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BURNSIDE
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Technical Memorandum

OBC, Fire & Life Safety and Accessibility Review

Date: November 25 2026 **Project No.:** 300062207.0000

Project Name: 5 Keppel Street Renovation

Client Name: Township of Southgate

Submitted To: Jim Ellis – Chief Administrative Officer

Submitted By: Julia Márquez, B.Arch - CIDEZ

Reviewed By: Mark Kabbes

1.0 Background

The Council of the Corporation of the Township of Southgate authorized R.J. Burnside & Associates Limited (Burnside) to perform a review of Building Code, Fire & Life Safety and Accessibility requirements for the renovation of the existing building located at 5 Keppe Street, Dundalk, Ontario to a municipal facility composed of office space for different city departments, Council Chambers, Public Works and Fire Department along with multiple garage spaces with the purpose of identifying compliance items that may influence design, construction costs, schedule and feasibility for the renovation to include a new major occupancy.

1.1 Property Description

The property at 5 Keppel Street consists of a two-storey light industrial building (Building 1) with an approximate building footprint of 2,900 m^2 and a single-storey workshop (Building 2) with an approximate building footprint of 1,000 m^2 place on a site of approximately 3.61 ha (8.92 ac) in size. For the purpose of this report, we will focus on Building 1 only as the main focus for the renovation.

2.0 Ontario Building Code Requirements

The Ontario Building Code requires that a building subject to a change of use, and where renovation is proposed, and the building has been in existence for at least five years, to be assessed under Part 11 of Division B. As a general principle, the proposed construction in

accordance with sentence OBC 11.3.1.1.(1) requires that the performance level of the building must not be reduced because of the change of use or renovation work undertaken, the assessment will indicate the level of compensating construction required for the renovation.
Occupancy Classification

2.1 Classification of Existing Buildings

Where proposed construction will result in the change of major occupancy of all part of an existing building to another major occupancy, the building shall be classified as to its construction index and hazard index in accordance to article 11.2.1.1.

2.1.1 Existing Building Occupancy Classification

Group F-2 – Medium-Hazard Industrial

Under 3.2.2.69. Group F, Division 2, up to 4 Storeys, Increased Area, under OBC O. Reg. 332/12 when it was originally constructed.

2.1.2 Proposed Building Occupancy Classification

Previous Major Occupancy Group F-2 – Medium Hazard Industrial 3.2.2.69. Group F, Division 2, up to 4 Storeys, Increased Area, under OBC O. Reg. 332/12 to be grandfathered in as existing condition, based on previous drawings and relative construction date of the building. Indicating the building to be non-combustible and the following applied:

- Floor assemblies shall be fire separations with a fire-resistance rating not less than 1 hr, mezzanines shall have a fire-resistance rating not less than 1 hr;
- If the building is not sprinklered, roof assemblies shall have a fire-resistance rating not less than 1 hr; and
- Loadbearing walls, columns and arches shall have a fire-resistance rating not less than that required for the supported assembly.

New Major Occupancy to be included - Group D – Offices (Multiple Municipal Offices) 3.2.2.58. Group D, up to 6 Storeys, under OBC O. Reg. 5/25. - Facing at least 1 street. This section of the building will hold an ancillary Group A-2 – Assembly use. Indicating the building to be non-combustible and the following to be provided:

- Floor assemblies shall be fire separations with a fire-resistance rating not less than 1 hr;
- Mezzanines shall have a fire-resistance rating not less than 1 hr;
- Roof assemblies shall have a fire-resistance rating not less than 1 hr, except that in a building not more than one storey in building height this requirement is waived; and
- Loadbearing walls, columns and arches shall have a fire resistance rating not less than that required for the supported assembly.

2.1.3 Construction Index – Hazard Index

For renovations and change of use, the OBC assigns a hazard index to occupancies. When an occupancy changes to another major occupancy, it triggers assessment of the construction types (combustible vs non-combustible construction, fire resistance ratings) to assess the building construction index and hazard index.

Based on previous classification and existing conditions, and with confirmation of roof fire-resistance rating, the Construction Index of the existing building would be set to six, which refers to performance level of the building structure in fire-resistance rating of an existing building in accordance to OBC Table 11.2.1.1.A.

