NCIA Request for Information (RFI)

PROVISION OF WI-FI INTERNET CONNECTIVITY VIA 5G BACKHAUL FOR SHAPE BUILDINGS
RFQ 16484

NCIA/ACQ/2025/16484
Monday, 22 December 2025

NCIA Request for Information (RFI)

To: Industry Partners

1. The NATO Communications and Information Agency (NCIA) is conducting market research to identify qualified vendors and gather input on potential solutions to support the upcoming acquisition for **the provision of Wi-Fi Internet Connectivity via 5G Backhaul for SHAPE Buildings**. To that end, we are issuing the attached Request for Information (RFI) 16484 to solicit feedback from capable and interested industry partners.

2. This RFI is issued for planning purposes only and is not a request for bids. It is part of NCIA's effort to ensure it has a clear understanding of the marketplace, available capabilities, and potential acquisition strategies.

3. We value your insight and invite you to:
   a. Share relevant corporate capabilities and experience;
   b. Review and comment on our draft requirements (Annexes A and B) with a view in providing recommendations for improving performance outcomes, competition, and efficiency; and identifying any risks or concerns that should be considered during planning.

4. Submission instructions and additional details can be found in the enclosure to this RFI.

5. Only companies from a NATO member country can participate in or respond to this RFI (https://www.nato.int/cps/en/natohq/nato_countries.htm).

6. Should you have any questions or need clarification, please contact Esteban Diaz at Esteban.diaz@ncia.nato.int.

7. We thank you in advance for your time and input, and we look forward to engaging with you as we shape this potential acquisition.

For the Chief of Acquisition:

Esteban Diaz
Digitally signed by Esteban Diaz
Date: 2025.12.22 17:31:29 +01'00'

Esteban Diaz
Senior Contracting Assistant

Enclosure:

- Request for Information with Annexes A and B
- Distribution List

Distribution List

1. NATO Delegation (Attn: Infrastructure Adviser)

1. Albania	**12.** Greece	**23.** Poland
2. Belgium	**13.** Hungary	**24.** Portugal
3. Bulgaria	**14.** Iceland	**25.** Romania
4. Canada	**15.** Italy	**26.** Slovakia
5. Croatia	**16.** Latvia	**27.** Slovenia
6. Czechia	**17.** Lithuania	**28.** Spain
7. Denmark	**18.** Luxembourg	**29.** Sweden
8. Estonia	**19.** Montenegro	**30.** Türkiye
9. Finland	**20.** Netherlands	**31.** United Kingdom
10. France	**21.** North Macedonia	**32.** United States
11. Germany	**22.** Norway	

2. All NATEXs

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REQUEST FOR INFORMATION

A. Introduction

1. The NATO Communications and Information Agency (NCIA) is conducting market research to identify potential sources and gather information regarding industry capabilities to support **the provision of Wi-Fi Internet Connectivity via 5G Backhaul for SHAPE Buildings**. This Request for Information (RFI) is issued solely for informational purposes and does not constitute a Request for Proposal (RFP), Request for Quotation (RFQ), or invitation for bid.

B. Purpose

1. The purpose of this RFI is to obtain input from industry to help inform the NCIA's acquisition planning. Responses to this RFI will assist in refining requirements, identifying capabilities, and shaping the strategy for any future solicitation.

C. Background

1. Several buildings within the SHAPE compound are currently served by legacy wired network infrastructure that is technically outdated, fully utilized, and no longer aligned with SHAPE's operational shift toward mobile and flexible working practices. Although these buildings remain connected to the NATO Enterprise network through existing passive cabling, this infrastructure does not support user mobility and cannot be economically expanded to accommodate additional users or new operational requirements.
2. As a result, users in these buildings experience limited or no access to wireless connectivity, constraining their ability to effectively use modern enterprise tools and collaboration platforms.

D. Submission Instructions

1. Interested parties are invited to respond in accordance with the instructions below:

   a. Submit responses via the email address in section H no later than **12:00 hours Central European Time (CET)** on **31 January 2026**.

   b. Responses should be submitted in PDF or Word format and must not exceed **15 pages**, including:
      i. Responses to Annex A and comments on Annex B

      excluding:
      i. Cover page
      ii. Company brochures or product literature (if included)
      iii. Attachments such as past performance references

   c. Use the following subject line for submission
      i. "Response to RFI [RFI Number] – [Company Name]"

   d. All responses should address the items listed in Annex A – Requested Information.

e. Respondents are also encouraged to review and comment on the draft requirements in Annex B – Draft Statement of Work (SOW)/Performance Work Statement (PWS).

E. Industry Engagement

1. Not Applicable.

F. Disclaimer

1. This RFI is for planning and informational purposes only and shall not be construed as a solicitation or obligation on the part of the NCIA. The NCIA does not intend to award a contract based on responses to this RFI. Respondents are solely responsible for all costs incurred in responding to this RFI. The NCIA will consider and analyse all information received from this RFI and may use these findings to develop a future solicitation. The NCIA will consider all responses as confidential commercial information and will protect it as such.

2. NCIA reserves the right, at any time, to cancel this informal market survey, partially or in its entirety. No legal liability on the part of NCIA for payment of any sort shall arise and in no event will a cause of action lie with any prospective participant for the recovery of any costs incurred in connection with the preparation of documentation or participation in response hereto. All effort initiated or undertaken by prospective informal market survey participants shall be done considering and accepting this fact.

G. Use of Information Provided through Responses

1. **Confidentiality of Responses**

The NCIA may incorporate industry comments and responses, in part or in whole, into a future release of a solicitation. Should respondents include proprietary data in their responses that they do not wish to be disclosed to the public for any purpose, or used by NCIA (except for internal evaluation purposes), they must:

a. **Mark the title page with the following legend:**

This document includes data that shall not be disclosed outside NATO and shall not be duplicated, used, or disclosed – in whole or in part – for any purpose other than for NCIA internal evaluation purposes, unless otherwise expressly authorised by [insert company name]. This restriction does not limit the NCIA's right to use information contained in this data without restriction if it is obtained from another source. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]

b. **Mark each sheet of data it wishes to restrict with the following legend:**

Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this document.

H. RFI Point of Contact

1. Esteban Diaz
2. Esteban.diaz@ncia.nato.int.

Annex A – Requested Information

1. Respondents are encouraged to provide the following information in their response:

   a. **Company Information**
      i. Legal Business Name
      ii. Address
      iii. Website
      iv. Primary Point of Contact
      v. Email address

   b. **Technical Capability**
      i. Summary of relevant capabilities and past performance

   c. **Feedback and Recommendations**
      i. Comments on the draft Statement of Work (SOW)/ Performance Work Statement (PWS)
      ii. Responses to the following RFI Questions

1. **Public 5G Network – Preliminary Performance Assessment**

Respondents are requested to provide a preliminary assessment of the suitability of the current public 5G network to support the Wi-Fi backhaul use case described in this RFI.

The assessment shall be based on current and realistic network conditions, and shall explicitly take into account the existing traffic load on the public 5G network elements serving the SHAPE compound.

