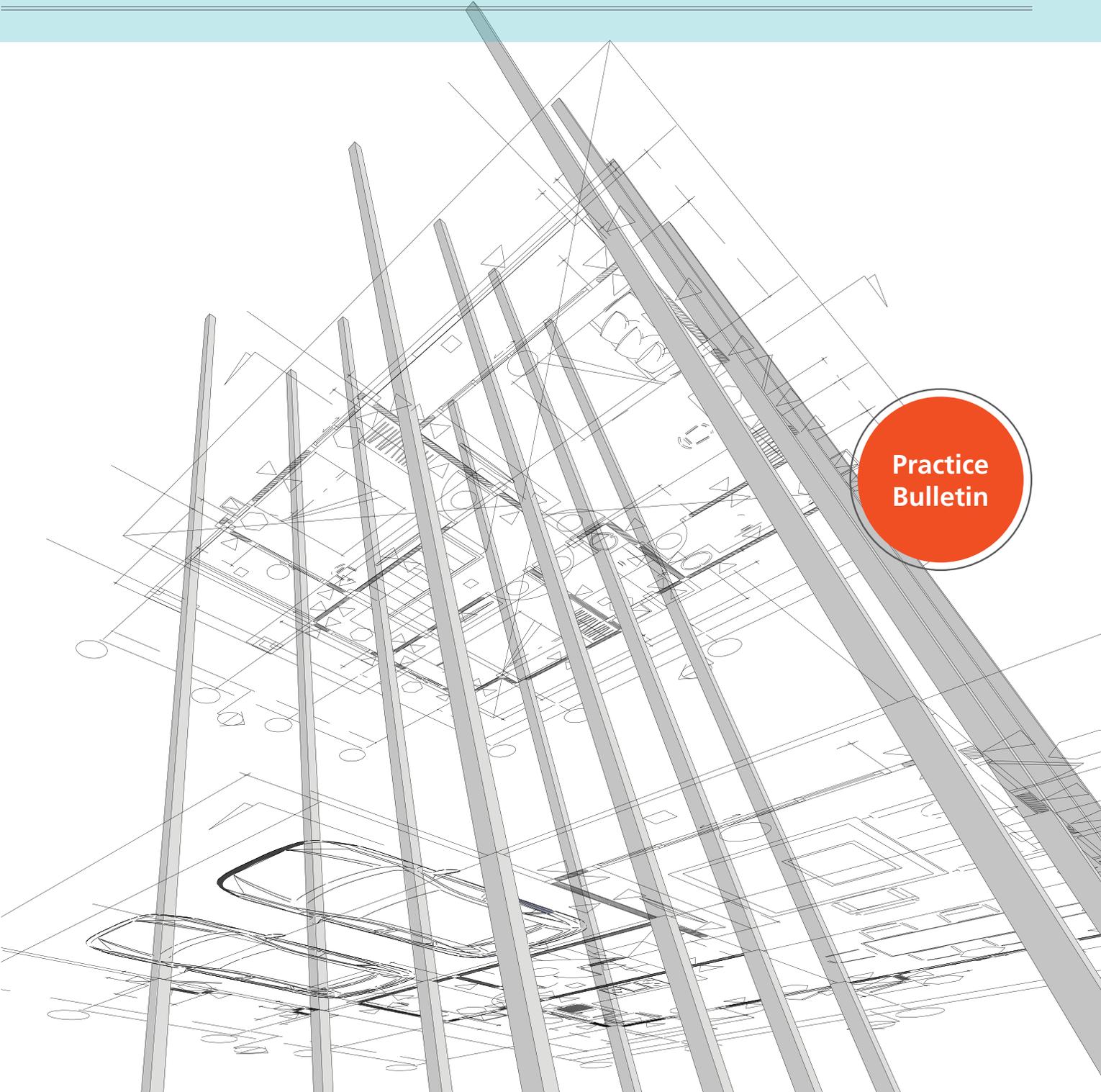


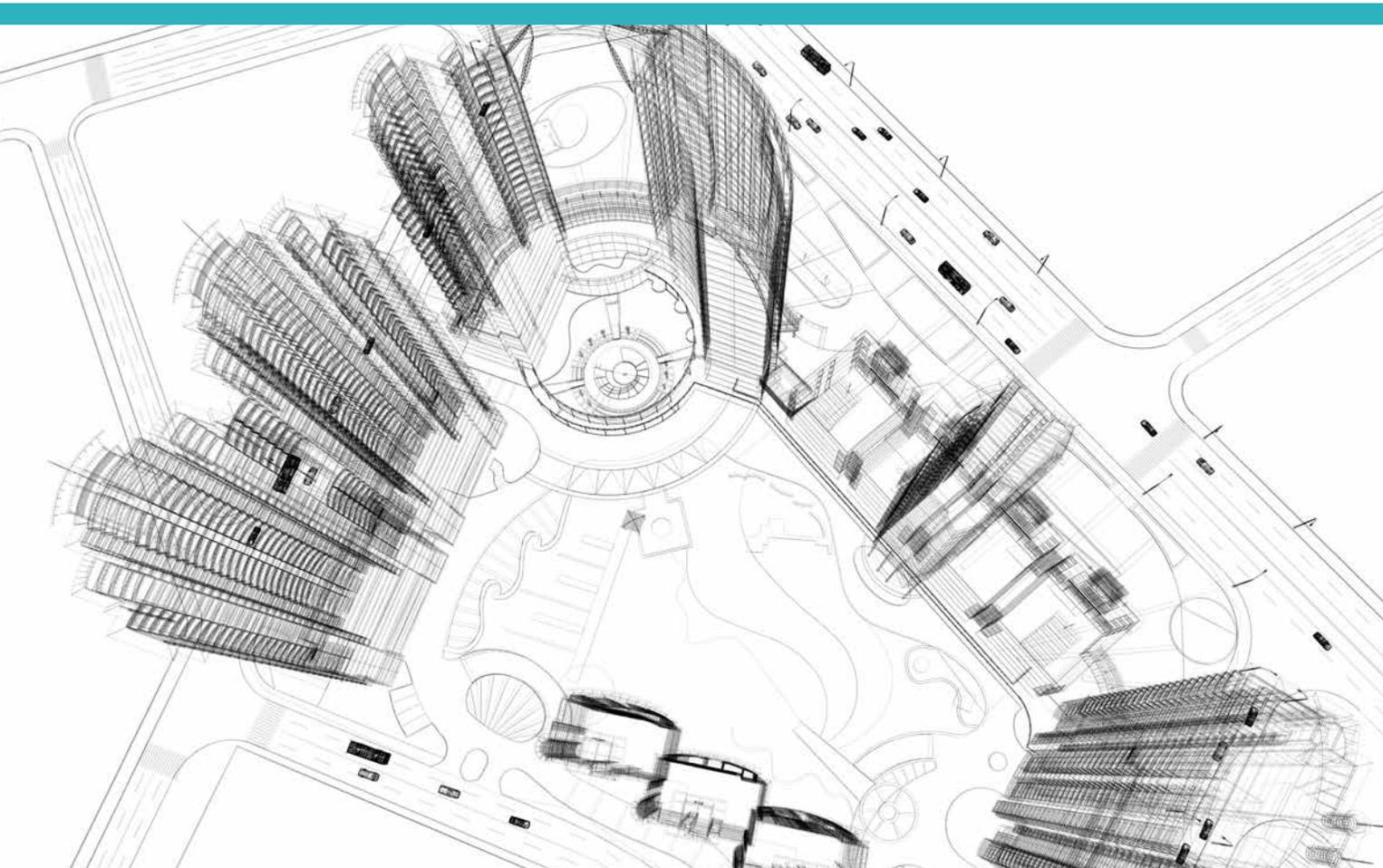


Professional Engineers
Ontario

USE OF BUILDING CODE COMPLIANCE DATA MATRIX **BY PROFESSIONAL ENGINEERS SUBMITTING DRAWINGS** FOR BUILDING PERMITS



**Practice
Bulletin**



DATA MATRIX PROFESSIONAL STANDARD FOR PEO LICENCE HOLDERS (ONTARIO REGULATION 260/08)

References to engineers in this bulletin apply equally to professional engineers, temporary licence holders, provisional licence holders, licensed engineering technologists and limited licence holders.

Section 12(6) of the *Professional Engineers Act* governs the relationship between professional engineers and architects. Generally, professional engineers are restricted to preparing or providing designs for structural, mechanical, electrical and other systems in the building that involve the practice of professional engineering. However, for certain classifications, such as industrial buildings, professional engineers may prepare designs for all aspects of the building.