The existing Hazard Index of the existing building is 6, which refers to the level of hazard present and determined by use and size of the building in accordance with OBC Table 11.2.1.1.M. There is no increase to the Hazard Index Level related to the proposed renovation and change of use.

Reference:
3.2.2.69. Group F, Division 2, up to 4 Storeys, Increased Area, under OBC O. Reg. 332/12
3.2.2.58. Group D, up to 6 Storeys, under OBC O. Reg. 5/25
OBC O. Reg. 5/25 - Table 3.1.3.1 – Major Occupancy Fire Separations
OBC O. Reg. 5/25 – Table 11.2.1.1.A – Construction Index
OBC O. Reg. 5/25 – Table 11.2.1.1-M – Hazard Index

2.2 Performance Level Evaluation and Compensating Construction

In accordance with article OBC 11.4.2, the proposed renovation results in a reduction in the building's existing performance due to change an increase of occupant load by more the 15% and change of major occupancy.

The building will contain multiple major occupancies, Industrial (Group F) and Offices (Group D), in this case, the most restricted major occupancy shall apply to the whole building.

Estimated Occupancy Load Based on area (m^2) per person by OBC Table 3.1.17.1							
	Offices	Area per person (m^2)	1st Floor Area (m^2)	Max. Occ.	2nd Floor Area (m^2)	Max. Occ.	Comments
Existing	Offices	9.3	92m^2	10	114m^2	13	
	Storage	28	366m^2	13	270m^2	10	
	Vehicle Bays	46	2300m^2	50			
	Lunchroom	1.2			95m^2	80	
Sub-Total				73		103	
Total Building Occupancy				**176**			
Proposed*	Offices	9.3	163m^2	18	330m^2	36	*Estimated based on Design Option for the Municipal Offices and Fire Department maximum capacity. See Appendix 1
	Storage	28	153m^2	6	197m^2	7	
	Vehicle Bays	46	1747m^2	38			
	Council Chamber	0.95	100m^2	106			
	Training Room	1.85	143m^2	78			
	Gym	9.3			124m^2	14	
Sub-Total				246		57	
Total Building Occupancy				**303**			

Occupant load is estimated to increase over 15% for the change of use with inclusion of major occupancy with ancillary assembly use

Change of Use

A change of use is required due to the following:

- Increase in the occupancy load over 15% and change of occupancy classification to include multiple occupancies.
  This increase and re-classification generate a reduction of performance level of the building. When the performance level of an existing building is reduced, compensating construction is required to ensure that the performance level is increased, and it is no less than prior to the intervention. Compensation Construction may include:
  - Structural reinforcement for live and dead loads.
  - Existing fire separations to be upgraded according to the required rating.
  - New fire rated separations to be provided.
  - Upgrades to the plumbing and sewage system.
  - Upgrades to the early warning and evacuation systems.
- Post-Disaster Building Classification:
  - Where the building or part of the building undergoes a change of use in accordance with sentences OBC 3.18.1.1 (a)(v) and 3.18.1.2, a post-disaster building shall also be deemed to constitute a change in major occupancy
  - In accordance with sentence OBC 3.18.2.1.(2), existing buildings shall be classified as to their construction and occupancy as provided for in sentence OBC 11.2.1.1 (1).
  - In accordance with Article OBC 3.18.2.2, performance level and compensating construction shall not be less than the performance level of the building prior to construction. Reduction of performance level under a change of major occupancy is determined in accordance with article 11.4.2.3.(e) the change of a building or part of a building to a post-disaster building.
  - In accordance with sentence 11.4.3.4, (1), additional upgrading shall be required described in Table 11.4.3.4 -A.

New Major Occupancy (H.I)	Increase of CI to Equal H.I. to Support New Major Occupancy	Additional Required Upgrading	Part 11 Alternative Compliance
H.I 6	C.I 5 to 6	Comply with table 11.2.1.1-A ratings for C.I of 6	Provide sprinkler system, plus 45 min. roof rating

  - With the inclusion of the Fire Department Services and the housing of vehicles used for emergency purposes as per reference OBC 1.4.1.2, and 11.4.2.3. This would entail specific structural and seismic design requirements for this building category to be included as part of the renovation. This use may be exempted from designation as post-disaster building at the *principle authority* discretion, depending on its function for essential services following a disaster.