In particular, respondents are requested to consider and describe, at a high level:

- The public 5G coverage of the SHAPE compound and the cells or sectors serving the area
- The current utilization and busy-hour behaviour of those cells or sectors
- Typical indoor and outdoor radio conditions relevant to the buildings in scope
- The time-of-day traffic profile of the public 5G network compared with the expected SHAPE usage window (Monday to Friday, 08:30–17:30)
- The incremental impact of approximately fifty (50) additional SHAPE users on capacity, throughput, and latency
- Expected downlink/uplink throughput and latency ranges under normal and busy-hour conditions
- Any key bottlenecks, risks, or assumptions affecting performance

The objective of this assessment is to understand whether the public 5G network can reliably support the expected workload during business hours, and whether reinforcement or alternative architectures may be required.

2. **Required Network Reinforcements**

Where applicable, respondents should describe:

- Type of reinforcement required
- Technical justification
- Indicative implementation complexity

- Impact on timeline and cost

3. Wi-Fi Access Management & Security Approach

Respondents are requested to describe their proposed approach for:

- User and device authentication
- Authorization and access control
- Integration constraints with enterprise-managed laptops
- Access lifecycle management (onboarding, revocation, replacement devices)
- Monitoring, logging, and auditability
- Roles and responsibilities between customer and supplier

4. Management of Multiple Wi-Fi Networks and Traffic Prioritization

Respondents are requested to describe how their proposed solution would support multiple Wi-Fi networks within the same building, in the context of both the initial scope and potential future framework deployments.
In particular, respondents should address, at a high level:

Multi-Network Support

- Ability to operate multiple logically separated Wi-Fi networks (e.g. multiple SSIDs) over the same physical infrastructure
- Separation of traffic, security policies, and management domains between networks
- Flexibility to enable or disable specific networks on a per-building basis

Access Control Models

- Different authentication and authorization mechanisms per Wi-Fi network
- Support for distinct user populations and device types
- Operational implications for administration and lifecycle management

Traffic Prioritization and Quality of Service

- Mechanisms to prioritize traffic between different Wi-Fi networks or user categories
- Behaviour during congestion scenarios
- Ability to enforce lower priority or best-effort service for guest or public access
- Impact of prioritization on the 5G backhaul and overall system performance

Scalability and Framework Considerations

- How these capabilities scale as additional buildings are added
- Any constraints or dependencies affecting large-scale or multi-building deployments

Respondents should describe principles, capabilities, and operational approaches rather than detailed configurations.

5. Private Network Option – Shared Infrastructure (e.g. MOCN)

For a MOCN-type or equivalent solution, respondents should outline:

- Proposed architecture (high-level)
- Degree of resource isolation
- Expected performance improvements vs public 5G
- Security implications
- Advantages and limitations
- Dependencies on regulatory, spectrum, or operator constraints

6. Private Network Option – Dedicated SHAPE Mast

For a fully dedicated private 5G deployment, respondents should outline:

- Proposed architecture and coverage concept
- Implementation phases and indicative timeline
- Expected performance characteristics
- Operational implications
- Advantages and limitations compared to other scenarios

7. Opportunities Enabled by a Private 5G Network

For both private 5G network options under consideration (shared infrastructure models such as MOCN, and fully dedicated private 5G deployments), respondents are requested to describe the additional usage opportunities that could be enabled beyond the Wi-Fi backhaul use case described in this RFI.

The objective of this section is to help SHAPE understand the potential functional, operational, and strategic benefits of a private 5G network over time, rather than to define additional mandatory scope at this stage.

Respondents are invited to describe, at a high level, opportunities such as (non-exhaustive):

Extended Data and Internet Access Use Cases

- Direct Internet and data access services for smartphones or tablets used by SHAPE personnel
- Differentiation between corporate-managed and personal devices, where applicable
- Potential roaming or mobility considerations within the SHAPE compound

Voice and Telephony Services

- Local voice services using Voice over IP (VoIP) over the private 5G network
- Integration possibilities with existing telephony or unified communications platforms
- Advantages and limitations compared to traditional wired, cellular or Wi-Fi–based voice services

Operational and Mission-Critical Communications

Respondents are requested to describe how a private 5G network could support or complement operational and mission-critical communication services, including but not limited to:

- Mission-critical voice and group communications (e.g. push-to-talk, group calls)
- Priority, pre-emption, and quality-of-service mechanisms for designated user groups
- Resilience, availability, and fallback capabilities relevant to operational use

In addition, respondents are invited to provide high-level feedback on interoperability considerations, including:

- The ability of a private 5G network to interact with or interoperate with existing mission-critical communication systems used by other stakeholders, such as:
  - ASTRID users (e.g. Belgian Federal Police and emergency services, based on TETRA technology)
  - P25-based users operated by US stakeholders
- Potential technical approaches to such interaction (e.g. gateways, interworking functions, application-layer integration), without detailed design

- Key limitations, dependencies, or constraints (technical, regulatory, security, or organizational)

Quality of Service and Network Control

- Ability to offer differentiated service levels (latency, throughput, availability) for different use cases
- Mechanisms for traffic prioritization and resource allocation
- Impact of these capabilities on overall network design and operations

Security and Isolation

- Opportunities for enhanced security, isolation, or sovereignty compared to public network usage
- Control over data paths, traffic localization, and policy enforcement

Scalability and Evolution

- How such additional use cases could be introduced incrementally over time
- Dependencies, constraints, or prerequisites (technical, regulatory, or operational)
- Indicative impact on cost, complexity, and operations

Respondents should clearly indicate:

- Which opportunities are naturally enabled by the proposed private 5G architecture
- Which would require additional infrastructure, licenses, or services
- Any key limitations or trade-offs

Descriptions should remain conceptual and informative, and shall not be interpreted as requirements or commitments for future procurement phases.

iii. Innovations or alternatives

iv. Rough Order Magnitude (ROM), including any assumptions upon which they are based

Respondents are requested to provide indicative ROM estimates (non-binding) for:

- Each of the three solution scenarios
- Under both service models (NOCO and COCO)

This results in six (6) ROM estimates in total.

ROM estimates should:

- Clearly distinguish CAPEX vs OPEX
- Identify major cost drivers
- State assumptions (traffic, users, SLAs, duration)
- Be expressed as indicative ranges where appropriate

When providing Rough Order of Magnitude (ROM) cost estimates, respondents shall ensure that their estimates reflect a complete, end-to-end solution, based on the assumptions described in this RFI.

Without being exhaustive, and for the purpose of ensuring comparability between responses, respondents are requested to consider and explicitly state whether their ROM estimates include the following cost elements, as applicable to each solution scenario and service model:

Design & Engineering
- System design activities
- Preliminary and detailed 5G capacity and performance analysis
- Radio planning and coverage assessments

Equipment & Infrastructure
- Provision of enterprise-grade 5G-enabled Wi-Fi Access Points (including embedded or external 5G modems)
- SIM cards associated with each Wi-Fi Access Point
- External or rooftop antennas where indoor 5G signal levels are insufficient
- Associated cabling, mounting hardware, and accessories

5G Network Aspects
- Data subscriptions for all Wi-Fi Access Points
- Any required public 5G network reinforcement or enhancement (Scenario 1 – Public 5G), where applicable
- Dedicated or semi-dedicated resources for private or shared private network scenarios (Scenarios 2 and 3), as applicable

Deployment & Acceptance
- Installation, configuration, and commissioning activities
- Activation of SIMs and connectivity services
- Acceptance testing and validation activities
- Provision of acceptance and test reports

Wi-Fi Access Management & Security
- Wi-Fi access control, authentication, and authorization mechanisms
- Centralized management platforms or licenses
- Security monitoring, logging, and audit capabilities

Operations & Maintenance
- Monitoring of Wi-Fi and 5G connectivity
- Incident management and service desk
- On-site support and hardware replacement, where applicable
- Firmware, software, and security updates
- Service Level Agreement (SLA) commitments

Respondents shall clearly identify:
- Which of the above elements are included in their ROM estimates
- Any elements assumed to be excluded or provided by the customer
- Any significant cost drivers or assumptions impacting the ROM figures

d. Questions or Concerns

i. Risks, concerns, or barriers

ii. Suggestions for risk mitigation or enhancing competition

Annex B – Draft Requirements / Statement of Work (SOW/PWS)

Note: This is a DRAFT and subject to change. The NCIA is seeking industry feedback.