Section 12(6)2 of the *Professional Engineers Act* states that: a professional engineer or an architect may prepare or provide a design for the construction, enlargement or alteration of a building:

- i. that exceeds 600 square meters in gross area or three storeys; and
- ii. that is used or intended for, A) industrial occupancy, or B) mixed occupancy consisting of industrial occupancy and one or more other occupancies, where none of the other occupancies exceeds 600 square meters of the gross area, but only a professional engineer may provide services within the practice of professional engineering in connection with the design.

A data matrix is rarely included when professional engineers prepare all the drawings for a building permit application, a common

occurrence as section 12(6)2 of the *Professional Engineers Act* allows professional engineers to prepare all drawings required for factories, industrial units, parking garages and storage units.

These data matrices provide information crucial to the evaluation of the permit, such as identification of occupancy type, building area, gross area and number of storeys, and whether the building is of combustible or non-combustible construction.

PROFESSIONAL STANDARD FOR PEO LICENCE HOLDERS (ONTARIO REGULATION 260/08)

In preparing the design, the professional engineer shall provide information about the building's compliance with the building code. The information shall be organized in a table and shall be listed under the following headings:

- Project description (new, addition, alteration, change of use)
- Major occupancy or occupancies
- Importance category
- Building area
- Gross area of building
- Number of storeys above and below grade
- Building height
- Number of streets and access routes
- Building classification
- Sprinkler system proposal
- Standpipe requirements

- Fire alarm requirements
- Adequacy of water service or supply for firefighting purposes
- Whether the building is an industrial building
- Construction restrictions (combustible, non-combustible or both)
- Mezzanine information (number, area, locations)
- Occupancy load per floor and method of determination
- Provision of barrier-free design
- Presence of hazardous materials in the building
- Requirements respecting fire resistance rating of horizontal assemblies and supporting members
- Exterior wall construction type and requirements respecting spatial separations
- Plumbing fixture requirements

RECOMMENDED PROCEDURES

- Establish in your practice a system that facilitates retrieval of the information to be shown on drawings submitted with the building permit application. This information is ascertained in the early design stages through your code analysis and confirmed through the design, development and construction drawing stages.
- Consider using the building code compliance data matrix in Appendix 1, adapted as required to meet the specific requirements of each project.
- The engineer shall ensure that the table is affixed to the top-most sheet of the drawings prepared as part of the application for a building permit for the building's construction, enlargement or alteration, or is included in the drawings in a similarly prominent location.
- Coordinate with the mechanical, electrical and structural engineers and share with them the data in matrix.
- The engineer shall provide a copy of the table, for the purposes of the building code, to any other person who the engineer knows to be responsible for any portion of the design of the construction, enlargement or alteration of the building.
- If the building code compliance data matrix is not located on the drawings (e.g. is in a project booklet instead), ensure that the building name and address, as well as your project number and date of issuance, are inserted at the top of the matrix.
- Add exit capacity calculations either on the same drawing sheet as the matrix or separately, confirming that the exit capacity exceeds the occupant load.
- Add plumbing fixture calculations either on the same drawing sheet as the matrix or separately, confirming that the number of plumbing fixtures provided is not less than required by the occupant loads for the various occupancies. It may be necessary to provide a breakdown of the various occupancies for greater clarity. Adapt the matrix to clearly describe the project.

