



PO Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

District 12 Planning Advisory Committee - Nov. 23, 2009
Heritage Advisory Committee - Nov. 25, 2009
Halifax Regional Council – April 12, 2011
May 10, 2011

TO: Chair and Members of District 12 Planning Advisory Committee
Chair and Members of Heritage Advisory Committee

SUBMITTED BY: Original Signed
Dan English, Chief Administrative Officer
Original Signed
Wayne Anstey, Deputy Chief Administrative Officer - Operations

DATE: November 18, 2009

SUBJECT: Case 01172: Development Agreement- Barrington/ Sackville/ Granville
Streets, Halifax

ORIGIN

- Application by 778938 Ontario Limited (Starfish Properties) to enter into a development agreement to permit a mixed-use development at 1651-57 Barrington Street and 1652-66 Granville Street (the "Roy Building") and 5181-87 Sackville Street, Halifax;
- June 16, 2009 Regional Council approval of the Downtown Halifax Secondary Municipal Planning Strategy which includes policies to enable Council to consider this proposal under the policies of the Halifax Municipal Planning Strategy in effect when the complete application was received.

RECOMMENDATION

It is recommended that the District 12 Planning Advisory Committee and the Heritage Advisory Committee recommend that Regional Council:

1. Give Notice of Motion to consider an application by 778938 Ontario Ltd. for a development agreement at 1651-57 Barrington Street / 1652-66 Granville Street and 5181-87 Sackville Street, Halifax, and schedule a public hearing;
2. Approve the development agreement, included as Attachment A of this report, to permit a mixed-use development; and
3. Require that the development agreement be signed and returned within 120 days, or any extension thereof granted by Regional Council on request of the applicant, from the date of final approval by Regional Council and any other bodies as necessary, whichever is later; otherwise this approval will be void and obligations arising hereunder shall be at an end.

EXECUTIVE SUMMARY

This development agreement application is for the construction of a mixed-use building at 1651-57 Barrington Street and 1652-66 Granville Street (the "Roy Building") and 5181-87 Sackville Street. This is one of the projects which Council has included provision for in the HRM by Design documents in order to grandfather it under the planning objectives and policies of the Halifax Municipal Planning Strategy as it existed prior to March 31, 2009.

The building is proposed to be 16 storeys above Barrington Street and 18 storeys above Granville Street with a total height, including penthouse level, of approximately 250 feet above Granville. Total gross floor area will be approximately 222,000 square feet. Proposed land uses include offices, pedestrian-oriented ground floor uses, cultural (venue) space above the Barrington level and parking. Optional uses include residential and/ or institutional uses. The base of the building is designed to replicate the massing, building materials and architectural detailing of the Roy building on the Barrington facade while the Granville facade uses the cornice lines, bay rhythms and fenestration patterns of the nearby Johnston building as a guide in its design. The tower portion of the building above the 5th level will be differentiated from the base by being set back from the property lines and will utilize different building materials to provide a more contemporary appearance. The existing buildings, which are not registered heritage properties, will be demolished to allow for the development.

The site is subject to Section 84 of the Halifax Peninsula Land Use By-law, where any development that is greater than 40 feet in height is to be approved by development agreement. Such development is to be reviewed against the objectives and policies of the Halifax MPS.

This report highlights objective and policy considerations from the Municipal Planning Strategy including view protection measures, heritage considerations, building scale and design related policies, micro-climate issues such as wind and shadow effects, traffic/ circulation matters and economic and social objectives. The proposal is found to be consistent with objectives and policies of the Municipal Planning Strategy and it is therefore recommended that Council enter into the proposed development agreement. However, due to the varied nature of the surrounding area, it is recognized that Council has some discretion in determining whether the proposed building's height, massing and mix of architectural styles and materials is appropriate for the site.

BACKGROUND

HRM by Design/ Downtown Plan

On June 16, 2009, Regional Council approved the Downtown Halifax Secondary MPS which includes provisions to enable their consideration of this project (and three others) under the Halifax Municipal Planning Strategy policies in effect at the time the application was received. As such, although the new Downtown Halifax Secondary MPS came into effect on October 24, 2009, this report addresses the proposal relative to the objectives/ policies and regulations of the Halifax

Municipal Planning Strategy (MPS) and Peninsula Land Use By-law (LUB) which existed on June 25, 2008, the date of the application.

Location/ Site Description:

The subject properties are located within the southern half of the block bounded by Barrington, Sackville, Granville and Prince Streets (refer to Map 1). They include the following:

- The existing Roy Building at 1651-57 Barrington Street and 1652-66 Granville Street with a height of six storeys above Barrington/ seven storeys above Granville;
- 5181 Sackville Street, at the intersection of Granville, which houses Brooks Travel and is three storeys high;
- 5185-87 Sackville Street (Moda Capelli, next to Brooks Travel), also three storeys high.

The total site area is 18,100 square feet. The buildings are not municipally registered heritage properties.

The Proposal:

The following is a detailed breakdown of the proposal (refer to Schedules B through O of Attachment A):

- demolition of the existing Roy Building and the two buildings fronting on Sackville Street and consolidation of the three land parcels;
- construction of a new mixed-use building with a height of 16 storeys above Barrington Street and 18 storeys above Granville (total building height, including penthouse level, to be 234 feet above Barrington/ 250 feet above Granville);
- the base portion of the building is designed to replicate the massing, building materials and architectural detailing of the Roy building on the Barrington elevation and to “borrow” elements from the adjacent Johnston building (at Granville and Prince Streets) on the Granville elevation (refer to Schedules N and O). The height of the base will match the current height of the Roy building parapet, but will contain one storey less (5 storeys instead of 6) in order to allow for higher floor to ceiling heights. On the Granville elevation, the height of the building will follow the existing parapet line of the Roy and Johnston buildings and extend it around the corner at the Granville/ Sackville intersection. Exterior materials will include brick, stone and/ or factory cast concrete panels which provide a similar appearance to the existing buildings;
- the tower portion of the building will be differentiated from the base by being stepped back and utilizing different building materials to provide a more contemporary appearance. The tower will be set back from all property lines with setbacks varying between approximately 10 and 24 feet. It will be clad with a combination of glass curtain wall and aluminum composite panels.
- exterior signs at the sidewalk levels will meet heritage principles and be compatible with those of the Barrington Street heritage conservation district;
- land uses are proposed to include pedestrian oriented ground floor retail/ commercial uses (approx. 8,500 sq. ft.), cultural/ venue space (approx. 13,000 sq. ft.) and office space (approx.

128,000 sq. ft.). Optional land uses within the building include residential and/ or institutional uses. Some interior parking will be provided for building tenants. Total gross floor area will be approximately 222,000 square feet;

- the base/ podium rooftop will be landscaped and visually attractive.

Highlights of Proposed Development Agreement:

A proposed development agreement (refer to Attachment A) has been devised in consideration of the site, its surroundings and applicable MPS objectives and policies. It provides for the elements of the proposed development as noted above and has specifications relating to matters such as:

- architectural design, materials and colours;
- landscaping specifications for the base/ podium rooftop including both active/ hard surface and passive/ green roof areas;
- surveyor verification that the building will not exceed the height restriction in relation to views over the Citadel ramparts;
- requirements for wind tunnel testing and possible wind mitigation measures;
- provision for an optional level of underground parking below Granville Street;
- permitted land uses and building signage and lighting;
- various possibilities for non-substantive amendments requiring a resolution of Council;
- project commencement within 3 years and completion within 6 years of Council approval.

Planning Context:

This application is made pursuant to Section 84 of the Halifax Peninsula Land Use By-law which enables Council, by development agreement, in accordance with Implementation Policy 3.5.1 of the Municipal Planning Strategy, to approve a development which is over 40 feet in height.

The subject land is zoned C-2 (General Business) under the Peninsula Land Use By-law and its Generalized Future Land Use designation is Commercial under the Halifax Municipal Planning Strategy (refer to Map 1). It is located within the Central Business District. The site and the block on which it resides are both evenly divided into two different Sub-Areas of the CBD (Sub-Areas # 8 and 10).

As the subject properties are not registered heritage properties nor do they abut any, the proposal is not subject to the specific heritage related policies of the Regional MPS.

Surrounding Area:

The immediate area which surrounds the subject site contains a broad mix of heritage and contemporary buildings which vary in height, age and building styles. Also present in the area are some vacant lots which are utilized for surface parking. Building heights typically range from 3 storeys (Civic 1669 Granville) to 15 storeys (Founders Square). While heritage buildings exist

throughout the downtown, there is a particular concentration of buildings west of Granville Street, within the current Barrington Street conservation district. That area generally contains low to medium rise buildings. However, to the east of Granville Street, there are a number of taller buildings such as the Centennial and Joe Howe buildings, Radisson hotel and Founders Square which are substantially taller and of contemporary design. The subject site lies "kitty corner" or diagonally adjacent to the United Gulf (former Texpark) site, which is currently vacant.

DISCUSSION

Staff have evaluated the subject development proposal in relation to the objectives and policies of the Halifax Municipal Planning Strategy (Attachment B includes a review of the most relevant ones). Due to the site's proximity (diagonally adjacent) to the United Gulf (former Texpark) site, many of the same issues which were dealt with by Council and raised at the NSUARB appeal of that project are relevant in this case. However, some key differences exist between the two proposals. In this case, the base portion of the building pays respect to adjacent heritage buildings by its replication of the Roy building and certain elements of the nearby Johnston building instead of through the use of contemporary design and materials. Also, the subject site is located one block up the hill and is equally divided between the Barrington and Granville sub-areas as compared to the Texpark site which was located entirely within the Granville Sub-area. While the total height of the current proposal is approximately 35 feet shorter than the United Gulf proposal, it is proposed to be built very close to the "Citadel ramparts" height limit, as was the former Texpark proposal.

The evaluation of the most relevant MPS objectives and policies is summarized below.

Views:

The proposal complies with the view protection measures of the MPS/LUB. Comments with regard to each of these measures are found below:

- Viewplanes: The subject properties are not encumbered by any viewplanes. The site lies within a gap between the viewplanes, those being Viewplane # 4 and 5 to the north and Viewplane # 6 to the south.
- Views from within the Citadel parade square: Buildings are not permitted to be visible over the ramparts from specific vantage points inside the Citadel parade square. The application indicates that the building will not be visible and the agreement requires confirmation of this from a surveyor prior to the issuance of construction and occupancy permits.
- Building Heights in Vicinity of Citadel: The MPS sets "low to medium rise" height limits "immediately adjacent to Citadel Hill and increasing with distance therefrom." The intent was to limit building heights within the foreground of the view from the Citadel. In the Midtown Tavern case, the NSUARB agreed that the particular site, one block down from Brunswick Street, was close enough to the Citadel that it warranted consideration of a lower building height than that which was proposed. In the United Gulf (former Texpark) case,

staff's view that the site was not in the vicinity of the Citadel and did not warrant such height restrictions was supported by Council, whose decision was upheld by the NSUARB on appeal. As the subject site in this case is 5 blocks away and down slope from the base of the Citadel along Brunswick Street, it also is not in the vicinity of the Citadel as was envisioned by these policies. Therefore, Council may consider a tall building on this site without violating this aspect of the MPS.

- Views Along East-West Streets: The MPS states that; "views of and from the harbour along the east-west streets should be conserved". There is currently a view of the harbour down Sackville Street but no view of the Citadel up the street. The proposed development maintains the view along Sackville Street. Minor encroachments into the street right-of-way such as awnings/ canopies and signs are common throughout the CBD, are generally accepted as standard streetscape elements and do not impact upon the overall view along the street.
- Rooftop Landscaping: The MPS encourages rooftop landscaping in situations where the rooftops can be seen from the Citadel, taller buildings or other parts of the city. In this case, the roof of the base portion (refer to Schedule G of Attachment A) will be landscaped. The agreement includes requirements for landscaping and requires that a plan be submitted by a landscape architect.

Heritage Considerations/ Scale and Design Detail:

In staff's view, the proposal complies with the objectives and policies of the MPS which relate to building scale and design and its relationship to adjacent heritage properties. However, in this case as in some past cases, Council has some latitude in determining whether the proposed building's height, massing and mix of architectural styles and materials is appropriate for the site, given its surroundings. Therefore, Council must use its judgement/ discretion. Staff comments with regard to heritage matters and the building's scale and design are found below:

Block Pattern and Scale / Massing:

As indicated in the Background section, building heights, ages and styles vary widely throughout the surrounding area. In some cases, low-rise historic buildings abut high-rise, contemporary ones. The subject site is split between two sub-areas of the CBD. The proposal does not involve the closure of streets and consolidation of blocks. The proposed building's form and scale is not unlike other tall buildings in the CBD and in the immediate area, although it will be approximately 3 or 4 storeys higher than the adjacent office buildings to the east. The building's footprint encompasses approximately half the block, compared to other buildings in the CBD whose footprint takes up an entire city block. The proposal is in keeping with the surrounding area and is, therefore, compatible with the block pattern.

The base portion of the building replicates or borrows from the massing, texture and materials of both the Roy and Johnston buildings and will be built to the street line/ sidewalk. This massing will continue around the Sackville/ Granville corner so that the height at this location is in keeping with the abutting Vogue building. The office tower component above the 5th floor is stepped back from all property lines. Although a narrow portion of the office tower is within the Barrington sub-area, it is stepped back from the Barrington streetline and its narrow width (approx. 70 ft.) helps to reduce its impact and the overall massing of the building. The wider, rear portion of the tower is to be set back approximately 75 feet from the Barrington streetline and is fully within the Granville Sub-area. Due to its position above the base, the tower will be less visible from some parts of Barrington Street than from other parts of the downtown.

Given the above, the proposed building's scale and massing are, as the MPS calls for, "appropriate to the varied scale and character of the sub-areas of the CBD".

This proposal is not the only tall building proposed on Barrington Street since the adoption of the MPS in 1978. On October 31, 1985, Halifax City Council approved a hotel proposal which was to rise 22-storeys above Barrington Street on the current Green Lantern property (Civic 1585 Barrington Street, next to the Discovery Centre). That application proposed the construction of a contemporary tower above the Green Lantern building which would be set back from the front and rear property lines in a similar fashion to the existing proposal. The Green Lantern building's Barrington Street facade was to be retained and the remainder of the building was to be demolished to allow for the construction of the new building. Council's approval of the project was appealed to the N.S. Municipal Board (now the NSUARB) but the appeal was withdrawn in April of 1986. The development agreement lapsed in April of 1988. While the approval of this project does not create a precedent, staff believe Council should be made aware of it.

Adjacent Heritage Buildings/ Complementary Design:

There are many heritage buildings adjacent to the site. The applicant and architect have chosen to replicate or draw from the existing Roy building and the adjacent Johnston building in designing the new building, particularly the base portion. Brick, stone and/ or similar exterior materials will be used. While the Barrington facade will attempt to mimic that of the existing Roy building, the Granville facade uses the cornice lines, bay rhythms and fenestration patterns of the Johnston building as a guide in its design.

While the tower portion differentiates itself from the base by the use of more contemporary materials (aluminum and glass curtain wall), it is also complementary to the heritage buildings in the area by providing a contemporary design approach which respects but does not mimic heritage buildings.

Micro-Climate: Wind

The MPS calls for acceptable wind levels on sidewalks/ pedestrian routes and within public open spaces. A pedestrian wind assessment was prepared by RWDI Inc. on behalf of the applicant (refer

to Attachment C). This assessment involved a qualitative, desktop analysis which was based on a review of meteorological data, design drawings, site and area photographs and wind engineering expertise. This preliminary assessment recommends that wind tunnel testing be conducted in order to quantify wind conditions and to refine conceptual wind control measures. This approach of “deferring” wind tunnel testing until the more detailed design and permitting stage differs to the approach taken with some other downtown proposals in the past, but is similar to that which was adopted for the Centennial Group’s proposed development of the “Saltér Block” site immediately north of Bishop’s Landing, a proposal which Council approved in June of 2007.

