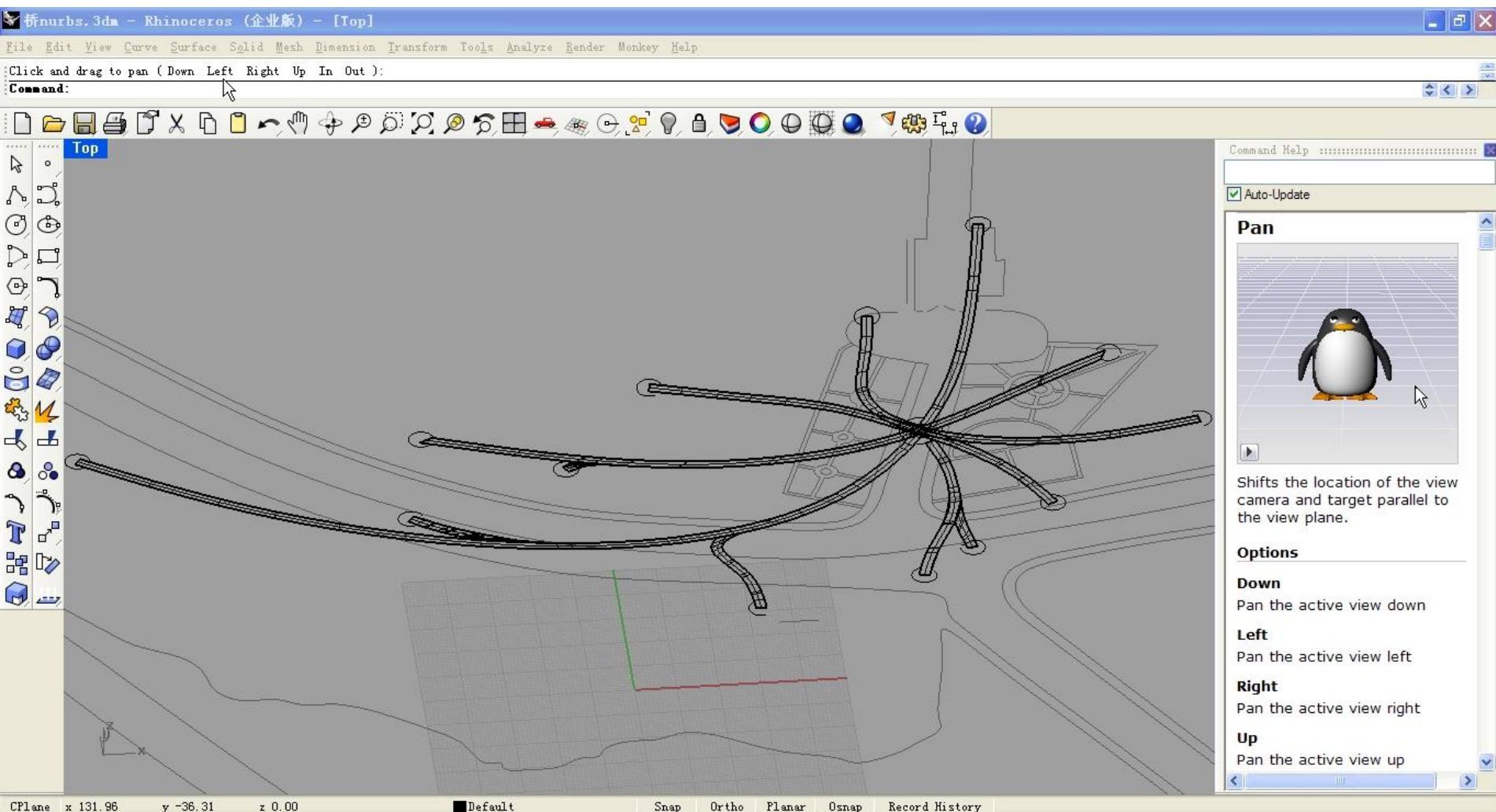
Bridge

*Auto CAD
Rhino
Grasshopper
3D MAX*

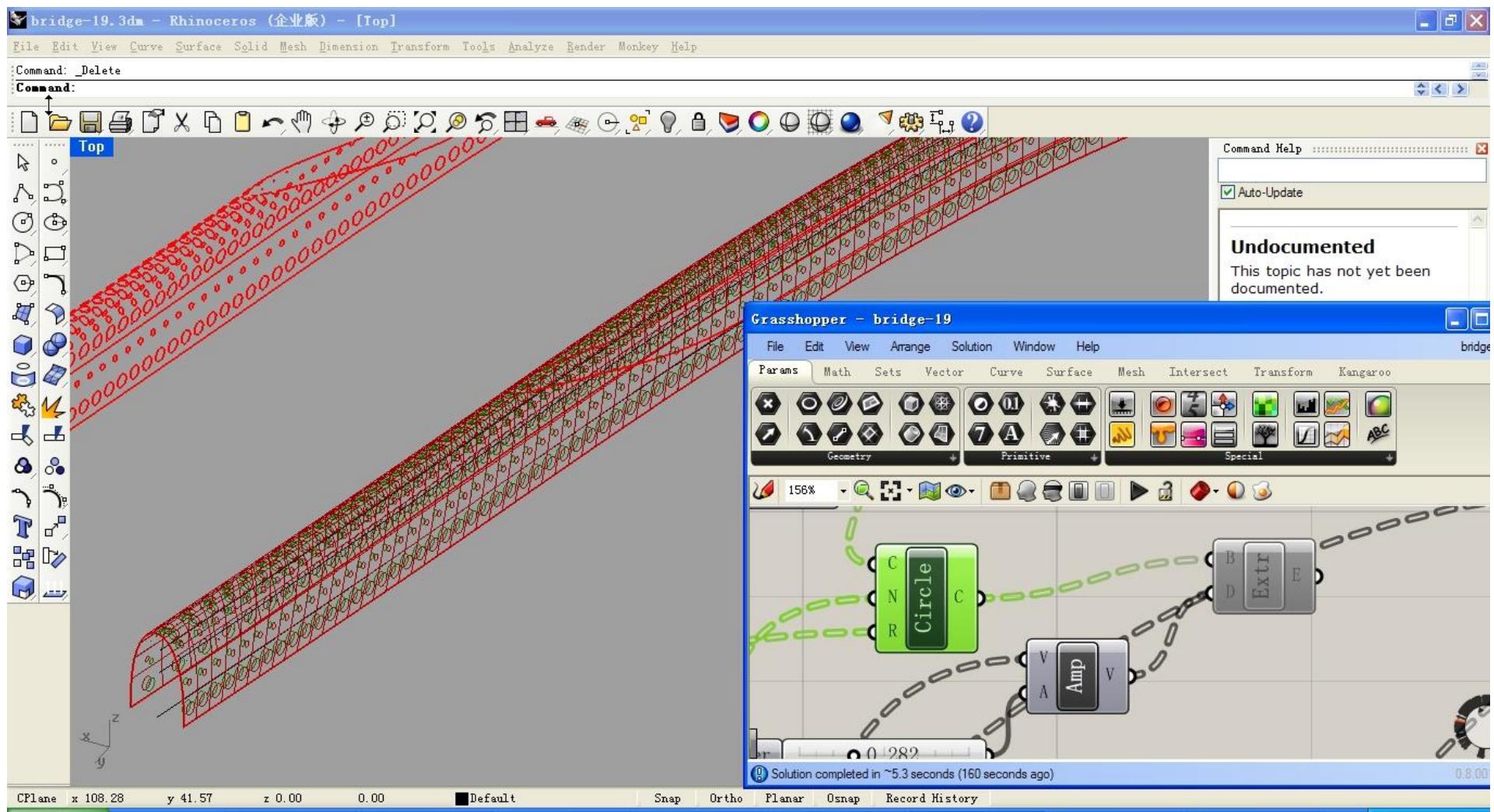
1. Prepare master plan in Auto cad



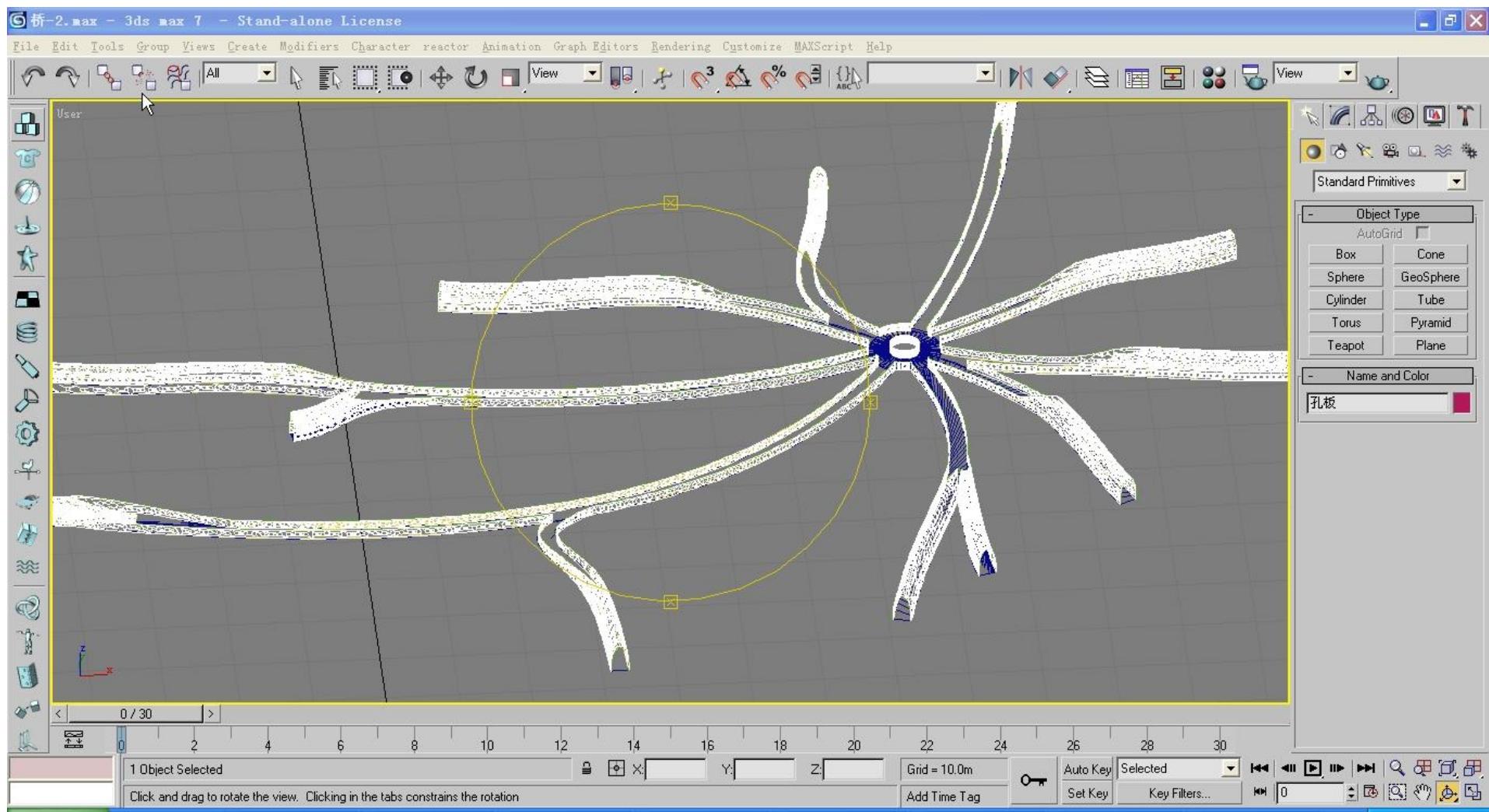
2. Import Auto cad file & Generate form in Rhino



