REPORT N^{O} 141-24324-00

PROPOSED COMMERCIAL CENTRE DEVELOPMENT AT 3020 HAWTHORNE ROAD TRANSPORTATION IMPACT STUDY ADDENDUM

JANUARY 2016

WSP | MMM GROUP

PROPOSED COMMERCIAL CENTRE DEVELOPMENT AT 3020 HAWTHORNE ROAD TRANSPORTATION IMPACT STUDY ADDENDUM

Controlex Corporation

Final

Project no: 141-24324-00
Date: January 2016

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WSP | MMM GROUP

January 13, 2016

Mr. Marty Koshman
Controlex Corporation
100 - 223 Colonnade Road
Ottawa, ON K2E 7K3

Subject: **Proposed Commercial Centre Development at 3020 Hawthorne Road, City of Ottawa – Transportation Impact Study Addendum (Re-Submission)**

Dear Mr. Koshman,

Subsequent to the submission of our Final Report titled Hawthorne Commercial Centre 3020 Hawthorne Road Transportation Impact Study (TIS) dated March 2, 2012, the proposed site plan has been revised, as provided in Appendix 1, and part of the proposed development has been built. This Letter Report is intended to review the changes of density, confirm the 2012 Study findings and address the City's previous comments on the adjacent pedestrian networks.

1. SITE DEVELOPMENT STATUS UPDATES

The following identifies the development status of the proposed site since the 2012 TIS Study.

- Buildings 300 and 400 in Phase 1 have been built at the proposed commercial centre at 3020 Hawthorne Road. Buildings 200 and 700 were existing at the time.
- Construction of Buildings 500 and 600 is planned to start in 2015 and the anticipated full occupancy for these two buildings will be in 2017.

2. CITY'S TIS REQUIREMENTS

The 2012 TIS Study Report provided an assessment of transportation needs and impacts of future phases and full build-out of the proposed subject site at 3020 Hawthorne Road in the City of Ottawa. Specifically, this study was completed for Phase 1 - Buildings 200 and 700 (construction completed) as well as Phase 2 - Buildings 100, 500 and 600 for the 3020 Hawthorne Road Commercial Centre.

The 2012 Study findings are:

- By the full build-out (horizon 2017), the Russell Road and Walkley Road intersection will be over capacity in both peak periods with the northbound right over capacity in the AM and PM peak, and westbound left and eastbound through over capacity in the PM peak. These future conditions are considered to be the background traffic growth. The overall effect of the site traffic on this intersection is negligible.
- The intersections of Hawthorne Road at Russell Road and Ages Drive will be running with a satisfactory level of service (LOS) B or better. The estimated northbound left-turning vehicle

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queues at the Hawthorne Road and Russell Road intersection can be accommodated by the existing storage length.

- By horizon 2022 (five years after full build-out), the Russell Road and Walkley Road intersection will continue to operate beyond its practical capacity, which is attributed to the background traffic growth. The intersections of Hawthorne Road at Russell Road and Ages Drive will be running with a satisfactory LOS.
- The Hunt Club Road extension from Hawthorne Road to Highway 417 has been completed and is open to traffic. This will dramatically change the travel patterns in the area. The greatest benefit of the new interchange will be realized through the diversion of traffic from the Walkley Road interchange. It is likely that the volumes travelling east from the Russell Road and Walkley Road intersection will be reduced, such as the northbound right turns. A 35% reduction to intersection volumes at this location would permit the intersection to operate below theoretical capacity.

The Report was completed in accordance with the City of Ottawa's 2006 Transportation Impact Assessment Guidelines. This Report was completed within the five years prior to the subject development (Buildings 500 and 600), and therefore, is believed to be valid, as per the City's 2006 Transportation Impact Assessment Guidelines. The following is to review the changes of density and confirm the 2012 Study findings.

3. DENSITY CHANGES

There are no changes to the proposed land uses for the subject site. The gross floor area (GFA) of Buildings 500 and 600 are similar to what was accounted for in the 2012 TIS Report. Exhibit 1 presents the changes of the density proposed in the October 9, 2014 Site Plan, compared to the density accounted for in the March 2012 TIS Report.

