CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Finance
Supply Chain Management: Demand management
Reference: RFI94/2025/26

REQUEST FOR INFORMATION RFI94/2025/26: Real-Time Indoor Air Quality Monitoring

To assess the Real Time Indoor Air Quality (IAQ) monitoring system options for built indoor environments available in the market.

- **Purpose**

1.1. This Request for Information (RFI) seeks solutions to monitor the air quality parameters by means of integration into the Building Management System within the indoor built environments to improve occupant health, safety, well-being, comfort and productivity as well as enhance the optimization of building performance, and energy efficiency, in addition to meeting regulatory compliance.

1.2. Interested service providers are invited to submit relevant information to assist the City in:

- Gathering comprehensive data on available technology and systems in the market; and service providers
- Enhance its understanding of the various real-time monitoring system options available in the market.

1.3. This RFI aims to test market interest, explore business solutions, and obtain indicative pricing from potential private sector service providers to assess the viability of a solution.

- **Background**

The recent Physical Agents Regulations, 2024 promulgated in terms of the Occupational Health and Safety Act, 85 of 1993 stipulates that the employer must ensure that risk of exposure to biological, chemical and physical agents impacting indoor air quality is eliminated at the source, where reasonably practicable. The Regulation further requires that exposure monitoring be undertaken to evaluate concentrations against the guideline levels for indoor air quality parameters (Table 3).

The World Health Organisation (WHO) underlines the importance of real-time monitoring of indoor air quality to contribute to the health and safety of building occupants. The City's Facility Management Department provides a comprehensive integrated services and asset management programme within the buildings, under its control, focussing on, amongst others,

mechanical ventilation management encompassing both fresh air intakes and or heating, ventilation and air-conditioning (HVAC) systems. The mandate of Corporate Facilities Management Department therefore includes, the provision of clean, safe and well-maintained facilities, and as such, indoor air quality is of critical importance. The key benefits of the HVAC management system include:

- **Proactive maintenance:** Implementation of maintenance schedules inclusive of physical inspections, filter cleaning, replacement of components, etc.;
- **Real-time monitoring:** Use of the Building Management System to monitor the HVAC performance in real-time, in an effort to optimize energy efficiency, building occupant comfort and overall ventilation system performance;
- **Energy efficiency:** Optimal operation and scheduled maintenance contribute to energy reducing and related costs;
- **Reduction in maintenance costs:** Active monitoring and early diagnosis of faults contribute to a more effective and efficient ventilation system with increased plant lifespan;
- **Improved indoor air quality:** By controlling parameters like humidity, temperature, airflow, etc. the quality of indoor air is improved to the benefit of the health and general well-being of building occupants;

Hence, through:

- Accurate indoor air pollutant measurements that may include although not limited to volatile organic compounds (total), formaldehyde, carbon dioxide, carbon monoxide and particulate matter (i.e. PM 1, 2.5 & 10).
- Measurement of non- indoor air pollutants for the purpose of building occupant comfort i.e. temperature, humidity:
- the collection and interpretation of real-time data;
- system/alarm event alerts for prompting corrective action;
- data tracking for recording information, trend analysis, trouble-shooting; and
- data monitoring for system optimization

the above will all contribute to the overall benefits attainable through the deployment of real-time monitoring to improve indoor air quality thereby a direct benefit to the health and well-being of building occupants, increased work efficiency, productivity, sustainability and ultimately a healthier building indoor environment.

- Building Description

The Cape Town Civic Centre was completed in April 1979 and was then one of the largest office buildings in South Africa. It is situated on the foreshore (Herzog Boulevard) of the City of Cape Town and serves as the headquarters of the City of Cape Town, the municipality that governs the city and its suburbs.

Figure 1: Aerial View (Google Earth), North West Face and Plan View

The building, as shown in Figure 1, is made up of two blocks. The Podium Block was originally 5 storeys but had an additional floor added in 2000 making it 6 storeys high. The Podium houses the City Management offices, including the Council Chamber and Mayor's Office. The Tower Block has a narrow and long aspect (18 m wide and 192 m long) and is a 26 storey high-rise (2 basements, a ground floor and 23 floors resulting in a height of 98 m). This part of the building houses the administrative offices of the municipality

The building is predominately composed of concrete, steel and glass. The Tower Block facades consist of an aluminium grid that frames, alternately, windows, and façade composite panels (from internal to external: fibre; eggbox; fibre; glazing).

The original building is 46 years old and alterations to the Podium are now 25 years old.

Figure 2 : Example of unoccupied office space Tower Building.

- Metasys Building Automation System (BAS)

  The BAS is used in the Civic Centre for lighting control, monitoring of the chiller and HVAC system.

  Five workstations (PC's) allow access to the system for monitoring and settings, Emergency Control Room (BAS), Mechanical Maintenance on the Tower 11th floor, and 4th floor office of the Mechanical Engineering Senior Superintendent. It is possible to monitor and control temperature per Bay of the Tower and Podium buildings.

- **Request for Information**

3.1. This RFI is not a request for proposal, quotation, offer, or bid, nor does it limit the City of Cape Town in its future implementation activities.

3.2 The RFI sets out to collect information on real time IAQ solutions that will best integrate with the existing BAS serving the Cape Town Civic Centre.

3.3. Responses will provide the City with insights into market-available products supporting its required business capabilities.

3.4. The City may request additional information or demonstrations (proof of concepts) from respondents. Accurate and honest information is crucial.

3.5. This RFI aims to collect information on multiple products and solutions and is not restricted to the current product.

3.6 Service Providers with **real-time indoor air quality monitoring systems successfully implemented** within built environments are encouraged to respond.

The anticipated timeline for sourcing a solution is from 01 January 2026, contingent on positive responses to this RFI and internal supply chain processes.

- **RFI Release date:** 18 July 2025
- **RFI Closing date:** 31 October 2025

4.Network Refresh Requirements

The network refresh is needed to replace software and hardware ("systems") that will no longer be supported by the Original Equipment Manufacturer beyond 2028. The Dimetra Version 9.2 system was introduced into the market in 2022 and implemented in the City in the same year. By 2028, the software and hardware are expected to reach end-of-life, and vendor support for the existing system will discontinue. The City seeks a network refresh option to operate the PPDR network service beyond 2028, including all necessary software, hardware, and professional services. Basic sustainment support, including component repair and remote technical support, should be provided during the warranty period.

The system refresh will include ongoing availability of repair services, support, system expansions (e.g., additional RF sites, dispatch positions, data sub-systems, or network management positions), and the latest cyber security protection. The refresh should offer a consistent, budgeted solution delivering a complete and functional PPDR communication system.

5. Functional Requirements

5.1. **Real-time indoor air quality monitoring system elements:**

- Provide information on a suitable solution for a real-time indoor air quality monitoring (IoT) based system that integrates with the Cape Town Civic Centre BAS, centred on the following:
    - Sensors with capability to measure different indoor air pollutants, inclusive of particulate matter (PM), total volatile organic compounds (TVOC), carbon dioxide (CO2), formaldehyde (CH2O);
    - Sensors with capability to record temperature and humidity
    - Micro-controller for continuous data logging and processing
    - Communication network with capability to integrate with the BAS communication system to support and facilitate data driven automated adjustments, monitoring and control
    - Interface with mobile applications and dashboards for monitoring and reporting
    - Alarm and alerting capabilities where corrective action is required
    - Required operation, calibration and maintenance considerations
    - Full features and technical specifications applicable to both on-and off-line modes

