Application
to the

James D. MacConnell Award

Project Dossier
for

Barrie North Collegiate Institute Academic Resource Commons (ARC), Cafeteria, Classroom Wing Addition and Interior Renovations

Association for Learning Environments

Barrie North Collegiate Institute – Academic Resource Commons (ARC), Cafeteria, Classroom Wing Addition and Interior Renovations

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Tab 1

1.0 - Executive Summary

Barrie North Collegiate Institute – Academic Resource Commons (ARC), Cafeteria, Classroom Wing Addition and Interior Renovations - Barrie, Ontario

1.0 - Executive Summary:

Barrie North Collegiate Institute is a public secondary school located in Barrie, Ontario, Canada. It was established in 1957 as part of the Simcoe County District School Board in southern Ontario.

In early April 2015, **Kingsland** + Architects Inc. were commissioned to provide architectural services for the sixth phase at the school since 2007. The decision had been made to close one of the other older schools and to continue to upgrade Barrie North to accommodate the students from the school that was to be demolished. We were informed the school needed 11 new classrooms, a larger library for the size of the school population, and an ASD classroom / suite.

Kingsland + has just completed the eighth phase. For the purposes of this award entry, we will focus on the most recent additions and modifications to the existing school and site completed in 2017 mentioned above as the sixth phase, a phase that was considerably more eventful, impactful and effective in meeting the Board's long-range objectives.

Tab 2

2.0 - Scope of Work and Budget

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The revised program of work for the 2017 addition, renovations and site work included a new academic resource commons (affectionately referred to as the ARC), a new cafeteria/study hall, that was eventually included into the ARC program through the outcome of the design process, a 9-classroom addition, down from the original 11, that included a new Art Room c/w kiln room, and supporting washrooms and ancillary spaces, complete renovations to the existing Cosmetology Classroom and Comm. Tech. Classroom c/w green screen, and site improvements such as additional tree and bed planting to satisfy the requirements of the City of Barrie's Site Plan Approval process.

The existing library was converted into ASD Rooms to compliment previous renovations to the 3 classroom Special Ed wing.

The existing art room was given up to a second floor connecting corridor to the ARC addition with the remaining space dedicated to a teacher's work room and AHU Room.

The existing exercise room was temporarily moved to the stage off the gym and the stage was renovated after the equipment was moved back to a renovated exercise room.

Final Cost:	$8,651,993.00
Tendered Cost:	$8,777,000.00
Project Budget:	$8,777,000.00

Tab 3

3.0 - School and Community Engagement

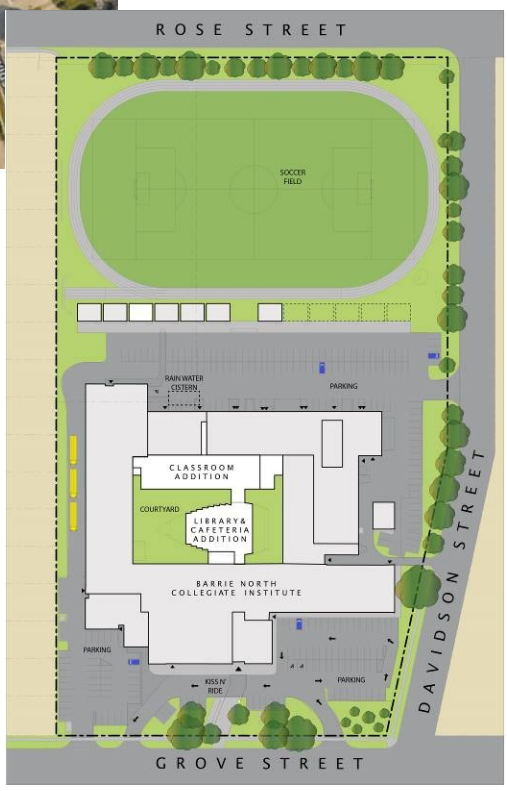
3.0 - School and Community Engagement:

Description of the Community:

Barrie North C.I. is located in an older, quiet, suburban neighbourhood of Barrie that dates back to the 50's. The school site, bounded on three sides by city residential streets, is completely consumed by the large two storey high school building, playing field and running track, and of course, parking.

Stakeholders:

The potentially affected stakeholders of the BNCI project were the staff and students of the school, the Simcoe County District School Board and it's Trustees, the surrounding community residents and interest groups, and the City of Barrie.



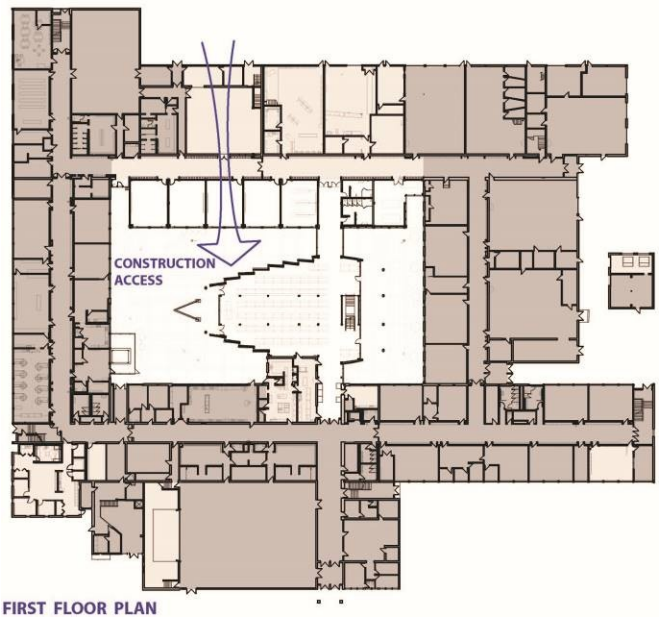
Challenges:

Any amount of addition to the outside perimeter of the building was an extreme challenge. That challenge was completely overcome by thinking of expansion inwards rather than outwards. The resulting partial infill of the quadrangle/courtyard, despite the size of the additions, created little or no impact on the local residents as they were not able to see the construction happening nor hear much noise due to the nature of the structure being built within the quadrangle.