3. Generate hand railing form in Grasshopper



4. Export to 3ds file & import to 3d Max



5. Rendering in 3d Max

3D model process



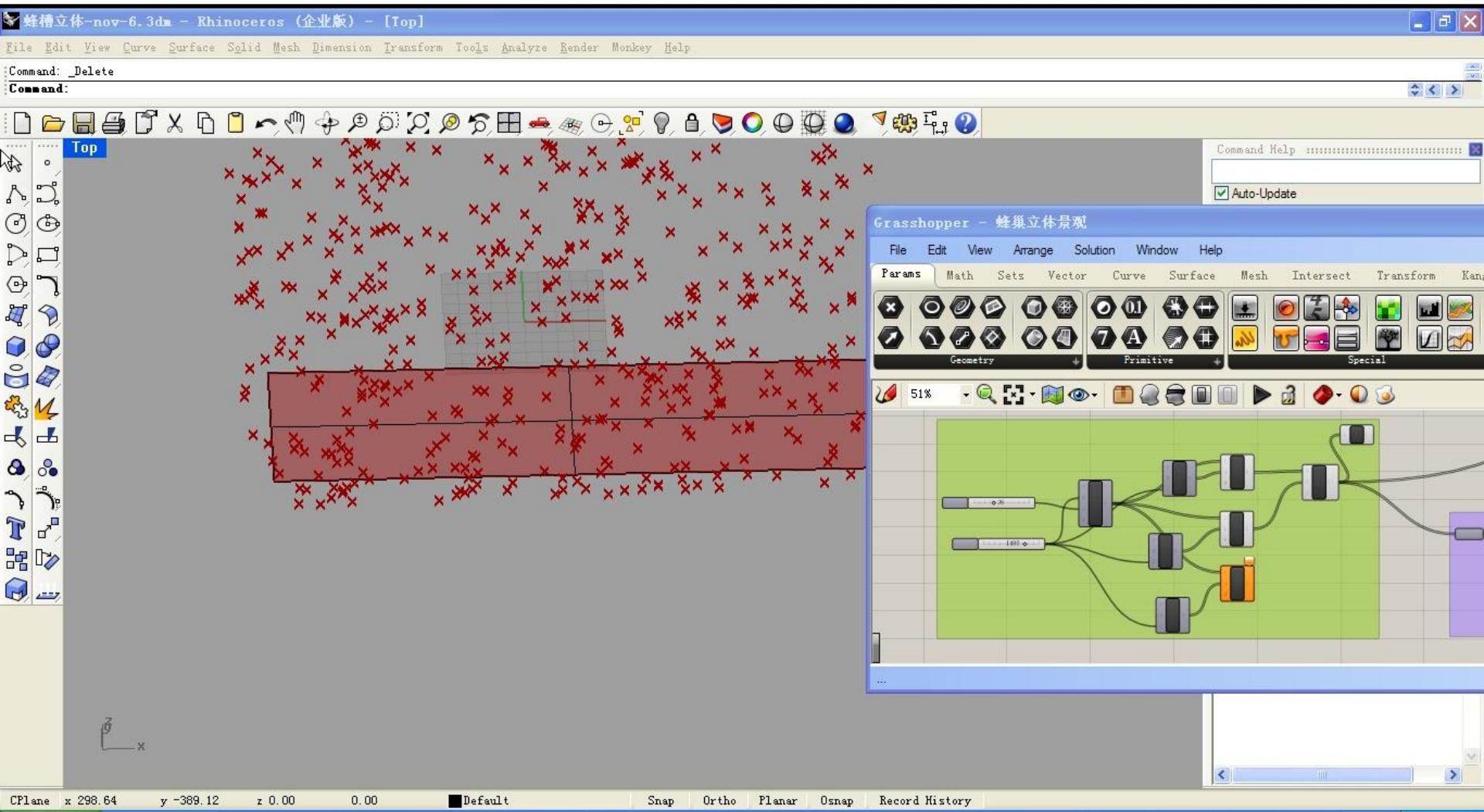
3D model process

Component

Rhino
Grasshopper
3D MAX

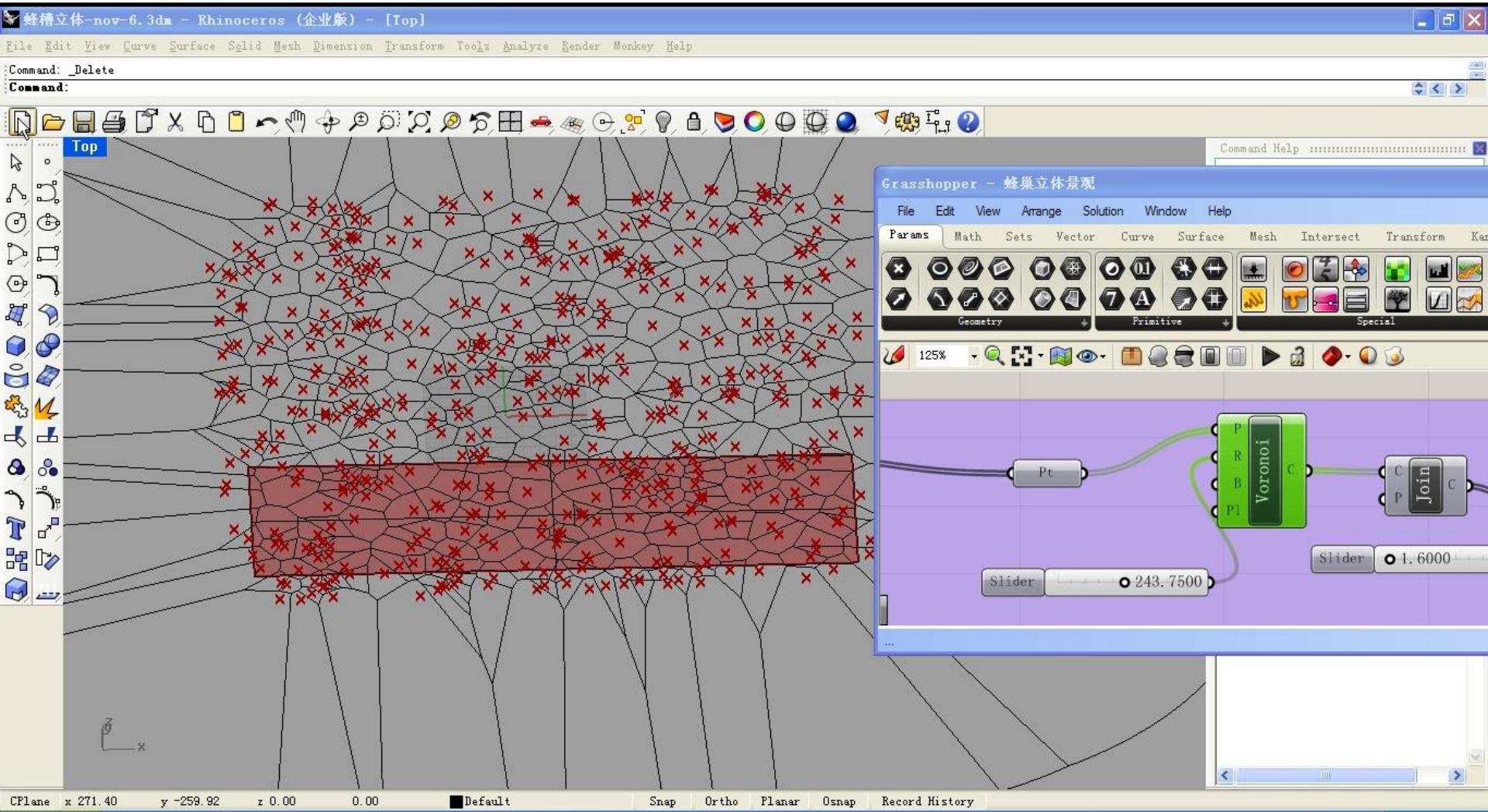
3D model process

1. Arrange random points in Grasshopper



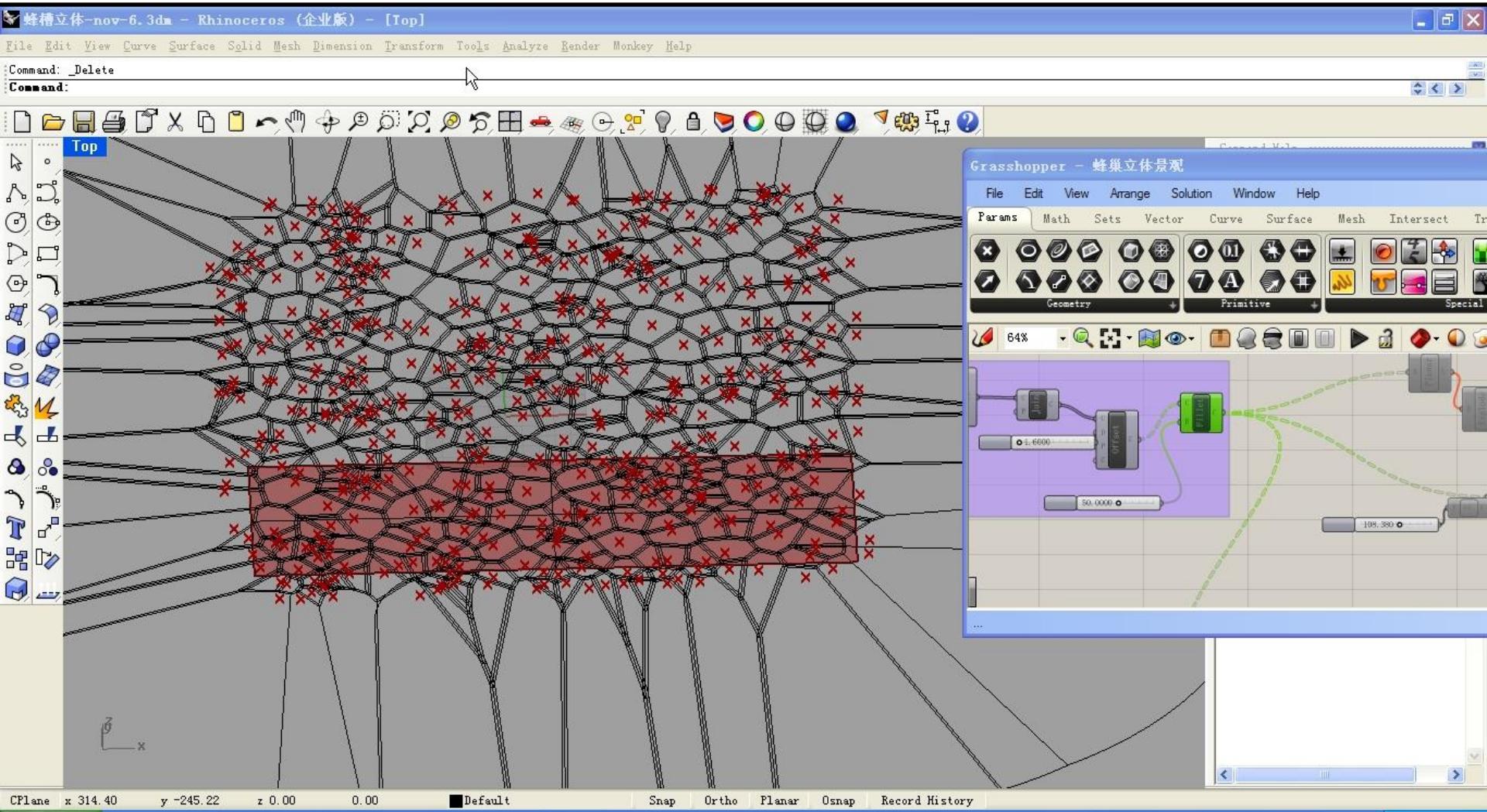
2. Generate comb form in Grasshopper

3D model process

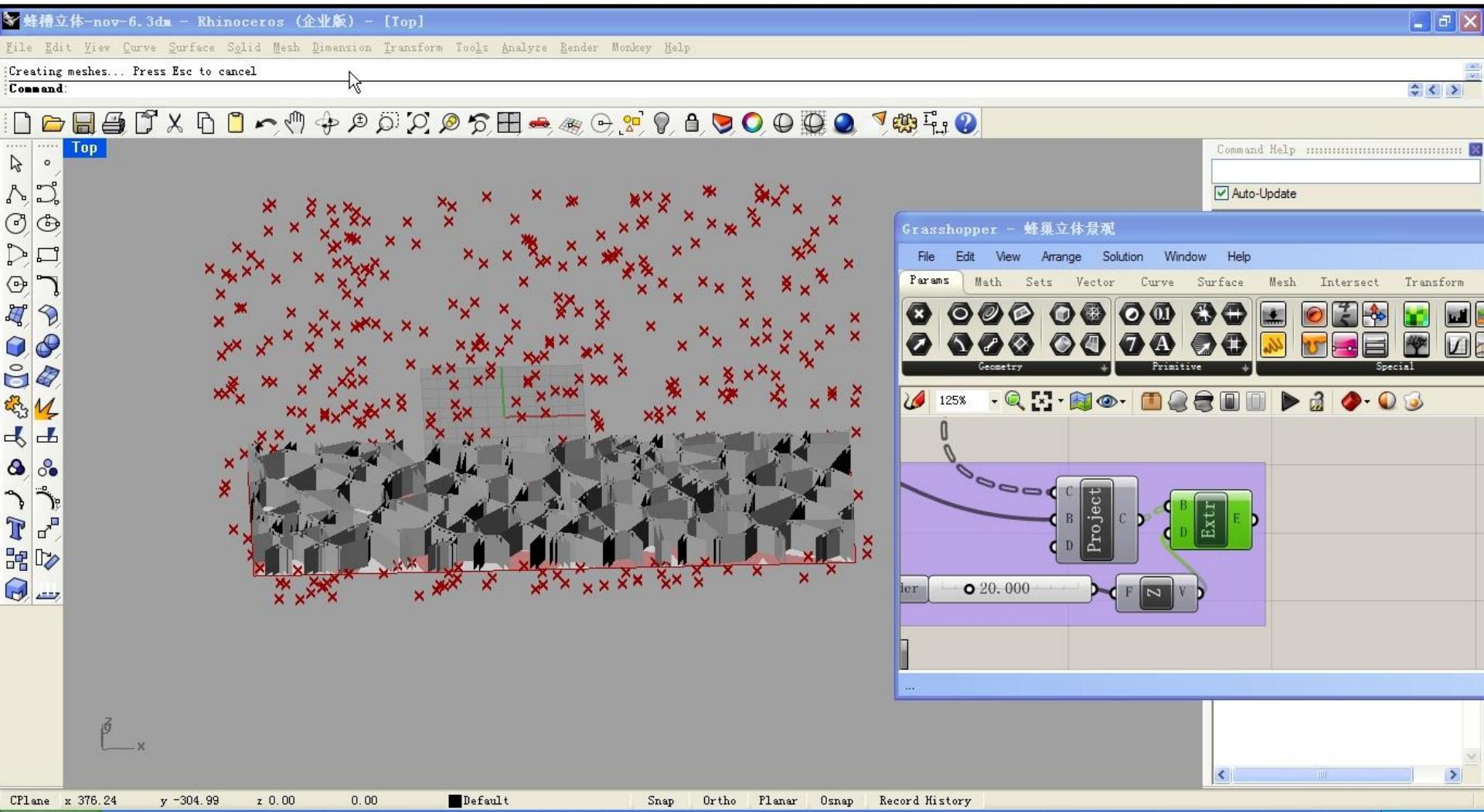


3. Offset line in Grasshopper

3D model process

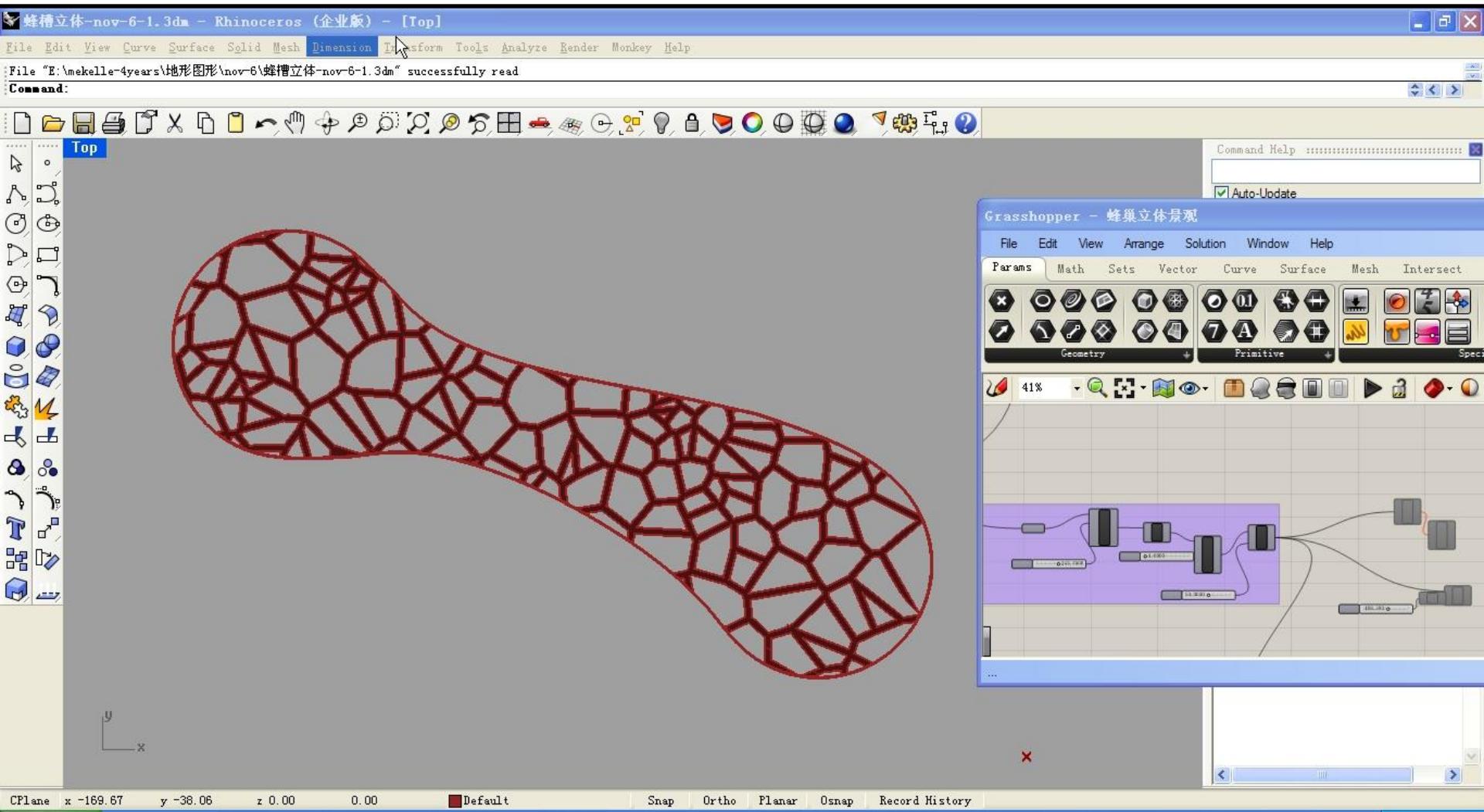


4. Extrude line in Grasshopper



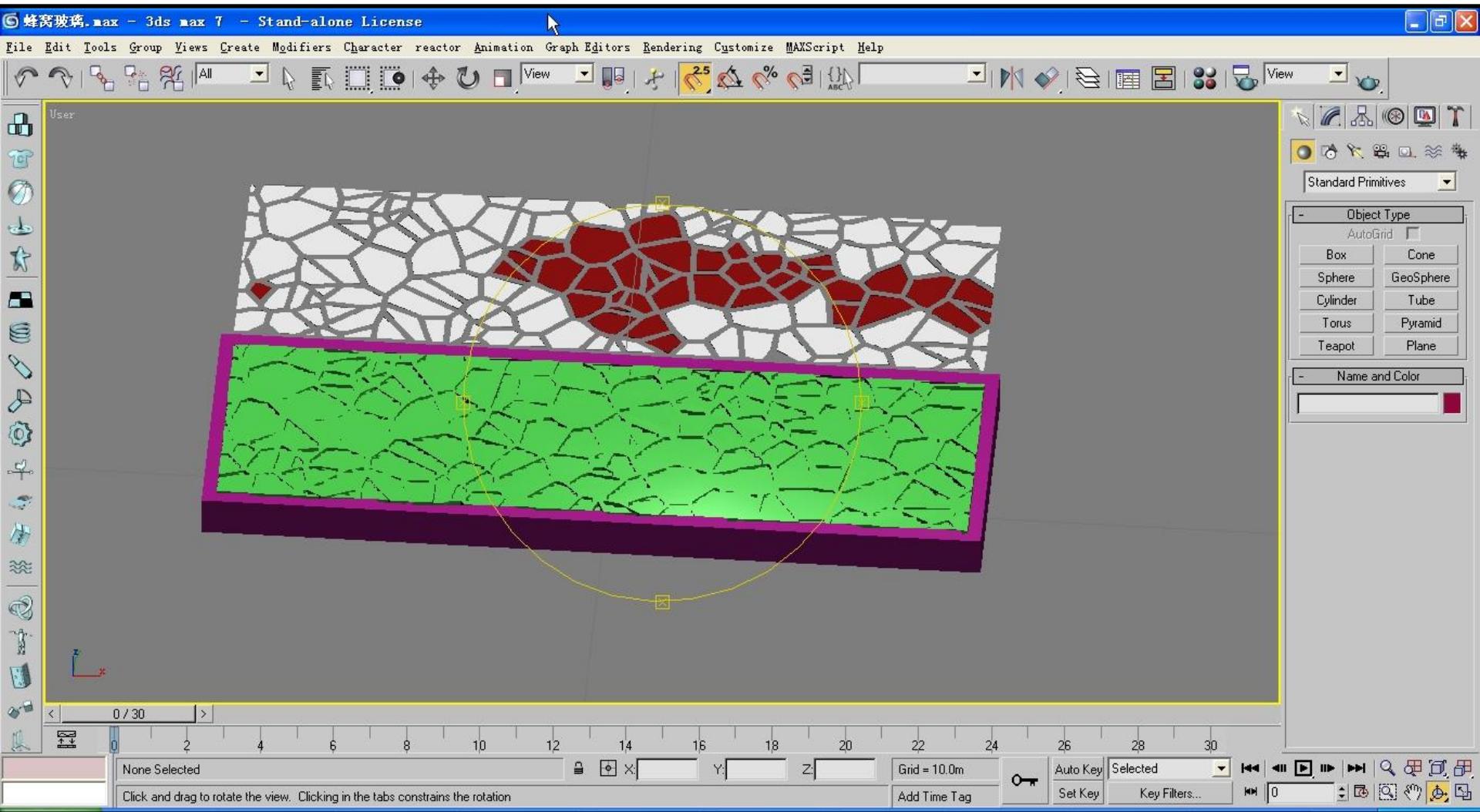
5. Trim the form in rhino

3D model process



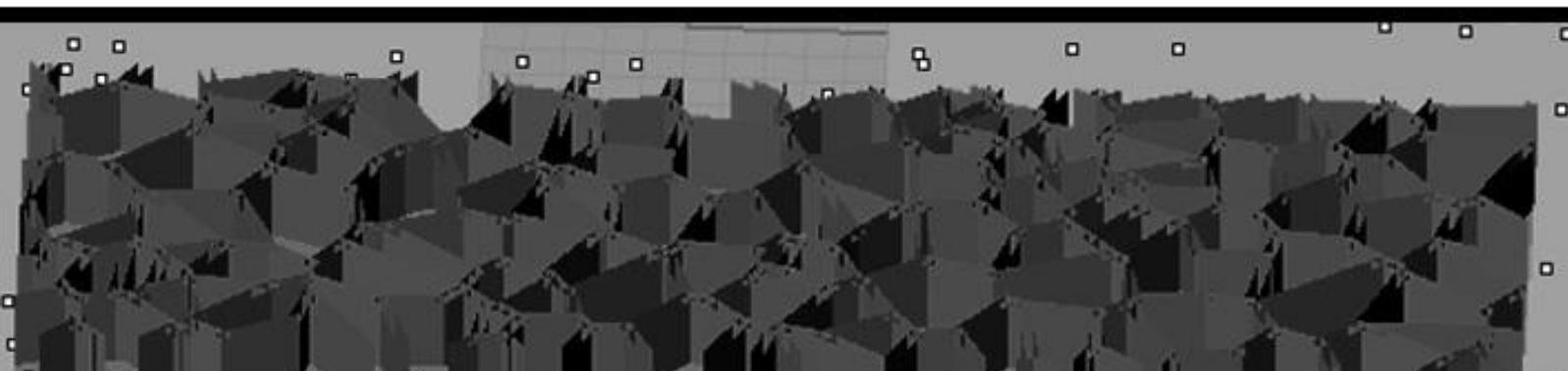
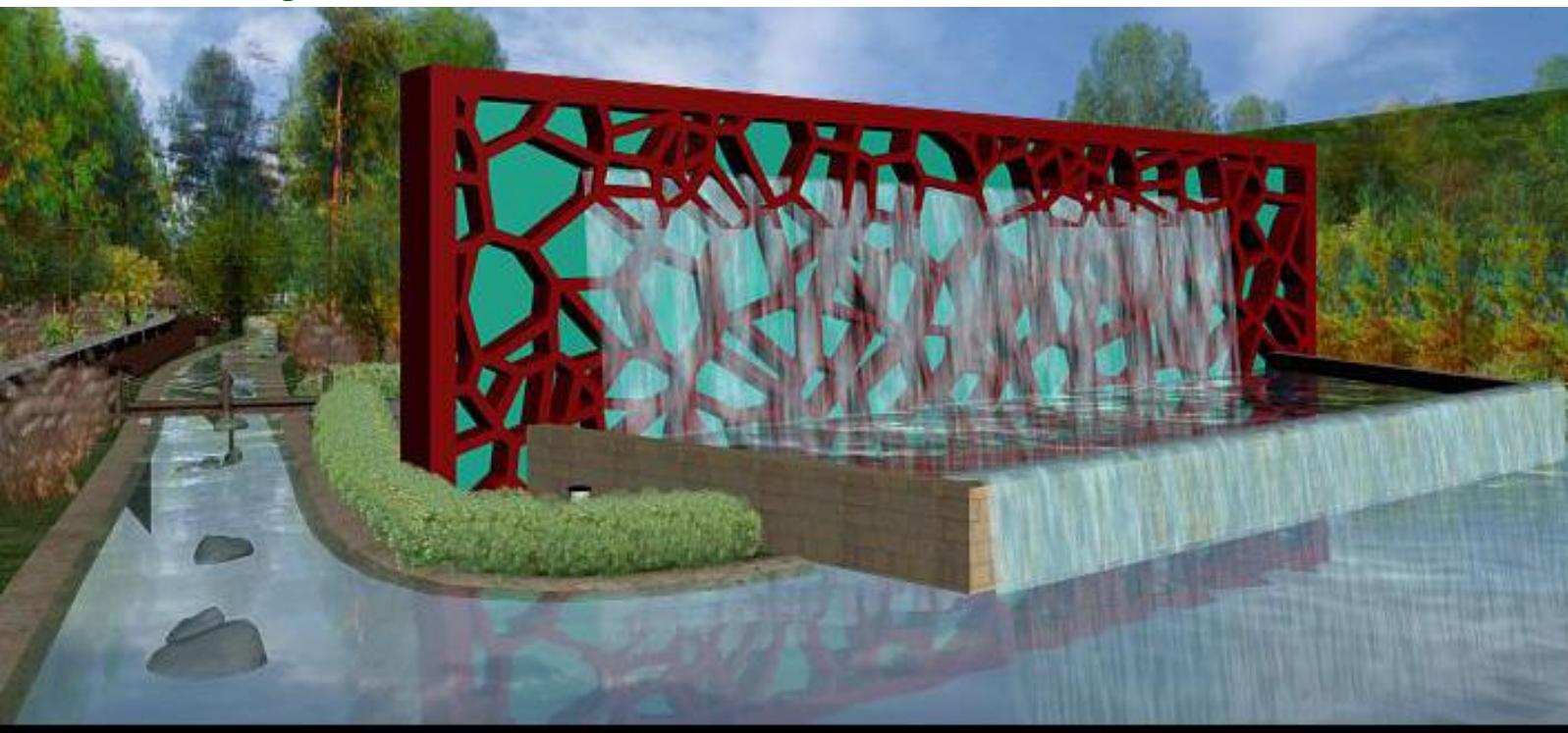
6. Export to 3ds file & import to 3d Max

3D model process



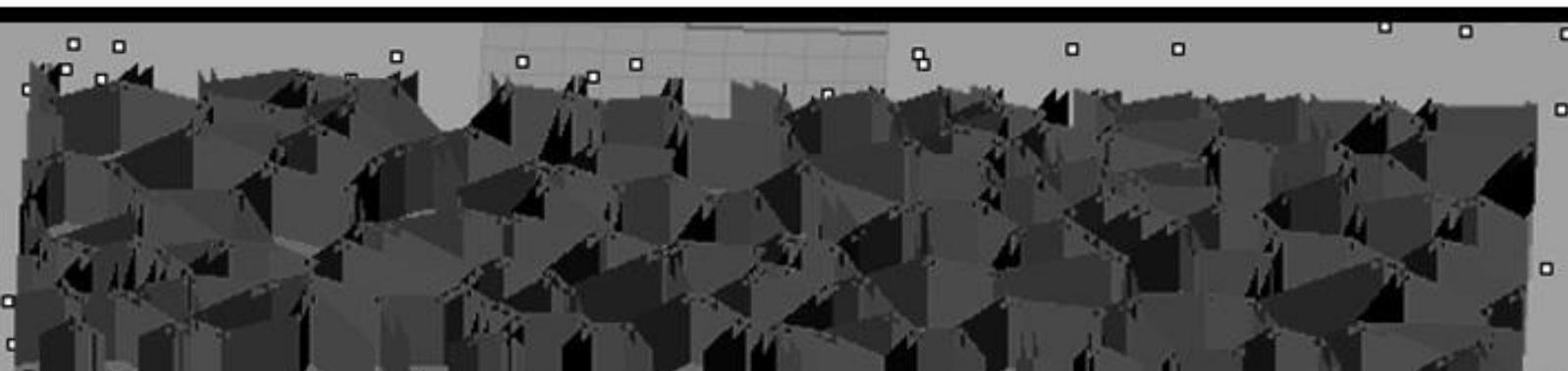
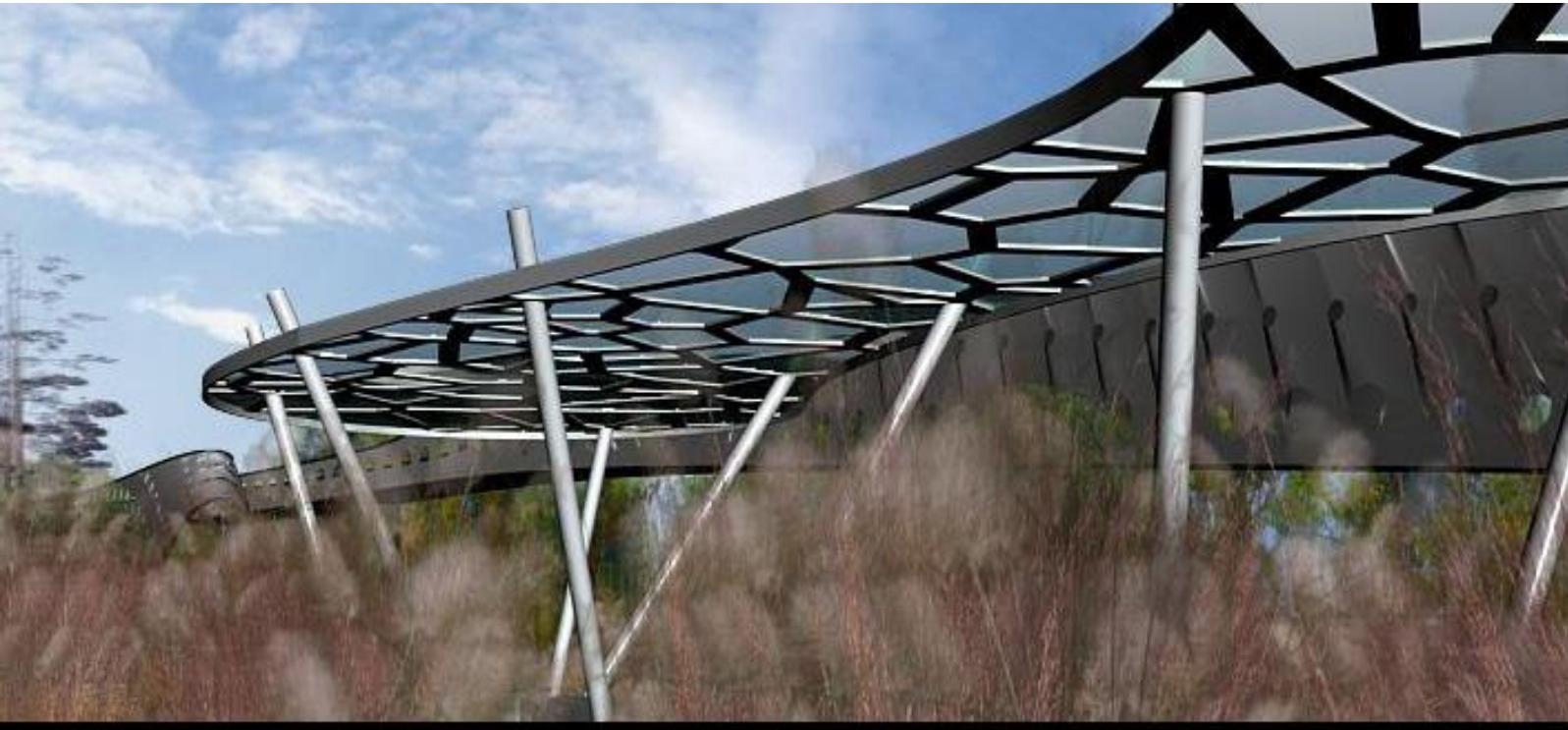
7. Rendering in 3d Max-1