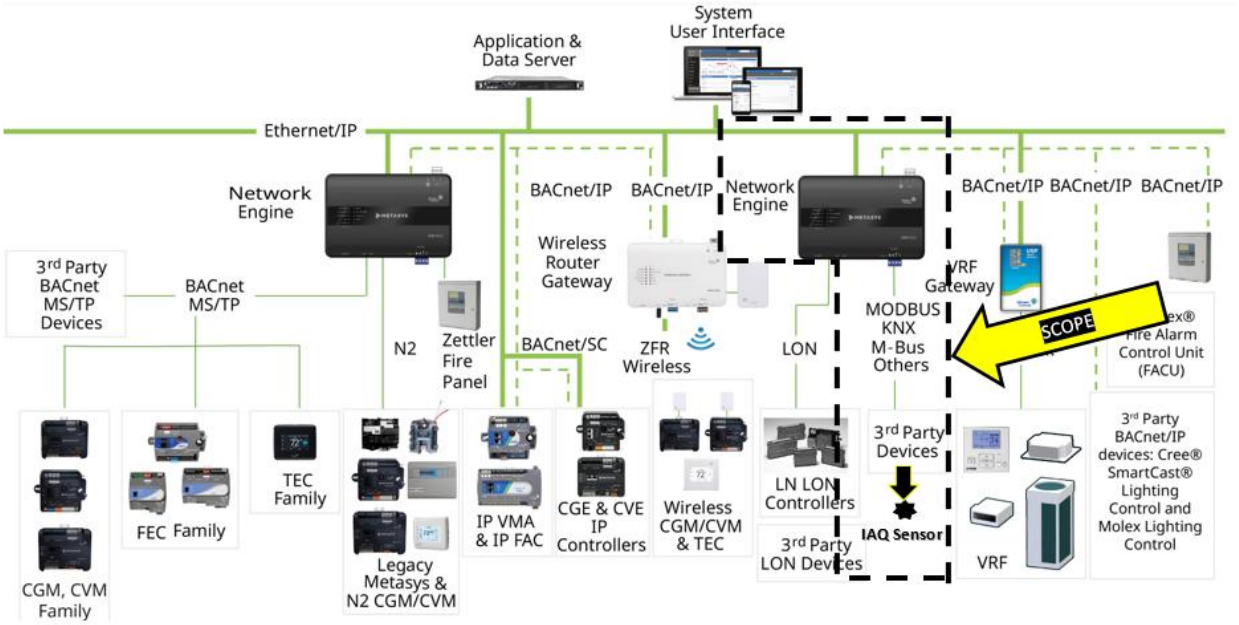
1.2 **Building management system supported integrations:**

- BACnet/SC
- BACnet/IP

- Simplex® Fire Alarm Control Unit (FACU)
- Cree® SmartCast® Lighting Control
- Molex® Lighting Control
- BACnet MS/TP Field Controller (FC) Bus
- N2 Bus

  Note: The M4-SNE110Lx-0 model does not support the N2 Bus.
- LonWorks® (requires USB to LON adapter)

  Note: The M4-SNE110Lx-0 model does not support the LonWorks network interface.
- Modbus: Modbus TCP/IP on Ethernet and Modbus Remote Terminal Unit on RS-485
- KNX IP
- M-Bus
- Tyco® C•CURE® 9000 and victor® Video Management
- Zettler® Fire Panel with RS-232 adapter
- OPC Unified Architecture (OPC UA)
- MQ Telemetry Transport (MQTT)



Onsite Network Architecture & Scope.

- Engage the onsite Mechanical Senior Superintendent and BMS specialist as per the scope figure above:
  - System integration development
  - Applicable hardware and programming required for IAQ SENSOR integration with the existing **Metasys BMS**.
  - 235 + 10% = **259 proposed sensors**
  - BMS Graphic design and monitoring parameters

- All costings applicable to the scope
- Commissioning and closeout

1.3 **Indoor air- quality proposed sensor positioning per floor:**

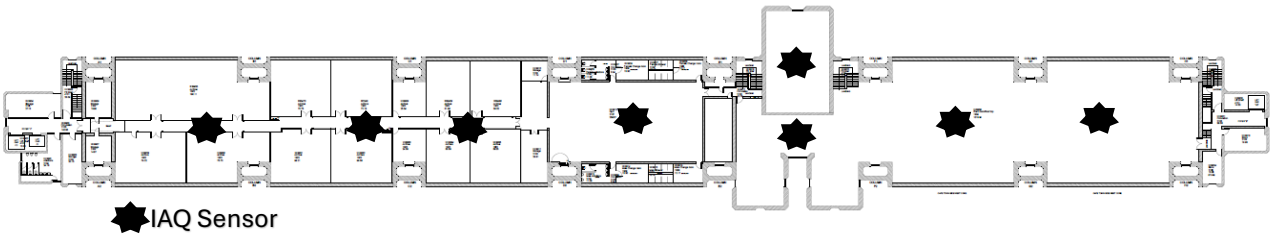


Figure 2.1: Tower Building proposed sensor positioning 23nd floor/Roof (8).

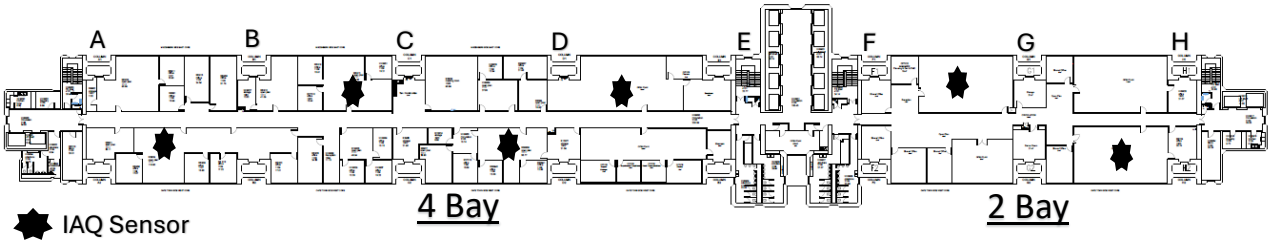


Figure 3: Tower Building proposed sensor positioning 22nd floor (6).

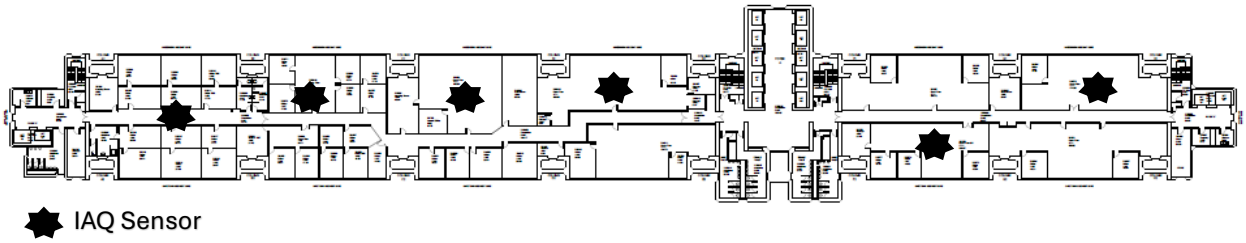


Figure 4: Tower Building proposed sensor positioning 21st floor (6).

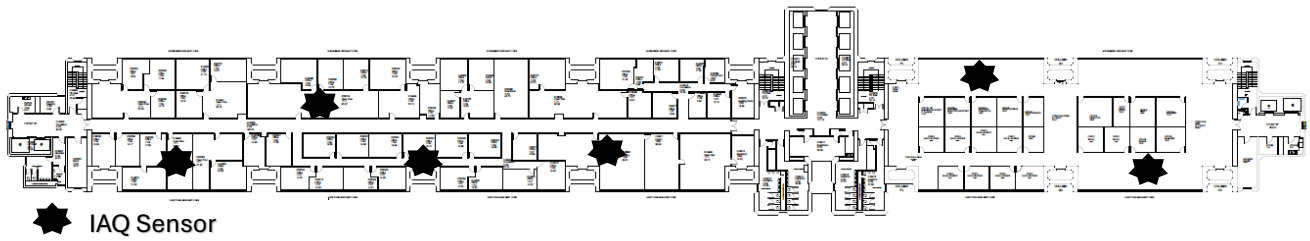


Figure 5: Tower Building proposed sensor positioning 20th floor (6).

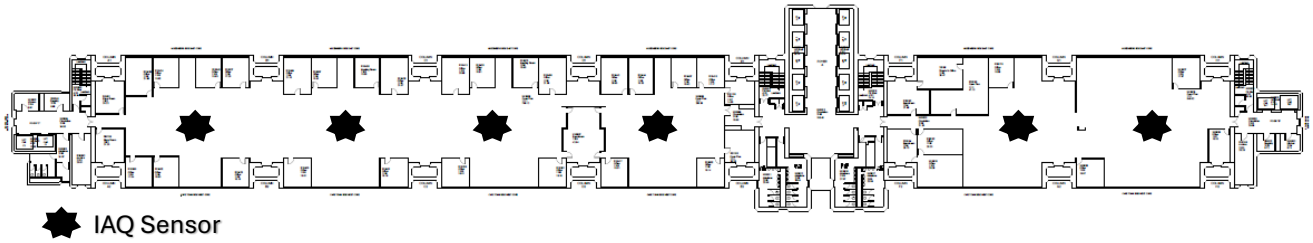


Figure 6: Tower Building proposed sensor positioning 19th floor (6).