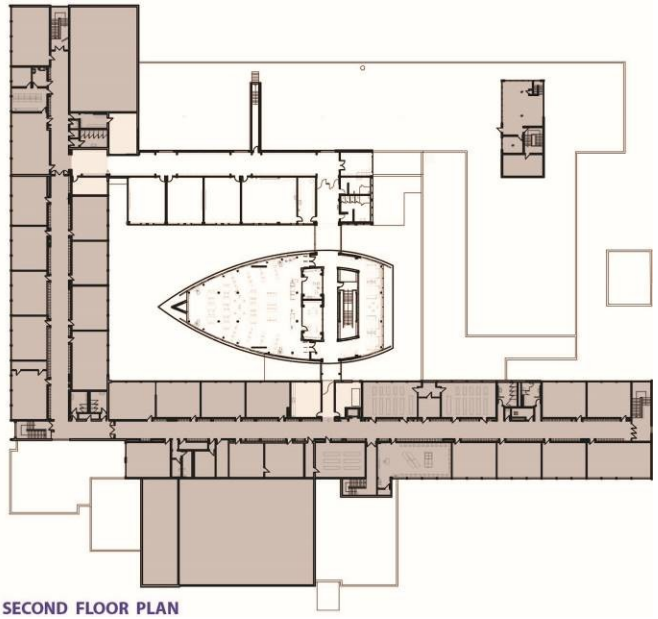
The greatest challenge for the community's utilization of the facility assets and opportunities is knowing they even exist. You can't simply drive by and think, "Hey, I wonder if we can rent that space?", because being within the quadrangle of the school, it is not visible. This requires the school or School Board to make the public aware of the facility's offerings, prospects and resources.

Barrie North has hosted numerous public speaking events open to the community, featuring keynotes such as David Suzuki, Margaret Atwood, Jay Ingram, Romeo Dallaire and Craig Kielburger. It was also the first Ontario high school to hold a major Writer's Conference for students and the public in May 2008, run by the iDeology students. Many community groups always have and will now even more so continue to take advantage of the opportunities the facility has to offer. It is treated as a truly beneficial asset to the community.

From a design and construction standpoint, the greatest challenge was determining how access to the quadrangle would be achieved. Once the challenge of determining where the programme would materialize, the challenge was how to construct the additions within the courtyard with a shop wing that was 1.5 storey's high. In order to provide access to the courtyard and maintain the required exiting for the school, which was to remain occupied during construction, a temporary construction access was constructed through the school from the parking lot. Existing services that could not be disconnected or relocated proscribed the removal of the roof structure. The solution was to provide openings large enough for small construction vehicles, from the north parking area, through the exorcise room, across a corridor, and into the courtyard. Finishes were removed or protected. A new temporary exit was created from the second floor. This took 4 months to complete (just to create the access) and to ensure all fire access, travel distance, and building code conditions and requirements were met.



FIRST FLOOR PLAN

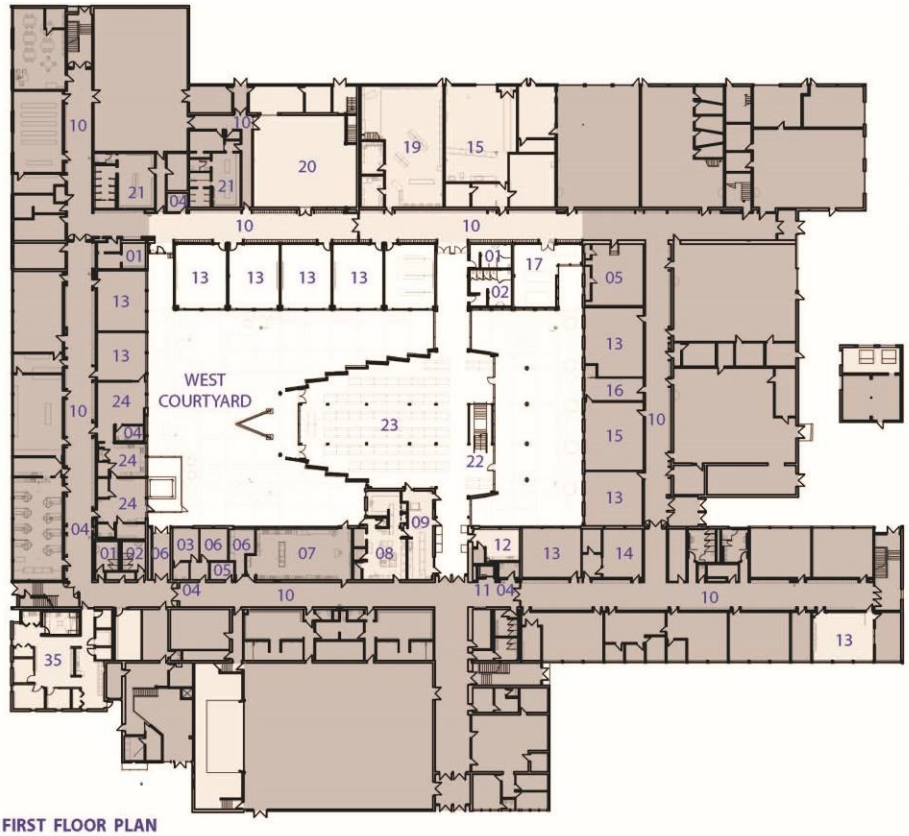

SECOND FLOOR PLAN

It was envisioned that the steel structure and concrete pours would happen via crane and that the rest of the construction access would happen through the building. This construction access created exiting and fire protection issues that had to be dealt with once the corridor was severed. It meant that a few of the tech classrooms on the north side could only access their rooms from the outside. It meant that the existing weight room would need to be moved somewhere, and the stage in the gym was the most logical place.

Construction of the additions started the following May (2016) and we received substantial Performance in November 2017.

Description of Assets:

A small circular single storey cafeteria in the centre of the courtyard was demolished to make way for a new 2 storey Academic Resource Commons (ARC) with cafeteria / study hall space below and new library, office and meeting room and student study hall and lounge above. Additional student washrooms, storage rooms and renovated servery were included. A connecting link between the north and south sides of the school on both levels and a feature stair connecting the upper study areas to the lower study areas within the ARC connected and centred the ARC as the central organizing principal space within the school as a whole.



