



THE TOWN OF SAUGEEN SHORES

Final Concept Design Report

Reference No.: 22026

Presented to:

The Town of Saugeen Shores
C/O Darren Hill
600 Tomlinson Drive
Port Elgin, ON
N0H 2C0

Prepared By;
thinkform architecture + interiors
881 Queen's Boulevard
Kitchener, ON
N2M 1A8

January 23, 2023



The Town of Saugeen Shores C/O Darren Hill
600 Tomlinson Drive
Port Elgin, ON
N0H 2C0

January 23, 2023

Dear Mr. Hill,

thinkform architecture + interiors is pleased to present our Final Design Concept Report to the Town of Saugeen Shores for their Municipal Office Renovation. Over the past year, thinkform has been hard at work preparing this design, along with engineering reports. This document contains the programming completed by thinkform, proposed plans, and engineering reports.

The process for this design was well-informed, as thinkform visited the Saugeen Shores office on numerous occasions. The first visit in summer of 2022 by our lead architect and designers created the initial design vision and engineering considerations. The engineers then conducted their own site visit to confirm their conclusions that the mechanical systems need heavy reworking to improve the efficiency of the building.

Throughout the design process, thinkform worked closely with the representatives of Saugeen Shores to develop a detailed design that suited the needs of the employees. There were numerous brainstorming sessions and revisions to ensure the design was optimal for the future users.

We hope you enjoy what we've put together for you. Should you have any questions, please feel free to contact us.

Sincere Regards,

A stylized, handwritten signature in black ink, appearing to read "Frances Boychuk".

Frances Boychuk *ARIDO + NCIDQ + IDC*
frances@thinkform.ca
t: 226.476.1428 ext. 107

A handwritten signature in black ink, appearing to read "Sarah Wilson".

Sarah Wilson *Intern ARIDO + BID*
sarah@thinkform.ca
t: 226.476.1428 ext. 105

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Photo of Insurance Store in Barrie, Provided by Bisallion Images.



thinkform research and development

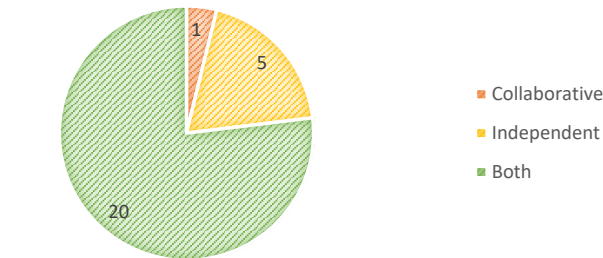


thinkform research and development

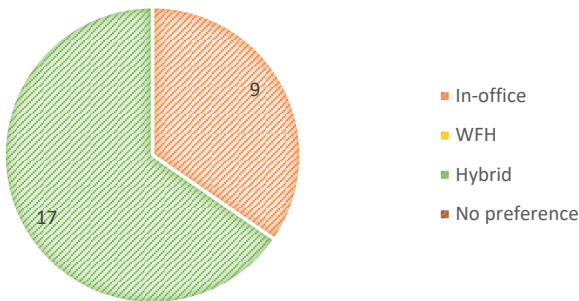
During the programming process, thinkform created a survey for the employees of Saugeen Shores to complete. The survey included questions about how they function in the space, what needs must be met, improvements that could be made on the existing space, and their opinion on how the space could be more efficient. The responses to this survey allowed thinkform to make broad strokes conclusions about how people work at the Saugeen Shores office.

The programming for this project allowed thinkform to create a design-led solution to the main pain points in the current Saugeen Shores municipal office. Completing the research proved very beneficial as it showed the designers how people use the space, and how to design the space to meet everyone’s needs.

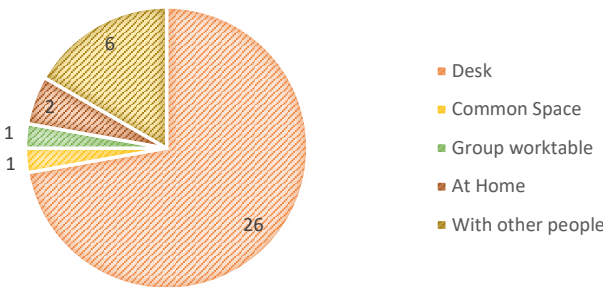
COLLABORATIVE VS. INDEPENDENT WORK



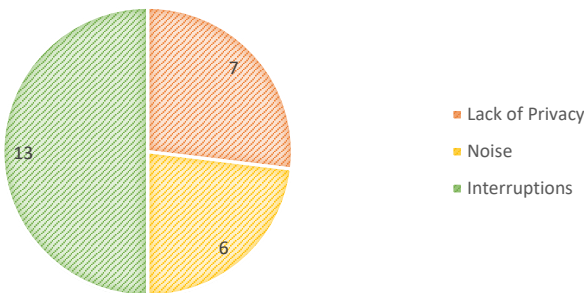
PREFERRED WORK MODEL



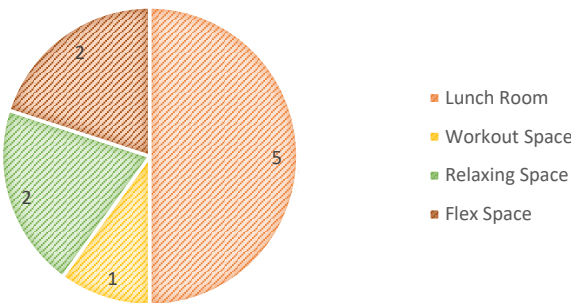
MOST COMMON WORKSPACES



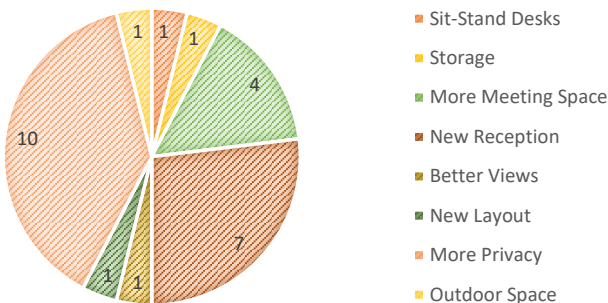
BIGGEST HASSLES IN THE WORK ENVIRONMENT



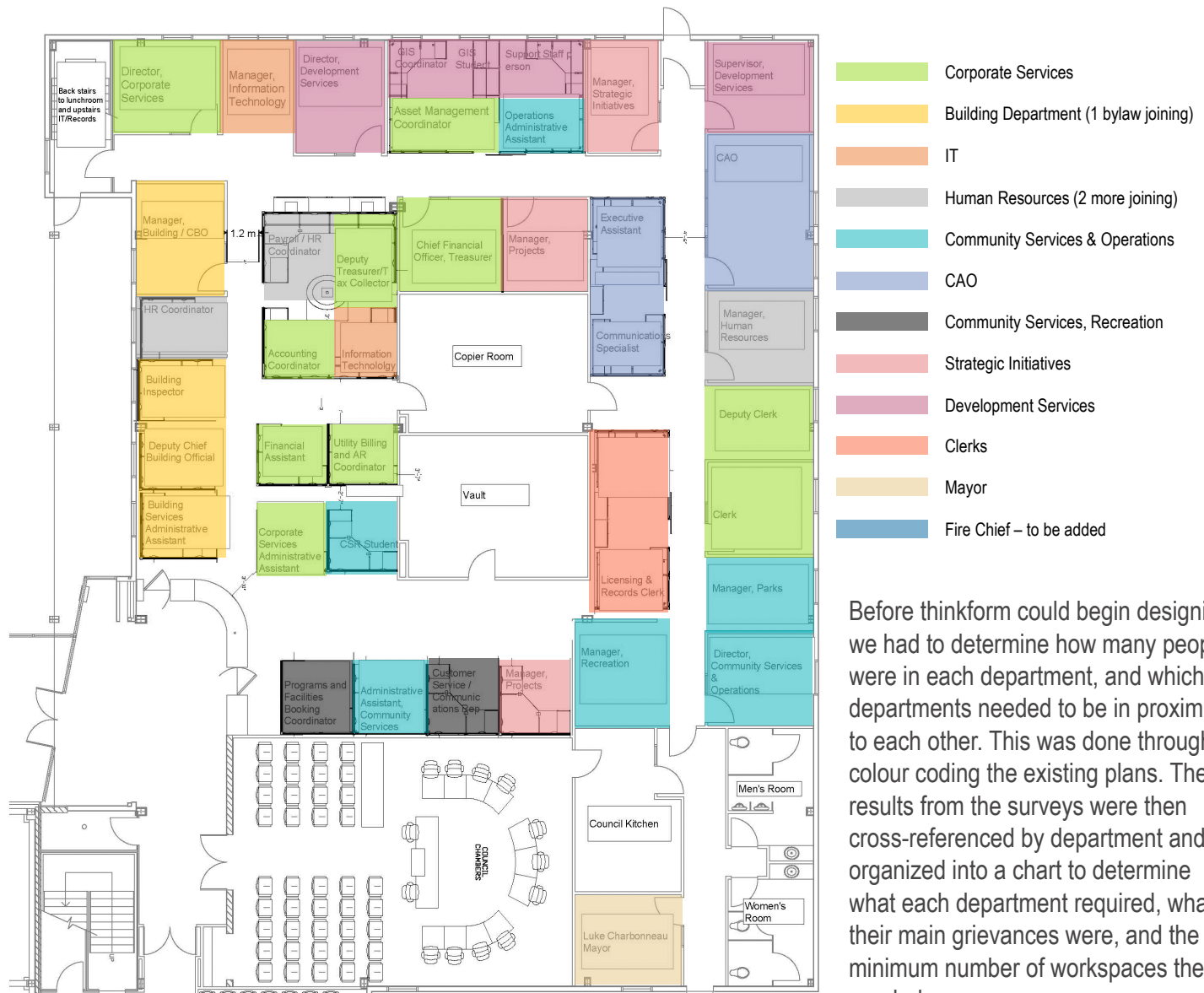
PREFERRED SOCIAL AREAS



YOUR RECOMMENDATIONS



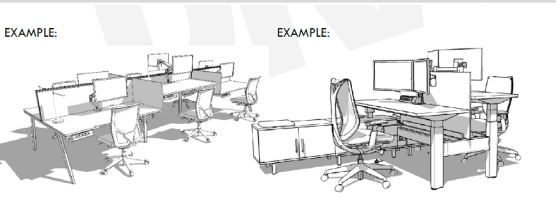
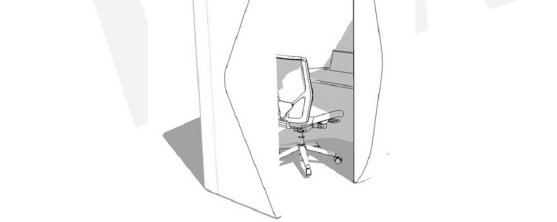
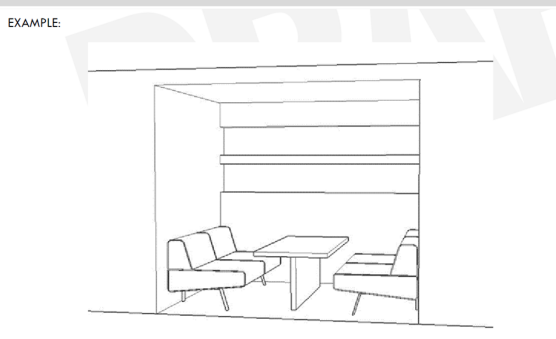
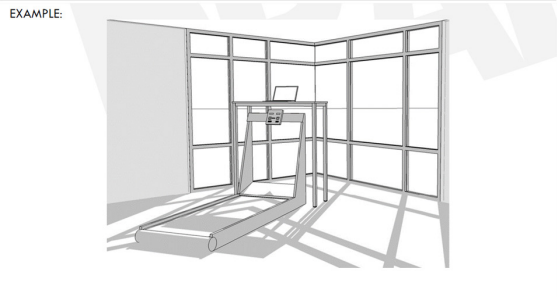
thinkform research and development



Before thinkform could begin designing, we had to determine how many people were in each department, and which departments needed to be in proximity to each other. This was done through colour coding the existing plans. The results from the surveys were then cross-referenced by department and organized into a chart to determine what each department required, what their main grievances were, and the minimum number of workspaces they needed.

Department	Workspaces req'd	Issues	Requirements
Corporate Services	15 workspaces	Lack of meeting rooms	Sound attenuation, front counter more welcoming
Building Department	6 workspaces	No space for new employee	Access to front desk & near planning
IT	2 workspaces	Limited storage & workspace	Whiteboards, project boards, storage, access to server room
Human Resources	4 workspaces	Limited storage for paperwork, secure storage for employee files	Dedicated HR meeting space for confidentiality
Community Services & Operations	7 workspaces	Front counter concerns, office space needed for manager, informal meeting space	Front counter security, collaboration spaces, storage, wellness room/flex space
CAO	2 workspaces	Cannot group teams	Sound attenuation, space for "Make Work Visible"
Community Services, Recreation	2 workspaces	Collaboration spaces lacking, front counter issues	Whiteboards/wall space, storage, sound attenuation at front counter
Strategic Initiatives	5 workspaces	Team not located together, customer service cannot see front counter well	Storage for marketing material & promo items, whiteboards
Development Services	13 workspaces	Identify space for department customer service coordinator & manager of planning in the future	Small group meeting space/flex space with audio/video connectivity
Clerks	1 workspace	Difficult to make confidential phone calls, no privacy	Hanging folder storage, large workspace, sit-stand desk
Fire Services	1 workspace	2 positions within next 5 years	Whiteboards, communication monitoring equipment

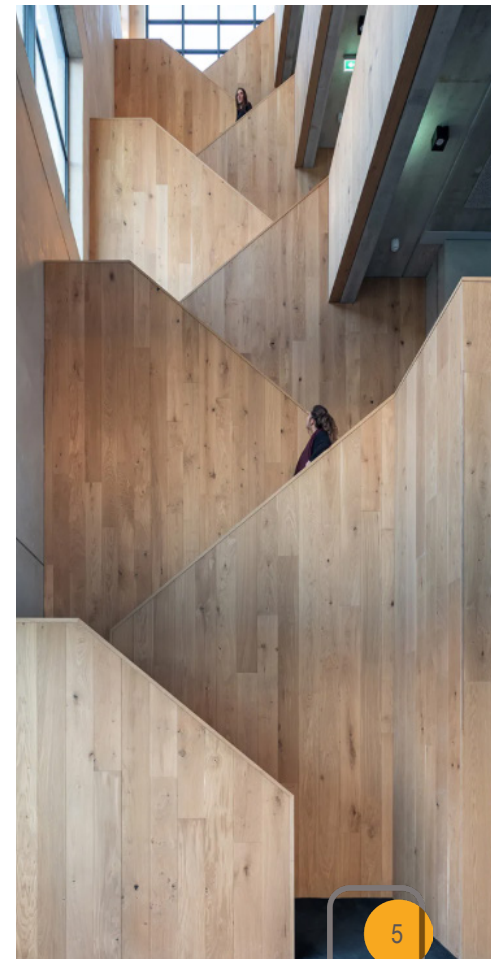
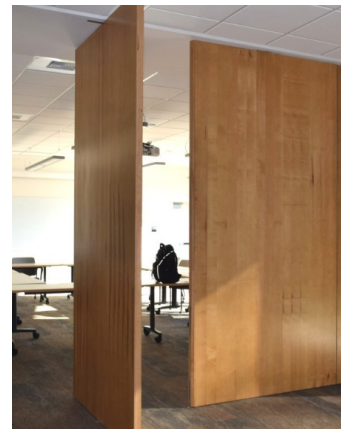
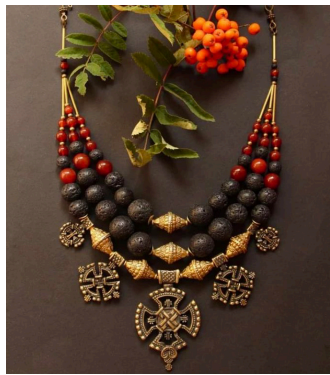
thinkform research and development

PRIMARY INDIVIDUAL OPEN	WORKSTATION	PRIMARY INDIVIDUAL OPEN	FOCUS POD
DESCRIPTION: Mid to long-term workspace with proximity and access to others. Supports individual focus activities such as reading, writing, researching.		DESCRIPTION: For mid-term individual focused work; a secluded workpoint that supports quiet concentration in an open work environment.	
PLANNING TIPS: - Primarily located in proximity to perimeter windows; - At least one work surface per workstation to be height adjustable; - Any surface with monitor(s) to be 30" deep to allow for use of monitor arm(s); - Panels should not exceed 54" high; can be lower based on zone and activity being performed; - Include adjustable ergonomic task chair and task lighting; - Provide power modules at surface; - Optional open storage can be included for bags or purses.		PLANNING TIPS: - Best suited for Quiet and Transitional zones; - Semi-enclosed furniture solution; - Can be planned on its own or in clusters; - Provide adequate task lighting.	
EXAMPLE: 		EXAMPLE: 	
COLLABORATIVE OPEN	HUDDLE	SECONDARY INDIVIDUAL	ACTIVE WORKSTATION
DESCRIPTION: Informal short-mid length meeting area, open or semi-enclosed.		DESCRIPTION: Treadmill, stationary bicycle or other suitable equipment with worksurface for computer.	
PLANNING TIPS: - Locate in an Interactive or Transitional Zone; - Semi-enclosed booth or furniture solutions; - Can be used as division between zones.		PLANNING TIPS: - Can be located in an enclosed room or semi-private workpoint; locate away from open workpoints to avoid distraction; - Provide adequate visual privacy to user; - Locate on perimeter window when possible with equipment facing exterior view; - Ensure adequate power supply for equipment.	
EXAMPLE: 		EXAMPLE: 	
COLLABORATIVE ENCLOSED	PROJECT ROOM		
DESCRIPTION: Enclosed room for longer term project teams or groups to assemble, brainstorm and create.			
PLANNING TIPS: - Locate in a Transitional or Interactive Zone; - Enclosed room with demountable and/or drywall partitions; - Consider sliding door to optimize space; - Glazed partition on at least one wall to allow light penetration (privacy film to be applied in accordance with applicable codes and standards); - Provide a variety of mobile furniture that can be easily adapted to various configurations; - Provide writable walls and mobile whiteboards.		OCCUPANTS: 6 (Calculate occupancy at 50%) VISUAL PRIVACY: Medium-High ACOUSTIC PRIVACY: Medium (STC 35) AVERAGE SIZE: 20m ² POSTURE: Formal or Casual IT PROFILE: - Power & USB charging 1 large monitor - (interactive monitor optional) - Wireless presentation tech. - VoIP (optional) - LAN drop (optional) ACCESSIBILITY TIPS: - Height-adjustable worksurfaces - Mobile furniture on casters - Controls and outlets 400mm-1200mm vertical reach	
EXAMPLE: 			

thinkform also provided the Saugeen Shores representatives with examples of different kinds of workstations that could be included in their design. As a group, we reviewed the different types and decided on which would be most beneficial to the staff. During this portion of the meeting, it was also discussed which kind of workstations were not preferred to be used in the design.

thinkform research and development

thinkform also provided the Saugeen Shores representatives with inspiration for the design to come, as pictured below. The main concept behind the design was allowing employees to enjoy the workplace again and feel comfortable coming to work. We wanted to address the noise concerns among the employees in the office, as well as incorporating biophilic elements where possible. The inclusion of indigenous details was also an important design consideration.



thinkform proposed designs



floor plan features

When designing the municipal office for Saugeen Shores, thinkform worked closely with the client to determine their needs and provide planning for the future. Throughout the process, the design was altered many times to accommodate the growing needs of the employees. In the following pages, the four designs are shown.

The original design that thinkform created incorporated the existing building footprint for the municipal offices, with an extension on the building for a new council chambers. This design included a newly designed, open reception area for visitors. There were 41 permanent workstations included in this design, with 18 hybrid stations for employees who didn't require a permanent desk. Three meeting rooms of varying sizes were included, as well as a large collaboration area. This design met the needs of the client while using as little extension as possible.

The second design presented to the client included two extensions on the original footprint - one extension to house a larger council chambers, and one to house the engineering office and extra workstations. This design included the original reception from the first design, 53 permanent workstations, 16 hybrid workstations, and many collaboration spaces.

The third design was created considering the Aquatic & Wellness Centre being designed by Salter Pilon. In their design, they found 9,000 sq ft of space on the second floor of their extension. thinkform put together a design that had the council chambers in the original footprint of the municipal offices, along with a lounge, some private offices, and meeting rooms. The second floor of the Aquatic & Wellness Centre housed the main municipal office functions.

The fourth and final design presented by thinkform architecture used the idea of creating an addition on the second floor of the new connection to the Aquatic & Wellness Centre. This was thinkform's largest design, with 65 permanent workstations to account for future growth. This design also created a "bridge" between the municipal offices and the new A&W Centre to create unison between the two buildings. This design allowed for a large council chambers, hybrid stations, 22 private offices, and a connection to the outdoors via a patio on the second floor.