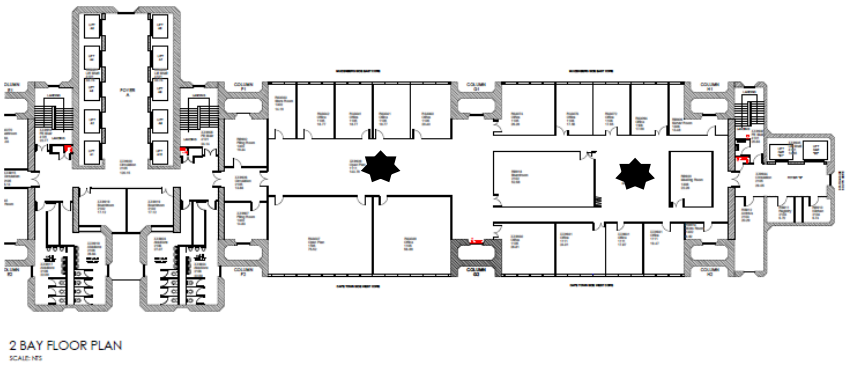


Figure 7: Tower Building proposed sensor positioning 18th floor (6).

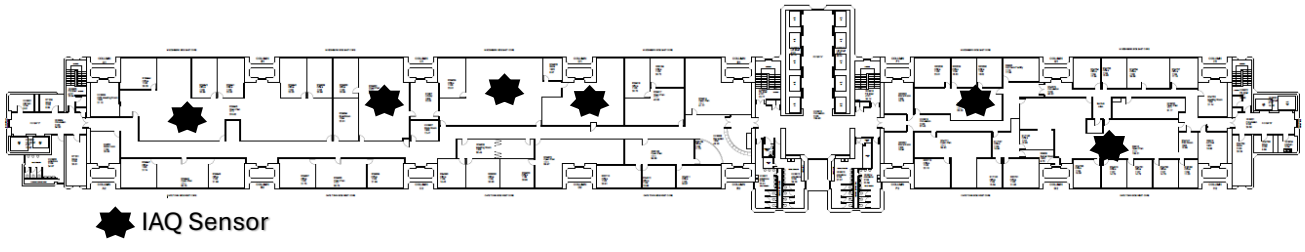


Figure 8: Tower Building proposed sensor positioning 17th floor (6)

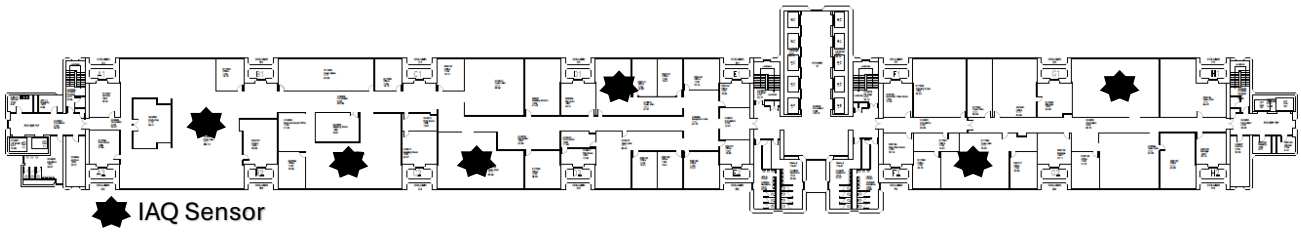


Figure 9: Tower Building proposed sensor positioning 16th floor (6)

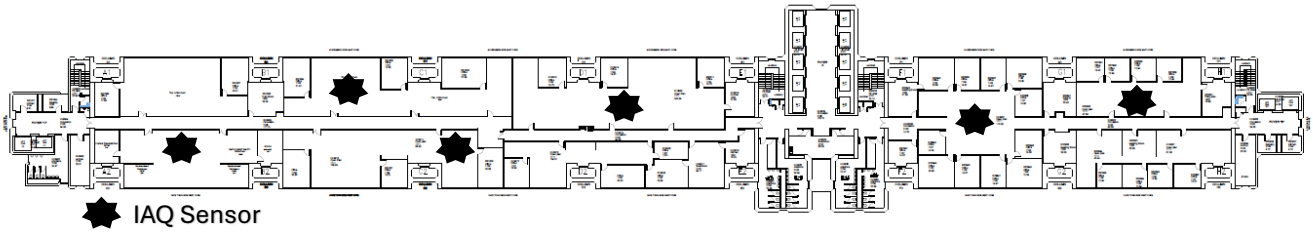


Figure 10: Tower Building proposed sensor positioning 15th floor (6)

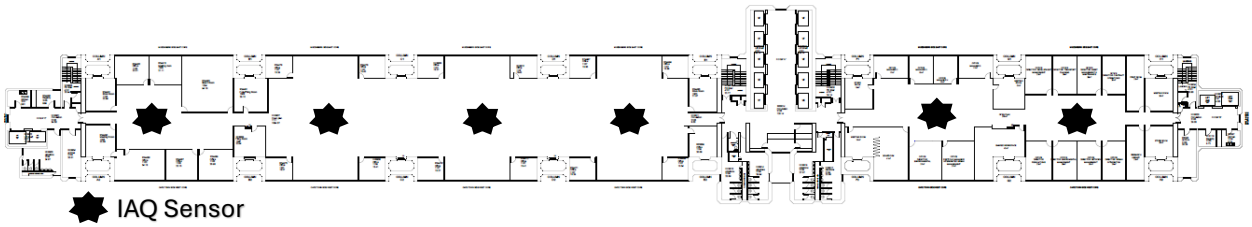


Figure 11: Tower Building proposed sensor positioning 14th floor (6)

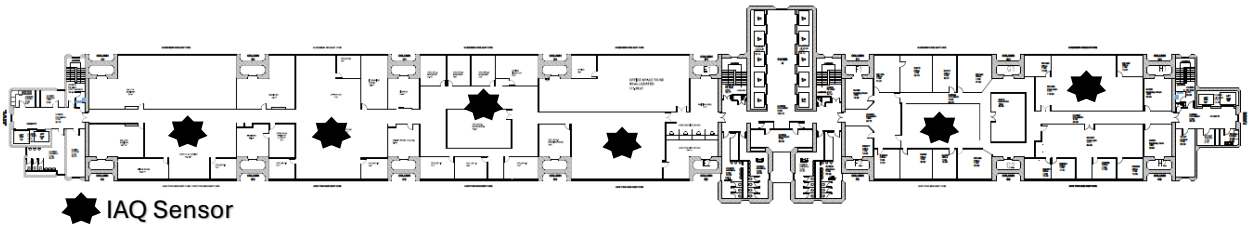


Figure 12: Tower Building proposed sensor positioning 13th floor (6)

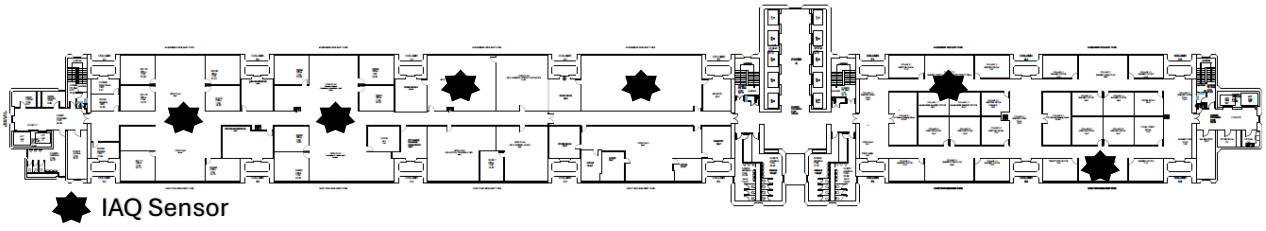


Figure 13: Tower Building proposed sensor positioning 12th floor (6)