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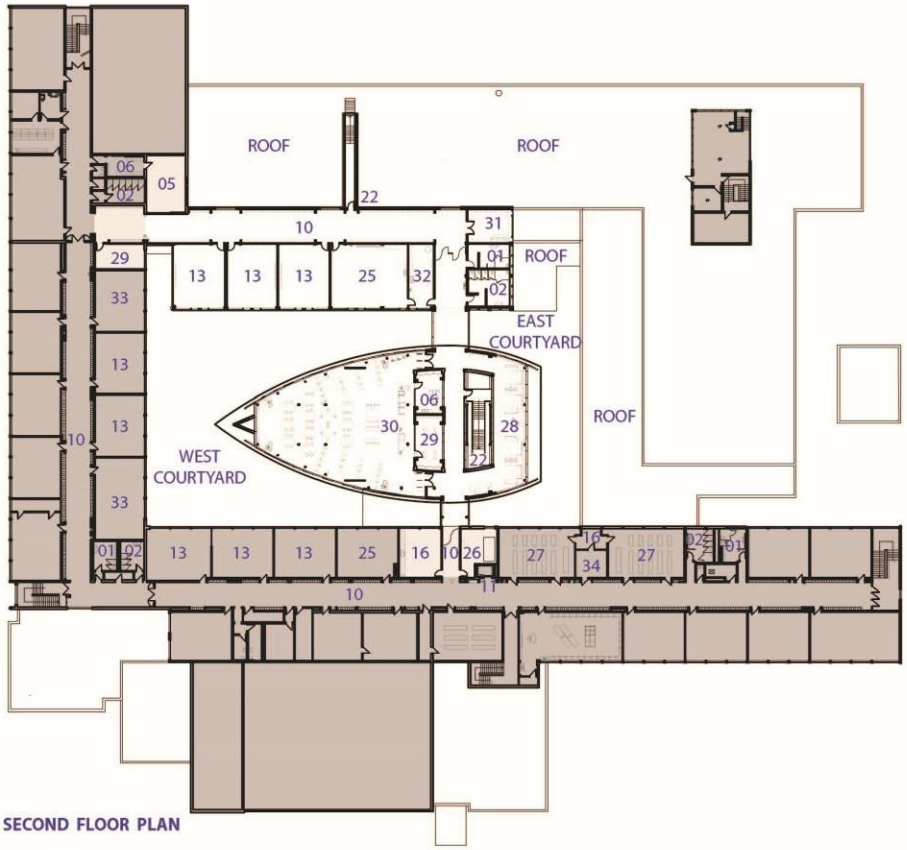


SECOND FLOOR PLAN

LEGEND

01 - BOYS' WASHROOM
02 - GIRLS' WASHROOM
03 - CUSTODIAN
04 - WASHROOM
05 - MECHANICAL
06 - OFFICE
07 - FAMILY STUDIES
08 - KITCHEN
09 - SERVERY
10 - CORRIDOR
11 - ELEVATOR
12 - STAFF ROOM
13 - CLASSROOM
14 - RESOURCE ROOM
15 - COMM. TECH
16 - WORK ROOM
17 - MECH./ELECT.
18 - TRANSPORTATION
19 - COSMETOLOGY
20 - EXERCISE ROOM
21 - CHANGE ROOM
22 - STAIR
23 - CAFETERIA
24 - LIFE SKILLS ROOM
25 - ART ROOM
26 - AHU ROOM
27 - SCIENCE LAB
27 - SCIENCE CLASSROOM
28 - LOUNGE
29 - SEMINAR ROOM
30 - LIBRARY
31 - ACADEMIC STORAGE
32 - KILN/STORAGE
33 - COMPUTER ROOM
34 - PREP ROOM
35 - ASD SUITE

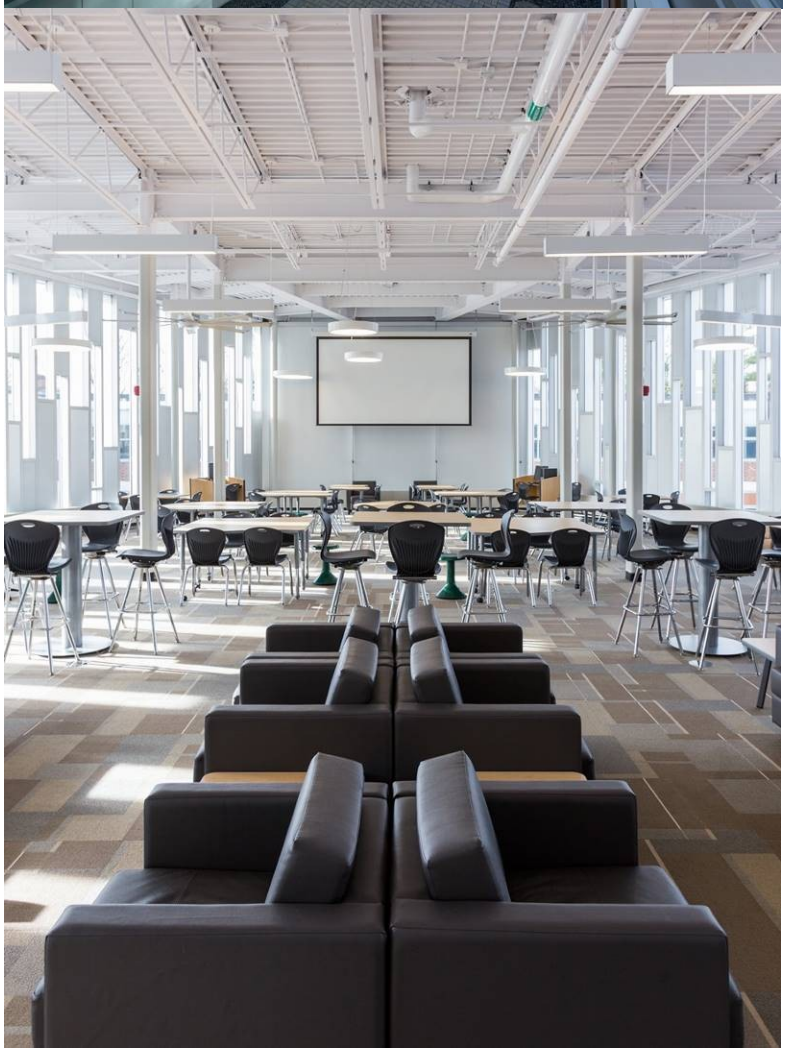
EXISTING BUILDING
INTERIOR RENOVATIONS/ ALTERATION
NEW CONSTRUCTION/ ADDITION

The shape of the ARC was more ergonomic than metaphorical. Although the metaphor reminiscent of Noah's calling is quite poignant, and the school's football team happens to be named the Vikings, which students saw as not simply a coincidence and had nicknamed the structure as it was being erected, the 'Viking Ship', it's shape was more designed for efficiency, comfort and environmental orientation, a result of an organic process of analysis.