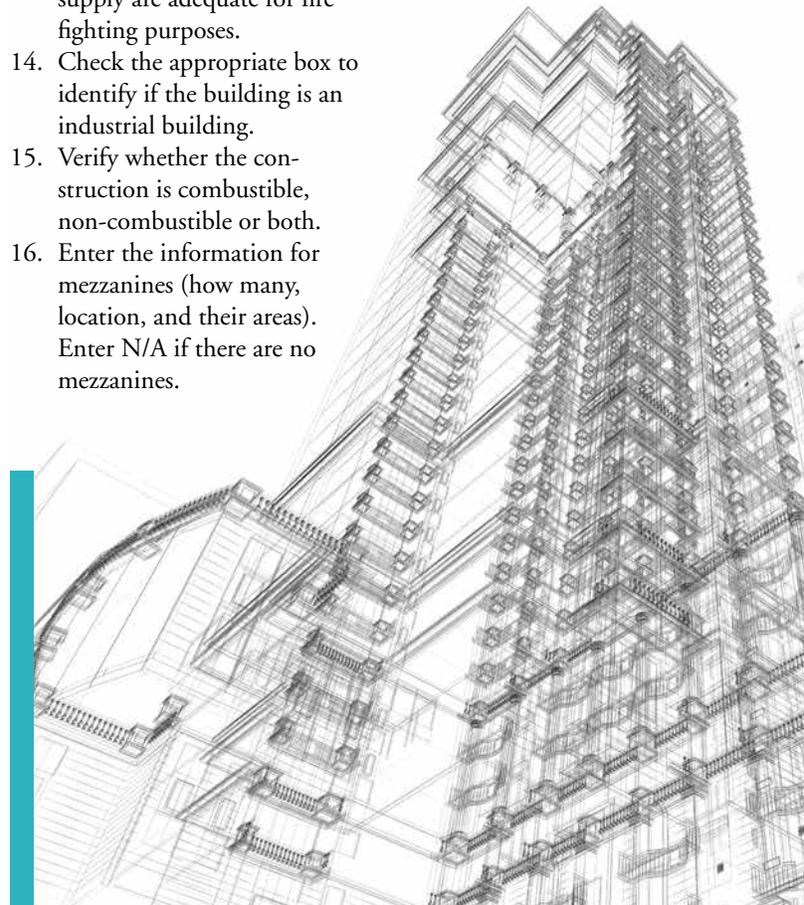
GUIDE TO USING THE ONTARIO BUILDING CODE ANALYSIS MATRIX

This matrix presents a quick overview of the key code factors concerning your design to the municipal building official.

Item No.

1. Enter the contact information for the engineer who prepared the matrix, such as name, company, phone numbers, signature and date.

2. Review the building code compliance data matrix and set out a brief description of the project. Check whether the project is new or an alteration and/or addition. Identify if the use has changed.
3. Identify the major occupancy(s).
4. Identify the category of building.
5. Enter the area of the building in the spaces provided, including areas of the new and existing portions. If a portion of the building is to be demolished, enter in the "existing" space only the portion that is to remain, such that the total of new and existing is the building area of the final project.
6. Enter the gross area of the building in the spaces provided, and enter the extent of new and existing areas, if applicable. If a portion of the building is to be demolished, enter in the "existing" space only the portion that is to remain, such that the total of new and existing is the gross area of the final project.
7. Enter the number of storeys above and below grade.
8. Enter the total completed building height and enter the dimensions of the new and existing portions. If a portion of the building is to be demolished, enter in the "existing" space only the height of the portion that is to remain, such that the total of new and existing is the total height of the completed building.
9. Enter number of streets and fire access routes.
10. Enter the code building classification.
11. Check the appropriate box to identify if the sprinkler system proposed is for the entire building, selected compartments, selected floor areas, the basement, the roof or is not required at all.
12. Check the appropriate box to identify if the fire alarm is required.
13. Check the appropriate box to identify if the water services or supply are adequate for fire fighting purposes.
14. Check the appropriate box to identify if the building is an industrial building.
15. Verify whether the construction is combustible, non-combustible or both.
16. Enter the information for mezzanines (how many, location, and their areas). Enter N/A if there are no mezzanines.



17. Enter the occupancy load determination method.
18. Provide occupancy and occupant load per floor, and method of calculation. If insufficient space is available in the table, list occupancies in a separate table identifying occupancy and occupancy load per floor, and attach it to the drawing.
19. Check appropriate box to indicate a barrier-free design. If “no” is selected, provide an explanation as to why.
20. Check appropriate box to indicate if any hazardous substances will be used in connection with any of the occupancies in the project.
21. Enter the fire resistance rating required for horizontal assemblies (floors, roofs and mezzanines).
Note that fire resistance ratings may change for different major occupancies in the building. If the table in the matrix will not accommodate the building, prepare a separate table and/or schematic plan and cross reference accordingly.
22. Enter the fire resistance rating required for the supporting members of floors, roofs and mezzanines.
Note that fire resistance ratings may change for different major occupancies in the building. If the table in the matrix will not accommodate the building, prepare a separate table and/or schematic plan and cross reference accordingly.
23. Enter the spatial separation information in the appropriate columns for each elevation where applicable. Identify Exposed Building Face (EBF), Limiting Distance (L.D.), Length (L) and Height (H) of building in appropriate columns.
Use a separate table for spatial calculations if the project is more complex and cannot be accommodated in attached data matrix. Cross reference accordingly to the separate table.
24. Provide the plumbing fixtures requirements.

DEFINITIONS

Building area (O.Reg.332/12)

The greatest horizontal area of a building above grade,

- (a) within the outside surface of exterior walls; or
- (b) within the outside surface of exterior walls and the centre line of firewalls.

Engineer (*Professional Engineers Act*)

A person who holds a licence or a temporary licence.