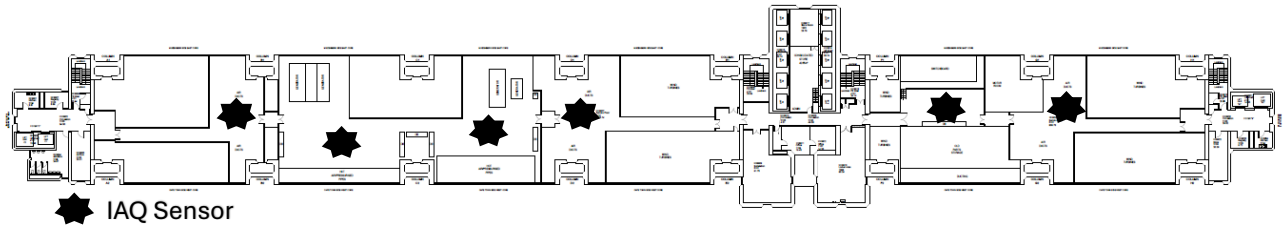


Figure 14: Tower Building proposed sensor positioning 11th floor (6)

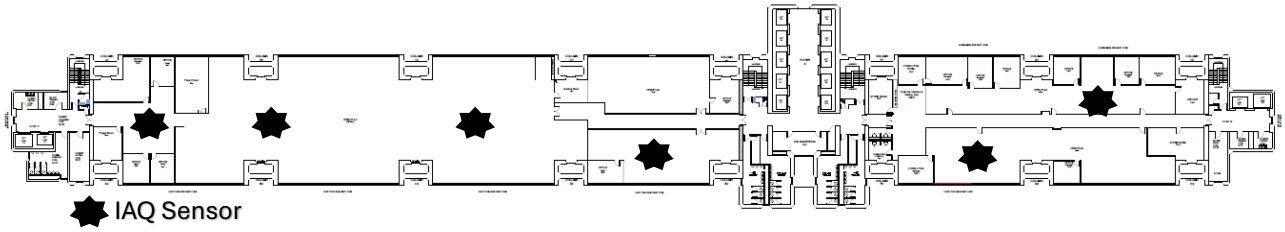


Figure 15: Tower Building proposed sensor positioning 10th floor (6)

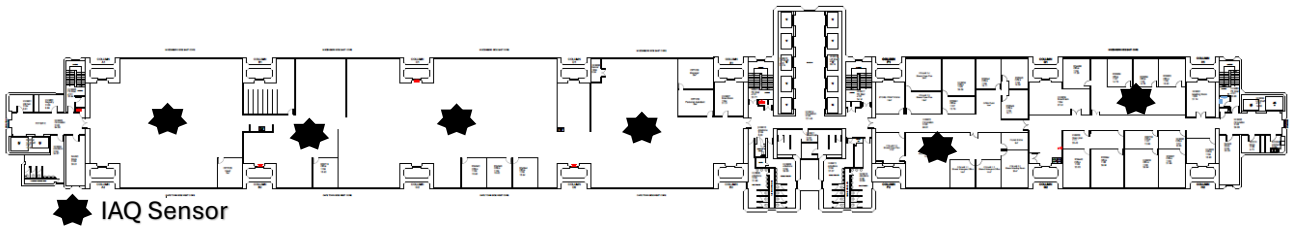


Figure 16: Tower Building proposed sensor positioning 9th floor (6)

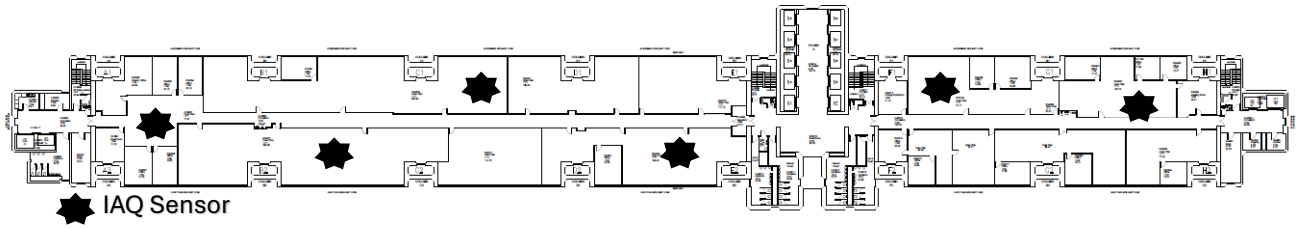


Figure 17: Tower Building proposed sensor positioning 8th floor (6)

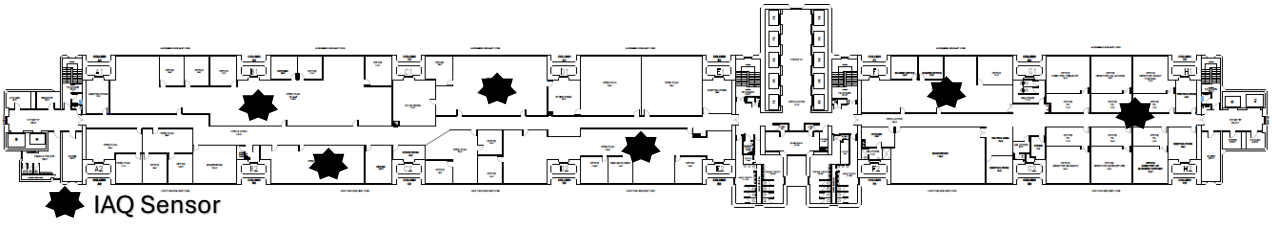


Figure 18: Tower Building proposed sensor positioning 7th floor (6)

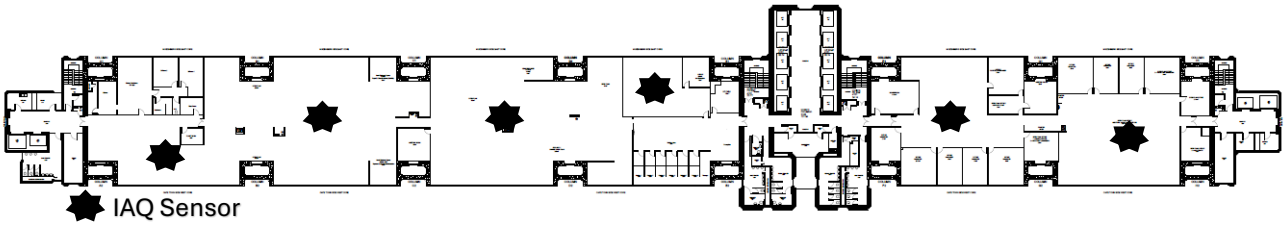


Figure 19: Tower Building proposed sensor positioning 6th floor (6)

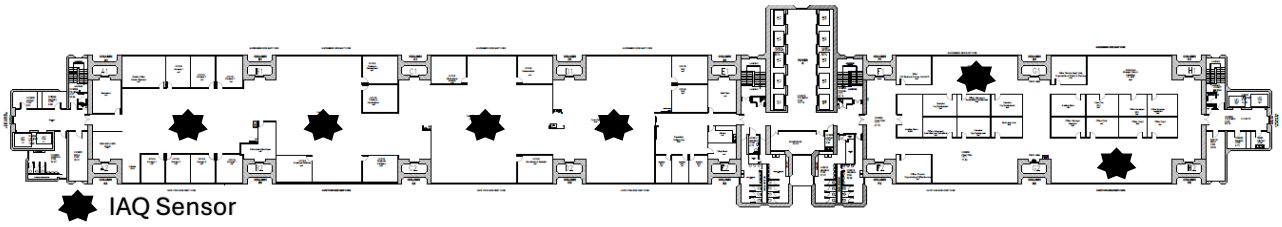


Figure 20: Tower Building proposed sensor positioning 5th floor (6)