Barrie North Collegiate Institute

We studied the size of the courtyard, the proximity of the addition to the surrounding classrooms and were looking to maximize the amount of natural daylight to each of the classrooms and the ARC. At the same time, we were looking to avoid the fishbowl effect of direct visual connection between students in the ARC and immediately adjacent classrooms. Within, the shape provides a direction to a focalized end whereby assemblies easily find the most suitable orientation for viewing and arranging seating.

The two-storey classroom addition not only added much needed teaching space to the existing school but did so in a way that made the single loaded corridor on the ground floor more efficient and connected the second floor of the north-west corner of the building with the second floor of the north-east corner of the building to make circulation around and through the school logical, efficient and complete.



Once the learning materials were moved from the existing library, that space was then renovated into what is now the ASD Suite. The new ASD Suite features a separate entrance from the parking lot and includes office spaces, resource rooms, laundry facility and barrier-free washroom.

Along the north side of the school the existing Cosmetology Classroom and Comm. Tech. Classroom were completely renovated as was, of course, the weight room that had facilitated the construction access during construction.

Tab 4

4.0 - Educational Environment

4.0 - Educational Environment:

Educational Vision and Goals:

The programme for additions and renovations to the existing school was due to it now having an extra 350 students enrolled who were transferred from the now-closed Barrie Central Collegiate Institute (circa 1919) slated for demolition. The School Board decided that it was in the Board's best interest to take the existing assets of Barrie North C.I. and improve and develop them rather than keep the two schools operating inefficiently.

How the Environment Supports the Curriculum:

Initially when presented with the required programme it was suggested that we look at an extension to one of the exterior corners of the building and add an addition towards one of the property lines towards the street for the classroom addition. Several trials proved this suggestion to be ineffective. The library addition seemed to make sense in the courtyard above the existing cafeteria.

While exploring the courtyard with the library addition, we further explored the idea that perhaps all the classrooms could be located within the courtyard as well, along the north corridor of the technical shop wing of the building, as the shops were using an inefficient single storey, single loaded corridor for access. All programme criteria seemed to fit within the courtyard and so that is the design direction that developed into what we see today.

We believe converting the old library into the New ASD classroom was successful from a programming and logistic point of view particularly as the size of space was appropriate and that the existing Special Education classrooms, being adjacent, would benefit greatly by it's proximity as a hub.

We were able to reduce the need for 11 additional classrooms down to 9 which we located along the courtyard side of the north corridor. We were able to take advantage of the inefficient single-loaded corridor along that side of the building servicing the technical shop classrooms. That north corridor is now double loaded on the ground floor and two storeys high connecting the upper level of the East and West side of the building. The two storey quadrangle was complete.

How the Environment Supports a Variety of Learning and Teaching Styles Through Adaptability and Flexibility:

The landscaping of the courtyard was intended to reinforce the space and turn it into a place, an extension of the cafeteria/study area, or to be used as an outdoor classroom, with the coloured pavers, large stones and some greenery (but not too much to become a maintenance burden). The intention was to make the courtyard an extension of the cafeteria/study hall space for not only the students during the day but as a community asset evenings and weekends for private and public functions. We imagined community groups, town halls and even weddings and/or wedding receptions taking advantage of the space both inside and out. Already, semi-formals for the students have taken place at the ARC. Further flexibility and adaptability was encouraged by reducing the amount of fixed book shelves and furniture in the library and leaving the other study halls open with loose tables and seating only to encourage adaptability and flexibility.

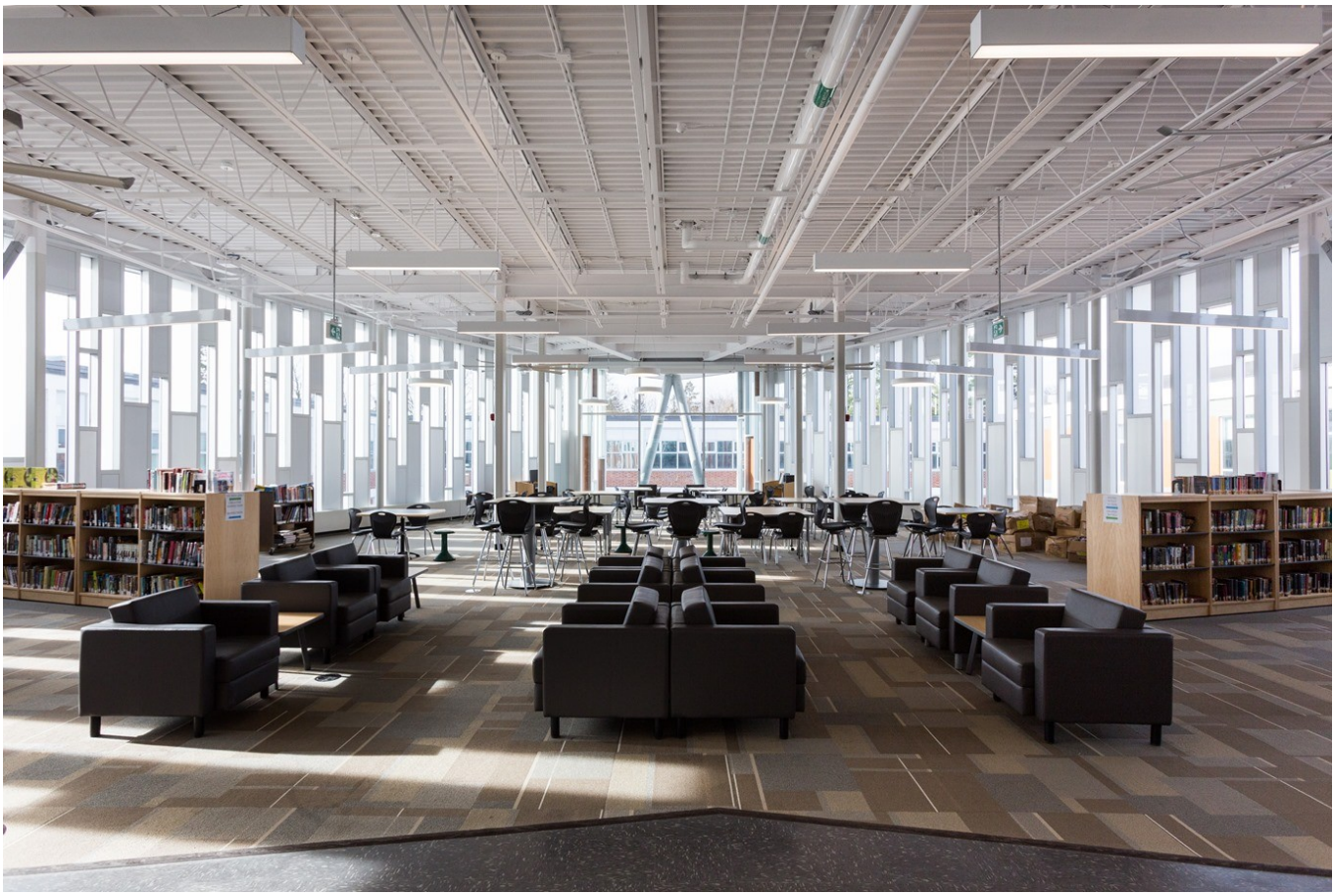
Tab 5

5.0 - Physical Environment

5.0 - Physical Environment:

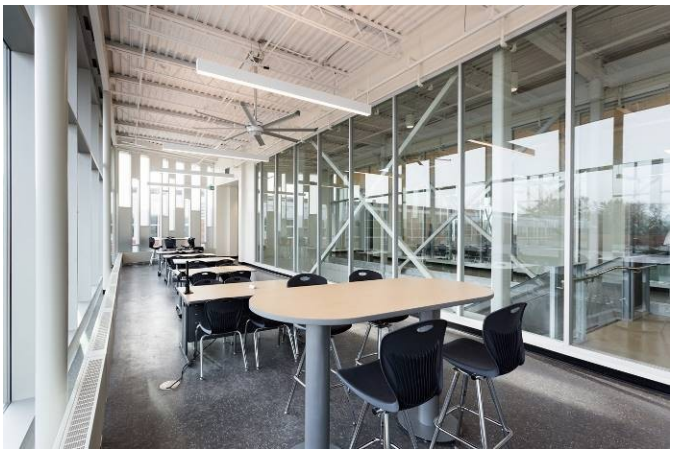
The Physical Attributes: The defining traits or features

Form/shape – When the shape of the ARC was determined, mostly due to the attempt to maximize the amount of natural daylight to the ARC and classrooms alike, while looking to avoid the fishbowl effect, the vertical, random nature of the upper fenestration allowed for views out and sunlight in but also reduced the amount of discomfort from too much visual exposure. This affect was enhanced by the nature of the composition of the curtainwall façade that consisted of vertical bands of varying heights of opaque spandrel, translucent glass, and clear glass panels.

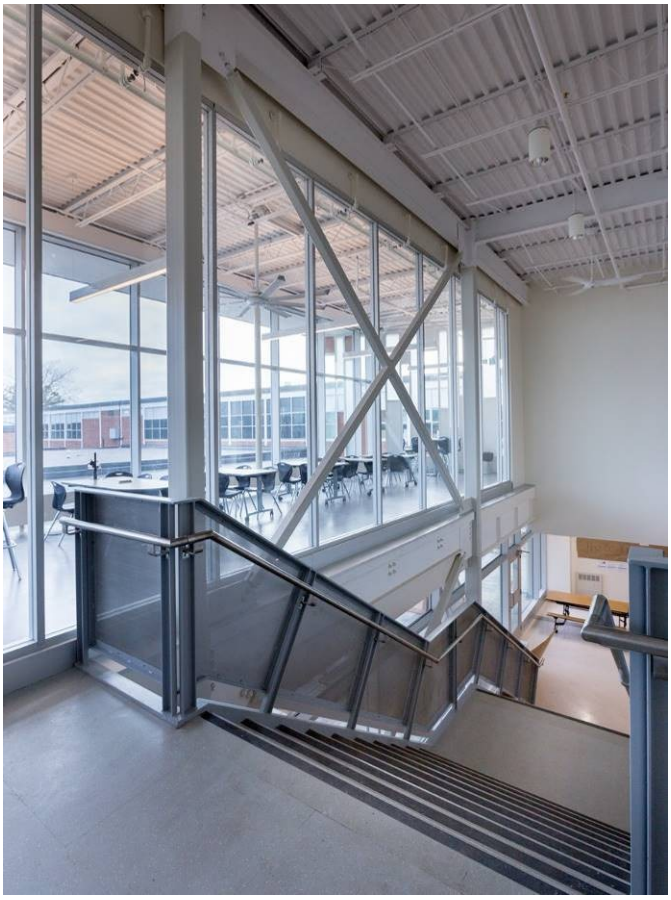


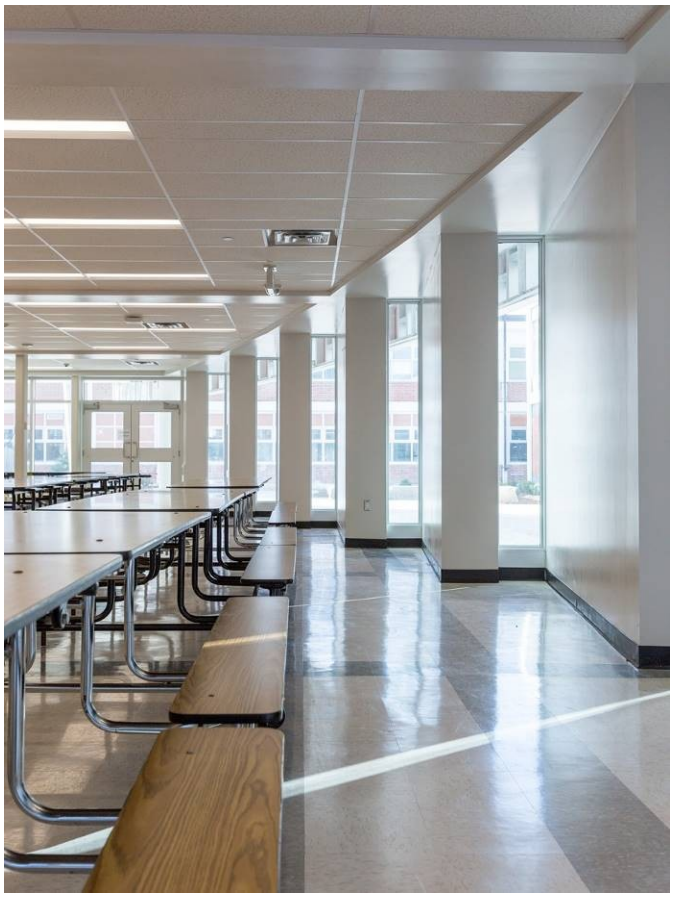
The airy, lofty and light industrial look of the library and upper study hall office and meeting rooms, with exposed structure, provides an uplifting sense of grandeur. Natural light floods the space limiting the need for artificial lighting for darker winter days and evenings.