2.3 Fire Separations

Existing Building

- Existing Typical wall construction in the storage areas and dividing wall between with the vehicle bays appears to be painted 190 mm CMU which should one hour of fire rated separation.
- Existing shared walls between the storage / vehicle bay and the office space appear to be 140 mm and CMU with 1 layer of regular drywall on the office side, which should provide 1 hr of fire rated separation.
- Existing interior partitions in office space are assumed to be non-loadbearing steel studs with 1 layer of regular drywall on each side, which should provide 45 minutes of fire rated separation.
- Existing precast hollow core slabs and concrete slab on the floor typically provide 45 minutes to 1 hour of fire-resistance rating.
- Existing roof appears to be a conventional modified bitumen flat roof, composed of insulation and sheathing on steel deck with exposed underside.
  Given the existing building classification and absence of sprinkler system in the building, we assume it has been finished with intumescent paint on the underside of the steel deck or a different fire resistance method through the roof assembly to provide the required fire-resistance rating required by the building classification when originally constructed, condition to be verify through site verification and required testing.

Required Rated Fire Separations for the new Occupancy Classification

- Group F-2 must be separated from Group D with ancillary Group A-2 by a fire rated separation of 2 hours minimum.
- Group D must be separated by ancillary Group A-2 by a fire rated separation of 1 hr minimum.
- Floors assemblies, and loadbearing components shall have a fire-resistance rating of 1 hr or no less of the fire-separation supported, if applicable.
- Roof assemblies shall have a fire-resistance rating of 1 hr, or the building must be sprinklered throughout.
- Public corridors are required to have a fire rated separation of 45 mins, unless is sprinklered.

To comply to the new fire-resistance separation requirements in walls, existing CMU walls that will act as demising walls between different occupancies will have to be upgraded with the installation of one or two layers of gypsum board, regular or Type X, depending on the required rating. All new walls acting as demising walls between occupancies are to be recommended to be with Type X gypsum board to achieve the required rating.

Existing roof assembly fire-resistance rating is to be confirmed with test cuts of the existing roof assembly and testing of the applied paint is required to confirm existing fire-rating provided is no less than 1 hr. If existing fire-resistance rating is insufficient, it can be achieved by application of intumescent paint, spray-applied fireproofing of the elements or enclosing them in gypsum

board as required depending on the location, use of the space and cost considerations. In the absence of fire-resistance required, the building is required to be sprinklered throughout.

In addition, structural framing for the existing second floor and roof, most of it currently exposed, is to be provided with fire-resistance rating of no less of 1 hr, or to match the fire-separation supported. Testing of existing finished paint in structural components is recommended to verify current rating. If fire-resistance rating is not present, it can be achieved by application of intumescent paint, spray-applied fireproofing of the elements or enclosing them in gypsum board as required depending on the location, use of the space and cost considerations.

2.4 Fire Alarm and Sprinkler Requirements

According to the Building Condition Assessment, there are various fire extinguishers installed on site. There is emergency life safety lighting and running man signs installed on site, no visible sprinkler system or fire alarm in place.

Under the existing classification for Group F, Division 2, up to 4 Storeys, Increased Area, under OBC O. Reg. 332/12 as existing conditions and the new major occupancy of Group D - Offices, OBC 3.2.2.58. Group D, up to 6 Storeys, under OBC O. Reg. 5/25, the building is not required to be sprinklered. Note that the roof assembly must have a 1 hr fire resistance rating, existing to be confirmed for this to be maintained, along with the Construction Index. If Construction Index upgrade is required, a sprinkler system will need to be incorporated.

As per OBC O. Reg. 5/25, 3.2.4.1, the proposed renovation does not require fire alarm system if the following is maintained:

- Sprinkler system is not required;
- Total building occupant load remains under 300 people;
- Occupant load above the first floor remains under 150 people; and
- Occupant load for Group F, medium hazard use remains under 75 people above the first floor.

If these conditions are not met, the building is to be provided with a fire alarm system.