Exhibit 1 – Density Changes, October 9, 2014 Site Plan versus March 2012 TIS Report

Buildings	March 2012 TIS Report		October 9, 2014 Site Plan		Difference
	GFA (sq. ft.)	Phase	GFA (sq. ft.)	Phase	GFA (sq. ft.)
Building 200	41,213		40,811	Existing	
Building 700	20,663		20,643	Existing	
Buildings 300 and 400	95,000	Phase 1	100,831	Existing	
Sub-total	**156,876**		**162,285**		**5,409**
Building 500	124,491	Phase 2	102,524	Phase 2	
Building 600	40,119	Phase 2	60,304	Phase 2	
Building 100	17,500	Phase 2	17,557	Phase 2	
Sub-total	**182,110**		**180,385**		**-1,725**
Total	**338,986**		**342,670**		**3,684**

GFA = gross floor area

The changes are:

- An extra building area of 5,409 square feet has been built in Phase 1 including the existing buildings.
- A decrease of 1,725 square feet in building areas is proposed for Phase 2 (Buildings 100, 500 and 600).
- The entire commercial centre will have an increased building area of 3,684 square feet, compared to the density accounted for in the 2012 TIS Report.

4. TOTAL SITE-GENERATED VEHICLE TRIPS AND TRAFFIC IMPACTS

The total site-generated vehicle trips for the entire Hawthorne commercial centre were estimated based on the average rates for Industrial Park (ITE Land Use 130), published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (8th Edition), which is consistent with the 2012 TIS Study Report. Site traffic generation is presented in Exhibit 2 for the density accounted for in the 2012 TIS Report and the updated density in the October 2014 Site Plan. Similar to the 2012 TIS Report, a transit modal split of 10 percent was applied.

Based on the latest Site Plan, both the total AM and PM peak hour site-generated vehicle trips are only three (3) more trips, compared to the 2012 TIS Report. Three (3) vehicle trips resulting from the changes in the proposed density would be insignificant. Therefore, the findings in the assessment and recommendations in the 2012 TIS Report will be unchanged.

Exhibit 2 – Total Site-Generated Vehicle Trips, March 2012 TIS Report versus October 9, 2014 Site Plan

1). March 2012 TIS Report

Buildings	GFA	Adjustment	AM Peak Hour		PM Peak Hour	
	1000 sq. ft.	Factors	Trip Rate[1]	Total	Trip Rate[1]	Total
200, 300, 400 and 700	156.876		0.84	132	0.86	135
Transit		10%		13		13
Sub-total new vehicle trips				**119**		**122**
100, 500 and 600	182.110		0.84	153	0.86	157
Transit		10%		15		16
Sub-total new vehicle trips				**138**		**141**
Total new vehicle trips				**256**		**263**

Note: 1. Land use codes, trip rates or fitted curve equations, and directional split are per ITE Trip Generation, 8th Edition, which was applied in the March 2012 TIS Report. 2. GFA = gross floor area

2). October 9, 2014 Site Plan

Buildings	GFA	Adjustment	AM Peak Hour		PM Peak Hour	
	1000 sq. ft.	Factors	Trip Rate[1]	Total	Trip Rate[1]	Total
200, 300, 400 and 700	162.285		0.84	136	0.86	140
Transit		10%		14		14
Sub-total new vehicle trips				**123**		**126**
100, 500 and 600	180.385		0.84	152	0.86	155
Transit		10%		15		16
Sub-total new vehicle trips				**136**		**140**
Total new vehicle trips				**259**		**266**

Note: 1. Land use codes, trip rates or fitted curve equations, and directional split are per ITE Trip Generation, 8th Edition, which was applied in the March 2012 TIS Report.

5. PEDESTRIAN NETWORK REVIEW

EXISTING PEDESTRIAN NETWORK

Exhibit 3 presents existing pedestrian network adjacent to the subject site. These networks include:

Hawthorne Road:

- Paved sidewalks on the west side of Hawthorne Road, south of Russell Road.
- Sidewalks connecting to the two bus stops (northbound and southbound).

Russell Road:

- Paved sidewalks on both sides of Russell Road, west of Hawthorne Road.
- Paved sidewalks on the north side of Russell Road, east of Hawthorne Road.

Intersection of Hawthorne Road and Russell Road:

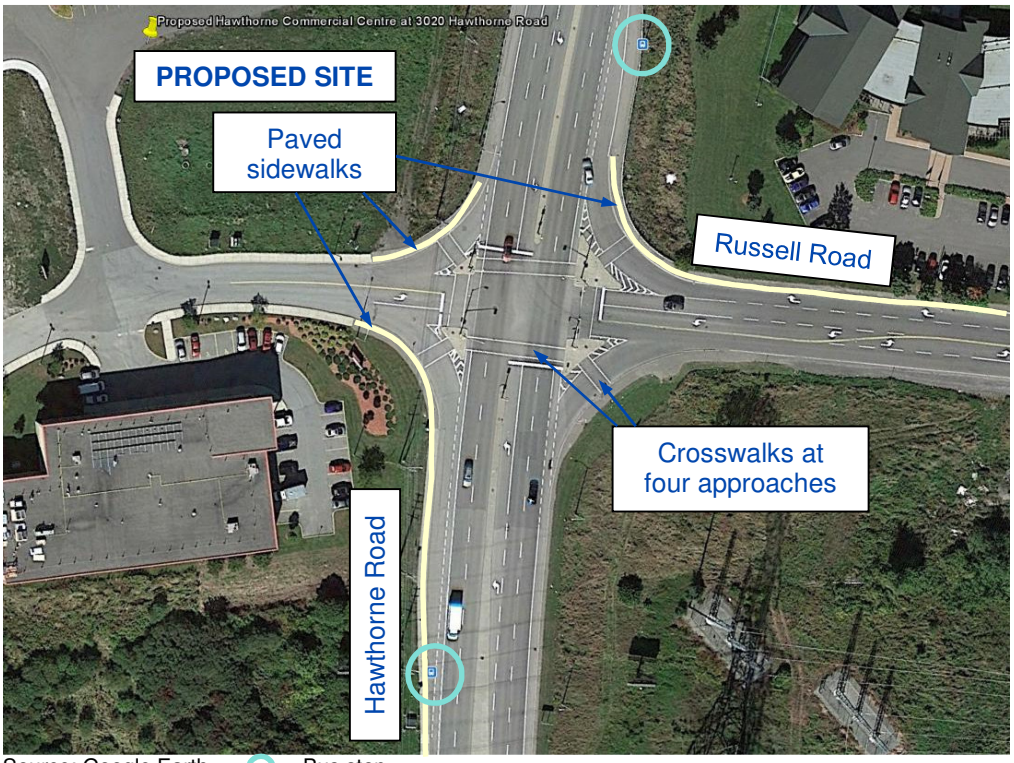
- Paved sidewalks on the northwest, northeast and southwest corners. The paved sidewalks at the northwest and northeast corners transition to the paved shoulders north of Russell Road.
- Crosswalks at the four approaches.
- Pedestrian crossing signals at the four intersection approaches, as shown in Exhibit 4.

FUTURE PEDESTRIAN NETWORK

Based on the City's 2013 Pedestrian Plan, no improvements for sidewalks are proposed adjacent to the subject site.

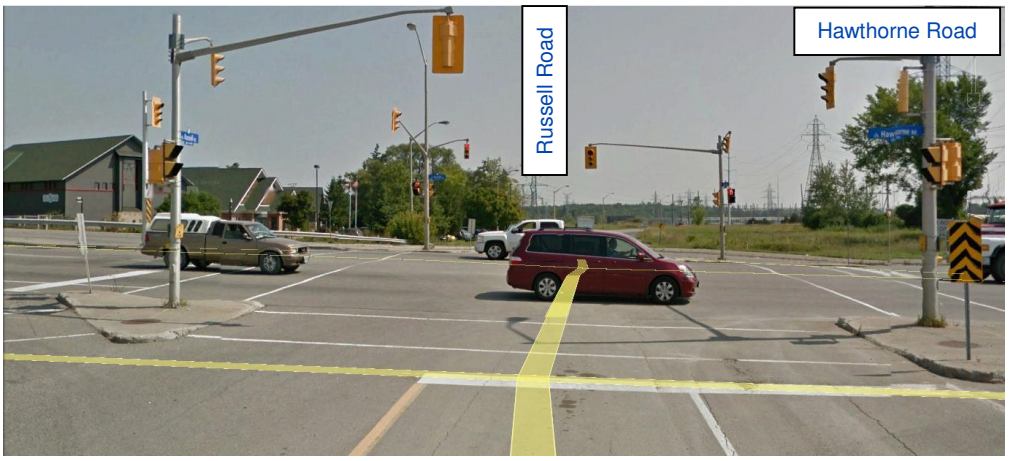
The subject site is located at a Light Industrial Planning Zone and is not expected to generate significant pedestrian volumes. East side of Hawthorne, from Russell Road to Hunt Club Road, has a rural cross-section and is dominated by a mix of light industrial and heavy industrial developments. The existing pedestrian network is sufficient in the industrial area.

Exhibit 3 – Existing Adjacent Pedestrian Network



Source: Google Earth. Bus stop.

Exhibit 4 – Existing Pedestrian Crossing Signals



ON-SITE PEDESTRIAN NETWORK

An on-site pedestrian circulation plan is provided in the Application submission package and is also provided in Appendix 2. As shown in the circulation plan, the existing on-site pedestrian network (completed in the previous phase) connects with the boundary pedestrian network. Pedestrian crosswalks and sidewalks are proposed on site for Buildings 500 and 600, connecting parking lots, building entrances and the existing on-site pedestrian network.