The assessment predicts that wind comfort and safety conditions will generally be acceptable for the proposed development, but that severe wind speeds which exceed safety criteria may currently exist at the corner of Sackville and Granville Streets in winter. In order for the wind conditions to improve with the new proposal, tunnel testing would be required. As such, the agreement requires that wind tunnel testing be carried out and a report be submitted to HRM at the detailed design stage which a) confirms / quantifies the expected wind comfort and safety conditions, and b) where necessary, outlines proposed wind mitigation measures to achieve accepted industry standards for pedestrian wind comfort and safety. Should tunnel testing require significant changes to the building design, Council approval of same via a non-substantive amendment will be necessary. It should be noted that the building's design, which incorporates upper storey setbacks from its base, generally serves to mitigate the effects of downwashing winds at the pedestrian level.

Micro-Climate: Shadow

With regard to the design of new developments, the MPS calls for “a minimal amount of shadow cast on public open spaces.” A sun/ shadow study was prepared by Connor Architects and Planners Ltd. on behalf of the applicant (refer to Attachment D for the consultant’s summary). The sun’s path was modelled for the solstices (December 21st and June 21st) as well as the equinoxes (March 21st and September 21st). Staff reviewed the shadow effects on public open spaces such as Sackville Landing and the waterfront boardwalk, Parade Square/ St. Paul’s Church, Province House grounds and the Citadel. The shadow modelling illustrates that shadow impacts of the proposed development on public open spaces will be minimal and, specifically, illustrates the following:

- On June 21st, there are no shadows on public open spaces during the morning or afternoon. Shadows from the building combine with those from other buildings along the waterfront site just south of Summit Place after 6:30pm and continue along the waterfront until sunset at approximately 9pm.
- On March 21st and September 21st following sunrise between 7am and 7:15, shadows from the building combine with those from other buildings on the Citadel. Shadows from the proposed building leave the Citadel by approximately 8am. These shadows run across the back of St. Paul’s Church between approximately 9:15 and 11am, but do not appear to reach the Parade Square. After 5pm, the shadows combine with those from other buildings, reaching Sackville Landing and continue on until sunset at approx. 7:30pm.

- On December 21st, shadows from the proposed building combine with those from other buildings on the Grand Parade between approx. 9:30am and 10:15am. These shadows cross the Province House grounds between approx. 11:15am and 2:30pm.

Generally, there is greater shadow impact from buildings which are next to or very close to public open spaces than those of similar height which are further away. Shadows on sidewalks in a downtown setting, in which buildings are constructed up to or very near the sidewalk, are to be expected and are generally considered to be acceptable. In this particular case, the shadow impacts on public open spaces resulting from the proposed building are minimal.

Traffic/Circulation:

A traffic impact statement prepared by Atlantic Road and Traffic Management was submitted in support of the application. This has been reviewed by staff and found to be acceptable. The original proposal included two car elevator entrances off Granville Street as well as a parking garage entrance. The proposal has now been revised to eliminate the car elevators. As a result, all parking levels will be accessed from a single entry/ exit point off Granville Street.

Economic and Social Considerations:

The economic objective of the Halifax Central Business District is “the strengthening of the Halifax CBD as a dynamic focus of governmental, commercial, retail, residential, recreational, and entertainment uses, and the appropriate development of the waterfront to promote the City as the major business and cultural centre of Atlantic Canada”. This objective is reinforced through various policies such as City-Wide policy 3.2.1 which indicates that “Major office projects, hotels, cultural facilities and government office activities, which would strengthen and enhance Halifax as the dominant centre of Atlantic Canada, should be induced to locate in the Central Business District”. The proposal includes a major office component as well as retail and cultural uses which are appropriate for the CBD.

The social objective for the CBD encourages the “creation of a lively, vibrant environment” through street level uses such as retail and restaurants along with attention to street level design treatments. In this case, the proposed agreement requires pedestrian oriented ground floor uses abutting Barrington and Granville Streets and the proposal includes cultural (venue) space above the Barrington Street level. Storefronts will have an attractive design which blends in with the historic streetscape. Awnings / signs will meet guidelines for signage on registered heritage properties.

Conclusion

Staff is of the opinion that the proposal is in keeping with the policies and objectives of the Halifax MPS and the Regional Municipal Planning Strategy. Council has some latitude with regards to the objectives and policies of the Halifax MPS, especially those related to Scale and Design Detail, in

determining whether the proposed building's height, massing and mix of architectural styles and materials is appropriate for the site, given its surroundings.

Public Participation/Area of Notification

A public information meeting was held on July 9, 2008. Detailed minutes of the meeting are not available, however, as the public information meeting is not a statutory requirement of the development agreement approval process, this poses no legal impediment to Council's consideration of the proposal. The following summary of the comments made at the meeting is being provided for Council's consideration. A variety of comments were received with some being in favour of the proposal and others in opposition. Some of the key issues discussed were as follows:

- design of the base portion of building should include more architectural details;
- design should ensure an exact replication of the Roy building so that it appears as an old building, not a new one;
- design should reflect historical streetscape and include elements found in original building (eg. awnings/ canopies, historical signs, etc.);
- tower portion of building should include more glass on the Barrington side instead of brick so that the glass wraps around the building;
- concern over the height of the tower, that it is too tall;
- concern with the tower blocking views of the harbour;
- concern with traffic and the closing of sidewalks during construction;
- whether wind patterns would be affected;
- proposal is a positive move and that not enough development has been happening downtown.

As a result of the public comments and staff concerns over the building design, the plans were revised to:

- provide more architectural details of the street level and base portion of the building in order to reflect the historic streetscape;
- change the materials of the tower portion to incorporate more glass in the facade and provide a contemporary appearance;
- the weaving effect of the glass curtain wall on the east facade of the tower was changed to provide a flat, vertical surface;
- alter the position of the tower so that setbacks are provided from all property lines;
- removal of the car elevators/ entrances on Granville Street and replaced them with a new retail storefront;
- prominent venue space entrance was incorporated at corner of Granville and Sackville St.

Should Council decide to hold a public hearing, in addition to published newspaper advertisements, property owners within the area shown on Map 2 will be sent written notification. Written submissions will be circulated under separate cover.

BUDGET IMPLICATIONS

There are no budget implications. The Developer will be responsible for all costs, expenses, liabilities, and obligations imposed under or incurred in order to satisfy the terms of this Agreement. The administration of this Agreement can be carried out within the approved budget with existing resources.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ALTERNATIVES

1. Council may approve the proposed development agreement. This is the recommended course of action.
2. Council may refuse the development agreement and, in doing so, must provide reasons based on conflict with existing MPS policy.
3. Council may approve the development agreement with modifications which are acceptable to the applicant. Such modifications may require further negotiations with the applicant or revisions to the attached agreement.

ATTACHMENTS

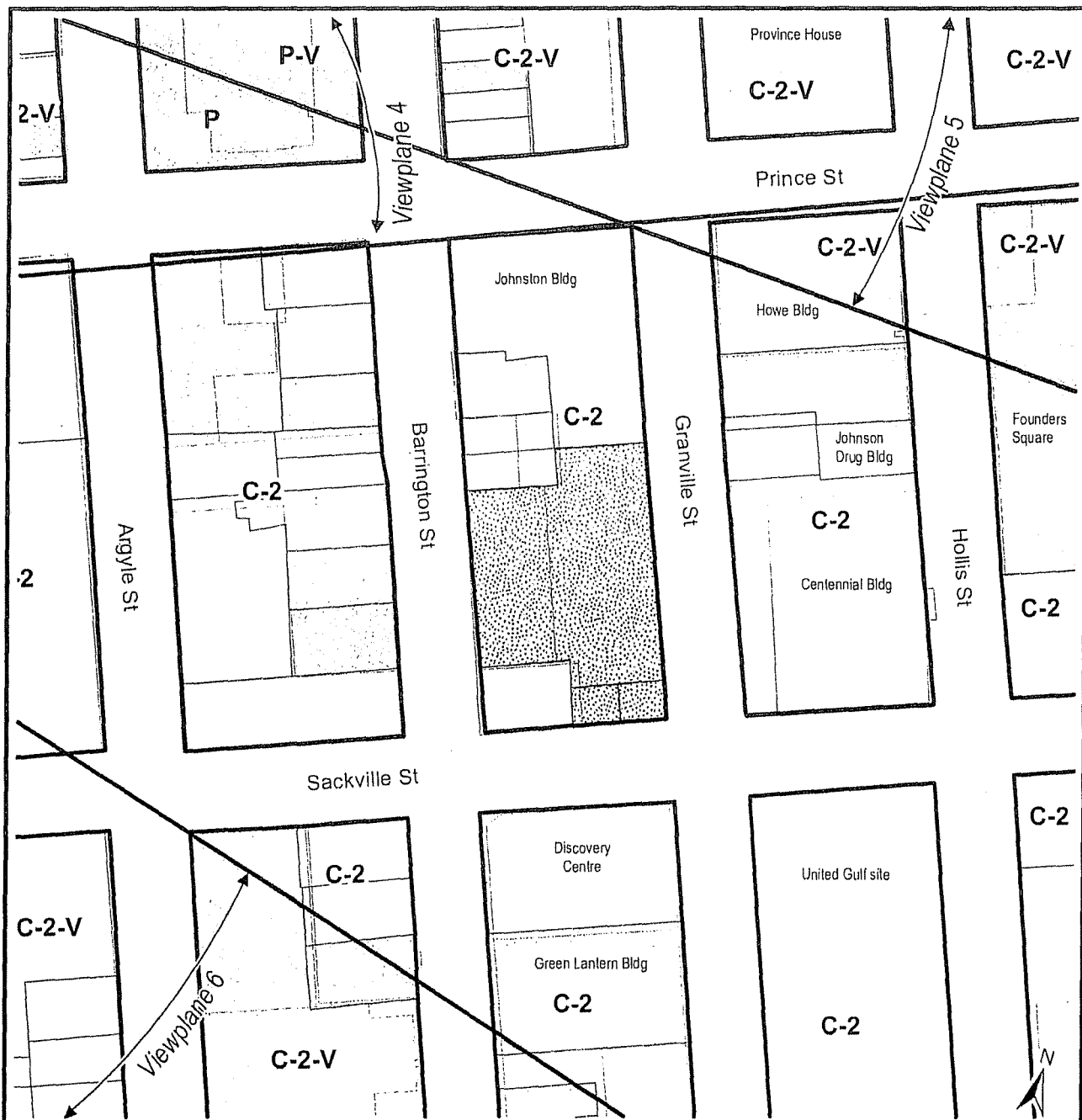
Map 1	Zoning and Location/ Context
Map 2	Area of Notification
Attachment A	Proposed Development Agreement with Schedules
Attachment B	Review of Most Relevant Sections of the Halifax MPS
Attachment C	Pedestrian Wind Assessment
Attachment D	Shadow Study Summary

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Paul Sampson, Planner I, 490-6259

Original Signed

Report Approved by: Austin French, Acting Director, Community Development, 490-6717



Map 1 - Location and Zoning

1651-57 Barrington Street,
1652-66 Granville Street
and 5181-87 Sackville Street
Halifax

Halifax Peninsula
Land Use By-Law Area *



Subject area



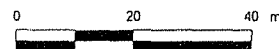
Registered Heritage property

Zone (-V = within viewplane) *

C-2 General Business
P Park and Institutional

* In effect on 31 March 2009

HALIFAX
REGIONAL MUNICIPALITY
COMMUNITY DEVELOPMENT
PLANNING SERVICES





This map is an unofficial reproduction of a portion of the Zoning Map for the Halifax Peninsula Land Use By-Law Area as of 31 March 2009

HRM does not guarantee the accuracy of any representation on this plan



Map 2 - Area of Notification

1651-57 Barrington Street,
1652-66 Granville Street
and 5181-87 Sackville Street
Halifax

-  Subject site
-  Area of notification

HALIFAX
REGIONAL MUNICIPALITY
COMMUNITY DEVELOPMENT
PLANNING SERVICES



This map is an unofficial reproduction of a portion of the Zoning Map for the Halifax Peninsula Land Use By-Law Area as of 31 March 2009

HRM does not guarantee the accuracy of any representation on this plan

Halifax Peninsula
Land Use By-Law Area *

* In effect on 31 March 2009

PART 1: GENERAL REQUIREMENTS AND ADMINISTRATION

1.1 Applicability of Agreement

The Developer agrees that the Lands shall be developed and used only in accordance with and subject to the terms and conditions of this Agreement.

1.2 Applicability of Land Use By-law and Subdivision By-law

Except as otherwise provided for herein, the development, subdivision and use of the Lands shall comply with the requirements of the Halifax Peninsula Land Use By-law and the Halifax Regional Subdivision By-law, as may be amended from time to time.

1.3 Applicability of Other By-laws, Statutes and Regulations

1.3.1 Further to Section 1.2, nothing in this Agreement shall exempt or be taken to exempt the Developer, lot owner or any other person from complying with the requirements of any by-law of the Municipality applicable to the Lands (other than the Land Use By-law to the extent varied by this Agreement), or any statute or regulation of the Provincial/Federal Government and the Developer or Lot Owner agree(s) to observe and comply with all such laws, by-laws and regulations, as may be amended from time to time, in connection with the development and use of the Lands.

1.3.2 The Developer shall be responsible for securing all applicable approvals associated with the on-site and off-site servicing systems required to accommodate the development, including but not limited to sanitary sewer system, water supply system, stormwater sewer and drainage system, and utilities. Such approvals shall be obtained in accordance with all applicable by-laws, standards, policies, and regulations of the Municipality and other approval agencies. All costs associated with the supply and installation of all servicing systems and utilities shall be the responsibility of the Developer. All design drawings and information shall be certified by a Professional Engineer or appropriate professional as required by this Agreement or other approval agencies.

1.4 Conflict

1.4.1 Where the provisions of this Agreement conflict with those of any by-law of the Municipality applicable to the Lands (other than the Land Use By-law to the extent varied by this Agreement) or any provincial or federal statute or regulation, the higher or more stringent requirements shall prevail.

1.4.2 Where the written text of this Agreement conflicts with information provided in the Schedules attached to this Agreement, the written text of this Agreement shall prevail.

1.5 Costs, Expenses, Liabilities and Obligations

The Developer shall be responsible for all costs, expenses, liabilities and obligations imposed under or incurred in order to satisfy the terms of this Agreement and all Federal, Provincial and Municipal laws, by-laws, regulations and codes applicable to the Lands.

1.6 Provisions Severable

The provisions of this Agreement are severable from one another and the invalidity or unenforceability of one provision shall not affect the validity or enforceability of any other provision.

PART 2: USE OF LANDS, SUBDIVISION AND DEVELOPMENT PROVISIONS

2.1 Schedules

The Developer shall develop the lands in a manner, which, in the opinion of the Development Officer, is generally in conformance with the following Schedules attached to this agreement (plans numbered 01172-001 to 01172-014 inclusive) filed in the Halifax Regional Municipality as Case Number 01172.