Fire-resistance rating (O.Reg. 332/12: Building Code)

The time in minutes or hours that a material or assembly of materials will withstand the passage of flame and the transmission of heat when exposed to fire under specified conditions of test and performance criteria, or as determined by extension or interpretation of information derived from that test and performance as prescribed in this code.

Gross Floor Area (GFA)

The total floor area of a building, including areas devoted to utilities, stairs, etc., in addition to the net floor area that is directly occupied by owners or tenants.

Hazardous substances (O.Reg.350/06)

An objective of the *Ontario Building Code* is to limit the probability that, as a result of the design or construction of a building, the

public will be exposed to an unacceptable risk of illness due to the release of hazardous substances from the building.

Fire sprinkler/standpipe (O.Reg.332/12)

Class 1 fire sprinkler/standpipe system is an assembly of pipes and fittings: that conveys water from the water service pipe or fire service main to the sprinkler/standpipe system’s outlets; that is directly connected to the public water supply main only; that has no pumps or reservoirs; and, in which the sprinkler drains discharge to the atmosphere to dry wells or to other safe outlets.

Class 2 fire sprinkler/standpipe system is a Class 1 fire sprinkler/standpipe system that includes a booster pump in its connection to the public water supply main.

Class 3 fire sprinkler/standpipe system is an assembly of pipes and fittings that conveys potable water from the water service pipe or fire service main to the sprinkler/standpipe system’s outlets, and that is directly connected to the public water supply main and to one or more of the following storage facilities that are filled from the public water supply main only: elevated water storage, fire pumps supplying water from aboveground covered reservoirs or pressure tanks.

Class 4 fire sprinkler/standpipe system is an assembly of pipes and fittings that conveys water from the water service pipe or fire service main to the sprinkler/standpipe system’s outlets and is directly connected to the public water supply main (similar to Class 1 and Class 2 fire sprinkler/standpipe systems) and to an auxiliary water supply dedicated to fire department use that is located within 520 m of a pumper connection.

Class 5 fire sprinkler/standpipe system is an assembly of pipes and fittings that conveys water from the water service pipe or fire service main to the sprinkler/standpipe system’s outlets, is directly connected to the public water supply main and is interconnected with an auxiliary water supply.

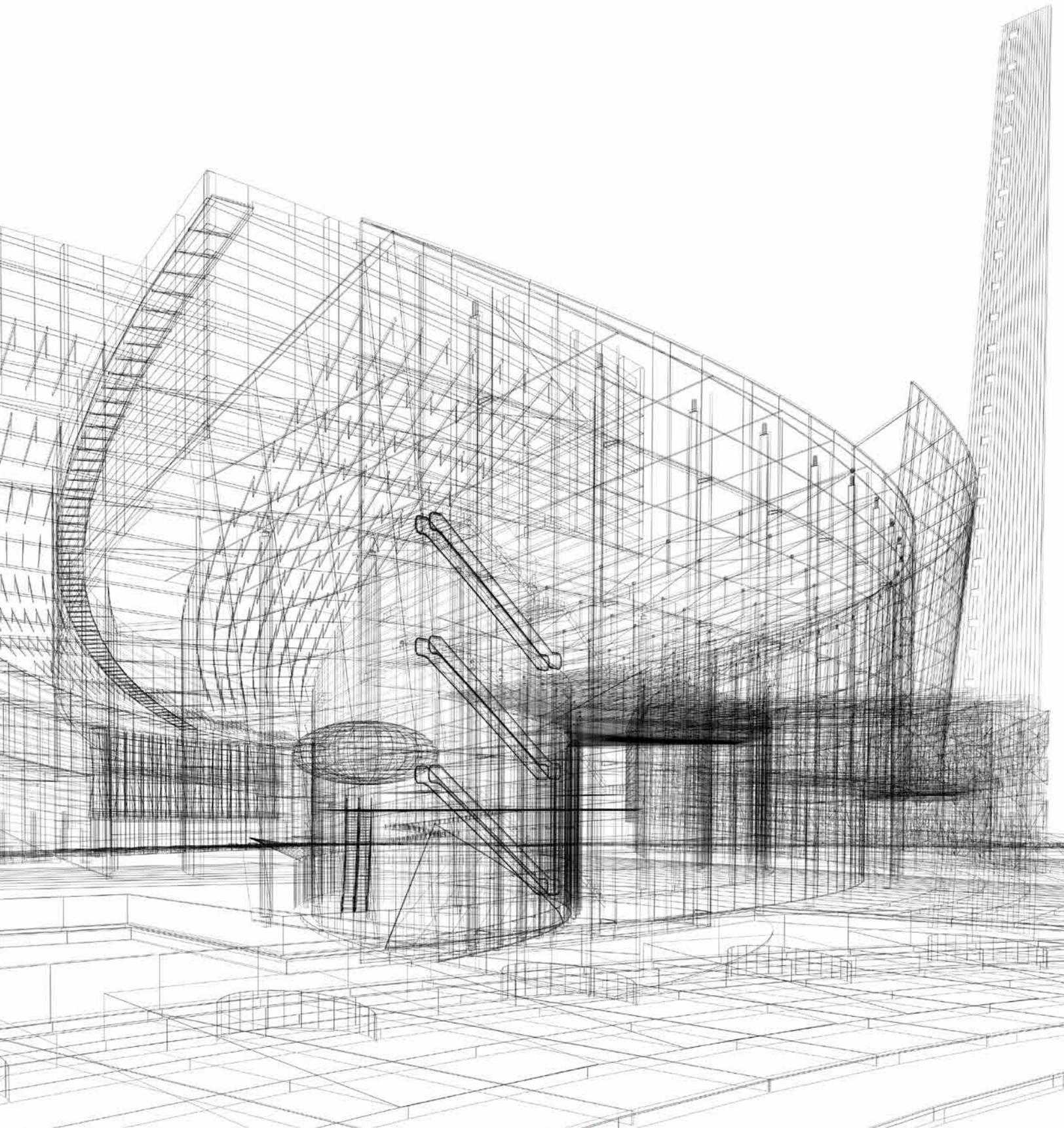
Class 6 fire sprinkler/standpipe system is an assembly of pipes and fittings that conveys water from the water service pipe or fire service main to the sprinkler/standpipe system’s outlets and acts as a combined industrial water supply and fire protection system that is supplied from the public water supply main only, with or without gravity storage or pump suction tanks.