1. Background

The NATO Communications and Information Agency (NCIA) requires the provision of Wi-Fi Internet Connectivity via 5G Backhaul for SHAPE Buildings. This capability support the NCIA's mission to deliver secure, resilient, and reliable information and communication services that enable NATO and SHAPE personnel to effectively perform their operational, administrative, and collaborative duties.

Several buildings within the SHAPE compound are currently served by **legacy wired network infrastructure** that is technically outdated, fully utilized, and no longer aligned with SHAPE's operational shift toward mobile and flexible working practices. Although these buildings remain connected to the NATO Enterprise network through existing passive cabling, this infrastructure does not support user mobility and cannot be economically expanded to accommodate additional users or new operational requirements.

As a result, users in these buildings experience limited or no access to wireless connectivity, constraining their ability to effectively use modern enterprise tools and collaboration platforms.

In this context, SHAPE is exploring the deployment of a managed **Wi-Fi internet access solution using 5G connectivity as the primary backhaul**, as an alternative to extending or upgrading the existing wired infrastructure.

The Wi-Fi connectivity under consideration is intended to provide secure Internet connectivity to authorized SHAPE users and enterprise-managed devices. This Internet connectivity will support:

- Access to **public Internet–hosted enterprise services**, such as Microsoft 365 and Microsoft Teams (including audio and video collaboration), and
- **Secure remote access to NATO Enterprise network resources**, typically established from the end-user devices via existing secure connectivity mechanisms (e.g. VPN).

The solution is not intended to provide direct integration or connectivity into internal SHAPE or NATO Enterprise local area networks. Instead, it shall deliver reliable, predictable, and secure Internet access performance suitable for enterprise productivity workloads, while respecting existing NATO Enterprise security architectures and responsibilities.

Given the reliance on wireless access and cellular backhaul, SHAPE seeks to better understand:

- The suitability of the current public 5G network to support the expected user density and workload,
- The potential need for network reinforcement or optimization,
- And whether private 5G network models could offer advantages in terms of performance, resilience, security, or cost predictability.

2. Scope

The envisaged scope under consideration includes:

- Provision of managed Wi-Fi connectivity in SHAPE buildings
- Use of 5G connectivity as the primary backhaul
- Secure Wi-Fi access restricted to authorized SHAPE users and devices
- Centralized monitoring, operations, and maintenance
- Optional deployment of a private 5G network covering part or all of the SHAPE compound

The final scope, architecture, and commercial model are not yet fixed and will be informed by the responses to this RFI.

At this stage, **seven (7) buildings** have been identified as an initial and firm scope for the solution described in this RFI. These buildings should be considered representative of the typical use cases, constraints, and performance expectations that may be included in a future Statement of Work resulting from this RFI.

However, SHAPE anticipates that **additional buildings** may require similar Wi-Fi connectivity via 5G backhaul in the near to medium term. As such, the intent is to assess solutions that are scalable, repeatable, and suitable for inclusion in a potential framework contract, allowing additional buildings to be equipped over time without requiring a complete re-procurement for each site.

Respondents are therefore encouraged to describe:

- How their proposed solutions scale technically and operationally
- Any volume-related efficiencies or constraints
- How pricing, lead times, and service levels could evolve as additional buildings are added under a framework arrangement

Buildings in Scope (Indicative)

Building	GPS coordinates	Estimated Users	Estimated WAPs*
217/218	50.496594, 3.976905	8	2
206	50.498148, 3.978697	2	1
202	50.497200, 3.979813	3	1
233	50.497746, 3.976272	9	2
219	50.497097, 3.976272	5	1
210	50.497664, 3.977876	21	4
105	50.502178, 3.981905	2	1
Total		**50**	**12**

* Preliminary NCIA estimates. Respondents may comment on their validity and propose alternatives.
Floor plans indicating coverage areas are available as an annex for context.

3. High-Level Technical Expectations

The final technical requirements and detailed architecture will be defined at a later stage. At this RFI stage, SHAPE seeks industry input on solutions that are robust, secure, scalable, and suitable for framework-based deployment.

3.1 Wi-Fi and Backhaul Technology (Indicative)

At a minimum, the solution under consideration is expected to:

- Use enterprise-grade Wi-Fi technology (Wi-Fi 6 or higher)
- Rely on 5G connectivity as the primary backhaul
- Support centralized configuration, monitoring, and lifecycle management
- Be deployable in a modular and repeatable manner across multiple buildings

3.2 Usage Profile and Operating Hours (Initial Scope)

For the seven (7) buildings identified as the initial and firm scope, the expected usage profile is primarily business-hours driven, as follows:

- Monday to Friday
- 08:30 to 17:30

During these periods, the Wi-Fi connectivity is expected to support typical enterprise productivity workloads, including but not limited to:

- Microsoft 365 applications
- Microsoft Teams (including audio and video conferencing)
- Secure remote access to NATO Enterprise resources via VPN

Outside these hours, usage is expected to be minimal and largely incidental.

3.3 Access Scope – Current and Future Use Cases

For the seven (7) buildings in the initial scope, the Wi-Fi service is intended to be:

- Restricted exclusively to authorized SHAPE users and enterprise-managed devices
- No public or guest Wi-Fi access is foreseen for these buildings

However, in the context of a potential framework contract, SHAPE anticipates that future deployments may involve buildings with mixed user populations and use cases, for example:

- Restricted access for NATO personnel
- Restricted access for other supporting or partner organizations
- Optional public or guest Wi-Fi access

The solution should therefore be capable of supporting multiple logically separated Wi-Fi networks (e.g. SSIDs) within the same physical infrastructure, each with:

- Distinct authentication and authorization mechanisms
- Appropriate security controls
- Independently configurable policies

3.4 Traffic Segregation and Prioritization (Indicative)

For future mixed-use scenarios, SHAPE expects that the solution could support:

- Logical segregation of traffic between different Wi-Fi networks
- Configurable traffic prioritization between user categories

In particular, where public or guest Wi-Fi access is enabled:

- Such traffic would be expected to have lower priority than operational or mission-related traffic
- Performance for guest access may be intentionally degraded during congestion in favour of higher-priority users

The exact prioritization policies, enforcement mechanisms, and performance targets are not defined at this stage and will be informed by the responses to this RFI.

