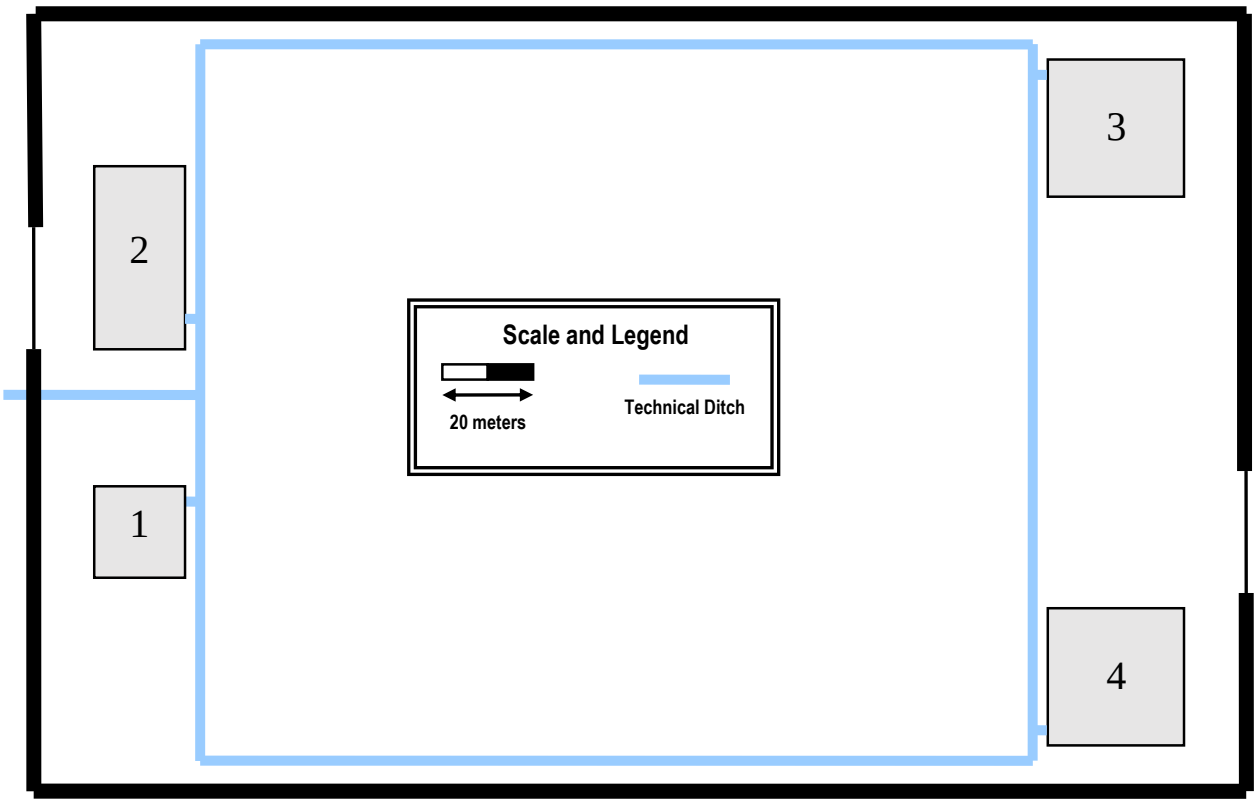
Computer Networks (*Redes de Computadores - RCOMP*) – 2023/2024

Project 1 – Sprint 1 - Description

The team is enrolled in a structured cabling project, the outcome for this sprint is a structured cabling deployment plan for the given physical environment. The project owner role is assumed by the laboratory classes teacher.

1. Physical environment description

The structured cabling project is to embrace a private closed area with four buildings, each of these buildings has two floors. The buildings are identified by the numbers 1, 2, 3, and 4. The following image represents the site plan.