3D model process



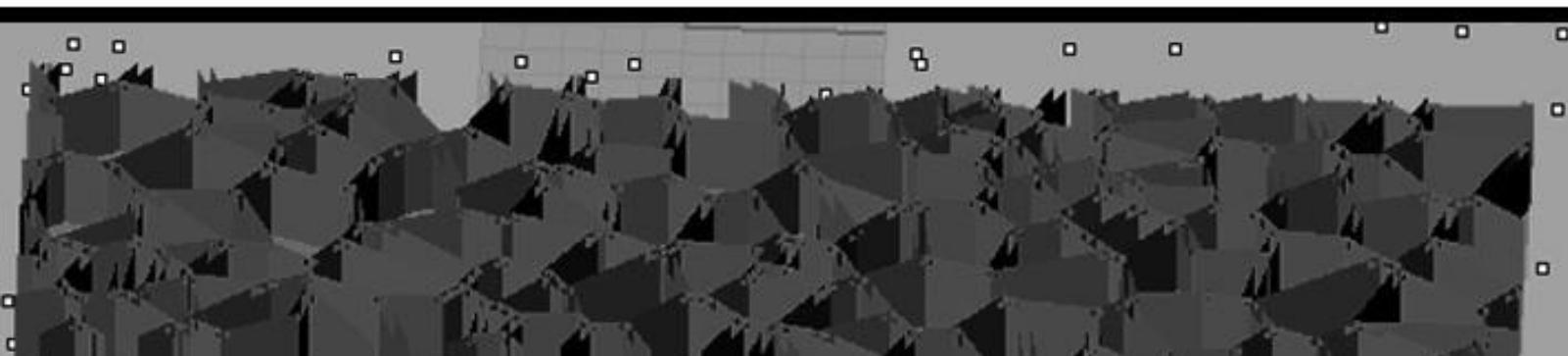
7. Rendering in 3d Max-2

3D model process



7. Rendering in 3d Max-3

3D model process

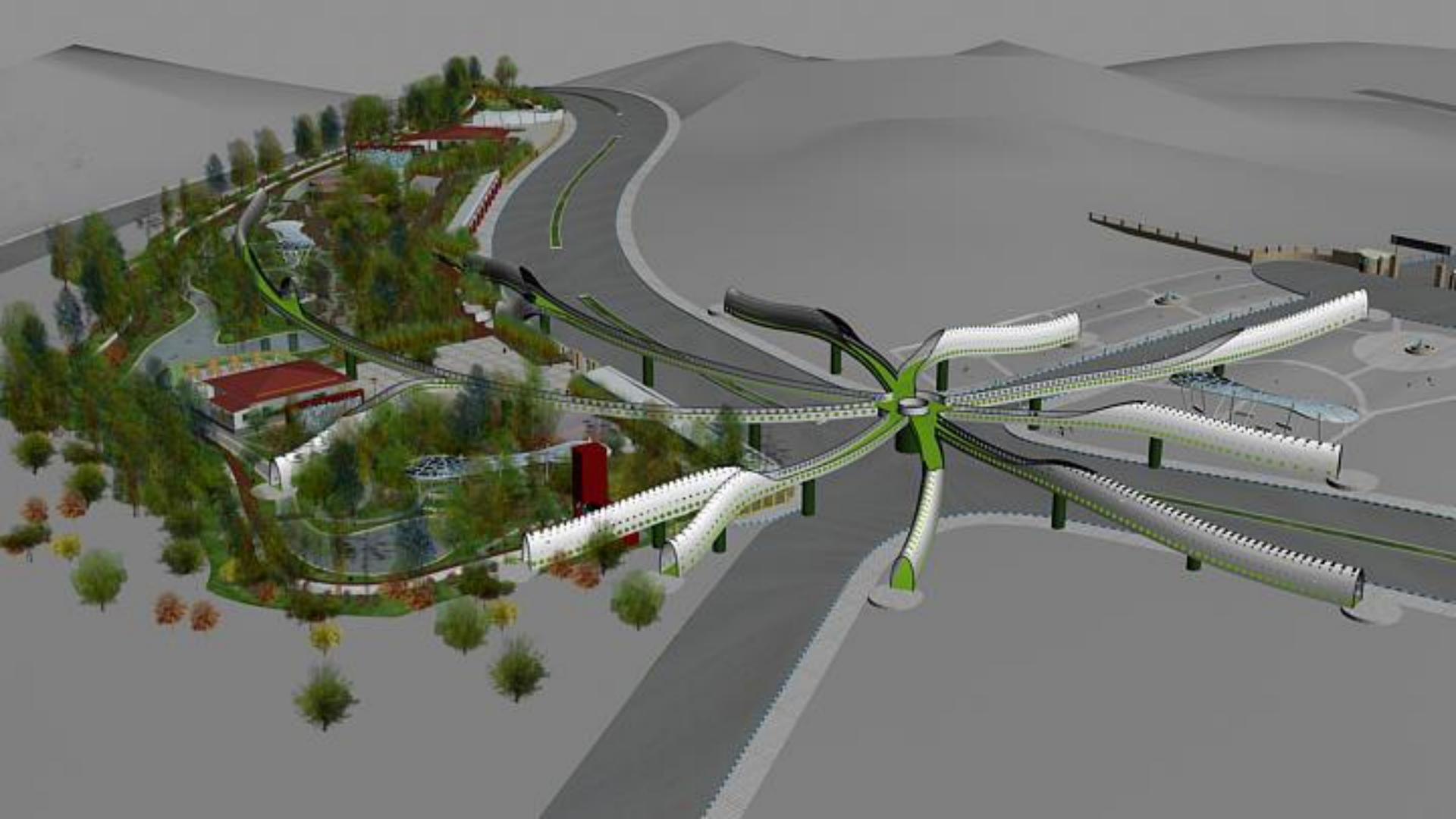


Achievement

Perspective

Mekelle Culture Park





Perspective

Mekelle Culture Park

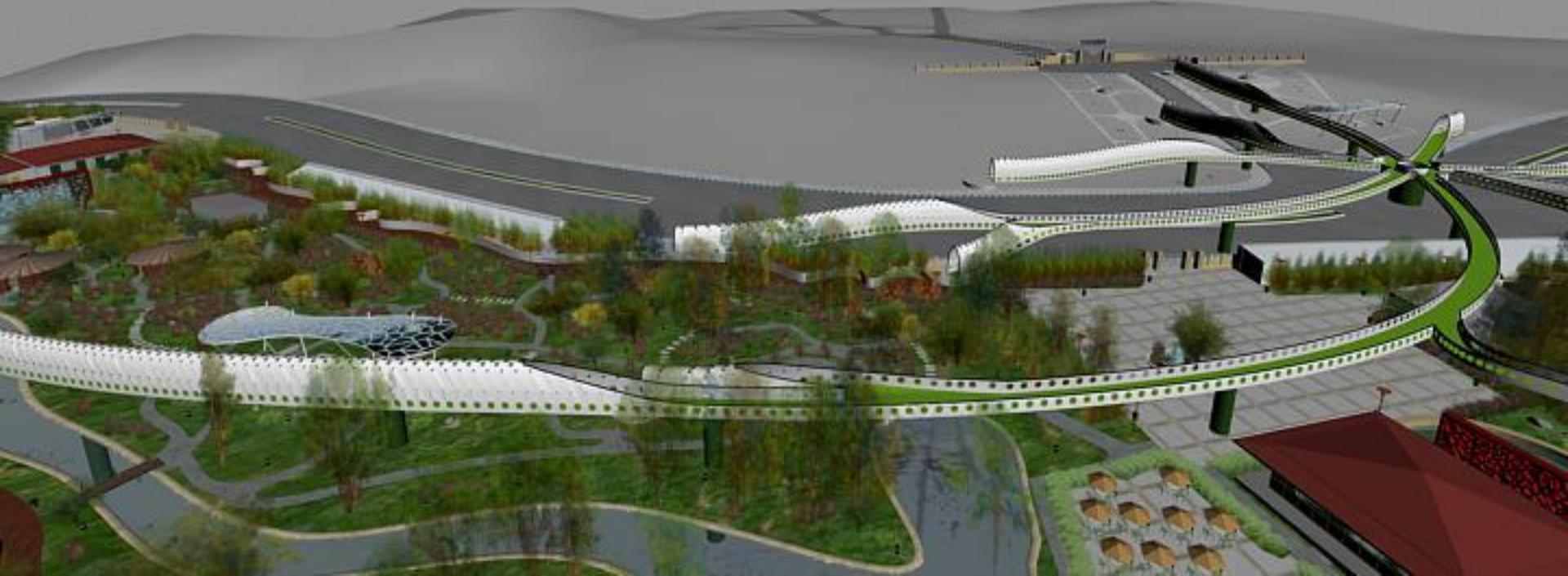
Perspective

Mekelle Culture Park



Perspective

Mekelle Culture Park





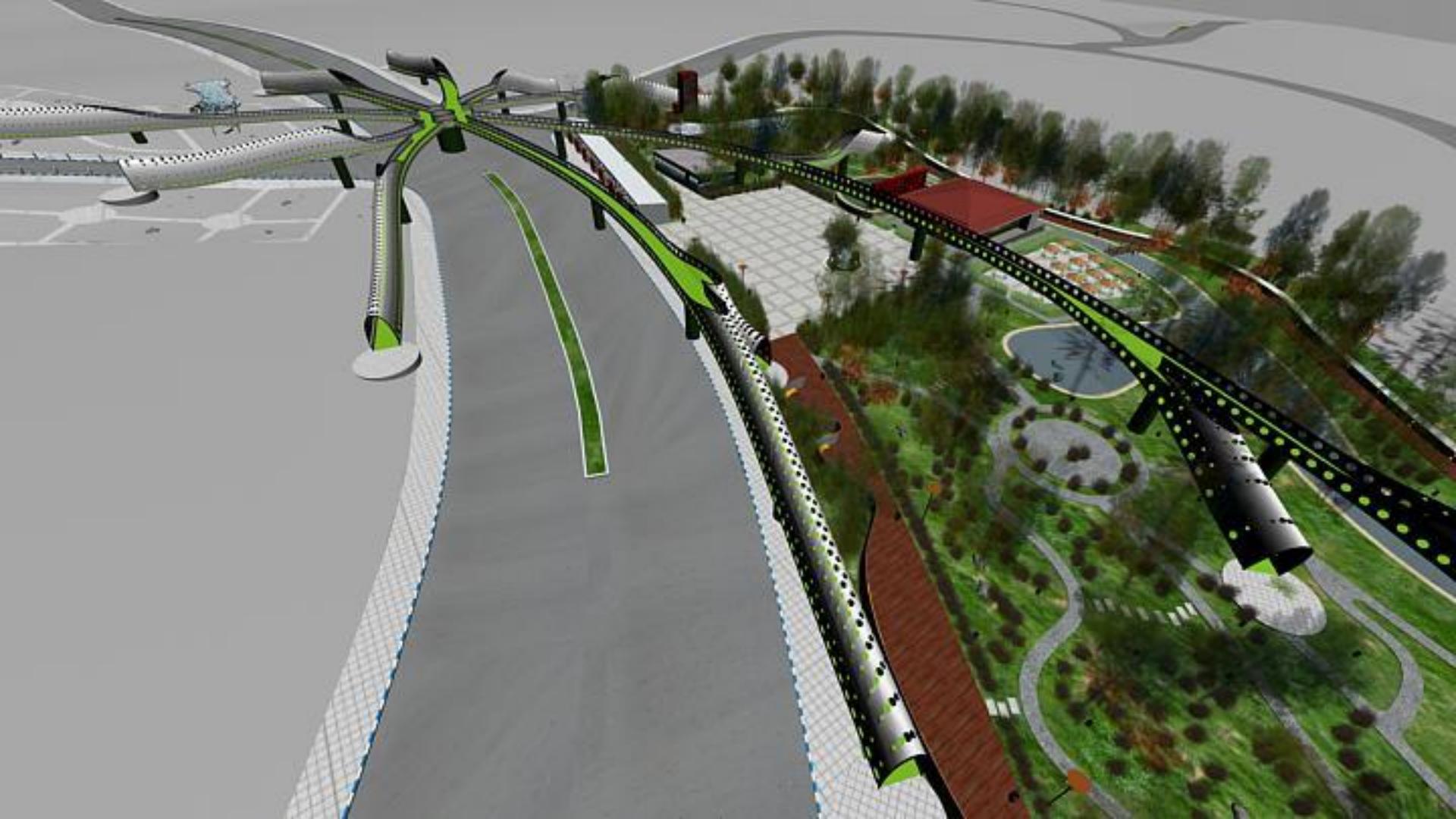
Perspective

Mekelle Culture Park

Perspective

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Perspective

Mekelle Culture Park

Perspective

Mekelle Culture Park



Perspective

Mekelle Culture Park





Perspective

Mekelle Culture Park

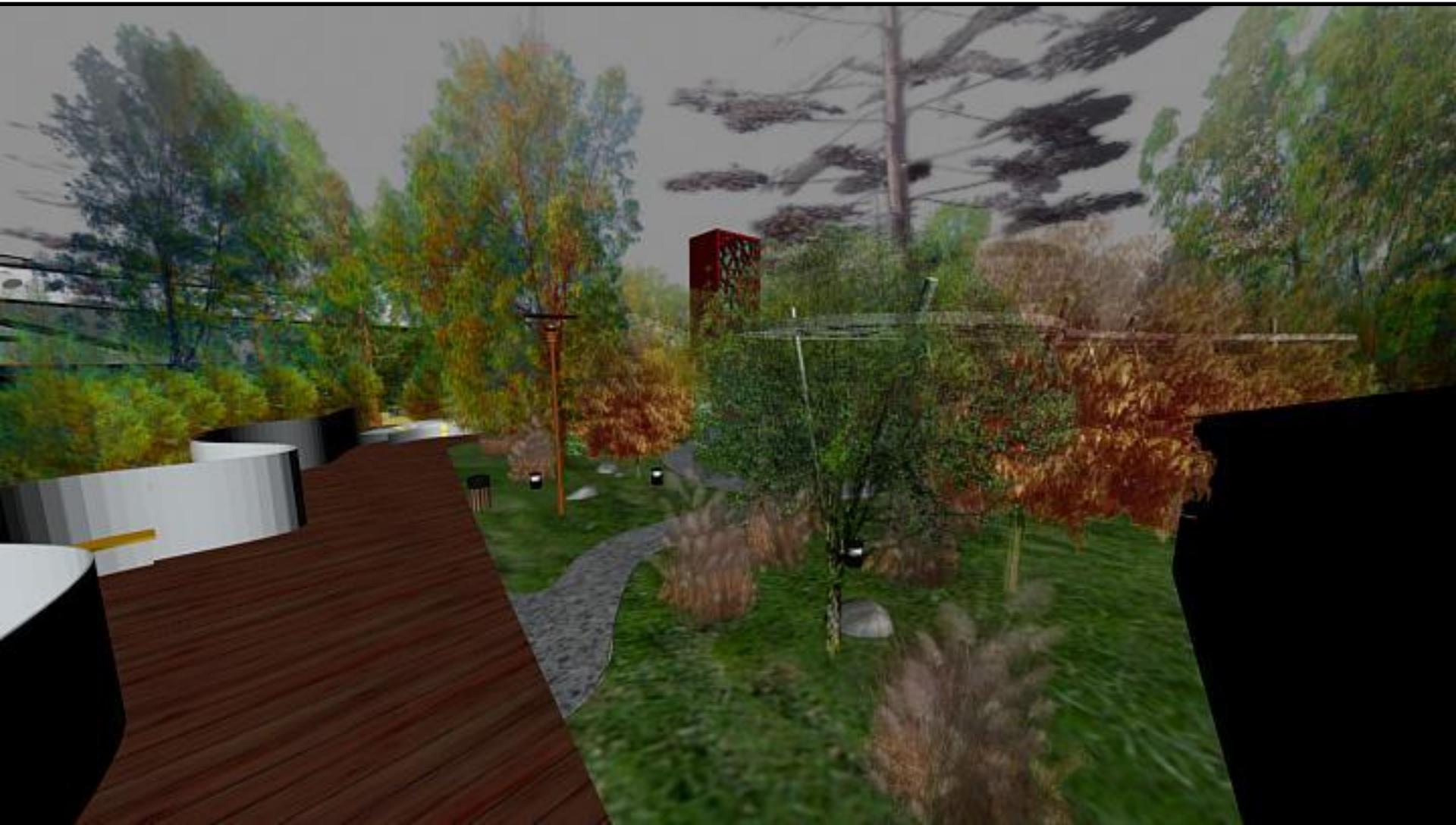


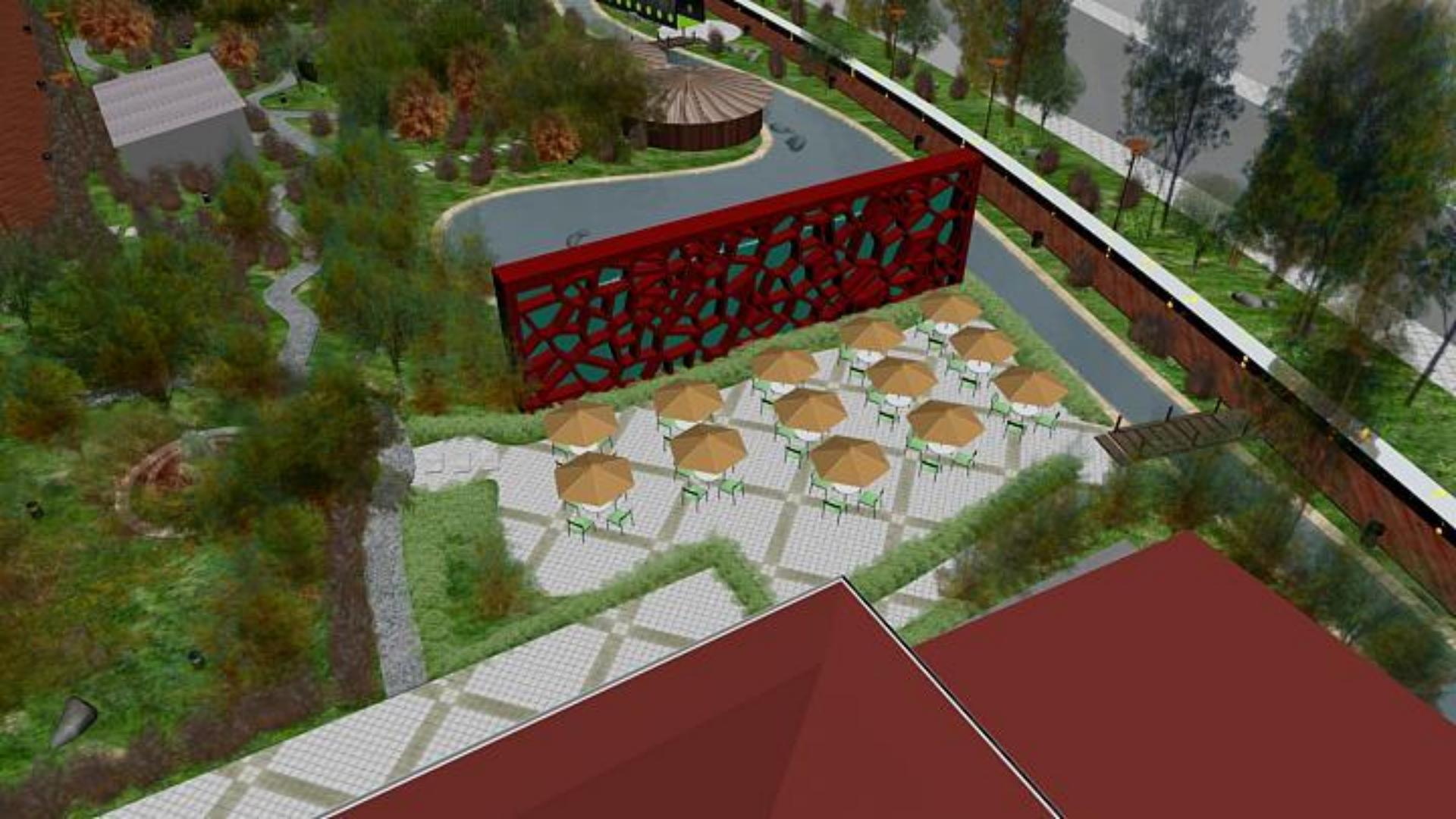
Perspective

Mekelle Culture Park

Perspective

Mekelle Culture Park





Perspective

Mekelle Culture Park



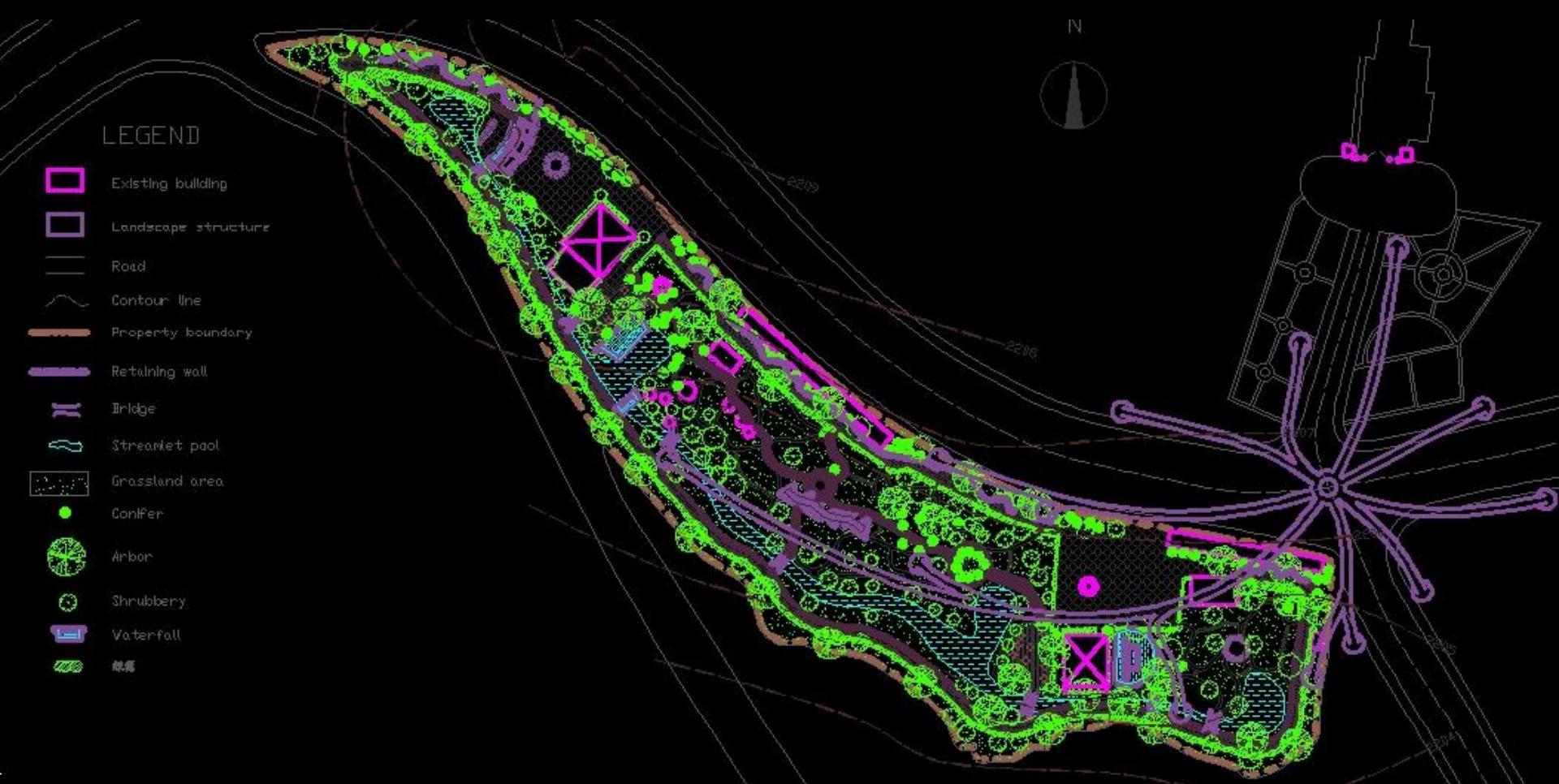
Perspective

Mekelle Culture Park

Perspective

Mekelle Culture Park



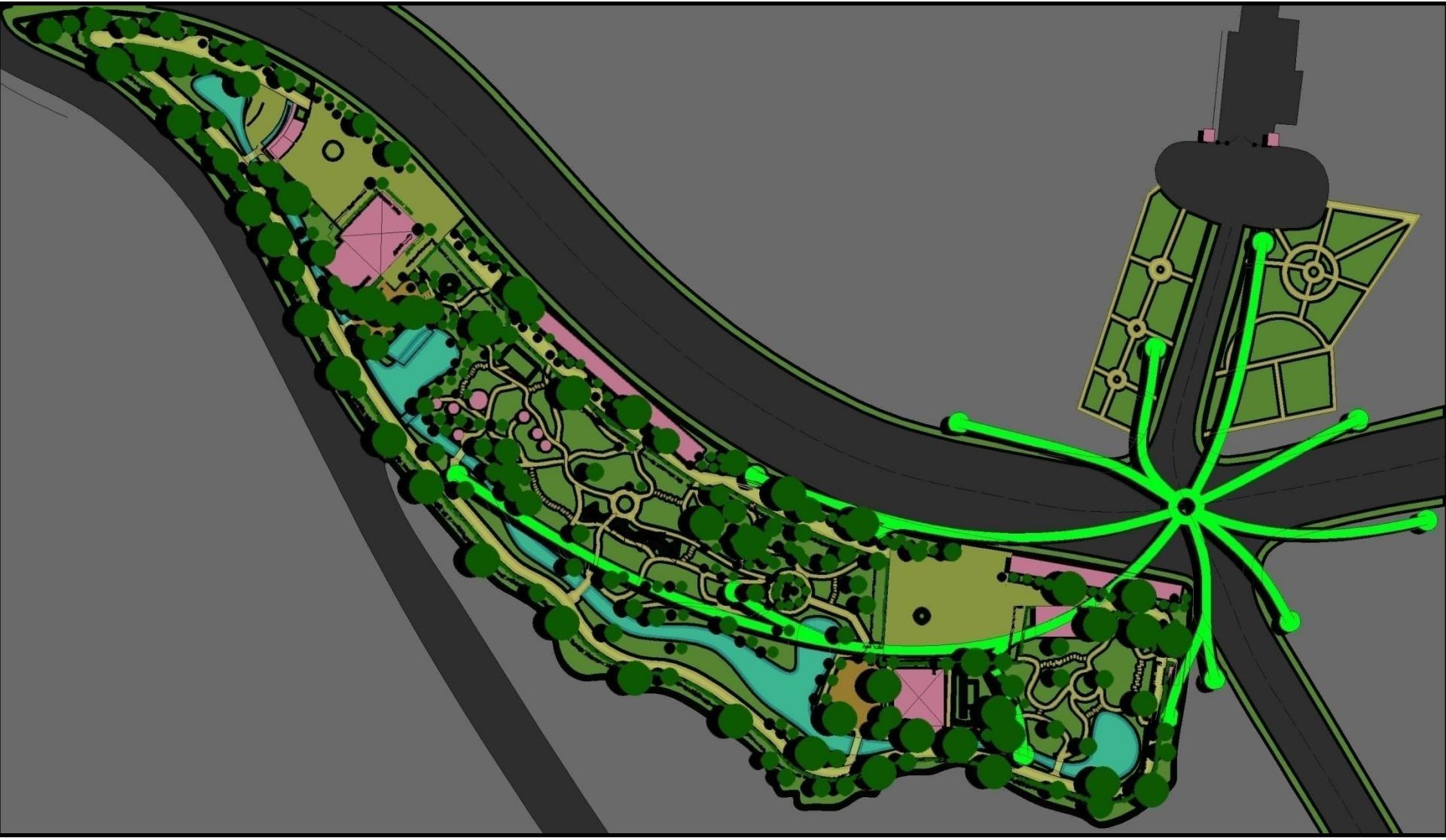