4. Solution Scenarios to Be Assessed

Respondents are requested to provide inputs for three alternative solution scenarios:

4.1 Scenario 1 – Public 5G Network Backhaul

- Wi-Fi access points connected to the existing public 5G network
- SIM-based connectivity
- Potential need for coverage or capacity reinforcement

4.2 Scenario 2 – Private 5G Network via Shared Infrastructure (e.g. MOCN)

- Use of supplier's existing radio infrastructure
- Dedicated logical network / slice for SHAPE
- Dedicated or semi-dedicated capacity and core functions

4.3 Scenario 3 – Private 5G Network with Dedicated SHAPE Mast

- Deployment of new 5G radio equipment on SHAPE-owned or SHAPE-located masts
- Dedicated infrastructure and spectrum usage model (as applicable)
- Longer implementation timeline but potentially higher control and predictability

5. Objectives

SHAPE is considering two service ownership/operation models:

NOCO – NATO Owned / Contractor Operated

- Infrastructure owned by SHAPE
- Contractor installs, configures, operates, and maintains the system

COCO – Contractor Owned / Contractor Operated

- Infrastructure fully or partially owned by the contractor
- Service delivered under an SLA as a managed service

Respondents are invited to comment on:

- Suitability of each model
- Advantages and constraints
- Impact on cost, risk, and flexibility

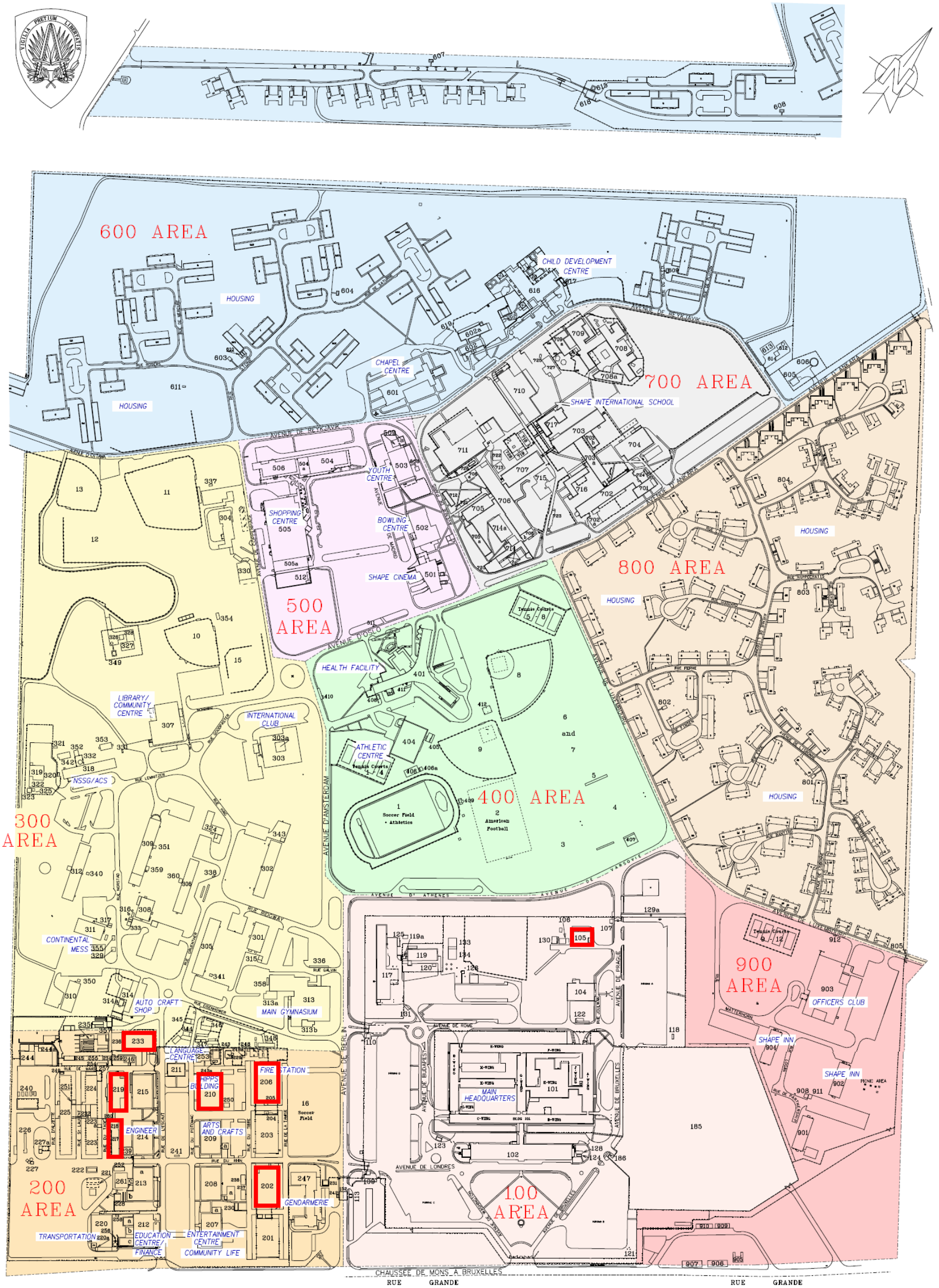
6. Period of Performance

a. To be determined.
Potential combinations:
1-year Base period + 4 Optional years (executed on a yearly basis)

5 years Base period + 5 Optional years (executed on a yearly basis)

7. Place of Performance

a. SHAPE (Casteau, Belgium) with the option to add other NCIA locations in Belgium.



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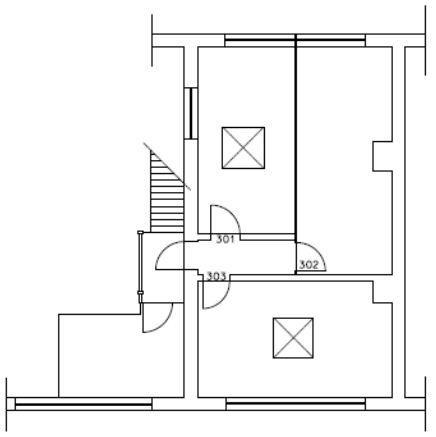