design one: the original



41 Workstations + 3 Reception

12 Private Offices

36 Flex / Collaboration

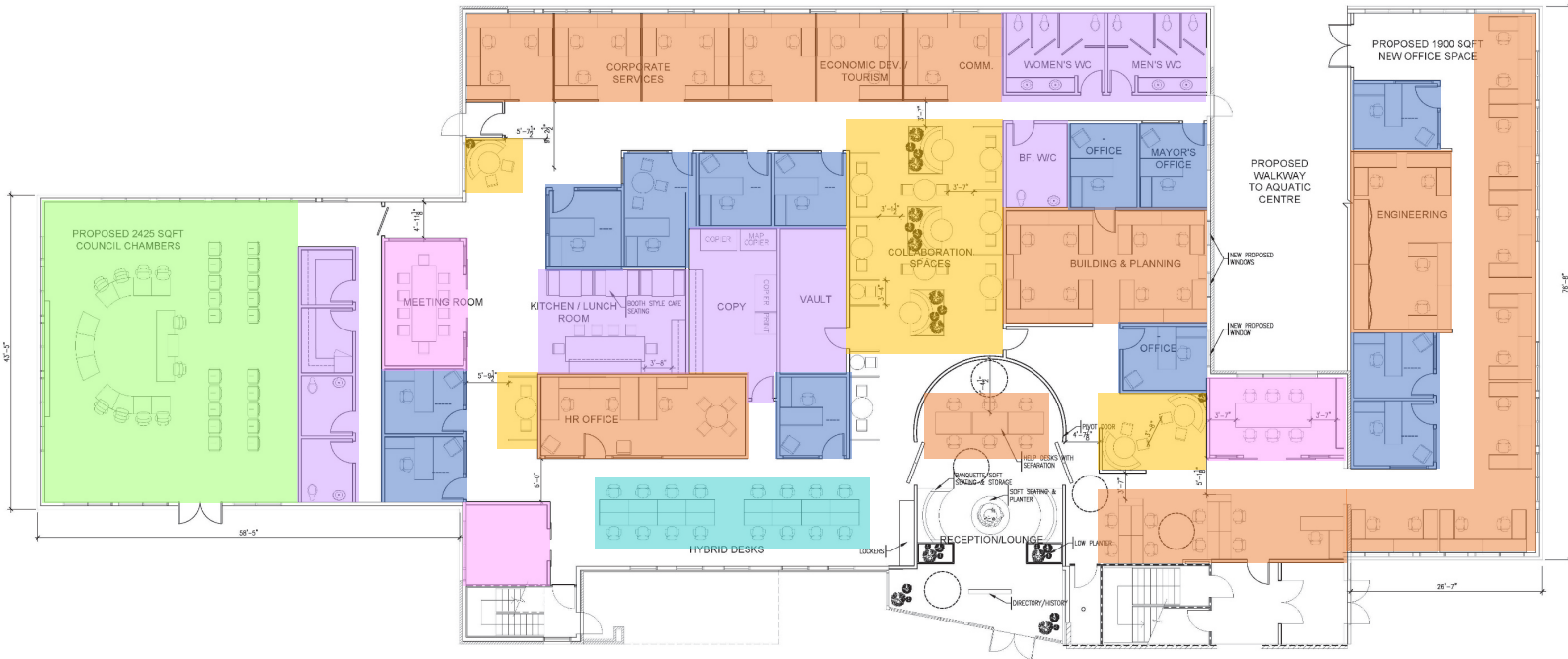
18 Hybrid / Hotelling Stations

3 Meeting Rooms

1500 sq ft Council Chambers

1 Kitchen + 1 Copy Room + 1 Vault + 6 W/C

design two: the bump-outs



53 Workstations + 3 Reception + 3 HR

13 Private Offices

38 Flex / Collaboration

16 Hybrid / Hotelling Stations

3 Meeting Rooms

2400 sq ft Council Chambers

1 Kitchen + 1 Copy Room + 1 Vault + 9 W/C

design three: the new 9,000



7 Workstations + 1 CAO EA

9 Private Offices

12 Flex / Collaboration

1 Lounge for 16 people

6 Meeting Rooms

1620 sq ft Council Chambers

7 W/C + 1 Kitchenette



1 MUNICIPAL OFFICES SECOND FLOOR PROPOSED PLAN
1/8" = 1'-0"

51 Workstations + 3 HR

16 Private Offices

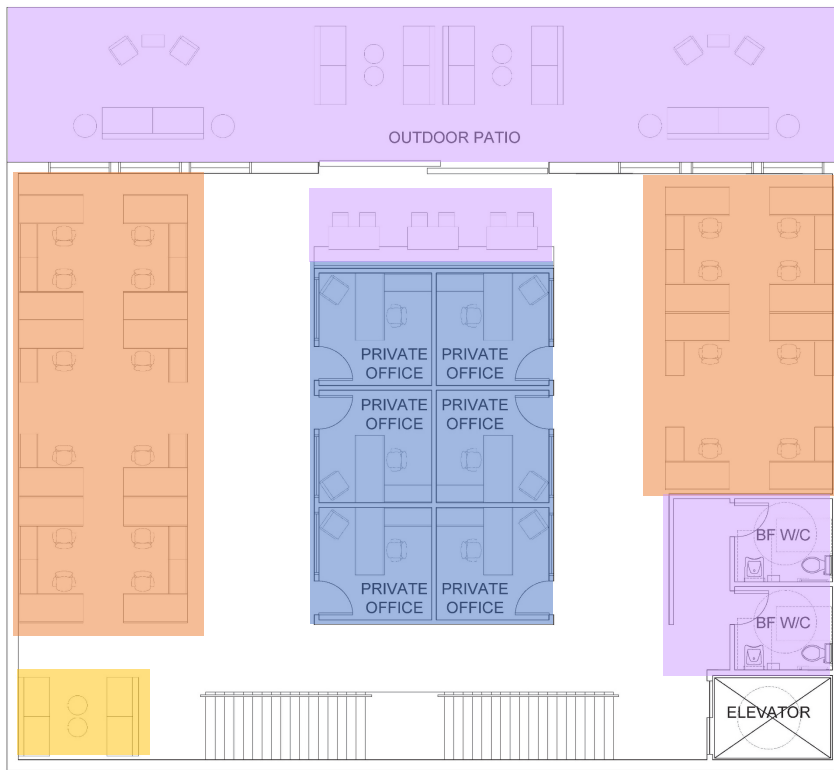
16 Flex / Collaboration

2 Meeting Rooms

8 Hybrid / Hotelling Stations

1 Kitchen + 1 Copy Room + 1 Server Room +
9 W/C

design four: the bridge



65 Workstations + 3 HR + 1 CAO EA + 1 Reception

22 Private Offices

38 Flex / Collaboration

2 Meeting Rooms

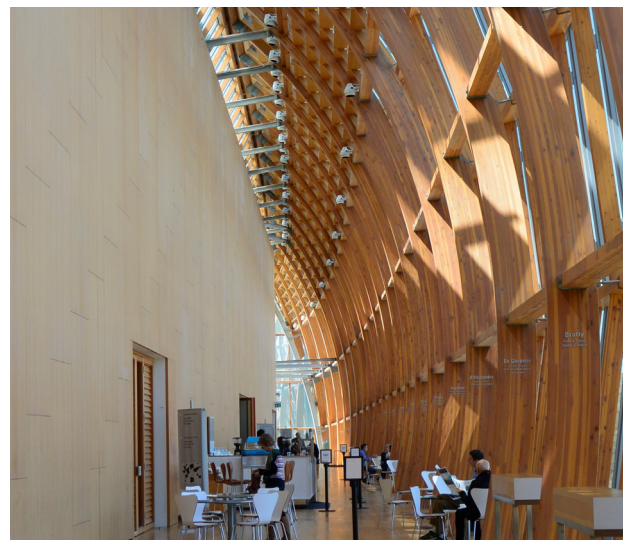
16 Hybrid / Hotelling Stations

1800 sq ft Council Chambers

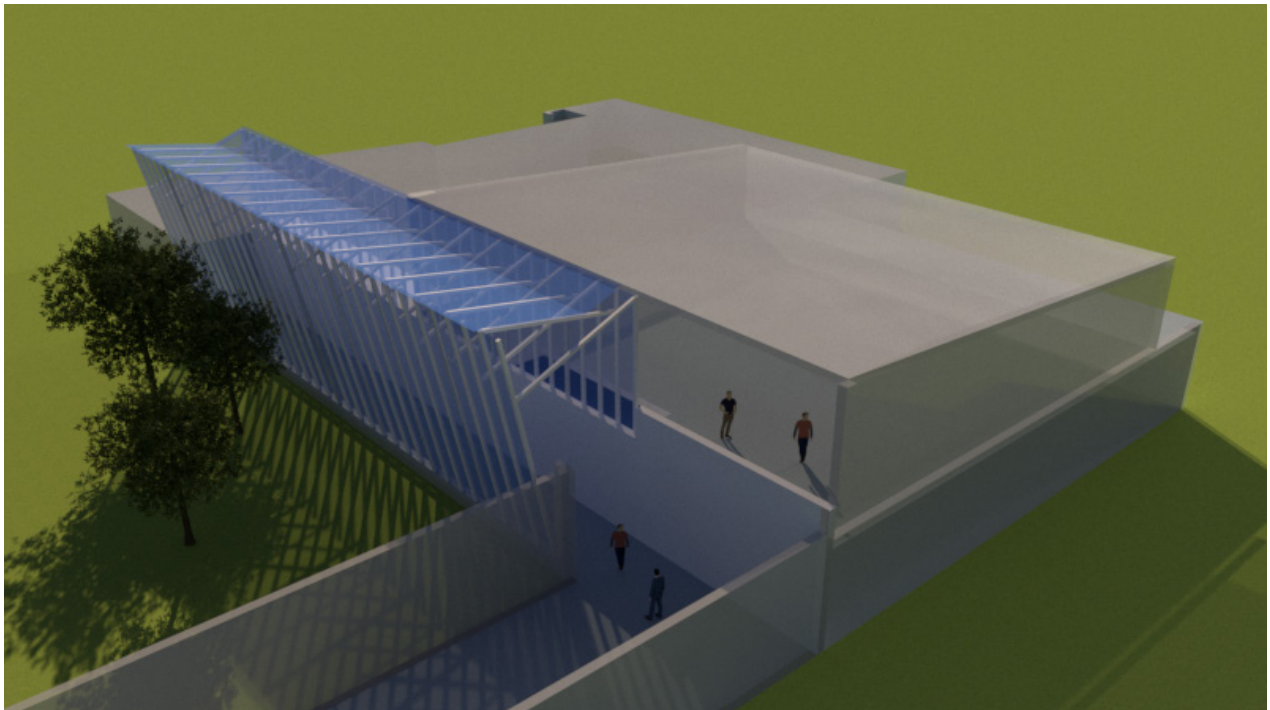
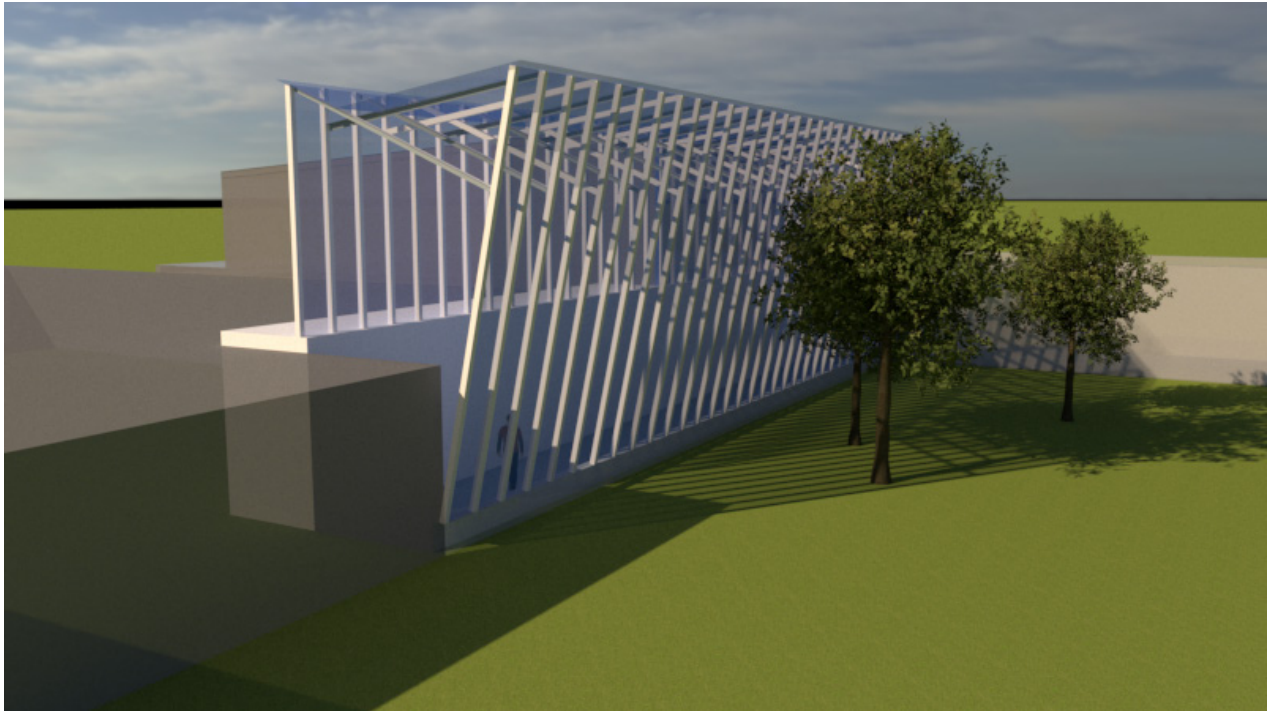
1 Lounge + 1 Kitchen + 2 Copy Rooms + 2 Storage Rooms + 8 W/C + 1 Outdoor Lounge



design four: the bridge inspiration



design four: the bridge renderings



appendix a





**TOWN OF SAUGEENN SHORES
MUNICIPAL OFFICE 2.0
Port Elgin, Ontario**

DRAFT CLASS "D" ESTIMATE R0

prepared for:

SALTON PILON ARCHITECTURE
151 Ferris Lane, Suite 400
Barrie, Ontario
L4M 6C1

prepared by:

MARSHALL & MURRAY INCORPORATED
625 Wellington Street
London, Ontario
N6A 3R8

November 29, 2022

L2463/2 Office 2.0

Quantity Surveyors and Development Consultants

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1379 Bank Street, Suite 301, Ottawa, Ontario K1H 8N3 Tel: (613) 230-3115 Fax: (613) 230-4091
E-mail: main@marshallmurray.com Website: www.marshallmurray.com



November 29, 2022

SALTON PILON ARCHITECTURE

151 Ferris Lane, Suite 400
Barrie, Ontario
L4M 6C1

Attention: Mr. Ryan Stitt

**Re: TOWN OF SAUGEENN SHORES - MUNICIPAL OFFICE 2.0 - Port Elgin,
Ontario**

Dear Ryan,

Please find enclosed a copy of our Draft Class "D" Estimate R0 for the above note project for your review and comment.

If you have any questions or require further information, please do not hesitate to contact our office.

Yours truly,

MARSHALL & MURRAY INC.

Alexei Kouritsyn, PQS, MRICS, GSC, LEED AP
Intermediate Cost Consultant

Quantity Surveyors and Development Consultants

625 Wellington Street, London, Ontario N6A 3R8 Tel: (519) 433-3908 Fax: (519) 433-9453
Suite 414, 120 Carlton Street, Toronto, Ontario M5A 4K2 Tel: (416) 928-1993 Fax: (416) 928-0895
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E-mail: main@marshallmurray.com Website: www.marshallmurray.com

DRAFT CLASS "D" ESTIMATE R0

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SECTION 1

PROJECT OVERVIEW

a) EXECUTIVE SUMMARY

This report prepared by Marshall & Murray Inc. is classified as a Draft Class "D" Estimate R0.

Marshall & Murray Inc. were retained to provide a realistic **Total Projected Construction Cost** budget for the redevelopment at Town Of Saugeenn Shores.

The project is located in Port Elgin, Ontario.

The proposed redevelopment would consist of a two (2) new office additions and renovation to existing office areas. Costs for associated sitework are also included.

The proposed redevelopment is being designed by Salton Pilon Architecture Inc.

The estimate presented here is based on the drawings received from the design team, meetings, and oral information.

The **Total Projected Construction Cost** is estimated at: **\$6,611,566**

The above amount excludes Separate and Alternate prices. A detailed breakdown of the amount can be found in the following Section 1b).

This estimate is priced in November 2022 dollars. Escalation during construction has been included in the estimate. Projected escalation to time of tender is identified separately if requested.

We are unable at this time to determine the projected construction cost implications due to the Coronavirus COVID-19 but have included allowances for this impact if any.

We are currently experiencing a very active construction market which could result in bids varying greatly from our indicated amount due to lack of bidders, escalating material costs and lack of suppliers holding prices or delivery dates.

This estimate has been priced, based on a standard CCDC 2 – Stipulated Sum Contract. It does not include for any additional costs associated with the Alternate Financing Procurement method.

The construction cost includes all labour, materials, plant, sub-contractors' overheads and profit, and the general contractor's overheads and profit.

Please review the exclusions as noted in Section 1 k) Exclusions to Construction Cost.

If you have any questions or require further information, please do not hesitate to contact our office.

Alexei Kouritsyn, PQS, MRICS, GSC, LEED AP
Email: akouritsyn@marshallmurray.com
Ph: 519-433-3908
Mob: 647-687-6493

b) PROJECTED CONSTRUCTION COST SUMMARY

DESCRIPTION		DRAFT CLASS "D" ESTIMATE R0		
		GFA(SF)	COST/SF	AMOUNT
A.	MUNICIPAL OFFICE 2.0			
1.0	NEW BUILD	4,620	666.10	3,077,381
	COUNCIL CHAMBER ADDITION	2,541	685	1,739,305
	ENGINEERING ADDITION	2,079	644	1,338,076
2.0	RENOVATION	9,161	320.82	2,938,990
	RENOVATION	9,161	321	2,938,990
3.0	OTHER ASSOCIATED COSTS			220,955
	SITE DEVELOPMENT / LANDSCAPING			220,955
	ABNORMAL SOIL CONDITIONS / CONTAMINATED SOIL			EXCLUDED
	PREMIUM TIME / AFTER-HOURS WORK			EXCLUDED
	CONSTRUCTION PHASING			EXCLUDED
	LEED SILVER			EXCLUDED
	NET ZERO			EXCLUDED
	SIGNAGE & WAYFINDING			EXCLUDED
	MOVING COSTS			EXCLUDED
	MARKET / SUPPLY CHAIN CONDITIONS			EXCLUDED
	COVID-19 IMPACTS			EXCLUDED
4.0	ESCALATION			374,240
	ESCALATION TO TIME OF TENDER (ALLOW 6.0% P.A.)		6.0%	374,240
TOTAL	MUNICIPAL OFFICE 2.0	13,781	479.76	\$6,611,566
	ANCILLARY COSTS (PROFESSIONAL FEES, PERMITS, TAXES, ETC.)			EXCLUDED
	FURNISHINGS AND EQUIPMENT			EXCLUDED
	LOCATION FACTOR			EXCLUDED
	SCOPE CONTINGENCY			EXCLUDED
	POST CONTRACT CONTINGENCY (ON CONSTRUCTION)			EXCLUDED
	ANTICIPATED ESCALATION TO TIME OF TENDER			EXCLUDED
TOTAL PROJECT COST				6,611,566

B.	SEPARATE PRICES (INCLUDED ABOVE)			
1.0	CONSTRUCTION COST			
1.1	Omission of Council Chamber			-1,843,663
1.2	Omission of Engineering Additions			-1,418,361
1.3	Omission of Site Work			-234,212

c) METHOD OF MEASUREMENT

This estimate has been prepared by measurement of quantities from the schematic drawings and carried assumptions of details from the rough design brief received from the design team, Salton Pilon Architecture Inc.

Unit costs, allowances, and contingencies were applied to these quantities to reflect market conditions and provide a realistic budget based on comparable projects with similar size and scope of works.

d) GROSS FLOOR AREA

COUNCIL CHAMBER ADDITION	236	M2	2,541 SF
ENGINEERING ADDITION	193	M3	2,079 SF
RENOVATION	851	M2	9,161 SF
Total	1,280	M2	13,781 SF

e) PRICING

This estimate is priced in November 2022 dollars expecting 3-6 qualified competitive General Contractors and Sub-Contractors. Bids will vary due to fluctuating market conditions, proprietary product vendors, lack or surplus bidders and bidder's perception of risk.

Please note that the quotation for the therapy swimming pool is based on quotes received from pool contractor(s) arising from the schematic drawings and general specifications received. The pricing received at this time is preliminary only and is subject to change based on the design, layout, time of tender, escalation, inflation of material costs, labour availability, etc.

We are unable at this time to determine the projected construction cost implications due to the Coronavirus COVID-19 but have included any allowances for this impact if any.

We are currently experiencing a very active construction market which could result in bids varying greatly from our indicated amount due to lack of bidders, escalating material costs and lack of suppliers holding prices or delivery dates.

f) TAXES

The Harmonized Sales Tax (H.S.T.) is excluded.

g) MECHANICAL AND ELECTRICAL COSTS

Mechanical and Electrical Costs included in this estimate were based on information provided by the Consultants.

h) SITE SERVICES

This includes allowances for mechanical, electrical, civil site services, soft, and hard landscaping.

i) CONTINGENCY

At this stage of the project, a 12.0% design contingency has been allowed. This is to cover unknown details in design and construction, layout variations and material selections but excludes any scope increases.

j) GENERAL REQUIREMENTS AND FEES

General Requirements - General Contractors Overhead is taken at:	15.0%
Fee - General Contractors Profit is taken at:	5.0%

k) EXCLUSIONS TO CONSTRUCTION COST

- | | |
|------------------------------------|--|
| - Phasing | - Abnormal Soil Conditions |
| - Price Escalation | - Contaminated Soil |
| - Soft Costs | - Project Management |
| - Professional and Design Fees | - Harmonized Sales Tax (H.S.T.) |
| - Furniture and Loose Equipment | - Inspection and Testing |
| - Development Charges and Levies | - Post Contract Contingencies |
| - Financing Costs | - Window Drapes/Curtains, and Art Work |
| - Relocation Costs | - Premium Labour |
| - Market volatility | - Project Scope Contingency |
| - Escalation to Time of Tender | - Winter heat to shell construction |
| - COVID-19 / Pandemic Impact Costs | - Asbestos Abatement |

It is to be noted that the excluded Abnormal and Contaminated soil conditions are to be reviewed and confirmed at design development stage. Please also note that no reports have been received at the time of this estimate.

l) STATEMENT OF PROBABLE COSTS

This estimate represents a professional opinion of the probable costs for this project. Marshall & Murray Incorporated cannot guarantee that the actual project cost will not vary from this opinion.

m) ONGOING COST CONTROL

The project is still within the early stages of design and thus the full scope and design specifications have not been clearly determined. The estimate makes assumptions for all elements not clearly defined on the drawings. These assumptions are listed within the detailed estimate.

To alleviate a portion of the risk, a design and pricing contingency allowance has been included to accommodate for future design tweaks. However if there is a significant amount of design changes as the project progresses, they could result in an increase in cost that cannot be covered by the design and pricing contingency allowance. At this stage we consider the risk high, and would request that the design team review and provide comment with regards to the design detail included within the estimate.

We recommend that the estimate contained herein be reviewed thoroughly by the project team. Any comments or suggestions should be forwarded as soon as possible. We also recommend that further estimates be prepared once a firm design has been established.

n) DOCUMENTS LIST

The following list of drawings was received from Salton Pilon Architecture Inc.
The noted drawings were used to complete Marshall and Murray's Draft Class "D" Estimate R0.

Document Description	<u>Printed / Revision Date</u>	<u>Date Received</u>
Allen-Hasting Ltd. - Existing Plans.	July 05, 2000	October 26, 2022
Demaiter Eng - Mechanical & Electrical	July 28, 2000	October 26, 2022
Floor Plan Square Footage Measurements		October 26, 2022
G.M. Diemert - Existing Site		October 26, 2022
G.M. Diemert - Sections		October 26, 2022
thinkform - inspiration		October 26, 2022
thinkform preliminary plan	August 29, 2022	October 26, 2022
2022.10.20 Plan	August 29, 2022	October 26, 2022

SECTION 2

COUNCIL CHAMBER ADDITION

TOWN OF SAUGEENN SHORES					November 29, 2022				
MUNICIPAL OFFICE 2.0					DRAFT CLASS "D" ESTIMATE R0				
Port Elgin, Ontario					GFA : 2,541 sf				
FILE: L2463/2 Office 2.0									
ELEMENT/Sub Element		Ratio to GFA	Elemental Cost		Elemental Amount		Rate/sf		
			Quantity	Unit Rate	Sub-total	Total	Sub-Total	Total	
A SHELL						\$589,483		\$231.99	33.89%
A1 SUBSTRUCTURE						\$153,140		\$60.27	8.80%
A11 Foundations		1.00	2,541 sf	60.27	\$153,140		\$60.27		
A112 Special Foundations		0.00	0 m³	0.00	nil		\$0.00		
A12 Basement Excavation		0.00	0 m³	0.00	nil		\$0.00		
A2 STRUCTURE						\$168,718		\$66.40	9.70%
A21 Lowest Floor Construction		1.00	2,541 sf	8.59	\$21,828		\$8.59		
A22 Upper Floor Construction		0.00	0 m²	0.00	nil		\$0.00		
A222 Stair Construction		0.00	0 flts	0.00	nil		\$0.00		
A23 Roof Construction		1.00	2,541 sf	57.81	\$146,890		\$57.81		
A3 EXTERIOR ENCLOSURE						\$267,625		\$105.32	15.39%
A31 Walls Below Grade		0.00	0 m²	0.00	nil		\$0.00		
A32 Walls Above Grade		0.66	1,675 sf	53.89	\$90,260		\$35.52		
A33 Windows & Entrances		0.17	425 sf	136.12	\$57,850		\$22.77		
A34 Roof Covering		1.00	2,541 sf	47.03	\$119,515		\$47.03		
A35 Projections		0.00	0 sf	0.00	nil		\$0.00		
B INTERIORS						\$214,234		\$84.31	12.32%
B1 PARTITIONS & DOORS						\$131,550		\$51.77	7.56%
B11 Partitions		1.12	2,834 sf	28.35	\$80,350		\$31.62		
B12 Doors		0.00	10 #	5,120.00	\$51,200		\$20.15		
B2 FINISHES						\$65,474		\$25.77	3.76%
B21 Floor Finishes		1.00	2,541 sf	9.59	\$24,369		\$9.59		
B22 Ceiling Finishes		1.00	2,541 sf	9.09	\$23,099		\$9.09		
B23 Wall Finishes		2.02	5,128 sf	3.51	\$18,006		\$7.09		
B3 FITTINGS & EQUIPMENT						\$17,210		\$6.77	0.99%
B31 Fittings & Fixtures		1.00	2,541 sf	6.77	\$17,210		\$6.77		
B32 Equipment		0.00	0 0	0.00	\$0		\$0.00		
B33 Conveying Systems		0.00	0 stp	0.00	\$0		\$0.00		
C SERVICES						\$389,709		\$153.37	22.41%
C1 MECHANICAL						\$268,355		\$105.61	15.43%
C11 Plumbing & Drainage		1.00	2,541 sf	20.37	\$51,750		\$20.37		
C12 Fire Protection		1.00	2,541 sf	5.42	\$13,773		\$5.42		
C13 HVAC		1.00	2,541 sf	66.05	\$167,832		\$66.05		
C14 Controls		1.00	2,541 sf	13.77	\$35,000		\$13.77		
C2 ELECTRICAL						\$121,354		\$47.76	6.98%
C21 Service & Distribution		1.00	2,541 sf	6.89	\$17,500		\$6.89		
C22 Lighting, Devices & Heating		1.00	2,541 sf	18.84	\$47,885		\$18.84		
C23 Systems & Ancillaries		1.00	2,541 sf	22.03	\$55,969		\$22.03		
NET BUILDING COST - EXCLUDING SITE & ANCILLARY WORK					\$1,193,426	\$1,193,426		\$469.67	68.62%
D SITE & ANCILLARY WORK						\$100,700		\$39.63	5.79%
D1 SITE WORK						\$0		\$0.00	0.00%
D11 Site Development		0.00	0 m²	0.00	nil		\$0.00		
D12 Mechanical Site Services		0.00	0 m²	0.00	nil		\$0.00		
D13 Electrical Site Services		0.00	0 m²	0.00	nil		\$0.00		
D2 ANCILLARY WORK						\$100,700		\$39.63	5.79%
D21 Demolition		0.00	0 m²	0.00	nil		\$0.00		
D22 Alterations		0.00	0 0	0.00	\$93,200		\$36.68		
D23 Cash Allowances		1.00	2,541 sf	2.95	\$7,500		\$2.95		
NET BUILDING COST - EXCLUDING GENERAL REQUIREMENTS					\$1,294,126	\$1,294,126		\$509.30	74.40%
Z GENERAL REQUIREMENTS						\$258,825		\$101.86	14.88%
Z1 GENERAL REQUIREMENTS & FEE						\$258,825		\$101.86	14.88%
Z11 General Requirements (%)			15.0%		\$194,119		\$76.39		
Z12 Fee (%)			5.0%		\$64,706		\$25.46		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES					\$1,552,951	\$1,552,951		\$611.16	89.29%
Z2 ALLOWANCES						\$186,354		\$73.34	10.71%
Z21 Design & Pricing (%)			12.0%		\$186,354		\$73.34		
Z22 Escalation Allowance (%)			0.0%		\$0		\$0.00		
Z23 Construction Allowance (%)			0.0%		\$0		\$0.00		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING TAXES					\$1,739,305	\$1,739,305		\$684.50	100.00%
HARMONIZED SALES TAX						\$0			
Harmonized Sales Tax			0.0%		\$0		\$0.00		
TOTAL CONSTRUCTION ESTIMATE					\$1,739,305		\$684.50		