Masterplan

Mekelle Culture Park

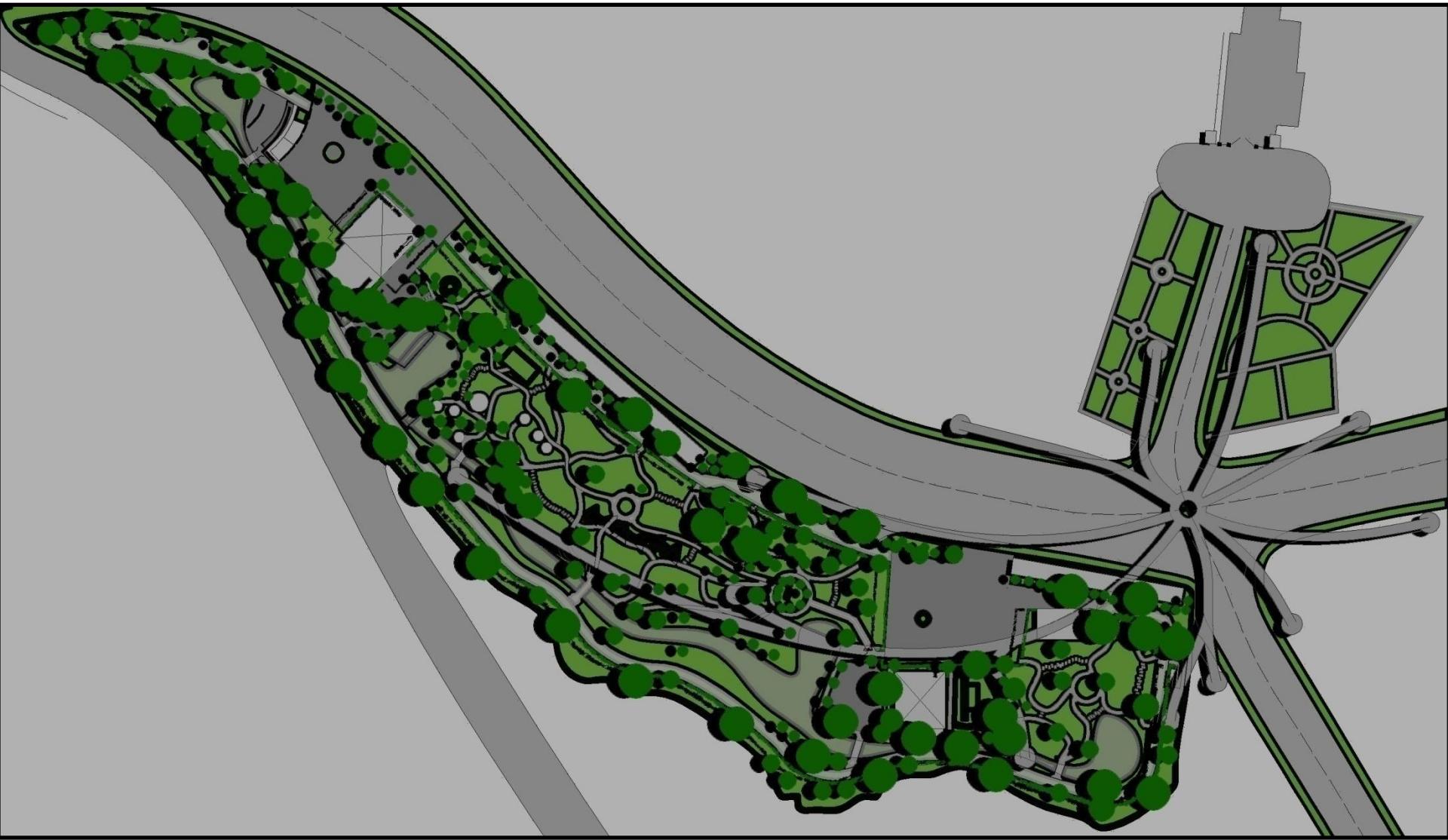
Masterplan

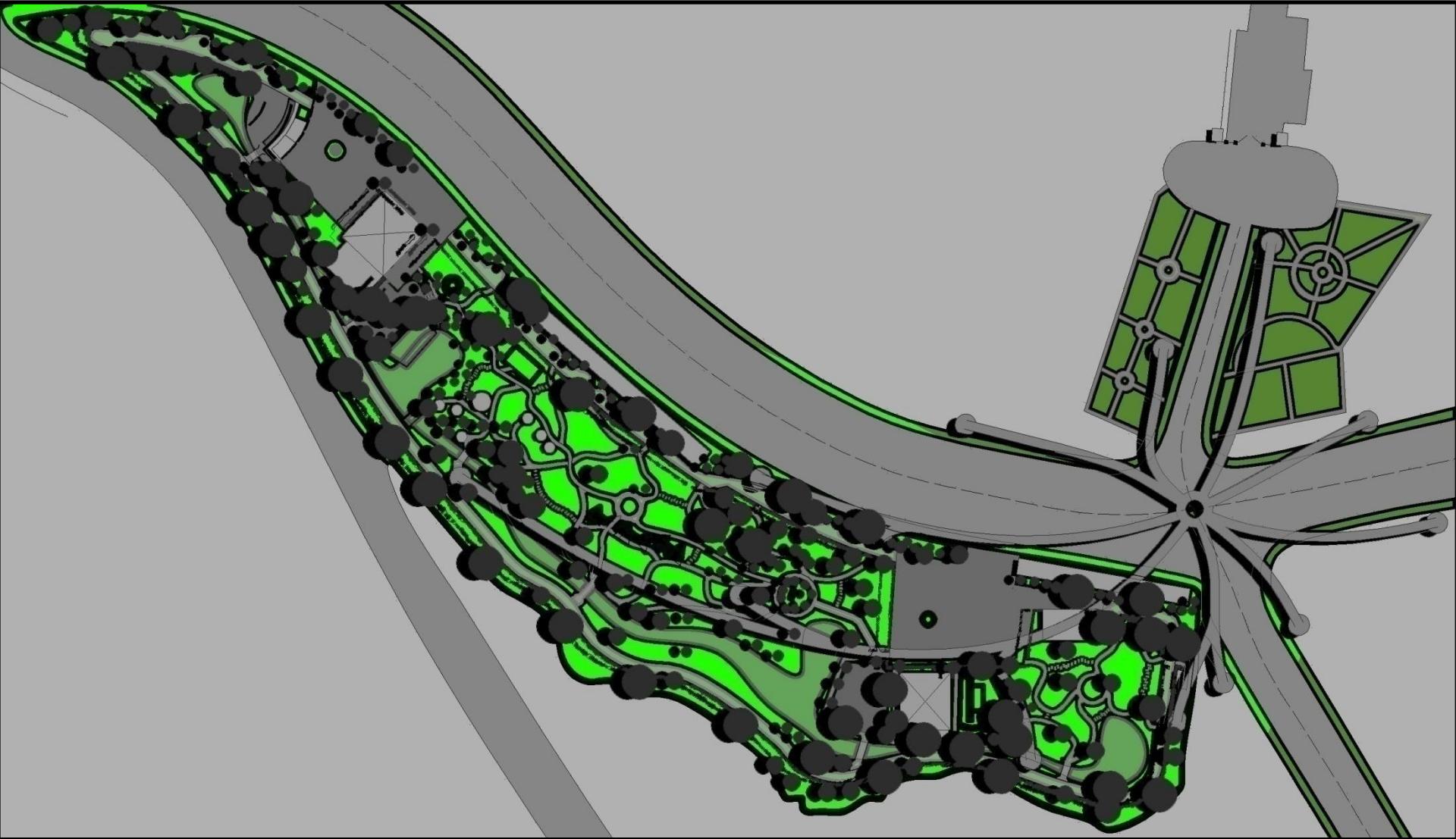
Mekelle Culture Park



Trees

Mekelle Culture Park



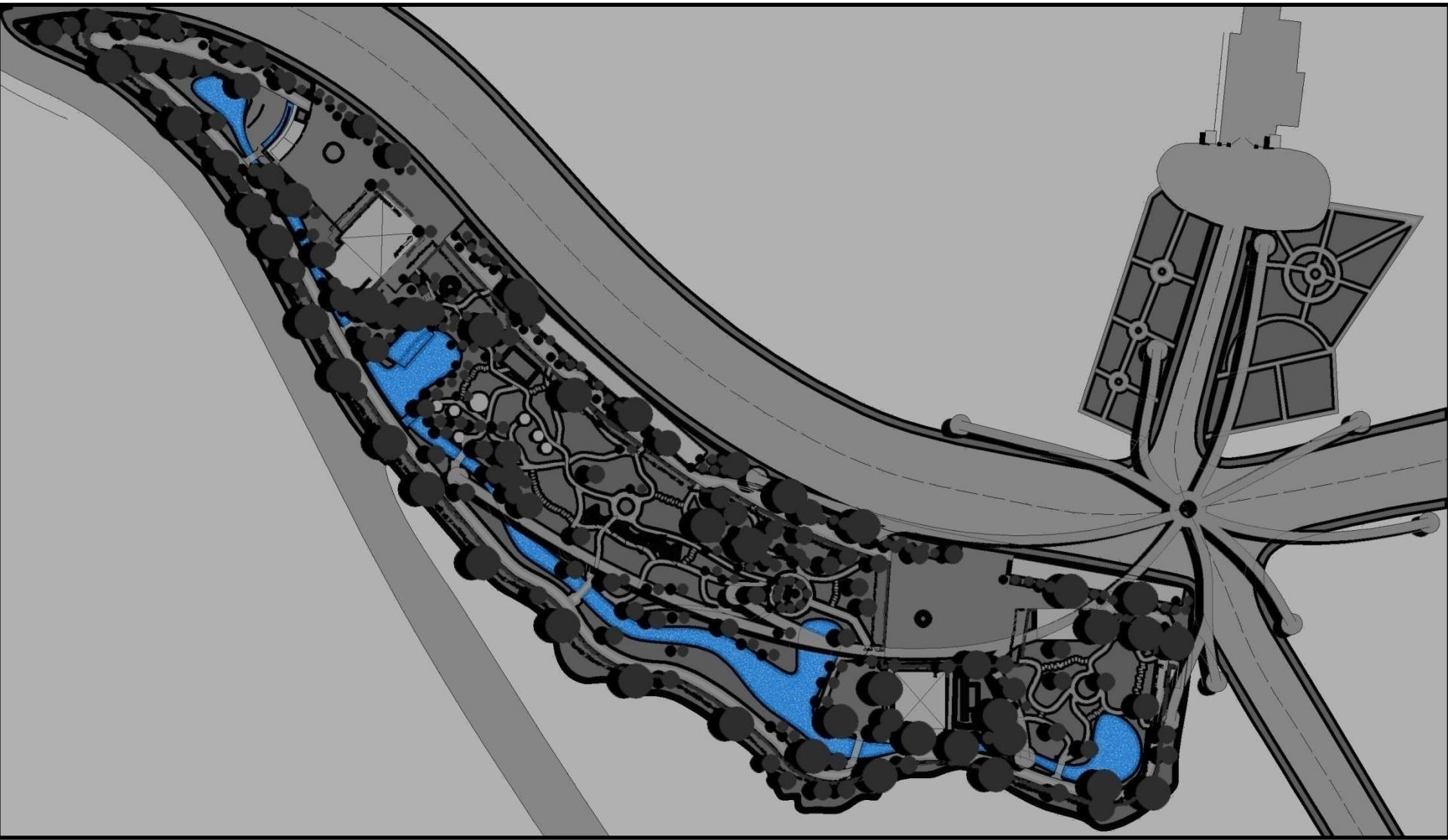


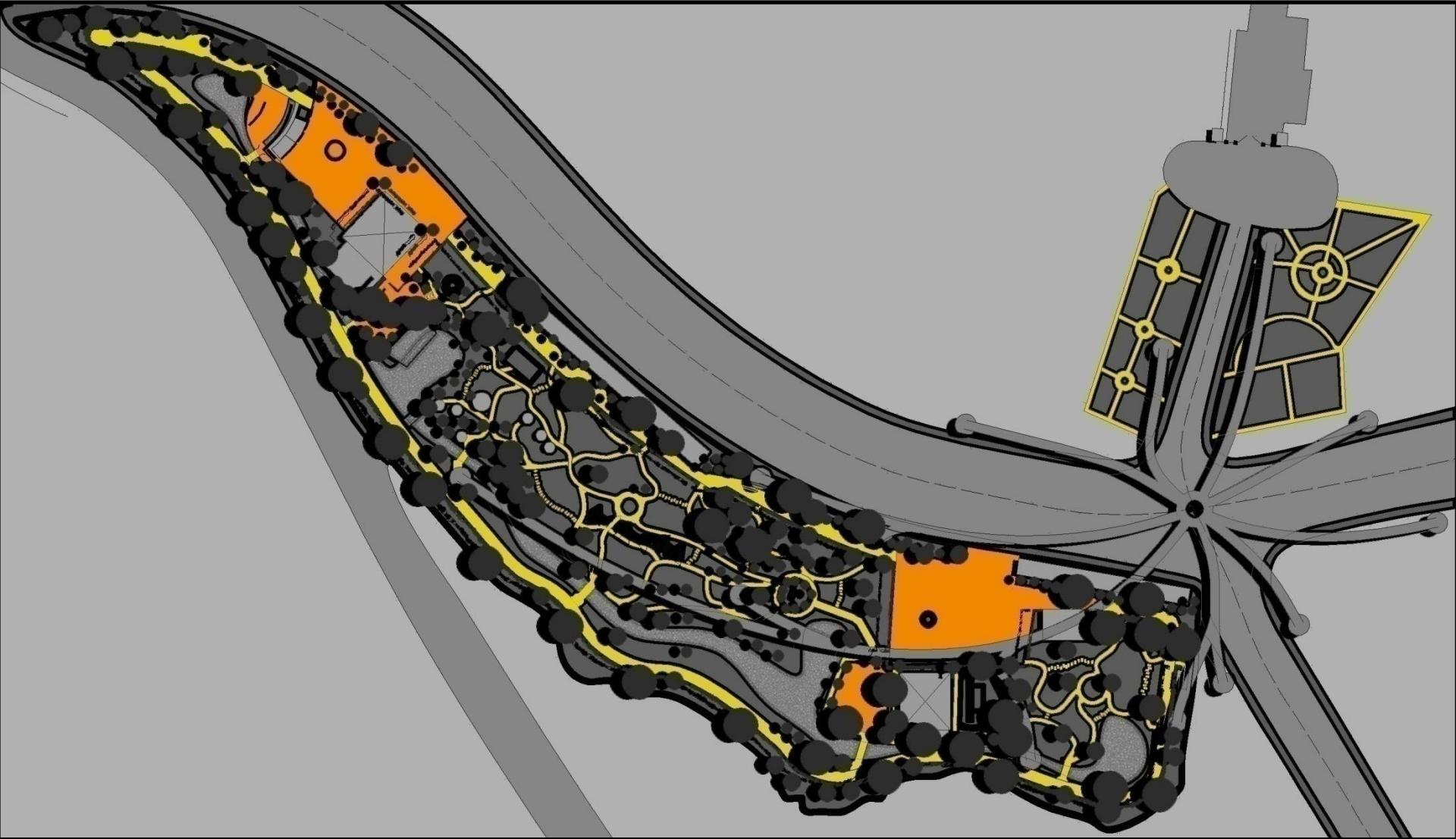
Shrub & Grass

Mekelle Culture Park

Water

Mekelle Culture Park



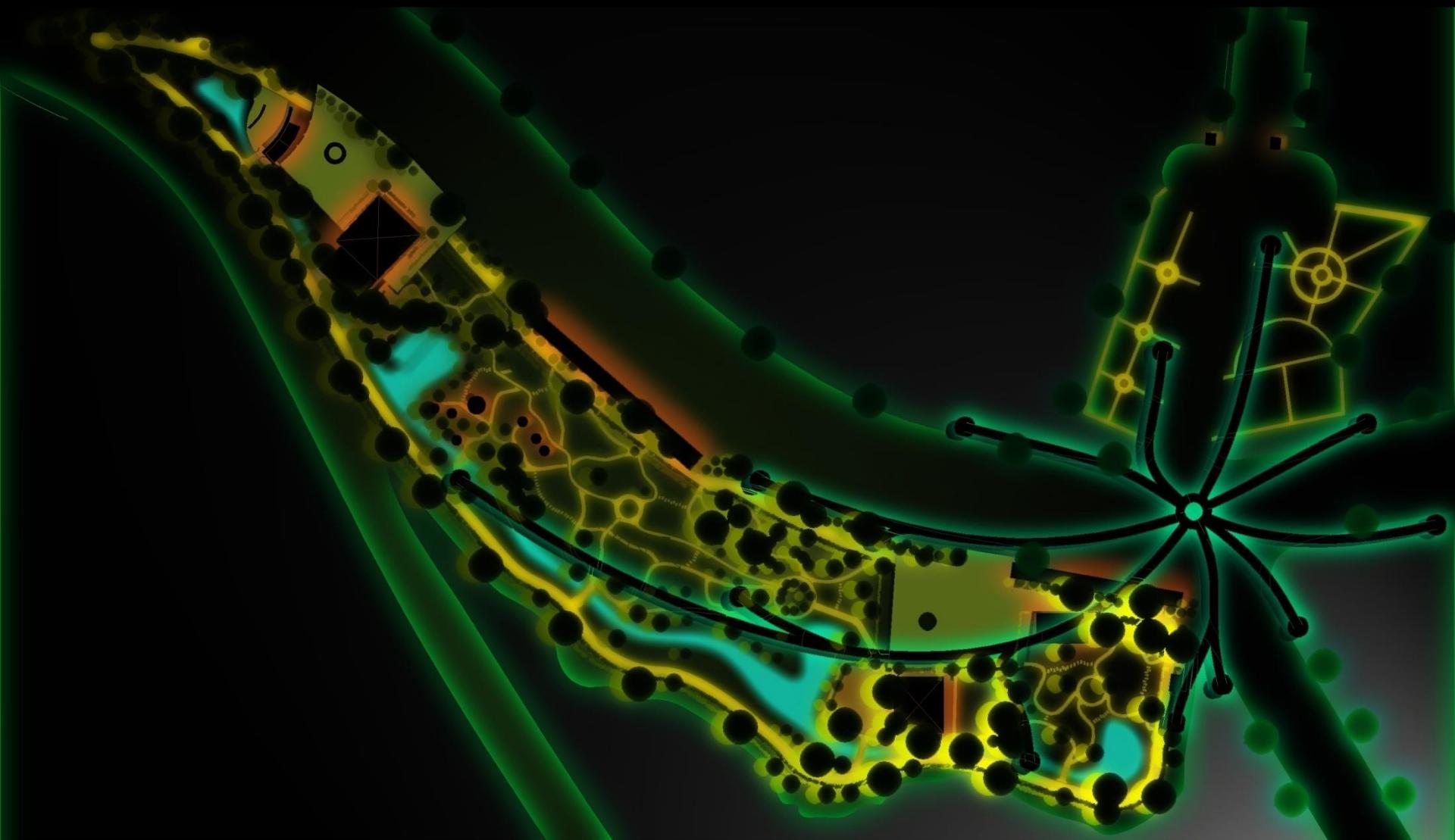


Path & Parking

Mekelle Culture Park

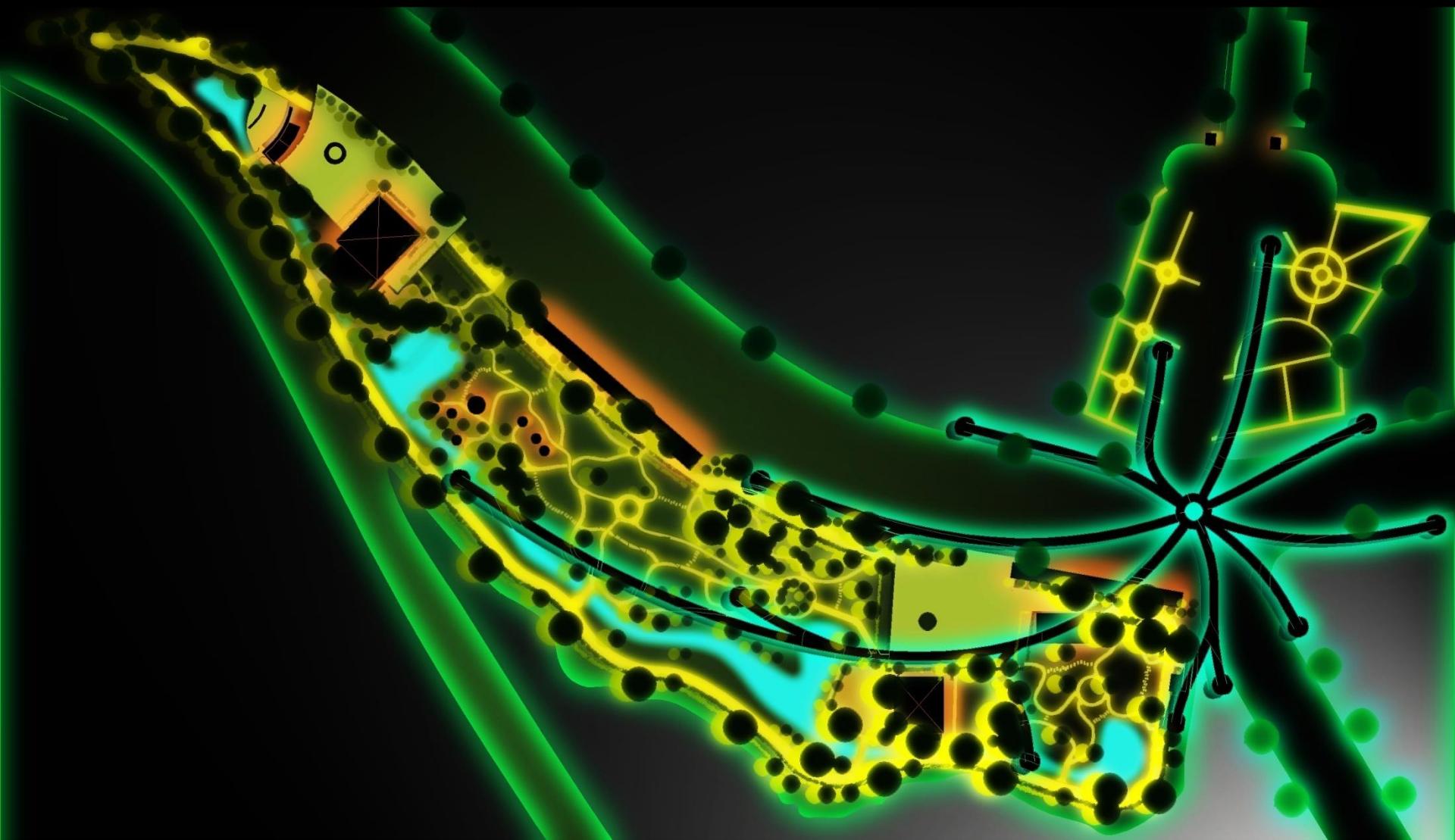
Lighting design

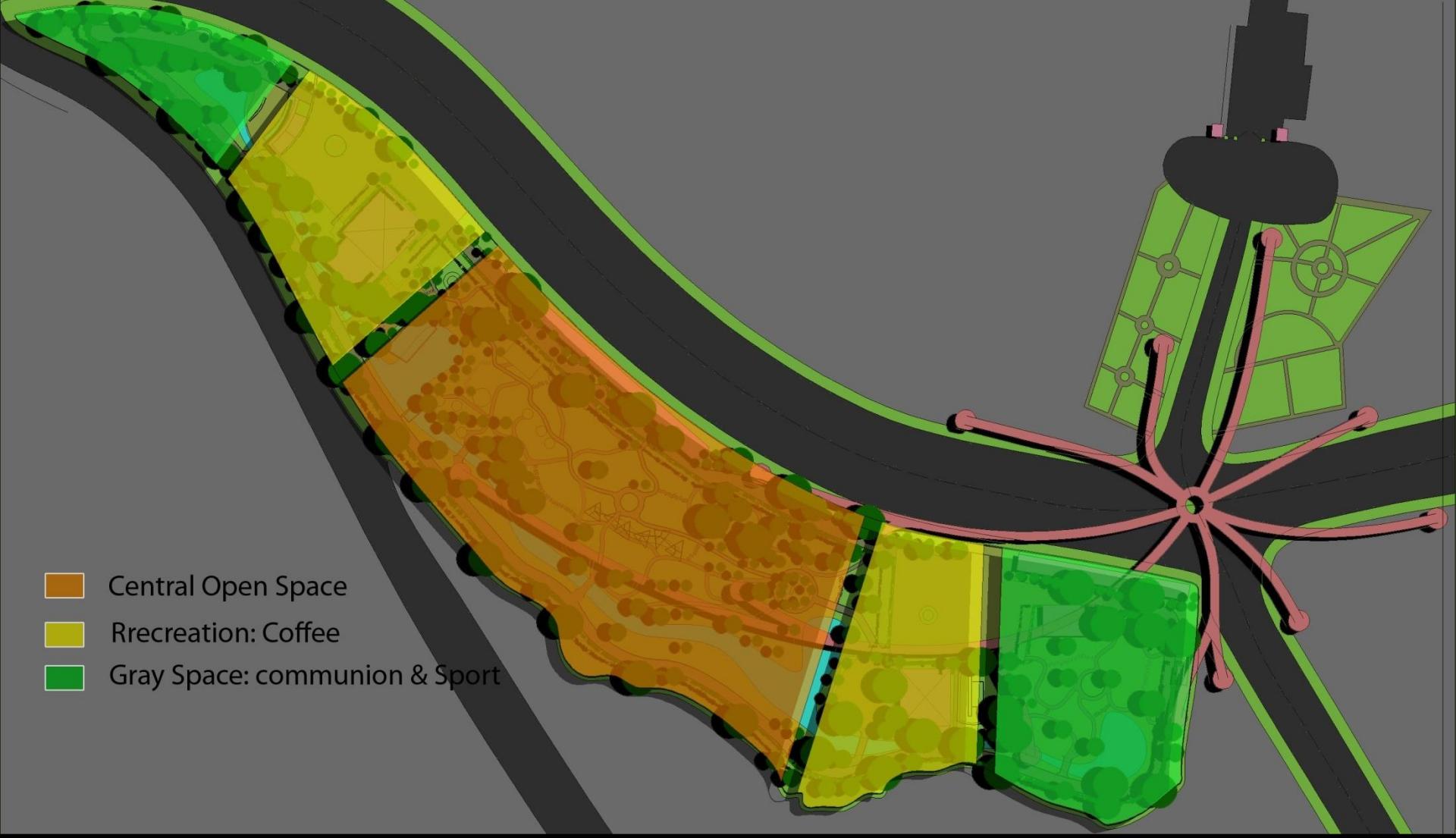
Mekelle Culture Park



Lighting design

Mekelle Culture Park



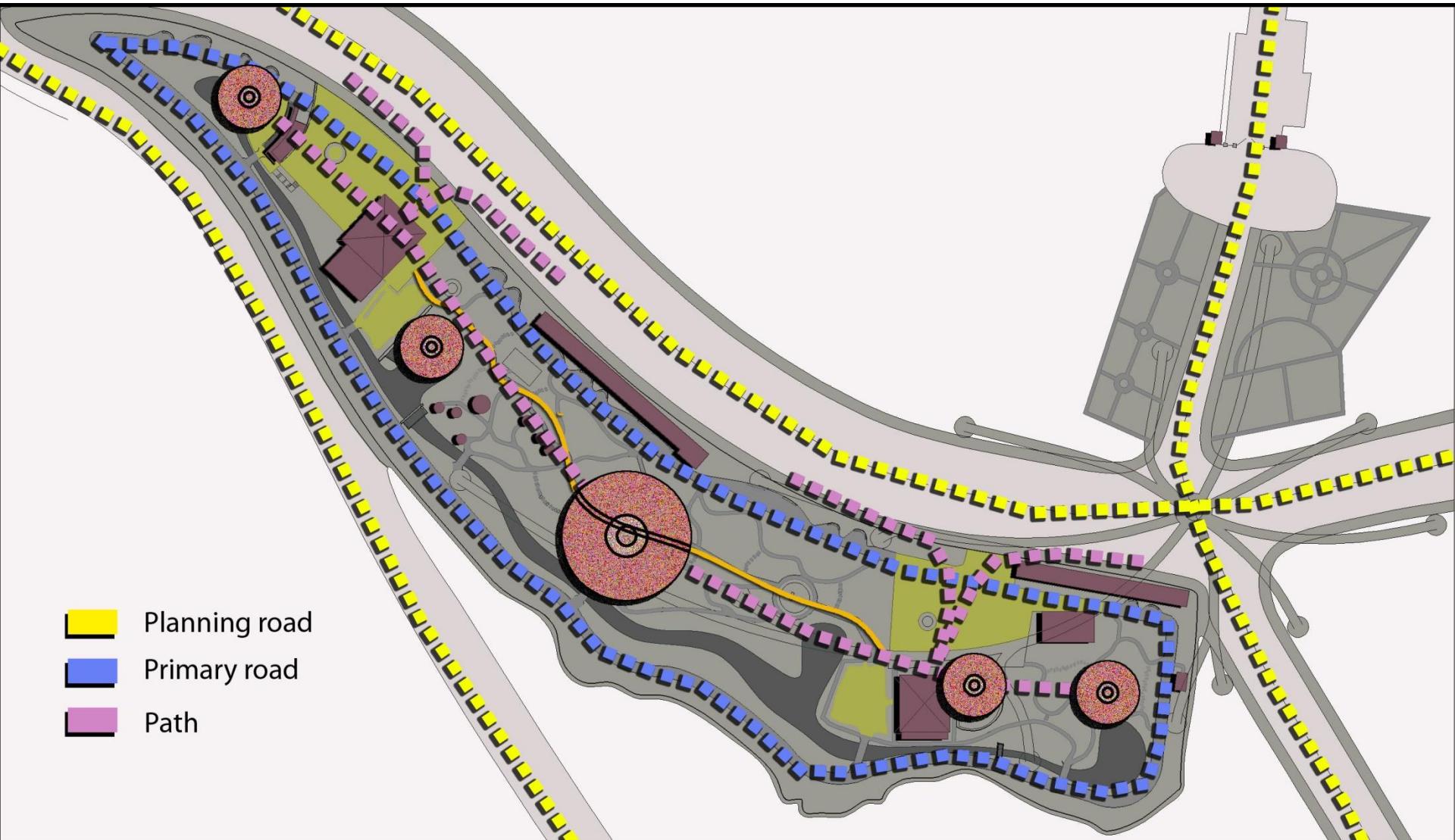


Analysis of Function

Mekelle Culture Park

Analysis of Circulation

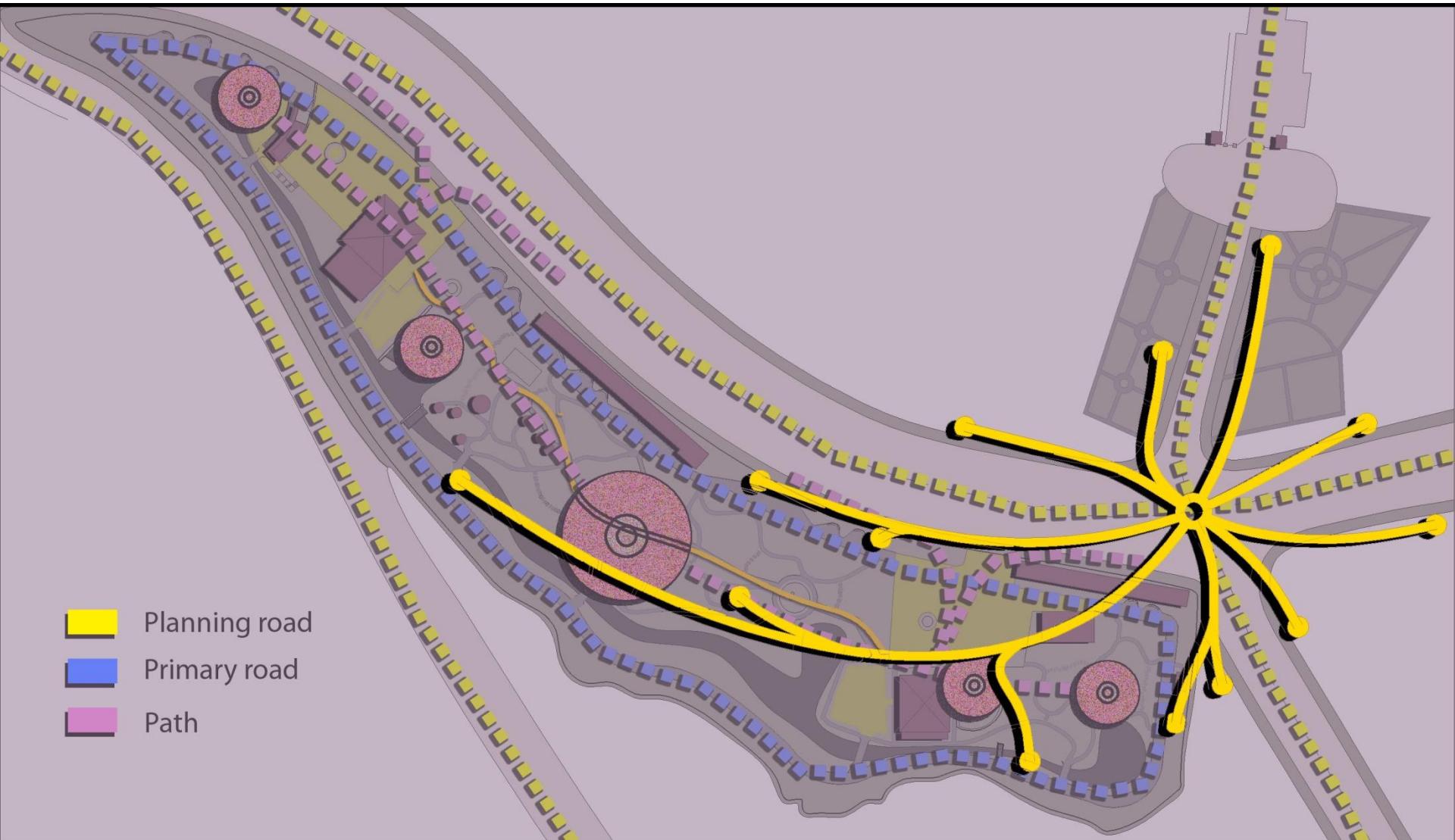
Mekelle Culture Park

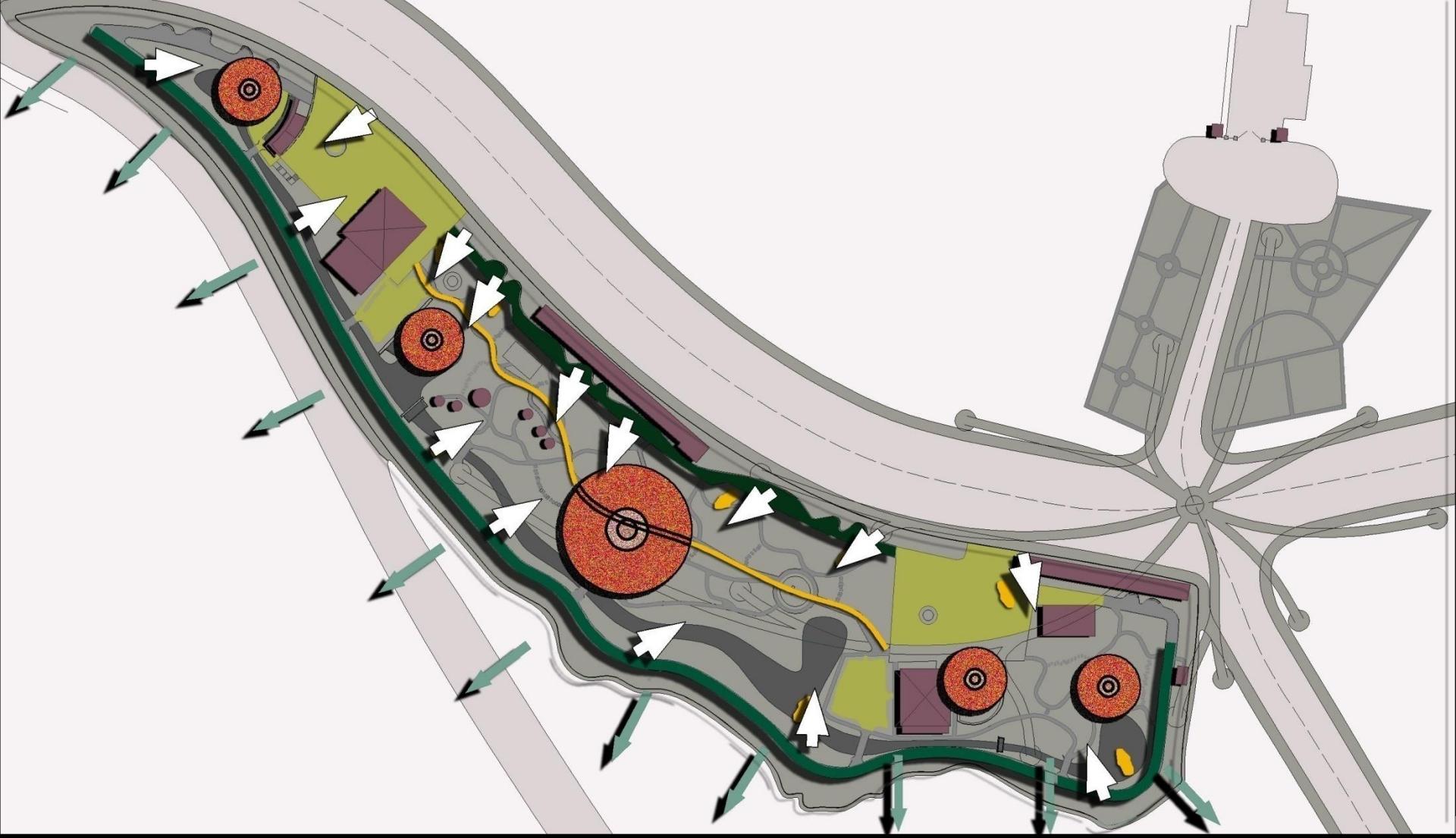


- [Yellow] Planning road
- [Blue] Primary road
- [Pink] Path

Analysis of Circulation

Mekelle Culture Park



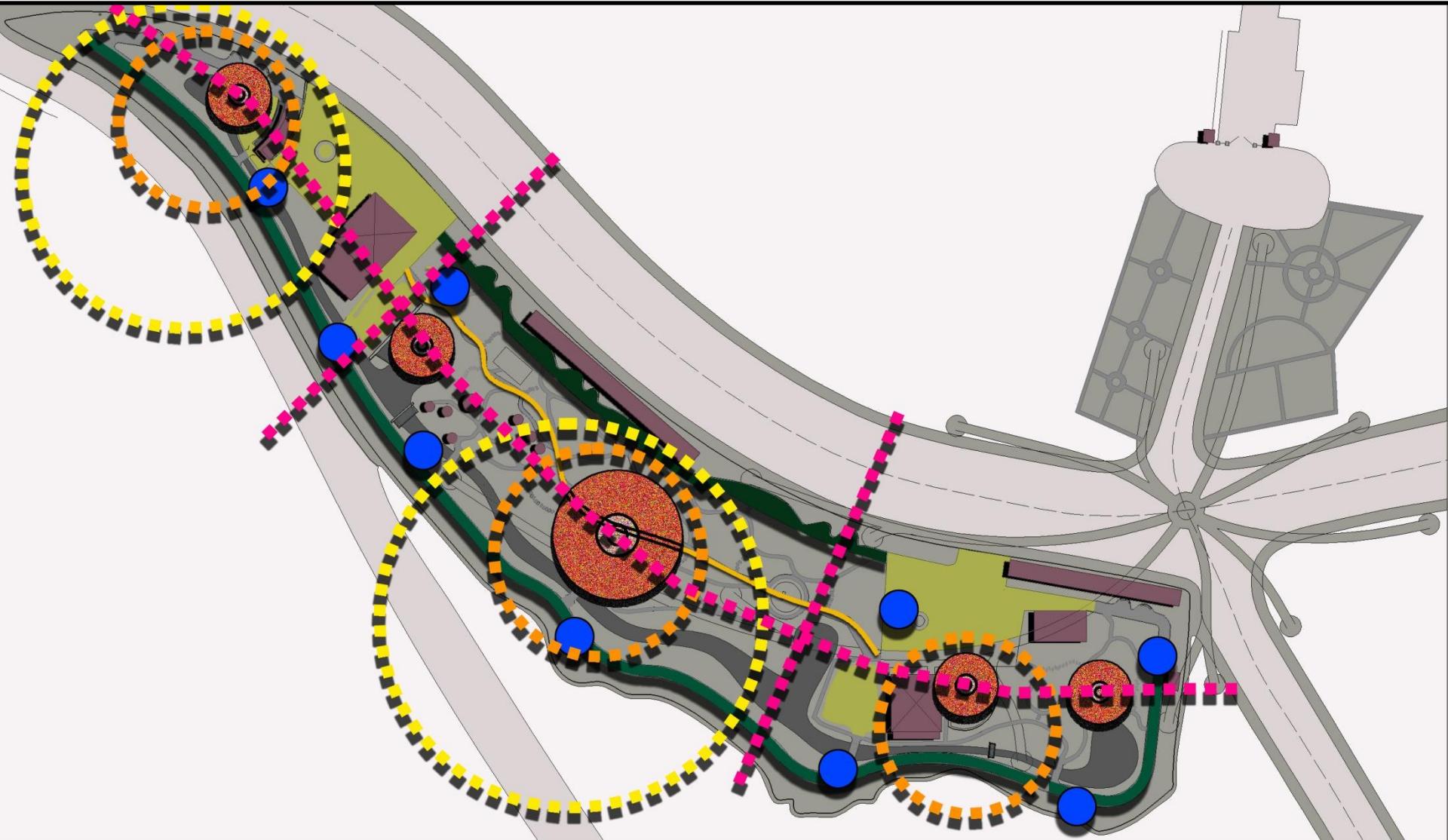


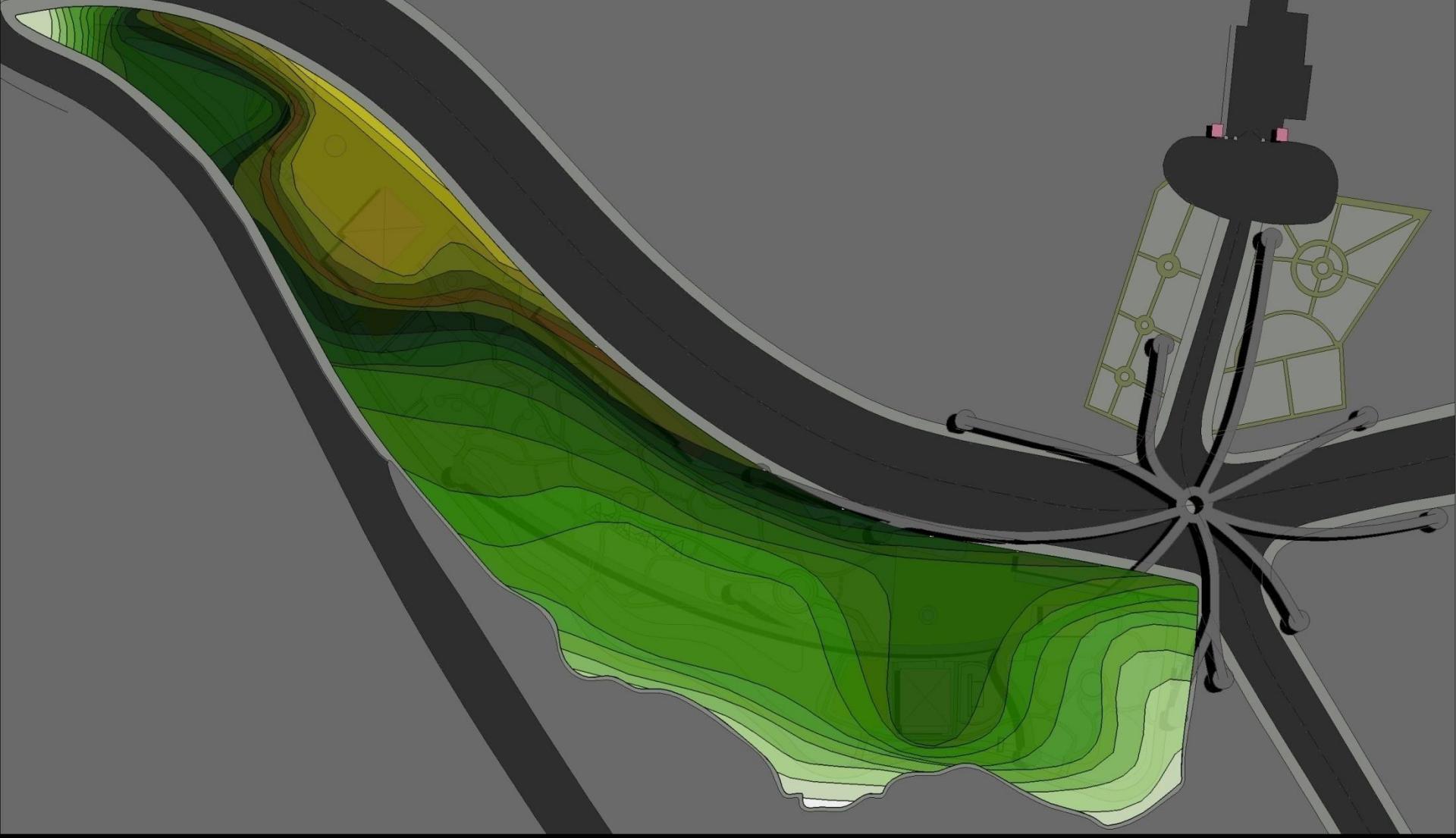