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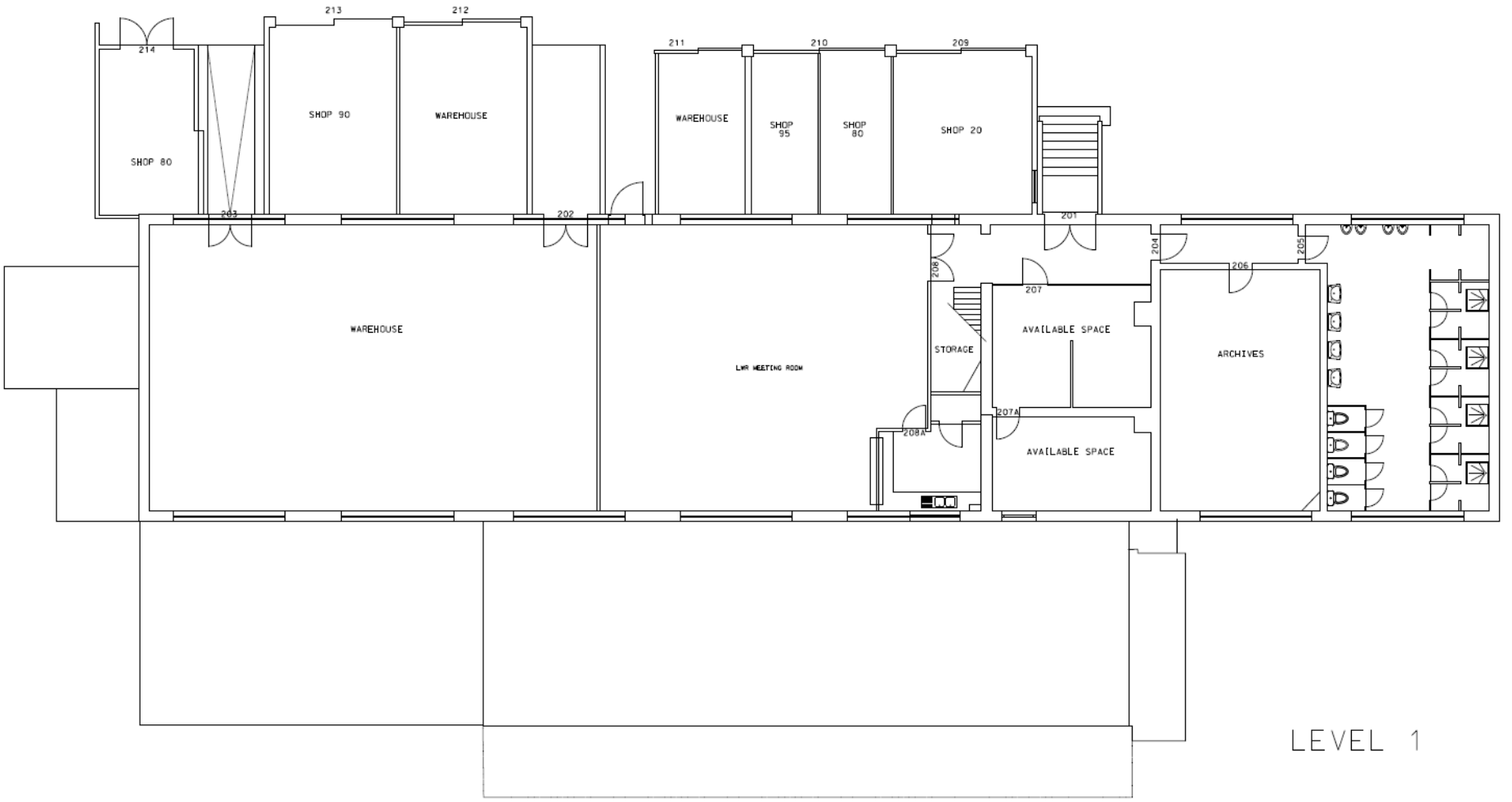

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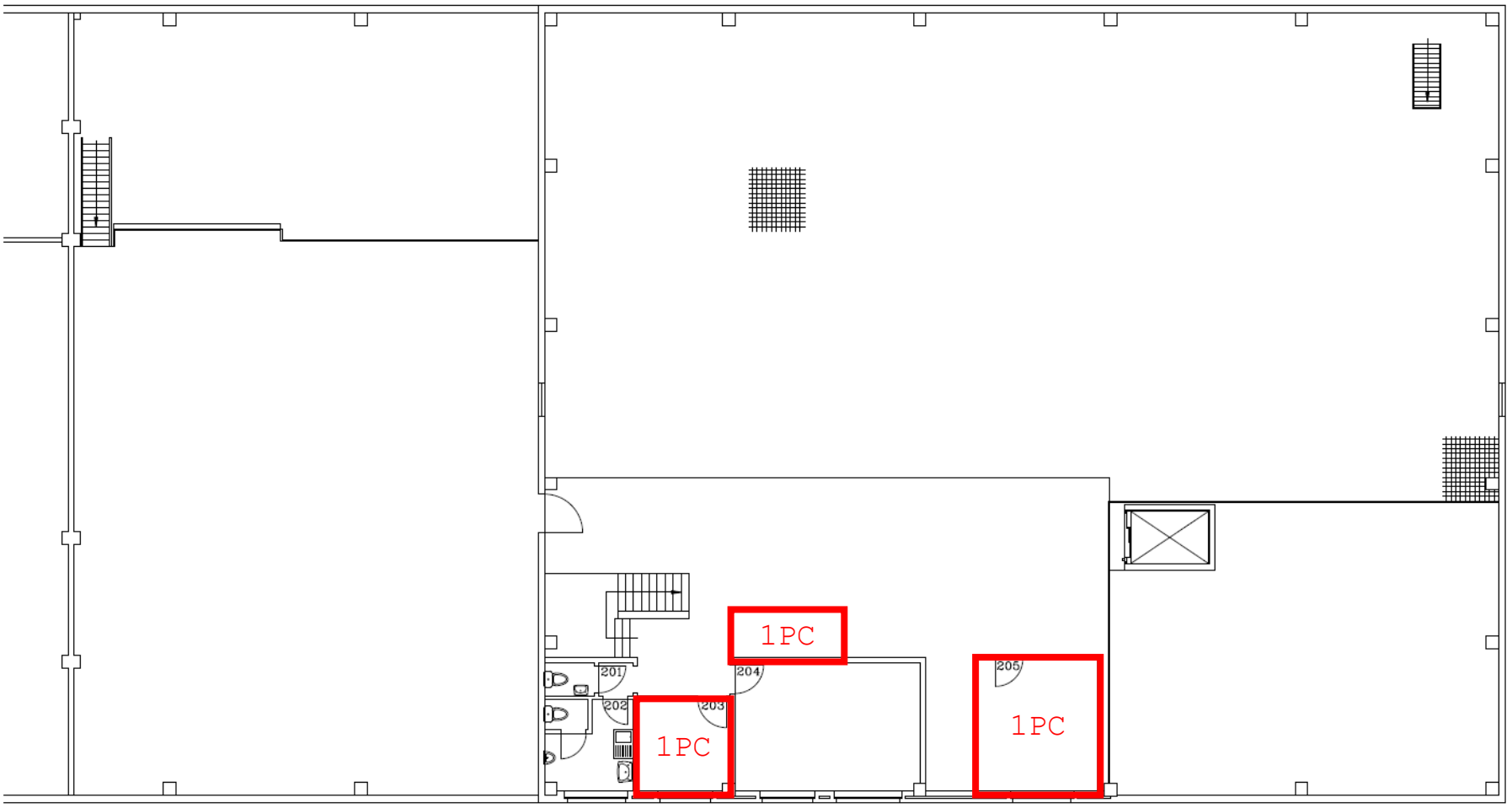