2.5 Exiting Requirements / Travel Distances

Existing exits and travel distances appear adequate for the current Industrial use with Service Bays, including supporting storage and offices.

For the proposed change in Occupancy Classification and Change of Use of the building, upgrade of the early warning and evacuation systems are required as follows:

- 2 exits are required for any floor area for an occupancy serving more than 60 people.
- 2 exits are required for a travel distance of more than 25 m.
- 2 exits are required for floor areas exceeding;
  - Group A: 150 m^2 – 15 m travel distance
  - Group D: 200 m^2 – 25 m travel distance

  - Group F-2: 150 m^2 – 10 m travel distance

Under the consideration the building is sprinklered throughout.

- Minimum Widths for Exits:
  - Corridor: 1100 mm
  - Ramps: 1100 mm
  - Stairs: 900 mm

Exits shall be located and arranged so that they are clearly visible, or their locations are clearly indicated and they accessible all the time.

For the proposed renovation of the building, emergency exits must be located so at least one exit is located within 40 m in office use, and 30 m for the service vehicle bays and other areas.

The proposed design is expected to incorporate additional exits for the new office space located in the 1st floor and at least one new set of exit stairs from the 2nd floor to serve the new office areas evacuation in case of an emergency.

Exact exit requirements and locations will be determined with the final occupancy load and layout.

2.6 Emergency Lighting

There is emergency life safety lighting and running man signs installed on site, according to the existing layout.

Due to the changes in layout and addition of new offices and corridors, new emergency lighting is to be provided in the following areas to ensure safe travel to an exit in case of emergency:

- Exits;
- Routes to an exit in open floor areas and service rooms;
- Corridors us by the public;
- Floor areas with public assembly congregation or occupancy load of more than 60 people;
- Washroom for public use;
- Locations with doors equipped with electromagnetic locks;
- Universal washrooms; and
- Internal corridors or aisles serving as routes to exits.

Lighting levels and installation shall be in accordance with OBC 3.2.7.3.

2.7 Washroom Requirements

The existing building is provided with the following washrooms:

- First Floor:
  - 3 stalls + 1 BF stall for Women
  - 2 sinks
  - 2 urinals + 1 stall + 1 BF for Men

  - 2 sink
- Second Floor:
  - 1 private washroom
  - 2 private washrooms with shower

For the estimated increase in occupancy and change of use, the following is required:

Estimated Occupancy Load Based on estimated occupancy load and by OBC Table 3.7.4.3 and 50/50 usage			
Occupancy	**Estimated Load**	**Male WC**	**Female WC**
First Floor			
Group A – Assembly	106	3	5
Group D – Offices	18	2	2
Group F-2- Vehicles Bays	38	3	3
Second Floor			
Group D – Offices	36	3	3

In addition, 1 Universal Washroom is required for 2-Storey Building and 1 Barrier-Free stall for each sex to be included in each washroom area.

2.8 Accessible Entrances

There is one main entrance, directly into the office section of the building, and two secondary entrances, serving the service bays and storage areas.

For the proposed intervention, all pedestrian entrances, except for service entrances, shall be barrier free entrances and connected to a barrier free exterior path and at least one barrier free entrance is to be provided from any section of the building that is separated from the barrier free travel path inside the building. Accessible entrances are to be designed in accordance to OBC 3.8.2.2.(1)

For the proposed design of the building, the main entrance, and each separate entrance to a unit of offices, the council chambers and Fire Department Service Hall and Public Works Service Bays are to be accessible entrances.

2.9 Barrier-Free Paths of Travel / Exterior Pedestrian Walks

A barrier-free path of travel shall be provided throughout the building as per OBC 3.8.3 and 3.8.3.2, with the following considerations:

- 1100 mm unobstructed width in corridors;
- All walking surfaces to be smooth and without large openings;
- To be stale, firm and slip resistant;
- With maximum slope of 1 in 2; and
- Be provided with an unobstructed space of 1800 mm x 1800 mm every 30 m

For the proposed renovation of the building, the inclusion of a new elevator(s) is provided, to allow barrier-free access to the second-floor office and assembly space. All corridors must be designed to comply to OBC 3.8.1.3.