Analysis of Views

Mekelle Culture Park

Analysis of Scenic Spots

Mekelle Culture Park



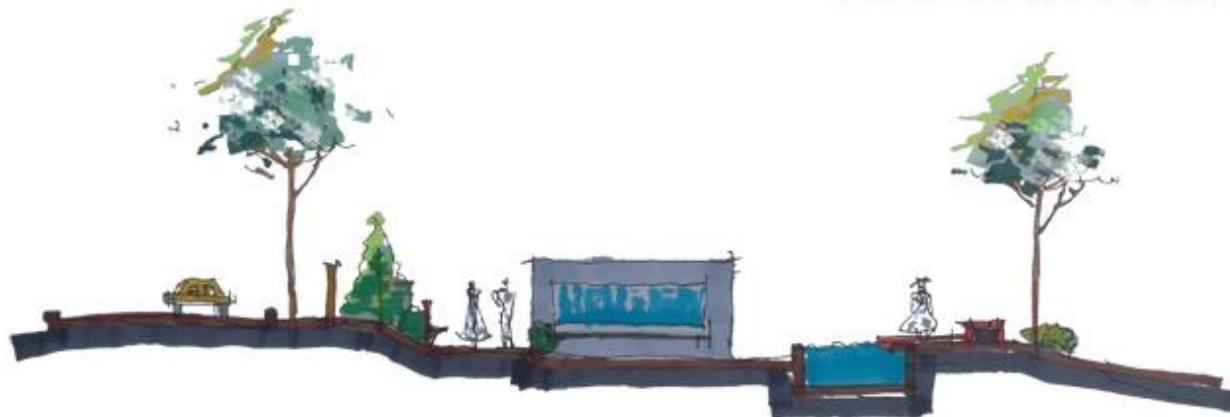


Level

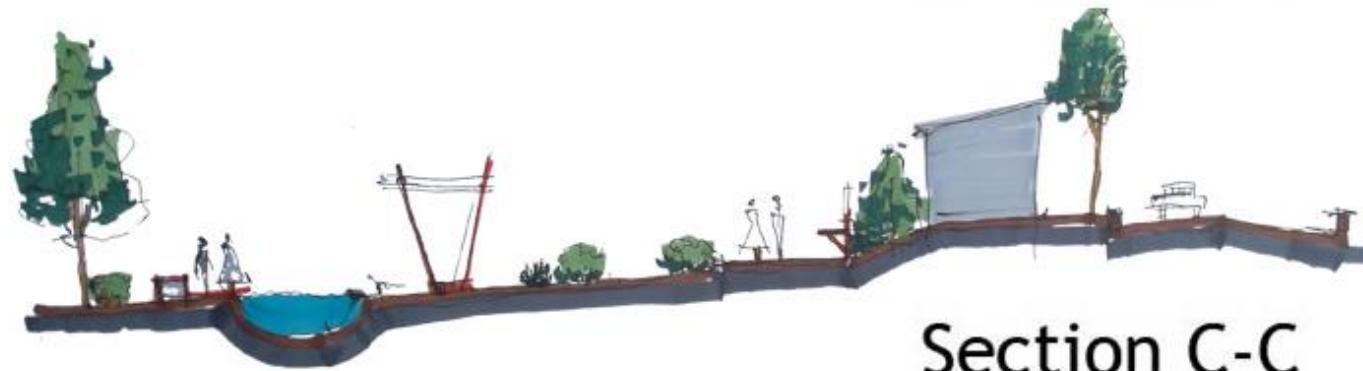
Mekelle Culture Park



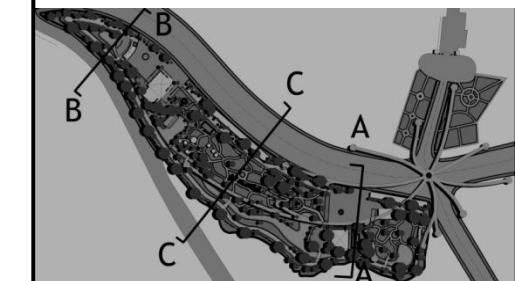
Section A-A



Section B-B



Section C-C

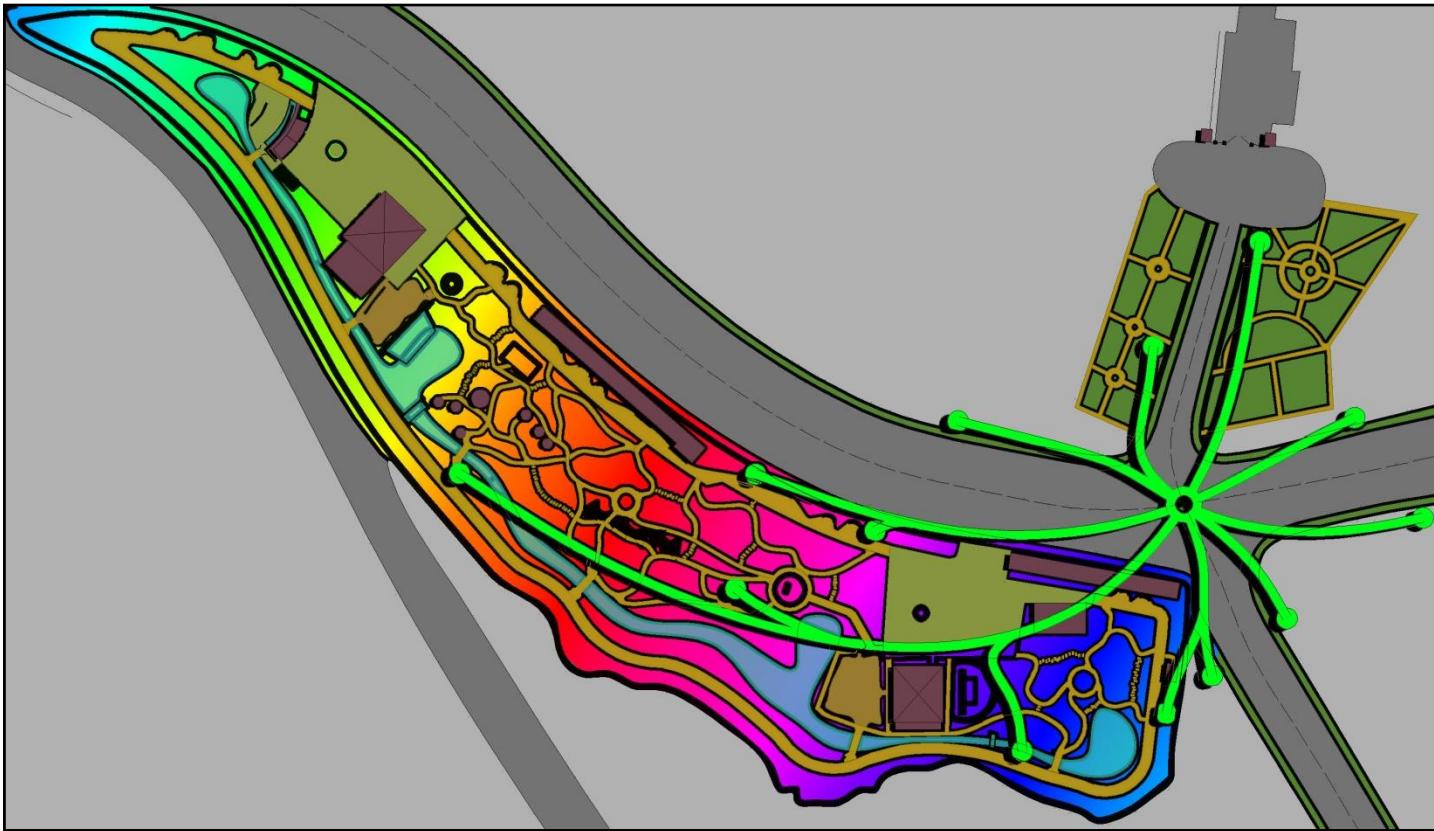


Section A,B,C

Mekelle Culture Park

Plants

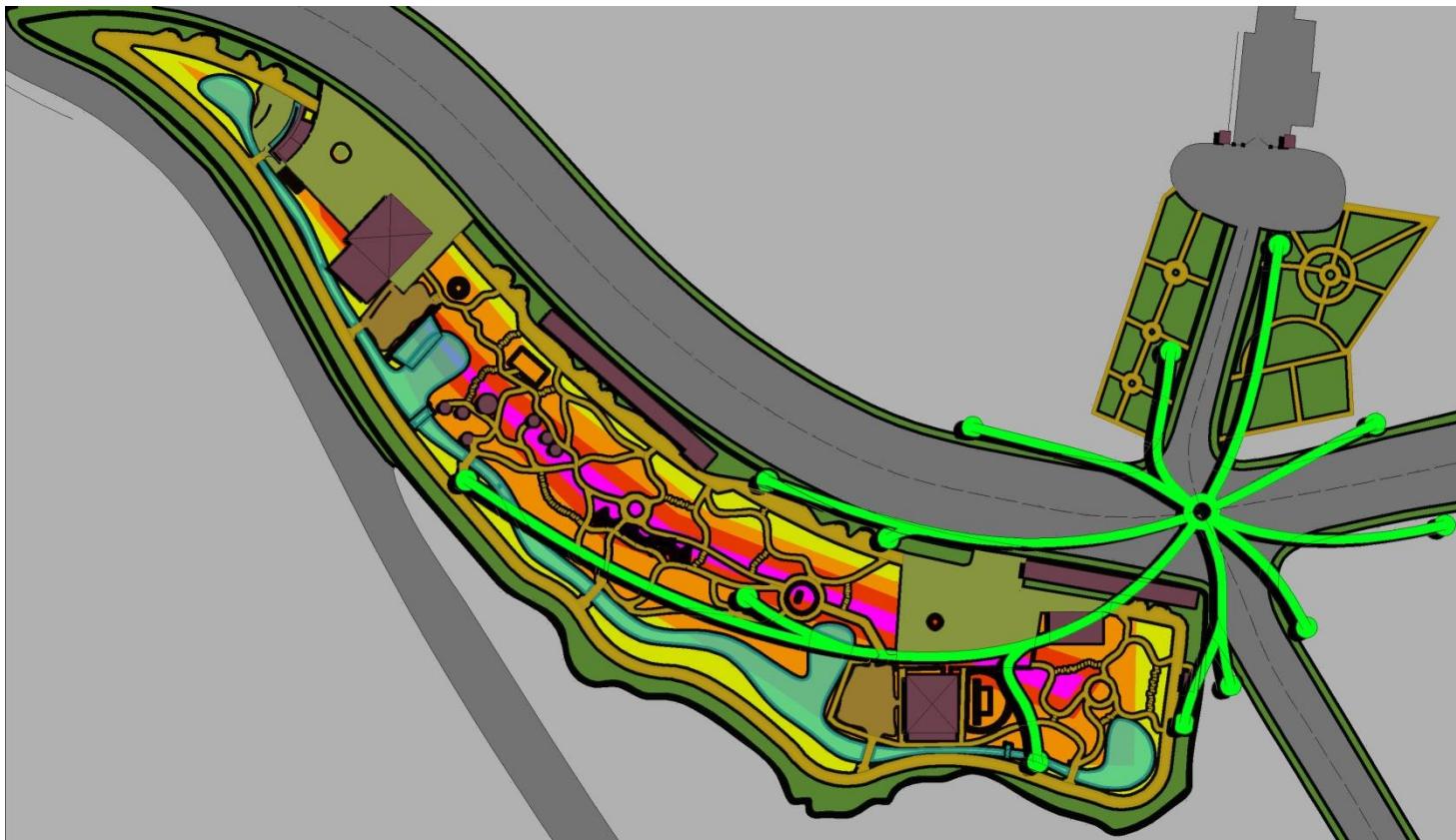
Mekelle Culture Park



Concept 1

Mekelle Culture Park





Concept 2

Mekelle Culture Park



80% 常绿树种 ,20% 落叶树种
80%evergreen,20%deciduous

50% 常绿树种 ,50% 落叶树种
50%evergreen,50%deciduous

20% 常绿树种 ,80% 落叶树种
20%evergreen,80%deciduous

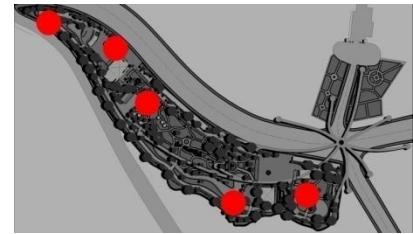
色叶 (花) 树种
Coloured trees

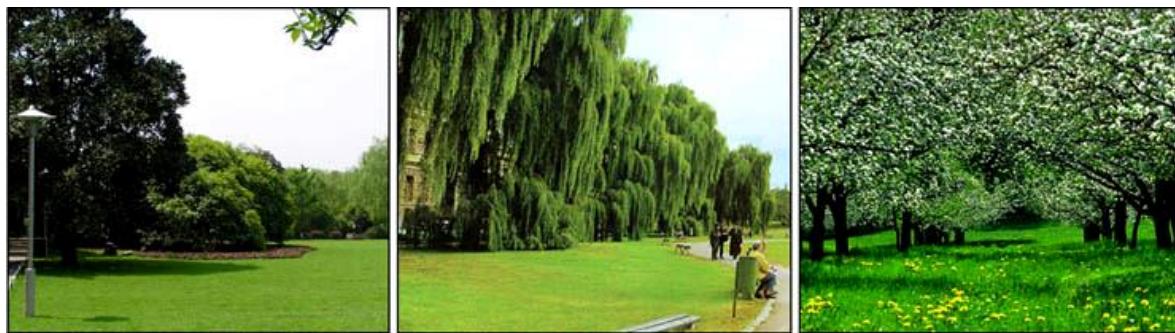
水生植物
Aquatic plant



Ground cover plants

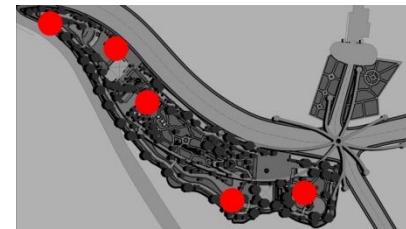
Mekelle Culture Park





Trees

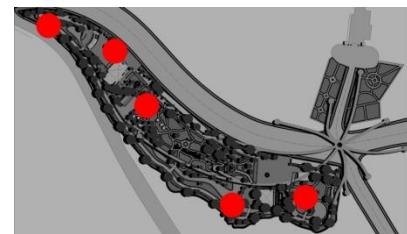
Mekelle Culture Park

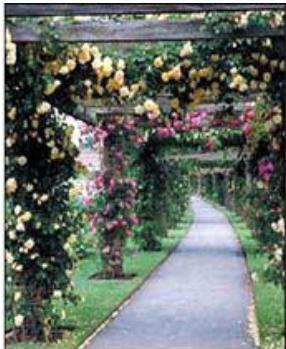
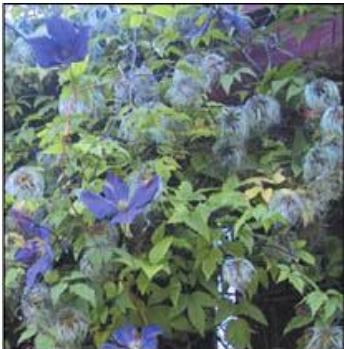