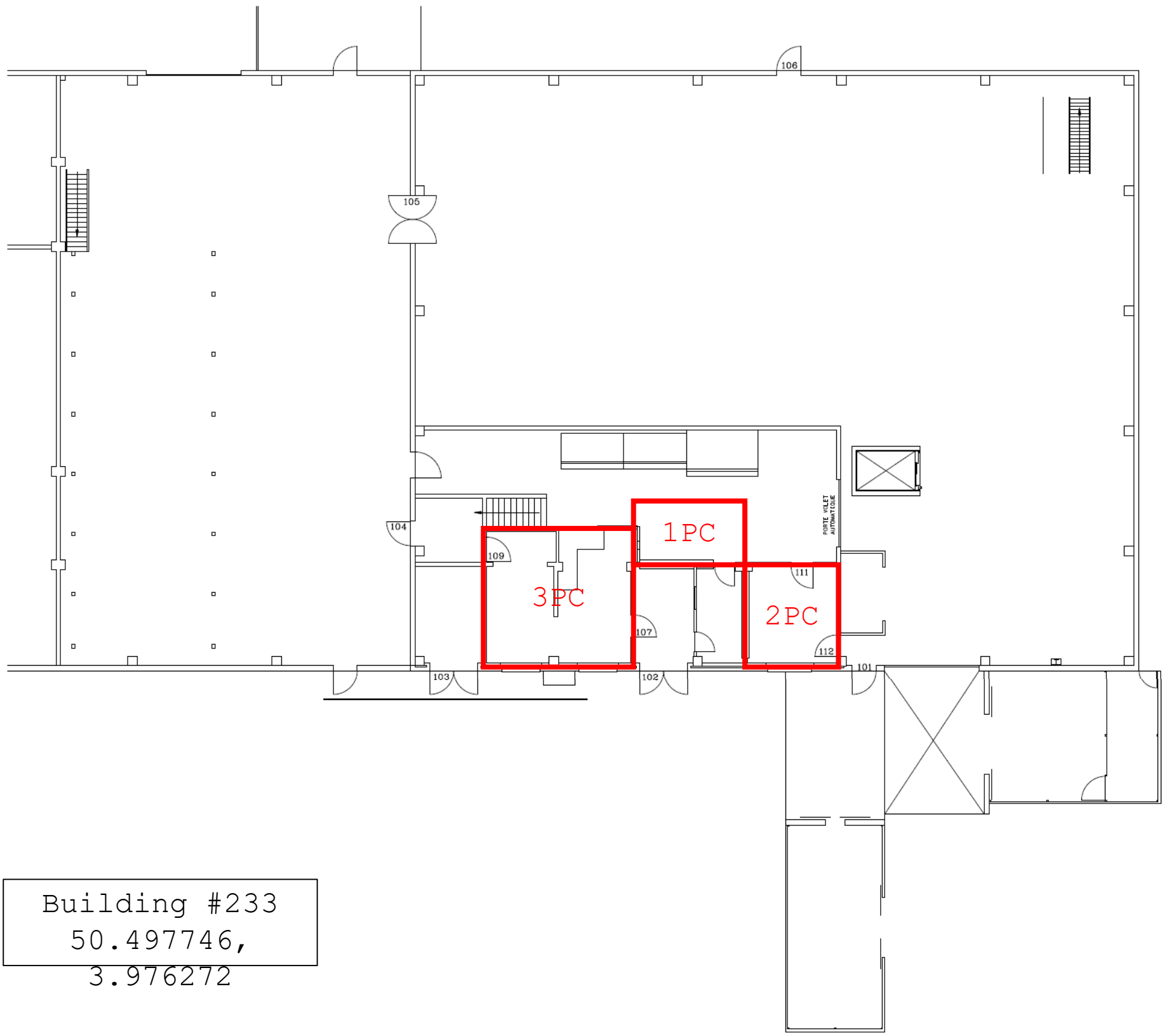

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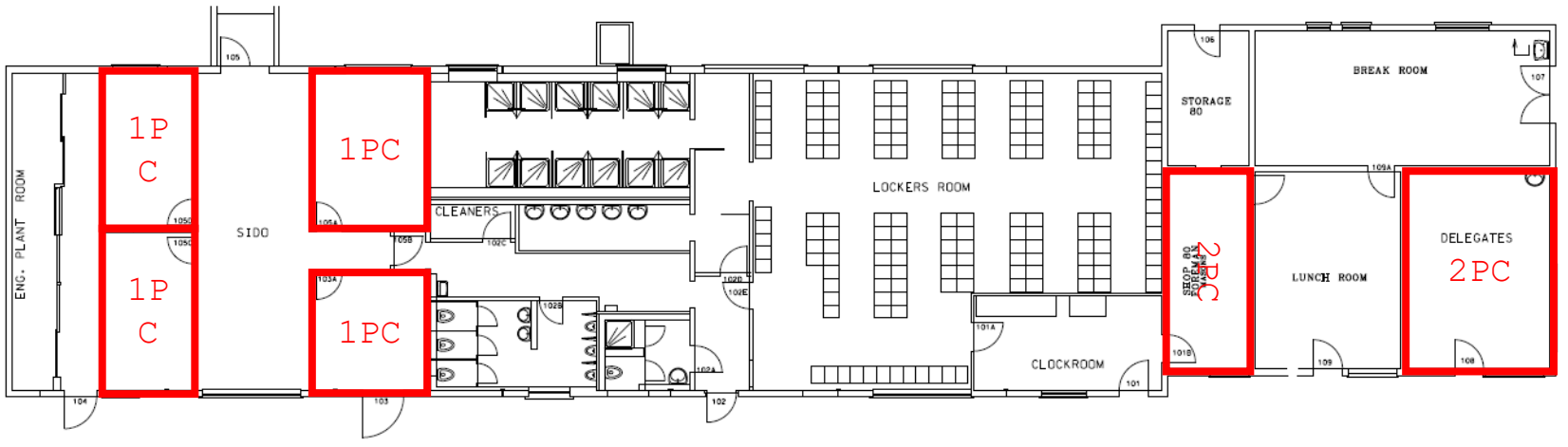

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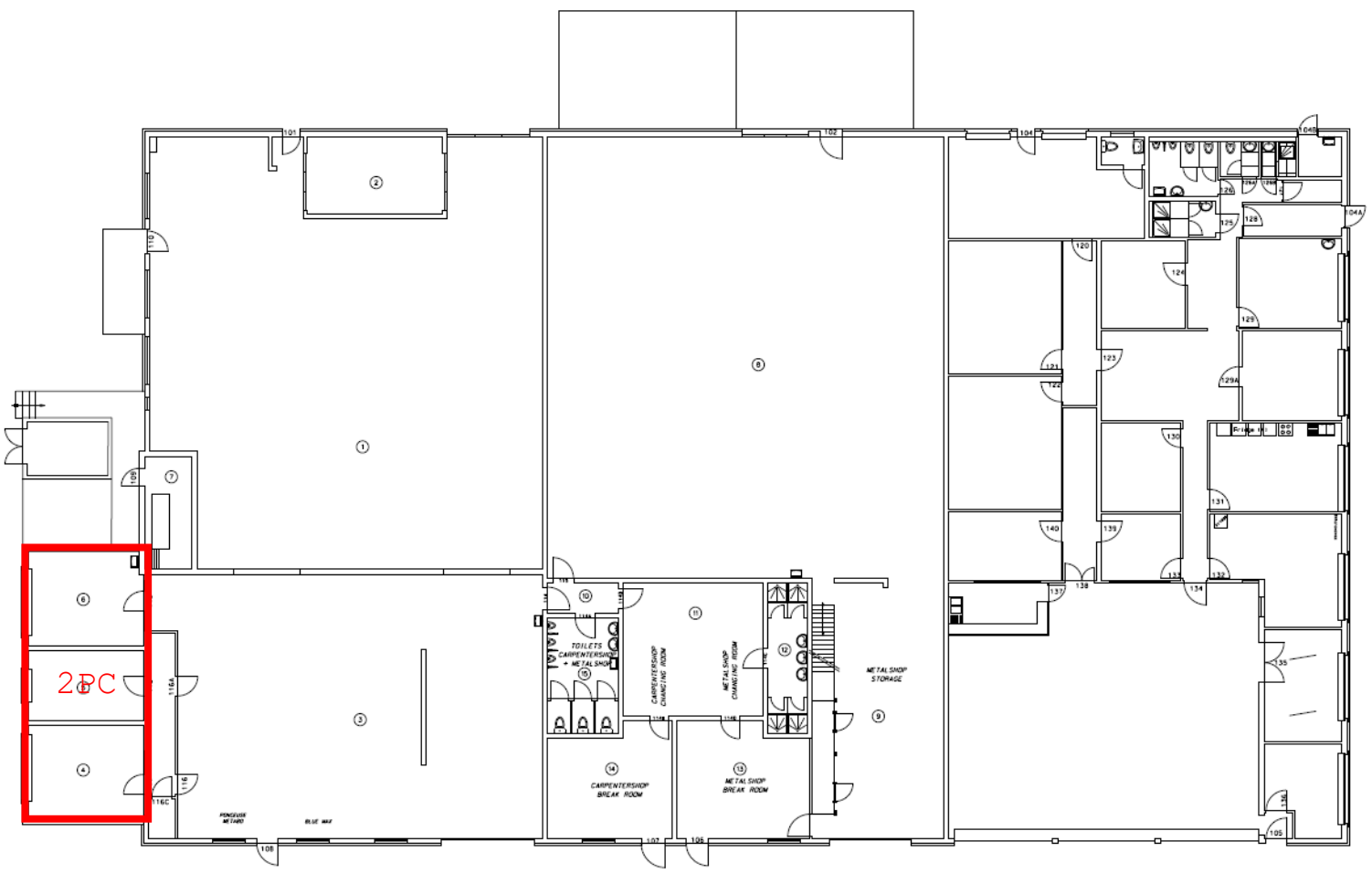