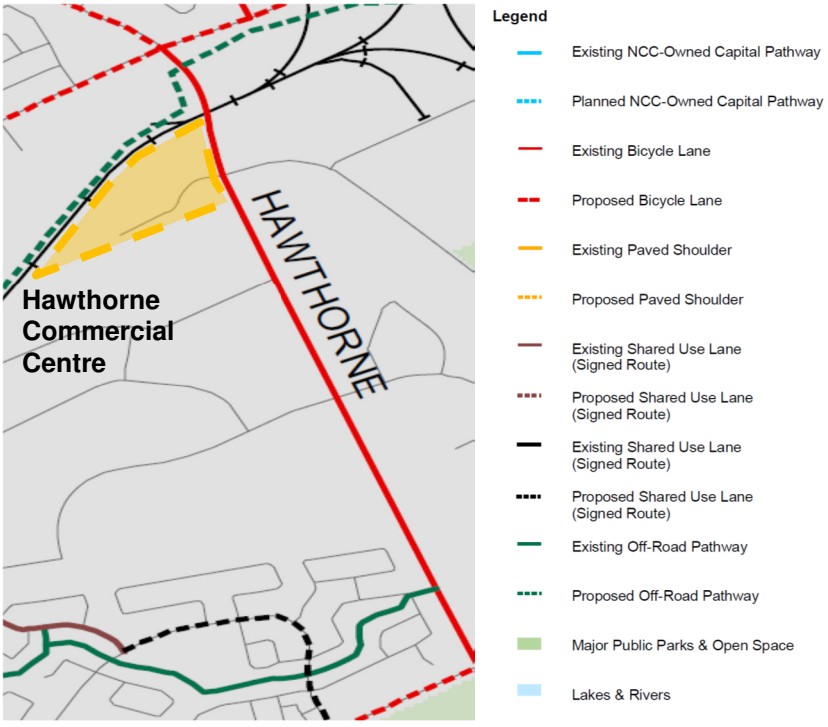
The on-site provision of pedestrian facilities and connectivity with the boundary pedestrian network are adequate.

6. CYCLING NETWORK REVIEW

EXISTING CYCLING NETWORK

Exhibit 5 presents Existing and Future Cycling Network adjacent to the subject site. Currently, Hawthorne Road has biking lanes on both sides south of Russell Road, south of the intersection of Hawthorne Road and Russell Road. The bike lanes are transitioned to the paved shoulder, from north of the intersection of Hawthorne Road and Russell Road to the intersection of Hawthorne Road and Walkley Road.

Exhibit 5 – Existing and Future Cycling Network



Source: City of Ottawa Cycling Plan January 2008 – Figure 3-5c.

FUTURE CYCLING PLAN

As shown in Exhibit 5, bike lanes are proposed on Walkley Road and Hawthorne Road north of Walkley Road, and off pathways are proposed along the rail corridor based on the City's 2008 Cycling Plan.

Based on the City's 2013 Cycling Plan, no additional improvements are proposed adjacent to the subject site.

Based on the proposed land use – General Industrial, not many employees are expected to travel by bike; however, should they choose the biking travel mode, the existing and future proposed bike facilities will be adequate to accommodate them.

7. CONCLUSIONS

The following conclusions are made:

- The 2012 TIS Study Report provided an assessment of transportation needs and impacts of future phases and full build-out of the proposed subject site. This Report was completed within the five years prior to the subject development (Buildings 500 and 600), and therefore, is believed to be valid, as per the City's 2006 Transportation Impact Assessment Guidelines.
- Based on the current Site Plan, the entire commercial centre will have an increased building area of 3,684 square feet, compared to the density accounted for in the 2012 TIS Report. The increase in density would result in three (3) vehicle trips in both the AM and PM peak hours, which would be insignificant.
- The impacts on the traffic assessment results, resulting from the changes in the proposed density would be negligible. Therefore, the findings in the assessment and recommendations in the March 2012 TIS Report will be unchanged:
  - The overall impact of the site-generated traffic on boundary intersections is negligible
  - Site-generated traffic can be accommodated by boundary roads without additional improvements beyond the area planned improvements - the Hunt Club Road extension from Hawthorne Road to the Highway 417 and the interchange with the Highway 417.
- The existing and future planned pedestrian and cycling networks adjacent to the subject site are sufficient given the type of the proposed developments and the industrial zoning area.
- An on-site pedestrian circulation plan is provided in Appendix. The on-site provision of pedestrian facilities and connectivity with the boundary pedestrian network is adequate.

Should you have any questions, please feel free to contact the undersigned.