Aquatic Plants

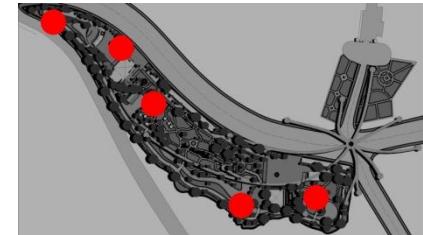
Mekelle Culture Park





Pendulous Plants

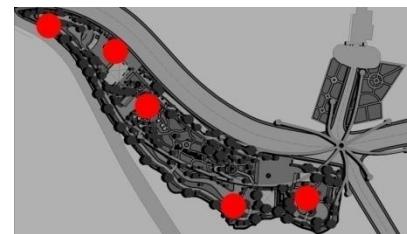
Mekelle Culture Park





Color Gardens

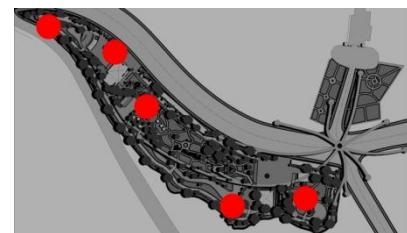
Mekelle Culture Park





Color Gardens

Mekelle Culture Park



Collect rainwater for circulation

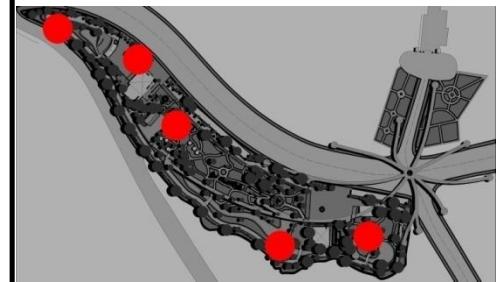
Details

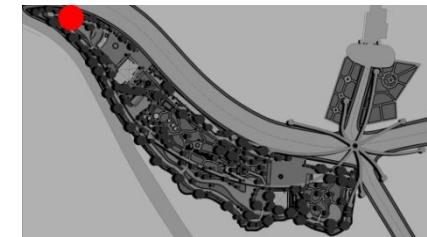
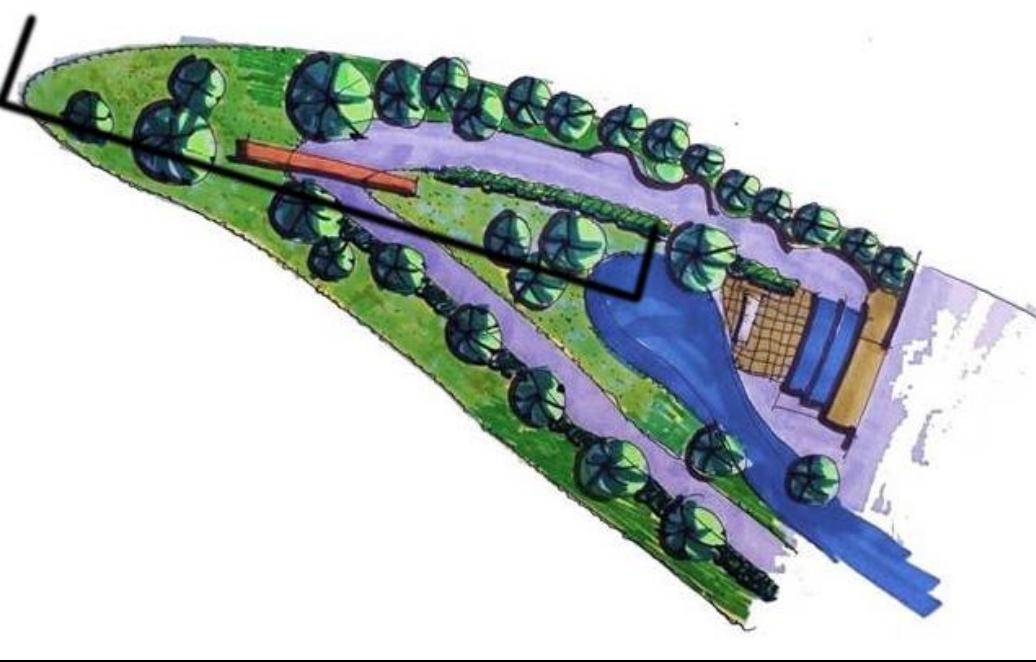
Mekelle Culture Park



Detail

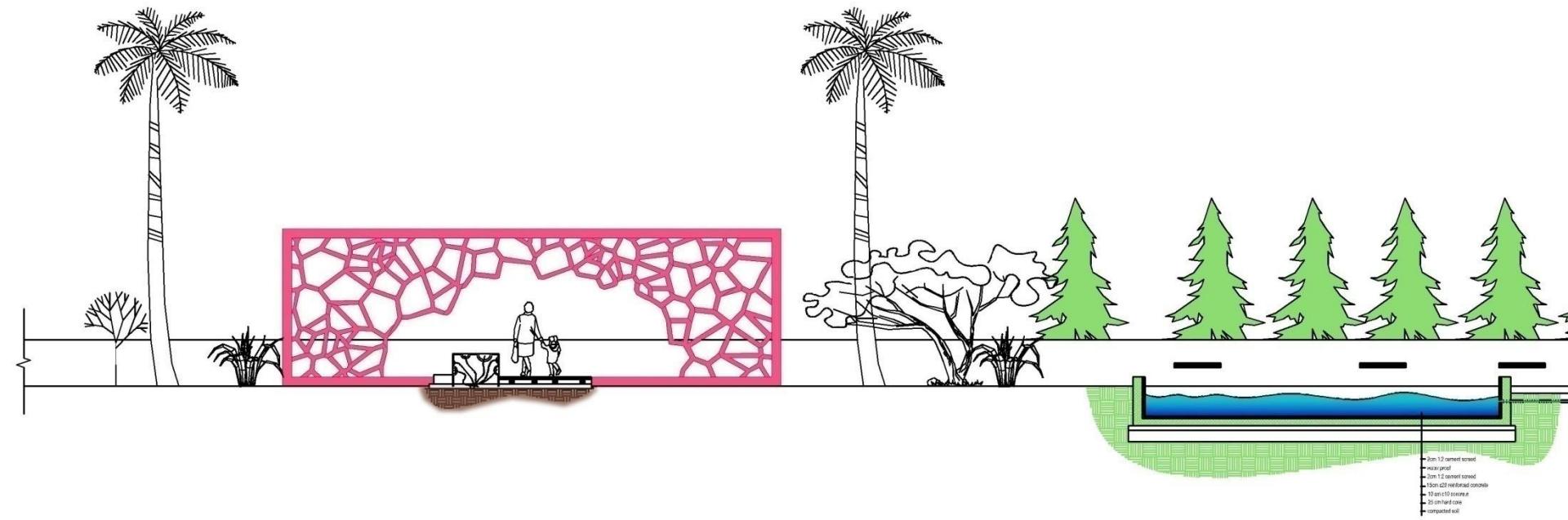
Mekelle Culture Park

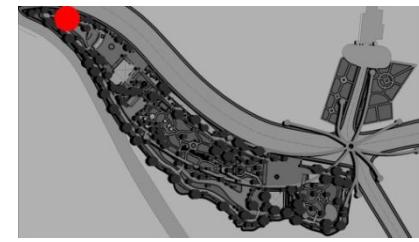




Detail-1

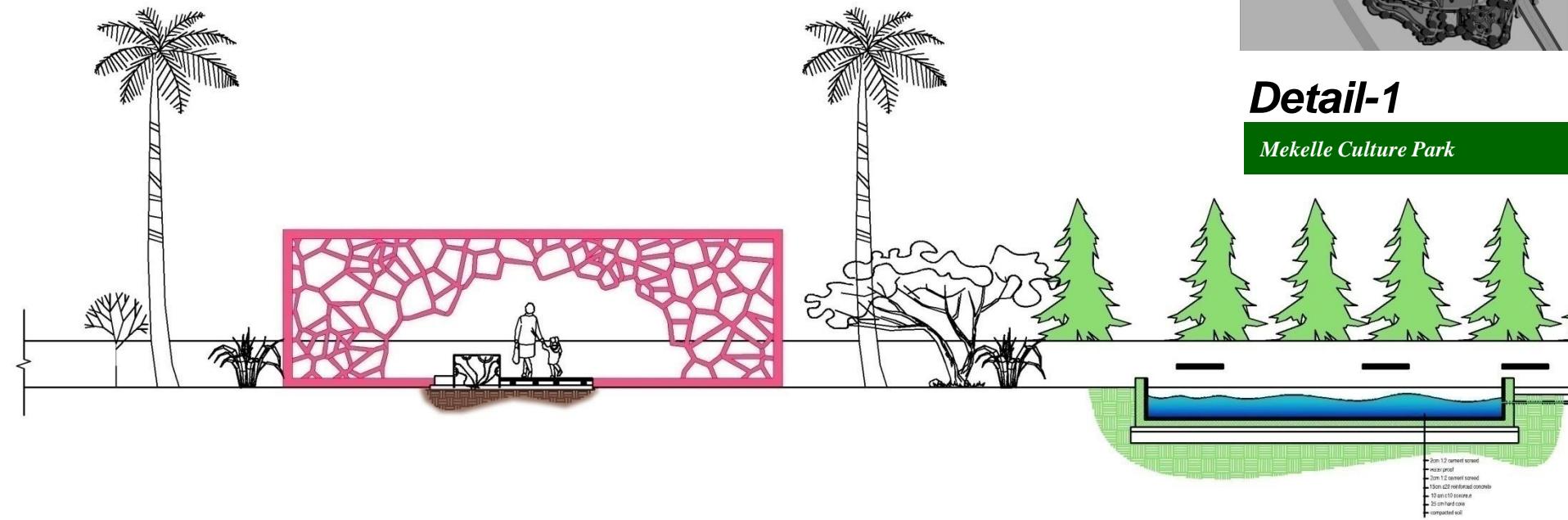
Mekelle Culture Park

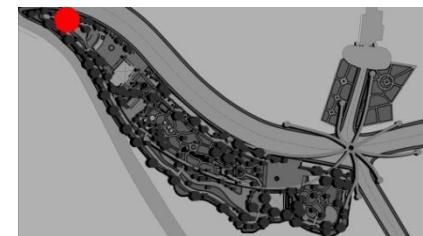
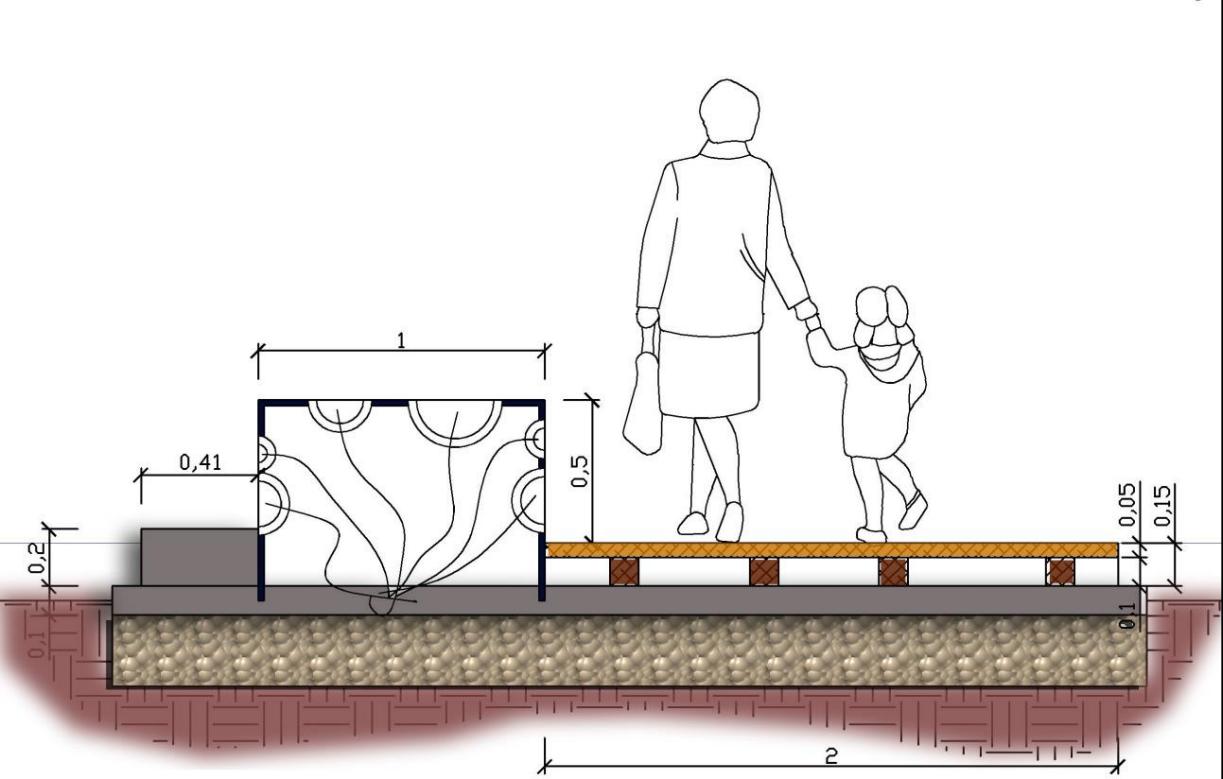




Detail-1

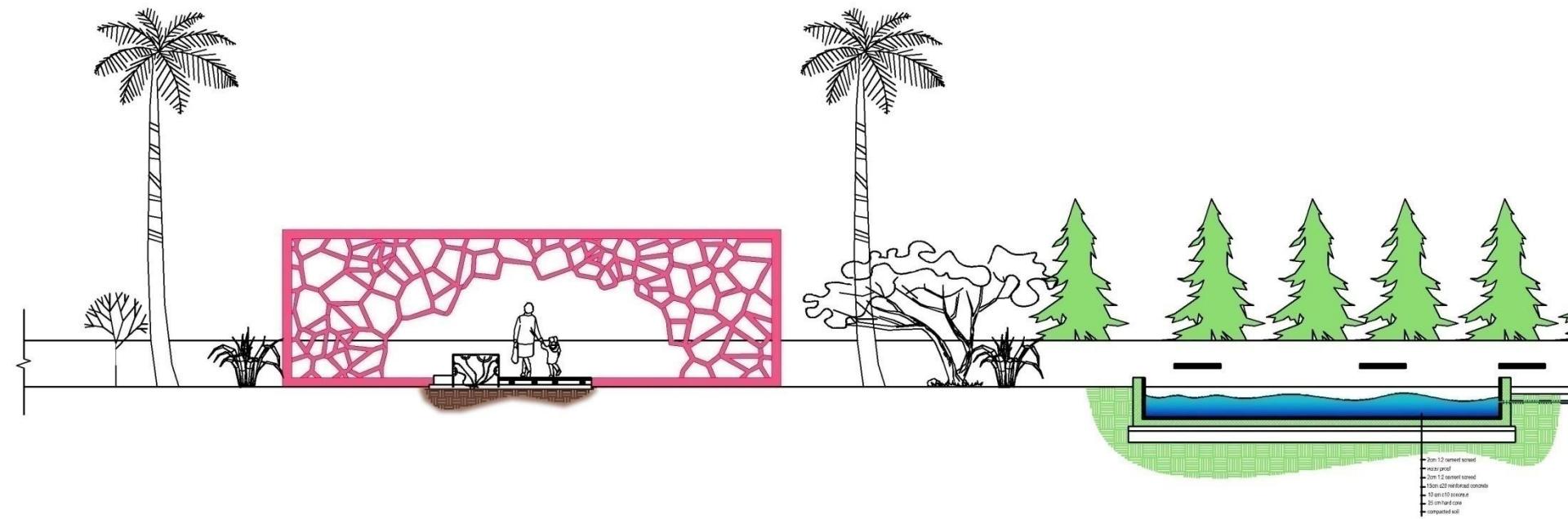
Mekelle Culture Park

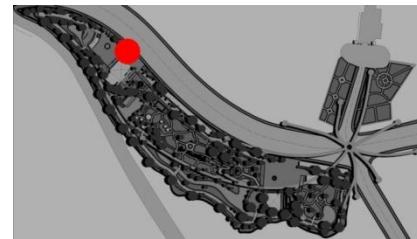




Detail-1

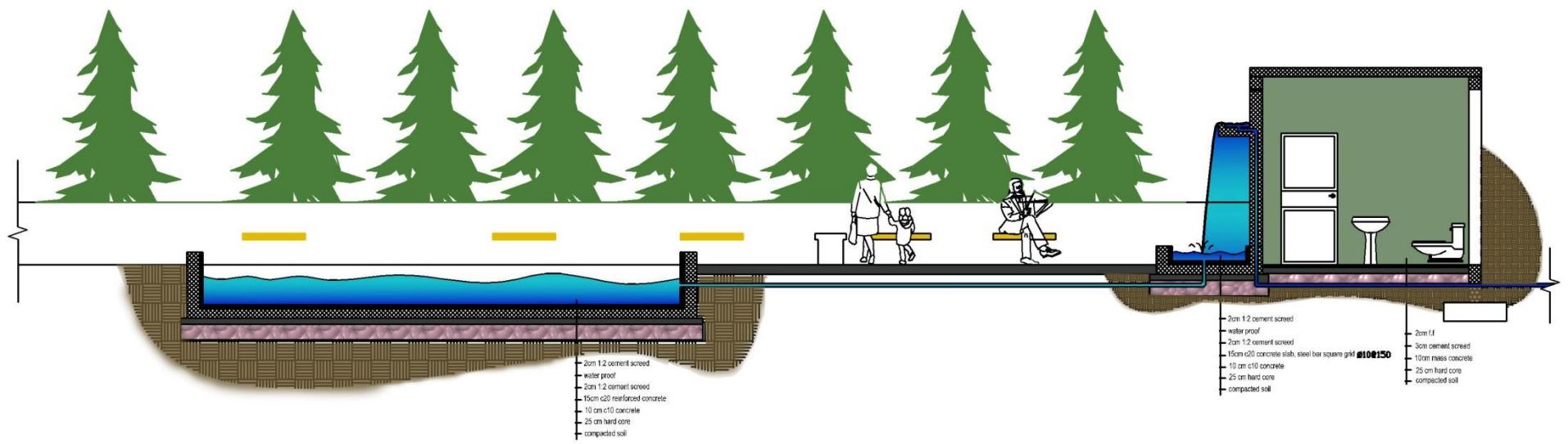
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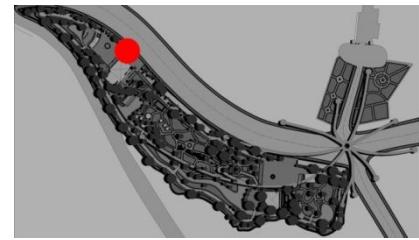