The schedules are:

Schedule A	Legal Description of the Lands	
Schedule B	Granville Floor Plan/ Parking Level 2	Plan # 01172-001
Schedule C	Parking Level 1	Plan # 01172-002
Schedule D	Barrington Floor Plan	Plan # 01172-003
Schedule E	1 st Floor Plan	Plan # 01172-004
Schedule F	Typical Floor Plan, 2 nd to 4 th Levels	Plan # 01172-005
Schedule G	5 th Floor Plan	Plan # 01172-006
Schedule H	Typical Floor Plan, 6 th to 15 th Levels	Plan # 01172-007
Schedule I	Roof/ Penthouse Floor Plan	Plan # 01172-008
Schedule J	Barrington Street Elevation	Plan # 01172-009
Schedule K	Granville Street Elevation	Plan # 01172-010
Schedule L	Sackville Street Elevation	Plan # 01172-011
Schedule M	North Elevation	Plan # 01172-012
Schedule N	Barrington Street Elevation - Detail	Plan # 01172-013
Schedule O	Granville Street Elevation - Detail	Plan # 01172-014

2.2 Requirements Prior to Approval

2.2.1 Prior to the issuance of a Development Permit, the Developer shall provide the following to the Development Officer, unless otherwise stated by the Municipality:

- (a) Landscape Plan as per the requirements of Section 2.5;
 - (b) surveyor certification in accordance with Section 2.10 of this agreement;
 - (c) pedestrian wind study identifying any mitigation measures / solution concepts in accordance with Section 2.11 of this agreement.
- 2.2.2 Prior to the issuance of the first Occupancy Permit, the Developer shall provide the following to the Development Officer, unless otherwise stated by the Municipality:
- (a) Certification from a qualified professional indicating that the Developer has complied with the Landscape Plan and Section 2.5;
 - (b) surveyor certification in accordance with Section 2.10 of this agreement;
 - (c) completion of wind mitigation measures in accordance with Section 2.11 of this agreement.
- 2.2.3 Notwithstanding any other provision of this Agreement, the Developer shall not occupy or use the Lands for any of the uses permitted by this Agreement unless an Occupancy Permit has been issued by the Municipality. No Occupancy Permit shall be issued by the Municipality unless and until the Developer has complied with all applicable provisions of this Agreement and the Land Use By-law (except to the extent that the provisions of the Land Use By-law are varied by this Agreement) and with the terms and conditions of all permits, licenses, and approvals required to be obtained by the Developer pursuant to this Agreement.
- 2.3 General Description of Land Use**
- 2.3.1 The use(s) of the Lands permitted by this Agreement, as generally shown on the Schedules, are the following:
- (a) Any business or commercial enterprise permitted in the C-2 (General Business) zone;
 - (b) Cultural uses as defined by the Municipal Planning Strategy;
 - (c) institutional and/ or residential uses;
 - (d) uses accessory to any of the foregoing uses.
- 2.3.2 The Development Officer may approve changes to the interior floor plans (Schedules B through I).
- 2.4 Architectural Requirements**
- 2.4.1 The building's exterior design, materials and colours shall be as shown on Schedules J through O.

2.4.2 The base portion of the building shall employ two distinct facade designs. The Barrington Street facade (Schedules J and N) shall be constructed to replicate the features and materials of the original Roy Building. Stone from the existing structure shall be utilized in the new construction where possible. New brick cladding or precast concrete veneer shall be similar in appearance to the brick on the Johnston Building (Civic 1683 Barrington Street). The Granville and Sackville Street facades (Schedules K, L and O) shall consist primarily of a combination of brick/ stone or precast concrete veneer and glass. Stone, masonry or precast concrete veneer on the first two levels above grade shall appear similar to the stone on the Johnston Building. Brick or precast material on the upper levels of the base shall appear similar to the brickwork of the Johnston Building.

2.4.3 The tower portion of the building shall be clad with a combination of glass/ aluminum curtain wall and composite panels with glass as shown on Schedules J through M.

2.5 Landscaping

2.5.1 Prior to the issuance of a Development Permit and Building Permit for the construction of the building, the Developer shall provide the Municipality with a detailed landscape plan, prepared by a Landscape Architect, which shall provide details of the rooftop landscaped area shown on Schedule "G". Landscaping shall generally consist of both hard surface areas and areas of "low grass and flowers" as shown on Schedule "G".

2.5.2 Areas shown on Schedule "G" as "low grass and flowers" shall be extensive (passive) green roof areas designed to be generally self-sustaining, requiring a minimum of maintenance. In contrast, areas shown as "hard surface" shall be active areas generally accessible to building occupants and shall contain a combination of concrete pavers, walkways, shrubs, deciduous and coniferous trees, site furnishings and landscaping features.

2.5.3 Planting on rooftops and podiums above structures shall be carefully selected for their ability to survive in rooftop environments. Rooftop trees shall be located in planting beds or containers. Approximately 50 percent of the plant material shall be evergreen or material with winter colour and form. Deciduous trees shall have a minimum size of 45 mm caliper (1.8 inch diameter). Coniferous trees shall be a minimum of 1.5 m (5 ft.) high and upright shrubs shall have a minimum height of 60 cm. (2 ft.).

2.5.4 All plant material shall conform to the Canadian Nursery Trades Association Metric Guide Specifications and Standards and sodded areas to the Canadian Nursery Sod Growers' Specifications.

2.5.5 Planting details for each type of plant material proposed on the landscape plan shall be provided, including species list with quantities, size of material, and common and

botanical names (species and variety). Mass shrub plantings or mixed shrub and ground cover plantings are preferred instead of perennial beds.

- 2.5.6 Construction Details or Manufacturer's Specifications for all constructed landscaping features such as pergolas, benches, etc. shall be provided to the Development Officer, and shall describe their design, construction, specifications, hard surface areas, materials and placement so that they will enhance the design of individual buildings and the character of the surrounding area.
- 2.5.7 Prior to issuance of an Occupancy Permit, the Developer shall submit to the Development Officer a letter prepared by a member in good standing of the Canadian Society of Landscape Architects certifying that all landscaping has been completed according to the terms of this Development Agreement.
- 2.5.8 Notwithstanding the above, an Occupancy Permit may be issued provided that the weather and time of year does not allow the completion of the outstanding landscape work and the Developer supplies a security deposit in the amount of 110 percent of the estimated cost to complete the landscaping as shown on the Landscape Plan. The security shall be in favour of the Municipality and shall be in the form of a certified cheque or automatically renewing, irrevocable letter of credit issued by a chartered bank. The security shall be returned to the Developer only upon completion of the landscaping as described herein and as approved by the Development Officer. Should the Developer not complete the landscaping within twelve months of issuance of the Occupancy Permit, the Municipality may use the deposit to complete the landscaping. The Developer shall be responsible for all costs in this regard exceeding the deposit. The security deposit or unused portion of the security deposit shall be returned to the Developer upon completion of the work and its certification.

2.6 Ground Floor Uses

- 2.6.1 The ground floor commercial spaces shown on Schedules C and D (Barrington, Granville levels) shall be limited to retail, restaurant, lounge/ entertainment, personal services or cultural uses. Offices may be permitted but shall not directly abut or face a sidewalk at street-level.

2.7 Signs

- 2.7.1 Exterior signs shall be generally limited to:
 - (a) awning signs made of fabric material; and
 - (b) fascia and projecting signs.

- 2.7.2 The Developer agrees that all signs indicated in section 2.7.1 which are located along the ground floor and/ or second floor facade be designed to generally follow the municipality's basic principles for signage on heritage properties and that municipal sign permit applications be approved by the Development Officer, in consultation with the Heritage Planner, to ensure that the building signs are generally in keeping with or complementary to those of the Barrington Street district.

2.8 Building Lighting

- 2.8.1 This Agreement shall not oblige the Developer to illuminate the building, but where the building is illuminated, such illumination shall generally comply with the Sections 2.8.2 and 2.8.3.
- 2.8.2 Lighting shall be directed to driveways, parking areas, loading areas and building entrances and shall be arranged so as to direct the light away from streets, adjacent lots and buildings.
- 2.8.3 The building may be illuminated for visual effect provided such illumination is directed away from streets, adjacent lots and buildings and does not flash, move or vary in intensity such that it creates a hazard to public safety.

2.9 Functional Elements

- 2.9.1 All vents, down spouts, electrical conduits, meters, service connections, and other functional elements shall be treated as integral parts of the design. Where appropriate these elements shall be painted to match the colour of the adjacent surface, except where used expressly as an accent.
- 2.9.2 Other than roof mounted equipment, any mechanical equipment, exhausts, propane tanks, electrical transformers, and other utilitarian features shall be visually concealed from abutting properties, including municipal rights-of-way.

2.10 Surveyor Certification re: Citadel Ramparts

- 2.10.1 Prior to the issuance of both a Development Permit and Occupancy Permit for the building, the Developer shall provide to the Development Officer written certification from a professional surveyor that both the proposed development and completed building does not violate section 26B of the Halifax Peninsula Land Use By-law.

2.11 Wind Mitigation Measures

2.11.1 Prior to the issuance of a development permit for construction, the Developer shall undertake wind tunnel testing of the development by a qualified professional experienced in wind engineering and submit a report to the Development Officer that:

- (a) Confirms/ quantifies the expected wind comfort and safety conditions; and
- (b) Where necessary, outlines proposed wind mitigation measures to achieve accepted industry standards for pedestrian wind comfort and safety.

2.11.2 Appropriate mitigation measures / solutions shall be approved by the Development Officer prior to the issuance of a development permit for construction, except those which, in the opinion of the Development Officer, involve a substantive change to a portion of the building and/ or site plan. In these instances, such measures shall be considered by Council as per Section 5.2 (g) prior to the issuance of a development permit for construction.

2.11.3 Mitigation measures / solutions shall be shown on the building plans submitted for development permit for construction and be completed prior to the issuance of an occupancy permit.

2.12 Parking

2.12.1 Notwithstanding Section 2.1 (Schedules), the provision of a parking level (P3) below the Granville Street level (Schedule B) shall be at the discretion of the Developer.

2.13 Maintenance

2.13.1 The Developer shall maintain and keep in good repair all portions of the development on the Lands, including but not limited to, the interior and exterior of the building, fencing, walkways, recreational amenities, parking areas and driveways, and the maintenance of all landscaping including the replacement of damaged or dead plant stock, trimming and litter control, garbage removal and snow removal/salting of walkways and driveways.

PART 3: STREETS AND MUNICIPAL SERVICES

3.1 General Provisions

3.1.1 All construction shall conform to the Municipal Services Specifications unless otherwise varied by this Agreement and shall receive written approval from the Development Engineer prior to undertaking any work.

- 3.1.2 Any disturbance to existing off-site infrastructure resulting from the development, including streets, sidewalks, curbs and gutters, street trees, landscaped areas and utilities, shall be the responsibility of the Developer and shall be reinstated, removed, replaced, or relocated by the Developer as directed by the Municipal Engineer.

3.2 Proposed Encroachments

- 3.2.1 Any proposed building encroachments into the street rights-of-way, illustrated on the attached Schedules or otherwise, shall be subject to separate Municipal approval pursuant to 1.3.1.

PART 4: ENVIRONMENTAL PROTECTION MEASURES

4.1 Archaeological Monitoring and Protection

- 4.1.1 The Lands fall within the High Potential Zone for Archaeological Sites identified by the Province of Nova Scotia. The Developer agrees to contact the Curator of Special Places, Heritage Division, Tourism, Culture, and Heritage prior to any disturbance of the site and to comply with the requirements set forth by the Province of Nova Scotia in this regard.

4.2 Sulphide Bearing Materials

- 4.2.1 The Developer agrees to comply with the legislation and regulations of the Province of Nova Scotia with regards to the handling, removal, and disposal of sulphide bearing materials, which may be found on the Lands.

PART 5: AMENDMENTS

5.1 Substantive Amendments

Amendments to any matters not identified under Section 5.2 shall be deemed substantive and may only be amended in accordance with the approval requirements of the *Halifax Regional Municipality Charter*.

5.2 Non-Substantive Amendments

The following items are considered by both parties to be not substantive and may be amended by resolution of Council (for greater certainty, these items do not include changes which, in the opinion of the Development Officer, are generally in conformance with the plans attached as Schedules B-O):

- a) changes to the requirements prior to approval in section 2.2;

- b) changes to the architectural requirements and exterior architectural appearance, materials and/ or colours as detailed in section 2.4 and corresponding schedules;
- c) changes to the landscaping requirements as detailed in section 2.5;
- d) changes to the land uses permitted by Section 2.3 and/ or the ground floor uses in Section 2.6;
- e) changes to the sign requirements (Section 2.7);
- f) building lighting / illumination which does not comply with Section 2.8;
- g) wind mitigation measures / solutions which involve a substantive change to a portion of the building and/ or site plan pursuant to Section 2.11;
- h) changes to the functional elements as detailed in section 2.9;
- i) Changes to the date of commencement of development specified in Section 6.3; and
- j) Changes to the date of completion of development specified in Section 6.4.

PART 6: REGISTRATION, EFFECT OF CONVEYANCES AND DISCHARGE

6.1 Registration

A copy of this Agreement and every amendment or discharge of this Agreement shall be recorded at the Registry of Deeds or Land Registry Office at Halifax, Nova Scotia and the Developer shall incur all costs in recording such documents.

6.2 Subsequent Owners

- 6.2.1 This Agreement shall be binding upon the parties thereto, their heirs, successors, assigns, mortgagees, lessees and all subsequent owners, and shall run with the Lands which is the subject of this Agreement until this Agreement is discharged by Council.
- 6.2.2 Upon the transfer of title to any lot(s), the subsequent owner(s) thereof shall observe and perform the terms and conditions of this Agreement to the extent applicable to the lot(s).

6.3 Commencement of Development

- 6.3.1 In the event that development on the Lands has not commenced within three years from the date of registration of this Agreement at the Registry of Deeds or Land Registry

Office, as indicated herein, the Agreement shall have no further force or effect and henceforth the development of the Lands shall conform with the provisions of the Land Use By-law.

- 6.3.2 For the purpose of this section, commencement of development shall mean the installation of the foundation for the building.
- 6.3.3 For the purpose of this section, Council may consider granting an extension of the commencement of development time period through a resolution under Section 5.2, if the Municipality receives a written request from the Developer at least sixty (60) calendar days prior to the expiry of the commencement of development time period.

6.4 Completion of Development

- 6.4.1 If the Developer fails to complete the development after six years from the date of registration of this Agreement at the Registry of Deeds or Land Registration Office Council may review this Agreement, in whole or in part, and may:
- (a) retain the Agreement in its present form;
 - (b) negotiate a new Agreement; or
 - (c) discharge this Agreement.
- 6.4.2 Upon the completion of the whole development or complete phases of the development, Council may review this Agreement, in whole or in part, and may:
- (a) retain the Agreement in its present form;
 - (b) negotiate a new Agreement;
 - (c) discharge this Agreement; or
 - (d) for those portions of the development which are completed, discharge this Agreement and apply appropriate zoning pursuant to the Halifax Municipal Planning Strategy and Mainland Land Use By-law, as may be amended from time to time.

PART 7: ENFORCEMENT AND RIGHTS AND REMEDIES ON DEFAULT

7.1 Enforcement

The Developer agrees that any officer appointed by the Municipality to enforce this Agreement shall be granted access onto the Lands during all reasonable hours without obtaining consent of the Developer. The Developer further agrees that, upon receiving written notification from an officer of the Municipality to inspect the interior of any building located on the Lands, the Developer agrees to allow for such an inspection during any reasonable hour within twenty four hours of receiving such a request.

7.2 Failure to Comply

If the Developer fails to observe or perform any covenant or condition of this Agreement after the Municipality has given the Developer thirty (30) days written notice of the failure or default, except that such notice is waived in matters concerning environmental protection and mitigation, then in each such case:

- (a) The Municipality shall be entitled to apply to any court of competent jurisdiction for injunctive relief including an order prohibiting the Developer from continuing such default and the Developer hereby submits to the jurisdiction of such Court and waives any defense based upon the allegation that damages would be an adequate remedy;
- (b) The Municipality may enter onto the Lands and perform any of the covenants contained in this Agreement or take such remedial action as is considered necessary to correct a breach of the Agreement, whereupon all reasonable expenses whether arising out of the entry onto the Lands or from the performance of the covenants or remedial action, shall be a first lien on the Lands and be shown on any tax certificate issued under the Assessment Act;
- (c) The Municipality may by resolution discharge this Agreement whereupon this Agreement shall have no further force or effect and henceforth the development of the Lands shall conform with the provisions of the Land Use By-law; or
- (d) In addition to the above remedies, the Municipality reserves the right to pursue any other remediation under the *Halifax Regional Municipality Charter* or Common Law in order to ensure compliance with this Agreement.