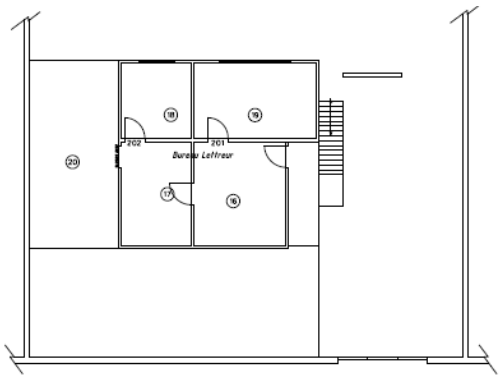

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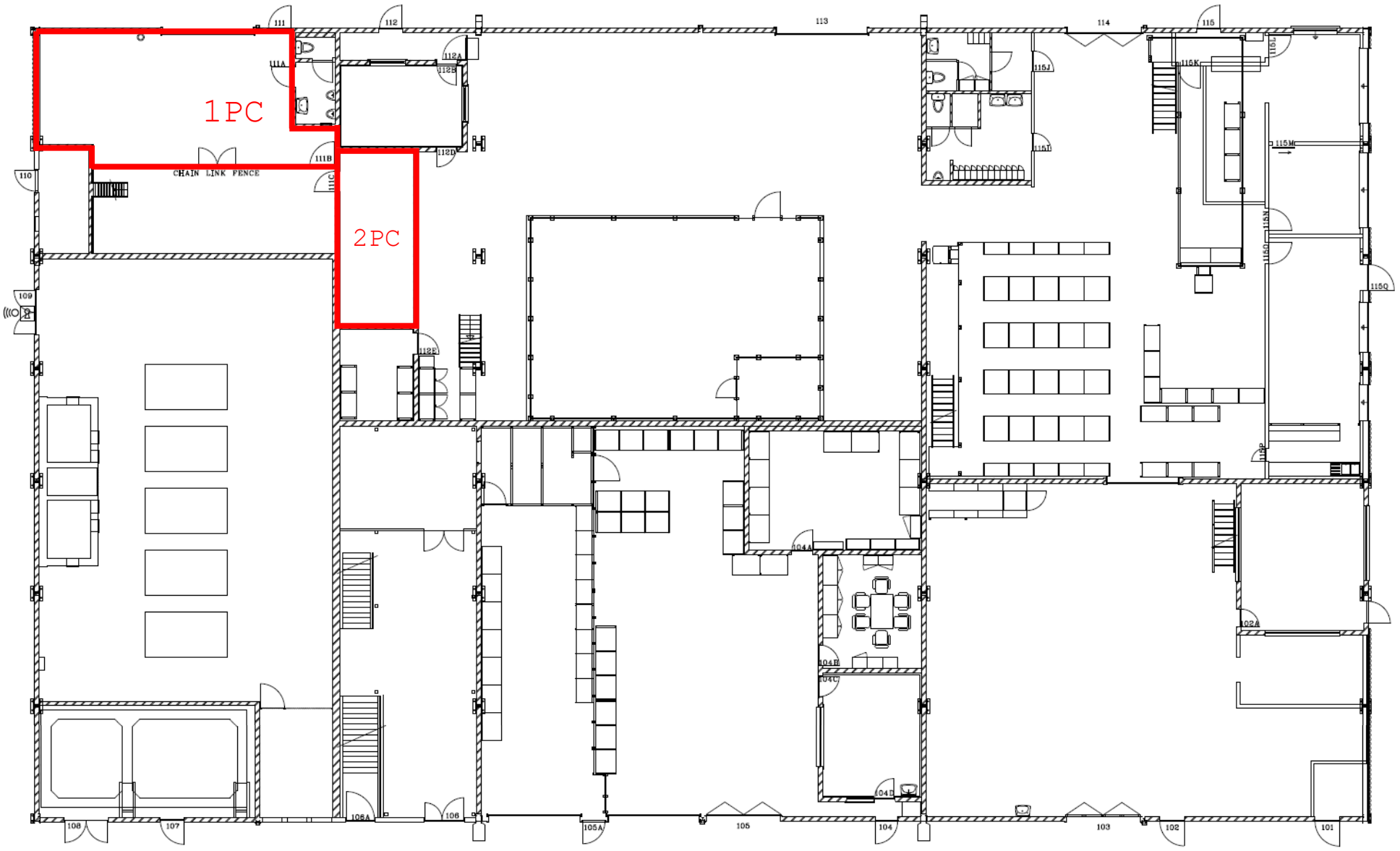