Major occupancy (O.Reg.332/12)

The principal occupancy for which a building or part of a building is used or intended to be used, and is deemed to include the subsidiary occupancies that are an integral part of the principal occupancy.

Mezzanine (O.Reg. 332/12)

An intermediate floor assembly between the floor and ceiling of any room or storey and includes an interior balcony.



BUILDING CODE ANALYSIS MATRIX

Prepared by

Name _____

Company _____

Telephone _____

Signature / Date _____

Project Description

New

Addition

Alteration

Change of Use

Major Occupancy(s)

Importance Category

Building Area (square metres)

Existing _____

New _____

Total _____

Gross Area of Building (square metres)

Existing _____

New _____

Total _____

Number of Storeys

Above grade _____

Below grade _____

Building Height (metres)

Existing _____

New _____

Total _____

Number of Streets and Access Routes

Number of streets _____

Number of access routes _____

Building Classification

Sprinkler System Proposed

Entire building

Selected compartments

Selected floor areas

Basement

Roof

Not required

Is a Fire Alarm Required?

Yes

No

Are Water Services or Supply Adequate for Fire Fighting Purposes?

Yes

No

Is the Building a High Building?

Yes

No

Construction Restrictions

Combustible

Non-combustible

Both

Mezzanine Information

Number

Area (square metres)

Locations

Occupancy Load Method of Determination

Square metres / person

Design of Building

Occupancy Load Per Floor

Basement	Occupancy _____	Load _____	Persons _____	1st Floor	Occupancy _____	Load _____	Persons _____
2nd Floor	Occupancy _____	Load _____	Persons _____	3rd Floor	Occupancy _____	Load _____	Persons _____
Floor	Occupancy _____	Load _____	Persons _____				

Provision of Barrier-free Design

Yes No (explain)

Presence of Hazardous Substances in the Building

Yes No

Required Fire Resistance Rating (Horizontal Assemblies)

Floors _____ Hours Roof _____ Hours Mezzanine _____ Hours

Required Fire Resistance Rating (Supporting Members)

Floors _____ Hours Roof _____ Hours Mezzanine _____ Hours

Spatial Separation—Construction of Exterior Walls

Wall	Area of	L.D. (m)	L/H or H/L	Permitted Max.	Proposed %	FRR (Hours)	Listed Design	Comb.	Comb.	Non-comb.
		EBF(m ²)		% of Openings	of Openings		or Description	Const.	Const.	Construction
									Non-comb	on
									Cladding	

North

South

East

West

Plumbing Fixture Requirements



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