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
A1 SUBSTRUCTURE				
A11 Foundations				
1.0 Earthwork	2,541	sf	10.00	25,410
2.0 Foundations	2,541	sf	30.00	76,230
3.0 Shoring/ underpinning to abutting building		allow		44,000
4.0 Inserts, steps, tie-ins, etc.		allow		7,500
Total A11 Foundations	2,541	sf		153,140
A112 Special Foundations				nil
A12 Basement Excavation				nil
A2 STRUCTURE				
A21 Lowest Floor Construction				
1.0 Concrete slab on grade (125mm concrete with WWM)	2,541	sf	8.00	20,328
2.0 Inserts, slab thickening, equipment bases, misc. reinforcing		allow		1,500
Total A21 Lowest Floor Construction	2,541	sf		21,828
A22 Upper Floor Construction				nil
A222 Stair Construction				nil
A23 Roof Construction				
1.0 Roof structure				
- structural steel	25,410	lbs	4.90	124,509
- metal deck	2,541	sf	6.25	15,881
2.0 Inserts, curbs, misc. reinforcing, tie-in to existing		allow		6,500
Total A23 Roof Construction	2,541	sf		146,890
A3 EXTERIOR ENCLOSURE				
A31 Walls Below Grade				nil
A32 Walls Above Grade				
1.0 Steel stud framing - 60% Standing Seam	1,005	sf	42.00	42,210
2.0 Steel stud framing - 40% Wood Panel	670	sf	65.00	43,550
3.0 Lintels, caulking, flashing, tie-in to existing		allow		4,500
Total A32 Walls Above Grade	1,675	sf		90,260

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
A3 EXTERIOR ENCLOSURE				
A33 Windows & Entrances				
1.0 Glazed aluminum entrance doors c/w hardware	2	#	3,500.00	7,000
2.0 Curtainwall	425	sf	112.00	47,600
3.0 Supports, caulking, flashing, etc.		allow		3,250
Total A33 Windows & Entrances	425	sf		57,850
A34 Roof Covering				
1.0 2-Ply Roofing membrane and parapet cap	2,541	sf	42.00	106,722
2.0 Parapets	203	lf	31.00	6,293
3.0 Flashing, pavers, anchors, tie-in to existing		allow		6,500
Total A34 Roof Covering	2,541	sf		119,515
A35 Projections				nil
B1 PARTITIONS & DOORS				
B11 Partitions				
1.0 Drywall partitions	2,834	sf	20.00	56,680
- extra over for premium wall finishes	2,834	sf	5.00	14,170
2.0 Glazing		allow		6,000
3.0 Lintels, supports, caulking, firestopping		allow		3,500
Total B11 Partitions	2,834	sf		80,350
B12 Doors				
1.0 Solid core stain grade door set within solid core wood frame	6	lvs	750.00	4,500
2.0 Sliding doors c/w door hardware	3	lvs	3,900.00	11,700
3.0 Pivot door c/w door hardware	1	lvs	14,000.00	14,000
4.0 Extra / over for:				
- finish hardware	6	#	1,600.00	9,600
- fire rating		allow		400
- glazing		allow		1,000
- automatic door operators		allow		5,000
- card readers, door closers, kick plates etc		allow		2,500
5.0 Supports, misc. finish hardware		allow		2,500
Total B12 Doors	10	#		51,200

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
B2 FINISHES				
B21 Floor Finishes				
1.0 Flooring and bases	2,541	sf	9.00	22,869
2.0 Special finishes, patterns, etc.		allow		1,500
Total B21 Floor Finishes	2,541	sf		24,369
B22 Ceiling Finishes				
1.0 Ceilings	2,541	sf	8.50	21,599
2.0 Special finishes, patterns, etc.		allow		1,500
Total B22 Ceiling Finishes	2,541	sf		23,099
B23 Wall Finishes				
1.0 Paint walls	5,128	sf	2.00	10,256
2.0 Ceramic tile		allow		7,000
3.0 Special finishes, patterns, etc.		allow		750
Total B23 Wall Finishes	5,128	sf		18,006
B3 FITTINGS & EQUIPMENT				
B31 Fittings & Fixtures				
1.0 Universal change rooms				
- toilet tissue dispenser	1	#	95.00	95
- paper towel dispenser	2	#	275.00	550
- mirror	2	#	220.00	440
- soap dispenser	2	#	270.00	540
- wall mounted waste receptacle	2	#	100.00	200
- sanitary napkin disposal	2	#	110.00	220
- coat hooks	2	#	35.00	70
- vanity	6.7	ft	650.00	4,355
- stainless steel shelf	2.0	#	120.00	240
2.0 Break areas				
- lower cabinet	26	ft	210.00	5,460
- upper cabinet	16	ft	190.00	3,040
3.0 Offices				nil
4.0 Meeting room				nil
5.0 Chamber room				nil
6.0 Signage and wayfinding		allow		1,000
7.0 Blinds				Excluded
8.0 Various fittings, fixtures, millwork and specialty components not specifically detailed on the current drawings		allow		1,000
Total B31 Fittings & Fixtures	2,541	sf		17,210

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
B3 FITTINGS & EQUIPMENT				
B32 Equipment				by owner
B33 Conveying Systems				nil
C1 MECHANICAL				
C11 Plumbing & Drainage				
PLUMBING FIXTURES:				
1.0 Wall hung toilet c/w electronic flush valve, seat, and hanger	2	#	1,600.00	3,200
2.0 Wall hung lavatory c/w electronic faucet, trap, and hanger	2	#	1,550.00	3,100
TOTAL - PLUMBING FIXTURES			\$6,300	
			\$2.48 /sf	
DOMESTIC HOT AND COLD WATER				
3.0 Non frost wall hydrants	1	#	650.00	650
4.0 Mixing valve to lavatories	2	#	200.00	400
5.0 Trap seal primer	1	#	1,400.00	1,400
6.0 Domestic water pipe distribution				10,400
7.0 Insulation				2,600
TOTAL - DOMESTIC HOT AND COLD WATER			\$15,450	
			\$6.08 /sf	
SANITARY WASTE AND VENT				
8.0 Floor drains	2	#	350.00	700
9.0 Sanitary pipe distribution				8,200
TOTAL - SANITARY WASTE AND VENT			\$8,900	
			\$3.50 /sf	
STORM				
10.0 Roof drains	2	#	400.00	800
11.0 Storm pipe distribution				8,000
12.0 Pipe insulation				1,800
TOTAL - STORM			\$10,600	
			\$4.17 /sf	
NATURAL GAS				
13.0 Natural gas pipe distribution		allow		6,400
TOTAL - NATURAL GAS			\$6,400	
			\$2.52 /sf	
DEMOLITION				
				nil
TOTAL - DEMOLITION			nil	
			- /sf	
MISCELLANEOUS				
14.0 Identification				700
15.0 Miscellaneous fitments, rentals, as built, etc				3,400
TOTAL - MISCELLANEOUS			\$4,100	
			\$1.61 /sf	
Total C11 Plumbing & Drainage	2,541	sf		51,750

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C1 MECHANICAL				
C12 Fire Protection				
SPRINKLERS:				
1.0 Wet sprinklers				7,623
2.0 Mains to areas		allow		5,000
TOTAL - SPRINKLERS			\$12,623 \$4.97 /sf	
FIRE STANDPIPE				
				nil
TOTAL - FIRE STANDPIPE			nil - /sf	
FIRE EXTINGUISHERS				
3.0 Fire extinguishers	1	#	250.00	250
TOTAL - FIRE EXTINGUISHERS			\$250 \$0.10 /sf	
MISCELLANEOUS				
4.0 Miscellaneous fitments, rentals, as built, etc				900
TOTAL - MISCELLANEOUS			\$900 \$0.35 /sf	
Total C12 Fire Protection	2,541	sf		13,773
C13 HVAC				
AIR HANDLING UNITS AND DUCTWORK				
1.0 Air handling units, grilles and diffusers, ductwork, etc		allow		101,640
TOTAL - AIR HANDLING UNITS & DUCTWORK			\$101,640 \$40.00 /sf	
EXHAUST AND VENTILATION				
				incl.
TOTAL - EXHAUST AND VENTILATION			incl. - /sf	
LIQUID HEAT TRANSFER				
2.0 Convectors c/w heating water pipe distribution				30,492
TOTAL - LIQUID HEAT TRANSFER			\$30,492 \$12.00 /sf	
BALANCING				
3.0 Balancing				2,500
4.0 Verification				1,500
5.0 Labour for Mechanical Contractor to coordinate with commissioning agent				2,000
TOTAL - BALANCING			\$6,000 \$2.36 /sf	

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C1 MECHANICAL				
SILENCING/VIBRATION ISOLATION				nil
TOTAL - SILENCING/VIBRATION ISOLATION			<u>nil</u> \$0.00 /sf	
MOTOR CONTROL & MECHANICAL WIRING				By electrical
TOTAL - MOTOR CONTROL & MECHANICAL WIRING			<u>By electrical</u> \$0.00 /sf	
MISCELLANEOUS				
6.0 Identification				2,600
7.0 Cranage/haulage				16,100
8.0 Seismic restraint				nil
9.0 Miscellaneous fitments, rentals, as built, etc				11,000
TOTAL - MISCELLANEOUS			<u>\$29,700</u> \$11.69 /sf	
Total C13 HVAC	2,541	sf		<u>167,832</u>
C14 Controls				
1.0 Controls				35,000
Total C14 Controls	2,541	sf		<u>35,000</u>

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C2 ELECTRICAL				
C21 Service & Distribution				
1.0 Normal power distribution	1	#	7,500.00	7,500
2.0 Emerg distribution	1	sum	2,500.00	2,500
3.0 Mechanical (motor) wiring	1	sum	6,000.00	6,000
4.0 Miscellaneous distribution	1	sum	1,500.00	1,500
Total C21 Service & Distribution	2,541	sf		17,500
C22 Lighting, Devices & Heating				
1.0 Lighting including exit & emerg lights, LED	2,541	sf	10.00	25,410
2.0 Switching c/w occupancy sensors	1	sum	4,000.00	4,000
3.0 LV lighting control system				nil
4.0 Receptacles				
- duplex, W/M	29	#	300.00	8,700
- duplex c/w USB port, W/M	4	#	300.00	1,200
- duplex, C/M	2	#	300.00	600
- quad, W/M	4	#	300.00	1,200
- 20a housekeeping, W/M	2	#	375.00	750
5.0 Equipment hard wired power connections				
- barrier free motorized door operator c/w pushbuttons, C/M	2	#	375.00	750
- BAS mechanical controls c/w 50va 120v/24vac TX in ceiling space	2	#	250.00	500
6.0 Electrical resistance heating, supply & install				
- 2.00kw cabinet unit heater UH-1 c/w built-in non-programmable electrical thermostat, W/M	1	#	800.00	800
- 3.00kw cabinet forced flow heater FFH-1 c/w built-in non-programmable electrical thermostat, W/M	1	#	975.00	975
7.0 Heat tracing to roof mounted mechanical piping				nil
8.0 Hydronic snow melting system for entrance ramp				nil
Total C22 Lighting, Devices & Heating	2,541	sf		47,885

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C2 ELECTRICAL				
C23 Systems & Ancillaries				
1.0 Single stage addressable fire alarm system c/w 3rd party verification	2,541	sf	2.50	6,353
2.0 Telecommunications, conduit only				
- 1voice & 1data, W/M	1	#	150.00	150
- 2data, W/M	8	#	150.00	1,200
3.0 Telecommunications, Cat6 FT6 multipair plenum rated cabling				
- voice, R/M	1	#	300.00	300
- data, R/M	21	#	300.00	6,300
- 48port patch panel in data rack, R/M	1	#	750.00	750
- PDU unit & UPS equipment, modem, network switch, etc.				by others
- network audit after completion	1	sum	700.00	700
4.0 Wireless communications, power only				
- Wi-Fi network access points, C/M	1	#	250.00	250
- PoE wireless router, C/M				by owner
5.0 CATV system, conduit only				
- CATV outlet, W/M	2	#	200.00	400
6.0 Barrier-free universal washroom flashing unit				nil
7.0 Intrusion control system	1	sum	2,500.00	2,500
8.0 Door access control system, conduit & power only				
- proximity card reader, unsecured side, W/M	1	#	125.00	125
- electric strike, D/M	1	#	125.00	125
- electro-magnetic door holder, D/M	4	#	125.00	500
- door open-detect contact, D/M	2	#	125.00	250
- door bell c/w step-down transformer, C/M	1	#	125.00	125
- power assisted pushbutton, W/M	1	#	125.00	125
- infra-red egress motion detector, W/M	1	#	125.00	125
- security junction box, C/M	1	#	150.00	150
- door power & security controller on secure side, C/M	1	#	500.00	500
9.0 Door access control system, wiring & head-end equipment				
10.0 CCTV system, power & conduit only				
- indoor CCTV camera, indoor fixed, W/M	3	#	500.00	1,500
11.0 CCTV system, head-end equipment, devices & wiring				
12.0 Cable tray, main conduit, hangers & support channels, etc.	1	sum	8,000.00	8,000
13.0 Public address & paging system				nil

DETAILED ESTIMATE - COUNCIL CHAMBER ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C2 ELECTRICAL				
C23 Systems & Ancillaries (Cont'd)				
14.0 Wireless clock system	1	sum	2,500.00	2,500
15.0 Audio & visual system for council chambers, conduit & power only	1	sum	5,000.00	5,000
16.0 Audio & visual system, system devices & wiring				by others
17.0 Lightning protection system				nil
18.0 Secondary grounding & bonding system	2,541	sf	0.75	1,906
19.0 Scanning, core drilling & patching				by general
20.0 Testing & inspection	1	sum	1,000.00	1,000
21.0 Labour for commissioning agent	1	sum	500.00	500
22.0 Seismic & vibration restraints				nil
23.0 Miscellaneous fitments, fire stops, rentals, etc.	1	sum	2,500.00	2,500
24.0 Job start up & close out	1	sum	10,987.00	10,987
Total C23 Systems & Ancillaries	2,541	sf		55,969

D1 SITE WORK				
D11 Site Development				separate
D12 Mechanical Site Services				separate
D13 Electrical Site Services				separate

D2 ANCILLARY WORK				
D21 Demolition				nil
D2 ANCILLARY WORK				
D22 Alterations				
1.0 Removals - exterior wall	578	sf	150.00	86,700
2.0 Cut & patch for mechanical & electrical		allow		2,000
3.0 Minor demolition, removals, etc.		allow		4,500
Total D22 Alterations				93,200

D23 Cash Allowances				
1.0 Testing, Inspections and unforeseeable site conditions		allow		7,500
Total D23 Cash Allowances	2,541	sf		7,500

SECTION 3

ENGINEERING ADDITION

TOWN OF SAUGEENN SHORES						November 29, 2022			
MUNICIPAL OFFICE 2.0						DRAFT CLASS "D" ESTIMATE R0			
Port Elgin, Ontario						GFA : 2,079 sf			
ELEMENTAL COST SUMMARY									
DETAILED ESTIMATE - ENGINEERING ADDITION									
FILE: L2463/2 Office 2.0									
ELEMENT/Sub Element		Ratio to GFA	Elemental Cost		Elemental Amount		Rate/sf		
			Quantity	Unit Rate	Sub-total	Total	Sub-Total	Total	%
A SHELL						\$513,987		\$247.23	38.41%
A1 SUBSTRUCTURE						\$119,660		\$57.56	8.94%
A11 Foundations		1.00	2,079 sf	57.56	\$119,660		\$57.56		
A112 Special Foundations		0.00	0 m³	0.00	nil		\$0.00		
A12 Basement Excavation		0.00	0 m³	0.00	nil		\$0.00		
A2 STRUCTURE						\$137,747		\$66.26	10.29%
A21 Lowest Floor Construction		1.00	2,079 sf	8.36	\$17,382		\$8.36		
A22 Upper Floor Construction		0.00	0 m²	0.00	nil		\$0.00		
A222 Stair Construction		0.00	0 flts	0.00	nil		\$0.00		
A23 Roof Construction		1.00	2,079 sf	57.90	\$120,365		\$57.90		
A3 EXTERIOR ENCLOSURE						\$256,580		\$123.42	19.18%
A31 Walls Below Grade		0.00	0 m²	0.00	nil		\$0.00		
A32 Walls Above Grade		0.92	1,904 sf	53.57	\$101,994		\$49.06		
A33 Windows & Entrances		0.23	485 sf	118.19	\$57,320		\$27.57		
A34 Roof Covering		1.00	2,079 sf	46.78	\$97,266		\$46.78		
A35 Projections		0.00	0 sf	0.00	nil		\$0.00		
B INTERIORS						\$87,777		\$42.22	6.56%
B1 PARTITIONS & DOORS						\$38,830		\$18.68	2.90%
B11 Partitions		0.57	1,194 sf	26.28	\$31,380		\$15.09		
B12 Doors		0.00	3 #	2,483.33	\$7,450		\$3.58		
B2 FINISHES						\$48,947		\$23.54	3.66%
B21 Floor Finishes		1.00	2,079 sf	10.44	\$21,711		\$10.44		
B22 Ceiling Finishes		1.00	2,079 sf	9.46	\$19,672		\$9.46		
B23 Wall Finishes		1.15	2,388 sf	3.17	\$7,564		\$3.64		
B3 FITTINGS & EQUIPMENT						\$0		\$0.00	0.00%
B31 Fittings & Fixtures		0.00	0 sf	0.00	nil		\$0.00		
B32 Equipment		0.00	0 0	0.00	\$0		\$0.00		
B33 Conveying Systems		0.00	0 stp	0.00	\$0		\$0.00		
C SERVICES						\$334,579		\$160.93	25.00%
C1 MECHANICAL						\$224,120		\$107.80	16.75%
C11 Plumbing & Drainage		1.00	2,079 sf	8.27	\$17,200		\$8.27		
C12 Fire Protection		1.00	2,079 sf	6.03	\$12,537		\$6.03		
C13 HVAC		1.00	2,079 sf	74.26	\$154,383		\$74.26		
C14 Controls		1.00	2,079 sf	19.24	\$40,000		\$19.24		
C2 ELECTRICAL						\$110,459		\$53.13	8.26%
C21 Service & Distribution		1.00	2,079 sf	7.22	\$15,000		\$7.22		
C22 Lighting, Devices & Heating		1.00	2,079 sf	19.56	\$40,665		\$19.56		
C23 Systems & Ancillaries		1.00	2,079 sf	26.36	\$54,794		\$26.36		
NET BUILDING COST - EXCLUDING SITE & ANCILLARY WORK					\$936,342	\$936,342		\$450.38	69.98%
D SITE & ANCILLARY WORK						\$59,250		\$28.50	4.43%
D1 SITE WORK						\$0		\$0.00	0.00%
D11 Site Development		0.00	0 m²	0.00	nil		\$0.00		
D12 Mechanical Site Services		0.00	0 m²	0.00	nil		\$0.00		
D13 Electrical Site Services		0.00	0 m²	0.00	nil		\$0.00		
D2 ANCILLARY WORK						\$59,250		\$28.50	4.43%
D21 Demolition		0.00	0 m²	0.00	nil		\$0.00		
D22 Alterations		1.00	2,079 sf	24.89	\$51,750		\$24.89		
D23 Cash Allowances		1.00	2,079 sf	3.61	\$7,500		\$3.61		
NET BUILDING COST - EXCLUDING GENERAL REQUIREMENTS					\$995,592	\$995,592		\$478.88	74.40%
Z GENERAL REQUIREMENTS						\$199,118		\$95.78	14.88%
Z1 GENERAL REQUIREMENTS & FEE						\$199,118		\$95.78	14.88%
Z11 General Requirements (%)			15.0%		\$149,339		\$71.83		
Z12 Fee (%)			5.0%		\$49,780		\$23.94		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES					\$1,194,711	\$1,194,711		\$574.66	89.29%
Z2 ALLOWANCES						\$143,365		\$68.96	10.71%
Z21 Design & Pricing (%)			12.0%		\$143,365		\$68.96		
Z22 Escalation Allowance (%)			0.0%		\$0		\$0.00		
Z23 Construction Allowance (%)			0.0%		\$0		\$0.00		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING TAXES					\$1,338,076	\$1,338,076		\$643.62	100.00%
HARMONIZED SALES TAX						\$0			
Harmonized Sales Tax			0.0%		\$0		\$0.00		
TOTAL CONSTRUCTION ESTIMATE						\$1,338,076		\$643.62	

DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
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A1 SUBSTRUCTURE

A11 Foundations

1.0	Earthwork	2,079	sf	10.00	20,790
2.0	Foundations	2,079	sf	30.00	62,370
3.0	Shoring/ underpinning to abutting building		allow		30,000
4.0	Inserts, steps, tie-ins, etc.		allow		6,500
Total A11 Foundations		2,079	sf		119,660

A112 Special Foundations

nil

A12 Basement Excavation

nil

A2 STRUCTURE

A21 Lowest Floor Construction

1.0	Concrete slab on grade (125mm concrete with WWM)	2,079	sf	8.00	16,632
2.0	Inserts, slab thickening, equipment bases, misc. reinforcing		allow		750
Total A21 Lowest Floor Construction		2,079	sf		17,382

A22 Upper Floor Construction

nil

A222 Stair Construction

nil

A23 Roof Construction

1.0	Roof structure				
	- structural steel	20,790	lbs	4.90	101,871
	- metal deck	2,079	sf	6.25	12,994
2.0	Inserts, curbs, misc. reinforcing, tie-in to existing		allow		5,500
Total A23 Roof Construction		2,079	sf		120,365

DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
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A3 EXTERIOR ENCLOSURE

A31 Walls Below Grade nil

A32 Walls Above Grade

1.0	Steel stud framing - 60% Standing Seam	1,142	sf	42.00	47,964
2.0	Steel stud framing - 40% Wood Panel	762	sf	65.00	49,530
3.0	Lintels, caulking, flashing, tie-in to existing		allow		4,500
Total A32 Walls Above Grade		1,904	sf		101,994

A33 Windows & Entrances

1.0	Curtainwall	485	sf	112.00	54,320
2.0	Supports, caulking, flashing, etc.		allow		3,000
Total A33 Windows & Entrances		485	sf		57,320