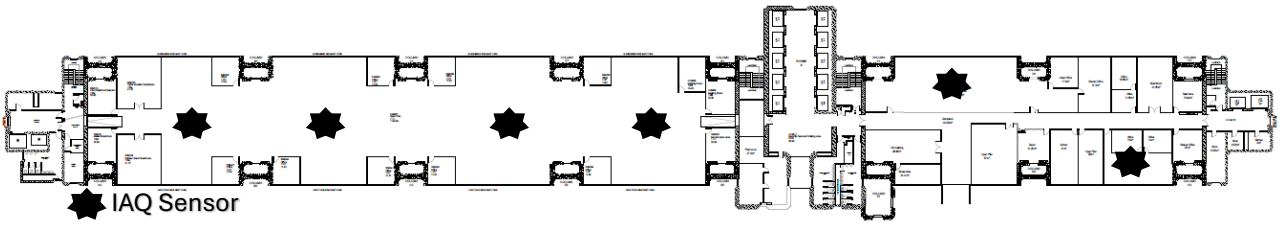


Figure 21: Tower Building proposed sensor positioning 4th floor (6)

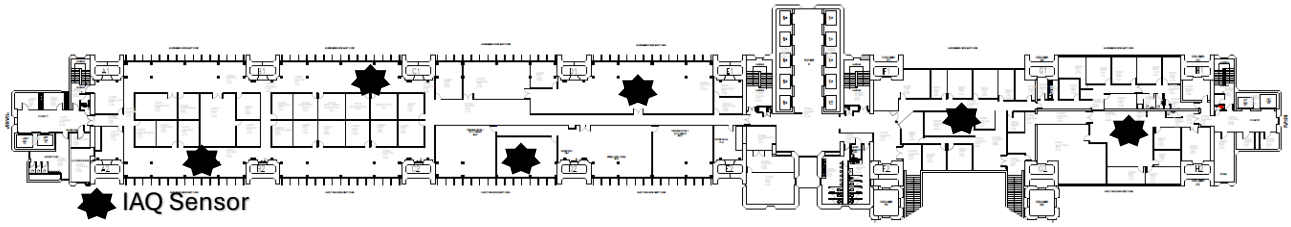


Figure 22: Tower Building proposed sensor positioning 3rd floor (6)

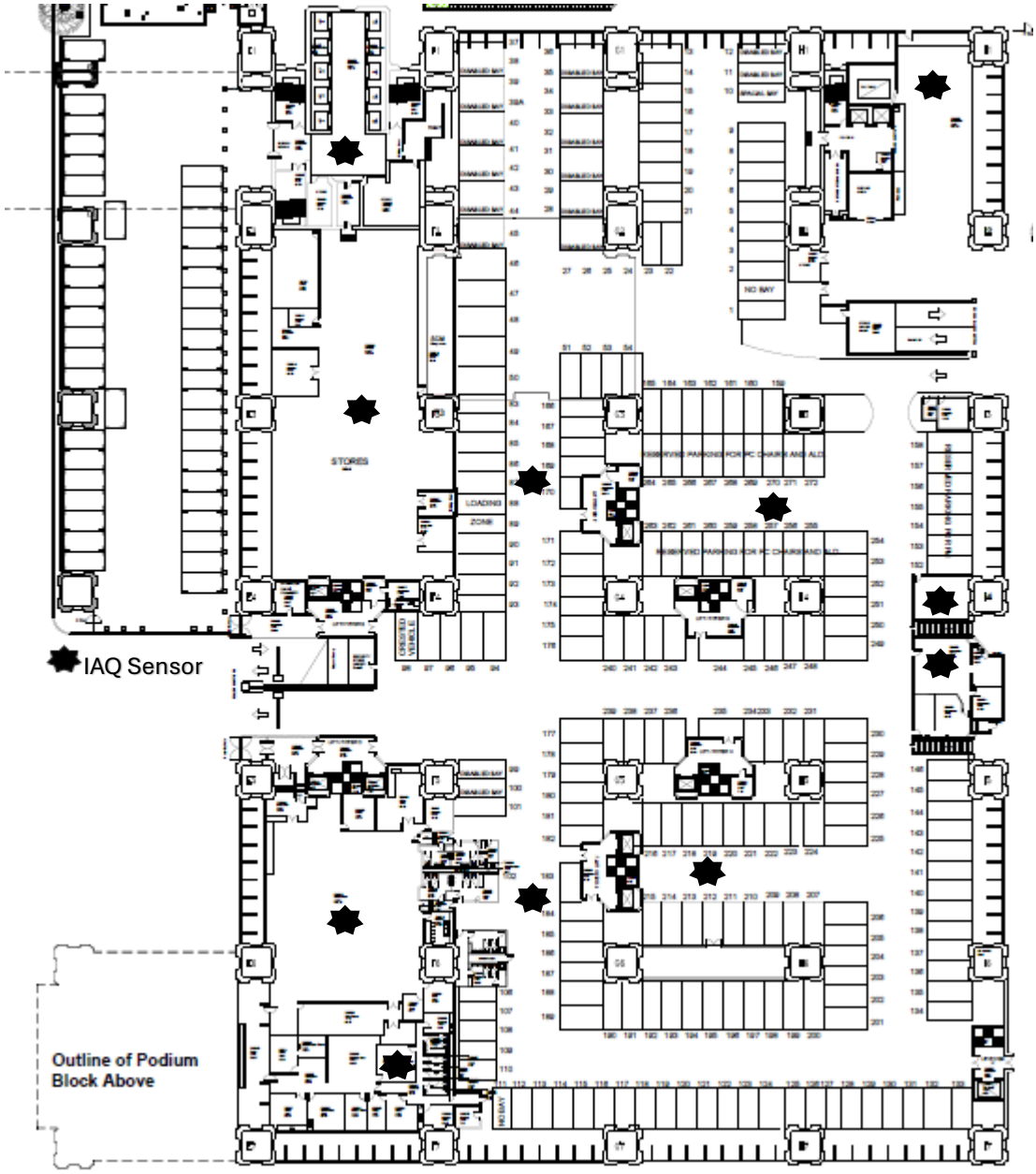


Figure 23: Ground floor Parking proposed sensor positioning (11)