Yours truly,

Don Stephens, P.Eng.
Discipline Lead, Transportation Planning
WSP | MMM
Tel: 613-736-7200 ext. 3247

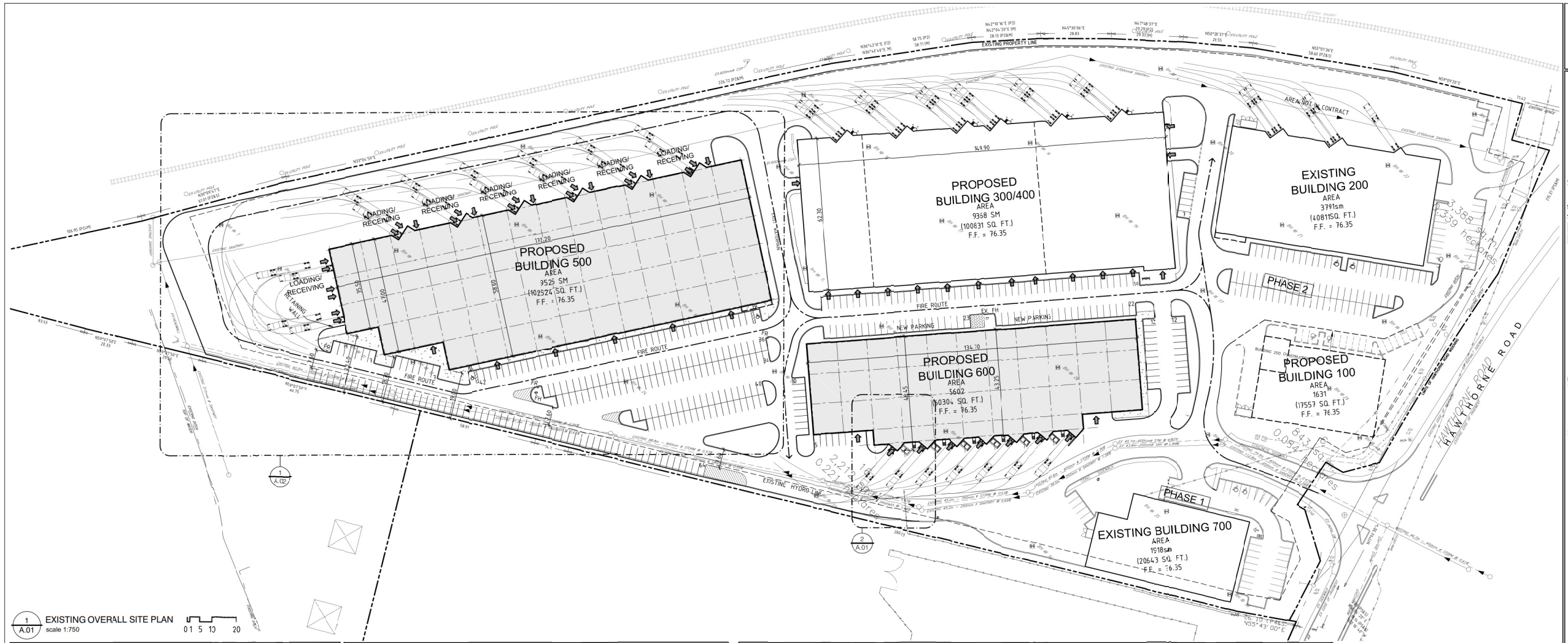
Thomas You, M.A.Sc., P.Eng.
Transportation Engineer
WSP
Tel: 1-905-475-7270 ext. 18294

Attachments:
Appendix 1: Proposed Site Plan
Appendix 2: On-site Pedestrian Circulation Plan