In addition, barrier-free paths of travel are to be provided between entrances, and where a designated barrier-free parking area is provided, an exterior passenger-loading zone is provided and to public thoroughfare, in compliance with OBC 3.8.3.2.

3.0 Accessible Parking

The Township of Southgate Zoning By-Law required for the proposed building occupancy and uses for the parking requirements are the following:

Use	Requirement	Data	Number of spaces
Fire Department Service Bay	5 per bay	7 bays	35
Council Chambers	1 parking space for every 8 seats	65 seats	9
Vehicle Bays	5 parking spaces plus 1 per 50 m^2	1025 m^2	25
Office	1 per 30 m^2	493 m^2	17
Training / Staff Lunchrooms	1 parking space for every 8 seats	135 seats	17
		Total	103

Note: Parking requirements are estimated based on estimated occupancy and may be subject to change.

Barrier-free parking spaces: 2 barrier free spaces are required.

Zoning By-Law states that where more than 20 parking spaces are required, one barrier-free space must be provided for the first 20 spaces, plus one additional barrier-free space for each additional 100 spaces or portion thereof.

Each parking space shall have a minimum length of 5.75 m, and minimum width of 2.75 m measured at right angles to the length, while Barrier-Free parking spaces shall have a minimum width of 4.4 m (14.4 ft) and a minimum length of 6 m (19.6 ft).

4.0 AODA Considerations

For the proposed building, as a municipal building serving the public, the following are required:

- Accessible parking with barrier-free pathway to accessible entrance;
- Exterior pedestrian pathways in compliance with barrier-free path of travel;
- Accessible entrance to all areas of the building;
- Barrier-free path of travel to all areas, unless exempt;
- Barrier-free path to second floor;
- Barrier-free washroom facilities on the first and second floor;
- Accessible door operators where required;
- Door widths allow for wheelchair obstructed movement;

- Appropriate signage in clear and bright design, including braille and other accessibility features;
- Visual and audible fire alarm;
- Service counter to include at least one accessible service station; and
- Waiting areas to accommodate wheelchair maneuvering space.

These considerations will be built into the final design for the renovation based on the final layout selected by the Township.

5.0 Summary Conclusions

The proposed renovation of Building 1 at 5 Keppel Street will incorporate the inclusion of a new major occupancy in an existing building, due to the increase in occupancy and new spaces designated as different departmental offices and ancillary assembly space, resulting in a change of use and classification under the Ontario Building Code. In addition, the designation of a portion of the building as a post-disaster building constitutes a change in major occupancy, thereby triggering the applicable change of use requirements.

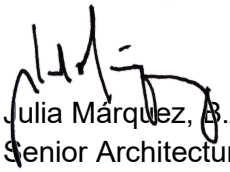
The proposed renovation will require compensating construction with multiple upgrades throughout the building systems to achieve the required performance level. Key components to be integrated in the design intervention are;

- Upgrade of existing fire separations to achieve required fire resistance ratings between occupancies;
- Review of existing fire-resistance separations, remediation where applicable;
- New fire rated separations to be provided between occupancies;
- Fire-rated proofing for structural components;
- Upgrade of main sanitary line and sewage system;
- Upgrade of early warning system and evacuation systems to meet increased capacity;
- Sprinkler System inclusion to meet the requirements applicable to new major occupancy and size of the building, depending on construction index determined by confirmation of roof fire resistance.
- Structural review and increase of structural capacity to sustain the increased loads capacity;
- Structural reinforcement for seismic measures required for a post-disaster building;
- Additional provision of washrooms facilities, including universal and barrier-free areas;
- Review of the building sewage system and plumbing requirements and remediation;
- Provision of accessible entrances and / or remediation as required;
- Provision of additional emergency exiting;
- Inclusion of barrier-free path of travel throughout the building where required;
- Inclusion of AODA design considerations where applicable;
- New HVAC system for the building; and
- New lighting and electrical components where required.

Final design will verify all building systems and components required throughout design stages and will be subject to review and approval by the authorities having jurisdiction.