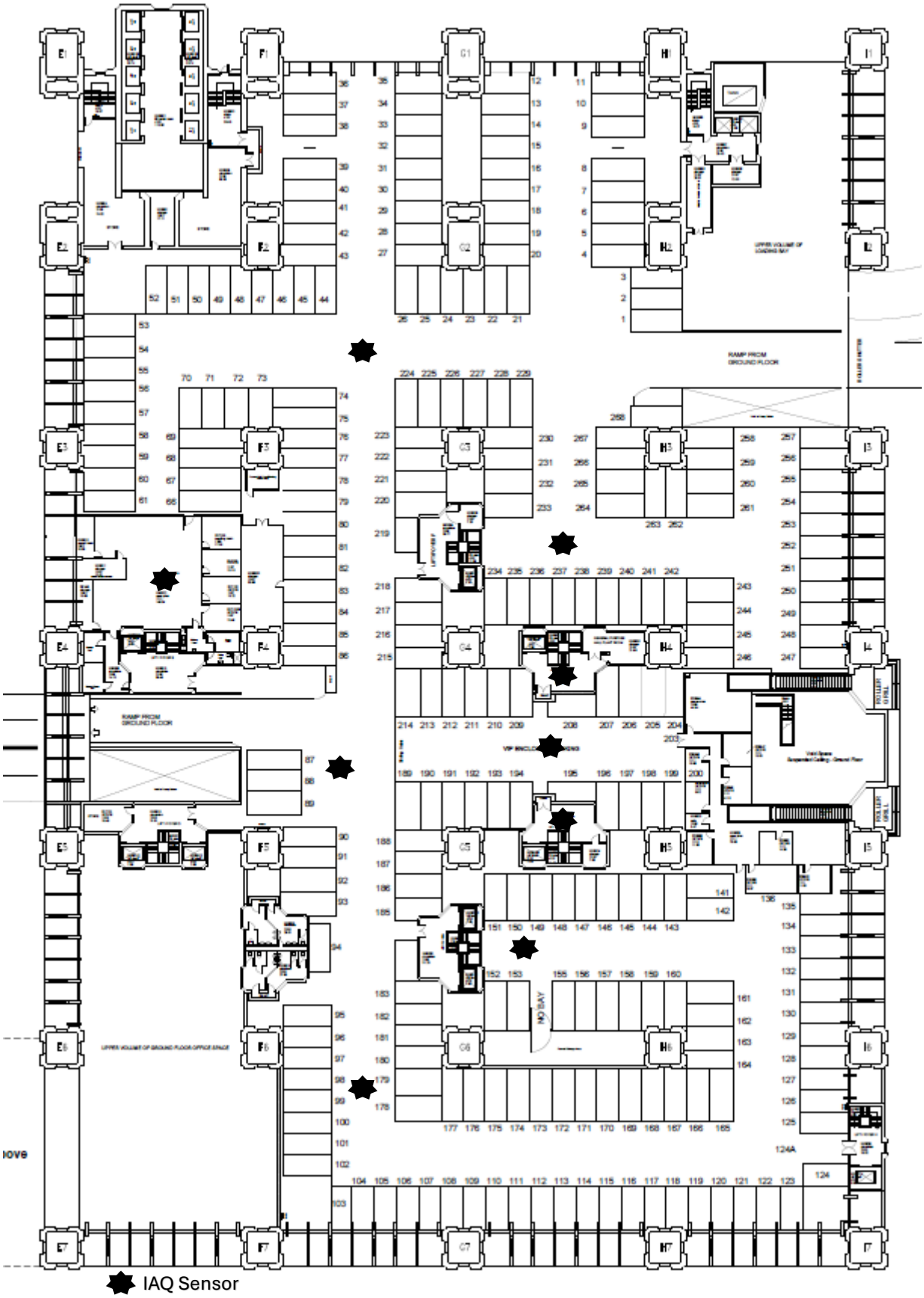


Figure 24: 1st floor parking proposed sensor positioning (9)

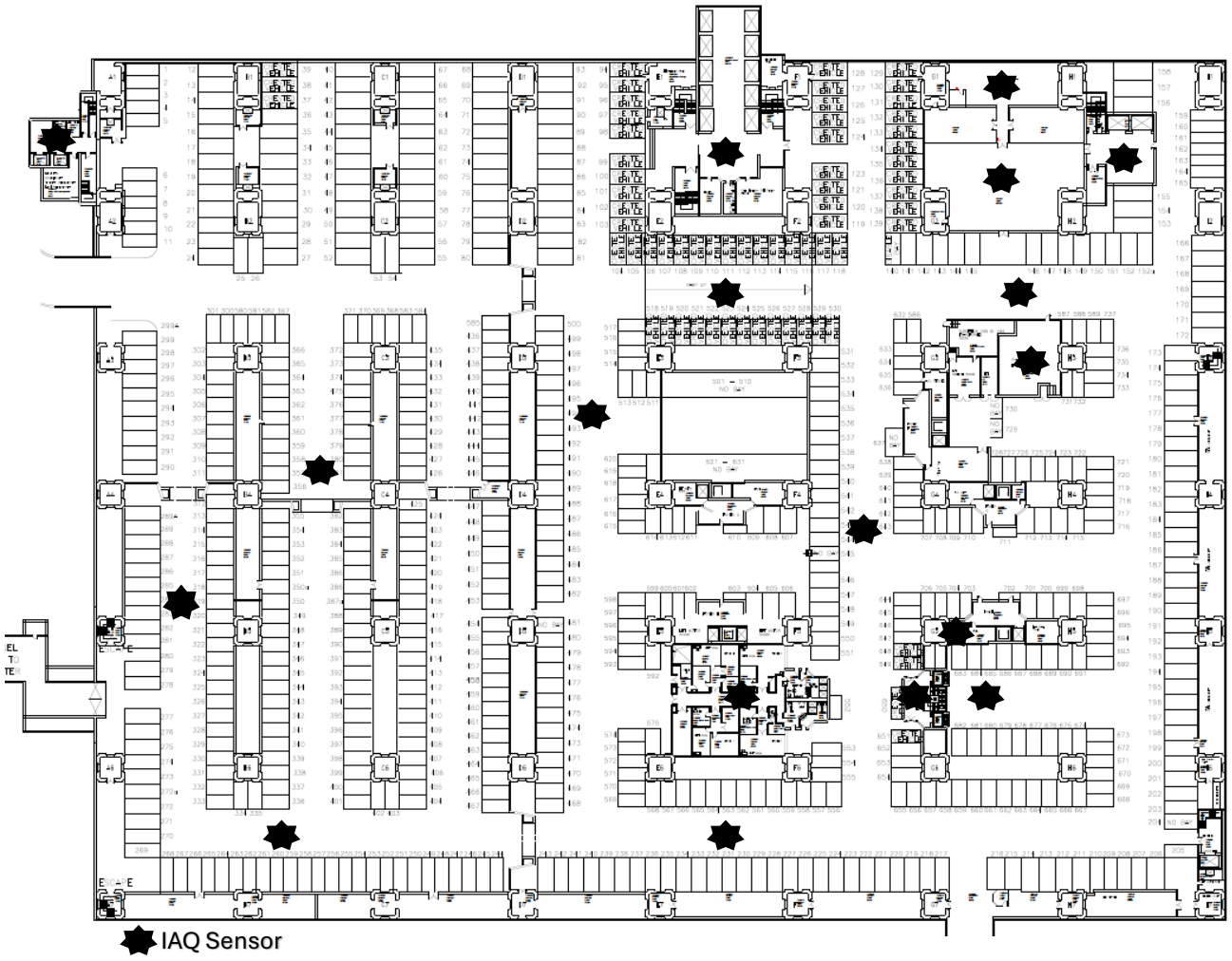


Figure 25: Basement parking proposed sensor positioning (18)

Figure 26: Concourse level proposed sensor positioning 2nd floor (21)

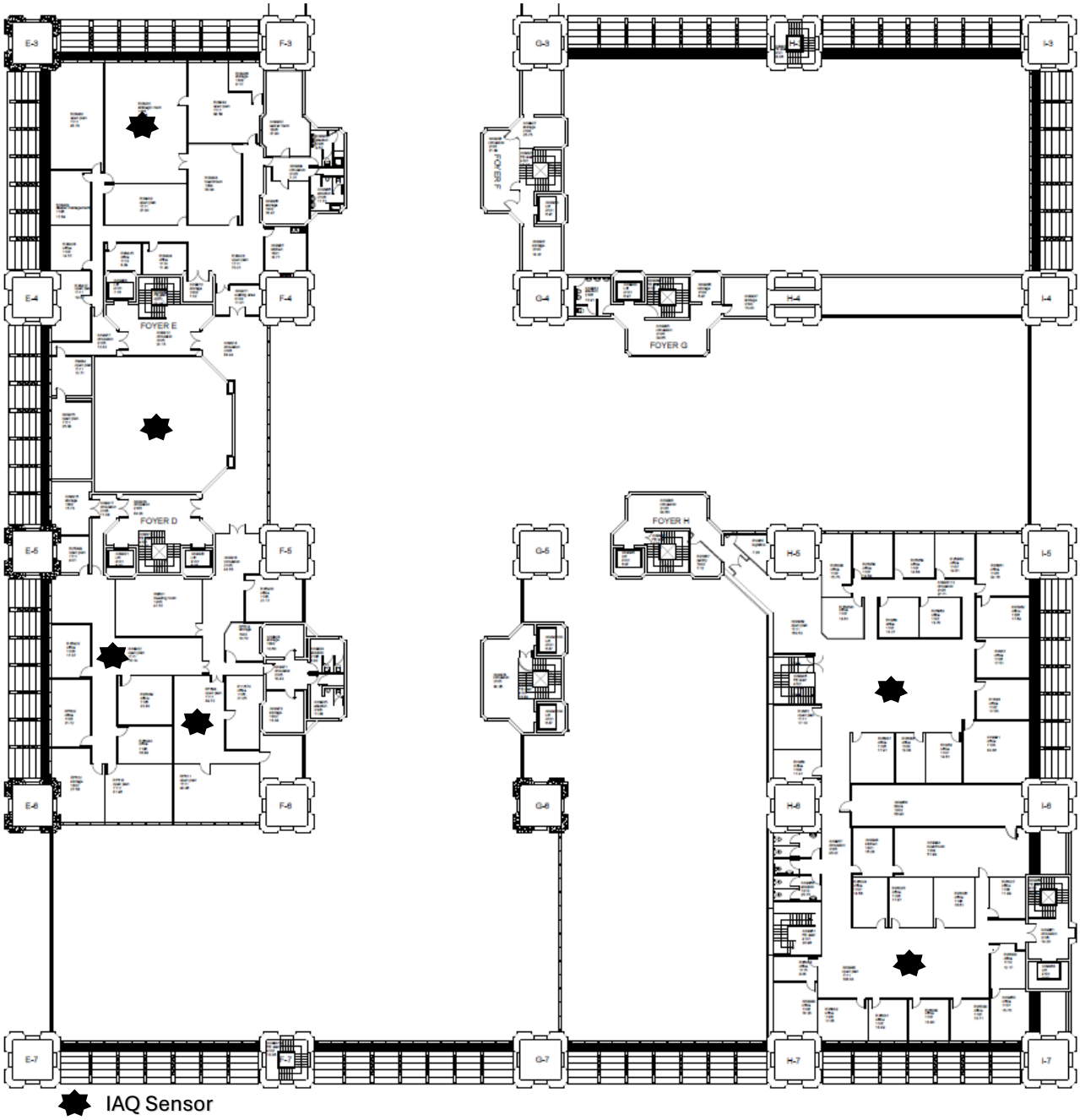


Figure 27: Podium Building proposed sensor positioning 3rd floor (6)