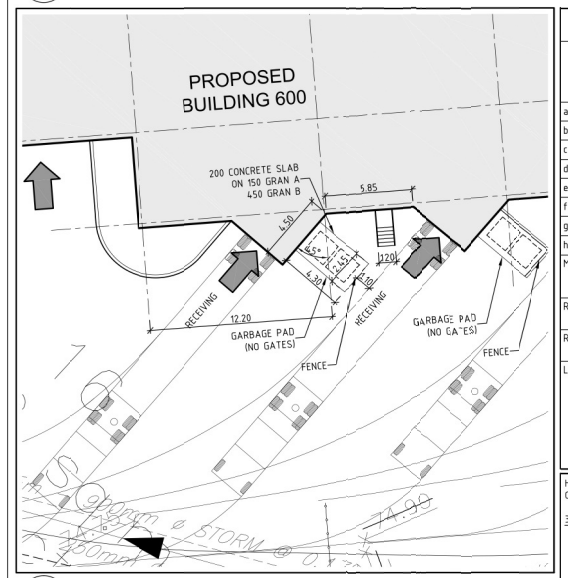
TY/ar

Appendix 1

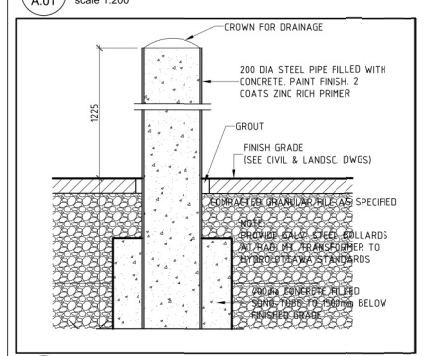
PROPOSED SITE PLAN



1 / A.01 EXISTING OVERALL SITE PLAN
scale 1:750
0 1 5 10 20



2 / A.01 PARTIAL SITE PLAN - BUILDING 600
scale 1:200



3 / A.01 STEEL BOLLARD - SECTION
scale 1:10

GENERAL INDUSTRIAL

II.	PROVISIONS	PROPOSED SITE PLAN DESIGN	COMPLIANCE DETAILS
a) Minimum Lot Area	2,000 m2	88 504.31 m2	Compliant with Zonning
b) Minimum Lot Width	no minimum	Irregular Lot	Compliant with Zonning
c) Maximum Lot Coverage	65%	36.41%	Compliant with Zonning
d) Minimum Front Yard	7.5m	Minimum 35m	Compliant with Zonning
e) Minimum Interior Side Yard	7.5m	3.0m	Compliant with Zonning
f) Minimum Rear Yard	3.5m	15m	Compliant with Zonning
g) Maximum Floor Space Index	2		Compliant with Zonning
h) Maximum Building Height	18n	9.5m	Compliant with Zonning
Minimum Width of Landscaped Area	i) abutting a street 3 m ii) abutting residential, institutional. 3m iii) other cases 0 m	provided 3.0m min.	Compliant with Zonning
Required Parking	Light Industrial Use (0.8/100 m2 gfa) - 70 Spaces required	76 Spaces Provided	Compliant with Zonning
Required Bicycle Parking	Light Industrial (1/1000 m2) - + spaces required	13 spaces provided	Compliant with Zonning
Landscape Provisions for Parking Lots	Landscape Buffer Width i) abutting a street 3 m ii) not abutting a street 1.5m Refuse Collection Areas i) 1.0 m from property line abutting a street ii) 3.0 m from other property lines iii) screened with minimum 2.0 m height Maximum 15% Landscaping around Parking Lots	5 m provided as per bylaw as per bylaw as per bylaw as per bylaw	Compliant with Zonning

HAWTHORNE COMMERCIAL CENTER : BUILDING 500
ONTARIO BUILDING CODE MATRIX

3.1 OCCUPANCY LOAD
BUILDING AREA = 9525sm
MAJOR OCCUPANCIES : INDUSTRIAL, BUSINESS & PERSONAL SERVICES OCCUPANCY
OCCUPANCY LOAD 9525sm @ 1/46sm = 207.06 (207) OCCUPANTS

3.2 CLASSIFICATION
MAJOR OCCUPANCY
GROSS FLOOR AREA = 9525sm
BUILDING ONE STOREY WITH NO BASEMENT.
GROUP F, DIVISION 2, UP TO 1 STOREY CONFORMING TO ARTICLE 3.2.2.70
UP TO 9600sm BUILDING AREA, 1 STOREY, SPRINKLERED (TABLE 3.2.2.70.B.)
COMBUSTIBLE OR NON-COMBUSTIBLE CONSTRUCTION.
LOAD-BEARING STRUCTURE SUPPORTINC AN ASSEMBLY REQUIRED TO HAVE A FIRE RESISTANCE RATING SHALL BE OF NON-COMBUSTIBLE CONSTRUCTION.

3.2.4 FIRE ALARM SYSTEM
SINGLE STAGE FIRE ALARM SYSTEM IS ?ROVIDED.

3.2.5 FIRE FIGHTING
FIRE ACCESS ROUTE IS PROVIDED ALONG 3 STREETS.
SIAMESE CONNECTION WITHIN 45 M OF ON SITE FIRE HYDRANTS

3.2.9 STANDPIPE SYSTEM
STANDPIPE NOT REQUIRED AS PER ART. 3.2.9.1.

3.3 SAFETY WITHIN FLOOR AREAS
2 MEANS OF EGRESS REQUIRED FOR ALL FLOOR AREAS (ART. 3.3.1.5 (1C))
JANITORS' ROOMS REQUIRED TO BE A 0 HOUR FIRE SEPARATION.

3.4 EXITS
MAXIMUM TRAVEL DISTANCE : 45M (ART. 3.4.2.5)
EXIT CAPACITY CALCULATIONS: EXITS PROVIDE SUFFICIENT CAPACITY BASED ON EACH 900MM WIDE LEAF PROVIDING EXI" CAPACITY OF 135 PERSONS.