Detail-2

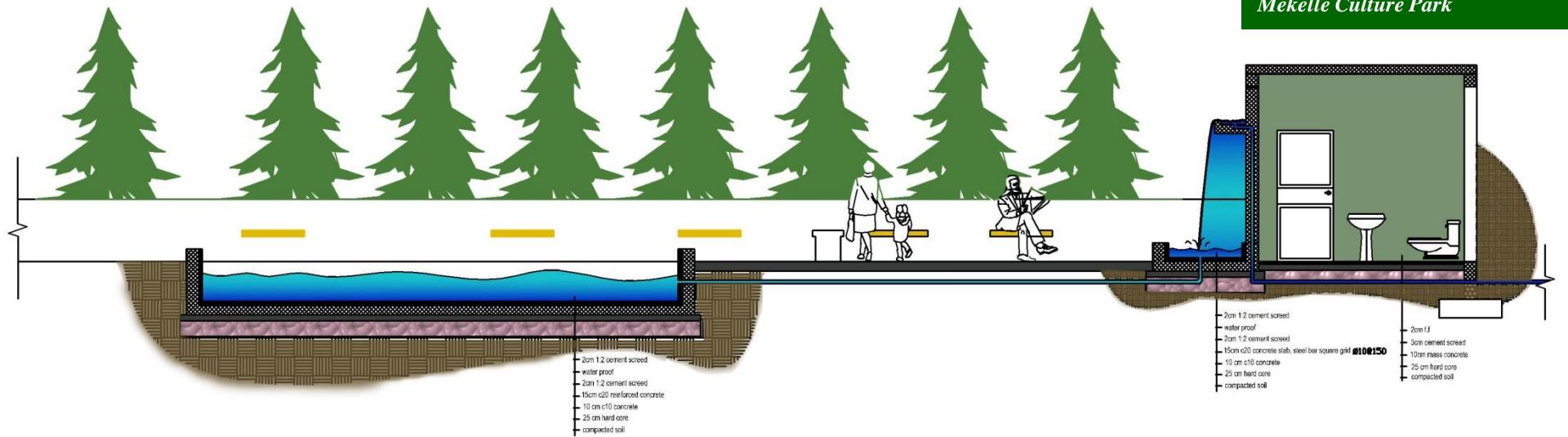
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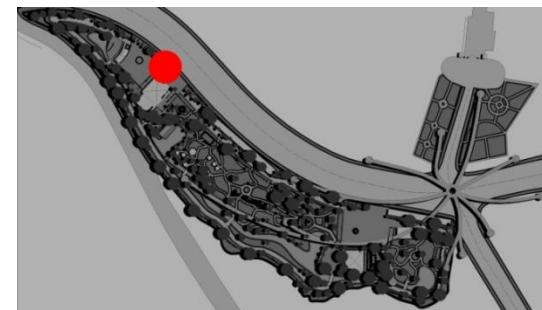
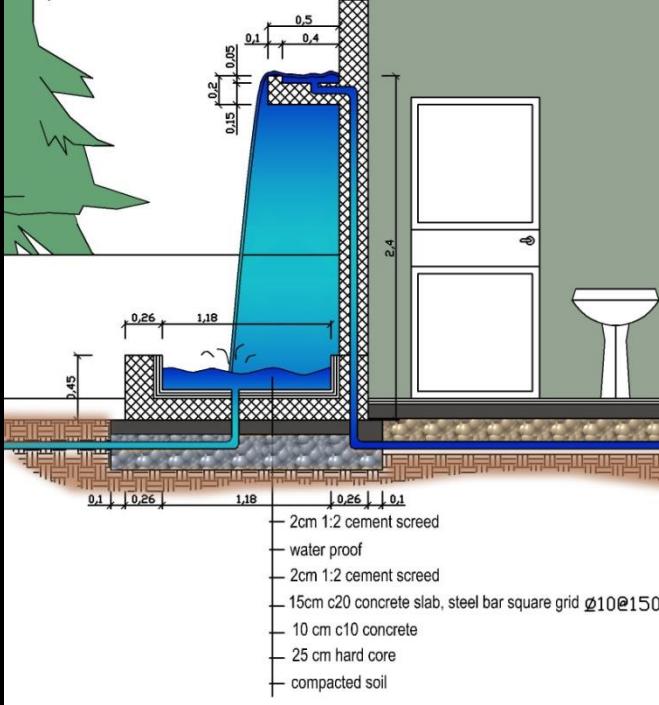
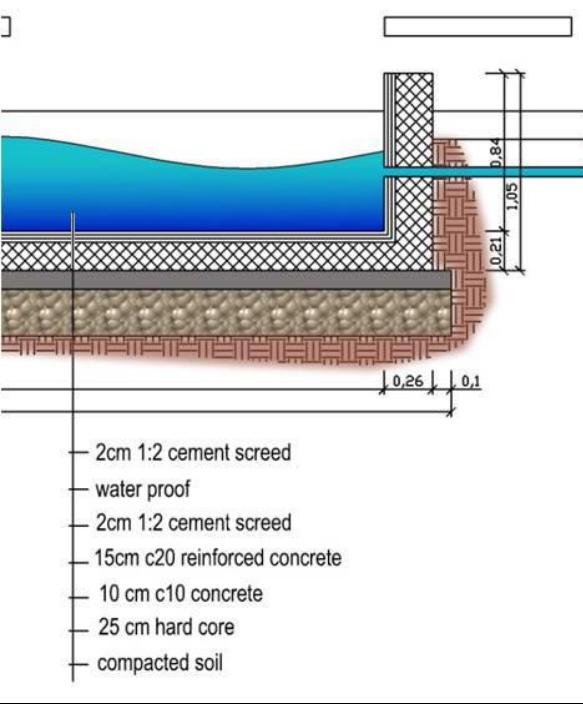




Detail-2

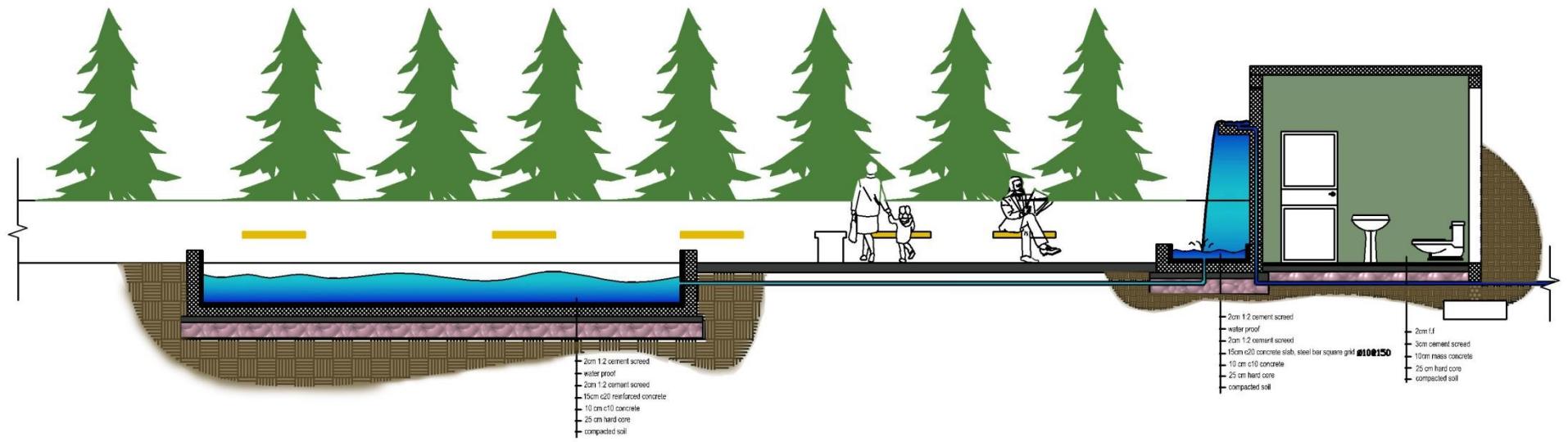
Mekelle Culture Park





Detail-2

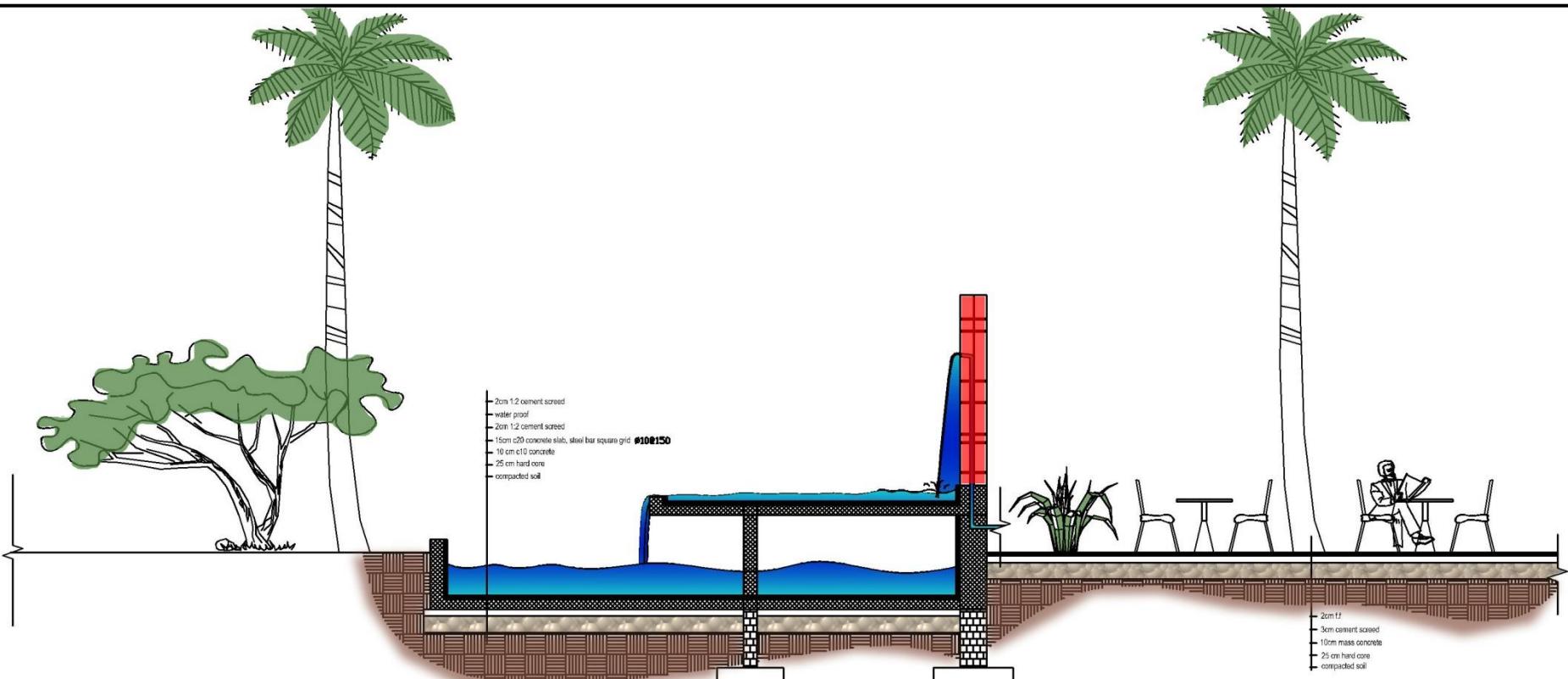
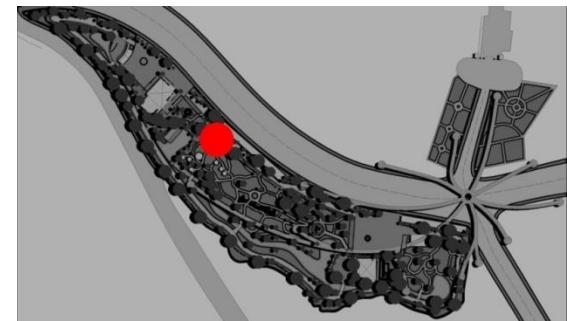
Mekelle Culture Park

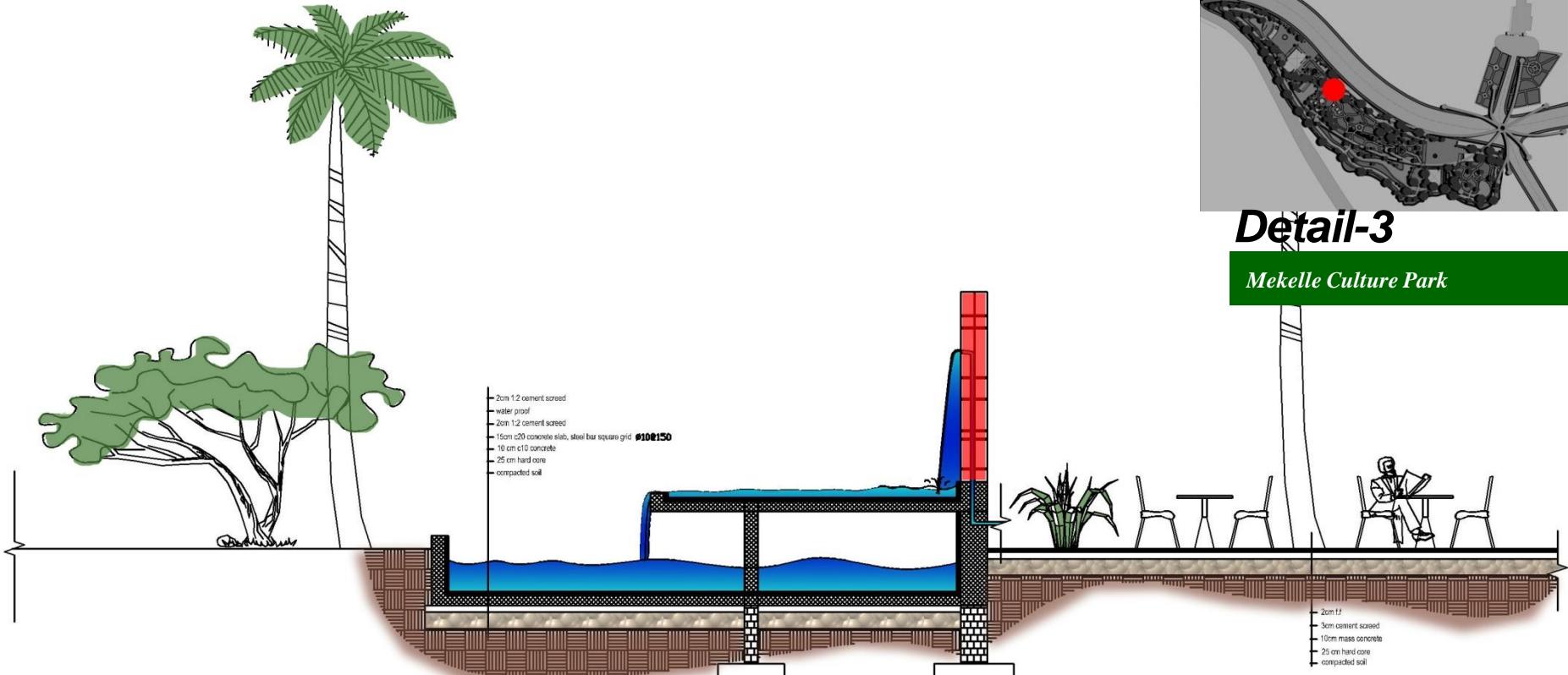


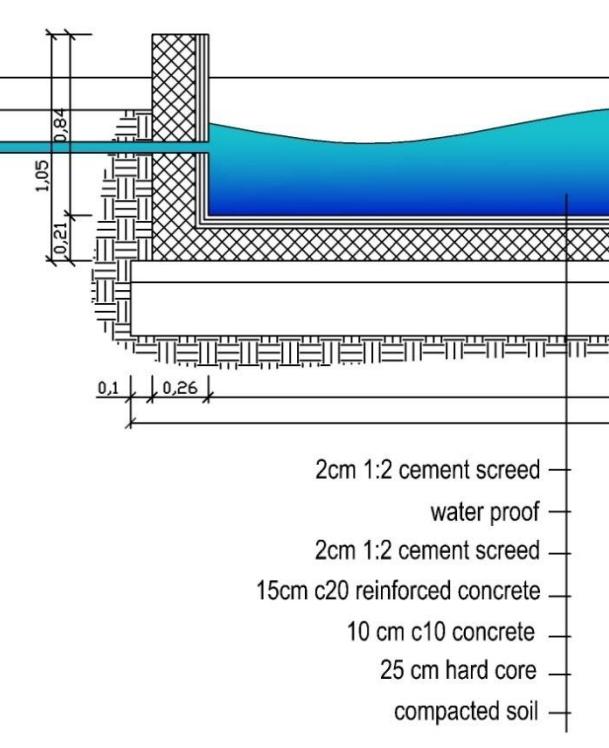
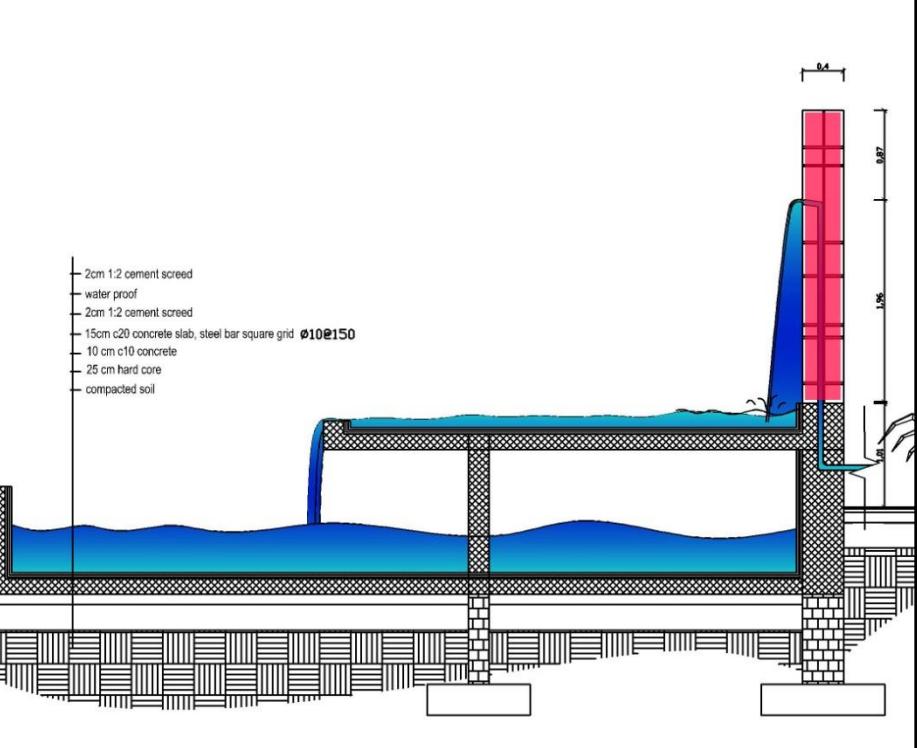