WITNESS that this Agreement, made in triplicate, was properly executed by the respective Parties on this _____ day of _____, A.D., 2010.

SIGNED, SEALED AND DELIVERED) **778938 ONTARIO LIMITED**
in the presence of)

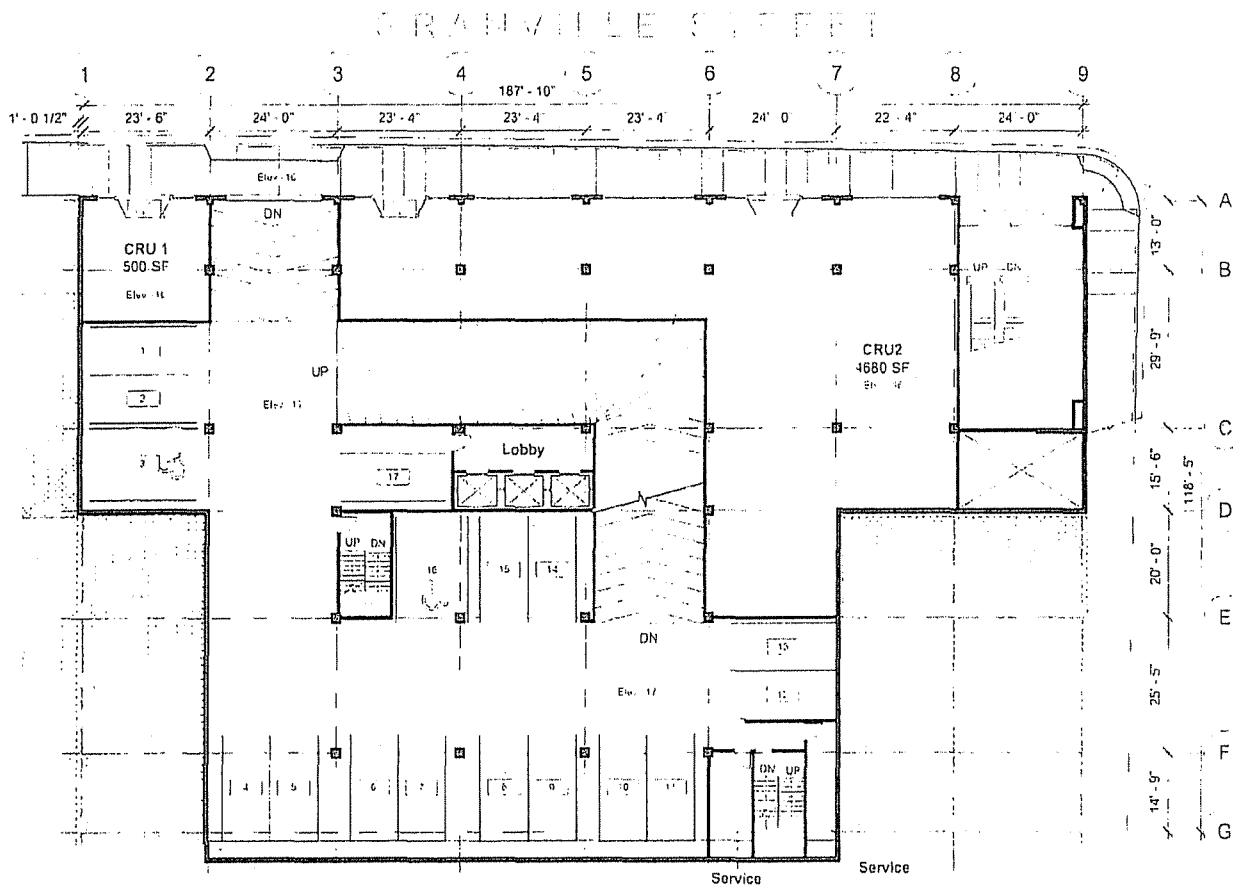
per _____) per: _____
)

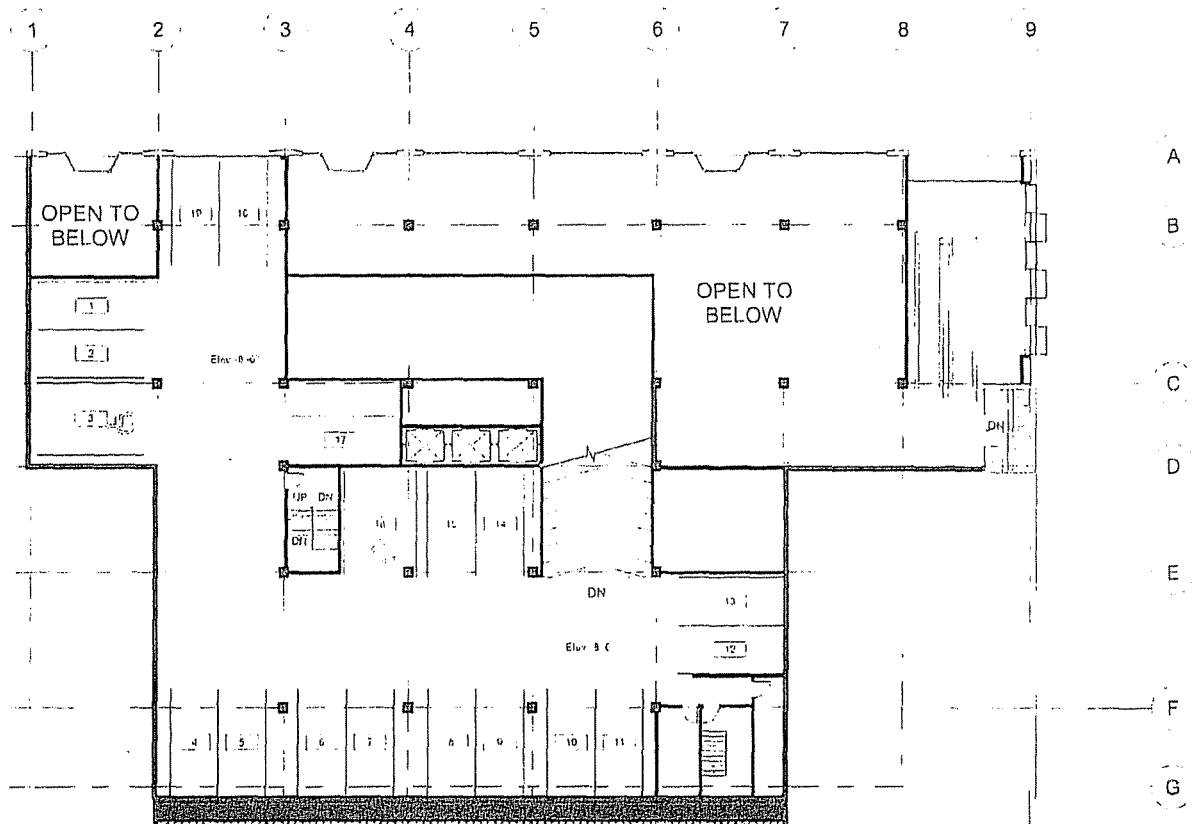
per _____) per: _____
)

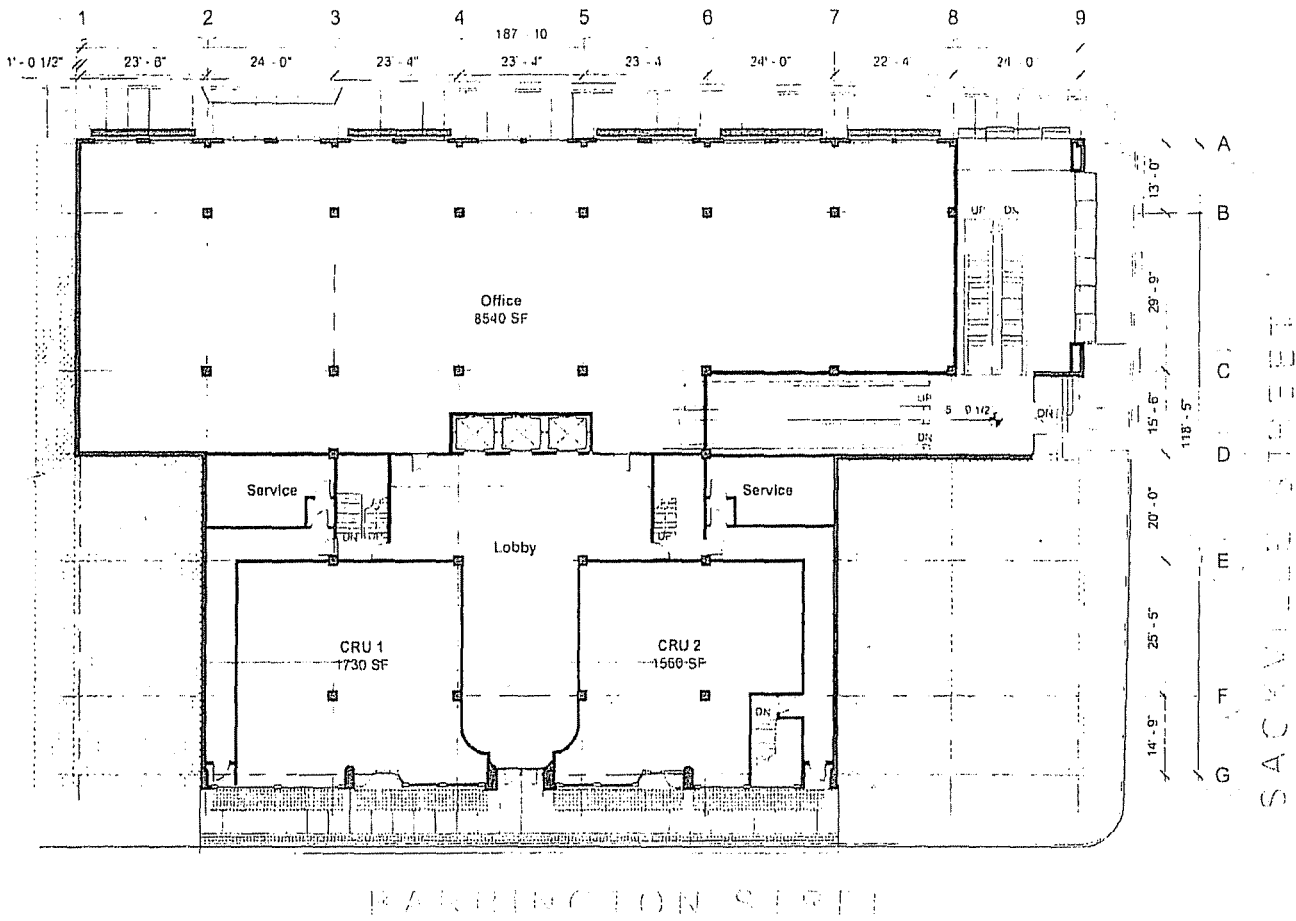
SEALED, DELIVERED AND)
ATTESTED to by the proper)
signing officers of Halifax Regional)
Municipality duly authorized)
in that behalf in the presence) **HALIFAX REGIONAL MUNICIPALITY**

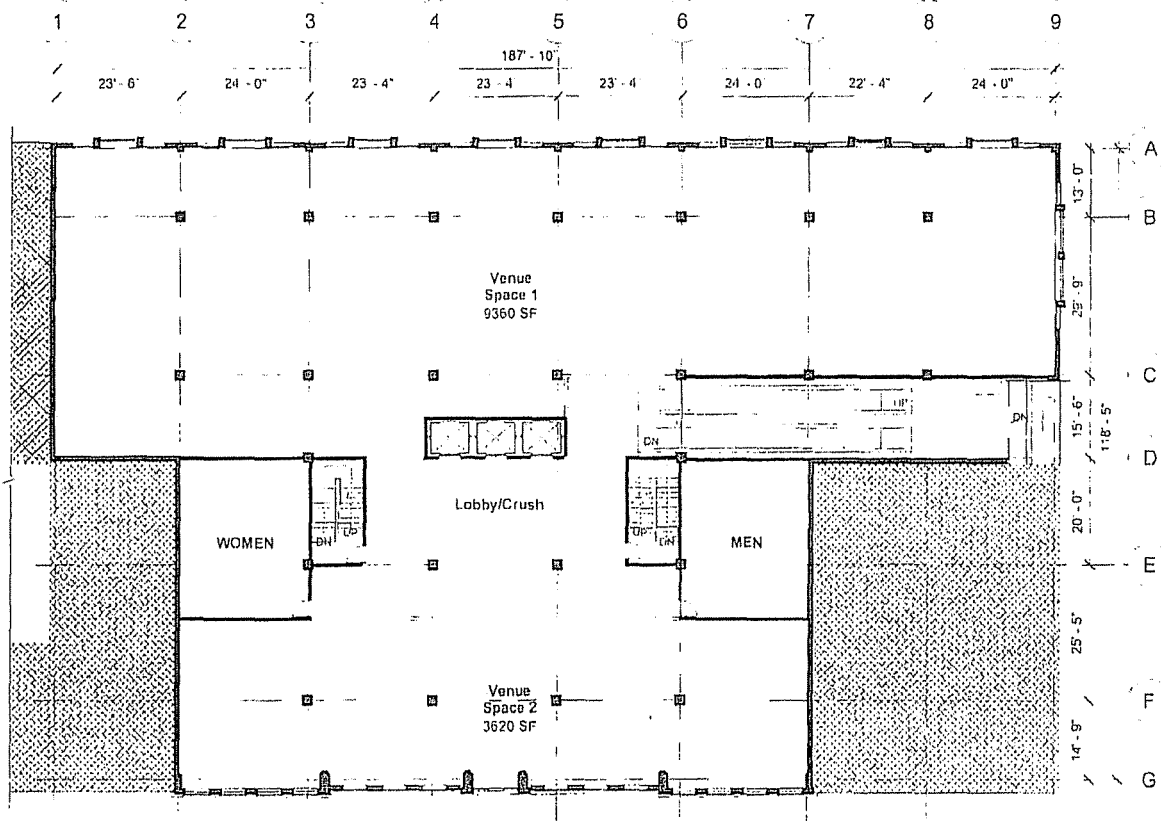
per _____) per: _____
) **MAYOR**

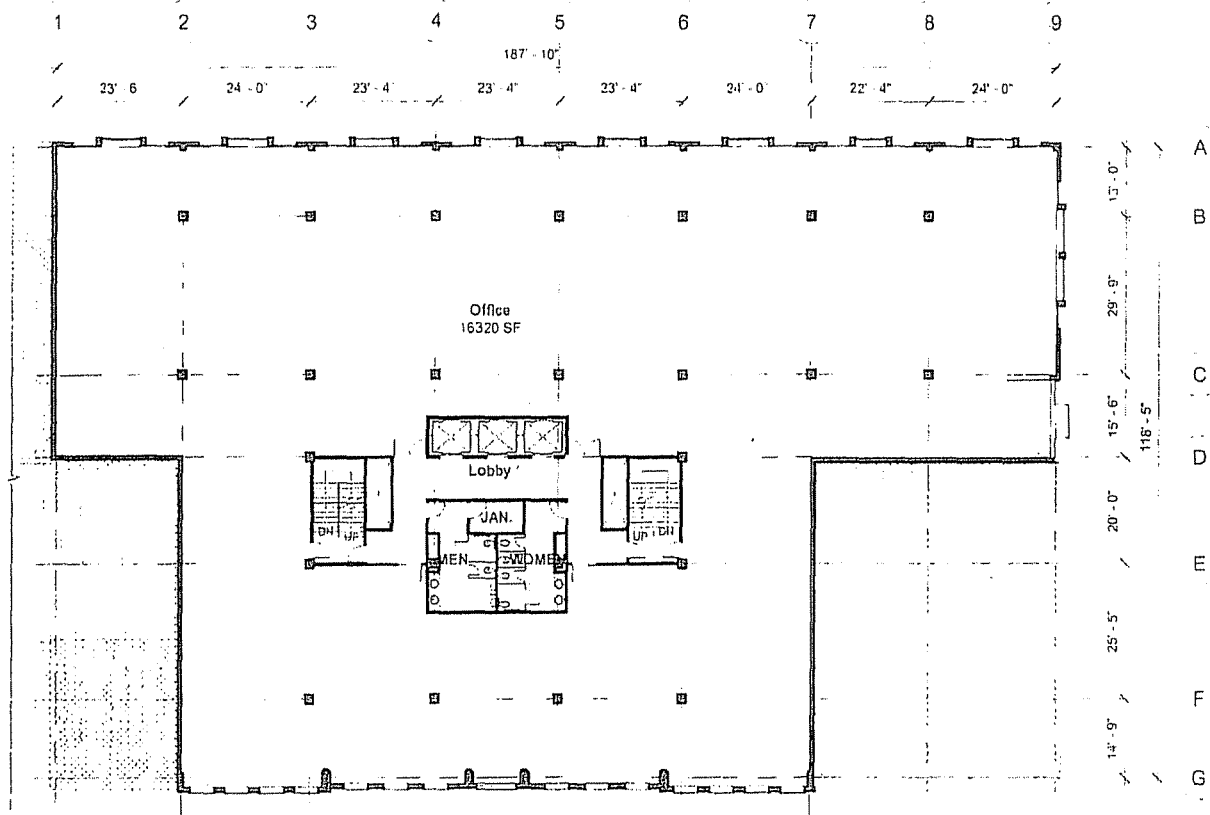
per _____) per: _____
) **MUNICIPAL CLERK**