3.6 SERVICE FACILITIES
NO FUEL FIRED APPLIANCES.

3.7 PLUMBING FACILITIES
SUBJECT TO TENANT FIT-UP

3.8 BARRIER FREE DESIGN
BARRIER FREE ACCESS PROVIDED

HAWTHORNE COMMERCIAL CENTRE: Building 600
ONTARIO BUILDING CODE MATRIX

3.1 OCCUPANT LOAD
BUILDING AREA = 5542sm
MAJOR OCCUPANCIES: INDUSTRIAL, BUSINESS & PERSONAL SERVICES
MANUFACTURING SPACES DESIGNED FOR XX OCCUPANTS
TOTAL OCCUPANT LOAD = 5542sm @ 1/46sm = 120.47 (121) OCCUPANTS

3.2 CLASSIFICATION
MAJOR OCCUPANCY - GROUP F, DIVISION 2
GROUND FLOOR AREA - 5602sm
PROPOSED BUILDING ONE STOREY WITH NO BASEMENT.
CONFORMING TO GROUP F, DIVISION 2, UP TO 1 STOREY, ARTICLE 3.2.2.73
COMBUSTIBLE OR NON-COMBUSTIBLE CONSTRUCTION PERMITTED
LOAD-BEARING STRUCTURE SUPPORTING AN ASSEMBLY REQUIRED TO HAVE A FIRE RESISTANCE RATING SHALL BE OF FIRE RATED TO NOT LESS THAN SUPPORTED ASSEMBLY.

3.2.3 SPATIAL SEPARATION (TABLE 3.2.3.1D)

EXPOSURE:	AREA	RATIO	LIMITING DISTANCE	ALLOWABLE OPENING	PROPOSED	FRR
SOUTH	sm	N/A	m	100%		0HR
NORTH	sm	N/A	m	100%		0HR
EAST	sm	N/A	m	100%		0HR
WEST	sm	N/A	m	100%		0HR

3.2.4 FIRE ALARM SYSTEM
SINGLE STAGE FIRE ALARM SYSTEM IS PROVIDED.

3.2.5 FIRE FIGHTING
FIRE ACCESS ROUTE IS PROVIDED TO PRINCIPAL ENTRANCE.
SIAMESE CONNECTION WITHIN 45m OF MUNICIPAL FIRE HYDRANT.

3.2.9 STANDPIPE SYSTEM
STANDPIPE NOT REQUIRED AS PER ART. 3.2.5.1.

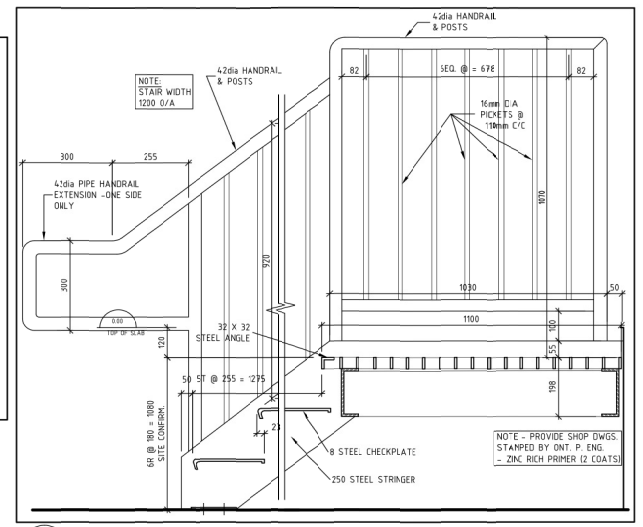
3.3 SAFETY WITHIN FLOOR AREAS
2 MEANS OF EGRESS REQUIRED FOR ALL FLOOR AREAS (ART. 3.3.1.5 (1C))

3.4 EXITS
MAXIMUM TRAVEL DISTANCE: 45m (ART. 3.4.2.5)
EXIT CAPACITY CALCULATIONS: EXITS PROVIDE SUFFICIENT CAPACITY BASED ON EACH 900MM WIDE LEAF PROVIDING EXIT CAPACITY OF 139 PERSONS.