Detail-3

Mekelle Culture Park

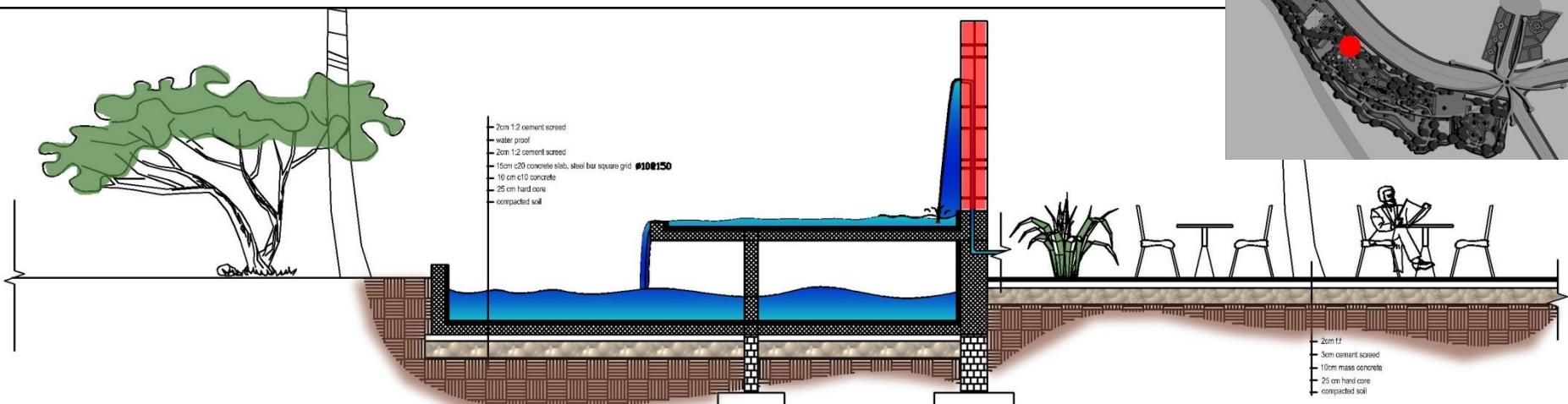


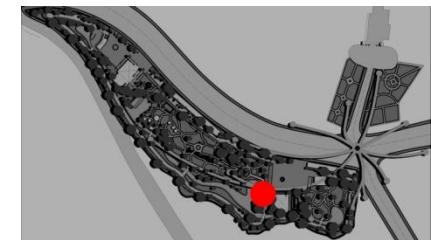




Detail-3

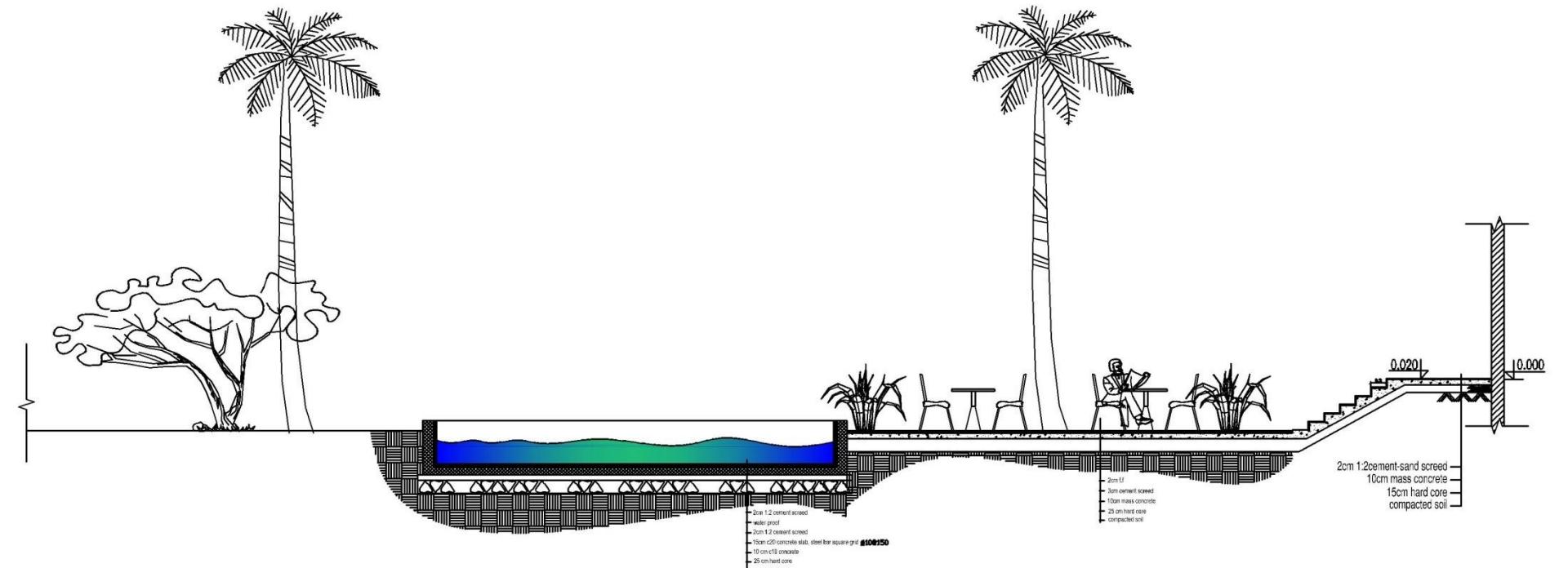
Mekelle Culture Park





Detail-4

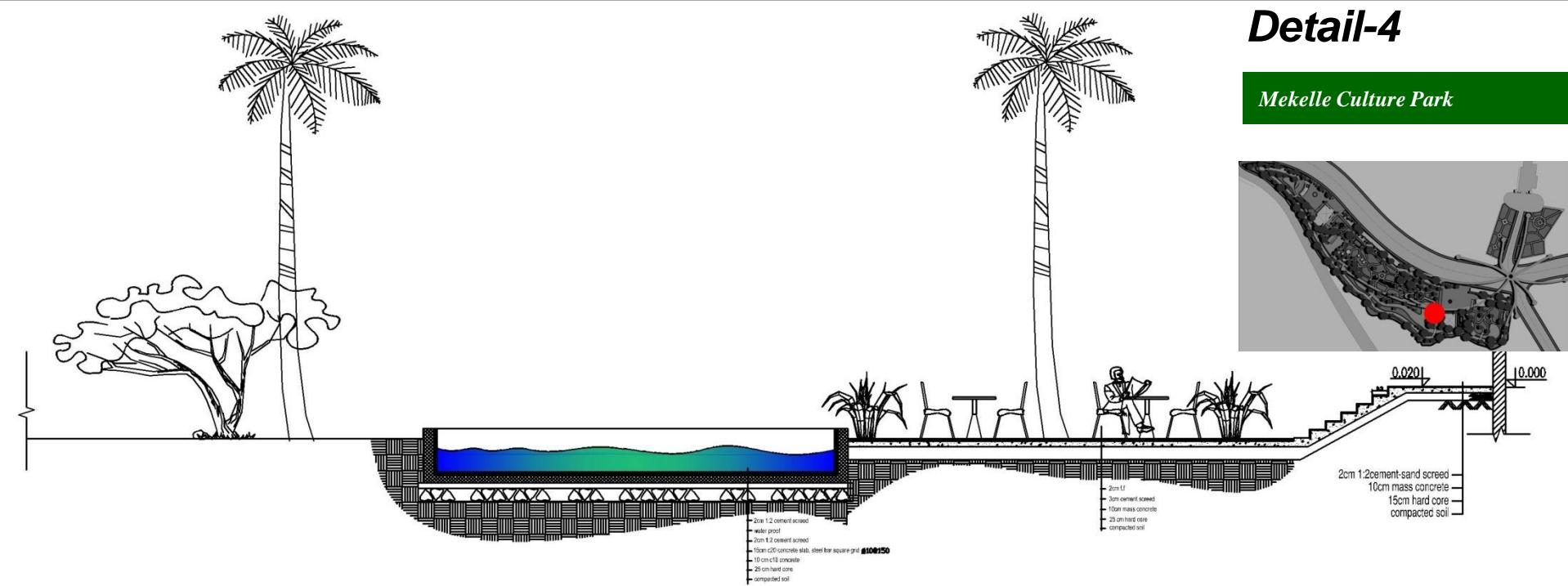
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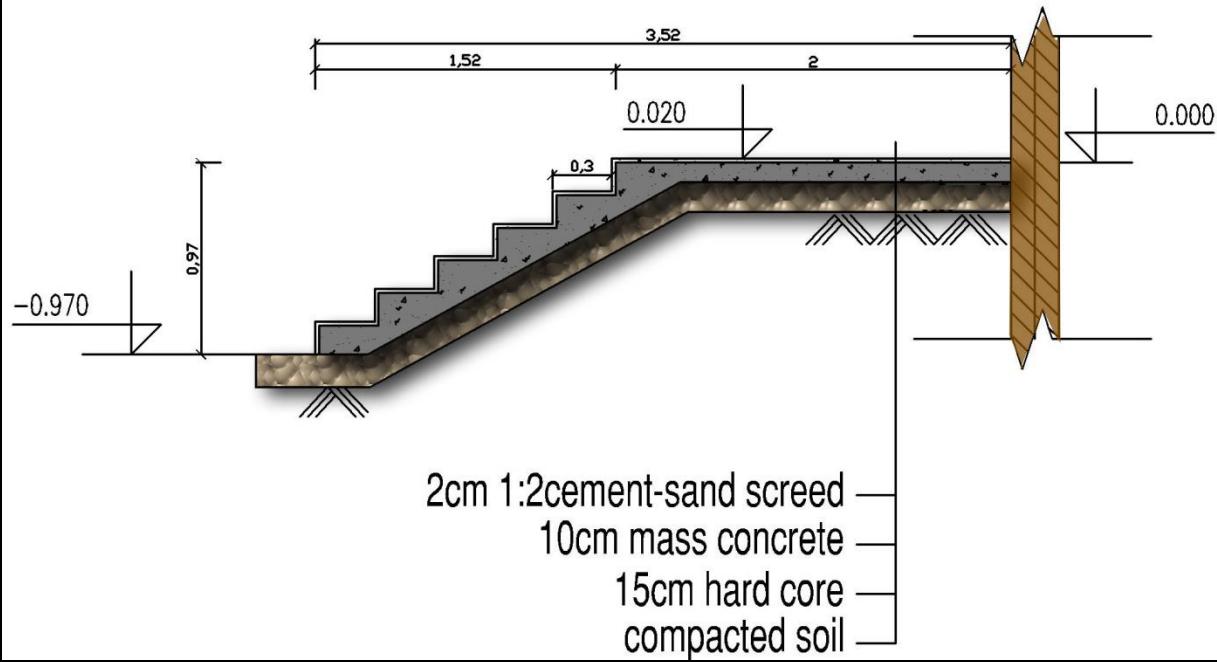
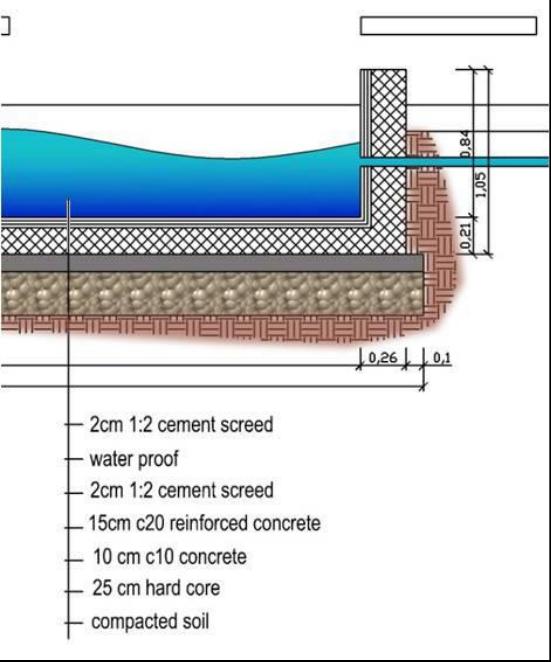




Detail-4

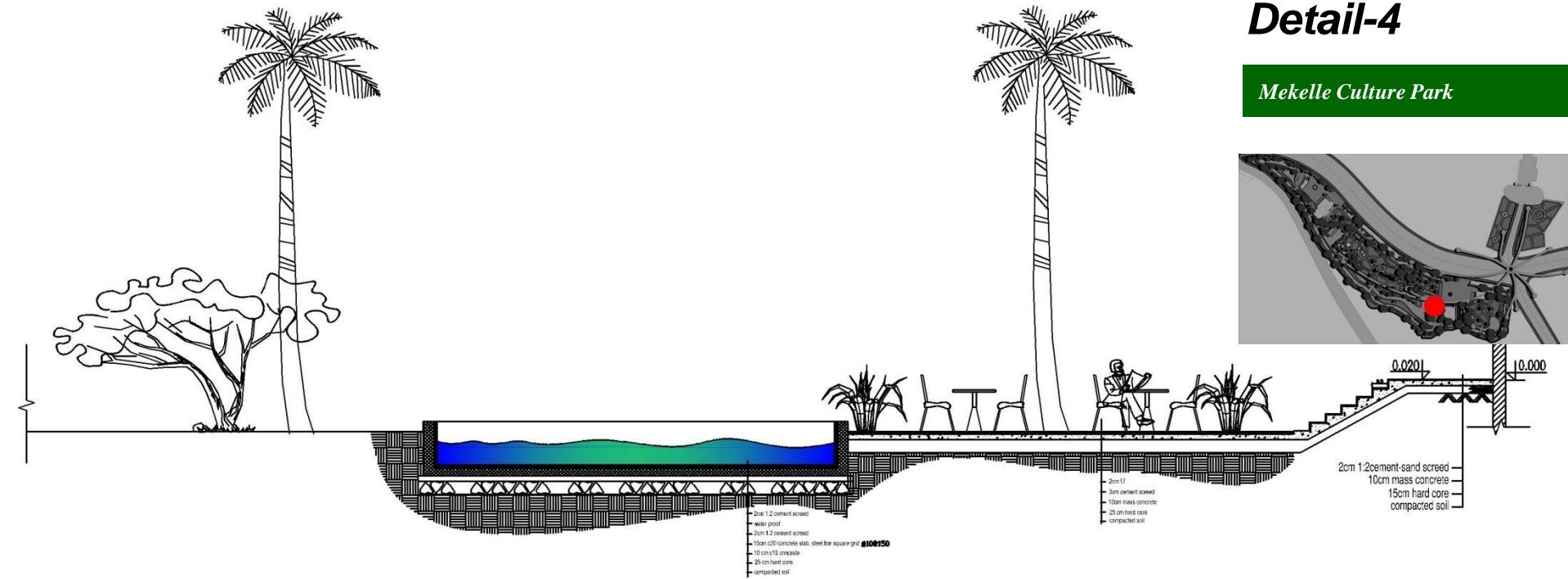
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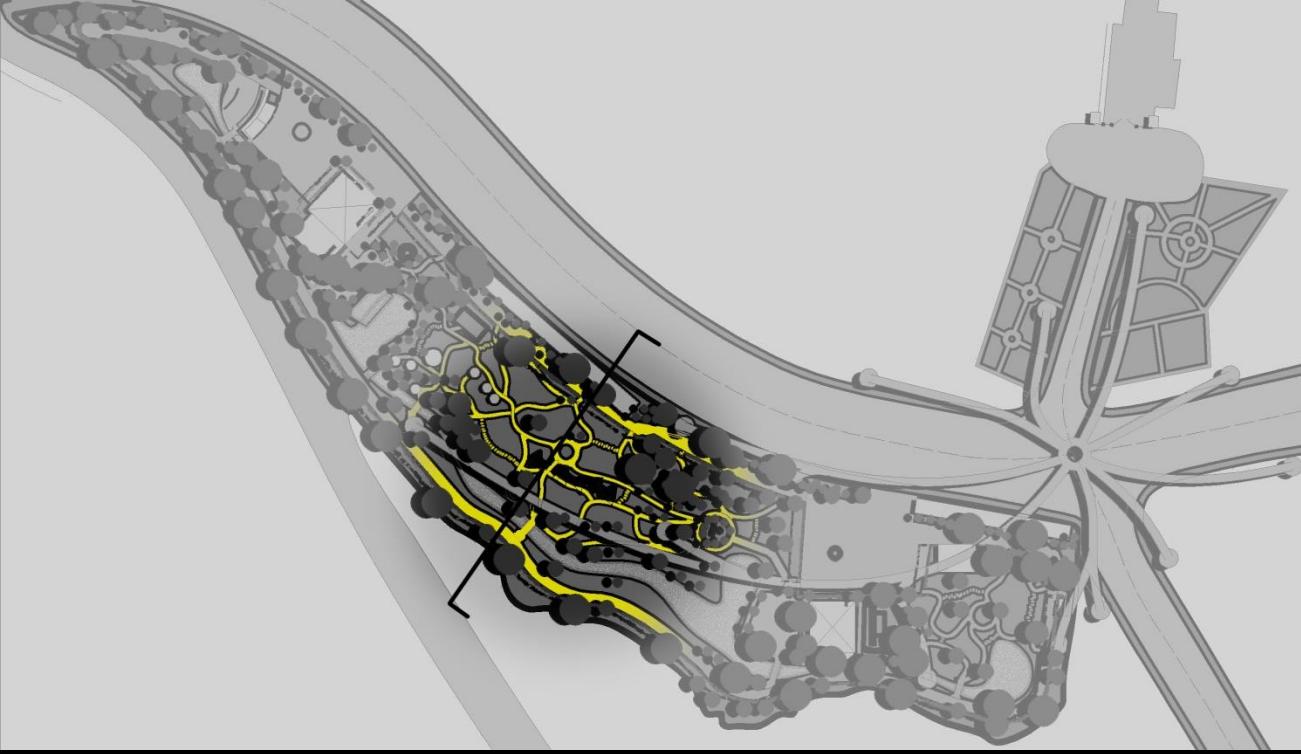




Detail-4

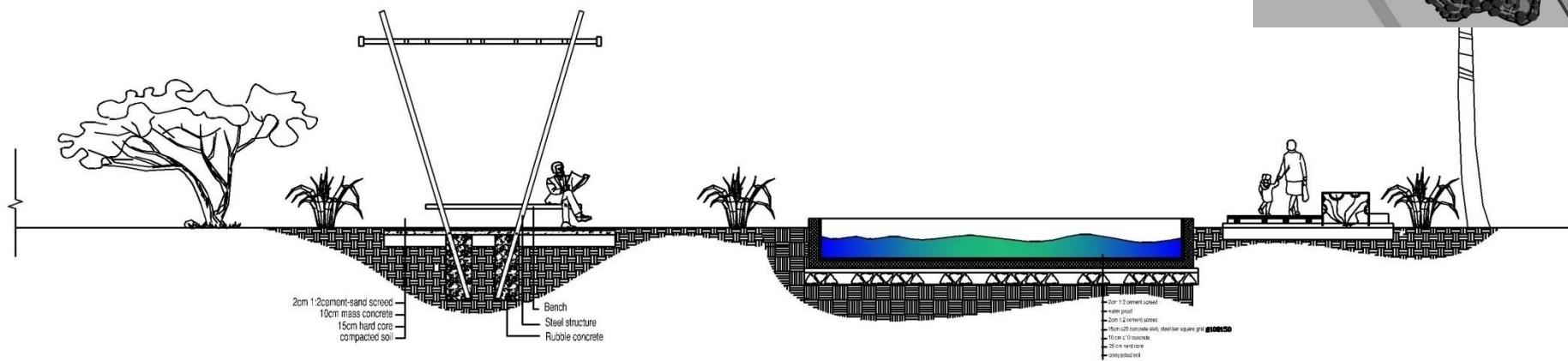
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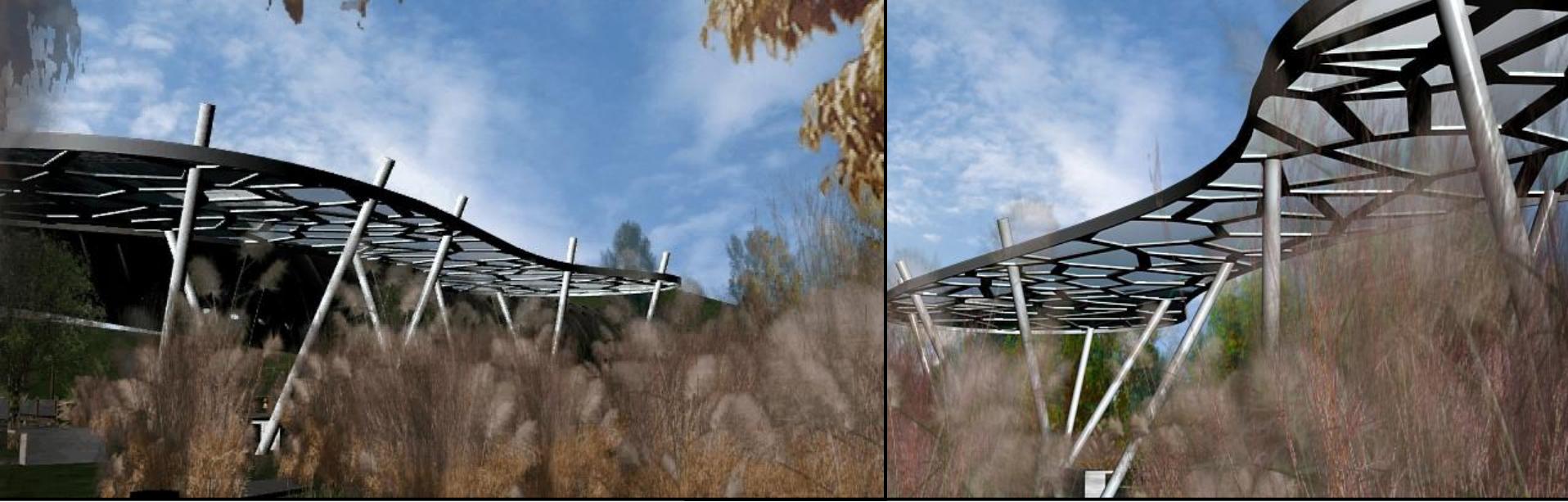




Detail-5

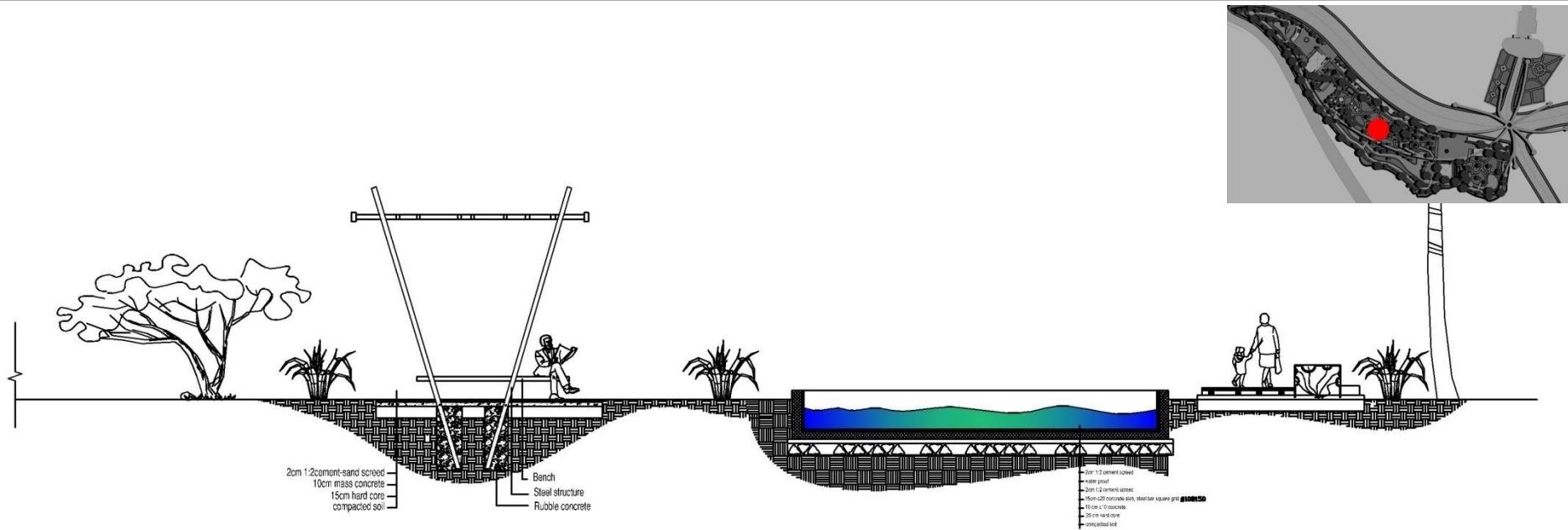
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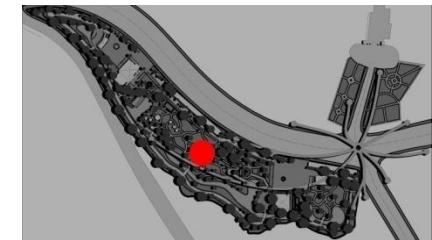
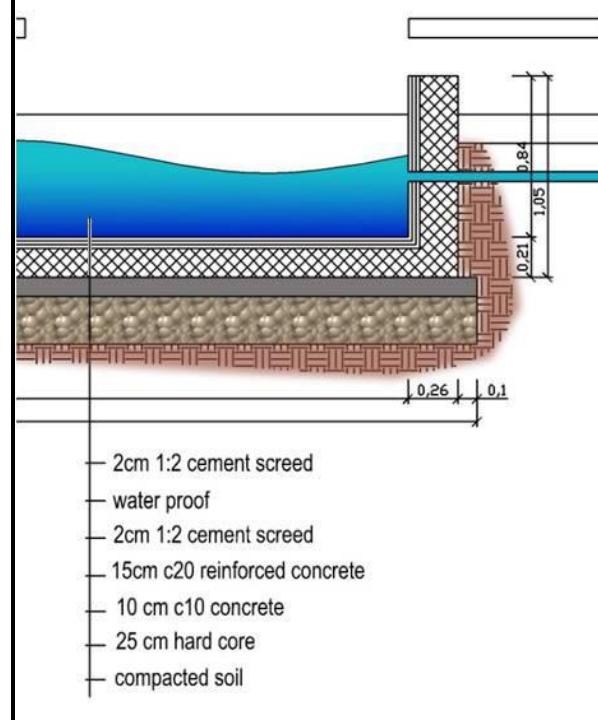
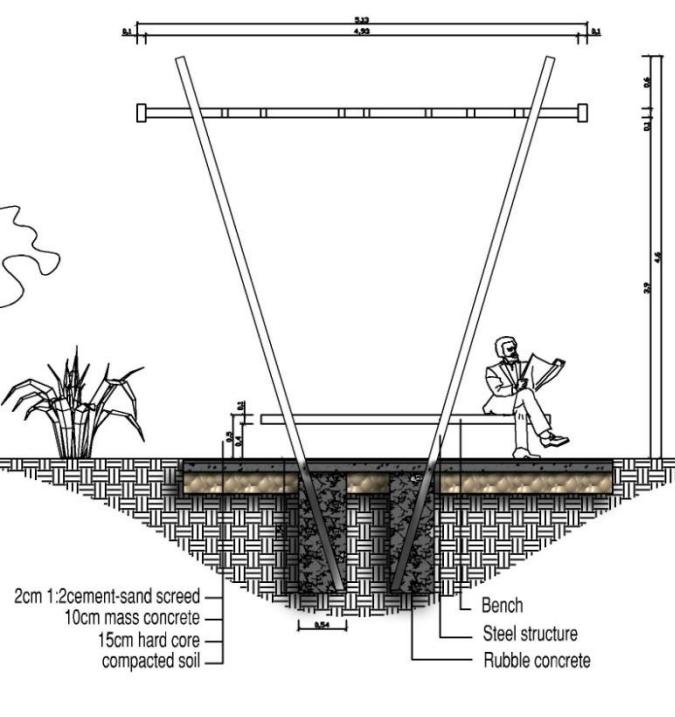




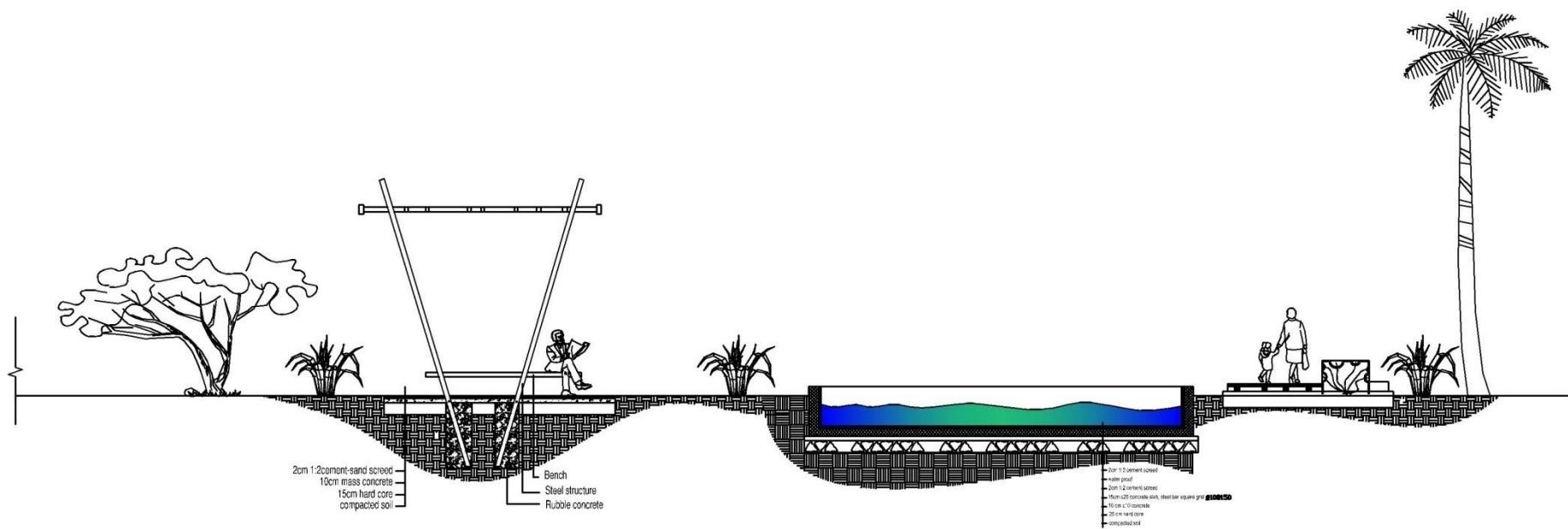
Detail-5

Mekelle Culture Park





Detail-5
Mekelle Culture Park





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