Prepared by,

R.J. Burnside & Associates Limited



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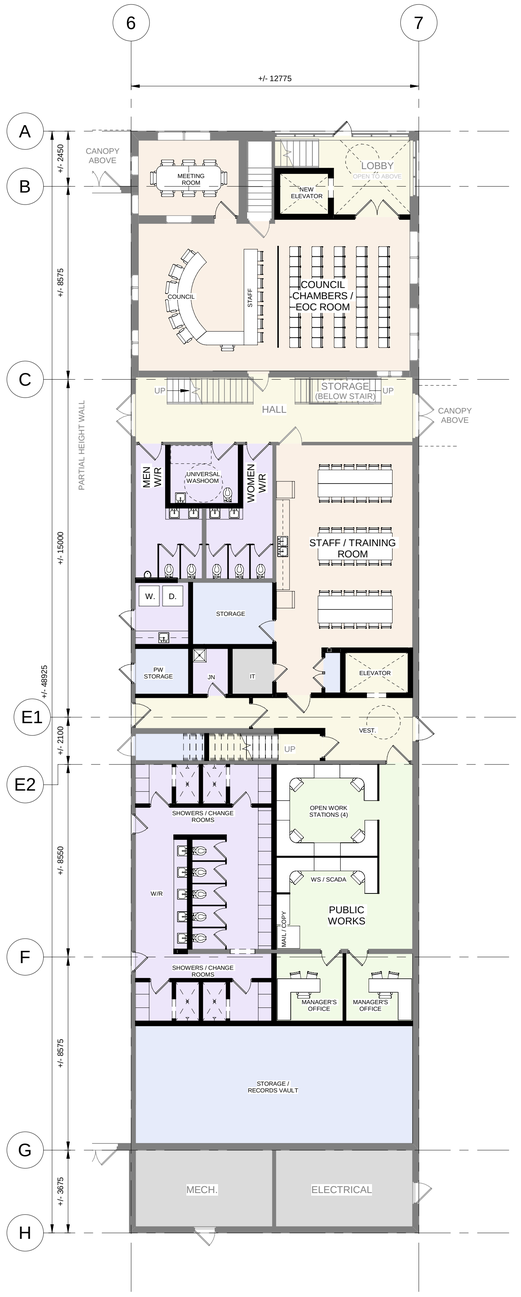

1 A1 MUNICIPAL OFFICES MAIN FLOOR

SCALE: 1 : 125



3 A1 MUNICIPAL OFFICES SECOND FLOOR

SCALE: 1 : 125



KEY PLAN

Notes

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2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing is the be read and understood in conjunction with all other plans and documents applicable to this project.

NOT FOR CONSTRUCTION

No.	Issue / Revision	Date	Auth.

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Drawing Title
5 KEPPEL STREET RENOVATION

MUNICIPAL OFFICES CONCEPT

Drawn	Checked	Designed	Checked	Date	Drawing No.
Author	Checker	Designer	Approver		**A1**
Project No. 300062207		Contract No.		Revision No.	
Scale: As indicated					

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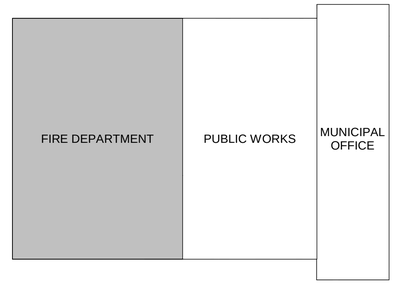

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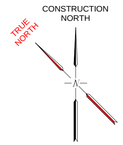

1 / A1 FIRE DEPARTMENT MAIN FLOOR PLAN

SCALE: 1 : 100

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Drawing Title
5 KEPPEL STREET RENOVATION