A3 EXTERIOR ENCLOSURE

A34 Roof Covering

1.0	2-Ply Roofing membrane	2,079	sf	42.00	87,318
2.0	Parapets	208	lf	31.00	6,448
3.0	Flashing, pavers, anchors, tie-in to existing		allow		3,500
Total A34 Roof Covering		2,079	sf		97,266

A35 Projections nil

DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
B1 PARTITIONS & DOORS				
B11 Partitions				
1.0 Drywall partitions	1,194	sf	20.00	23,880
2.0 Glazing		allow		6,000
3.0 Lintels, supports, caulking, firestopping		allow		1,500
Total B11 Partitions	1,194	sf		31,380
B12 Doors				
1.0 Solid core stain grade door set within solid core wood frame	3	lvs	750.00	2,250
2.0 Extra / over for: - finish hardware	3	#	1,600.00	4,800
3.0 Supports, misc. finish hardware		allow		400
Total B12 Doors	3	#		7,450
B2 FINISHES				
B21 Floor Finishes				
1.0 Flooring and bases	2,079	sf	9.00	18,711
2.0 Special finishes, patterns, etc.		allow		3,000
Total B21 Floor Finishes	2,079	sf		21,711
B22 Ceiling Finishes				
1.0 Ceilings	2,079	sf	8.50	17,672
2.0 Special finishes, patterns, etc.		allow		2,000
Total B22 Ceiling Finishes	2,079	sf		19,672
B23 Wall Finishes				
1.0 Paint walls	2,388	sf	3.00	7,164
2.0 Special finishes, patterns, etc.		allow		400
Total B23 Wall Finishes	2,388	sf		7,564

DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
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B3 FITTINGS & EQUIPMENT

B31 Fittings & Fixtures				nil
B32 Equipment				by owner
B33 Conveying Systems				nil

C1 MECHANICAL

C11 Plumbing & Drainage

PLUMBING FIXTURES:

TOTAL - PLUMBING FIXTURES			<u>nil</u> \$0.00 /sf	nil
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DOMESTIC HOT AND COLD WATER

TOTAL - DOMESTIC HOT AND COLD WATER			<u>nil</u> \$0.00 /sf	nil
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SANITARY WASTE AND VENT

TOTAL - SANITARY WASTE AND VENT			<u>nil</u> \$0.00 /sf	nil
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STORM

1.0	Roof drains	2	#	400.00	800
2.0	Storm pipe distribution				8,000
3.0	Pipe insulation				1,800

TOTAL - STORM			<u>\$10,600</u> \$5.10 /sf	
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NATURAL GAS

4.0	Natural gas pipe distribution		allow		5,200
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TOTAL - NATURAL GAS			<u>\$5,200</u> \$2.50 /sf	
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DEMOLITION

TOTAL - DEMOLITION			<u>nil</u> \$0.00 /sf	nil
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DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
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C1 MECHANICAL

C11 Plumbing & Drainage (Cont'd)

MISCELLANEOUS

5.0	Identification			300
6.0	Miscellaneous fitments, rentals, as built, etc			1,100

TOTAL - MISCELLANEOUS

\$1,400
\$0.67 /sf

Total C11 Plumbing & Drainage	2,079	sf		17,200
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C12 Fire Protection

SPRINKLERS:

1.0	Wet sprinklers			6,237
2.0	Mains to areas	allow		5,000

TOTAL - SPRINKLERS

\$11,237
\$5.41 /sf

FIRE STANDPIPE

nil

TOTAL - FIRE STANDPIPE

nil
\$0.00 /sf

FIRE EXTINGUISHERS

3.0	Fire extinguishers	2	#	250.00	500
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TOTAL - FIRE EXTINGUISHERS

\$500
\$0.24 /sf

MISCELLANEOUS

4.0	Miscellaneous fitments, rentals, as built, etc			800
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TOTAL - MISCELLANEOUS

\$800
\$0.38 /sf

Total C12 Fire Protection	2,079	sf		12,537
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DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C1 MECHANICAL				
C13 HVAC				
AIR HANDLING UNITS AND DUCTWORK				
1.0 Air handling units, grilles and diffusers, ductwork, etc		allow		93,555
TOTAL - AIR HANDLING UNITS & DUCTWORK			\$93,555 \$45.00 /sf	
EXHAUST AND VENTILATION				
				incl.
TOTAL - EXHAUST AND VENTILATION			incl. \$0.00 /sf	
LIQUID HEAT TRANSFER				
2.0 Convector c/w heating water pipe distribution				24,948
TOTAL - LIQUID HEAT TRANSFER			\$24,948 \$12.00 /sf	
BALANCING				
3.0 Balancing				2,200
4.0 Verification				1,320
5.0 Labour for Mechanical Contractor to coordinate with commissioning agent				1,760
TOTAL - BALANCING			\$5,280 \$2.54 /sf	

DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
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C1 MECHANICAL

SILENCING/VIBRATION ISOLATION

nil

TOTAL - SILENCING/VIBRATION ISOLATION

nil
\$0.00 /sf

MOTOR CONTROL & MECHANICAL WIRING

By electrical

TOTAL - MOTOR CONTROL & MECHANICAL WIRING

By electrical
\$0.00 /sf

MISCELLANEOUS

6.0	Identification			2,400
7.0	Cranage/haulage			18,100
8.0	Seismic restraint			nil
9.0	Miscellaneous fitments, rentals, as built, etc			10,100

TOTAL - MISCELLANEOUS

\$30,600
\$14.72 /sf

Total C13 HVAC	2,079	sf		<u>154,383</u>
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C14 Controls

1.0	Controls		allow	40,000
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Total C14 Controls	2,079	sf		<u>40,000</u>
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DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
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C2 ELECTRICAL

C21 Service & Distribution

1.0	Normal power distribution	1	#	6,000.00	6,000
2.0	Emerg distribution	1	sum	2,500.00	2,500
3.0	Mechanical (motor) wiring	1	sum	5,000.00	5,000
4.0	Miscellaneous distribution	1	sum	1,500.00	1,500
Total C21 Service & Distribution		2,079	sf		15,000

C22 Lighting, Devices & Heating

1.0	Lighting including exit & emerg lights, LED	2,079	sf	10.00	20,790
2.0	Switching c/w occupancy sensors	1	sum	3,000.00	3,000
3.0	LV lighting control system				nil
4.0	Receptacles				
	- duplex, W/M	21	#	300.00	6,300
	- duplex c/w USB port, W/M	4	#	300.00	1,200
	- duplex, C/M	2	#	300.00	600
	- quad, W/M	4	#	300.00	1,200
	- 20a housekeeping, W/M	2	#	375.00	750
5.0	Equipment hard wired power connections				
	- barrier free motorized door operator c/w pushbuttons, C/M	2	#	375.00	750
	- BAS mechanical controls c/w 50va 120v/24vac TX in ceiling space	2	#	250.00	500
6.0	Electrical resistance heating, supply & install				
	- 2.00kw cabinet unit heater UH-1 c/w built-in non-programmable electrical thermostat, W/M	2	#	800.00	1,600
	- 3.00kw cabinet forced flow heater FFH-1 c/w built-in non-programmable electrical thermostat, W/M	1	#	975.00	975
Total C22 Lighting, Devices & Heating		2,079	sf		40,665

DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C2 ELECTRICAL				
C23 Systems & Ancillaries				
1.0 Single stage addressable fire alarm system c/w 3rd party verification	2,079	sf	2.50	5,198
2.0 Telecommunications, conduit only				
- 1voice & 1data, W/M	1	#	150.00	150
- 2data, W/M	20	#	150.00	3,000
3.0 Telecommunications, Cat6 FT6 multipair plenum rated cabling				
- voice, R/M	1	#	300.00	300
- data, R/M	43	#	300.00	12,900
- 48port patch panel in data rack, R/M	3	#	750.00	2,250
- PDU unit & UPS equipment, modem, network switch, etc.				by others
- network audit after completion	1	sum	1,400.00	1,400
4.0 Wireless communications, power only				
- Wi-Fi network access points, C/M	1	#	250.00	250
- PoE wireless router, C/M				by owner
5.0 CATV system, conduit only				
- CATV outlet, W/M	1	#	200.00	200
6.0 Barrier-free universal washroom flashing unit				nil
7.0 Intrusion control system	1	sum	2,000.00	2,000
8.0 Door access control system, conduit & power only				
- proximity card reader, unsecured side, W/M	2	#	125.00	250
- electric strike, D/M	2	#	125.00	250
- electro-magnetic door holder, D/M	4	#	125.00	500
- door open-detect contact, D/M	3	#	125.00	375
- door bell c/w step-down transformer, C/M	2	#	125.00	250
- power assisted pushbutton, W/M	2	#	125.00	250
- infra-red egress motion detector, W/M	2	#	125.00	250
- security junction box, C/M	2	#	150.00	300
- door power & security controller on secure side, C/M	2	#	500.00	1,000
9.0 Door access control system, wiring & head-end equipment				by others
10.0 CCTV system, power & conduit only				
- indoor CCTV camera, indoor fixed, W/M	2	#	500.00	1,000
11.0 CCTV system, head-end equipment, devices & wiring				by others
12.0 Cable tray, main conduit, hangers & support channels, etc.	1	sum	6,000.00	6,000
13.0 Public address & paging system				nil

DETAILED ESTIMATE - ENGINEERING ADDITION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
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C2 ELECTRICAL

C23 Systems & Ancillaries (Cont'd)

14.0	Wireless clock system	1	sum	500.00	500
15.0	Audio & visual system				nil
16.0	Lightning protection system				nil
17.0	Secondary grounding & bonding system	2,079	sf	0.15	312
18.0	Scanning, core drilling & patching				by general
19.0	Testing & inspection	1	sum	1,000.00	1,000
20.0	Labour for commissioning agent	1	sum	500.00	500
21.0	Seismic & vibration restraints				nil
22.0	Miscellaneous fitments, fire stops, rentals, etc.	1	sum	2,500.00	2,500
23.0	Job start up & close out	1	sum	9,996.00	9,996
Total C23 Systems & Ancillaries		2,079	sf		54,794

D1 SITE WORK

D11 Site Development	separate
D12 Mechanical Site Services	separate
D13 Electrical Site Services	separate

D2 ANCILLARY WORK

D21 Demolition	nil
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D22 Alterations

1.0	Removals - exterior wall	315	sf	150.00	47,250
2.0	Cut & patch for mechanical & electrical		allow		2,000
3.0	Minor demolition, removals, etc.		allow		2,500
Total D22 Alterations		2,079	sf		51,750

D23 Cash Allowances

1.0	Testing, Inspections and unforeseeable site conditions		allow		7,500
Total D23 Cash Allowances		2,079	sf		7,500

SECTION 4

RENOVATION

TOWN OF SAUGEENN SHORES					November 29, 2022			
MUNICIPAL OFFICE 2.0					DRAFT CLASS "D" ESTIMATE R0			
Port Elgin, Ontario					GFA : 9,161 SF			
FILE: L2463/2 Office 2.0								
ELEMENT/Sub Element	Ratio to GFA	Elemental Cost		Elemental Amount		Rate/SF		%
		Quantity	Unit Rate	Sub-total	Total	Sub-Total	Total	
A SHELL					\$0		\$0.00	0.00%
A1 SUBSTRUCTURE					\$0		\$0.00	0.00%
A11 Foundations	0.00	0 sf	0.00	\$0		\$0.00		
A112 Special Foundations	0.00	0 m³	0.00	nil		\$0.00		
A12 Basement Excavation	0.00	0 m³	0.00	nil		\$0.00		
A2 STRUCTURE					\$0		\$0.00	0.00%
A21 Lowest Floor Construction	0.00	0 sf	0.00	\$0		\$0.00		
A22 Upper Floor Construction	0.00	0 sf	0.00	\$0		\$0.00		
A222 Stair Construction	0.00	0 flts	0.00	\$0		\$0.00		
A23 Roof Construction	0.00	0 sf	0.00	\$0		\$0.00		
A3 EXTERIOR ENCLOSURE					\$0		\$0.00	0.00%
A31 Walls Below Grade	0.00	0 m²	0.00	nil		\$0.00		
A32 Walls Above Grade	0.00	0 sf	0.00	nil		\$0.00		
A33 Windows & Entrances	0.00	0 sf	0.00	nil		\$0.00		
A34 Roof Covering	0.00	0 sf	0.00	\$0		\$0.00		
A35 Projections	0.00	0 sf	0.00	\$0		\$0.00		
B INTERIORS					\$787,489		\$85.96	26.79%
B1 PARTITIONS & DOORS					\$362,142		\$39.53	12.32%
B11 Partitions	1.00	9,161 sf	27.92	\$255,742		\$27.92		
B12 Doors	0.00	29 #	3,668.97	\$106,400		\$11.61		
B2 FINISHES					\$288,742		\$31.52	9.82%
B21 Floor Finishes	1.00	9,161 sf	9.49	\$86,949		\$9.49		
B22 Ceiling Finishes	1.00	9,161 sf	16.29	\$149,217		\$16.29		
B23 Wall Finishes	1.00	9,161 sf	5.74	\$52,576		\$5.74		
B3 FITTINGS & EQUIPMENT					\$136,605		\$14.91	4.65%
B31 Fittings & Fixtures	1.00	9,161 sf	14.91	\$136,605		\$14.91		
B32 Equipment	0.28	2,541 m²	0.00	\$0		\$0.00		
B33 Conveying Systems	0.00	0 stp	0.00	\$0		\$0.00		
C SERVICES					\$1,285,382		\$140.31	43.74%
C1 MECHANICAL					\$879,810		\$96.04	29.94%
C11 Plumbing & Drainage	1.00	9,161 sf	14.84	\$135,950		\$14.84		
C12 Fire Protection	1.00	9,161 sf	8.58	\$78,583		\$8.58		
C13 HVAC	1.00	9,161 sf	65.53	\$600,277		\$65.53		
C14 Controls	1.00	9,161 sf	7.10	\$65,000		\$7.10		
C2 ELECTRICAL					\$405,572		\$44.27	13.80%
C21 Service & Distribution	1.00	9,161 sf	6.28	\$57,500		\$6.28		
C22 Lighting, Devices & Heating	1.00	9,161 sf	17.29	\$158,385		\$17.29		
C23 Systems & Ancillaries	1.00	9,161 sf	20.71	\$189,687		\$20.71		
NET BUILDING COST - EXCLUDING SITE & ANCILLARY WORK				\$2,072,871	\$2,072,871		\$226.27	70.53%
D SITE & ANCILLARY WORK					\$113,878		\$12.43	3.87%
D1 SITE WORK					\$0		\$0.00	0.00%
D11 Site Development	0.00	0 m²	0.00	nil		\$0.00		
D12 Mechanical Site Services	0.00	0 m²	0.00	nil		\$0.00		
D13 Electrical Site Services	0.00	0 m²	0.00	nil		\$0.00		
D2 ANCILLARY WORK					\$113,878		\$12.43	3.87%
D21 Demolition	0.00	0 m²	0.00	nil		\$0.00		
D22 Alterations	1.00	9,161 sf	12.43	\$113,878		\$12.43		
D23 Cash Allowances	0.00	0 0	0.00	\$0		\$0.00		
NET BUILDING COST - EXCLUDING GENERAL REQUIREMENTS				\$2,186,749	\$2,186,749		\$238.70	74.40%
Z GENERAL REQUIREMENTS					\$437,350		\$47.74	14.88%
Z1 GENERAL REQUIREMENTS & FEE					\$437,350		\$47.74	14.88%
Z11 General Requirements (%)		15.0%		\$328,012		\$35.81		
Z12 Fee (%)		5.0%		\$109,337		\$11.94		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES				\$2,624,098	\$2,624,098		\$286.44	89.29%
Z2 ALLOWANCES					\$314,892		\$34.37	10.71%
Z21 Design & Pricing (%)		12.0%		\$314,892		\$34.37		
Z22 Escalation Allowance (%)		0.0%		\$0		\$0.00		
Z23 Construction Allowance (%)		0.0%		\$0		\$0.00		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING TAXES				\$2,938,990	\$2,938,990		\$320.82	100.00%
HARMONIZED SALES TAX					\$0			
Harmonized Sales Tax		0.0%		\$0		\$0.00		
TOTAL CONSTRUCTION ESTIMATE					\$2,938,990		\$320.82	

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
A1 SUBSTRUCTURE				
A11 Foundations				nil
A112 Special Foundations				nil
A12 Basement Excavation				nil
A2 STRUCTURE				
A21 Lowest Floor Construction				nil
A22 Upper Floor Construction				nil
A23 Roof Construction				nil
A3 EXTERIOR ENCLOSURE				
A31 Walls Below Grade				nil
A32 Walls Above Grade				nil
A33 Windows & Entrances				nil
A34 Roof Covering				nil
A35 Projections				nil
B1 PARTITIONS & DOORS				
B11 Partitions				
1.0 Drywall partitions	8,944	sf	20.00	178,880
- extra over for security wire mesh		allow		8,000
2.0 Glazing	910	sf	45.00	40,950
3.0 Patch and make good of existing walls	5,304	sf	3.00	15,912
4.0 Lintels, supports, caulking, firestopping		allow		12,000
Total B11 Partitions	9,161	sf		255,742
B12 Doors				
1.0 Solid core stain grade door set within solid core wood frame	22	lvs	750.00	16,500
2.0 Full glazed aluminum framed doors c/w door hardware	3	lvs	2,800.00	8,400
3.0 Sliding door c/w door hardware	1	lvs	3,900.00	3,900
4.0 Pivot door c/w door hardware	2	lvs	14,000.00	28,000
5.0 Security door c/w door hardware	1	lvs	3,500.00	3,500

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
B1 PARTITIONS & DOORS				
B12 Doors (Cont'd)				
6.0 Extra / over for:				
- finish hardware	22	#	1,600.00	35,200
- fire rating	6	#	200.00	1,200
- glazing	6	#	250.00	1,500
- door operators, card readers etc		allow		2,700
7.0 Supports, misc. finish hardware		allow		5,500
Total B12 Doors	29	#		106,400
B21 Floor Finishes				
1.0 Flooring and base	9,161	sf	9.00	82,449
2.0 Special finishes, patterns, etc.		allow		4,500
Total B21 Floor Finishes	9,161	sf		86,949
B2 FINISHES				
B22 Ceiling Finishes				
1.0 Suspended gypsum board ceiling c/w paint finish - 30% of GFA	2,749	sf	12.00	32,988
2.0 Paint exposed ceilings - 30% of GFA	2,749	sf	2.00	5,498
3.0 Suspended acoustic ceiling tile - 20% of GFA	1,833	sf	7.00	12,831
4.0 Wood slats on heavy duty T bar grid - 20% of GFA	1,833	sf	50.00	91,650
5.0 Special finishes, patterns, etc.		allow		6,250
Total B22 Ceiling Finishes	9,161	sf		149,217
B23 Wall Finishes				
1.0 Paint walls	16,538	sf	2.00	33,076
2.0 Ceramic tile		allow		17,000
3.0 Special finishes, patterns, etc.		allow		2,500
Total B23 Wall Finishes	9,161	sf		52,576

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
B3 FITTINGS & EQUIPMENT				
B31 Fittings & Fixtures				
1.0 Reception/lounge				
- banquet seating and storage	16.0	ft	775.00	12,400
- seating and planter	16.8	ft	775.00	13,020
- low planter	2.0	#	750.00	1,500
2.0 Hybrid desks				nil
3.0 HR office				nil
4.0 Private office - 8 offices				nil
5.0 HR office				nil
6.0 Kitchen/Lunch room				
- lower cabinet	8	ft	210.00	1,680
- upper cabinet	8	ft	190.00	1,520
- booth style café seating	3	#	2,700.00	8,100
- extra over table	3	#	1,000.00	3,000
7.0 Copy				
- lower cabinet	15	ft	210.00	3,150
- upper cabinet	15	ft	190.00	2,850
8.0 Corporate services				nil
9.0 Economic services				nil
10.0 Comm				nil
11.0 Collaboration spaces				
- seating and planter	36	ft	775.00	27,900
- extra over table	4	#	500.00	2,000
12.0 Universal change rooms				
- toilet tissue dispenser	1	#	95.00	95
- paper towel dispenser	1	#	275.00	275
- mirror	1	#	220.00	220
- sanitary napkin disposal	1	#	110.00	110
- coat hooks	1	#	35.00	35
- vanity	3.0	ft	650.00	1,950
- stainless steel shelf	1.0	#	120.00	120

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
B3 FITTINGS & EQUIPMENT				
B31 Fittings & Fixtures (Cont'd)				
13.0 Womens washroom				
- toilet partition	3	#	1,100.00	3,300
- extra over for pivot doors	3	#	550.00	1,650
- grab bars	1	#	265.00	265
- toilet tissue dispenser	3	#	95.00	285
- sanitary napkin disposal	3	#	110.00	330
- stainless steel shelf	3	#	120.00	360
- mirror	3	#	220.00	660
- soap dispenser	2	#	270.00	540
- paper towel dispenser	2	#	275.00	550
- wall mounted waste receptacle	2	#	100.00	200
- vanity with storage	10	lf	650.00	6,500
14.0 Mens washroom				
- toilet partition	3	#	1,100.00	3,300
- extra over for pivot doors	3	#	550.00	1,650
- grab bars	1	#	265.00	265
- toilet tissue dispenser	3	#	95.00	285
- stainless steel shelf	3	#	120.00	360
- mirror	2	#	220.00	440
- soap dispenser	2	#	270.00	540
- paper towel dispenser	2	#	275.00	550
- wall mounted waste receptacle	2	#	100.00	200
- vanity with storage	10	lf	650.00	6,500
15.0 Building and planning				
- seating and planter	18	ft	775.00	13,950
- extra over table	2	#	500.00	1,000
16.0 Signage and wayfinding		allow		5,500
17.0 Blinds				Excluded
18.0 Various fittings, fixtures, millwork and specialty components not specifically detailed on the current drawings		allow		7,500
Total B31 Fittings & Fixtures	9,161	sf		136,605

B32 Equipment

by owner

B33 Conveying Systems

nil

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C1 MECHANICAL				
C11 Plumbing & Drainage				
PLUMBING FIXTURES:				
1.0 Wall hung toilet c/w electronic flush valve, seat, and hanger	7	#	1,600.00	11,200
2.0 Wall hung lavatory c/w electronic faucet, trap, and hanger	5	#	1,550.00	7,750
3.0 Double bowl s.s. sink	1	#	1,100.00	1,100
4.0 Dishwasher connection	1	#	200.00	200
TOTAL - PLUMBING FIXTURES			\$20,250	
			\$2.21 /sf	
DOMESTIC HOT AND COLD WATER				
5.0 Water heater				existing to remain
6.0 Mixing valve to lavatories	5	#	200.00	1,000
7.0 Trap seal primer	2	#	1,400.00	2,800
8.0 Domestic water pipe distribution				32,900
9.0 Insulation				8,200
TOTAL - DOMESTIC HOT AND COLD WATER			\$44,900	
			\$4.90 /sf	
SANITARY WASTE AND VENT				
10.0 Floor drains	4	#	350.00	1,400
11.0 Sanitary pipe distribution				27,200
TOTAL - SANITARY WASTE AND VENT			\$28,600	
			\$3.12 /sf	
STORM				
				existing to remain
TOTAL - STORM			nil	
			\$0.00 /sf	
NATURAL GAS				
				existing to remain
TOTAL - NATURAL GAS			nil	
			\$0.00 /sf	
DEMOLITION				
12.0 Mechanical demolition				32,100
TOTAL - DEMOLITION			\$32,100	
			\$3.50 /sf	
MISCELLANEOUS				
13.0 Identification				1,200
14.0 Miscellaneous fitments, rentals, as built, etc				8,900
TOTAL - MISCELLANEOUS			\$10,100	
Total C11 Plumbing & Drainage	9,161	sf		135,950

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C1 MECHANICAL				
C12 Fire Protection				
SPRINKLERS:				
1.0 Wet sprinklers				27,483
2.0 Preaction sprinklers to vault		allow		35,000
3.0 Mains to zones		allow		10,000
TOTAL - SPRINKLERS			\$72,483	
			\$7.91 /sf	
FIRE STANDPIPE				
				nil
TOTAL - FIRE STANDPIPE			nil	
			\$0.00 /sf	
FIRE EXTINGUISHERS				
4.0 Fire extinguishers	4	#	250.00	1,000
TOTAL - FIRE EXTINGUISHERS			\$1,000	
			\$0.11 /sf	
MISCELLANEOUS				
5.0 Miscellaneous fitments, rentals, as built, etc				5,100
TOTAL - MISCELLANEOUS			\$5,100	
			\$0.56 /sf	
Total C12 Fire Protection	9,161	sf		78,583