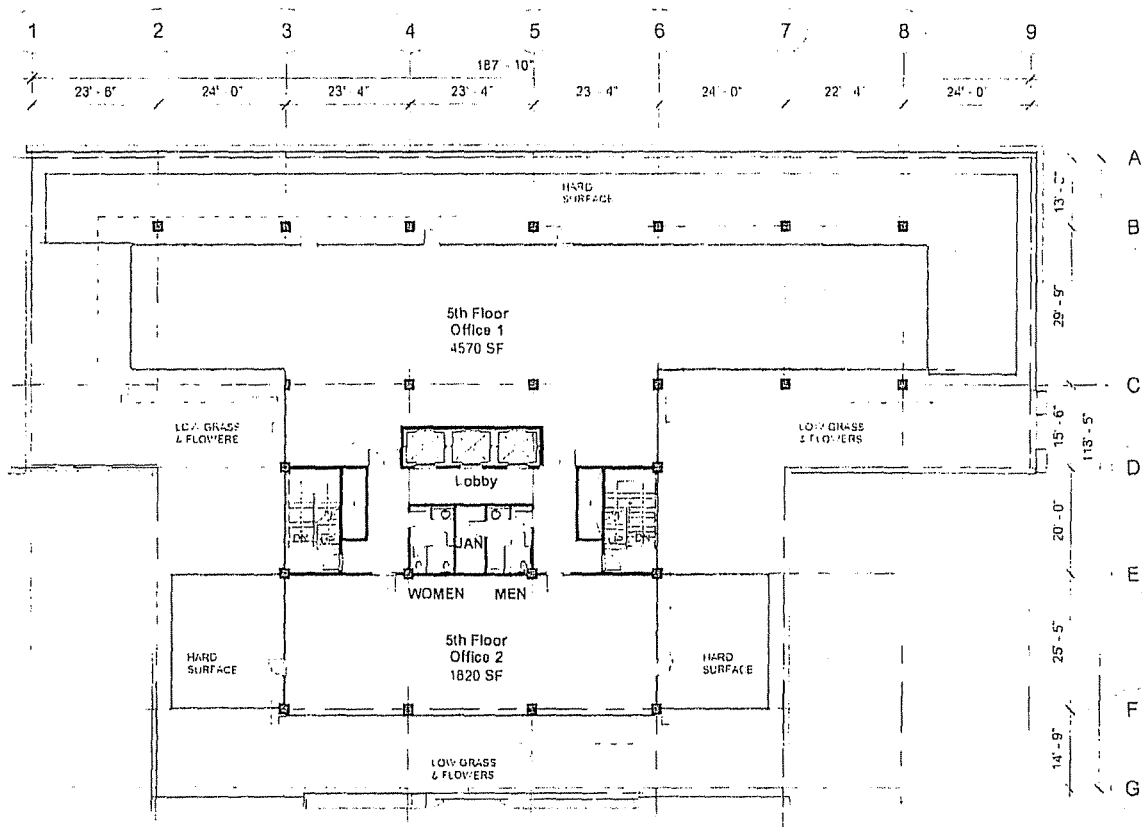


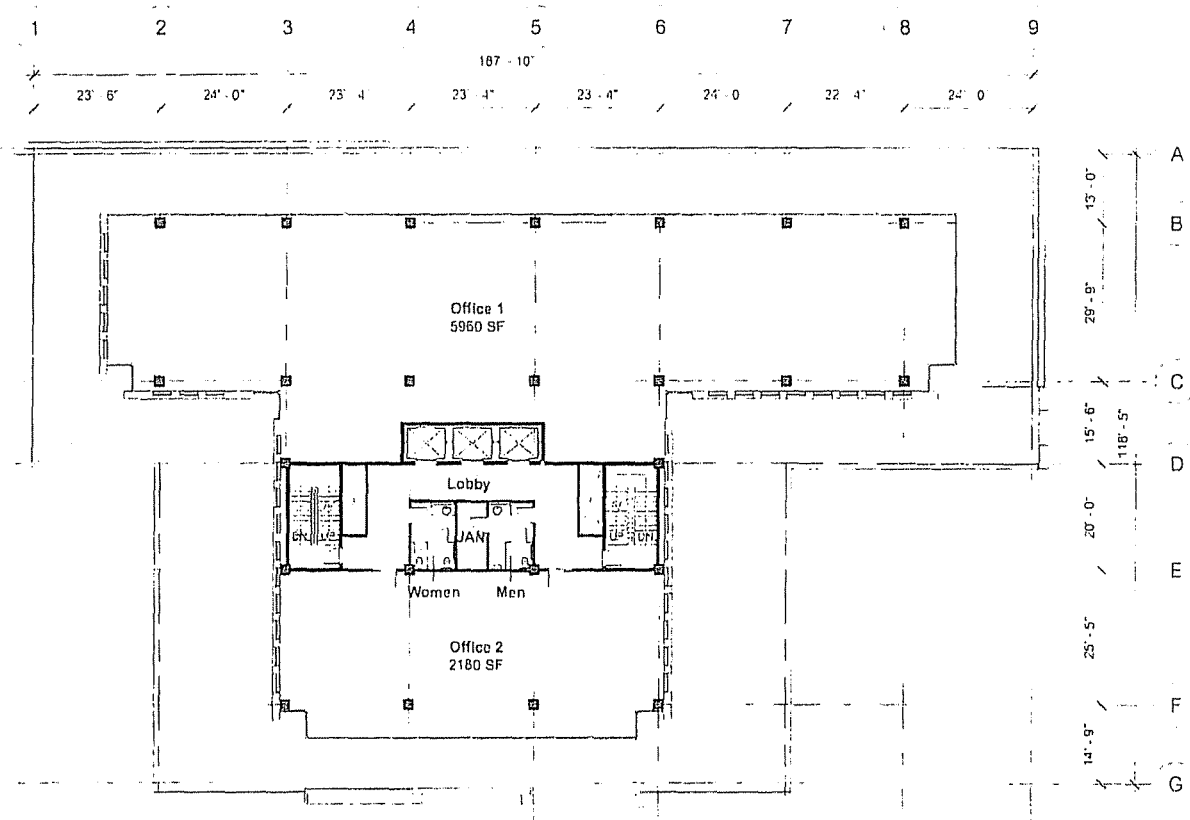


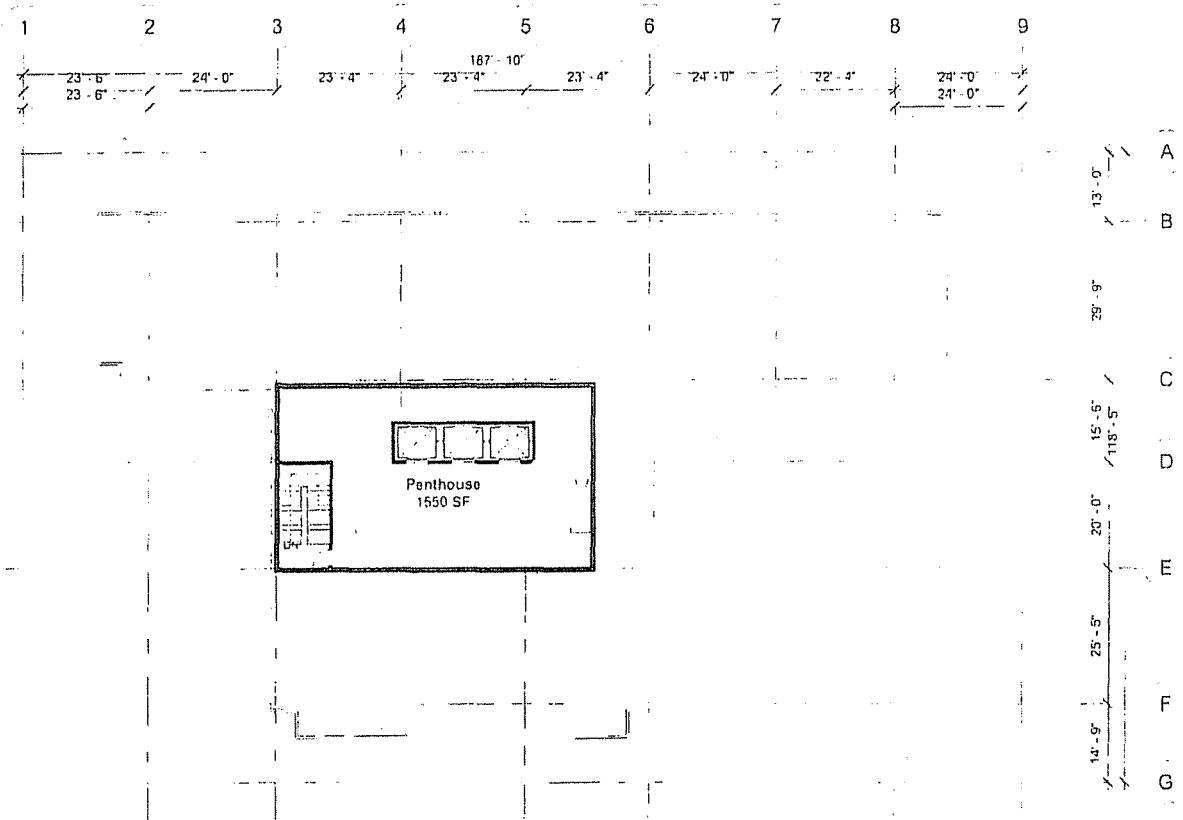


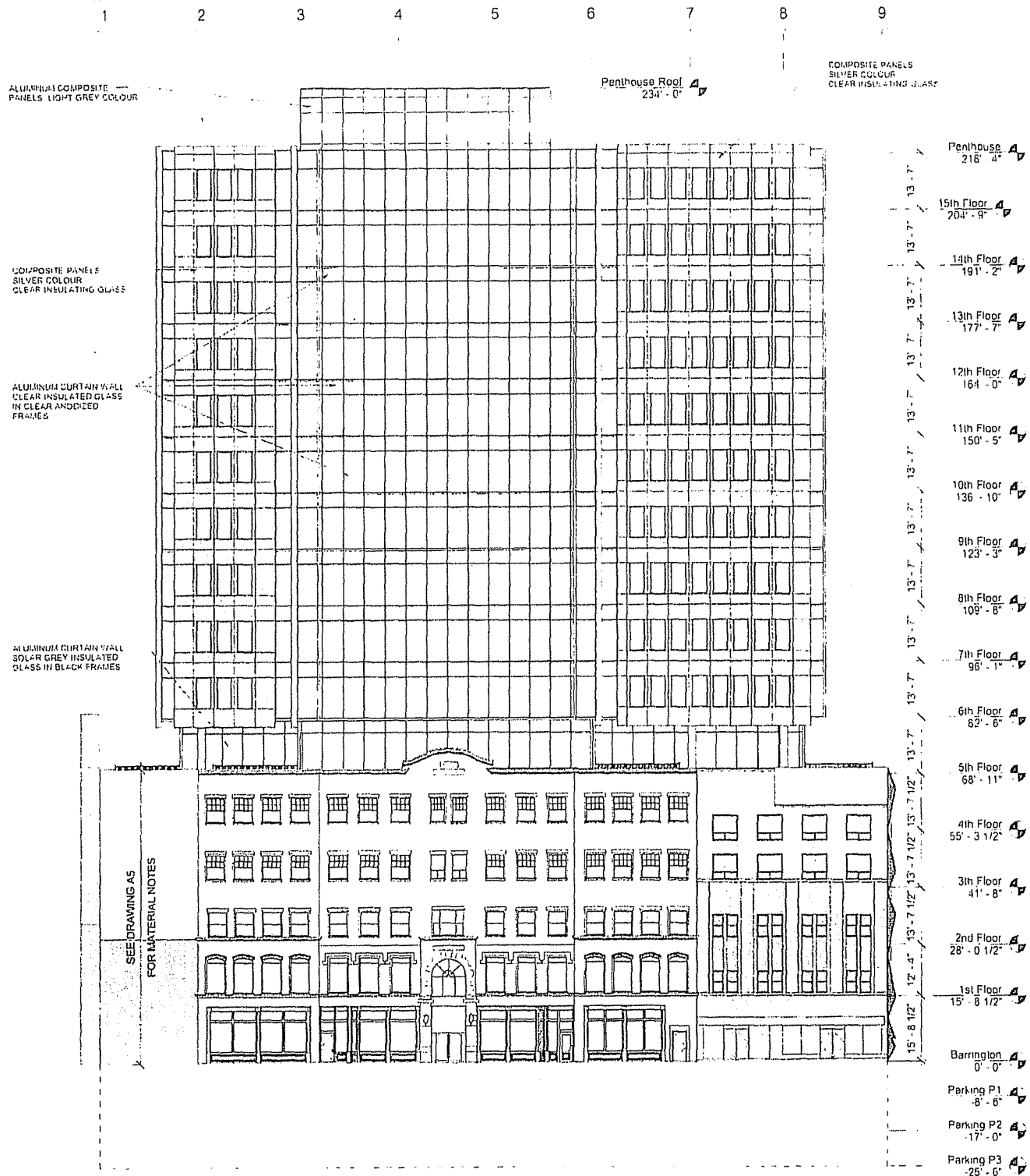


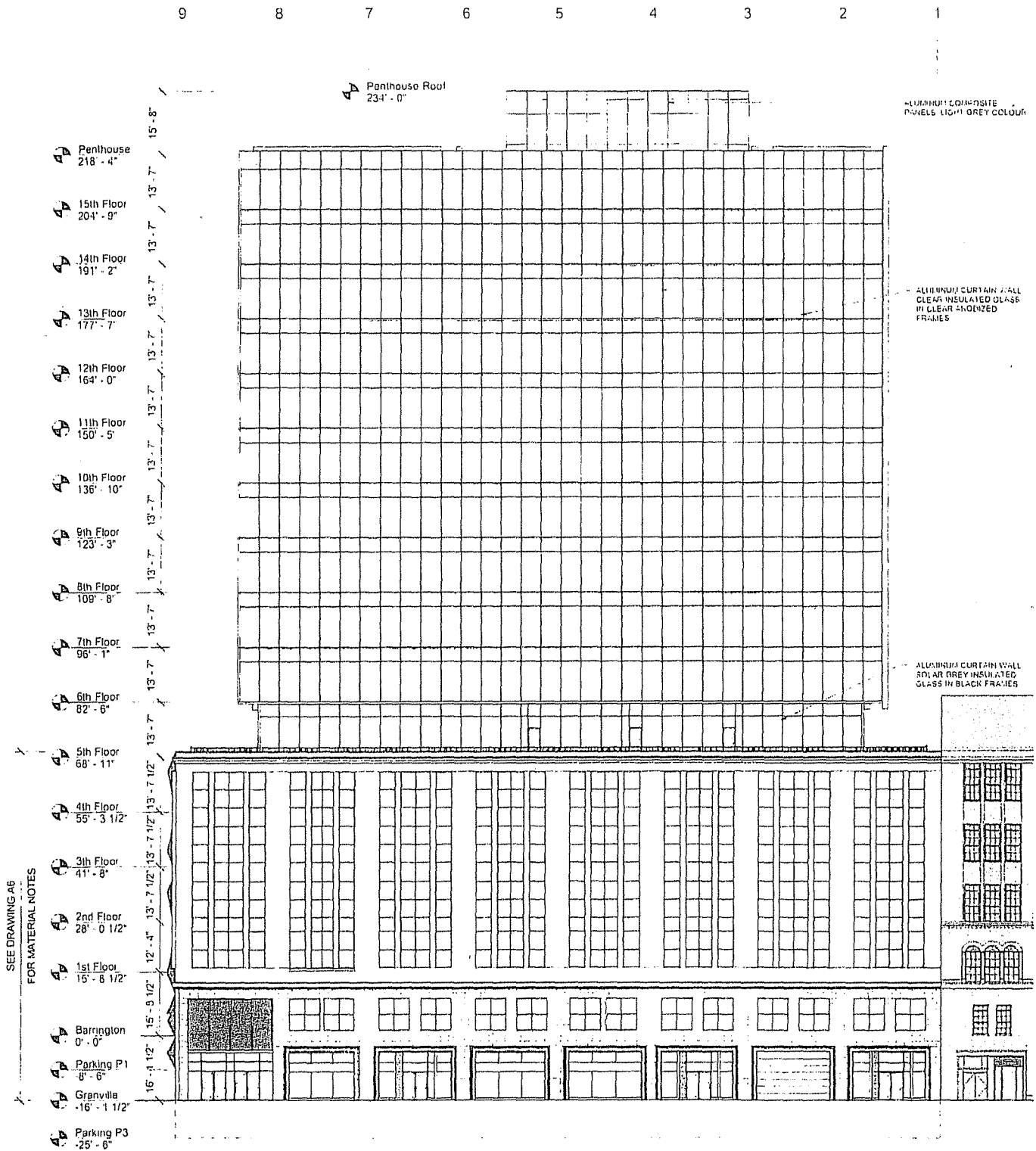


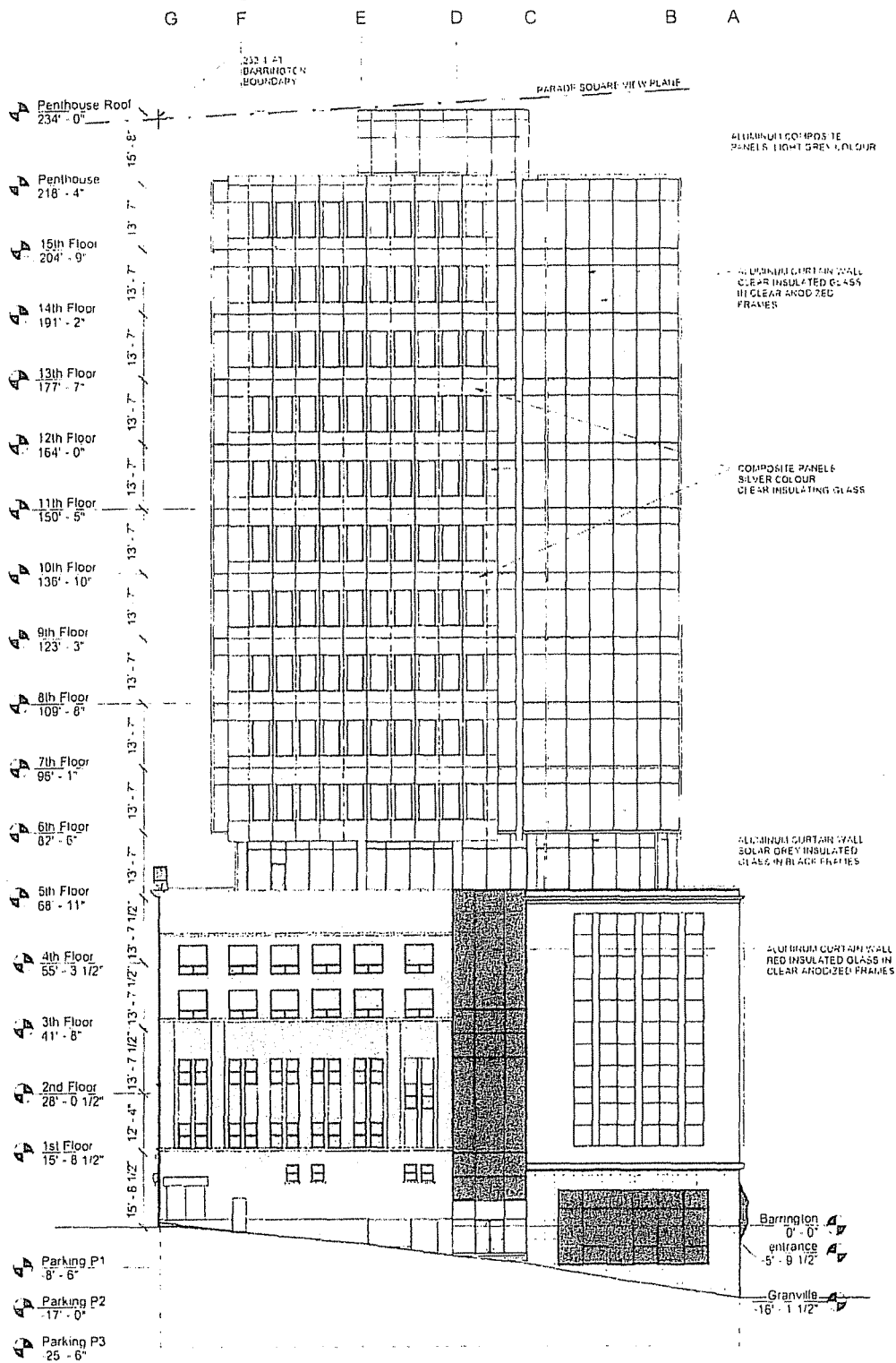


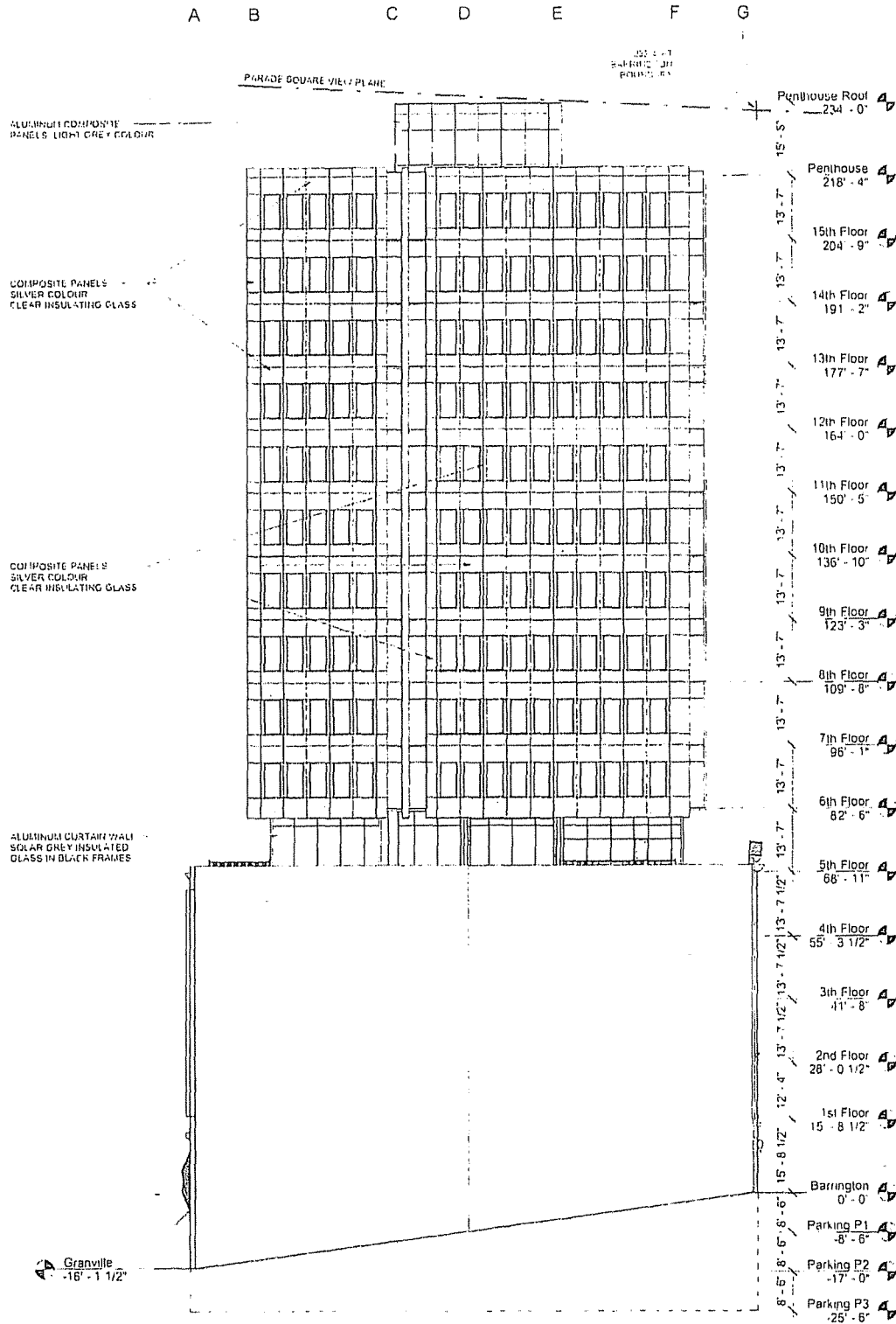














5th Floor
 68' - 11"

4th Floor
 55' - 3 1/2"

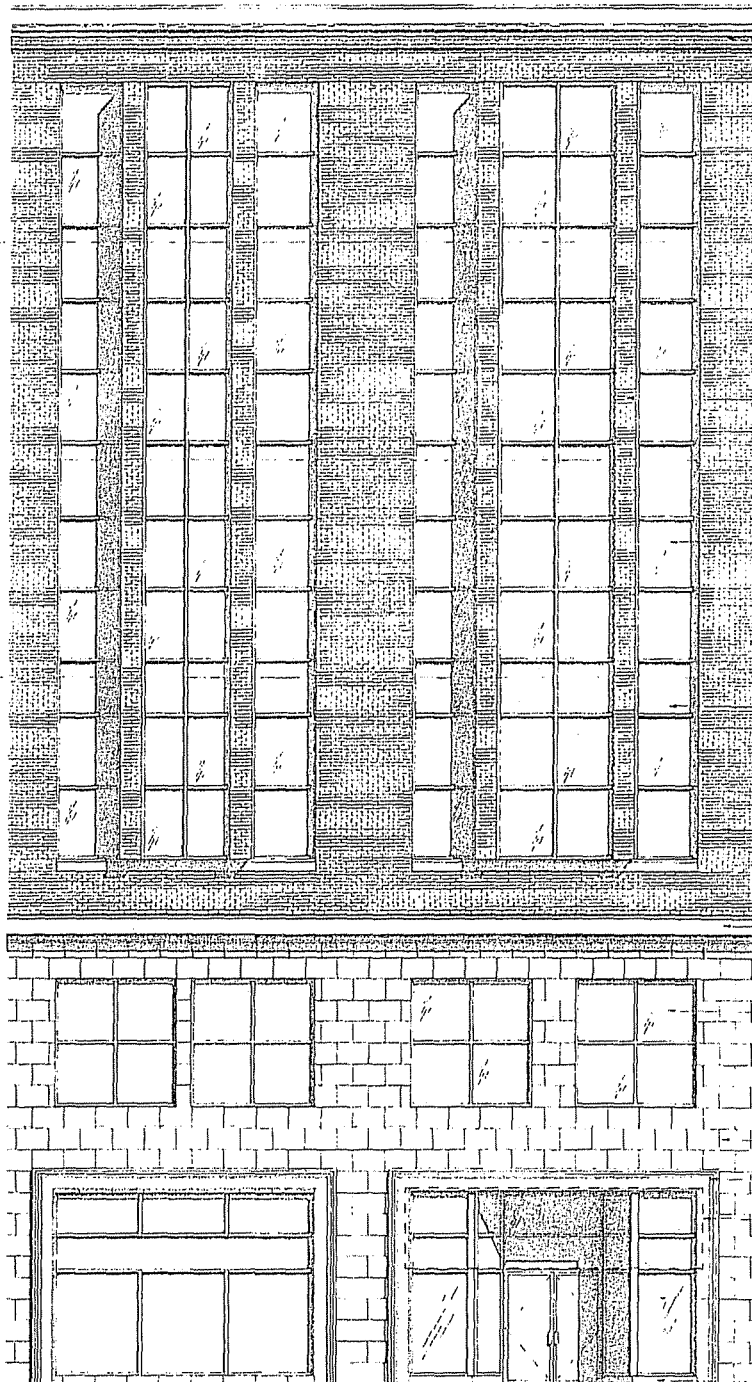
3rd Floor
 41' - 8"

2nd Floor
 28' - 0 1/2"

1st Floor
 15' - 8 1/2"

Barrington
 0' - 0"

Granville
 -16' - 1 1/2"



New Cornice Trim to Match Johnston Building

Brick or Precast Material to Match Johnston Building Brickwork

Flux Aluminium Cornice with Glass and Heavy Glass in Bronze Frames

Squared Panel Light Grey Colour

Brick or Precast Material to Match Johnston Building Brickwork

Cornice Trim

New Windows Timbered Grey Glass in Bronze Coloured Frames

Masonry or Cast Stone Colour to Match Johnston Building Trim

Line of Fabric Fining

New Glass in its Bronze Coloured Sashes and Clear Glass

Masonry Curb

ATTACHMENT "B"

Review of Most Relevant Sections of the Halifax Municipal Planning Strategy

SECTION III - CENTRAL BUSINESS DISTRICT, OBJECTIVES AND POLICIES

1. ECONOMIC

Objective The strengthening of the Halifax CBD as a dynamic focus of governmental, commercial, retail, residential, recreational, and entertainment uses, and the appropriate development of the waterfront to promote the City as the major business and cultural centre of Atlantic Canada.