FIRE DEPARTMENT MAIN FLOOR PLAN

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Project No.		Contract No.		Revision No.	
300062207					
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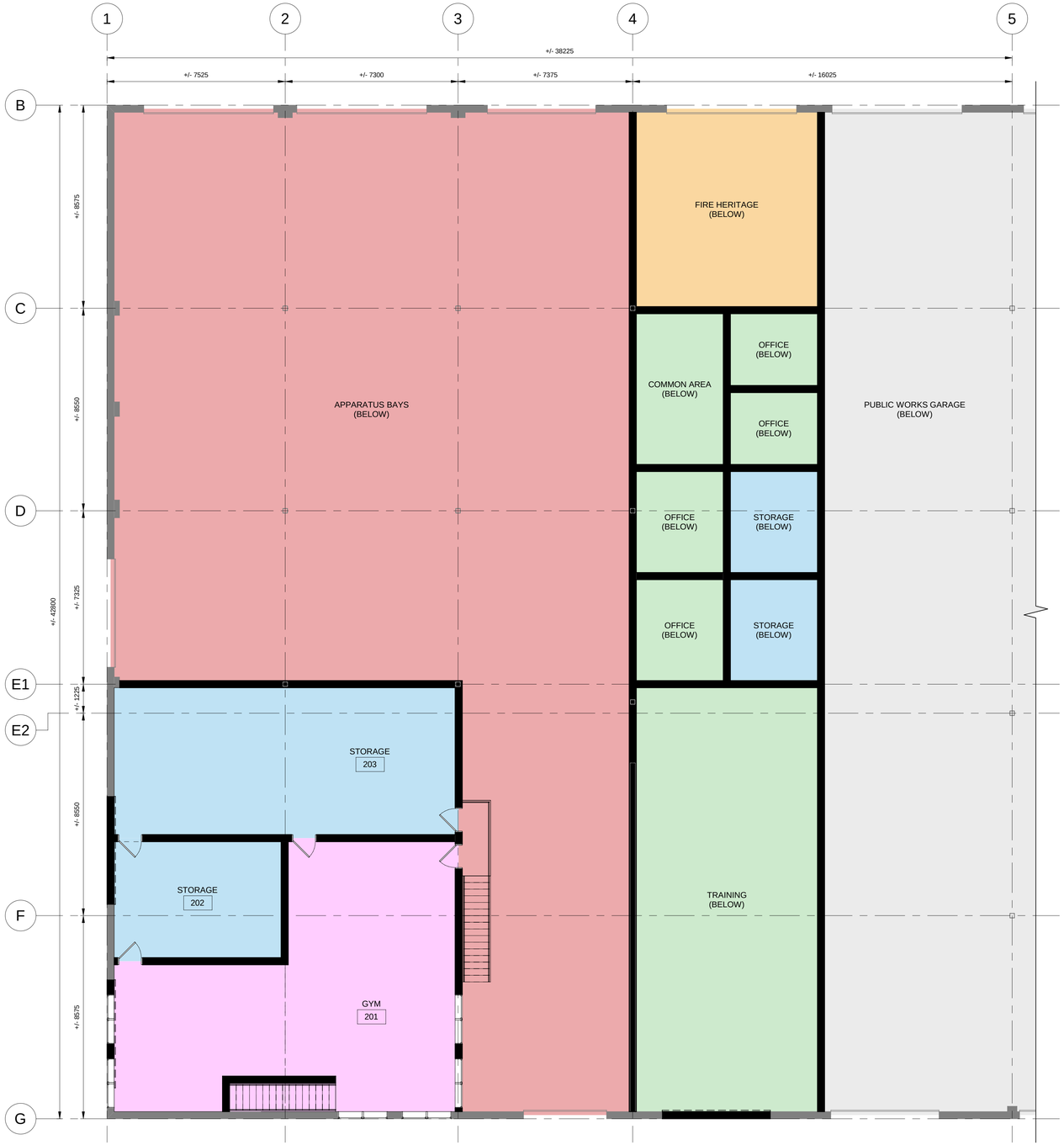

1 / A2 FIRE DEPARTMENT SECOND FLOOR PLAN

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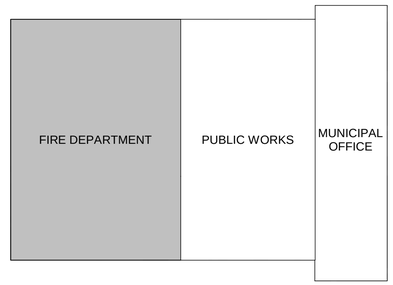

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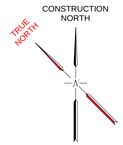

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Drawing Title
5 KEPPEL STREET RENOVATION

FIRE DEPARTMENT SECOND FLOOR PLAN

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