Views through each space, from library through meeting rooms, across corridors and stairs reinforces the openness of the plan despite the physical boundaries of walls and building code compliances. One can see through the full length of the ARC from west to east.



The lower level of the ARC consisting of the cafeteria / study hall, has a completely different feel. It is serene and almost art gallery like. The saw-tooth façade provides relief of visual distraction for the adjacent classrooms, provides views and natural light while still providing large wall planes like blank canvasses ready for art, presentations or projected images.





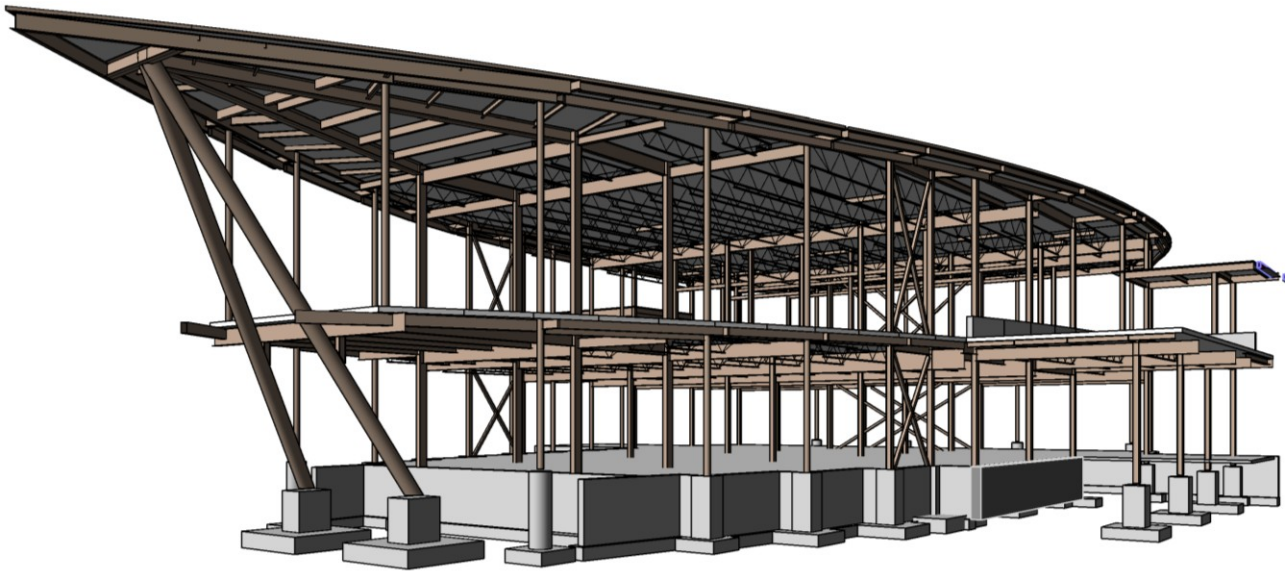
Students need to find places to sit and work independently or in small groups. The design was conscious of this need and offers the nooks and small or large places to hide or gather socially, inside and out, always flooded with natural light, and afforded views.

Modern mimicking of the existing ‘60’s façade – line, colour and proportion

The facades of the two additions, the classroom wing and the ARC, were intentionally designed to mimic the existing ‘60’s façade in colour, proportion and fenestration but with a contemporary twist that follows the edict of form follows function. The borrowing of those design elements, the lines, colours, forms, and shapes of the existing building, was taken liberally. As a result, the additions have a sense of belonging, a strong level of connection between the old and the new. It was intentional for the design of the ARC to be a feature space within the courtyard with new lines, shapes and forms.

Structure – a light weight steel structure was proposed

The structure of the ARC consists of structural steel frame supporting concrete on deck floor diaphragms. The west side of the building 2nd floor and roof are supported by two sloping HSS sections which come to an intersecting point at the roof level. The horizontal reactions within the floor diaphragms resulting from the sloped columns are resolved into internal braced frames to provide stability to the overall structural system.



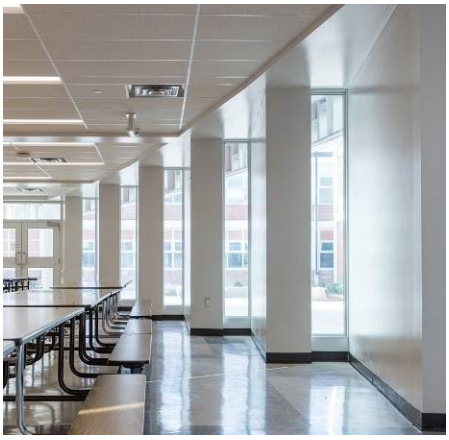
Indoor Environment

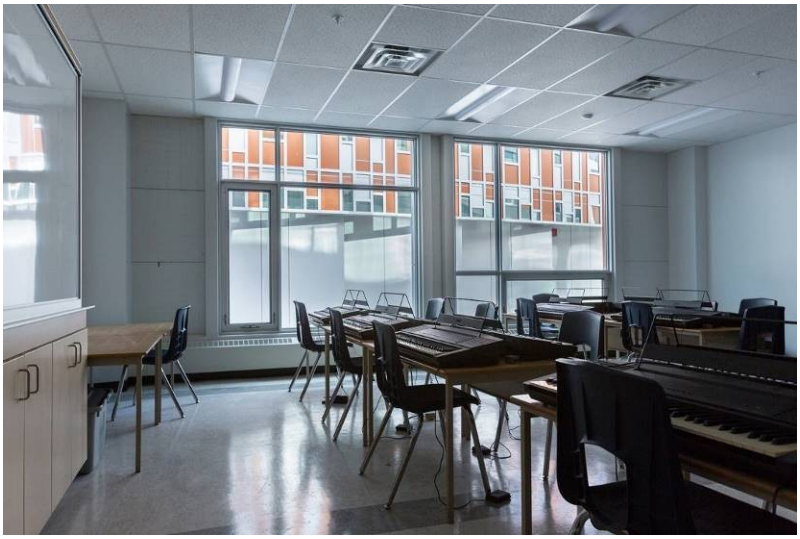
Natural daylighting strategies, air movement and air quality

In general, we believe one of the most important philosophies we engage in the design of our school buildings, to enhance the learning experience of the students, is the implementation of natural daylighting strategies. We know that high performance or holistic design can have a positive effect on health and comfort, and design strategies such as daylighting have been shown to enhance productivity. Good indoor air quality is essential for the health of the user. Creating an environment that is healthy, stimulating and which has been proven to positively affect productivity and reduce absenteeism is, in our estimation, a prerequisite. We have found air movement to be critical to good indoor air quality, so, high-volume, low-speed fans were installed at BNCI as part of our sustainability design strategy. Not only do the rooms feel less stuffy, but from both a comfort and economical sense, the breeze they generate creates a cooling effect of 10°F (5.5°c) in summer and de-stratifies the air in tall spaces such as what we have in the library, stair and study hall, in winter. The suggested result is up to 30% reduction in the heating and cooling costs and the occupants are more comfortable.