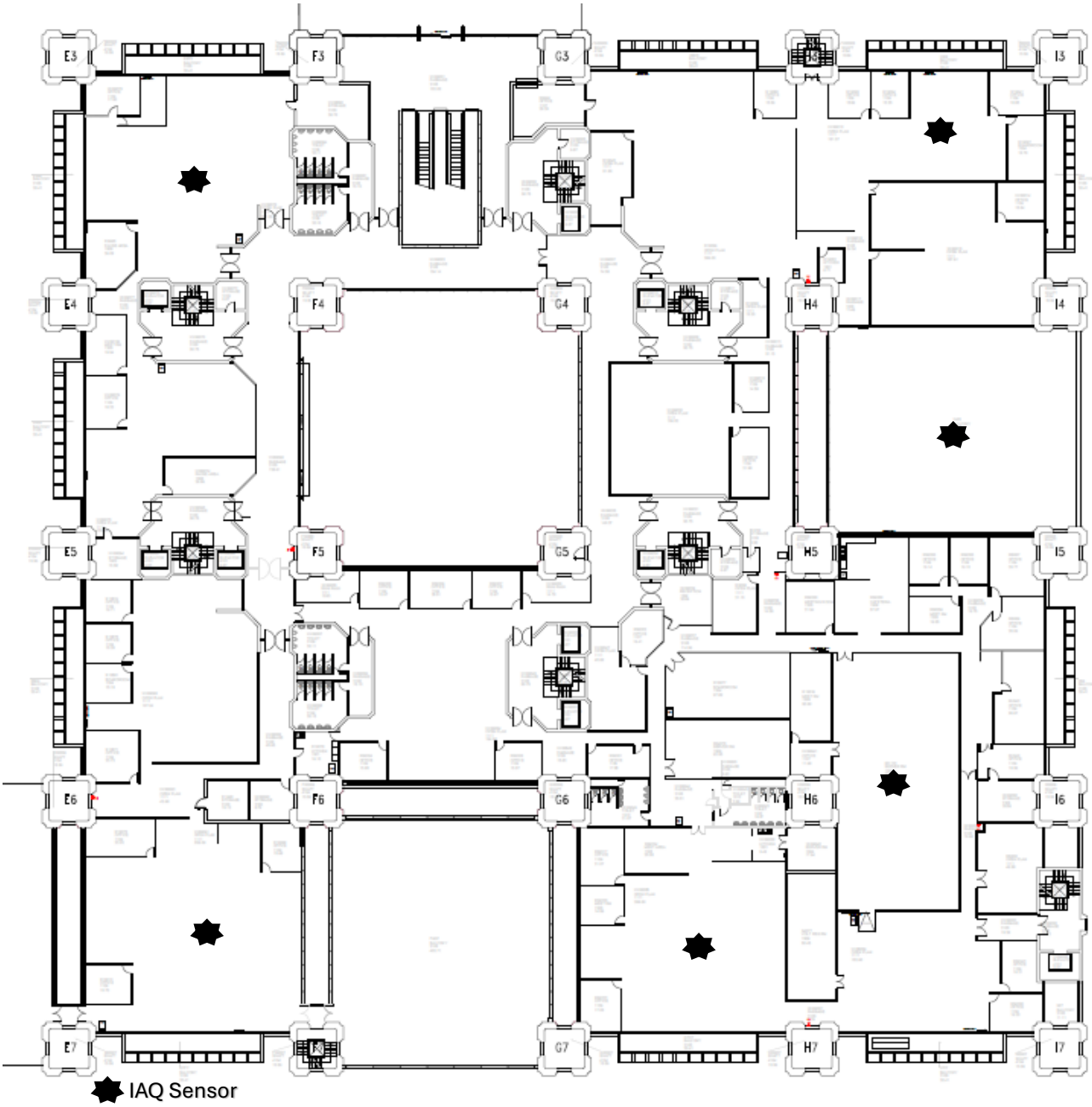


Figure 28: Podium Building proposed sensor positioning 4th floor (6)

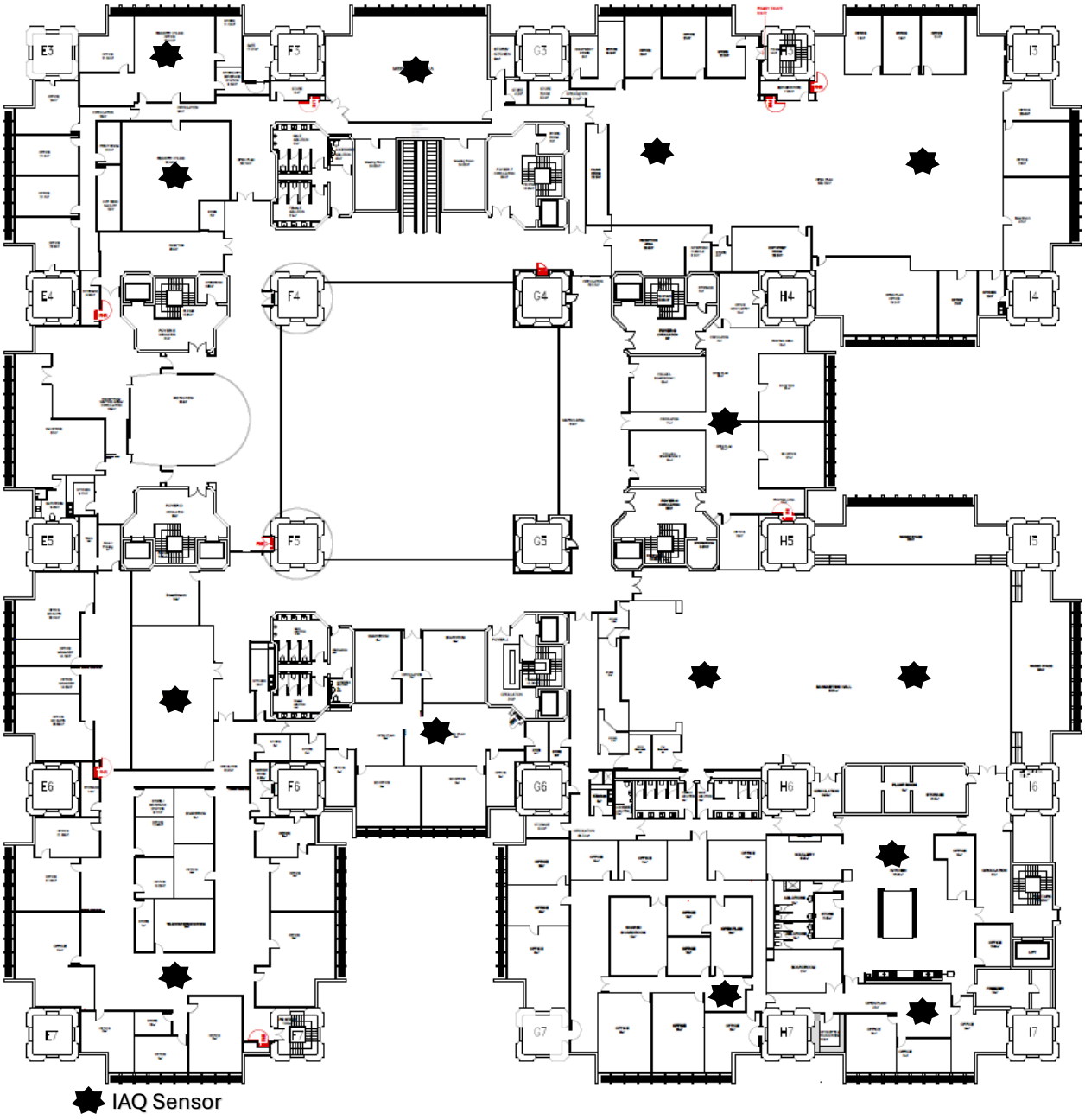


Figure 29: Podium Building proposed sensor positioning 5th floor (13)