3.6 SERVICE FACILITIES
NO FUEL FIRED APPLIANCES

3.7 PLUMBING FACILITIES
SUBJECT TO TENANT FIT-UP

3.8 BARRIER FREE DESIGN
BARRIER FREE ACCESS REQUIRED



4 / A.01 EXTERIOR STEEL STAIR - SECTION
scale 1:10

PROJECT DATA

1. LEGAL DESCRIPTION
PART OF LOT 1, CONCESSION 5 (RIDEAU FRONT), PART OF LOT 1 CONCESSION 6 (RIDEAU FRONT) AND PART OF THE ROAD ALLOWANCE BETWEEN CONCESSIONS 5 AND 6 (RIDEAU FRONT).
CLOSED BY BY-LAW 75-50 0 INST. OT1573)
FORMERLY IN THE GEOGRAPHIC TOWNSHIP OF GLOUCESTER
NOW IN THE CITY OF OTTAWA

2. SURVEY INFORMATION
SURVEY INFORMATION PREPARED BY:
GREGORY J. HARTWICK, O.L.S.
29 MARCH 2004

SITE LEGEND

FH	FIRE HYDRANT
DC	DEPRESSED CURB
	CONCRETE CURB
	UNIT PAVERS
	CONCRETE WALK
CB	CATCH BASIN
MH	MAN HOLE
BH	BORE HOLE
LS	LIGHT STANDARD
W.L.	WALL MOUNT LIGHT FIXTURE
WL	WALL MOUNTED LIGHT
PP	POWER POLE
GP	GUARD POST
SN	SIGN
88x25	EXISTING GRADE
G	GAS METER
HC	HANDICAPPED PARKING SIGN
FR	FIRE ROUTE SIGN

NOTES:
1. SEE SIT: SERVICES, ELECTRICAL & MECHANICAL DRAWINGS FOR UNDERGROUND UTILITIES LINES AND FOR NEW GRADING. EXCAVATE, BACKFILL & PROVIDE CONCRETE TO REQUIREMENTS OF MECHANICAL, ELECTRICAL & SITE SERVICES DRAWINGS AND SPECIFICATIONS AND TO REQUIREMENTS OF AUTHORITIES HAVING JURISDITION.
2. PROVIDE 0.5M RADIUS FOR CONCRETE CURBS UNLESS OTHERWISE NOTED

NO.	ISSUE & REVISIONS	DATE
3.		
2.		
1.		

SEAL

Not for construction unless SEALED and SIGNED.

PROJECT NORTH
TRUE NORTH

P&R
PYE & RICHARDS ARCHITECTS INC
824 MEATH STREET OTTAWA ONTARIO K1Z 6R8
TEL: 613 724-7700 FAX: 613 724-1889
EMAIL: info@pyeandrichardsarchitects.com
WEBSITE: www.pyeandrichardsarchitects.com

PROJECT
HAWTHORNE COMMERCIAL CENTRE
BUILDING 500
200 - 3020 HAWTHORNE ROAD OTTAWA

DRAWING
SITE PLAN

DO NOT SCALE, REFER ANY DIMENSIONAL ERRORS AND/OR POSSIBLE TRADE INTERFERENCE/ CONFLICT TO THE ARCHITECTS FOR CLARIFICATION PRIOR TO COMMENCEMENTS OF THE WORK. THE CONDITIONS OF THE CONTRACT APPLY.

PROJECT NO.	13-17
SCALE:	AS NOTED
DRAWN:	F. D.
CHECKED:	D. M.
PLOT DATE:	05 Mar. 2014

DRAWING NO.
A.01
REVISION NO.

Appendix 2

ON-SITE PEDESTRIAN CIRCULATION PLAN

1 / A.01 EXISTING OVERALL SITE PLAN
scale 1:750

0 1 5 10 20

CONTROLEX

PEDESTRIAN SIDEWALKS LEGEND

- EXISTING SIDEWALKS
- PROPOSED SIDEWALKS
- PROPOSED SIDEWALKS FOR PHASE WORK ON BUILDING 500
- PROPOSED SIDEWALKS FOR PHASE WORK ON BUILDING 600

NO.	ISSUE & REVISIONS	DATE
1	REVIEW	

SEAL

Not for construction unless SEALED and SIGNED.

PROJECT NORTH

TRUE NORTH

PYE & RICHARDS ARCHITECTS INC.
824 MEATH STREET OTTAWA ONTARIO K1Z 6X8
TEL: 613 724-7700 FAX: 613 724-1289
EMAIL: info@pnrarch.com
WEBSITE: www.pnrarch.com

PROJECT

HAWTHORNE COMMERCIAL CENTRE

BUILDING 500/ 600

200 - 3020 HAWTHORNE ROAD OTTAWA

DRAWING

SITE PLAN

PEDESTRIAN CIRCULATION

DO NOT SCALE, REFER ANY DIMENSIONAL ERRORS AND/OR POSSIBLE TRADE INTERFERENCE/ CONFLICT TO THE ARCHITECTS FOR CLARIFICATION PRIOR TO COMMENCEMENTS OF THE WORK. THE CONDITIONS OF THE CONTRACT APPLY.

PROJECT NO.	13-17
SCALE:	AS NOTED
DRAWN:	F. D.
CHECKED:	D. M.
PLOT DATE:	19 Mar. 2015

DRAWING NO.

A.P01

REVISION NO.