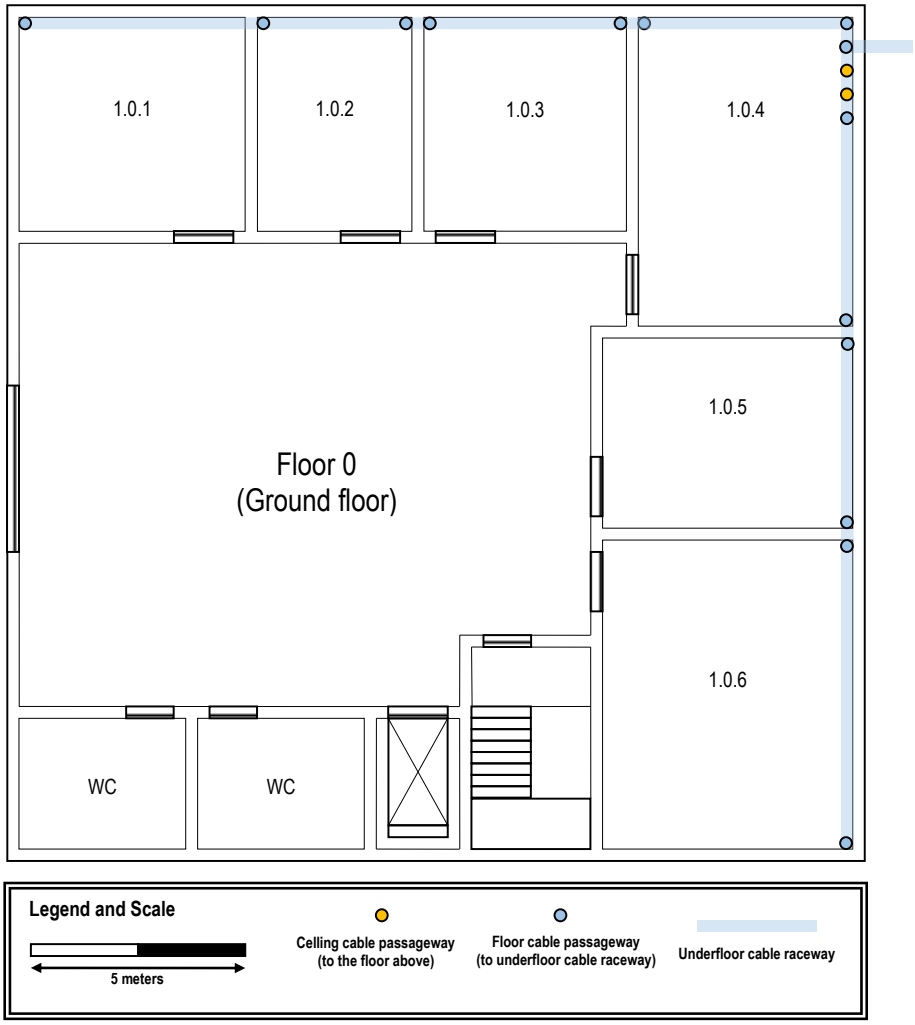
The building 1 horizontal dimensions are, approximately, 20 x 20 meters, the building 2 horizontal dimensions are, approximately, 40 x 20 meters. The buildings 3 and 4, have the same horizontal dimensions, approximately, 30 x 30 meters. An underground technical ditch with cable raceways (represented in blue) exists and includes cable passageways for every building, it's ready for telecommunications cabling and others.

1.1. Building 1

This building holds the datacentre (room 1.1.4), it will also house the main cross-connect for the structured cabling system. Both floors must have wireless LAN coverage (Wi-Fi).

1.1.1. Building 1 - Floor 0 (Ground floor)

The ground floor has an underfloor cable raceway connected to the external technical ditch. Access to the underfloor cable raceway is available at points marked over the plan at the image below. Also, cable passageways to the above floor are available.