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C1 MECHANICAL				
C13 HVAC				
AIR HANDLING UNITS AND DUCTWORK				
1.0 Air handling units			existing to remain	
2.0 Fans, grilles and diffusers, ductwork, etc		allow		412,245
TOTAL - AIR HANDLING UNITS & DUCTWORK			\$412,245	
			\$45.00 /sf	
EXHAUST AND VENTILATION				
				incl.
TOTAL - EXHAUST AND VENTILATION			incl.	
			\$0.00 /sf	
LIQUID HEAT TRANSFER				
3.0 Boilers			existing to remain	
4.0 Convectors c/w heating water pipe distribution				109,932
TOTAL - LIQUID HEAT TRANSFER			\$109,932	
			\$12.00 /sf	
BALANCING				
5.0 Balancing				5,500
6.0 Verification				3,300
7.0 Labour for Mechanical Contractor to coordinate with commissioning agent				4,400
TOTAL - BALANCING			\$13,200	
			\$1.44 /sf	
SILENCING/VIBRATION ISOLATION				
				nil
TOTAL - SILENCING/VIBRATION ISOLATION			nil	
			\$0.00 /sf	
MOTOR CONTROL & MECHANICAL WIRING				
				By electrical
TOTAL - MOTOR CONTROL & MECHANICAL WIRING			By electrical	
			\$0.00 /sf	

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C1 MECHANICAL				
MISCELLANEOUS				
8.0 Identification				10,400
9.0 Haulage				15,200
10.0 Seismic restraint				nil
11.0 Miscellaneous fitments, rentals, as built, etc				39,300
TOTAL - MISCELLANEOUS			\$64,900	
			\$7.08 /sf	
Total C13 HVAC	9,161	sf		600,277
C14 Controls				
1.0 Controls				65,000
Total C14 Controls	9,161	sf		65,000

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C2 ELECTRICAL				
C21 Service & Distribution				
1.0 Normal power distribution	1	#	32,000.00	32,000
2.0 Emerg distribution	1	sum	8,000.00	8,000
4.0 Mechanical (motor) wiring	1	sum	15,000.00	15,000
5.0 Miscellaneous distribution	1	sum	2,500.00	2,500
Total C21 Service & Distribution	9,161	sf		57,500
C22 Lighting, Devices & Heating				
1.0 Lighting including exit & emerg lights, LED	9,161	sf	10.00	91,610
2.0 Switching c/w occupancy sensors				
- LV single pole, W/M	30	#	175.00	5,250
- LV 3way, W/M	22	#	250.00	5,500
- LV 4way, W/M	3	#	275.00	825
- LV dimmer, W/M	3	#	300.00	900
- photocell, C/M	1	#	350.00	350
- emerg lighting bypass/shunt relay c/w dimmer override, C/M	12	#	125.00	1,500
3.0 LV lighting control system				nil
4.0 Receptacles				
- duplex, W/M	64	#	300.00	19,200
- duplex c/w USB port, W/M	8	#	300.00	2,400
- duplex, C/M	2	#	300.00	600
- GFCI, W/M	6	#	300.00	1,800
- quad, W/M	4	#	300.00	1,200
- 20a housekeeping, W/M	8	#	375.00	3,000
- dedicated, W/M	2	#	375.00	750
- IG, W/M	4	#	375.00	1,500
- GFCI, W/M, weatherproof	4	#	375.00	1,500
- GFCI, R/M, weatherproof	4	#	375.00	1,500
- 30a, IT room, W/M	2	#	375.00	750
- GFCI, U/M, weatherproof	1	#	750.00	750
- floor monument (1duplex, 1voice & 1data), flush F/M	2	#	975.00	1,950
5.0 Equipment hard wired power connections				
- electrical no touch faucet c/w 50va 120v/24vac TX in ceiling space	5	#	200.00	1,000
- electrical no touch flush valve c/w 50va 120v/24vac TX in ceiling space	7	#	200.00	1,400
- barrier free motorized sliding door operator c/w pushbuttons, C/M	4	#	375.00	1,500
- BAS mechanical controls c/w 50va 120v/24vac TX in ceiling space	4	#	250.00	1,000

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C2 ELECTRICAL				
C22 Lighting, Devices & Heating (Cont'd)				
6.0 Electrical resistance heating, supply & install				
- 0.30kw baseboard heater BBH-1 c/w built-in non-programmable electrical thermostat, W/M	5	#	650.00	3,250
- 0.30kw baseboard heater BBH-2 c/w built-in non-programmable electrical thermostat, W/M	1	#	675.00	675
- 0.50kw baseboard heater BBH-3 c/w built-in non-programmable electrical thermostat, W/M	1	#	750.00	750
- 3.00kw cabinet forced flow heater FFH-1 c/w built-in non-programmable electrical thermostat, W/M	1	#	975.00	975
- 3.00kw cabinet forced flow heater FFH-2 c/w built-in non-programmable electrical thermostat, W/M	4	#	1,250.00	5,000
Total C22 Lighting, Devices & Heating	9,161	sf		158,385
C23 Systems & Ancillaries				
1.0 Single stage addressable fire alarm system c/w 3rd party verification	9,161	sf	2.50	22,903
2.0 Telecommunications, conduit only				
- 2data, W/M	42	#	150.00	6,300
- 900x900x19mm fire rated plywood backboard, W/M	2	#	200.00	400
- vertical plugmold strip, R/M	1	#	150.00	150
- 2034x650x1124mm communications data rack, F/M	1	#	2,500.00	2,500
3.0 Telecommunications, Cat6 FT6 multipair plenum rated cabling				
- voice, R/M	2	#	300.00	600
- data, R/M	96	#	300.00	28,800
- 48port patch panel in data rack, R/M	6	#	750.00	4,500
- 5' patch cords, R/M	110	#	20.00	2,200
- 10' patch cords, R/M	110	#	25.00	2,750
- PDU unit & UPS equipment, modem, network switch, etc.				by others
- network audit after completion	1	sum	3,000.00	3,000
4.0 Wireless communications, power only				
- Wi-Fi network access points, C/M	4	#	250.00	1,000
- PoE wireless router, C/M				by owner
5.0 CATV system, conduit only				
- CATV outlet, W/M	2	#	200.00	400
6.0 Barrier-free universal washroom flashing unit				nil
7.0 Intrusion control system, conduit & power only	1	sum	3,000.00	3,000
8.0 Intrusion alarm system, devices, wiring & head-end equipment				by others

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
C2 ELECTRICAL				
C23 Systems & Ancillaries (Cont'd)				
9.0 Door access control system, conduit & power only				
- proximity card reader, unsecured side, W/M	12	#	125.00	1,500
- electric strike, D/M	12	#	125.00	1,500
- door open-detect contact, D/M	16	#	125.00	2,000
- door bell c/w step-down transformer, C/M	12	#	125.00	1,500
- power assisted pushbutton, W/M	12	#	125.00	1,500
- infra-red egress motion detector, W/M	12	#	125.00	1,500
- security junction box, C/M	12	#	150.00	1,800
- door power & security controller on secure side, C/M	12	#	500.00	6,000
10.0 Door access control system, wiring & head-end equipment				by others
11.0 CCTV system, power & conduit only				
- indoor CCTV camera, indoor fixed, W/M	8	#	500.00	4,000
12.0 CCTV system, head-end equipment, devices & wiring				by others
13.0 Cable tray, main conduit, hangers & support channels, etc.	1	sum	12,000.00	12,000
14.0 Public address & paging system				nil
15.0 Wireless clock system	1	sum	2,500.00	2,500
16.0 Audio & visual system, conduit & power only	1	sum	3,000.00	3,000
17.0 Audio & visual system, system devices & wiring				by others
18.0 Lightning protection system				nil
19.0 Secondary grounding & bonding system	9,161	sf	0.15	1,374
20.0 Scanning, core drilling & patching				by general
21.0 Electrical demolition c/w disposal	9,161	sf	2.00	18,322
22.0 Testing & inspection	1	sum	4,000.00	4,000
23.0 Labour for commissioning agent	1	sum	2,000.00	2,000
24.0 Seismic & vibration restraints				nil
25.0 Miscellaneous fitments, fire stops, rentals, etc.	1	sum	10,000.00	10,000
26.0 Job start up & close out	1	sum	36,688.00	36,688
Total C23 Systems & Ancillaries	9,161	sf		189,687

D1 SITE WORK

D11 Site Development	separate
D12 Mechanical Site Services	separate
D13 Electrical Site Services	separate

DETAILED ESTIMATE - RENOVATION

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
D2 ANCILLARY WORK				
D21 Demolition				nil
D22 Alterations				nil
1.0 Removals				
- framed partitions	10,575	sf	3.50	37,012
- floor finishes	9,161	sf	3.00	27,483
- ceiling finishes	9,161	sf	2.50	22,903
- interior doors and frames	24	#	100.00	2,400
- millwork		allow		3,500
2.0 Grind and prep floor for new finish	9,161	sf	0.50	4,581
3.0 Temporary partitions / protect existing		allow		5,000
4.0 Cut & patch for mechanical & electrical		allow		6,000
5.0 Hazardous material abatement				Excluded
6.0 Minor demolition, removals, etc.		allow		5,000
Total D22 Alterations	9,161	sf		113,878
D23 Cash Allowances				
1.0 Inspection, testing and other allowances				In Addition
Total D23 Cash Allowances				0

SECTION 5

Site

TOWN OF SAUGEENN SHORES

MUNICIPAL OFFICE 2.0

Port Elgin, Ontario

ELEMENTAL COST SUMMARY

DETAILED ESTIMATE - SITE WORK

November 29, 2022

DRAFT CLASS "D" ESTIMATE R0

GFA : N/A m²

FILE: L2463/2 Office 2.0

ELEMENT/Sub Element	Ratio to GFA	Elemental Cost		Elemental Amount		Rate/m²		%
		Quantity	Unit Rate	Sub-total	Total	Sub-Total	Total	
A SHELL								
A1 SUBSTRUCTURE								
A11 Foundations				separate				
A112 Special Foundations				separate				
A12 Basement Excavation				separate				
A2 STRUCTURE								
A21 Lowest Floor Construction				separate				
A22 Upper Floor Construction				separate				
A222 Stair Construction				separate				
A23 Roof Construction				separate				
A3 EXTERIOR ENCLOSURE								
A31 Walls Below Grade				separate				
A32 Walls Above Grade				separate				
A33 Windows & Entrances				separate				
A34 Roof Covering				separate				
A35 Projections				separate				
B INTERIORS								
B1 PARTITIONS & DOORS								
B11 Partitions				separate				
B12 Doors				separate				
B2 FINISHES								
B21 Floor Finishes				separate				
B22 Ceiling Finishes				separate				
B23 Wall Finishes				separate				
B3 FITTINGS & EQUIPMENT								
B31 Fittings & Fixtures				separate				
B32 Equipment				separate				
B33 Conveying Systems				separate				
C SERVICES								
C1 MECHANICAL								
C11 Plumbing & Drainage				separate				
C12 Fire Protection				separate				
C13 HVAC				separate				
C14 Controls				separate				
C2 ELECTRICAL								
C21 Service & Distribution				separate				
C22 Lighting, Devices & Heating				separate				
C23 Systems & Ancillaries				separate				
NET BUILDING COST - EXCLUDING SITE & ANCILLARY								
D SITE & ANCILLARY WORK					\$164,401			74.4%
D1 SITE WORK					\$164,401			74.4%
D11 Site Development	#DIV/0!	0 m2	0.00	\$43,037				
D12 Mechanical Site Services	#DIV/0!	0 m2	0.00	\$95,700				
D13 Electrical Site Services	#DIV/0!	0 m2	0.00	\$25,664				
D2 ANCILLARY WORK					\$0			0.0%
D21 Demolition	#DIV/0!	0 m2	0.00	\$0				
D22 Alterations	#DIV/0!	0 m2	0.00	separate				
D23 Cash Allowances	#DIV/0!	0 m2	0.00	separate				
NET BUILDING COST - EXCLUDING GENERAL REQUIREMENTS				\$164,401	\$164,401			74.4%
Z GENERAL REQUIREMENTS					\$32,880			14.9%
Z1 GENERAL REQUIREMENTS & FEE					\$32,880			14.9%
Z11 General Requirements (%)		15.0%		\$24,660				
Z12 Fee (%)		5.0%		\$8,220				
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES				\$197,281	\$197,281			89.3%
Z2 ALLOWANCES					\$23,674			10.7%
Z21 Design & Pricing (%)		12.0%		\$23,674				
Z22 Escalation Allowance (%)		0.0%		\$0				
Z23 Construction Allowance (%)		0.0%		\$0				
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING TAXES				\$220,955	\$220,955			100.0%
HARMONIZED SALES TAX					\$0			
Harmonized Sales Tax		0.0%		\$0				
TOTAL CONSTRUCTION ESTIMATE					\$220,955			

DETAILED ESTIMATE - SITE WORK

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
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D1 SITE WORK

D11 Site Development

1.0	Site preparation		allow	10,000
2.0	Earthwork		allow	2,000
3.0	Removals			
	- asphalt	5,544	sf	2.00
	- sidewalks		allow	1,500
	- sod/ topsoil		allow	1,250
4.0	Line painting to crosswalk		allow	500
5.0	Concrete sidewalk	924	sf	7.25
6.0	Signage		allow	1,000
7.0	Landscaping - planting/ flora/ sod		allow	1,500
8.0	Miscellaneous siteworks not shown / identified		allow	5,000
9.0	Grading, soil control, temporary barriers, etc.		allow	2,500

Total D11 Site Development

43,037

D12 Mechanical Site Services

1.0	Demolition			nil
2.0	Domestic/fire water			existing to remain
3.0	Sanitary			nil
4.0	Storm		allow	25,000
5.0	Irrigation			nil
6.0	Snow melting		allow	17,000
7.0	City charges		allow	45,000
8.0	Miscellaneous fitments, inspection, flushing, locates			8,700

Total D12 Mechanical Site Services

95,700

DETAILED ESTIMATE - SITE WORK

FILE: L2463/2 Office 2.0

Description	Qty	Unit	Rate	Amount
-------------	-----	------	------	--------

D1 SITE WORK

D13 Electrical Site Services

1.0	Wall mounted outdoor luminaries, LED	12	#	975.00	11,700
2.0	Outdoor signage, lighting & wallpacks controls	1	sum	1,000.00	1,000
3.0	CCTV system, conduit & power only - outdoor CCTV camera c/w heater, PTZ, W/M	2	#	1,500.00	3,000
4.0	Power, data & EMT conduit to outdoor electronic sign, W/M	1	#	1,000.00	1,000
5.0	Power, data & U/G schedule4 conduit to outdoor electronic sign, P/M	1	sum	2,500.00	2,500
6.0	Testing & inspection	1	sum	500.00	500
7.0	Miscellaneous fitments, firestops, rentals, etc.	1	sum	1,250.00	1,250
8.0	Job start up & close out	1	sum	4,714.00	4,714

Total D13 Electrical Site Services

25,664

D2 ANCILLARY WORK

D21 Demolition	separate
D22 Alterations	separate
D23 Cash Allowances	separate

SECTION 6

SEPERATES / OPTIONS

SEPARATES

FILE: L2463/2 Office 2.0

	TOTAL	GENERAL REQ (%) 15%	FEE (%) 5%	TOTAL EXCLUDING ALLOWANCES	DESIGN & PRICING (%) 12%	ESCALATION 6%	CONSTRUCTION ALLOWANCE 0%	TOTAL EXCLUDING TAXES	HARMONIZED SALES TAX 0%	TOTAL CONSTRUCTION ESTIMATE
SEPARATES										
1 Omission of Council Chamber	1,294,126	194,119	64,706	1,552,951	186,354	104,358	0	1,843,663	0	1,843,663
2 Omission of Engineering Additions	995,592	149,339	49,780	1,194,711	143,365	80,285	0	1,418,361	0	1,418,361
3 Omission of Site Work	164,401	24,660	8,220	197,281	23,674	13,257	0	234,212	0	234,212
TOTAL SEPARATES										3,496,236

SECTION 7

SCOPE OF WORK DRAWING

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Drawings Not to be Scaled. Dimensions are for Estimating Purposes Only. Contractor Must Field Verify the Accuracy of Surveys, Dimensions & Data Conforms with Design Intent for both Drawings & Specifications including those of Structural, Mechanical & Electrical Engineering. Discrepancies Must be Reported Immediately to the Consultant.

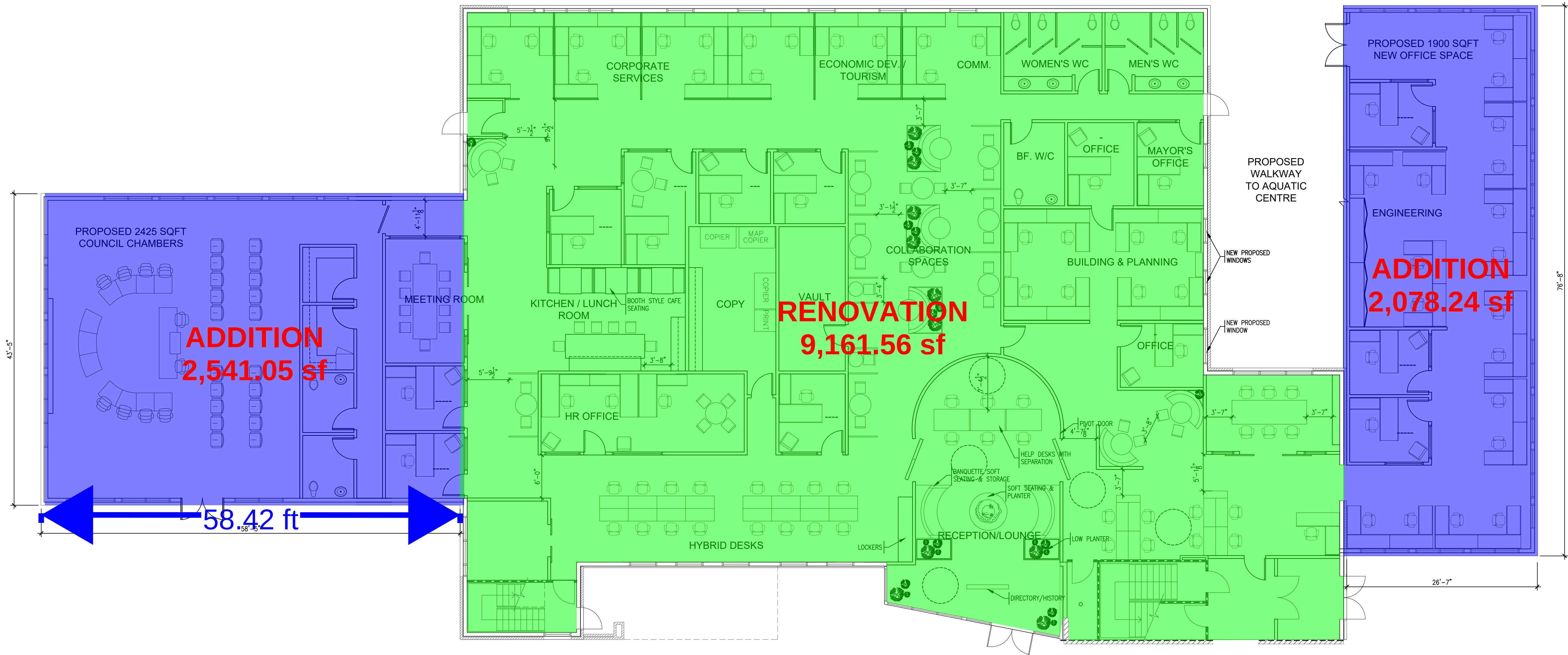
The Contractor is Responsible for Work Compliance with the National Building Code (GOC PWGSC *Work*) and Ontario Building Code.

The Constructor is the One Person with the Highest Authority over Worker Safety, Directly Responsible for Compliance: *WSIB Clearance, Occupational Health and Safety Act, Ministry of Labour (MOL): Notice of Project, Registration of Constructors and Employers engaged in Construction (Form 1000)*. Pursuant to section 4 of O. Reg. 213/91, the MOL Director may Designate Project Extent Permitting Two or More Constructors.

The Constructor and Contractor have compliance responsibility with: *Construction Act*, Environmental Regulations and all other Applicable Regulatory Laws with Jurisdiction.

Site Health & Safety is the Site Supervisor's Statutory Responsibility.

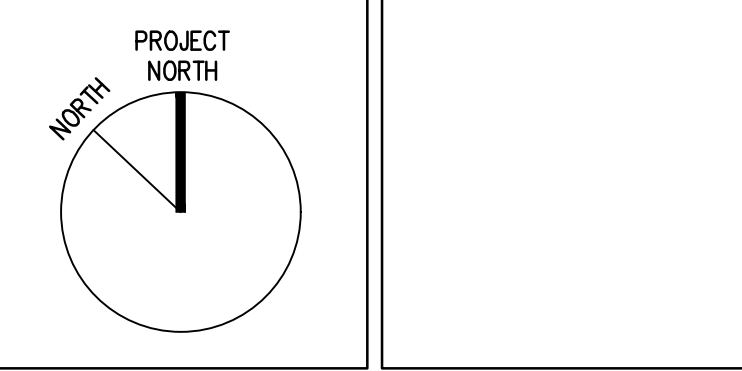
Ontario Building Code Requires a Copy of Permit Drawings & Specifications be Kept on Site at All Times.



1	ISSUED FOR INT CONSTRUCTION PERMIT	YYYY.MM.DD
No.	REVISIONS / ISSUED	DATE

PROJECT CLIENT:

CONSULTANT:



PROJECT TITLE

SAUGEEN SHORES
MUNICIPAL
OFFICES

DRAWING TITLE

PRELIMINARY PLAN

DATE	2022.08.29	DRAWING NUMBER
SCALE	3/16"=1'-0"	A1-1
PROJECT No.	22026	

appendix b





SAUGEEN SHORES

Admin Office Renovation

For



Thinkform Architecture + Interiors
881 Queen's Boulevard
Kitchener, ON N2M 1A8

PREPARED BY:



55 Northland Rd.
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1 INTRODUCTION

DEI Consulting Engineers has been commissioned together with Thinkform Architecture + Interiors to complete the design work for the Saugeen Shores Admin Office Renovation.

The building is located at 620 Tomlinson Drive, Port Elgin, Ontario and is an addition to the existing arena.

The office portion was constructed in 2001 by Saugeen Shores. The building is two stories in height and approximately 13,200 square feet.

The purpose of this report is to discuss the state of the current mechanical and electrical systems and what, if any modifications will be required to suit the planned renovations.

2 SITE OBSERVATIONS

This report is based upon a review of the existing building's design drawings and a visit to site conducted by DEI Consulting Engineers in October of 2022.

3 EXISTING 2000 SERVICES REQUIRING LIFE CYCLE REPLACEMENT

The building services are now 22 years old and some services are at the end of their life cycles.

3.1 PIPING SERVICES

- Sanitary Sewer
The existing services are believed to be adequate for another 30 plus years. Minor modifications are expected to suit the new layout.
- Storm Sewers
The building has a sloped roof. There is no internal storm piping in the office area.
- Water Piping
Water piping is still serviceable and expected to be so for another 30 plus years. Modifications will be required to suit the new layout.
- Gas Piping
The building is heated with a water source heat pump system fed from the arena. There is no gas piping for the administration building.
- Sprinkler
The existing sprinkler service size in the arena is suitable. The fire protection system will need to be reworked to suit the new layout.
- Heat Pump Loop
The heat pump system piping goes to an upper level mechanical room where it feeds eight (8) water to air heat pumps. The piping is in good condition and expected to last an additional 30 years.

3.2 DUCTWORK

The existing ductwork is in good condition. Where possible, duct trunks shall be re-used; however, rework of some areas is expected due to the change in layout. It should also be expected that all diffusers and final ductwork connections to them will be reworked to suit the new layout.

3.3 HEAT PUMPS

There are eight (8) heat pumps in the upper mechanical room. These heat pumps will all be replaced due to them reaching their end of life.

3.4 CONTROLS

The existing controls system largely consists of single zone temperature controls for the eight (8) zones served by each individual heat pump. These controls shall be completely removed and a new zoned BAS system shall be provided. The controls will be based on the town's standard.

3.5 MAIN ELECTRICAL SERVICE AND DISTRIBUTION

The existing building is serviced through a pad mounted transformer and a 600A 347/600V 3P 4W switchboard. This service enters the arena at the south-east corner of the building.