Policy	Comment
1.1 It shall be the City's policy to strengthen the development of the specific desirable characteristics of identified sub-areas of the CBD, as defined on Map 11 and in Schedule III.1 to provide the impetus necessary to ensure the viability of all parts of the CBD. The City shall accomplish the intent of this policy and all policies in Part II, Section III, Subsection I of this Plan, by Implementation Policy 3.5.	The subject block and site are equally divided into Sub-Areas 8 (Barrington St.) and 10 (Granville St.). The Granville area is characterized by offices and mixed uses, while the Barrington area has more of a retail focus. The Granville area generally has more tall and contemporary buildings than the Barrington area, which has more of a heritage focus with lower-rise buildings. The "desirable characteristics" are not defined. The proposal includes pedestrian-oriented ground floor uses on both Barrington and Granville Streets. The building is in keeping with the sub-area concept by including elements found in both sub-areas and by contributing to the viability of the area.
1.2 It shall be the City's policy to encourage Barrington Street as an activity-oriented circulation area. 1.2.1 In this context, the City should encourage such development on Barrington Street as will generate a variety of activities, particularly retail, but including institutional, recreational, residential, and cultural activities accessible to the public at large, with the stipulation that priority of activity is given to ground floor level.	Two retail spaces, in addition to the office / lobby spaces, are proposed on the Barrington Street level. The agreement allows the retail spaces to also be used for restaurant, entertainment, personal services or cultural uses. The remainder of the building is to include offices and cultural (venue) space with a provision in the agreement to also permit residential and / or institutional uses.

1.4	The CBD should be strengthened as a principal shopping centre in the region, through the development of a substantial increase in retail and commercial floor space, and the provision of a wide range of consumer facilities.	The proposal includes retail uses along both the Barrington & Granville street frontages and a substantial office component.
-----	--	--

2. SOCIAL

Objective The creation of a lively, vibrant environment throughout the CBD which promotes and supports a wide variety of living, leisure, and working activities throughout the day and evening.

Policy	Comment
2.1 The City shall seek and encourage appropriate non-office land and water uses which will generate human activity in the CBD area throughout the day and evening.	Ground floor uses are proposed to include retail, restaurant, lounge/ entertainment, personal services or cultural uses. The 1 st floor above Barrington includes cultural (venue) spaces.
2.1.1 The construction of office and retail buildings in the CBD should be those which reinforce the image of the City as the regional centre of activity, and should generate the need for services and amenities (hotels, entertainment, restaurants, etc.) which will provide an active CBD.	As indicated above, the proposal includes pedestrian-oriented ground floor uses. The proposal also provides additional office space to the site which will contribute to the activity / vitality of the area.
2.1.2 The City should require that space adjacent to areas of pedestrian circulation, including walkways at any level, be developed for retail activities and such other uses as generate and encourage the desired degree of public interest and activity.	The proposal combines pedestrian oriented ground floor uses with attractive storefronts / signs and building design elements that generate interest/ activity.

Policy	Comment
2.1.2.1 The City should require that any vertical surface between a pedestrian circulation area and any retail or such other use as referred to in Policy 2.1.2 respond to such functions, or through design treatment of surface elements, be visually stimulating to the pedestrian.	The proposal includes several storefront entrances directly off the sidewalk(s) with awnings above the entrances. Signs will meet municipal heritage principles. Storefronts will have an attractive design.
2.2 The City shall promote the development of mixed-use residential and commercial areas which are appropriate to the varied scale and character of the sub-areas of the CBD.	The character of the area and the scale of buildings varies widely. The proposal strikes an appropriate balance between the tall contemporary buildings of the Granville Street sub-area and the shorter heritage buildings found within the Barrington Street sub-area.
2.2.1 In the CBD, residential uses shall be encouraged within the same building envelope as office uses provided the commercial potential of the site is not displaced.	The agreement allows for a possible change from office to residential uses except on the ground floor levels.

3. CIRCULATION

Objective The creation within the CBD of a circulation framework which gives priority to the pedestrian, but which accommodates the transit, automobile and service requirements of the area.

Policy	Comment
3.1 The use of the private automobile within, to and through the CBD should be facilitated where it does not conflict with pedestrians and public transit.	One driveway entrance to the parking levels is proposed off Granville Street, which is a one-way street and has less vehicular and pedestrian traffic than on Barrington, which is the major transit and pedestrian route.
3.1.2.1 The City should seek the provision of weather protection for pedestrians, particularly at street level, where new development or major alterations to building facades abut pedestrian routes in the CBD.	Awnings are proposed above the storefronts at street level on both Barrington and Granville Streets.

Policy	Comment
3.1.2.3 In relation to the pedestrian system, the City shall give consideration to the design and location of all street facilities, including supervised washrooms, public information boards, seats, planters, lamp standards, trash holders, kiosks, and the coordination of all retail signs, building signs, directional signs, internally-luminated signs, etc.	Any sidewalk replacement as a result of the development will comply with municipal standards. Signs will be reviewed against municipal heritage principles by the Heritage Planner.
3.3.1 Long-term parking facilities should be located on the periphery of the CBD, and the City shall actively pursue their location in appropriate sites.	The existing MetroPark facility is on an adjacent block.
3.4 The City should encourage the development of short-term parking facilities, available to the public, preferably combined with new development in the CBD.	No public parking is proposed. The subject site is of inadequate size to accommodate combined parking for the development and a public parking facility. The provision of retail at grade is of greater importance in this case.
3.5.3.3 On-street loading and unloading should not be permitted during morning and afternoon peak traffic hours on major streets in the CBD.	Proposed changes, if any, to the existing on-street loading during the detailed design stage will require approval of the Traffic Authority.

4. HERITAGE

Objective The conservation or rehabilitation of areas, streetscapes, buildings, features, and spaces which mark the sequence of development in Halifax, and which identify the CBD as the City's cultural and heritage centre.

Policy	Comment
4.2 The City shall continue to seek the retention, preservation, rehabilitation and restoration of areas, streetscapes, buildings, features and spaces in the CBD consonant with the City's general policy stance on heritage preservation (see Section II, Policy Set 6).	The subject properties are not municipally registered heritage properties. Although one property, the Roy building, is now within the Barrington St. Heritage Conservation District, this proposal has been "grandfathered" under the former MPS policies. Refer also to Scale and Design Detail (Section 7).

6. VIEWS

Objective A CBD which is visually attractive from its major approach roads, from Citadel Hill, and from the harbour.

Policy	Comment
6.1 All new buildings shall be located so that views to the Harbour from Citadel Hill, as specifically delineated in the City of Halifax Zoning By-law, are maintained. These areas in the CBD are illustrated generally on Map 12.	The site is not impacted by a viewplane. Rather, it lies in the area between viewplanes #5 and #6 (refer to Map 1).
6.2 Views of and from the Harbour along the east-west streets should be conserved where existing, and when opportunity arises, such views should be enhanced and new views added.	The view of the harbour down Sackville Street will be maintained. There is no view of the Citadel looking up the street. The proposal will not impact the views. Minor encroachments, if any, such as awnings/ canopies, signs and street trees are accepted streetscape elements and do not block the overall views.
6.3 The City should encourage rooftop landscaping in any new developments which can be seen from the Citadel, from taller buildings, or from other parts of the City.	The rooftop of the base portion (5 th Floor/ Schedule G) will be landscaped. The agreement includes requirements for landscaping and requires that a plan be submitted by a landscape architect.

7. SCALE AND DESIGN DETAIL

Objective A high quality of design and construction of buildings to reflect the architectural, heritage and topographical characteristics of the CBD.

Policy	Comment
7.1 The City shall generally retain the remaining street grid and City block pattern in the CBD.	The street grid and block pattern are to be retained.

Policy	Comment
7.1.2 The City shall encourage the architectural form and scale of new developments to be compatible with the block pattern, and shall discourage those developments which do not respect it.	The proposal does not involve the closure of streets and consolidation of blocks. The block pattern under consideration would be both that of the entire CBD and the blocks found in the immediate area. The proposed building's form and scale is not unlike other tall buildings in the CBD and in the immediate area, although it will be approx. 3 or 4 storeys higher than the adjacent office buildings to the east. The building's footprint encompasses approx. half the block, compared to other buildings in the CBD whose footprint takes up an entire city block. The proposal is, therefore, compatible with the block pattern.
7.2 The character of the CBD should be reinforced through the control of urban design details such as massing, texture, materials, street furniture, and building lines.	The base portion of the building replicates or borrows from the massing, texture and materials of both the Roy and Johnston buildings and will be built to the street line/ sidewalk. The office tower component above the 5 th floor is stepped back from all property lines. Although a narrow portion of the office tower is within the Barrington sub-area, it is stepped back from the Barrington St. line and its narrow width (approx. 70 ft.) helps to reduce its impact/ massing and the overall massing of the building. The wider, rear portion of the tower is to be set back approx. 75 feet from the Barrington streetline and is fully within the Granville Sub-area.

SECTION II - CITY-WIDE OBJECTIVES AND POLICIES

3. COMMERCIAL FACILITIES

Objective The provision of commercial facilities appropriately located in relation to the City, or to the region as a whole, and to communities and neighbourhoods within the City.

Policy	Comment
3.2 The Halifax Central Business District shall be regarded as the principal business centre in the Halifax-Dartmouth region, and shall include office, shopping, finance, government, residential, recreation, and entertainment facilities as well as desirable types of harbour-related businesses and industries.	The proposal will include a variety of land uses, some of which are indicated here.
3.2.1 Major office projects, hotels, cultural facilities and government office activities, which would strengthen and enhance Halifax as the dominant centre of Atlantic Canada, should be induced to locate in the Central Business District. This policy shall remain in effect until City Council determines that the Central Business District is self-sustaining.	The proposal includes a major office component as well as cultural uses and retail/commercial uses.

Policy	Comment
7.2.1 The exterior architectural design of new buildings should be complementary to any adjacent ones which are designated as being of historic significance or important to the character of the CBD; in such instances, the careful use of materials, colour, proportion, and the rhythm established by surface and structural elements should reinforce those same aspects of the existing buildings.	There are many heritage buildings adjacent to the site. The applicant and architect have chosen to replicate or draw from the existing Roy building and the adjacent Johnston building in designing the new building, particularly the base portion. While the tower portion differentiates itself from the base by the use of more contemporary materials (aluminum and glass curtain wall), it is also complementary to the heritage buildings in the area by providing a contemporary design approach.
7.3 The City shall control the height of new development within the CBD in the vicinity of Citadel Hill, pursuant to Policies 6.3, 6.3.1, 6.3.2 and 6.3.3 of Section II of this Plan.	The intent was to control building heights in the <u>foreground</u> of the view from the Citadel. The subject site is 5 blocks away and down slope from Brunswick Street and the base of Citadel Hill. It is appropriately far enough away from the Citadel that it does not infringe upon the foreground view.
7.5 The design of new developments in the CBD should be such that normal wind levels on outdoor pedestrian routes and in public open spaces will be acceptable. 7.5.1 The City should investigate ways to regulate design to mitigate the effects of wind on pedestrian routes (see Section II, Policies 8.1 - 8.6).	A preliminary wind assessment was carried out. This assessment involved a qualitative, desktop analysis and recommends that wind tunnel testing be conducted in order to quantify wind conditions and to refine conceptual wind control measures. The agreement requires that wind tunnel testing be carried out and a report be submitted to HRM at the detailed design stage which a) confirms / quantifies the expected wind comfort and safety conditions, and b) where necessary, outlines proposed wind mitigation measures to achieve accepted industry standards for pedestrian wind comfort and safety.
7.6 The design of new developments in the CBD should be such that there will be a minimal amount of shadow cast on public open spaces.	A shadow study was carried out. The study confirms that there will be a minimal amount of shadow cast on public open spaces.

6. HERITAGE RESOURCES

Objective The preservation and enhancement of areas, sites, structures, streetscapes and conditions in Halifax which reflect the City's past historically and/or architecturally.

Policy	Comment
6.1 The City shall continue to seek the retention, preservation, rehabilitation and/or restoration of those areas, sites, streetscapes, structures, and/or conditions such as views which impart to Halifax a sense of its heritage, particularly those which are relevant to important occasions, eras, or personages in the histories of the City, the Province, or the nation, or which are deemed to be architecturally significant. Where appropriate, in order to assure the continuing viability of such areas, sites, streetscapes, structures, and/or conditions, the City shall encourage suitable re-uses.	The subject properties are not registered heritage properties. There will be no violation of protected views or other heritage policies.
6.2 The City shall continue to make every effort to preserve or restore those conditions resulting from the physical and economic development pattern of Halifax which impart to Halifax a sense of its history, such as views from Citadel Hill, public access to the Halifax waterfront, and the street pattern of the Halifax Central Business District.	The proposal does not violate or impact upon the preservation of protected views and the street pattern.

Policy	Comment
<p>6.3 The City shall maintain or recreate a sensitive and complimentary setting for Citadel Hill by controlling the height of new development in its vicinity to reflect the historic and traditional scale of development.</p> <p>6.3.1 The intent of such height controls shall be to establish a generally low to medium rise character of development in the area of approximately four traditional storeys in height immediately adjacent to Citadel Hill and increasing with distance therefrom.</p>	<p>As the subject site in this case is 5 blocks away and down slope from the base of the Citadel along Brunswick Street, it is not in the vicinity of the Citadel as was envisioned by these policies. Therefore, Council may consider a tall building on this site without violating this aspect of the MPS (refer to Sect. III, policy 7.3).</p>
<p>6.3.2 Within the area bounded by North Street, Robie Street and Inglis Street, no development shall be permitted that is visible over the top of the reconstructed earthworks on the Citadel ramparts, from an eye-level of 5.5 feet above ground level in the Parade Square of the Citadel.</p>	<p>The building will not be visible over the top of the ramparts. The agreement requires confirmation of this from a surveyor prior to the issuance of construction and occupancy permits.</p>
<p>6.3.3 Policy 6.3.2 above shall not be deemed to waive any other height or angle controls.</p>	<p>There are no other controls being waived.</p>
<p>6.4 The City shall attempt to maintain the integrity of those areas, sites, streetscapes, structures, and/or conditions which are retained through encouragement of sensitive and complementary architecture in their immediate environs.</p>	<p>The proposal does not violate this policy. Refer to Section III, policy 7.2.1.</p>

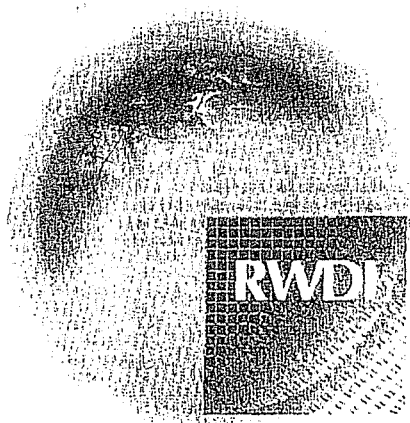
8. ENVIRONMENT

Objective The preservation and enhancement, where possible, of the natural and man-made environment, and especially of those social and cultural qualities of particular concern to the citizens of Halifax.

Policy	Comment
8.6 The City should make every effort to ensure that developments do not create adverse wind and shadow effects. The means by which this policy shall be implemented shall be considered as part of the study called for in Part III.	There will be no adverse wind and shadow effects. Refer to Section III, policies 7.5, 7.5.1 and 7.6.
8.8 The City should protect vistas and views of significant interest.	All view protections measures are being maintained. This has been accomplished by the protection measures provided for in policies 6.3, 6.3.1, 6.3.2 and those in Section III, policies 6.1, 6.2, 6.3 and 7.3. Refer to those sections for detailed comments.

IMPLEMENTATION POLICIES

Policy	Comment
3.5.1 Further to Policy 3.5 above, the areas identified on Map 10 of this Plan as the Business District, excepting that area of the CBD which falls within the Halifax Waterfront Development Area as identified on Map 14, shall be identified on the zoning map and within such area no development permit for a development of over 40 feet shall be issued, except under an agreement with Council pursuant to Section 34(1) of the Planning Act.	This policy enables the development agreement process for any building which is to be greater than 40 feet in height.