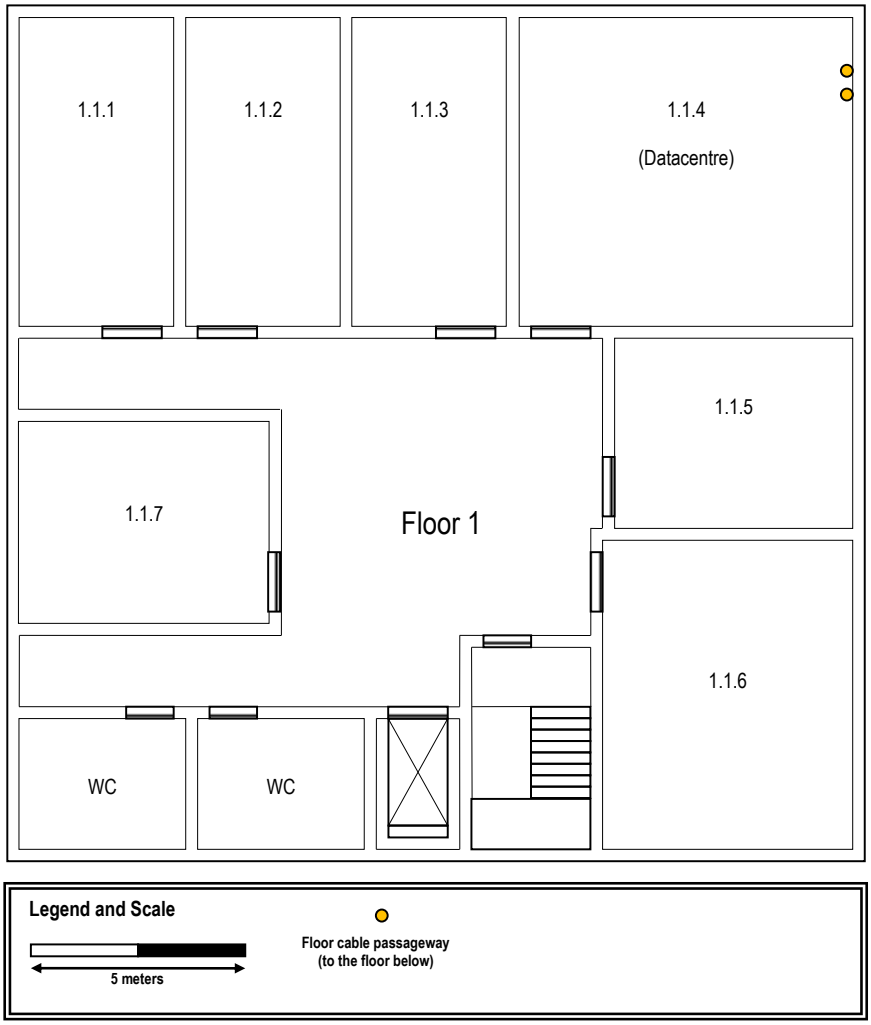


The ceiling height on this floor is 4 meters. Common areas, like the entrance hall, restrooms, and stairs, require no network outlets.

1.1.2. Building 1 - Floor 1

The ceiling height on this floor is 3 meters, however there's a removable dropped ceiling, placed 2.5 meters from the ground, covering the entire floor. The space over the dropped ceiling is perfect to install cable raceways and wireless access-points, this floor has no underfloor cable raceways.

The following image represents this floor plan.



No network outlets are required at restrooms and common areas like corridors and halls. Elsewhere, in every identified room, the standard number of network outlets per area rate should be honoured.