Views inside and out.

The juxtaposition of the ARC against the existing and new classroom wings creates interesting visual relationships from outside and from within. The wide-open views of the picture windows provide a stimulating contrast from the narrow vertical openings of view from the ground floor and second floor.





How does BNCI fit within the larger context of the community?

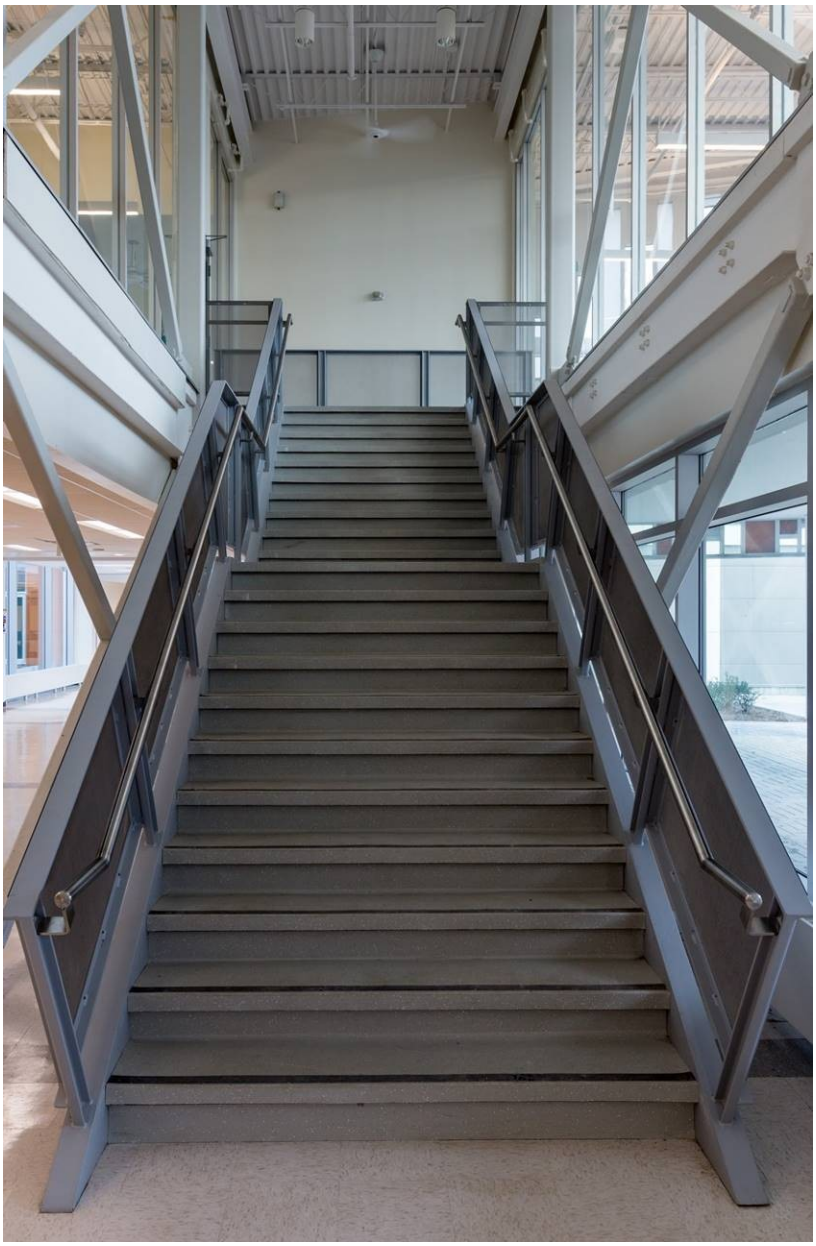
The BNCI intervention has had no impact on the larger context of the community. The surrounding neighbourhood is all one storey bungalows and since the entire project was an infill, the additions cannot be seen from any of the three residential streets that the school fronts or backs onto. However, through the School Board's **Community Use of Schools** program, spaces are available outside of school hours for not-for-profit community groups. The gyms, field, auditorium and classrooms are available for sporting events, concerts, recitals and more, and the ARC has provided more options as a community asset.

How does BNCI Inspire and Motivate?

We always endeavour to make the spaces we design as stimulating, exciting and as attractive as the budget will allow using common materials in interesting ways. We try to imagine the student's involvement, participation in, and contact with our buildings. We try to expose them to ideas and concepts through the engagement of their senses, through observation, awareness and insight. Schools are not simply teaching facilities, they are learning facilities, and the building, it's interior and its site must be as responsible in the education of an individual's mind as the teachers and programs provided within.

We play with forms, shapes and colours in the process of designing our schools. We believe in being playful. We want children and especially teenagers and young adults to be excited about the environment they spend more than half of their waking hours residing in. The playful interaction of parts was accentuated by the use of different materials and planes. Colour on the exterior was crucial and was also a key ingredient in attempting to make the building more fun and to fit the existing environment.

We engage our philosophies into both the interiors and exteriors, the rooms and the playgrounds. We see foyers and atria as courtyards or squares. We see corridors as streets and classrooms as houses or buildings lining those streets. The more prominent the room the more likely you will find it accessed off a foyer or atria. For example, in BNCN, the central feature stair is an extension of the north/south access on both levels and creates the connection between all the academic components of the ARC.