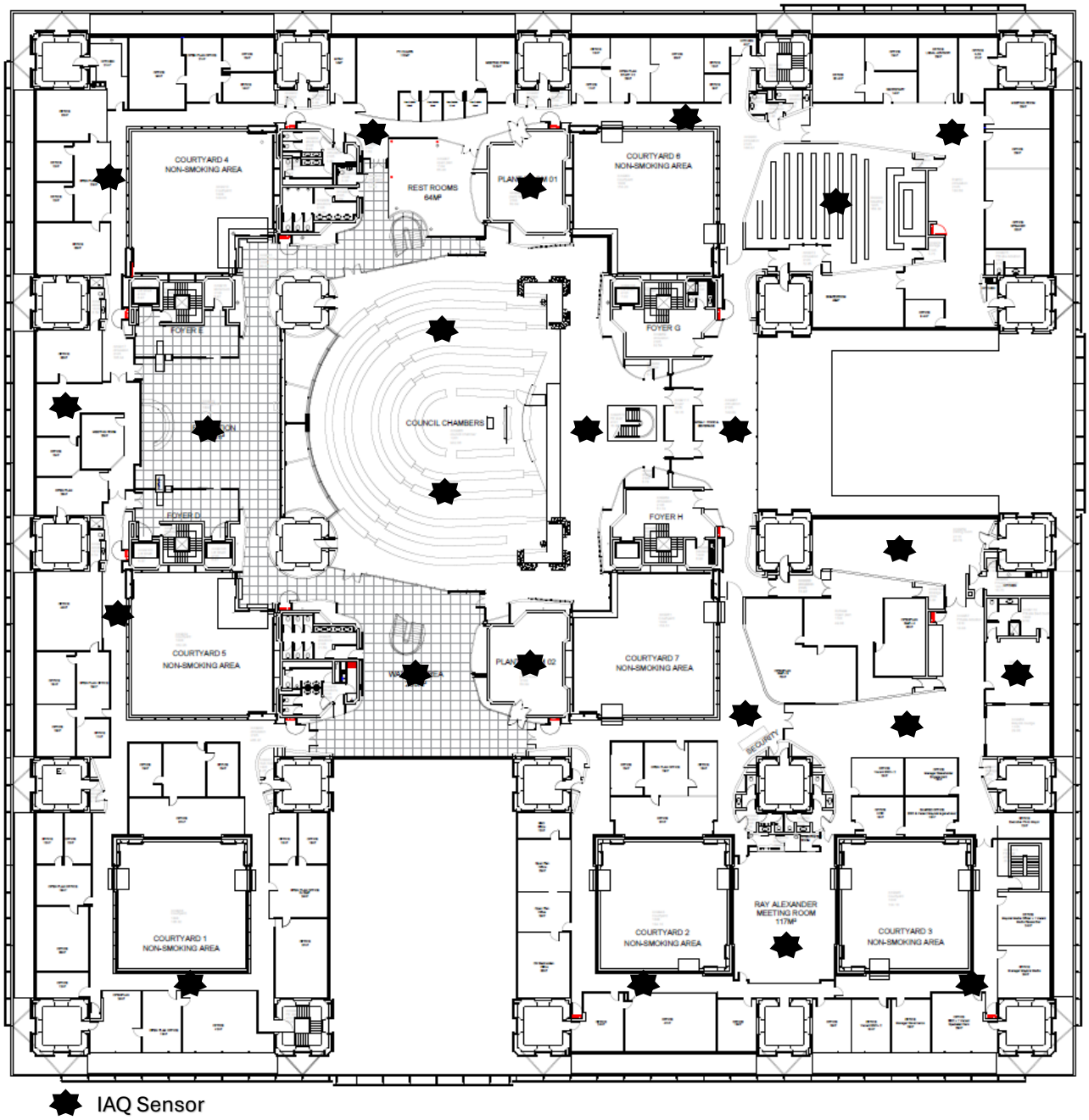


Figure 30: Podium Building proposed sensor positioning 6th floor (23)

6. General Company and Product Information

6.1. **Company Background:** Provide details on your company structure and business model, including the use of large account resellers (LAR), value-added resellers (VAR), systems/solution integrators, or direct engagements. Include information on software and hardware provisioning, licensing, implementation services, accreditation programs, training, ongoing maintenance, and your main representative in South Africa.

Has the company ever rendered work for the City of Cape Town. If so, provide references.

6.2. **Product Hardware and Software Overview:** Provide details of your product offerings through attachments, brochures, or web articles.

6.3. **Product Lifecycle and Enhancement Process:** Explain how your solution can be continuously updated and enhanced based on new requirements from the City. Describe your product lifecycle methodology, including development, quality assurance, training, consulting services and production systems.

6.4. **Product Architecture:** Detail the architecture of your solution and how it will be offered to the City.

7. Product Offering

7.1. **System Proposal:** Provide details of the indoor air quality monitoring system you propose, clearly indicating how it would meet the City's facility management programme needs for monitoring the acceptability of indoor air quality for its building occupants.

7.2. **Certification:** Provide written proof of any certifications globally recognised by organisations like ASHRAE, RESET Air, MCERTS, etc.

7.3. **Local and International Presence:** Detail your local and international presence and skills for installing, supporting, and maintaining the service.

7.4. **Additional Recommendations:** Feel free to make any additional recommendations or alternative proposals that meet the requirements and align with the overall intentions and purpose of the RFI.

8. Product Pricing Structure

8.1. **Payment Terms:** Once-off and or capital/Opex payment over an agreed period.

8.2. **Cost Estimates:** Provide likely cost estimates for supply and installation (tiered approach based on number of units installed, etc.)

8.3. **Detailed Cost Breakdown:** Provide a detailed cost breakdown covering all costs, including base cost for hardware, data logging and dashboard display costs, licensing costs, installation costs, upgrades to hardware (i.e. additional sensors, etc.), system integration into other platforms (i.e. building management system), service contracts (call-outs, servicing, maintenance, calibration)

In addition to the above, confirm if there any monthly or annual retainer costs.

9. Interaction with Respondents

9.1. The City of Cape Town reserves the right not to utilize information gathered during the RFI process to complete a specification for tendering.

9.2. For queries, please reference this RFI description and send to the email address: Randall.Felix@capetown.gov.za

10. Proof of Concept

The City of Cape Town reserves the right to engage respondents to validate and test information provided in response to this RFI. This may include a request for a proof of concept or demo, without the City playing any role in financial contribution towards proofing the concepts.

11. No Obligation

11.1 This RFI places no obligation on the City of Cape Town to proceed with any subsequent process to obtain any product or solution offering listed herein. Respondents will not gain preference or favour by responding to this RFI.

11.2 Responses to this RFI are voluntary. The City of Cape Town will use submitted information at its discretion and reserves the right to use any submitted information in public websites, reports, summaries, solicitations, grants, cooperative agreements, or future developments.

11.3 This RFI is for information and planning purposes only and shall not be construed as a solicitation, grant, cooperative agreement, or obligation on the part of the City of Cape Town. The City will not pay for the preparation of any information submitted or for the use of such information. No claims against the City shall arise from a response to this RFI or the use of such information.

11.4 The research obtained from this RFI will inform the technical and functional specification of the proposed goods and services, which may follow an open competitive bidding process. The City reserves the right not to proceed with any further process if the research/technology indicates it is not viable and feasible. The City also reserves the right to apply different procurement strategies while exploring methods to validate and test information provided in response to this RFI.

- **Submission Requirements**

Please provide all inputs electronically on or before **16:00, 31/10/2025**.

All responses to be sent: Randall.Felix@capetown.gov.za

Email subject line: RFI94/2025/26 response from [Insert company name]

Response format: PDF or MS Word

Length: +/-50 pages including support documentation.