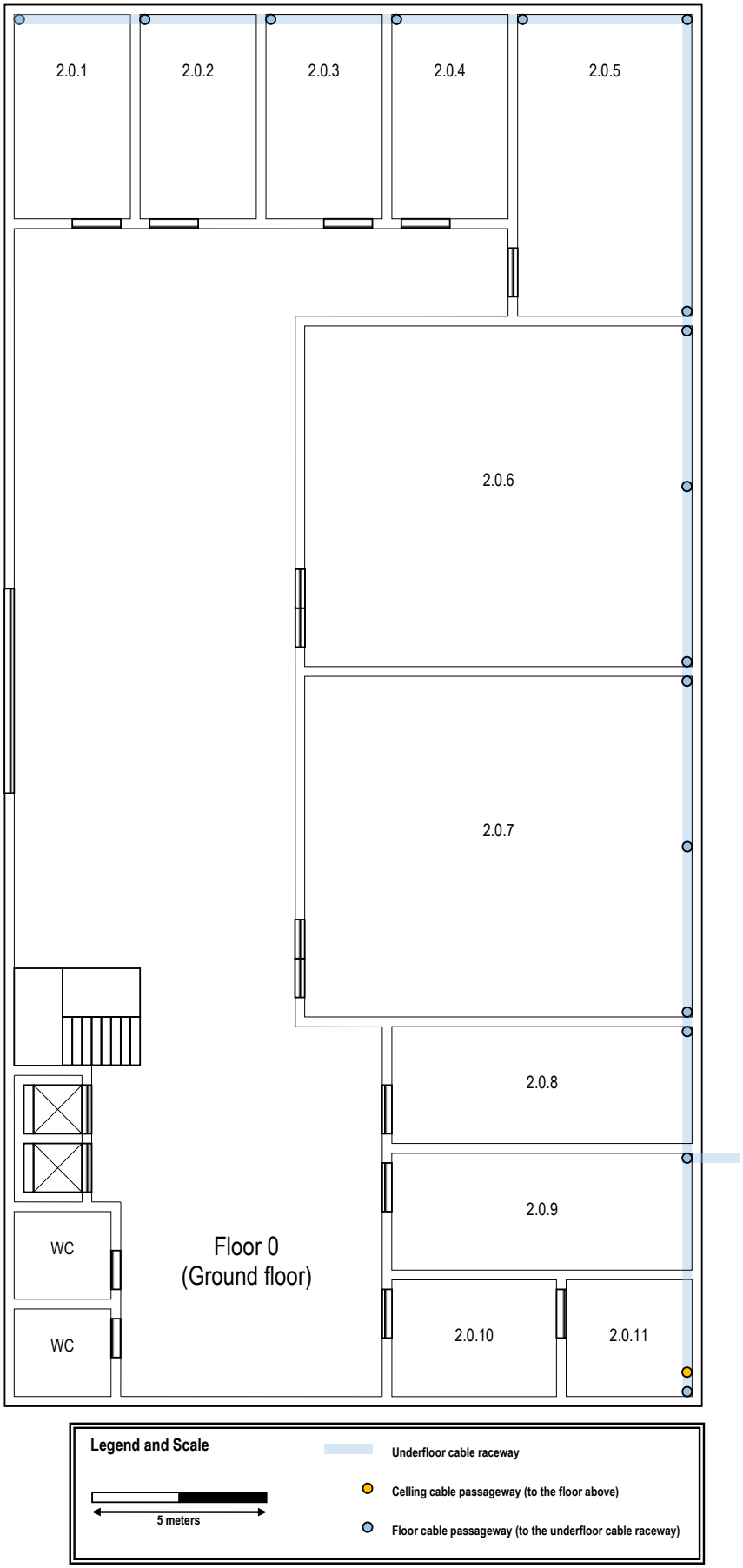
1.2. Building 2

Both floors of this building require full wireless LAN coverage (Wi-Fi).

1.2.1. Building 2 - Floor 0 (Ground floor)

The ground floor has an underfloor cable raceway connected to the external technical ditch. Access to the underfloor cable raceway is available at points marked over the plan at the image below. The ceiling height on this floor is 4 meters.

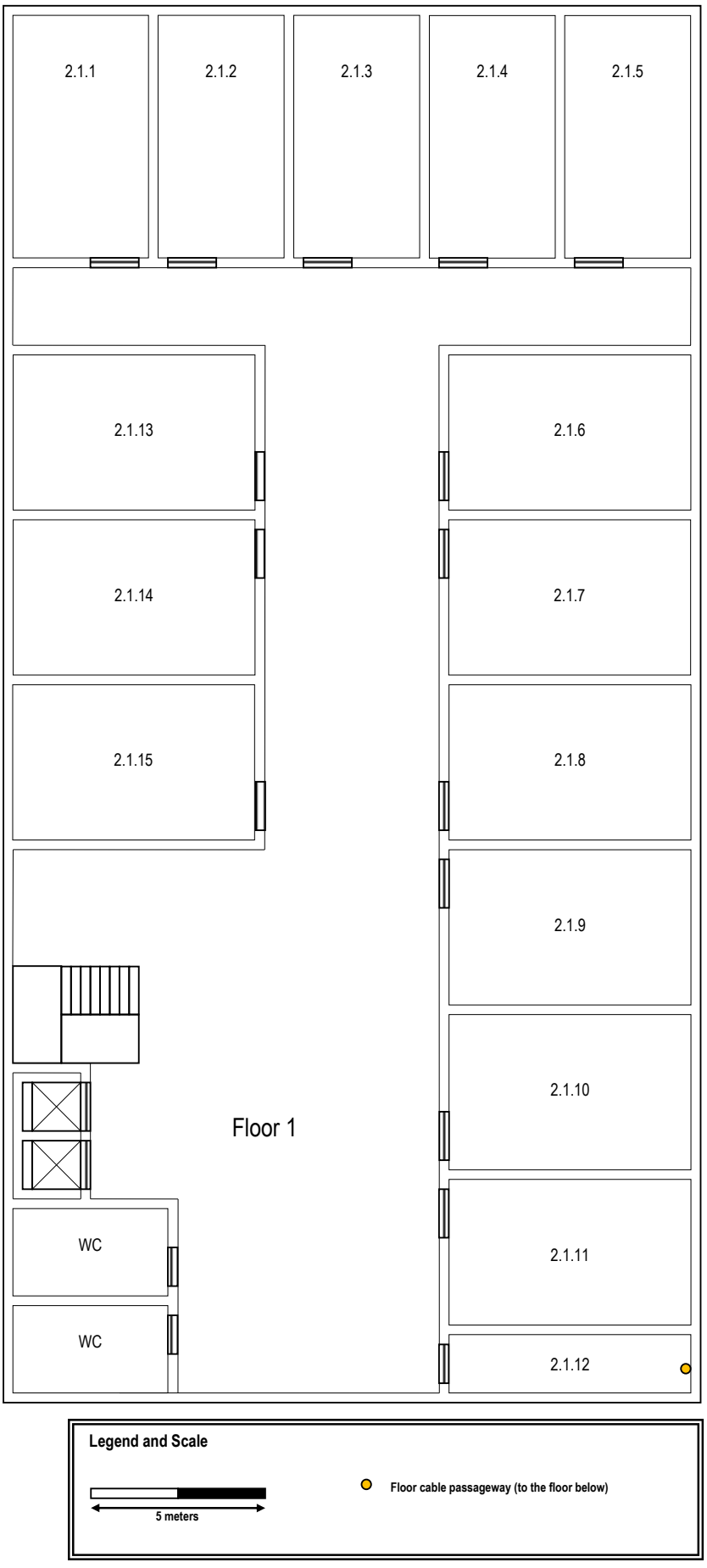
Rooms 2.0.6 and 2.0.7 have a special use and the only network outlets required are along the underfloor cable raceway, five outlets in each room.