The main switchboard is Federal Pioneer. This manufacturer is no longer in business; however, some serviceability remains through retrofit programs from different manufacturers.

The admin office is serviced through a 150kva 600V Delta to 208V Wye step-down transformer. The transformer feeds a splitter which services two local lighting panels and mechanical loads.

3.6 RECEPTACLE AND LIGHTING PANELS

The lighting panels are manufactured by Federal Pioneer and are no longer supported by any manufacturer. As such new parts and breakers are only available through "used" parts made available from other buildings' renovations or demolitions.

It is recommended that upcoming renovation work replaces the administrative's office electrical distribution equipment to modernize the equipment and start a new lifecycle.

3.7 MAIN PANEL FEEDS

All panels are fed with 20 year old conduit and wiring. The conduit and wiring lifespan is expected to last another 30 to 40 years.

3.8 BRANCH CIRCUIT WIRING

As part of the renovation work there is a reconfiguration of furniture. As such most branch wiring will be reworked to suit new room layouts and furniture layouts.

3.9 COMMUNICATIONS

There is a lack of existing communications service throughout the spaces. Consideration should be given to a new I.T. room location serviced via fiber. A new corridor cable management system or cable tray should be installed during renovations.

3.10 FIRE ALARM

The existing areas are served through fire alarm horns. There are no visual signaling devices. The existing initiating devices appear to be conventional and are expected to be in working order due to yearly testing requirements and associated replacement of non-working devices.

3.11 LIGHTING AND EMERGENCY LIGHTING

It appears that the facility underwent a LED upgrade since the original T8 fixtures were installed in 2000. Selective replacement of the lighting should be considered to suit new floor plans. Fixtures may be repurposed where possible to match architectural ceilings.

Emergency lighting is achieved through batteries and remote heads installed within spaces. The coverage is not adequate to suit current codes.

As a revision to the floor plan is required, it is expected that a full emergency lighting retrofit is undertaken in the areas of work.

3.12 EXISTING POWER GENERATION

There is an existing diesel generator providing stand-by power for the building's non-essential services.

The existing generator is installed on grade on the south east side of the building.

The generator is expected to remain as presently installed to suit the administrative office work.

4 PRELIMINARY MECHANICAL DESIGN FOR COST ESTIMATING

4.1 PLUMBING AND DRAINAGE

The existing plumbing and drainage serving the washroom area shall be reworked to suit the new 'Gender Neutral Washrooms' layout.

The existing water heater shall be replaced as part of its life cycle replacement.

The domestic water distribution system will remain largely in place, with only the sections that have interferences with the new HVAC system being removed and reworked.



4.2 STORM

The building has a sloped roof. There is no internal storm piping that requires revision.

4.3 FIRE PROTECTION

An entirely new fire protection system should be accounted for in the pricing. This is because the existing system is likely to be fully removed and reinstalled to avoid conflicts with new mechanical systems and to suit the new layout.

4.4 HYDRONIC PIPING

The existing heat pump system piping enters the building below grade and goes up in a chase to the second floor mechanical room. This piping is expected to remain in place and in service.

4.5 AIR DISTRIBUTION

It is proposed that the existing air distribution ductwork mains will be re-used wherever possible. It is expected that 50-60% of the mains will be able to be re-used. The terminal air diffusers will need to be removed and replaced with new to suit the new layout.

The existing system which operates as a constant volume system will no longer be suitable for appropriate temperature control in the building due to the change in layout. The new HVAC system will utilize Variable Volume and Temperature (VVT) dampers to provide better thermal comfort. In some areas, electric reheat coils will also be utilized to provide trim heat.

Ventilation will be provided through two (2) ERVs located in the mechanical room. These ERVs are planned to be replaced as part of this project.

4.6 WATER SOURCE HEAT PUMP UNITS

The existing eight (8) heat pump units are planned to be replaced. A ninth heat pump is likely to be added to serve the expanded and relocated Council Chambers. The preliminary water source heat pump sizes are as follows:

- 2 Tons/800 cfm: 3 units
- 3 Tons/1200 cfm: 2 units
- 4 Tons/1600 cfm: 1 unit
- 5 Tons/2000 cfm: 1 unit
- 6 Tons/2400 cfm: 2 units

4.7 CONTROLS

All new DDC controls are expected to be provided for a new Variable Volume and Temperature (VVT) system.

Saugeen Shores has typically utilized a “Tier 2” BAS system that can be installed and worked on by any qualified contractor. These systems include the Carrier iVu system that is widely in use with the town. This provides a cost-effective solution when compared to the typical Tier 1 BAS vendors.

5 PRELIMINARY ELECTRICAL DESIGN FOR COST ESTIMATING

1. New LED lighting where required to suit architectural ceiling.
2. New occupancy sensors and photocells to meet ASHRAE 90.1 codes for efficiency.
3. New LED emergency lighting and pictogram exit signs to suit the revised floor plan and paths of egress.
4. Panel retrofit and new electrical panels to be provided throughout spaces to suit 50W/sq.m. loading.
5. New mechanical equipment is to be serviced at 208V from existing distribution due to a lack of 600V power readily available within the administrative offices.
6. New I.T. room complete with 2"C to demarcation board for new fiber line.
7. New corridor cable management system and new Category 6 Wiring to serve areas of work.
8. An expansion of the security system complete with security cameras, new cards readers, and electric strikes where directed by the owner.
9. New signaling and initiating devices to suit the revised floor plan. The existing fire alarm control panel is proposed to remain as presently installed.
10. New branch circuit wiring from local lighting and receptacle panels to suit new furniture and room layouts.

appendix c



Saugeen Shores Administration Office

Port Eglin, ON
SW22228

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ACOUSTIC, NOISE AND VIBRATION CONTROL
Basis of Design Report

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October 20, 2022

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1.0 Introduction

At the request of Thinkform, Thornton Tomasetti (TT) presents this acoustic design review and basis of design report for the Saugeen Shores Administration Office Workplace 2.0 in Port Eglin, ON.

TT understands that the project consists of the revitalization of the existing Saugeen Shores Administration Office, as per the Office Planning for Government of Canada Workplace 2.0 Fit-up Standards ("Workplace 2.0"). This report outlines the recommended acoustic design criteria for the project regarding sound isolation, room acoustics, and background sound levels, based on the currently available information.

2.0 Sound Isolation between Spaces

Partitions provide a certain level of privacy or sound isolation between two spaces depending on their assembly. Partitions are usually specified by sound transmission class (STC) ratings which indicate their expected performance in terms of sound transmission.

A partition that is designed to have an STC of 50 will typically have an Apparent STC (ASTC) of 3 to 5 points lower when it is measured in the field. This is due to the influence of flanking paths as well as imperfections in the construction of the partition. For this reason, it is recommended that partitions are selected with an STC rating that is 3-5 points higher than the required rating so that performance in the field will meet the design criterion.

Table 1 provides a subjective feel for certain STC ratings. These subjective interpretations of STC ratings assume a background sound level of approximately NC 30-35. NC levels are described in Section 4 of this report.

Table 1: Subjective evaluation of STC ratings.

STC Rating	Subjective evaluation of STC rating
25	Normal speech can be understood quite easily and distinctly through wall
30	Normal speech can be understood fairly well
35	Loud speech intelligible
40	Onset of "privacy"
45	Loud speech audible but not intelligible
50	Very loud sounds such as musical instruments or a stereo can be faintly heard.
60	Most sounds inaudible

2.1 Recommended STC Ratings

Recommended minimum STC ratings with respect to room adjacencies are included in Table 2 which is based on the TT's experience with similar projects. A full partition review will be undertaken once a partition schedule is available.

Table 2: Recommended STC ratings by room adjacency types

Room Type / Adjacency	Minimum STC Rating
Mechanical Room / Any Other Space	60
Washroom / Any Other Space	50
Council Chambers / Occupied Space	55
Council Chambers / Corridor and open space	50
Meeting Room / Occupied Space	50
Meeting Room / Corridor and open space	45
Private Office / Occupied Space	45
Private Office / Corridor and open space	40
Copier Room / any other space	50

Note that the above recommended ratings apply to demising walls between spaces but would not apply to the walls containing doors, glazed walls, or operable partitions. This is due to their limiting sound isolation performance.

Typical gypsum board assemblies that meet the recommended STC ratings are provided in Table 3. Full-height (slab to slab) construction, including sealing with a non-hardening caulking around the perimeter of each partition face and penetrations, is required to meet the stated STC criteria.

Table 3: Typical gypsum board constructions to achieve STC ratings

STC Target	Typical Construction
40	OBC Wall Type S2g - 2 layers 13 mm Type X GWB, - 25-gauge 64 mm steel stud @ 600mm O.C. - 89 mm batt Insulation - 1 layer 13 mm Type X GWB
45	OBC Wall Type S4a - 1 layer 16 mm Type X GWB, - 25-gauge 92 mm steel stud @ 600mm O.C. - 89 mm batt Insulation - 1 layer 16 mm Type X GWB
50	OBC Wall Type S5a - 2 layers 16 mm Type X GWB - 25-gauge 92 mm steel stud @ 400 or 600 mm O.C. - 89 mm batt insulation - 1 layer 16 mm Type X GWB
55	OBC Wall Type S6b - 2 layers 16 mm Type X GWB - 25-gauge 92 mm steel stud @ 400 or 600 mm O.C. - 89 mm batt insulation - 2 layers 16 mm Type X GWB
60	OBC Wall Type S14a - 2 layers 15.9 mm Type X GWB - 92mm load bearing steel Stud @ 400mm O.C. - 89mm thick absorptive material - Resilient channel @ 610mm O.C. - 2 layers 15.9 mm Type X GWB

In addition to having walls that achieve the required STC ratings, the following guidelines are recommended to ensure privacy is maintained to the recommended levels:

- STC ratings for single steel stud partitions are based on the use of 25-gauge steel studs. Use of heavier gauge studs will reduce the acoustic performance. If heavier gauge studs are required, resilient channel or equivalent acoustically resilient construction should be used. Alternatively, Bailey B18 studs may be used where heavier gauge studs are required (see SPEC-01 attached).
- Gypsum boards used in the construction of STC rated partitions must not be lightweight or “Ultralight” types. 16 mm GWB to be Type ‘X’ with minimum 10.7 kg/m² density.
- Gypsum board joints should be staggered between layers in multi-layer assemblies.
- The entire perimeter of the base layer of gypsum board on each side of STC rated partitions must be sealed with a flexible, non-hardening sealant.
- STC rated partitions should completely seal and separate adjacent spaces. If partitions are not built up to the underside of the structure (i.e. slab to slab), install plenum barriers such as AcoustiGuard Privacy Board (see SPEC-02 attached), with transfer air silencers on each side of the baffling, from the top side of STC rated partitions to the underside of the ceiling structure. See sketch AC-SK-01 for a conceptual illustration of our recommendation.
- All partition penetrations above the ceiling shall be sealed with acoustic caulking. Where larger gaps exist in the partition, a gypsum board patch may be required (see sketch AC-SK-02).
- Continuous gypsum boards across intersecting partitions can create potential noise flanking paths. Create a discontinuity in partition gypsum boards intersecting with another partition. See sketch AC-SK-03 for a conceptual illustration of this recommendation.
- Electrical outlets should not be placed back-to-back within the same stud cavity of an STC-rated wall. Electrical outlets should be separated by at least one study cavity to reduce the noise flanking between adjacent rooms. If outlets must be placed in the same stud cavity or in walls of STC 50 or higher, then the boxes should be backed with acoustic putty such as Hilti CP-617 (see SPEC-03 attached).
- It is understood that TVs might be mounted on the partition in the Meeting Rooms. If TVs are mounted on the wall, they must not compromise the GWB installation by leaving any holes or cutouts. If necessary, plywood backing can be used behind the GWB for TV mounting.

2.2 Doors and Glazing

Note that the recommended STC ratings presented in Table 2 apply to walls between spaces but would not apply to walls containing doors and/or glazed walls. This is due to their limiting sound isolation performance.

Doors without proper acoustic seals will also create significant noise flanking paths which will limit the sound isolation performance of the partition, resulting in significant loss of speech privacy. The following guidelines are recommended for doors in STC rated partitions:

- Doors should include frames (insulated or solid core) in order to allow for the inclusion of acoustic door seals and door bottoms. Recommended door sealing hardware are by Pemko (S88 and 411_RL) and/or K.N. Crowder (W-42 and CT-50/51).
- Doors to adjacent or neighboring rooms shall be located as far apart as reasonable to reduce noise breakout from one room to another.

- If the door includes glazing or a sidelite, double glazing meeting STC 35 or higher is recommended (Typical 6.4 mm glazing / 12.7 mm airspace / 6.4 mm glazing).
- If glass doors are used, the doors should be minimum 13mm laminated glass to achieve STC-35. Frameless glazed are not recommended for rooms requiring noise privacy as they often fail to achieve proper acoustic seals. If acoustic door seals cannot be accommodated, the sound isolation performance of the partition/glazing will be significantly limited.
- It is understood that sliding doors are considered for most of the open plan work areas and the Meeting Rooms. The sound isolation performance of sliding doors is typically very limited and dependent on the quality of the installation and acoustic seals. Sliding doors are generally not recommended where sound isolation and/or speech privacy are required such as for the Meeting Room. As the open plan work area is not a noise sensitive space, and the adjacent space is corridor which would not be as critical of an acoustic space, some noise would be acceptable from the open plan work area to the corridor. It is recommended that the sliding door achieve a minimum STC 35 rating.
- It is understood that the front partition of all the Private Offices consist of glazing. As discussed, above, doors in STC rated partitions will often limit their acoustic performance. Since most glazed space fronts feature doors, the door itself is expected to limit the overall STC of the partition. As such, for Private Offices, we recommend a single glazed configuration with 13 mm laminated glass (STC-35).

3.0 Room Acoustics

Room acoustics will be controlled by installing sound absorbing and sound diffusive materials where required. Sound absorbing materials can help to increase speech intelligibility as well as control reverberant sound levels.

The main parameter that is controlled with sound absorbing materials is reverberation time. Reverberation time (RT60) is defined as the time required for a sound to decay within an enclosed room by 60 dB (or to inaudibility) once the source of the sound is stopped. As reverberation time is frequency-dependent, it is the mid-frequency reverberation time (average of 500 Hz, 1000 Hz and 2000 Hz octave bands) that is commonly used as an acoustic design criterion in rooms for speech. Shorter reverberation times are achieved by adding more sound absorbing materials in a room. Generally, shorter reverberation times are desirable for achieving high speech intelligibility, whereas longer reverberation times may be more desirable for open areas to create a livelier atmosphere.

Recommended reverberation time criteria for various spaces are listed in Table 4.

Table 4: Recommended reverberation time for various room types.

Room Type	Mid-Frequency RT60 (s)
Open Workstation Areas, Reception and Lounge, Kitchen / Lunch Room	<0.8
Council Chambers	<0.6
Meeting Room, Private Office	<0.6

Target reverberation times for each type of space are determined based on the use of each room. Detailed recommendations for the amounts and type of sound absorbing materials required in each room will be provided in subsequent design reviews.

3.1 Open Workstation Areas

Typically, for open office acoustic design, the design goal is to minimize the intelligibility of speech between workstations. Additionally, it is desired to minimize the intrusiveness of other sounds occurring within the open office area. There are three main considerations to achieving the desired speech privacy:

- Screening of the direct sound path from the speaker to the listener,
- Minimizing reflections from ceilings and walls,
- Sufficient background noise to mask received speech sounds.

Providing effective treatment for each of the above considerations is crucial in achieving the recommended speech privacy.

In all the open plan offices, the screens between the workstations are higher than the height of the ear of a seated person, which helps to block the direct sound path and increase the level of speech privacy.

Sound reflections can be controlled by installing acoustically absorptive materials to the walls, floor, and ceiling, such as acoustic wall/ceiling panels, baffles, acoustic ceiling tiles, and carpet flooring. In the current condition, almost all the noise sensitive areas such as open and private offices, have carpet and acoustic ceiling tiles. Based on the volume of the rooms, the absorbing materials in each space are sufficient to control the reverberation time.

A site visit was conducted by TT personnel on October 14, 2022. During the site visit, the background noise level was measured at the open workstation area and a private office. Based on the measurements the background sound level in the open space and private office was lower than the recommended criteria, which increases the radius of distraction. A Sound Masking System (SMS) is recommended to mask received speech sounds and thus increase speech privacy between workstations. SMS could make the speech less intelligible by increasing the background sound level. A sound masking specification is attached to the end of this report, which provides masking sound levels appropriate for the various rooms based on usage.

3.2 Council Chambers

For the Council Chamber, as there is amplified speech, it is recommended that acoustic wall panels be included on the back and side walls, to minimize excessive reflections. As the design progresses, specific area requirements and sound absorbing materials will be provided in the Summary of Recommendations.

3.3 Meeting Room

For meeting rooms with teleconferencing, it is recommended that acoustic wall panels be installed on two perpendicular walls, to minimize reflections between parallel surfaces and to increase speech intelligibility. For systems where the speakers are wall mounted at the front of the room, the opposite wall should be acoustically treated. Alternatively, Decoustics Fabric Wall Panel can be used (see SPEC-04).

4.0 Mechanical Noise & Vibration Control

Noise Criteria (NC) ratings will be used to specify background sound levels for this project. The ASHRAE applications handbook provides guidelines that will be followed for the room types that exist in the proposed building. Table 5 gives background sound level criteria for general space types based on ASHRAE.

Table 5: Recommended NC ratings for various room types.

Room Type	NC Rating
Meeting Room	NC 30
Council Chamber	NC 35
Reception and Lounge, Open Workstation Areas, Collaboration Space	NC 40

To achieve the background sound levels for various spaces the following ASHRAE based guidelines should be followed:

- Fan powered boxes (FPB), VAV's and other similar HVAC equipment should not be positioned over sensitive areas such as the Meeting Room. They may be placed above areas with NC 40.
- Air diffusers should be selected for NC levels 5 points below the NC level of the room, for rooms NC 30 and above.
- In ducts, airflows should not exceed 2000 fpm when passing through sensitive spaces such as Team Rooms.
- The air velocities in Table 6 should be used as a guideline for supply and return duct openings. The velocities should be reduced with the presence of diffusers or grilles.
- Ductwork downstream of FPB's and VAV's should be internally lined with 25 mm (1") thick acoustic duct liner for rooms with NC 30 requirement.
- The use of duct silencers and/or duct lining may be required. This will be determined once the HVAC equipment sound power level data and duct layouts are available.

Table 6: Airflow guidelines for supply and return air duct openings.

Type of Opening	Room NC Rating	Free Opening Airflow Velocity, (fpm)
Supply air outlet	40	560
	35	500
	30	425
Return air opening	40	675
	35	600
	30	500

5.0 Concluding Comments

We trust that these general recommendations meet the needs of the current phase of the design.

Please do not hesitate to contact us if there are any questions.

Yours Truly,

Thornton Tomasetti



Farideh Zarei, M.A.Sc.
Senior Scientist

Reviewed by:
Michael Wesolowsky, Ph.D., P.Eng.
Principal

Disclaimer: Achieving the required noise control requirements relies on correct incorporation of noise control recommendations into Architectural and Mechanical drawings and specifications, as well as correct installation during construction. On Request, TT will conduct drawing reviews and onsite reviews of noise control measures and provide observations as appropriate; however, notwithstanding the foregoing, it is expressly understood and agreed that TT shall not have control or charge of and shall not be responsible for the acts or omissions, including but not limited to means, methods, techniques, sequences and procedures, of the Design Professionals and/or Contractors performing design and/or construction on the Project. Accordingly, TT shall not be held responsible for the failure of any party to properly incorporate the noise control measures stated in this report.

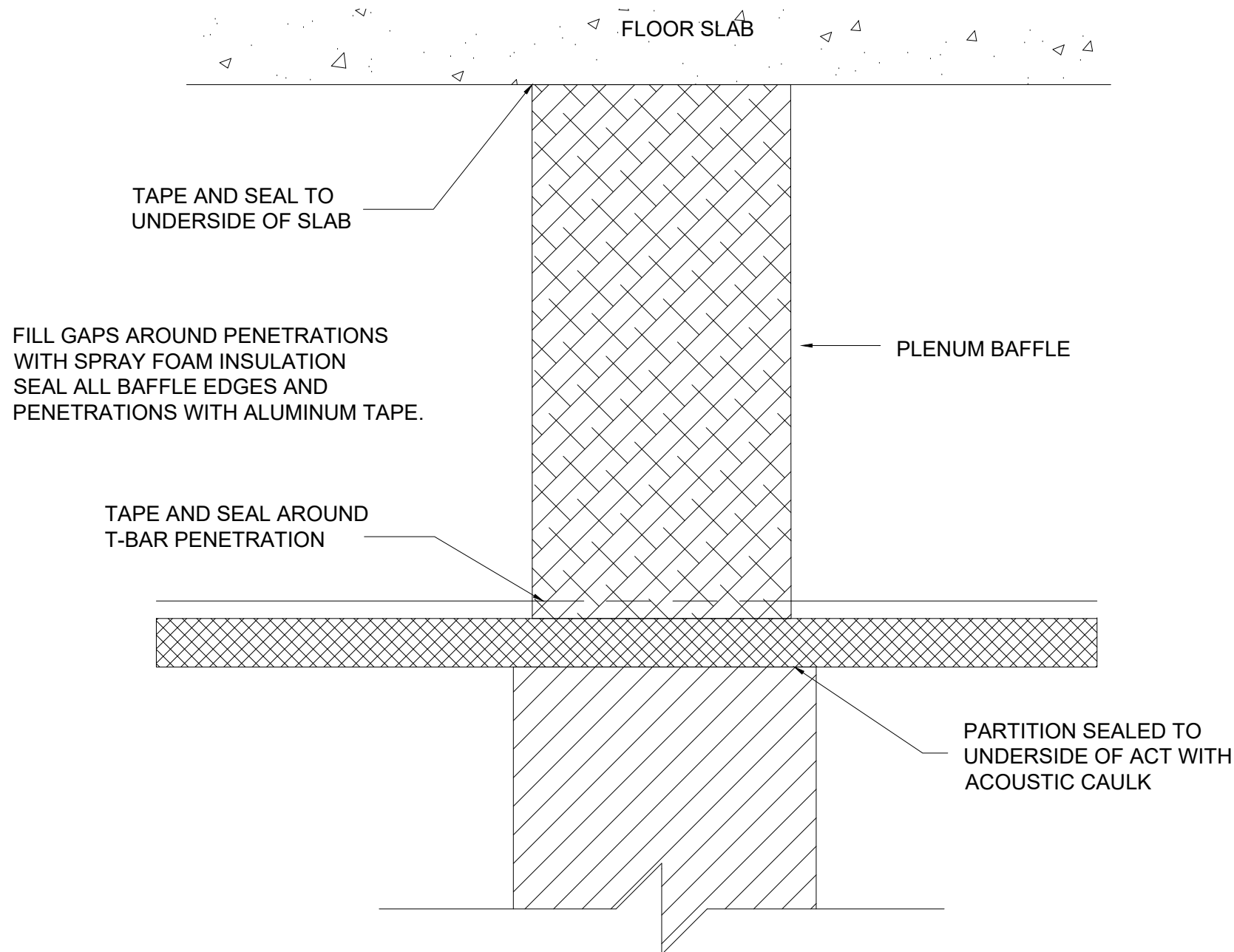
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TT PROJECT CODE

SW22228

DRAWN BY:

FZ



PROJECT NAME

Saugeen Shores
Administration Office

DRAWING NAME

CEILING PLENUM
ACOUSTIC BAFFLE

SCALE

NTS

DATE

2022/10/20

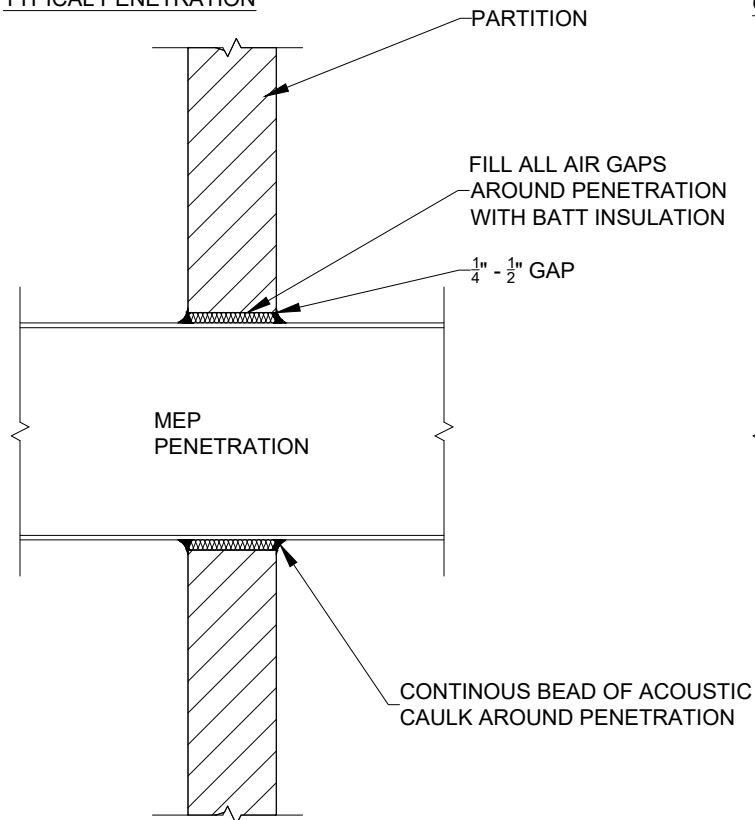
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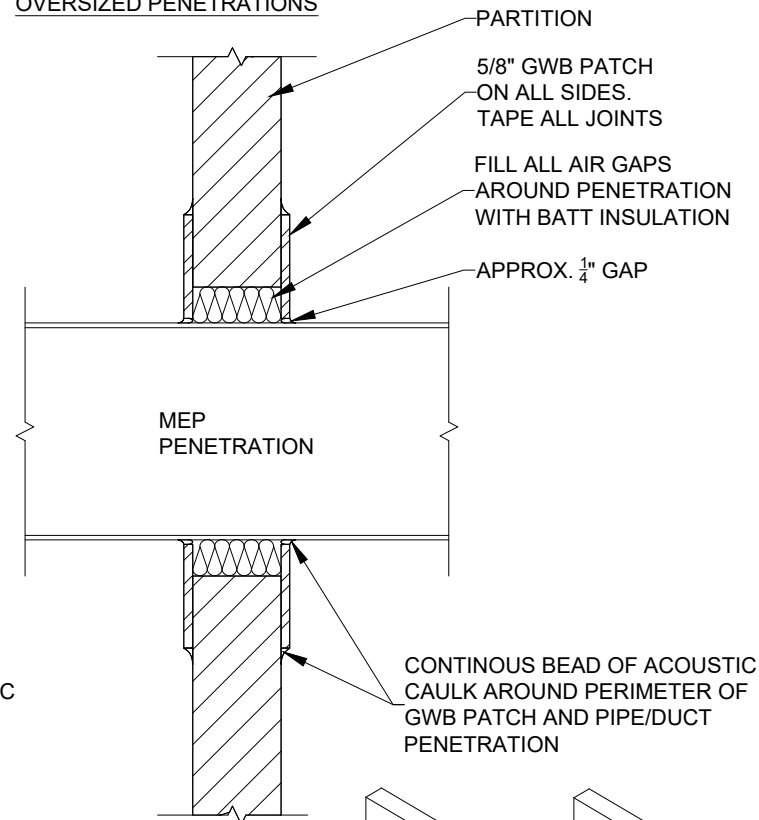
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1 OF 1

TYPICAL PENETRATION



GWB PATCH FOR OVERSIZED PENETRATIONS



CUT PATCH IN HALF
TO MOUNT AROUND
PIPE AND DUCT

SEAL BOTH ENDS OF
CONDUIT SLEEVES WITH
FIRESTOP PUTTY

NOTE:

- 1) CONDITIONS APPLY TO BOTH SIDES OF PARTITION
- 2) PATCH SHALL NOT TOUCH DUCT OR PIPE. SEAL AIR GAP WITH ACOUSTIC CAULK
- 3) PROVIDE SUFFICIENT SPACE BETWEEN PENETRATIONS TO ALLOW GWB PATCH BETWEEN PENETRATIONS

PROJECT NAME

Saugeen Shores
Administration Office

DRAWING NAME

PENETRATION DETAIL

SCALE	NTS	DATE	2022/10/20
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Project SK. No	AC-SK-02	SHEET	1 OF 1
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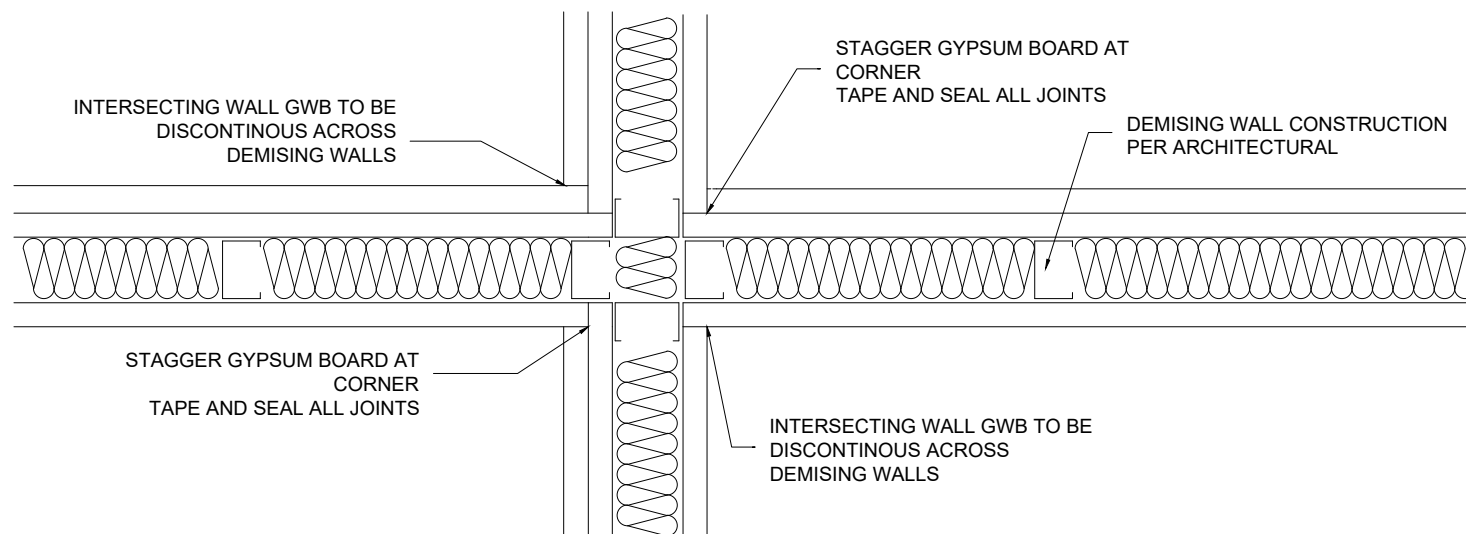
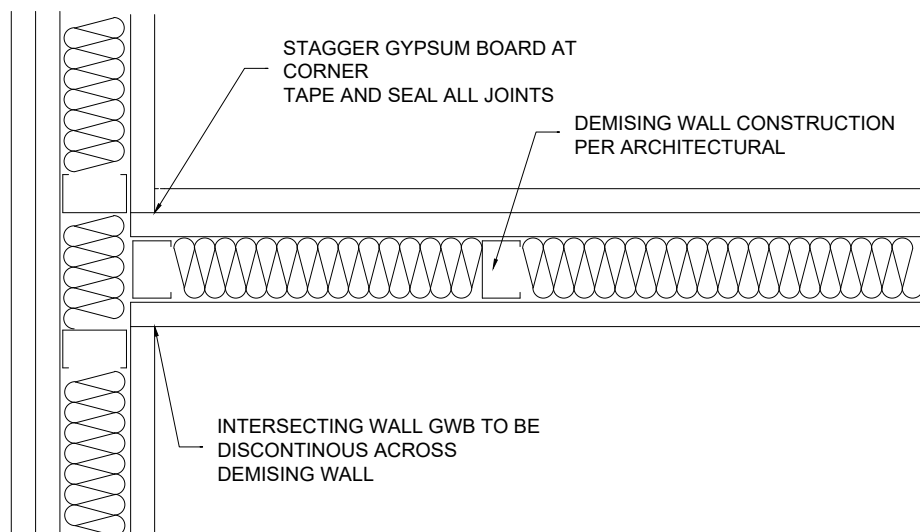
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Tel: 905.271.7888 Fax: 905.271.1846
www.thorntontomasetti.com

TT PROJECT CODE

SW22228

DRAWN BY:

FZ



PROJECT NAME

Saugeen Shores
Administration Office

DRAWING NAME
DISCONTINUITY IN STC-
RATED WALL GWB

SCALE NTS DATE 2022/10/20

Project SK. No AC-SK-03 SHEET 1 OF 1



BAILEY HEMMED STUD

SUBJECT: When **BOTH** Sound and Structure Matter

A custom proprietary hemmed 25ga stud is available by specific order. The custom hemmed stud product provides superior limiting height values (see below) and contributes to improved sound control.

Composite Limiting Height Tables of the Bailey Custom Hemmed Drywall Stud System

STUD DESIGNATION	Spacing o.c. (in.)	5 PSF			10 PSF		
		L/120	L/240	L/360	L/120	L/240	L/360
362S125-HEMMED25	12	20'-5"f	17'-11"	15'-10"	14'-5"f	14'-3"	12'-6"
	16	17'-8"f	16'-4"	14'-4"	12'-6"f	12'-6"f	11'-3"
	24	14'-5"f	14'-3"	12'-6"	10'-3"f	10'-3"f	9'-6"
600S125-HEMMED25	12	25'-11"f	23'-10"	20'-10"	18'-4"f	18'-4"f	16'-6"
	16	22'-6"f	21'-8"	18'-11"	15'-11"f	15'-11"f	14'-10"
	24	18'-4"f	18'-4"f	16'-6"	13'-0"f	13'-0"f	12'-8"

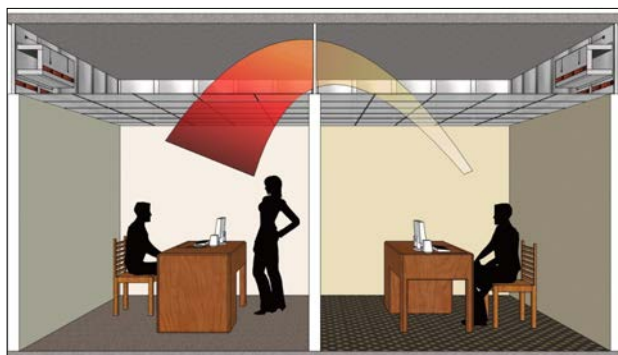
Shown values above are as tested and certified by accredited laboratory in accordance with ICC-ES-AC86.

- * The above tables were engineered by Prof. R. M. Schuster, University of Waterloo, in accordance with the Canadian Standards Association (CSA) Standard CAN/CSA-S136-01, North American Specification for the Design of Cold-Formed Steel Structural Members (including the 2004 Supplement) and the National Building Code of Canada.
 - * The above calculations were based on tests of the complete wall assembly.
 - * Consideration was given to the composite action between the gypsum boards and the steel studs.
 - * Strength values were based on flexure and end bearing.
 - * Stud heights under DEFLC=120, 240, 360 are the lesser of the strength and deflection values.
 - * (f) indicates that flexure controls.
- The structural testing report and section properties are available upon request from Bailey Metal Products Limited.
 - Sound tests performed at National Research Council (NRC). Tests reports available upon request from Bailey Metal Products Limited or acoustical consultant.
 - Screw pullout testing performed at STAR (Structural Testing and Research Inc. - Report #8191403A), to the requirements of ASTM C645-13. Tests reports available upon request from Bailey Metal Products Limited.
 - Screw penetration testing performed at STAR (Structural Testing and Research Inc. - Report #8191403B), to the requirements of ASTM C645-13. Test reports available upon request from Bailey Metal Products Limited.

Please contact Bailey Metal Products Limited for Availability & Pricing

Privacy Board

And Return-Air Silencers



Routinely office space shares a common return-air plenum where the individual partition walls do not continue all the way to the ceiling structure above. Regardless of the acoustical rating of the wall partitions below the drop ceiling or ceiling systems themselves, unwanted sound (noise) will enter and travel through this non-ducted plenum spaces.

Uncontrolled noise and lack of speech privacy can irritate, distract and greatly affect productivity. The AcoustiGuard™ Privacy Board™ System, blocks the area between the top of the partition walls and the structure above without interfering with the return-air distribution. It is an easy to install effective barrier that increases acoustic privacy and confidentiality by controlling the passage of sound in the plenum



View from above a suspended ceiling showing a complete Privacy Board™ installation with Return-Air Silencers

PRIVACY BOARD

The AcoustiGuard™ Privacy Board™ System solves the problem of flanking airborne sound transmission above the suspended (drop) ceilings and over interior partition walls. The standard practice of an open plenum above the drop ceiling grid has provided for much lower cost return-air duct construction – unfortunately at the expense of sound transmission, speech privacy and work-place comfort. Sound attenuation through two layers of ceiling tiles from office to office or boardroom to open office areas or health care examination rooms to waiting rooms will typically only achieve a CAC rating of approximately 35 dB. Even less when a return-air register (egg crate grill) is present. The specified STC rating of a partition wall assembly is irrelevant when the sound-flanking path between rooms is through the suspended ceiling and over the incomplete partition wall.

The AcoustiGuard™ Privacy Board™ barrier solves this problem with a product that is quicker and easier to install and much less messy than the installation of gypsum wallboard (GWB) extension walls.

RETURN-AIR SILENCER

The AcoustiGuard™ lined Return-Air Silencers solve the problem of open plenum HVAC sound flanking. They ensure that the Privacy Board™ "does no harm" to the return-air flow of the HVAC system, while maintaining acoustic isolation through the plenum.

THE SYSTEM

The AcoustiGuard™ Privacy Board™ system consists of 2 components:

1. A partition-wall extension board sound barrier; made of a 25 mm (1") thick foil-faced high-density rigid mineral fiber panel, that meets Class-1 fire rating.
2. A prefabricated Return-Air Silencer made of a 28 Ga. galvanized metal housing to ensure structural integrity and Class-1 fire rating, is lined with a 50 mm (2") thick high-density rigid mineral fiber board. The airflow face of the mineral fiber board is covered with a Class-1 fire rated non-woven, non-respirable acoustic liner.

SPECIAL FEATURES

- Enhances speech privacy and confidentiality
- Fast and easy field installation
- Will not interfere with HVAC return-air flow
- Does not encumber the installation of data cables
- LEED investment (virtually 100% recyclable)

Special Features

Sound Transmission Loss (dB) tests on the AcoustiGuard Privacy Board & Return-Air Silencer.

Test	Sound Transmission Loss (dB)						STC**
	125	250	500	1000	2000	4000	
Privacy Board™ Only	15.1	20.6	19.6	19.8	20.2	27.1	24
Privacy Board™ & 1 RAS*	12.2	20.0	23.2	21.6	24.0	30.3	27
Privacy Board™ & 2 RAS*	23.1	26.7	29.0	27.8	28.6	35.1	32

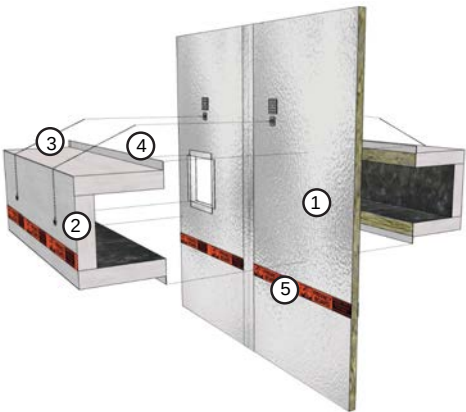
SPECIAL FEATURES

Speech Privacy, Speech Security and Oral Privacy have all found new importance and consideration since the enactment of multiple Federal, State or Provincial legislation in the United States, Canada and the European Union. Privacy Board™ and Return-air Silencers are products that can help achieve compliance with these various legislations, codes and guidelines. See:
PIPEDA, Bill 198 - Ontario, GLBA, HIPAA - HITECH, SOX, EISA, UFC & USGBC / LEED

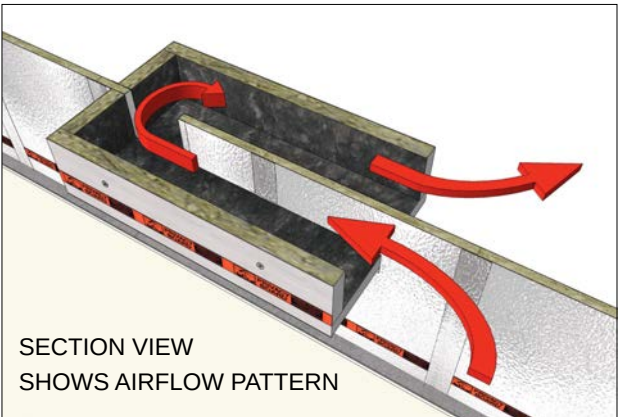


Privacy Board sealed at duct penetration

PRODUCT SYSTEM ASSEMBLY



- 1. Privacy Board™
- 2. Return-Air Silencer
- 3. Support Wire (two total)
- 4. Silencer Tape Edge
- 5. Privacy Board™ Identification Tape

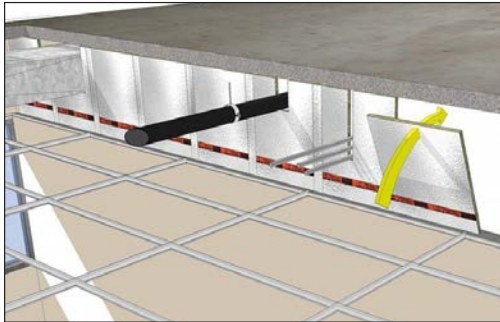


Section View:
Sound and return air enters the silencer where it is attenuated as it passes through the chamber

- The Return-Air Silencer passive air exchange helps isolate separate open plenum areas.**
- The highly absorptive inner surface of the silencer performs as a broadband acoustic absorber.**
- The Return-Air Silencers do not interfere with the air distribution. (Minimum Recommended: 1x double sided Return-Air Silencer per supply air feed duct).**

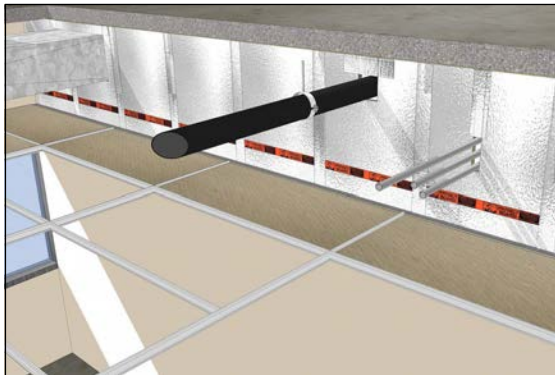
INSTALLATION INSTRUCTIONS (Short Description)

For complete installation instruction please download the Privacy Board™ IIG (Illustrated Installation Guide) located at www.acoustiguard.com



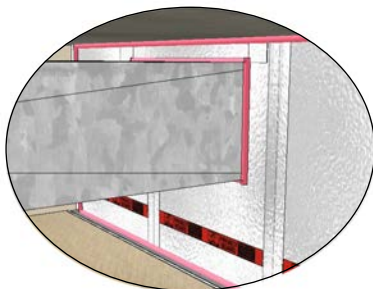
Cut Privacy Board™ to length to achieve a 'pressure fit' between the top of the partition wall and the underside of the structural slab. Cut the Privacy Board™ for 'Best Fit' around the penetrations that enter the plenum space. Secure all panel edges with FSK Tape on both sides of the partition wall.

Note: For dimensions less than 24-inches between the top of the partition wall and the underside of the structural slab above, AcoustiGuard™ recommend using the Privacy Board™ horizontally.

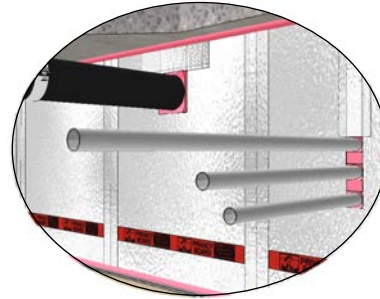


Fill voids in the Privacy Board™ with pieces of off-cut. Secure off-cut filler pieces with FSK tape. Apply the FSK tape to both sides of the filler pieces.

If T-Bar grids cross over the top of the partition wall AcoustiGuard recommends that the bottom edge of the Privacy Board™ be notched to accept the T-bar.



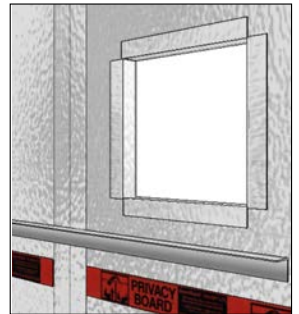
Install Class-1 fire rated, low expansion spray foam or caulking to seal all perimeter boundaries or voids.



AcoustiGuard™ recommends that both sides of the Privacy Board™ be sealed with foam or caulking.

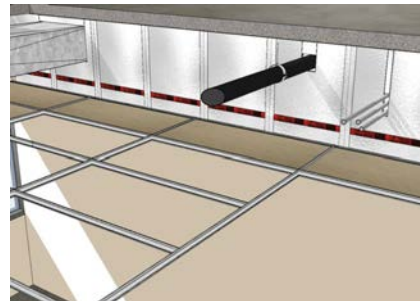
Select a location for placement of the return-air silencer.

(See Directions on the template).



Seal all cut edges with FSK Tape.

Align the Return-Air Silencer with the 3-lines that are traced around the exterior of the template. Ensure the hole in the Privacy Board™ aligns with the inside edges of the RAS.



Secure the 3 tape edges of the RAS (closed end & 2 long sides) to the Privacy Board™ with FSK tape supplied.

The RAS is supplied with 2 anchor wires screwed to the back. From the reverse side push stickpins through the Privacy Board™ approximately 4-inches up from the top edge of the RAS.

Push the washers in towards the Privacy Board to adjust the tension on the support wires.

PHYSICAL PROPERTIES

Compliance and Performance:

ASTM	Mineral Fibre Block & Board Thermal Insulation	Type IVB, Complies
MEA Approval	New York City Approval	333-97-M

Mineral Wool

ASTM E	136 Behavior of Materials at 750°C (1382°F)	Non-Combustible
CAN4 S114	Test for Non-Combustibility	Non-Combustible
ASTM E 84 (UL 723)	Surface Burning Characteristics	Flame Spread = 0
		Smoked Developed = 0
CAN/UIC S102	Surface Burning Characteristics	Flame Spread = 0 Smoked Developed = 0

Maximum Service Temperature:

ASTM C411	Hot Surface Performance	In Compliance with ASTM @ 650°C (1200°F)
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Foil Facing

Flame Spread:		
UL 723 / ASTM 84	Foil Side = 10	Paper Side = 30
Smoke Developed:		
UL 723 / ASTM E 84	Foil Side = 0	Paper Side = 5

Acoustic Liner:	Black Scrim Liner
-----------------	-------------------

AVAILABILITY & COST

For availability and pricing, contact WILREP LTD.
1-888-625-8944

DESIGN ASSISTANCE

AcoustiGuard™ - WILREP LTD. staff is available to provide technical assistance (quantities of materials, custom specifications, and budget pricing) for both new projects and renovations.

WARRANTY

Normal one-year warranty against faulty materials.

MAINTENANCE

No maintenance required. Cleaning of foil covered panels, if necessary or desired, may be performed by wiping with damp cloth or a solution of mild detergent and water.

SPECIFICATION (Short Forms)

SPEC NOTE: Upon request, a long form 3-Part CSI/CSC format specification is available in Microsoft Word.

2.02 MATERIALS

A. Plenum space sound control system: AcoustiGuard™ Privacy Board System is pre-engineered high performance acoustical extension wall for noise control within the ceiling plenum above partition walls, and consisting of: 1) Non-combustible, rigid high density mineral fiber insulation board to ASTM C-612, size 25 mm (1") thickness x 610 mm (24") x 1220 mm (48") having scrim reinforced foil facing vapor retarder both sides to UL 723/ASTM E-84 (FS 10 and SD 0 foil side), density (weight) of 4.4 kg/m² (0.9 lbs/sq ft), 24 STC. 2) A compatible AcoustiGuard™ Return-Air silencer; 50 mm (2") thick with foil exterior, and black absorptive interior liner 0.29 mm (11.3 mil) thickness. Tel: 905-625-8944; Toll Free 1-888-625-8944; Email: info@wilrep.com; Web: www.acoustiguard.com or www.wilrep.com

B. Quality assurance: Ensure specified plenum space sound control system is marked with Privacy Board identification tape for easy field inspection and verification. Supplied by WILREP Ltd., 1515 Matheson Blvd. East, Unit C-10, Mississauga, ON L4W 2P5.