CONSULTING ENGINEERS
& SCIENTISTS

Case 01172
Attachment C

**PEDESTRIAN WIND ASSESSMENT
ROY BUILDING
HALIFAX, NOVA SCOTIA**

Project Number: 08-1433A

May 27, 2008

SUBMITTED TO: Louis Reznick
Reznick & Partners Carpet Company Ltd.
81 Ronald Avenue
Toronto, Ontario
M6E 4M9

Email: louis@reznickcarpets.com

SUBMITTED BY: Rowan Williams Davies & Irwin Inc.
Consulting Engineers & Scientists
650 Woodlawn Road West
Guelph, Ontario N1K 1B8

P (519) 823-1311
F: (519) 823-1316

Technical Coordinator: Anthony Akomah, MEng
Project Manager: Vishal Raja, B.A.Sc
Project Director: Hanqing Wu, Ph.D., P.Eng

1. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by Starfish Properties to conduct a Pedestrian Wind Assessment for the proposed Roy Building in Halifax, Nova Scotia. The objective of this qualitative analysis is to estimate the pedestrian wind conditions at grade for the proposed development.

Using the design drawings and site photographs received by RWDI on April 30, May 9 and 15, 2008, the current assessment is based on:

- Review of local long-term meteorological data with site surrounding information
- Our engineering judgement and knowledge of wind flows around buildings.
- Our extensive experience of wind tunnel modelling of various building projects¹ with reference to projects conducted in the Halifax area.
- Use of software developed by RWDI for estimating the potential wind comfort conditions around generalized building forms².

In the absence of wind tunnel testing, this desktop approach provides a screening-level estimation of pedestrian wind conditions. To quantify the wind conditions or refine any conceptual wind control measures, physical scale model tests in a boundary layer wind tunnel facility would be required.

-
- 1 C.J. Williams, H. Wu, W.F. Waechter, and H.A. Baker (1999) "Experiences with Remedial Solutions to Control Pedestrian Wind Problems" *10th International Conference on Wind Engineering*, Copenhagen, Denmark.
 - 2 H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004) "Knowledge-based Desk top Analysis of Pedestrian Wind Conditions" *ASCE Structure Congress 2004*, Nashville, Tennessee.

2. SITE INFORMATION

Figure 1 is a site plan of the development. The proposed study site is located on Sackville Street between Barrington Street and Granville Street. At present on the study site, is a six storey building along the Barrington Street facade (Photos 1 and 2). A seven storey building presently exists on the Granville Street facade (Photo 3). South of this is a three storey building at the intersection of Granville and Sackville. As shown in Photo 2, there is a grade change of about 15 ft along Sackville Street, between Barrington and Granville Street.



Photo 1 - Barrington Street Elevation

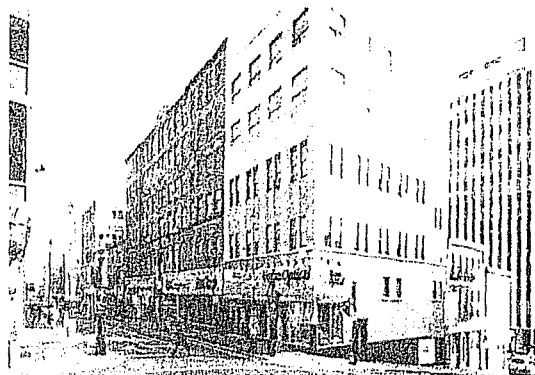


Photo 2 - Barrington/Sackville Street Elevation

The proposed Roy Building consists of a six storey office development along the Barrington Street facade, and a 16-storey office building along the Granville facade. Along Granville Street, the proposed building will be about 250 ft high, with a footprint of approximately 185 ft by 60 ft. On Barrington Street, the proposed building will be approximately 70 ft high, with a plan dimension of about 120 ft by 56 ft at grade. The existing building at the corner of Barrington Street and Sackville Street (see Photo 2) is to remain in place. Primary pedestrian areas around the new development include sidewalks surrounding the new building and entrances (indicated by solid triangles in Figure 1) along Granville and Barrington Street.



Photo 3 - Granville Elevation

North of the study site is an existing seven storey building adjoining the proposed Roy Building, and to the immediate east are mid-rise buildings which includes the Centennial Building. To the southeast is the future Texpark development which consists of two 26-storey towers. A three story building presently exists to the south, while mid-rise buildings exist to the west. Further away from the site, there are mixed low-rise and wooded areas with isolated mid and high-rise buildings. The Halifax Citadel National Historic Site is located to the west and the harbor is located east of the site. This assessment was conducted with the known future Texpark development in place.

3. METEOROLOGICAL DATA

Wind statistics recorded at the Shearwater Airport in Halifax, Nova Scotia, between 1953 and 2006 were analysed for the Summer (May through October) and Winter (November through April) seasons. Figure 2 graphically depicts the distribution of wind frequency and directionality for the two seasons. When all wind records are considered, winds from the southwest quadrant are predominant in the summer, as indicated by the upper-left wind rose. The lower-left wind rose shows the winter data, indicating the predominance of winds from the northwest quadrant during this season. Calm winds recorded at the airport occur for 6.5% of the time in the summer and 4.0% of the time in winter.

Strong winds of a mean speed greater than 30 km/h measured at 10 m above grade at the airport occur for 4.1% and 14.2% of the time during the summer and winter seasons, respectively. Winds from the north, east and southwest are prevalent in the summer, while winds from the west-northwest, north, west and east are dominant in the winter season. This is illustrated by the two right-hand wind roses in Figure 2. Winds from these directions potentially could be the source of uncomfortable or even severe wind conditions, depending upon the site exposure and development design. As a result, the northwesterly winds are considered most prevalent and important for the current assessment, although all wind directions were taken into account in our desk-top assessment.

4. RWDI WIND COMFORT CRITERIA

The wind conditions around the proposed development are assessed by use of pedestrian wind comfort criteria developed at RWDI. The four comfort categories used for this review are described in general terms as follows:

- **Sitting:** Low wind speeds during which one can read a newspaper without having it blown away. These wind speeds are appropriate for outdoor cafes and other amenity spaces that promote sitting.
- **Standing:** Slightly higher wind speeds that are strong enough to rustle leaves. These wind speeds are appropriate at major building entrances, bus stops or other areas, such as a bench along a sidewalk, where people may want to linger but not necessarily sit for extended periods of time.
- **Walking:** Winds that would lift leaves, move litter, hair and loose clothing. Appropriate for sidewalks, intersections, plazas, parks or playing fields where people are more likely to be active and receptive to some wind activity.
- **Uncomfortable:** The effects of wind speeds at this level would range from small trees swaying and wind force being felt on the body to whole trees being in motion and inconvenience being felt when walking. Wind of this magnitude would be considered a nuisance for most activities.

Wind conditions are considered acceptable for sitting, standing or walking if the wind speeds are within their specified ranges at least 80% of the time, or four in five days. An **uncomfortable** designation means that the 80% criterion is not satisfied for any of the above activities.

Safety is also considered by the criteria and is associated with excessive wind speeds that can adversely affect a pedestrian's balance and footing. If winds sufficient to affect a person's balance occur more than two times per summer or winter season, the wind conditions are considered

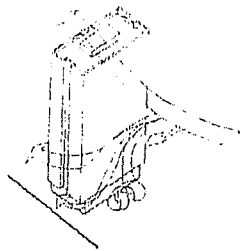
severe. Wind control measures are typically required at locations where winds are rated as uncomfortable or severe (exceeding the wind safety criterion)

5. WIND COMFORT ASSESSMENT

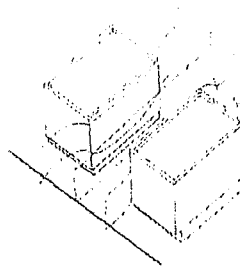
5.1 General

Predicting wind speeds and occurrence frequencies is complicated, involving building geometry, orientation, position and height of surrounding buildings, upstream terrain and the local wind climate. Over the years, RWDI has conducted more than 1500 wind tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge allows, in many situations, for a screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

In our discussion of anticipated wind conditions, reference will be made to the following generalized wind flows. Tall buildings tend to intercept the stronger winds at higher elevations and redirect them down to the ground-level. Such a *Downwashing Flow* is the main cause for wind accelerations around large buildings at the pedestrian level. Also, when two buildings are situated side by side, wind flow tends to accelerate through the space between the buildings due to the *Channelling Effect*. If these building/wind combinations occur for prevailing winds, there is an increased potential for even higher wind activity.



Downwashing Flow



Channelling Effects

Generally, wind conditions suitable for walking are appropriate for sidewalks; lower wind speeds comfortable for standing are preferred for major building entrances. The following describes the anticipated pedestrian wind conditions at areas (see Figure 1) around the study site.

5.2 Granville Street Facade (Areas A₁ and A₂)

Existing wind conditions along Granville Street are expected to be comfortable for standing in the summer and comfortable for walking in the winter months. All locations pass the wind safety criterion throughout the year.

With the proposed Roy Building in place, sidewalks along Granville Street are sheltered from westerly winds by the new development. These areas are, however, exposed to northerly winds channelling along the street in addition to winds from the east downwashing off the east facade of the new 16-storey building. All entrances along Granville Street are slightly recessed from the east facade. In addition, the architectural drawings also indicate lobby areas beside the doors where pedestrians could wait on windy days. These are positive features for wind control and they should be retained in the final design.

Overall, wind conditions at the entrances and surrounding sidewalk along Granville Street (Areas A₁ and A₂) are expected to be comfortable for standing in the summer and comfortable for walking in the winter. All locations are expected to pass the wind safety criterion throughout the year.

5.3 Sackville Street Facade (A₃ through A₅)

Existing wind conditions along Sackville Street are expected to be comfortable for standing in the summer and comfortable for walking in the winter months. In the summer, all locations pass the wind safety criterion. However, during the winter months, severe wind speeds in excess of the wind safety criterion were predicted along Sackville Street (Areas A₃ and A₄).

With the proposed Roy Building in place, sidewalks along Sackville Street are sheltered by the massing of the new building from northwesterly winds, but exposed to easterly winds channelling along the street and northerly winds accelerating around the southeast corner of the proposed development (A₁). These flow patterns could lead to increased windiness along A₁ through A₂. With the new building in place, wind conditions along Sackville Street are expected to be comfortable for walking in the summer and uncomfortable in the winter. Also, the severe wind speeds presently experienced at A₁ and A₂ are expected to remain in the winter months. It is our understanding that the design of the proposed Roy Building is evolving and a desktop wind assessment is adequate to address the current issues. At final design stage, wind tunnel tests are recommended to confirm these wind assessments under both the existing and proposed conditions and quantify any effects the proposed Roy Building will have on the existing wind conditions.

If necessary, the wind tunnel tests could also be used to develop and refine mitigation measures along Sackville Street. The mitigation measures may range from provision of landscaping to architectural additions and building massing changes. With the refined wind control measures in place, reduced wind activity can be expected along Sackville Street.

5.4 Barrington Street Facade (Areas B₁ and B₂)

Wind conditions along the Barrington Street facade of the existing building are expected to be comfortable for standing in the summer and suitable for walking in the winter months.

With the Roy Building in place, entrances and sidewalks along Barrington Street are sheltered from northerly and easterly winds by the massing of the new building. In addition, westerly winds downwashing off the west facade of the new building are retained at the six floor above the pedestrian area. In general, wind conditions along Barrington Street (B₁ and B₂) are expected to be comfortable for walking or better throughout the year. No wind safety failures were predicted on Barrington Street throughout the year. These wind conditions are considered appropriate.

6. SUMMARY

In general, with the proposed Roy Building in place, wind conditions along Granville Street and Barrington Street are expected to be comfortable for walking or better throughout the year. Along Sackville Street, increased wind activity was predicted due to easterly channelling along the street and northerly wind accelerating around the southeast corner of the new building. Wind conditions along Sackville Street are expected to be comfortable for walking in the summer, and uncomfortable in the winter with the potential for severe wind speeds. These severe wind speeds predicted along Sackville Street are likely existing conditions. During final design stage, wind tunnel testing are recommended for a detailed evaluation of these wind conditions and to quantify the effects of the new development on wind conditions along Sackville Street. Wind control measures ranging from provision of landscaping to architectural additions and building massing changes may be considered to reduce wind speeds along Sackville Street. With the refined wind control measures in place, reduced wind activity can be expected along Sackville Street.

Case 01172 - Attachment D

Shadow Study Summary

Name/Date	Time(s)	Shadow location/ Characteristics
Spring & Fall Equinoxes	7:15	Sunrise.
	7:30	Roy Building shadow decernible at base of Citadel Hill battlements.
21 March & Sept.	8:00 - 9:00	Across Brunswick St., Grafton St. and Market St. to Argyle St. (shadows comingled at street with existing structu
	9:00-11:15	Shadow falls across south end of Parade Square and St. Pauls
	11:15	Shadow comingled with neighboring buildings on intersection of Barrington St. and Prince St.
	12:30	Shadow appears on Granville Street
	3:00	Shadow reaches Hollis Street but is comingled with other shadows and indistinguishable as separate shadow.
	5:45	Shadow reaches Sackville Street but is comingled with other shadows and indistinguishable as separate shadow.
	6:00	Shadow crosses Sackville Street but is comingled with other shadows and indistinguishable as separate shadow.
	7:29	Sunset (total hours of illumination - Sunrise to Sunset: 12.23 March 21 and 12.21 September 21)
N.B. Subtract approximately 15 minutes from the above times for the Fall Equinox, 21 September.		

Name/Date	Time(s)	Shadow location/ Characteristics
Summer Soltice	5:29	Sunrise.
21-Jun	6:00	Roy Building shadow decernible.
	6:00-6:30	Shadow cast Spring garden Road to Brunswick St. where it comingles with other building shadows.
	6:30-7:15	Moves from Brunswick St. and crosses Market Street.
	7:15-10:15	Roy Building shadow cast across block between Prince and Sackville Streets
	10:30	Roy Building shadow cast at West side of Barrington Street.
	12:00	Roy Building shadow leaves Barrington Street.
	12:00-1:00	Shadow cast only on building block and adjacent roof structure.
	1:00	Shadow cast on Granville Street (west to east)
	4:30	Shadow cast on Sackville Street (north side) comingled with adjacent building shadows.
	4:45	Roy Building shadow cast across intersection at Hollis and Sackville Streets.
	5:00-6:15	Roy Building shadow comingled with other building shadow across Brewery Market site.
	6:15-6:30	Shadow crosses Lwr. Water Street discernable but comingled with adjacent building shadows.
	7:30-9:05	Roy Building shadow crosses waterfront east of Lwr Water St. between Sackville and Salter Streets (north to south)
	9:05	Sunset (total hours of illumination - Sunrise to Sunset: 15.6)

Name/Date	Time(s)	Shadow location/ Characteristics
Winter Solstice	7:50	Sunrise.
21-Dec	8:15	Roy Building shadow comingled with other building shadows around the Metro Centre arena.
	9:15	Roy Building shadow discernable across Argyle Street
	9:30	Roy Building shadow leaves Argyle Street.
	9:30-10:15	Shadow across Grand Parade
	10:15-10:30	Crosses Barrington St. near George St.
	10:50-11:10	Crosses Granville Street to Province House
	11:15	Shadow apparent at edge of Province House site.
	11:20	Roy Building shadow comingled with shadow from Province House. Roy Building shadow slightly longer than Province House shadow extending on to George St.
	12:15-2:00	Roy Building shadow crosses Hollis Street. Some comingling with adjacent building shadows is seen.
	2:00-4:37	Roy Building shadow indistinguishable from other general shadow cast.
	4:37	Sunset (total hours of illumination - Sunrise to Sunset: 8.78)