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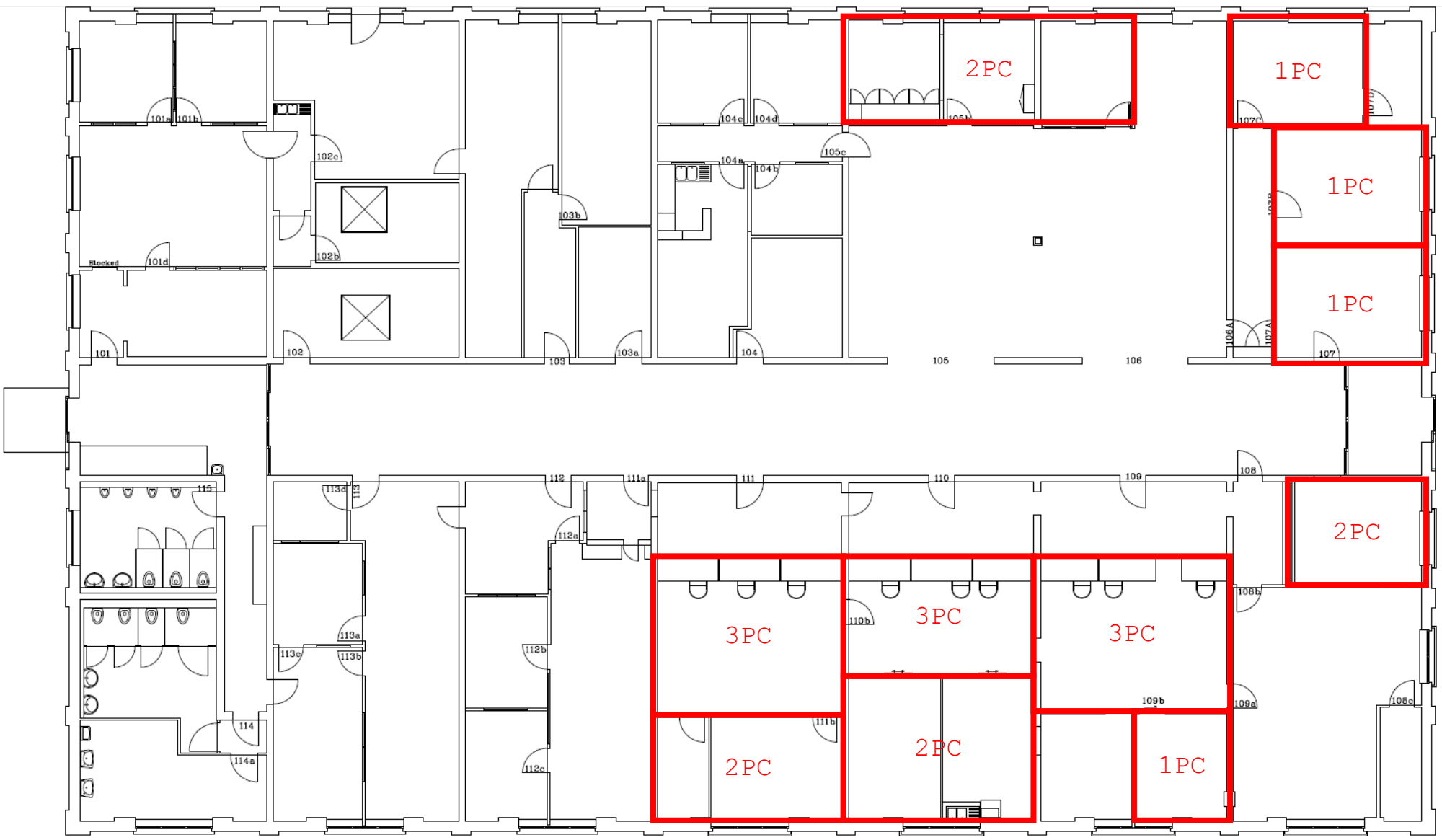

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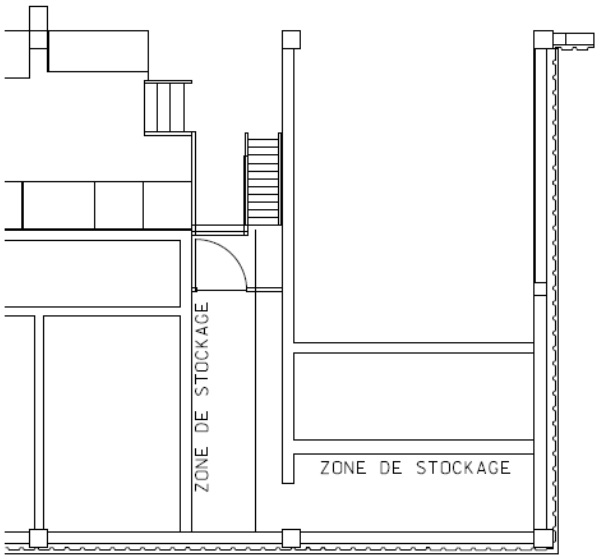

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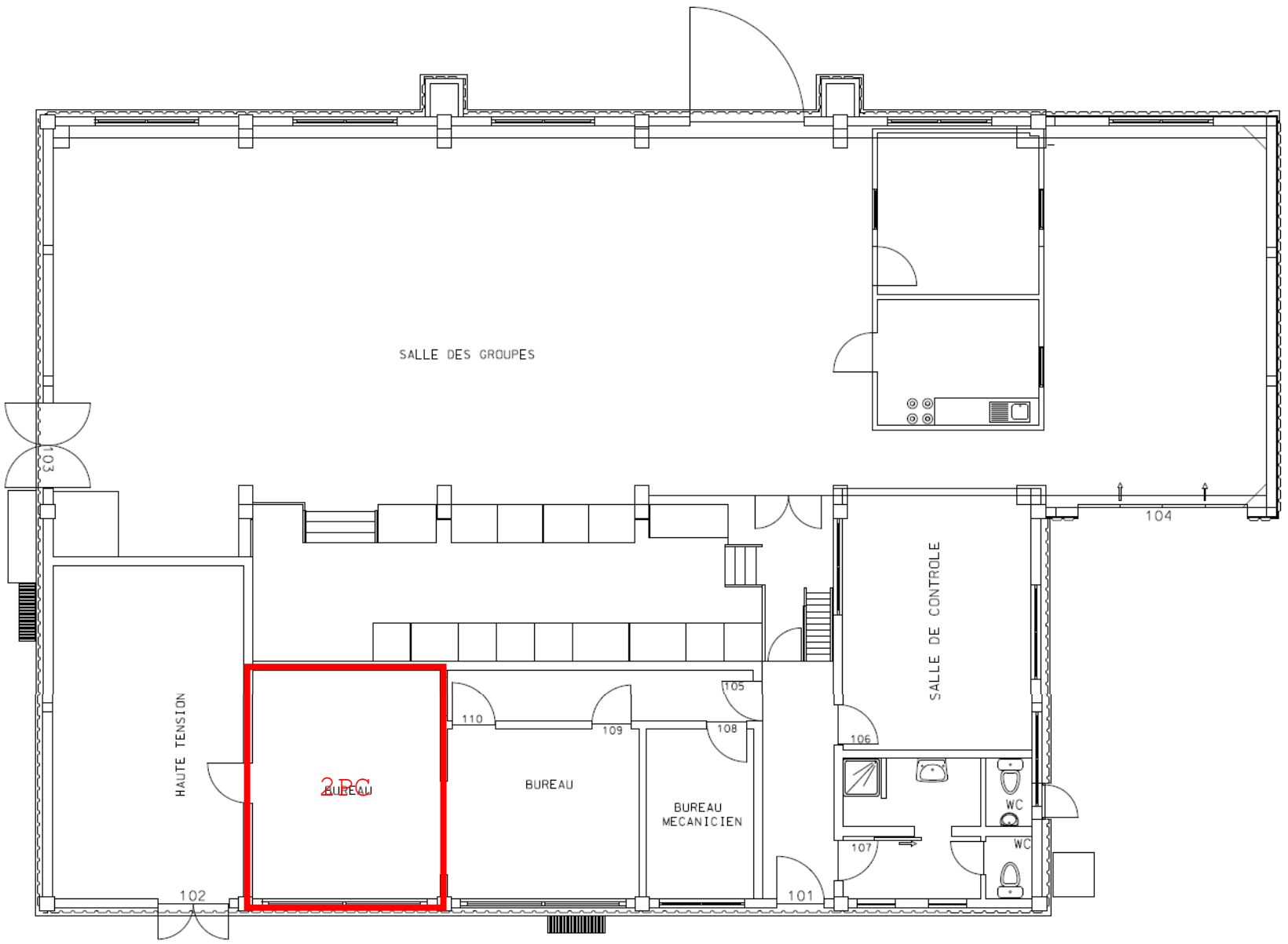

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