Firestop Putty Pad
(CP 617, CP 617L and CP 617XL)

Product description

- A moldable firestop putty designed to help protect electrical outlet boxes

Product features

- Applied by hand
- Fast installation

Areas of application

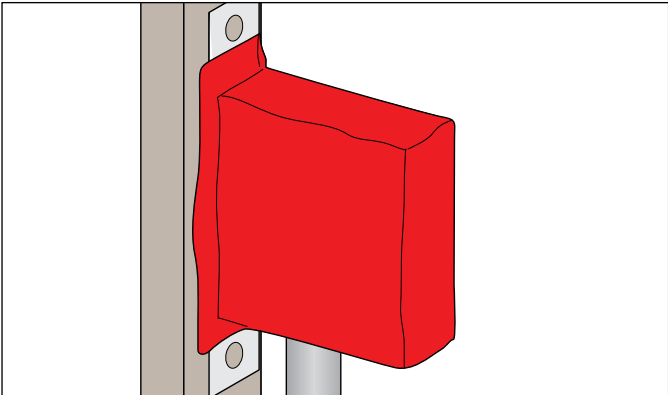
- Protection of electrical outlet boxes

For use with

- Gypsum wall assemblies with wood or metal studs

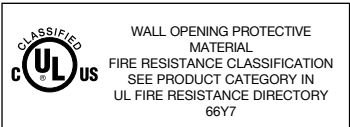
Examples

- Where two outlets are within a single stud/cavity or within 24" measured horizontally (not back to back unless specified by the specific UL approval)



Technical Data*	CP 617
Dimensions (LxWxH)	CP 617: 6" x 7" x 1/8" (15 x 18 x 0.3 cm) CP 617L: 7" x 7" x 1/8" (18 x 18 x 0.3 cm) CP 617XL: 9" x 9" x 1/8" (23 x 23 x 0.3 cm)
Consistency	Moldable putty
Color	Red
Application temperature	40°F (5°C) to 95°F (35°C)
Storage temperature	40°F (5°C) to 104°F (40°C)
Curing time	Non-curing
Density	1.48 g/cm³
Intumescent activation	Approx. 220°F to 250°F (104°C to 121°C)
Volatile solvents	None
Asbestos fibers	None
Surface burning characteristics (ASTM E 84-96)	Flame Spread: 15 Smoke development: 10
Sound transmission classification (ASTM E 90-97)	59 (Relates to specific construction)
Tested in accordance with • UL 263 • ASTM E 84 • ASTM G21	

*At 73°F (23°C) and 50% relative humidity



Installation instructions for CP 617

Notice

- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable listing (CLIV) in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

- stud) and completely seal against the stud within the stud cavity.
3. Reshape CP 617 to fit around conduit or cables.
 4. Press CP 617 to all sides of electrical box.
 5. Remove other side of label.

Not for use

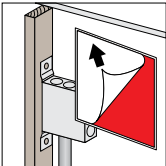
- In areas exposed to water

Storage

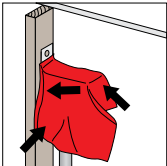
- Store only in the original packaging in a location at temperatures 40°F (5°C) to 104°F (40°C)

Application of firestop putty

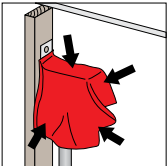
1. After ensuring box is cleaned of loose debris, dirt, oil, moisture, frost and wax, remove label from one side of pad. For a 1 to 2 hour fire rating, one CP 617 pad is required. Exposed side of pad is placed against box.
2. CP 617 Firestop Putty Pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the



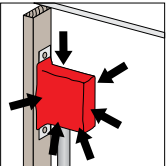
1. Remove label from one side of CP 617



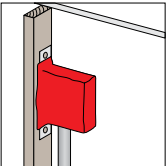
2. Adhere CP 617 to outlet box



3. Reshape CP 617 to fit around box



4. Press CP 617 to all sides of outlet box



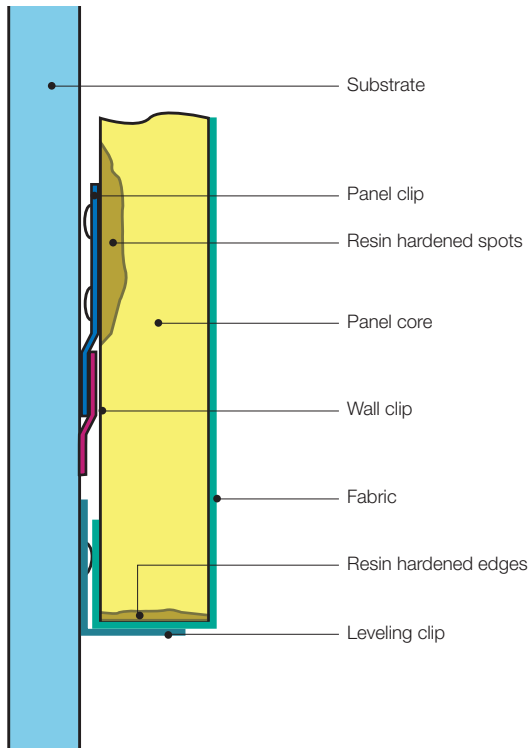
5. Remove other side of label



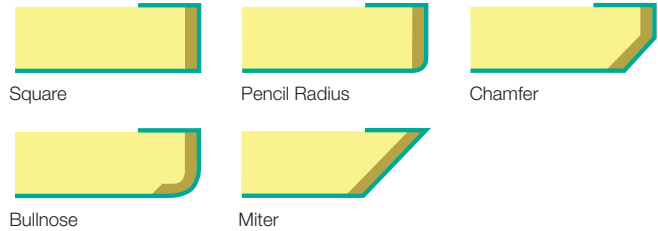
Hilti Firestop
Saving lives
through innovation
and education

Hilti. Outperform. Outlast.

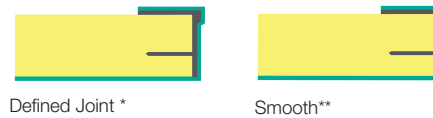
Acoustical Wall Panel (AP)



Resined Edges



Metal Edges



*Available in 1" (25mm), 1-1/2" (38mm) and 2" (50mm)

** Available in 1" (25mm) thickness

DESIGN AND SPECIFICATIONS

Description

An Acoustical Panel (AP) is a general purpose wall panel consisting of a medium density core with a fabric finish. Panels are recommended for use where they are unlikely to be subjected to abuse or impact. For these types of areas see Decoustics' High Impact Resistant panels.

Panels are supplied complete with factory installed clips for different types of mounting e.g. mechanical, adhesive, magnetic, and hook and loop fastenings.

Panels

All Decoustics panels are custom fabricated and offered in a variety of sizes, shapes, thicknesses and finishes.

Decoustics panels can be finished with fabric from almost any manufacturer. Prior to use, Decoustics will test all fabric for suitability.

Design Considerations

When using speakers in ceiling or wall panels, it is recommended the speaker grille be visibly mounted at the face of the panel. Speaker function creates air movement and any fabric covering the speaker will experience premature soiling.

Maintenance

Refer to appropriate Decoustics "Cleaning and Maintenance Instructions" for any specific finish.

Standards, Tests and Approvals

Surface Burning Characteristics (ASTM E-84): All panel components have a Flame Spread rating of less than 25.

Note: Building code requirements may necessitate composite panel testing based on specified finish.

A panel comprised of "Class A" (Flame Spread of 25 or less) components does not necessarily produce a composite panel meeting the "Class A" requirement. Decoustics has a considerable number of composite panel tests on file.

Decoustics Acoustical Wall Panel (AP)

Performance Data

FINISH	EDGE OPTIONS	SIZES	CONSTRUCTION	THICKNESS	NRC	WEIGHT
Fabric	Resin: - square - bevelled - radiused - stepped Concealed Extruded Aluminum: - square	Fabric: up to 48" x 120" (1220mm x 3050mm). Finish width must be sufficient to cover panel, panel thickness, and wrap a minimum of 1" (25mm) on the back side.	Acoustical Panel consists of a 6 to 7 pcf (96 to 112 kg/m³) medium density core with a fabric finish. Fabric corners are fully tailored (no exposed darting).	1/2" (13mm)	0.55	0.60 psf (2.93 kg/m²)
				3/4" (19mm)	0.70	0.74 psf (3.61 kg/m²)
				1" (25mm)	0.85	0.88 psf (4.30 kg/m²)
				1-1/2" (38mm)	0.95	1.19 psf (5.81 kg/m²)
				2" (50mm)	1.10	1.51 psf (7.37 kg/m²)
* Butt joint is available in 1" and 2" thick panels, defined joint is available in 1", 1-1/2" and 2" thick panels, bevelled is available for 1" thick panel.						

Note: The information provided in this Data Sheet is accurate to the best of our knowledge at the time of printing. However, we reserve the right to make changes when necessary without further notification. Suggested applications may need to be modified to conform with local building codes and conditions. We cannot accept responsibility for products that are not used, or installed, to our specifications. Please refer to our website for most current data.

Note: Only handle panels wearing clean, lightweight, white gloves during installation. Follow manufacturer's printed instructions for installation as well as field cutting of panels.

Mounting Methods

Mount panels to walls using mechanical fastening, adhesive, magnetic fastening or hook and loop fastening.

Mechanically mount only for panels located above head height (includes slide and engage z-clips, wall clips and/or track).

Use adhesive and mechanical fastening to secure "loop" to wall i.e. stapled with played-outward legs.

Consult with fastener manufacturer to determine correct fastener to use for specific substrates, particularly plaster or gypsum board.

Note: It is not always possible to secure panels or mounting hardware to a substrate support such as a steel stud.

Follow manufacturer's printed instructions for installation as well as for field cutting of panels.

Acoustical Data (ASTM C423: Type F5 Mounting as per ASTM E795).

FINISH	PANEL THICKNESS	FREQUENCY (Hz)						NRC	SAA
		125	250	500	1000	2000	4000		
Fabric	1/2" (13mm)	0.11	0.14	0.31	0.79	0.99	1.03	0.55	0.55
Fabric	3/4" (19mm)	0.03	0.20	0.52	0.90	1.09	1.03	0.70	0.66
Fabric	1" (25mm)	0.35	0.41	0.84	1.09	1.09	1.02	0.85	0.84
Fabric	1-1/2" (38mm)	0.16	0.58	1.02	1.19	1.10	1.05	0.95	0.95
Fabric	2" (50mm)	0.19	0.87	1.20	1.19	1.08	1.03	1.10	1.05

Acoustic testing was performed on a panel finished with an acoustically transparent fabric. See finishes, fabrics for additional acoustical performance data.



Decoustics
 61 Royal Group Crescent
 Woodbridge, Ontario L4H 1X9 Canada
www.Decoustics.com
 Phone: 905-652-5200
 Toll Free: 800-387-3809
 © 06/17 Decoustics
 Acoustical Wall Panel (AP)_DATASHEET



1. PART 1 – GENERAL

1.1. SECTION INCLUDES

1. Sound masking systems
2. Paging systems

1.2. RELATED SECTIONS

1. 27 51 19 – Sound Masking Systems
2. 27 51 13 – Paging Systems

1.3. REFERENCES

1. UL6500 / ULC 60065 – Standard for Audio/Video and Musical Instrument Apparatus for Household, Commercial and Similar General Use
2. UL 2043 – Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces; 2013
3. ASTM E 1374-06(2011) – Standard Guide for Open Office Acoustics and Applicable ASTM Standards
4. ASTM E 1573-18 – Standard Test Method for Measurement and Reporting of Masking Sound Levels Using A-Weighted and One-Third Octave Band Sound Pressure Levels
5. ASTM E 1130-16 – Standard Test Method for Objective Measurement of Speech Privacy in Open Offices Using Articulation Index
6. FCC – EN 55103-1&2 – Audio, Video and Entertainment Lighting Control
7. ANSI/ASA S12.2-2008 – American National Standard Criteria for Evaluating Room Noise

1.4. DESIGN AND PERFORMANCE REQUIREMENTS

1. General Performance
 1. The sound masking system shall provide digital controls for the adjustment of sound masking volume and frequency at the sound generator level.
 2. The sound masking system shall include all necessary hardware, software, cabinets, wiring to provide masking noise in an occupied space using only line power supplied by the building's electrical system.
 3. The system shall include PC Control Software capable of making and displaying all sound masking and sound masking timer settings.
2. Sound Masking Performance ABOVE CEILING SYSTEM
 1. The system shall use digital signal processing (DSP) technology for masking sound generation and adjustment of masking signals.
 2. The masking sound shall be random and provide no noticeable repetitive pattern.
 3. The system shall be comprised of sound masking zones, which will ensure that the target volume levels and spectral requirements identified in Section 1.4.9 and are met throughout the facility regardless of architectural condition. Each sound masking zone shall be comprised of a group of speakers fed by one or more independent masking sound generators and shall include independent equalization and volume controls as specified below.

4. The system shall provide a one-third octave equalizer for each masking sound generator. Equalizers shall provide a minimum adjustment range of 100 to 10,000 Hz.
 5. Each pair of closed offices, boardroom or meeting room shall be considered a separate zone. Each boardroom requiring more than one speaker shall be considered a separate zone.
 3. Timer Performance
 1. The system shall provide a timer function allowing masking volume levels to be automatically adjusted according to a programmed schedule.
 2. The system shall provide a calendar-based programmable timer function. Timer schedules shall be assigned to an individual or group of primary network devices.
 3. The system shall provide automatic daylight saving time adjustments.
 4. The system shall provide an acclimatization process that automatically increases the masking volume over a period of time according to a programmed schedule. The system shall allow for independent acclimatization schedules for each timer zone.
 5. The system shall allow for a minimum of one timer zone per loudspeaker zone.
 6. The system shall allow independent timer schedules for each day of the week.
 7. The system shall allow variable rates of volume adjustment.
 4. Masking Sound Level Control
 1. Centralized Control
 - i. Masking level controls shall be limited to a control panel located in a locked mechanical, electrical or telecommunications room local to the area being controlled (such as the MDF and IDF rooms), accessible only by authorized personnel.
 5. Diagnostic Performance
 1. The system shall be capable of identifying electronic components that are not functioning.
 6. Reporting Performance
 1. The PC software shall be capable of reading and displaying the current settings for all masking and timer zones.
 2. The system shall be capable of generating detailed reports of all system settings down for all masking and timer zones.
 7. Security Performance
 1. Below-ceiling electronic components shall be contained in a locked metal enclosure or cabinet.
 2. Access to the control functions shall be password protected.
 3. The system shall allow for all settings to be backed up on an electronic storage medium.
 8. Paging Performance
 1. The system shall be capable of providing overhead paging or background music simultaneously with and without interruption of the masking sound.

2. Paging volume adjustment shall be independent of masking volume adjustment. Each paging zone shall provide independent volume control.
 3. The system shall provide a one-octave equalizer for each paging zone.
 4. The system shall provide a priority paging override of existing paging settings.
 9. Acoustical Performance Requirements
 1. Prior to activating the sound masking system, with mechanical system operating at normal daytime levels and with all furnishings in place, one-third octave sound measurement samples shall be taken throughout the facility:
 - i. Special attention should be taken to identify any building noise that exceeds the preferred spectrum identified below.
 - ii. Provide a report of these measurements to the acoustical engineer in advance of system verification (see Section 3.9).
 2. When measured in the centre of a room, all zones shall conform to the overall masking sound levels defined in Section 1.4.9.4 to within +/- two (2) dB, and the sound spectrum defined in Table 1 below (following any adjustment per Section 1.4.9.4) to within +/- two (2) dB in each one-third octave band.
 3. Variations from the spectrum uniformity exceeding the tolerances defined in 1.4.9.2 and in any one-third octave band shall be the basis for additional zones to be provided at the vendor's expense.
 4. Masking sound level shall be nominally as follows. The target spectrum shall be determined for each area by adjusting the NRC Canada Optimum Spectrum as shown in Table 1 by adding or subtracting a constant value in 1.0 dB increments across all one-third octave bands (e.g., subtract 3 dB in each one-third octave band in private offices and meeting rooms).
 - i. 47 dBA in the open office workstation areas, reflection areas, meditation areas, library areas and drop-in workspace areas containing four (4) or more workstations
 - ii. 43 dBA in living room areas and dining areas
 - iii. 42 dBA in private offices and meeting rooms adjacent to open office areas.
 - iv. No sound masking is required within washrooms, stairs, elevator lobbies, or support spaces. No sound masking is required in large teleconferencing rooms, since it can interfere with audio systems during teleconferencing; sound masking in teleconferencing rooms is only acceptable if: 1) the room is adjacent to an open office area; AND 2) the sound masking within the room can be automated such that it gradually decreases in volume over a period of time (down to inaudibility) when the audio equipment is in use, and gradually increases in volume over a period of time (back to normal operating levels of 42 dBA) when the audio equipment is no longer in use.
 5. After adjustment, the system shall provide spatial uniformity as defined below:
 - i. For each third-octave band from 100 Hz to 125 Hz within a zone, the difference between the maximum and minimum sound levels measured shall not exceed 5 dB.

- ii. For each third-octave band from 160 Hz to 4 kHz within a zone, the difference between the maximum and minimum sound levels measured shall not exceed 4 dB.
- 6. At no location shall the sound level at any third-octave band be more than 4.5 dB higher than the levels for both adjacent third-octave bands.
- 7. The system shall provide temporal uniformity, such that one-second measurement samples of overall A-weighted noise levels are within +/- one (1) dB.

Table 1: Masking Sound Spectrum

Band Center Frequency	NRC Canada Optimum Spectrum
Overall dBA	45.0
100	46.9
125	45.9
160	44.7
200	43.9
250	42.7
315	41.4
400	40.4
500	38.9
630	37.4
800	35.4
1,000	33.7
1,250	31.4
1,600	29.4
2,000	27.4
2,500	24.9
3,150	22.4
4,000	19.4

1.5. OPTIONAL FEATURES

- 1. The masking system may include an optional automatic spectrum and level calibration process. Any additional cost for this feature shall be identified separately.
- 2. The masking system may include an option to allow paging through the system's speakers. Any additional cost for this feature shall be identified separately.

1.6. SUBMITTALS

- 1. Product Data: Manufacturer's specifications and installation instructions
- 2. System Design: Schematics of the system showing quantity and location of components and related cabling and accessories
- 3. Warranty Documents: Warranty documents covering the system components.

4. Specification Compliance Statement: A signed compliance statement from an executive officer of the manufacturer stating that the system ***as proposed to the customer*** will meet the design and performance requirements outlined in Section 1.4 herein.

1.7. QUALITY ASSURANCE

1. Manufacturer Qualifications: Minimum of 5 years manufacturing sound masking systems.
2. System Design – Performed by an approved manufacturer representative.
3. Installer Qualifications – Approved by manufacturer representative and are trained with the specified products or have demonstrated experience with the installation of similar products to those specified.
4. System Adjustment – Done by an approved manufacturer representative or trained contractor.

1.8. DELIVERY, STORAGE AND HANDLING

1. Protect from moisture during shipping, storage and handling.
2. Deliver in manufacturer's original unopened and undamaged packages with manufacturer's labels legible and intact.
3. Inspect manufacturer's packages upon receipt.
4. Handle packages carefully.

1.9. WARRANTY AND MAINTENANCE

1. Provide a written warranty that products installed shall be free from defects in parts or assembly for a 5-year period from date of first use.

2. PART TWO – PRODUCTS

2.1. MANUFACTURERS

1. Acceptable Manufacturers:
 1. K.R. Moeller Associates Ltd.; 3-1050 Pachino Court, Burlington, Ontario L7L 6B9 Canada. Toll Free: 866 LOGISON (1-866-564-4766). Tel: (905) 847-8633. Fax: (905) 847-7709. Email: info@logison.com. Web: www.logison.com.

Local Source:

Environmental Acoustics Inc.: 405 Brunel Road, Mississauga, ON L4Z 1Z5 Canada.
Tel: 905-238-1077 Web: www.enviraco.com

Contact Ed. Walcott x 2242
 2. Softdb Inc.: 1040 Belvedere Ave., Suite 215, Quebec City, Quebec G1S 3G3 Canada.
Tel: 1-866-686-0993 www.softdb.com

Local Source:

Contact Paul Barnard p.barnard@softdb.com
Tel: 647-668-4063

3. PART 3 – EXECUTION

3.1. SYSTEM DESIGN

1. Design system according to manufacturer's specifications.

3.2. EXAMINATION

1. Ensure that facility build out is at a stage suitable for the system installation.
2. Ensure that facility is constructed according to plans including wall locations, ceiling types and plenum barriers.
3. Ensure that the ceiling plenum height is appropriate as per manufacturer's recommendations and as per plan.
4. Ensure power requirements have been provided as per plan.
5. Ensure sufficient space for centrally located components is available as per plan and manufacturer's specifications.
6. Ensure any third-party components required to be interfaced with the system have been provided.

3.3. PERMITS

1. Obtain necessary permits for installation work.

3.4. INSTALLATION

1. Follow all applicable codes for the area.
2. Follow manufacturer's recommendations regarding installation as found in the manufacturer's installation manual.
3. Follow the system design for location of loudspeakers and wiring.
4. Record any necessary changes to the system design on the plan.
5. Ensure that supplementary materials used meet applicable safety standards.
6. If the masking system requires PC or Mac software, a copy of the software shall be provided to the building owner.

3.5. FIELD QUALITY CONTROL

1. Ensure that ceiling plenum heights meet the minimum recommended by the manufacturer for the loudspeakers.
2. Ensure that loudspeakers are not obstructed as much as possible.
3. Ensure cables are securely terminated.
4. Ensure that loudspeakers are suspended in a level manner using hammer drilled or shot and pin anchors and t-bar grid wire.
5. Ensure that distance between the top of the loudspeaker and the deck meets manufacturer's minimum specifications
6. Ensure cables are properly supported in the ceiling with minimal sag between support points.

3.6. SYSTEM CONFIGURATION AND ADJUSTMENT

1. Follow manufacturer's recommendations for system settings as found in the system's user manual.

3.7. CLEANING

1. Ensure that empty packaging is removed.
2. Ensure that any material waste is removed

3. Ensure the product is clean and presentable where required.

3.8. DEMONSTRATION AND TRAINING

1. Demonstrate operational system to customer by walking the space.
2. Demonstrate functionality of the system to the customer or customer's representative.
3. Train customer employee to maintain system as required.
4. Provide a test of final installed operation, provide spectrum and overall level measurements, minimum one measurement per zone or per 100 m² of floor area for zones exceeding 100 m² and demonstrate system performance to project Acoustical Engineer.

3.9. TESTING AND REPORTING

1. Prior to occupancy and with all furnishings in place, a third party acoustical engineer will be retained at the vendor's expense to verify that the masking system performs to the standards set in Section 1.4.9.
2. At a minimum, separate readings will be required for every zone or for every 100 m² (1,000 ft²) of floor area for zones exceeding 100 m². Sound level measurements will be collected 1.5 m above the floor and at least 1.0 m away from wall or other reflecting surfaces.
 1. With masking off and mechanical system on, verify sound levels in all areas previously identified by vendor in Section 1.4.9.1.i that exceed target volume and spectrum levels.
 - i. Excessive mechanical noise, which exceeds the target limits identified in Section 1.4.9.4 and Table 1, shall be noted and included in the submission to the client.
 - ii. This does not preclude the responsibility of the vendor to ensure that the target levels are met outside of the immediate area affected by the mechanical noise.
3. Verify specified sound volume and spectrum with mechanical system on. Volume levels shall meet the requirements specified in Section 1.4.9.
4. Sound Levels (dBA) or one-third octave spectrum levels which cannot be fine-tuned by the vendor to meet the specified requirements, will be the basis for additional speakers and /or spectrum zones to be provided along with re-verification by the engineer at the vendor's expense.
5. Acoustical engineer to provide a printed report detailing system settings.
6. Vendor may select only from the following list of Acoustical Engineers:
 1. HGC Engineering, attn. Bill Gastmeier, 905-826-4044.
 2. Thornton Tomasetti Canada Inc., attn. Michael Wesolowsky, 905-271-7888.
 3. Valcoustics, attn. Dr. Al Lightstone, 905-764-5223.
 4. Aercoustics Engineering Ltd., attn. Steve Titus, 416-249-3361.