Room 2.0.11 is a storage area and may be used to house a cross-connect, no network outlets are required there, and the same applies to the restrooms, the entrance hall, and other common areas. Elsewhere, the standard number of network outlets per area ratio is to be enforced.

1.2.2. Building 2 - Floor 1

The image below shows this floor's plan, in this floor there is no underfloor cable raceway.



The ceiling height on this floor is 3 meters, however there's a removable dropped ceiling, placed 2.5 meters from the ground, covering the entire floor. The space over the dropped ceiling is perfect to install cable raceways. Room 2.1.12 is a storage area and may be used to house a cross-connect, no network outlets are required there, and the same goes for restrooms, halls, and corridors. For the other rooms, the standard number of network outlets per area ratio should be applied.

1.3. Building 3

A full wireless LAN (Wi-Fi) coverage is required for this building on both floors.

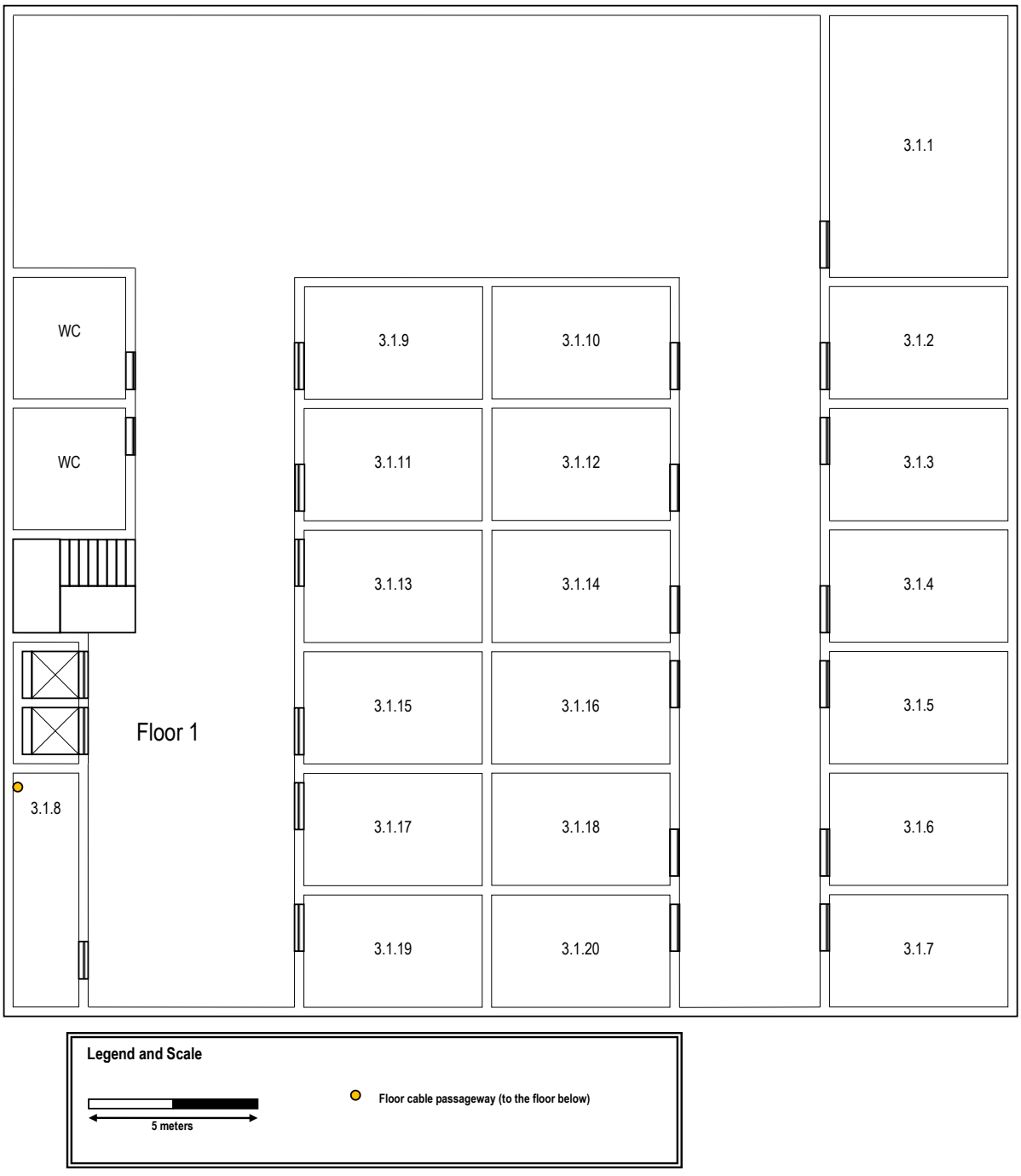
1.3.1. Building 3 - Ground floor

The ground floor has an underfloor cable raceway connected to the external technical ditch. Access to the underfloor cable raceway is available at points marked over the plan. The ceiling height on this floor is 4 meters.

Room 3.0.14 is a storage area that may be used to house a cross-connect, no network outlets are required there, and the same applies to restrooms, halls, and corridors. Rooms 3.0.1, 3.0.2, and 3.0.3 have specific purposes and the only network outlets required there are two near each floor cable passageway. Elsewhere, the standard number of network outlets per area ratio is to be enforced.

1.3.2. Building 3 - Floor one

The ceiling height on this floor is 3 meters, but there's a removable dropped ceiling, placed 2.5 meters from the ground, covering this entire floor. The empty space over the dropped ceiling is perfect to install cable raceways and wireless access-points.



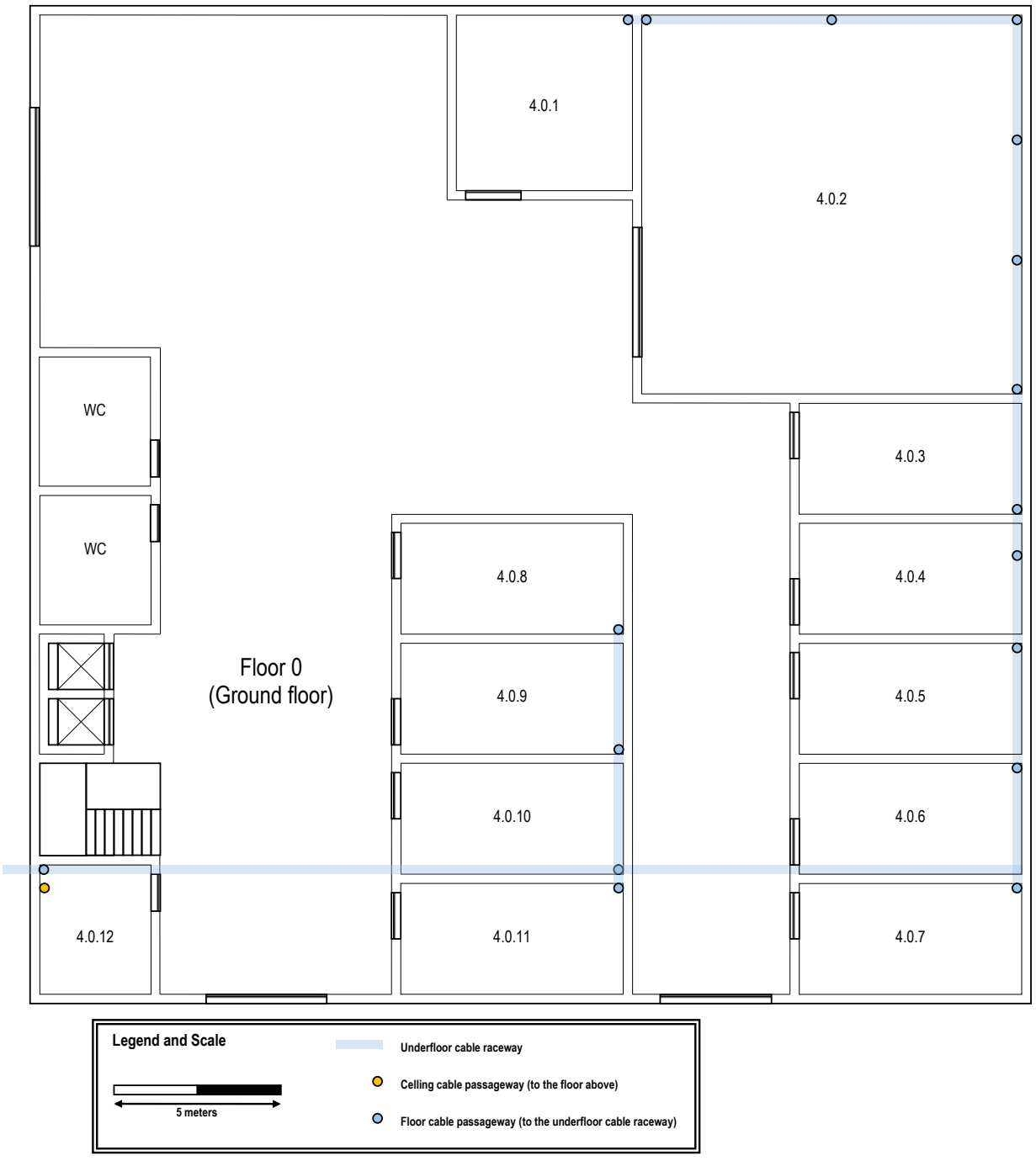
Common areas and restrooms are not required to have network outlets, other rooms should be provided with the standard number of network outlets. Room 3.1.8 is a storage area, no network outlets are required there as well, and it may be used to house a cross-connect and other network infrastructure hardware.

1.4. Building 4

A full wireless LAN (Wi-Fi) coverage is required for both floors of this building.

1.4.1. Building 4 - Ground floor

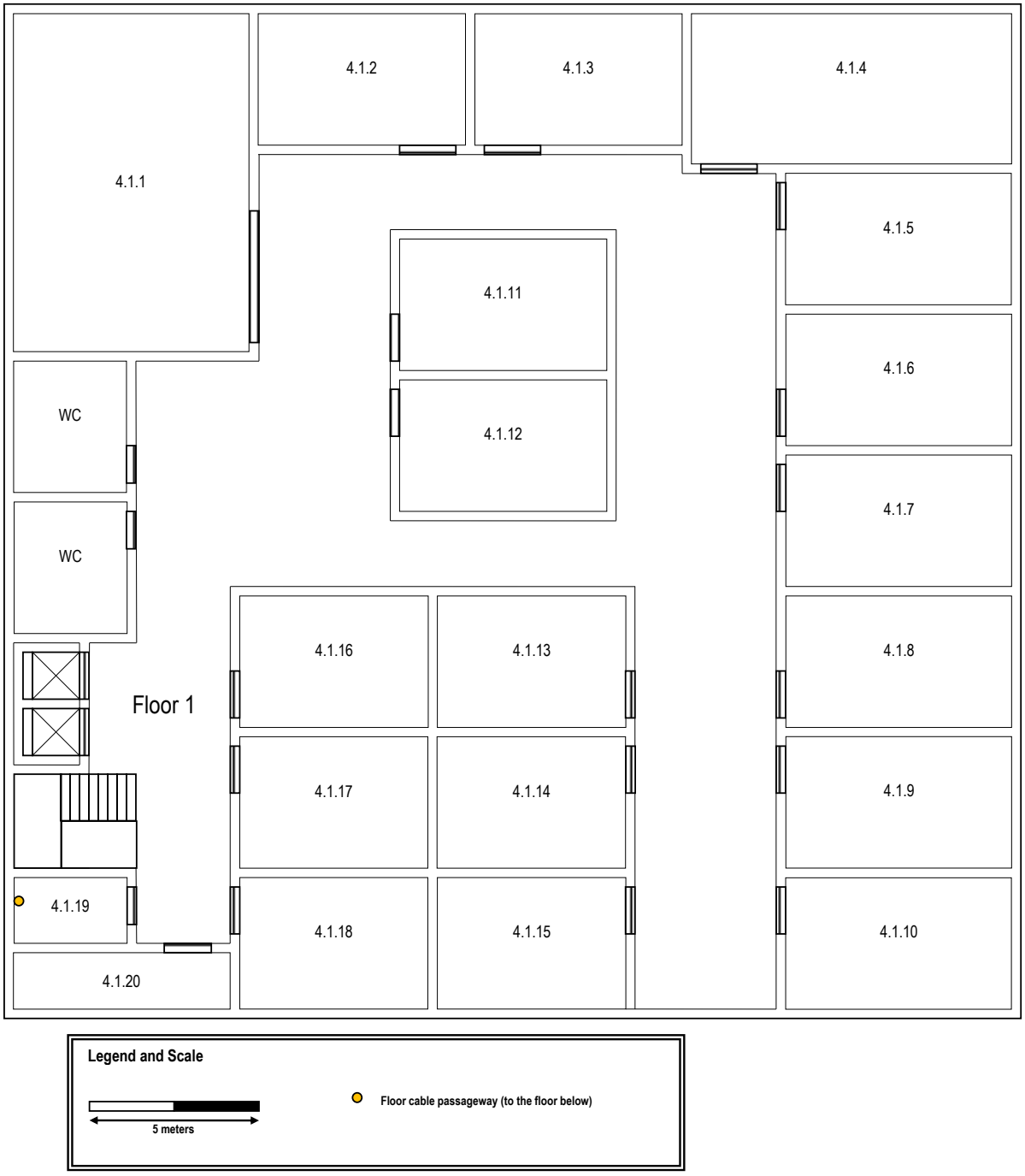
The ground floor has an underfloor cable raceway connected to the external technical ditch. Access to the underfloor cable raceway is available at points marked over the plan. The ceiling height on this floor is 4 meters.



Room 4.0.12 is a storage area that may be used to house a cross-connect and network infrastructure hardware, no network outlets are required in this room, and the same applies to restrooms and common areas like the entrance hall and corridors. Rooms 4.0.2 has a specific purpose and the only network outlets necessary are two near each floor cable passageway. Elsewhere, the standard number of network outlets per area ratio is to be enforced.

1.4.2. Building 4 - Floor one

The ceiling height on this floor is 3 meters, but there's a removable dropped ceiling, placed 2.5 meters from the ground, and covering this entire floor. The empty space over the dropped ceiling is perfect to install cable raceways and wireless access-points.



Rooms 4.1.19 and 4.1.20 are storage areas that may be used to house a cross-connect and other network infrastructure hardware, no network outlets are required there, the same goes for restrooms, and common areas like halls and corridors. Other identified rooms must be provided with the standard number of network outlets per area ratio.

2. Sprint 1 backlog

Task	Task description
T.1.1	Development of a structured cabling project for building 1, encompassing the campus backbone.
T.1.2	Development of a structured cabling project for building 2.
T.1.3	Development of a structured cabling project for building 3.
T.1.4	Development of a structured cabling project for building 4.

Task T.1.4 (Building 4) is to be ignored by teams with only three members.

3. Sprint 1 outputs/products

For each task on this sprint, the output is a structured cabling project. Each team member is free to provide this output in any desired format, it may be a single report or a set of items, but it should be placed in the team member's specific folder (**/doc/sprint1/{STUDENT-NUMBER}/**).

Whatever the format is, the following items are mandatory and will be subject of assessment:

- **Demonstration of calculations regarding the number of network outlets for each room.**
- **Network outlets deployment schematic plan (including outlets for wireless access points) and justification comments.**
- **Cross-connects deployment schematic plan and justification comments.**
- **Cable pathways deployment schematic plan and justification comments.**
- **Hardware inventories, including total cable lengths by cable type, appropriate patch panels, network outlets, telecommunication enclosures of proper size.**
- **There should be algo a global inventory made by the sum of the inventories of each building, this is a specific task for the sprint master.**

Keywords: explain, justify, and demonstrate.

The teacher's assessment is going to be focused on what is said to explain the solution.

4. Sprint 1 planning

- In the first laboratory class, the teacher will assign a number to each group, after that the team should create a BITBUCKET repository.
- One team member takes the **sprint master** role for sprint 1.

  On each sprint, a different team member takes this role. If no other criterion is consensual, it's suggested that the sprint master role for sprint 1 should be taken by the member with the lowest student's number.
- Global technical decisions and team coordination.

  Even though the tasks established in the sprint backlog are somewhat independent, once they all belong to the same project, a coordination effort in this phase is key. This will most often encompass technical decisions regarding the implementation with a special focus on features that are shared between tasks.

  All taken technical decisions must be registered, by the sprint master, in file **/doc/sprint1/planning.md**.

  For this specific sprint, some features to be settled now are:

  - Copper cable wiring standard to be adopted (either 568A or 568B).
  - Backbone cable types, cable passageways to be used, redundant links and others.
- Tasks assignment to team members.

  Every member (sprint master included) is assigned exactly one task from the backlog. The provided backlog has four tasks, for teams with less than four members, the last task in the backlog is to be ignored.

  The sprint master registers in file **/doc/sprint1/planning.md** the task assigned to each team member.

  Notice that the tasks assignment in this first sprint is going to persist along the remaining sprints, meaning tasks in the following sprints are the continuation of previous sprint's tasks and are to be carried out by the same team member.
- Sprint master's specific tasks.

  Beyond the usual sprint master tasks (e.g., planning/coordination, Moodle submission and review presentation) in this first sprint the sprint master will create a global inventory including hardware required for the campus backbone. This global inventory should be stored in the sprint's main folder (**/doc/sprint1/**). Ultimately, the liability for creating the bitbucket repository itself is for the sprint master as well.