The consideration for how much time a student is in school has become increasingly important because they have become far more mobile and more able to exercise their will. We believe the design of the school and its immediate environs plays a crucial role toward keeping kids in school. If you make for an inviting, hip, relaxing and yet invigorating social atmosphere we believe the students are more likely to stay and are encouraged to interact. We need them to be inspired and invigorated. The school needs go beyond bricks and mortar, to be less intimidating and provide a better social environment outside of the classroom. We have found and utilized ways to keep them in school, in our buildings. At BNCI, the greatest accolade we received from the students was that “they feel they are already in College or University”. That is a very mature and sobering thought. It’s working!

Tab 6

6.0 - Results of the Process and Project

6.0 - Results of the Process and Project:

We have a passion for seeing children and young adults thrive in their learning environments. We get great satisfaction in believing that what we do makes a difference to a child or young adult's overall conscious and/or subconscious outlook regarding school. We believe in some way we are able to affect their overall spirit and determination to succeed, their self-esteem, confidence, optimism and pride in where they go to school. We believe we help to keep kids in school and to provide the healthy and invigorating environment towards making them successful.

The same goes for staff and teachers. We believe we have a huge impact on the quality and morale of teachers. If they enjoy their school and are excited to be there, the benefits get passed down to the students, increasing morale and chances of success. We believe that from a fiscal point of view, the greater the morale the less absenteeism. The less absenteeism, the less cost associated with labour.

We have been told and congratulated, but also believe in our hearts, that the Academic Resource Commons (ARC), Classroom Wing Addition and Interior Renovations to Barrie North Collegiate Institute has been a huge success. The programme was fulfilled, the design and construction complete, the educational goals and objectives were met, and everyone is happy.

We have been asked "Why are we school architects?". The answer, "It's what we do". Between our passion for creating valuable learning environments and the amount of experience, both in design and technically, it's pretty much all we do. We are school designers and architects … and very proud of it!

Tab 7

7.0 - Educational Specifications

7.0 - Educational Specifications:

The following space template was received from the school board to begin the project.

SECONDARY SCHOOL SPACE TEMPLATE
Barrie North Collegiate Institute

School Board:	Simcoe County District School Board
Grade Range:	Grade 9 to 12
Program:	English, French or Dual Track
School Name:	Barrie North Collegiate Institute

Instructional Spaces	#	Size		Floor Area		Load	OTG
		m²	ft²	m²	ft²		
Classroom	33	67	725	2,224	23,938	21	693
Science Laboratories	**7**			**601**	**6,464**		**147**
Science General (Avg Size)	7	86	923	601	6,464	21	147
Science Biology (Avg Size)		-		-	-	21	-
Science Chemistry (Avg Size)		-		-	-	21	-
Science Physics (Avg Size)		-		-	-	21	-
Total Music / Arts	**5**			**335**	**3,605**		**105**
Music Instrumental/Vocal	1	215	2,316	215	2,316	21	21
Graphics/Visual Arts	3	9	92	26	276	21	63
Theatre Arts	1	94	1,013	94	1,013	21	21
Photography		-		-	-	21	-
Media Arts		-		-	-	21	-
Technical / Vocational	**13**			**2,329**	**25,069**		**273**
Business/Computer Room	4	84	907	337	3,630	21	84
Family Studies	2			*227*	*2,444*		*42*
Family Studies (Food)	1	110	1,188	110	1,188	21	21
Family Studies (Textiles/Fasion)	1	117	1,256	117	1,256	21	21
Family Studies (Nutrition)		-		-	-	21	-
Technology Lab Large	*4*			*1,230*	*13,240*		*84*
Transportation	2	298	3,206	596	6,412	21	42
Construction	1	290	3,123	290	3,123	21	21
Design/Drafting		-		-	-	21	-
Manufacturing	1	344	3,705	344	3,705	21	21
Green Industries		-		-	-	21	-
Welding		-		-	-	21	-
Wood		-		-	-	21	-
Integrated		-		-	-	21	-
Technology Lab Small	*3*			*535*	*5,756*		*63*
Communications	2	159	1,709	318	3,418	21	42
Computer Engineering		-		-	-	21	-
Computer Laboratory		-		-	-	21	-
Cosmetology	1	217	2,338	217	2,338	21	21
Health Sciences		-		-	-	21	-
Special Education / Resource	**5**			**397**	**4,274**		**39**
Special Education Area	3	55	588	164	1,765	9	27
Resource Area - Loaded (400-699	1	183	1,965	183	1,965	12	12
Resource Area - Unloaded (<400 sf)	1	50	544	50	544		-
Instructional Area Flexibility							
Other Spaces	**8**			**1,224**	**13,177**		**-**
Stage	1	148	1,597	148	1,597		-
Library/Library Resource Centre	1	397	4,278	397	4,278		-
Cafetorium/Cafeteria	1	505	5,431	505	5,431		-
Lecture		-		-	-	21	-
Seminar	5	35	374	174	1,870		-
Chapel		-		-	-		-
Gymnasium and Exercise Room	**10**			**1,472**	**15,845**		**21**
Gymnasium Area - Quadruple		-		-	-	63	-
Gymnasium Area - Triple		-		-	-	42	-
Gymnasium Area - Double	1	595	6,409	595	6,409	21	21
Gymnasium Area - Single	1	290	3,120	290	3,120		-
Dance/Aerobics Studio		-		-	-		-
Exercise Room	1	234	2,514	234	2,514		-
Weight Room		-		-	-		-
Change Rooms	7	50	543	353	3,802		-
Total GFA and OTG of Instructional Area				8,582	92,373		1,278

Operational Areas	Per Pupil		Floor Area	
	m²	ft²	m²	ft²
General Office			197	2,120
Guidance Area			131	1,413
Cooperative Education Office			-	
Staff Lounge			87	942
Kitchen/Servery			142	1,528
Custodial Areas			199	2,144
Staff Room and Teacher Work			551	5,934
Meeting Room			16	172
Academic Storage			181	1,952
Washrooms			346	3,722
Gymnasium Storage			74	802
Mechanical Spaces			656	7,058
Total Operational Area			2,582	27,789
Total Instructional (from above)			8,582	92,373
Total Operational and Instructional			11,163	120,162
Gross Up Added		42%	4,689	50,468
Gross Floor Area			15,852	170,629
Area per Pupil			12.40	133.5

Community Use Rooms	m²	ft²
Child Care	-	
Early Years Hub	-	
Community Use	-	
Other (please identify)	-	
Other (please identify)	-	
Other (please identify)	-	
Total Community Use Rooms Area	-	-

Total Square Feet	15,852	170,629

8.0 - Educational Brief and/or Educational Visioning Documents: