3D ISOMETRIC VIEW(S)
FOR PRESENTATION ONLY
1/10/2025 3:53:38 PM
Z:\Drawings\24-22 HWDSB Hess Street 400K\24-22 Hess Street\24-22 REVIT\24-22-01 HESS SCHOOL.rvt

HWDSB

Hamilton District School Board

P02082 Hess Street Elem. School Ground Floor Ceiling Replacement & Lobby / Classroom Renovation

107 Hess Street North
Hamilton, Ontario

AMRA J
ARCHITECTS INC.

E & M
Consulting Engineers Inc.

J. P. SAMUEL AND ASSOCIATES INC.
STRUCTURAL ENGINEERS
1040 Garner Road West, Suite C203
Ancaster, ON L9G 0J2
Tel:(647) 671-8530 email:jsamuel@jpsamuel.com
www.jpsamuel.com

project number	DRAWING NO.
24-22	A0.00

DRAWING LIST

SHEET	ARCHITECTURAL DRAWINGS
A0.00	COVER PAGE
A0.01	GENERAL NOTES, KEY PLAN, & LEGENDS
A1.01	DEMOLITION PLANS & NOTES
A1.02	ENLARGED FLOOR PLANS, SECTIONS & DETAILS
A1.03	PROPOSED GROUND FLOOR REFLECTED CEILING PLAN & DETAILS

	MECHANICAL DRAWINGS
M0-00	MECHANICAL LEGEND, DRAWING LIST & KEY PLAN
M1-00	OVERALL PLAN GROUND FLOOR DEMOLITIONS - MECHANICAL
M1-01	OVERALL PLAN SECOND FLOOR DEMOLITIONS - MECHANICAL
M1-02	OVERALL PLAN ROOF DEMOLITIONS - MECHANICAL
M2-00	OVERALL PLAN GROUND FLOOR NEW - MECHANICAL
M2-01	OVERALL PLAN SECOND FLOOR NEW - MECHANICAL
M2-02	OVERALL PLAN ROOF NEW - MECHANICAL
M3-00	SPECIFICATIONS
M4-00	SPECIFICATIONS
ME1-00	MECHANICAL & ELECTRICAL SCHEDULES

	ELECTRICAL DRAWINGS
E0-00	ELECTRICAL LEGEND, DRAWINGS LIST & KEY PLAN
E1-00	GROUND FLOOR DEMOLITION - ELECTRICAL
E2-00	GROUND FLOOR NEW - ELECTRICAL
E3-00	ELECTRICAL SPECIFICATION

	STRUCTURAL DRAWINGS
S1.1	GENERAL NOTES
S2.1	PARTIAL EX. ROOF PLAN
S2.2	JOIST REINFORCING DETAILS

SCHOOL SITE MAP (BY HWDSB)

1/10/2025 3:53:39 PM

NOTES AND SPECIFICATIONS

1. GENERAL:

THE SCOPE OF WORK INCLUDES REPLACEMENT OF THE EXISTING GROUND FLOOR CORRIDOR CEILING WITH NEW GWB AND LED LIGHTING, SUBDIVIDING EXISTING CLASSROOM 112 INTO TWO CLASSROOMS AND REPLACEMENT OF THE EXISTING GYM HVAC UNIT. THERE IS NO CHANGE OF USE OR OCCUPANT LOAD OF THE EXISTING SCHOOL.

THE AREA OF RENOVATION IS 465 SQ. M .

REVIEW THE ENTIRE SET OF DRAWINGS, INCLUDING MECHANICAL, ELECTRICAL, AND STRUCTURAL FOR THE FULL SCOPE OF WORK.

INCLUDE PROVISIONS FOR ALL REPAIRS OF MATERIALS DISTURBED BY MECHANICAL/ELECTRICAL WORK.

ENSURE THAT THE CONSTRUCTION COMPLIES WITH CURRENT ONTARIO BUILDING CODE REQUIREMENTS AND THAT EXISTING FIRE RATING IS MAINTAINED WHERE APPLICABLE.

VERIFY ALL DIMENSIONS ON-SITE PRIOR TO COMMENCEMENT OF WORK AND MAKE NECESSARY MODIFICATIONS TO SUIT EXISTING SITE CONDITIONS.

REPORT ANY CONTEMPLATED DEVIATIONS FROM THE DRAWINGS PRIOR TO MAKING CHANGES.

ENSURE THAT ALL AREAS DISTURBED OR DAMAGED DURING CONSTRUCTION, WHETHER SHOWN ON THE DRAWINGS OR NOT, ARE RESTORED TO THEIR ORIGINAL CONDITION.

CONTRACTOR SHALL FULLY ENCLOSE CONSTRUCTION AREA AND COORDINATE ALL DEMOLITION AND NEW WORK IN SUCH MANNER NOT TO DISTURB DAY-TO-DAY OPERATION OF THE SURROUNDING AREAS.

2. DEMOLITION

REFER TO THE DESIGNATED SUBSTANCE AUDIT REPORT CONTAINED WITHIN THE SPECIFICATIONS PRIOR TO STARTING ANY DEMOLITION WORK.

ALL AREAS OF CONCERN LISTED WITHIN THE REPORT TO BE COORDINATED UNDER THE ABATEMENT SCOPE OF WORK.

REFER TO DEMOLITION PLAN AND NOTES ON DRAWING A1.01 AND ALSO MECHANICAL, ELECTRICAL & STRUCTURAL DEMOLITION DRAWINGS AND NOTES.

REPAIR AND MAKE GOOD ALL EXISTING FLOORS, WALLS AND CEILINGS DAMAGED DURING THE DEMOLITION PROCESS AND NEW CONSTRUCTION.

PATCH ALL CEILING HOLES AS REQUIRED TO MAINTAIN EXISTING 1HR FIRE RATING.

3. NEW CONSTRUCTION

REVIEW ALL DRAWINGS AND SPECIFICATIONS FOR NEW CONSTRUCTION DETAILS AND MATERIALS.

CONSTRUCT NEW INTERIOR PARTITIONS ACCORDING TO THE PARTITION SCHEDULE.

NEW PARTITIONS TO EXTEND TO THE UNDERSIDE OF THE EXISTING STRUCTURE, TYPICAL.

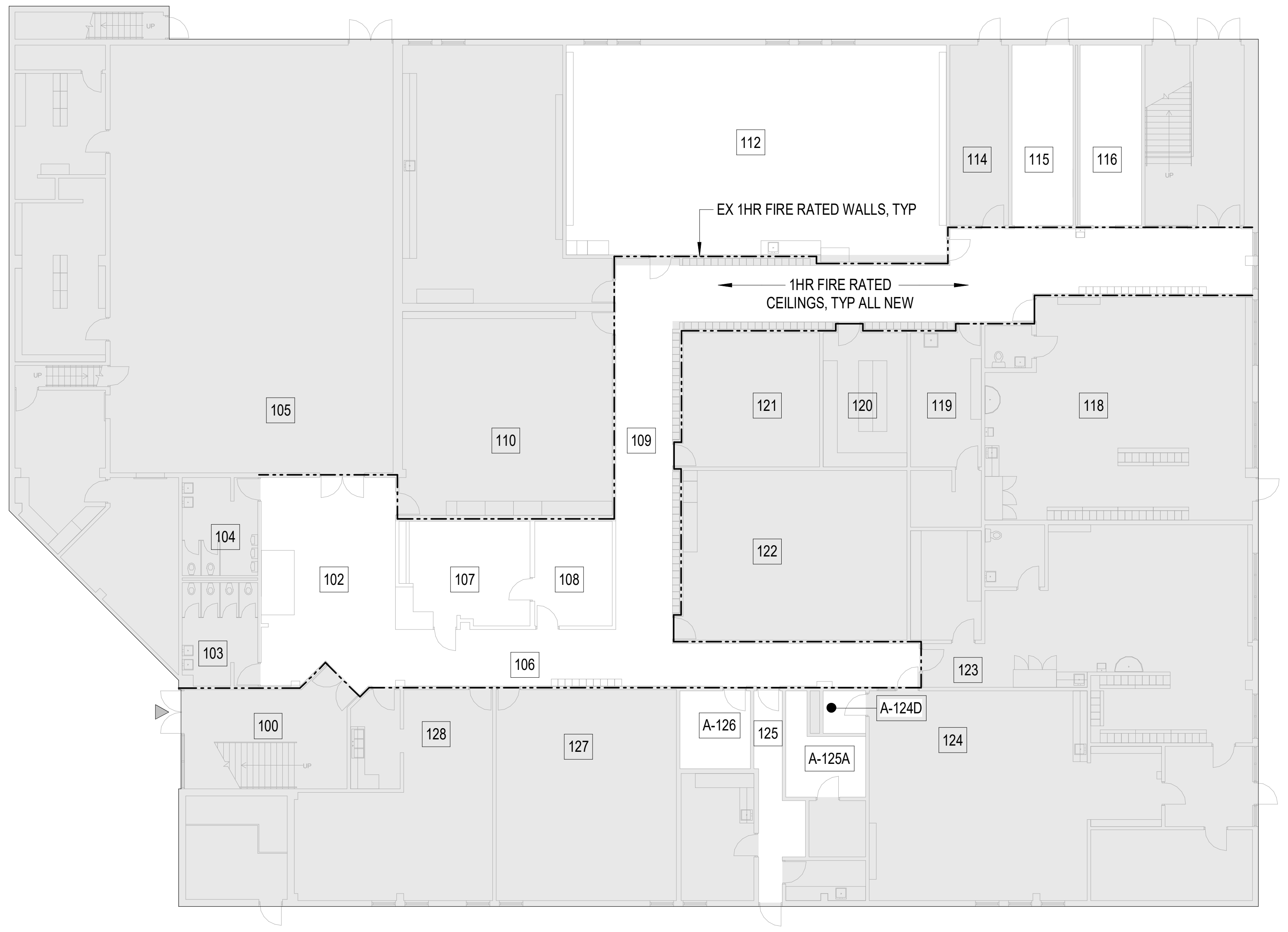
ACOUSTICALLY SEAL BASE AND TOP RUNNER CHANNELS. TAPE AND FINISH GYPSUM WALL BOARD SURFACES TO ENSURE A SMOOTH FINISH TO RECEIVE PAINT FINISH.

FILL IN WALL OPENINGS TO EXISTING WALLS USING MATERIALS TO MATCH EXISTING.

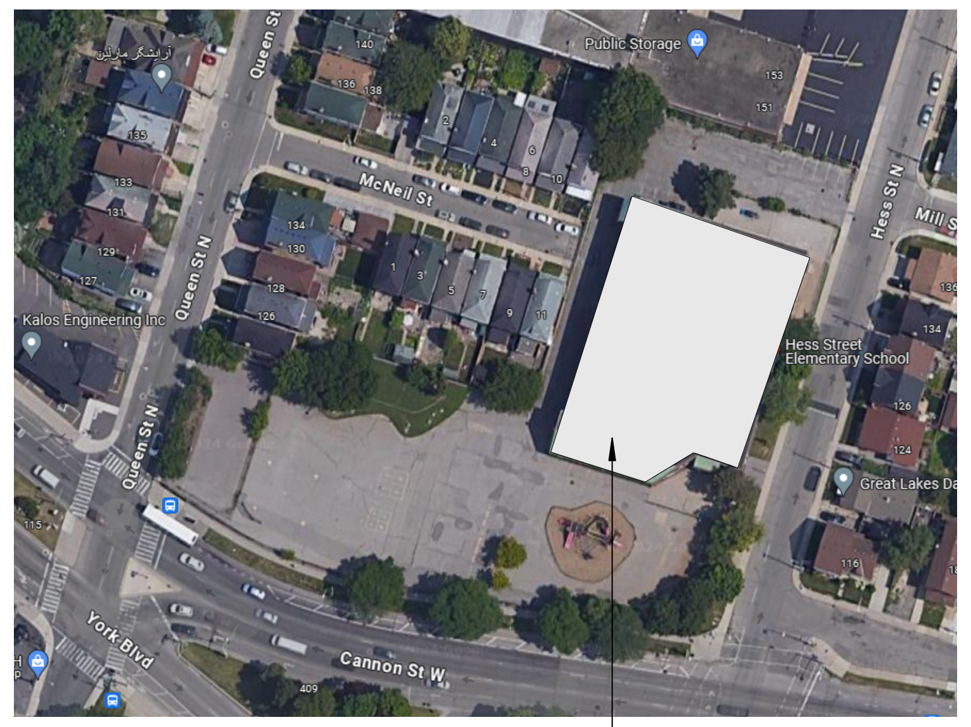
FOLLOWING INSTALLATION OF MECHANICAL AND ELECTRICAL SERVICES IN THE EXISTING WALLS, REPAIR PARTITIONS AS REQUIRED.

MAINTAIN PARTITION FIRE RATINGS AT WALL FILL-INS AND PATCHES.

FOR DOOR HARDWARE SPECIFIED ON DRAWING A1.02 CONTACT:
Craig S. Wilson AHC
Group 87 Architectural Hardware Inc.
Unit #1, 3245 Harvester Rd. Burlington, Ont. L7N-3T7
Ph: 905.639.4676
E-Mail: craig@group87.ca
Web: www.group87.ca



EXISTING GROUND FLOOR - KEY PLAN
SCALE: 1 : 200
1
A1.02



SITE

SITE LOCATION

SYMBOL LEGEND

0	STRUCTURAL GRID	EL.	SPOT ELEVATION
ELEVATION NAME	ELEVATION REFERENCE	?	DEMOLITION / CONSTRUCTION TAG
SIM 1 A01	SECTION REFERENCE	ROOM NAME 101	ROOM TAG
SIM 1 A100	DETAIL REFERENCE	1-10 A	DOOR TAG
2 1 A100 3 4	EXTERIOR ELEVATION REFERENCE	W1	WALL TAG
1-B 1-A A100 1-C 1-D	INTERIOR ELEVATION REFERENCE	W1	WINDOW / SCREEN TAG
		1i	FLOOR TAG
		R1	ROOF TAG
		#	REVISION TAG
—·-·—	EXISTING 1HR FIRE RATING		

ABBREVIATION LEGEND

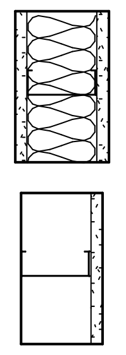
STANDARDS		MATERIAL	
A.F.F.	ABOVE FINISHED FLOOR	ACT	ACOUSTICAL CEILING TILE
c/w	COMPLETE WITH	CAR	CARPET
DN	DOWN	CMU	CONCRETE MASONRY UNIT
EL.	ELEVATION	CONC	CONCRETE
EX.	EXISTING	GWB	GYPSUM WALL BOARD
EXP.	EXPOSED	GW	GEORGIAN WIRE
FIN.	FINISHED	HM	HOLLOW METAL
FTG	FOOTING	INT	INTEGRAL
G.C.	GENERAL CONTRACTOR	PT	PAINT
GL	GRID LINE	RB	RUBBER BASE
G/R	GUARDRAIL	SC	SOLID CORE
H/R	HANDRAIL	SHT	SHEET
H.D.G.	HOT DIPPED GALVENIZED	S.S.	STAINLESS STEEL
N.I.C.	NOT IN CONTRACT	ST	STAIN
N.T.S.	NOT TO SCALE	TG	TEMPERED GLASS
SIM.	SIMILAR	VCT	VINYL COMPOSITE TILE
STRU.	STRUCTURE	AN	ANODIZED
T/	TOP OF	AL	ALUMINUM
TYP.	TYPICAL		
u/s	UNDERSIDE		

DRAWING LEGEND

▨	EXISTING AREAS NOT IN SCOPE
☐	AREA OF WORK

PARTITION WALL SCHEDULE

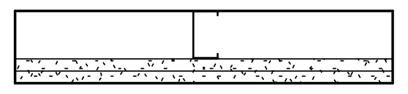
NEW PARTITION TO THE U/S OF THE EX. FLOOR ABOVE OTHERWISE NOTED



P1
1HR FRR AS PER ULC DESIGN No. U419
- 16mm TYPE X GWB
- 92mm MTL STUDS @ 400mm O.C.
- 89mm ACOUSTIC INSULATION
- 16mm TYPE X GWB

P2
- 16mm TYPE X GWB
- 92mm MTL STUDS @400mm O.C.

CEILING SCHEDULE



GWB 1
- 64mm MTL STUDS @ 400mm O.C.
- 2 LAYERS 16mm TYPE X GYPSUM BOARD

1HR FRR AS PER OBC SUPPLEMENTARY STANDARD SB-2, TABLE 2.3.12

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

PROJECT
SURVEY

No.	DESCRIPTION	DATE
1	ISSUED FOR TENDER	01/13/2024
0	ISSUED FOR BUILDING PERMIT	12/10/2024

REVISIONS

SEAL:

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board
P02082 Hess Street Elem. School Ground Floor Ceiling Replacement & Lobby / Classroom Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
GENERAL NOTES, KEY PLAN, & LEGENDS

drawn: RMC
date: 09/2024
scale: As indicated
project number: 24-22
checked: SG
date: 09/2024
DRAWING NO: A0.01
1
Revision

Z:\Drawings\24-22 HWDSB Hess Street 400K\24-22 Hess Street\24-22 REVIT\24-22-01 HESS SCHOOL.rvt

1/10/2025 3:53:40 PM
Z:\Drawings\24-22 HWDSB Hess Street 400K\24-22 Hess Street\24-22 REVIT\24-22-01 HESS SCHOOL.rvt

CLASSROOM 112 DEMOLITION FLOOR PLAN

2

SCALE: 1 : 100

EXISTING REFLECTED CEILING DEMOLITION PLAN

1

SCALE: 1 : 100

DRAWING LEGEND

▨	EXISTING AREAS NOT IN SCOPE
☐	AREA OF WORK

EX FIXTURES LEGEND

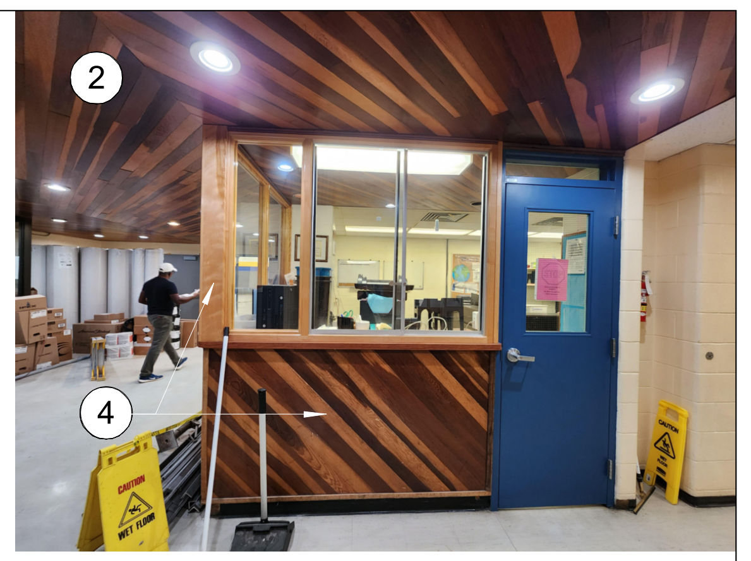
⊠	EX MECHANICAL DIFFUSER
▭	EX 2x4 LIGHT FIXTURE
▭	EX 1x4 LIGHT FIXTURE
○	EX RECESSED POT LIGHT
▨	EX WOOD CEILING
⊞	EX 610X1220 ACOUSTIC CEILING TILES IN SUSPENDED PREFINISHED METAL GRID
☐	EX GB CEILING

DEMOLITION NOTES

NUMBER	DESCRIPTION
1	REMOVE EXISTING ACT AND CEILING GRID C/W EX LIGHT FIXTURES. REFER TO MECHANICAL DRAWINGS FOR FULL SCOPE OF DEMOLITION AND ITEMS TO BE SALVAGED AND REUSED.
2	REMOVE EXISTING WOOD CEILING AND POT LIGHTS C/W ALL SUPPORT FRAMING ABOVE CEILING. MAKE GOOD ALL ADJACENT SURFACES AFFECTED BY DEMOLITION. PREPARE AREA TO RECEIVE NEW GWB CEILING.
3	REMOVE EXISTING WOOD CEILING AND POT LIGHTS C/W ALL SUPPORT FRAMING WITHIN AREA OF DISPLAY BOX. MAINTAIN EXISTING ALUMINUM FRAMING AND ITS SUPPORT TO THE EXISTING STRUCTURE ABOVE. TAKE CARE NOT TO DAMAGE EXISTING METAL SCREEN OF DISPLAY. PREPARE AREA TO RECEIVE NEW CEILING FINISH.
4	REMOVE EXISTING WOOD WALL CORNER PARTITION, MILLWORK, & SCREEN C/W EXISTING HM DOOR. REMOVE EXISTING FLOORING AS REQUIRED TO MAKE GOOD ALL EXISTING ADJACENT SURFACES. PREPARE AREA FOR INSTALLATION OF NEW INTERIOR CORNER SCREEN & DOOR.
5	REMOVE EXISTING WOOD FINISH ON WALL ABOVE EXISTING DISPLAY CASE. TAKE CARE NOT TO DAMAGE EXISTING FRAME & WOOD BLOCKING OF DISPLAY CASE DURING DEMOLITION. PORTION OF WALL TO RECEIVE NEW GWB FINISH.
6	REMOVE EXISTING SHEET METAL C/W FASTENERS FROM BOTTOM OF EX CABINET & FLOOR. ALL CABINETS NEED TO BE RELOCATED TO THE 2ND FLOOR AT THE LOCATION IDENTIFIED BY HWDSB. REPAIR/REPLACE EXISTING FLOORING AFFECTED BY DEMOLITION. MAKE GOOD ALL ADJACENT SURFACES.
7	EX GYPSUM BOARD PARTITION TO BE REMOVED. MAKE GOOD ALL EXISTING SURFACES AFFECTED BY DEMOLITION.
8	REMOVE EXISTING LIGHT FIXTURES & REMOVE/MODIFY EXISTING ACT GRID AS REQUIRED TO ACCOMMODATE THE CONSTRUCTION OF NEW PARTITION. SALVAGE EX ACT TILES AS REQURIED TO FILL IN GRID WHERE EX LIGHTS WERE REMOVED. MAKE GOOD ALL ITEMS AFFECTED BY DEMOLITION/CONSTRUCTION.
9	REMOVE EXISTING GWB CEILING CW/ EXISTING LIGHT FIXTURES. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR FULL SCOPE OF DEMOLITION AND ITEMS TO BE SALVAGED AND REUSED.

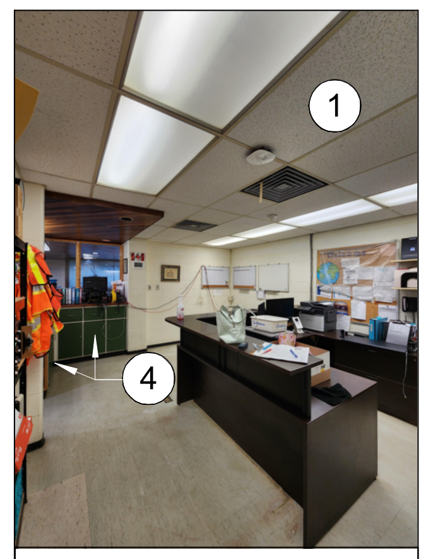
NOTE:

THE SALVAGE OF THE EXISTING ACOUSTIC CEILING TILES SUITABLE FOR INFILL WORK WITHIN CLASSROOMW 112A AND 112B TO BE PERFORMED UNDER ABATEMENT SCOPE OF WORK & TO BE COORDINATED WITH GENERAL CONTRACTOR.



EX LOBBY

EX CLASSROOM 112



EX OFFICE 107

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

PROJECT NORTH
SURVEY

No.	DESCRIPTION	DATE
1	ISSUED FOR TENDER	01/13/2024
0	ISSUED FOR BUILDING PERMIT	12/10/2024

REVISIONS

SEAL:

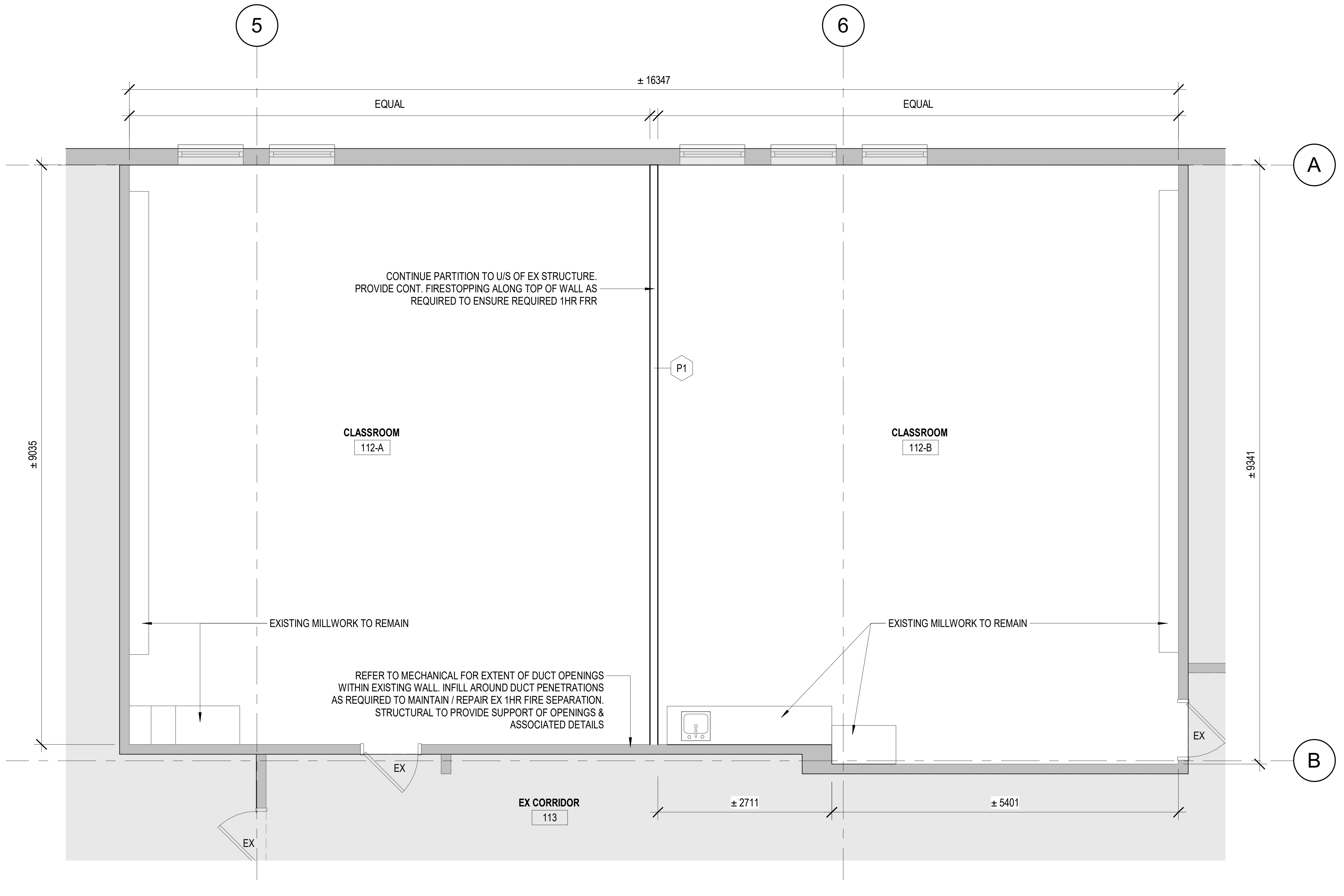
HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board
P02082 Hess Street Elem. School
Ground Floor Ceiling Replacement &
Lobby / Classroom Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
DEMOLITION PLANS & NOTES

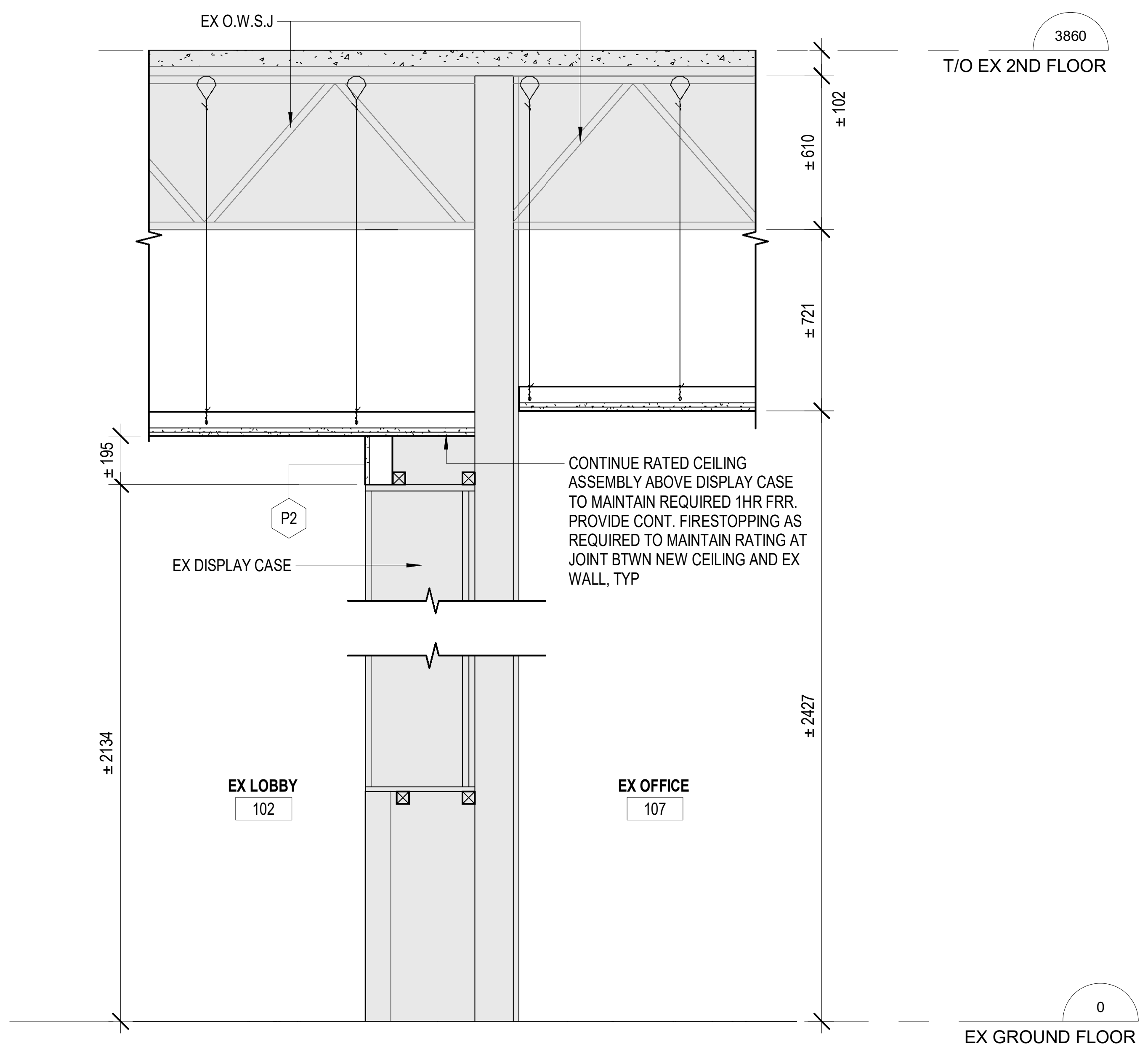
drawn: RMC
date: 09/2024
scale: As indicated
project number: 24-22
checked: SG
date: 09/2024
DRAWING NO: A1.01
1
Revision



PARTIAL FLOOR PLAN - CLASSROOMS 112-A & 112-B

7

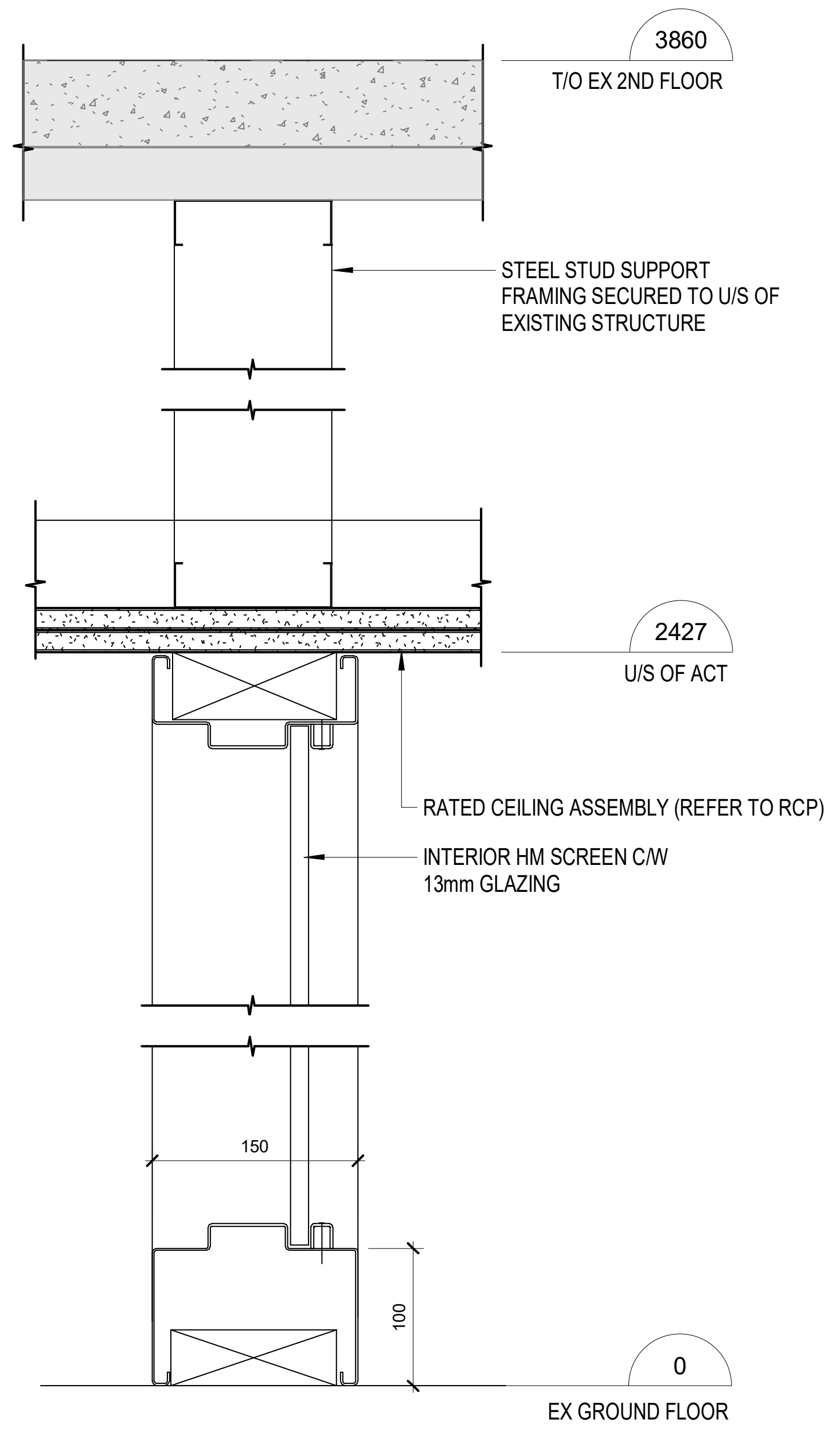
SCALE: 1 : 50



SECTION AT DISPLAY CASE

6
A1.02

SCALE: 1 : 20



HM SCREEN SECTION DETAIL

5
A1.02

SCALE: 1 : 5

DOOR SCHEDULE

DOOR								FRAME				
NUMBER	TYPE	WIDTH	HEIGHT	THICKNESS	MATERIAL	FINISH	GLAZING	TYPE	MATERIAL	FINISH	GLAZING	HARDWARE & REMARKS
107 A	A	965	2134	45	HM	PTD	TEMP	-	HM	PTD	TEMP	12 mm TEMPERED LAMINATED GLAZING

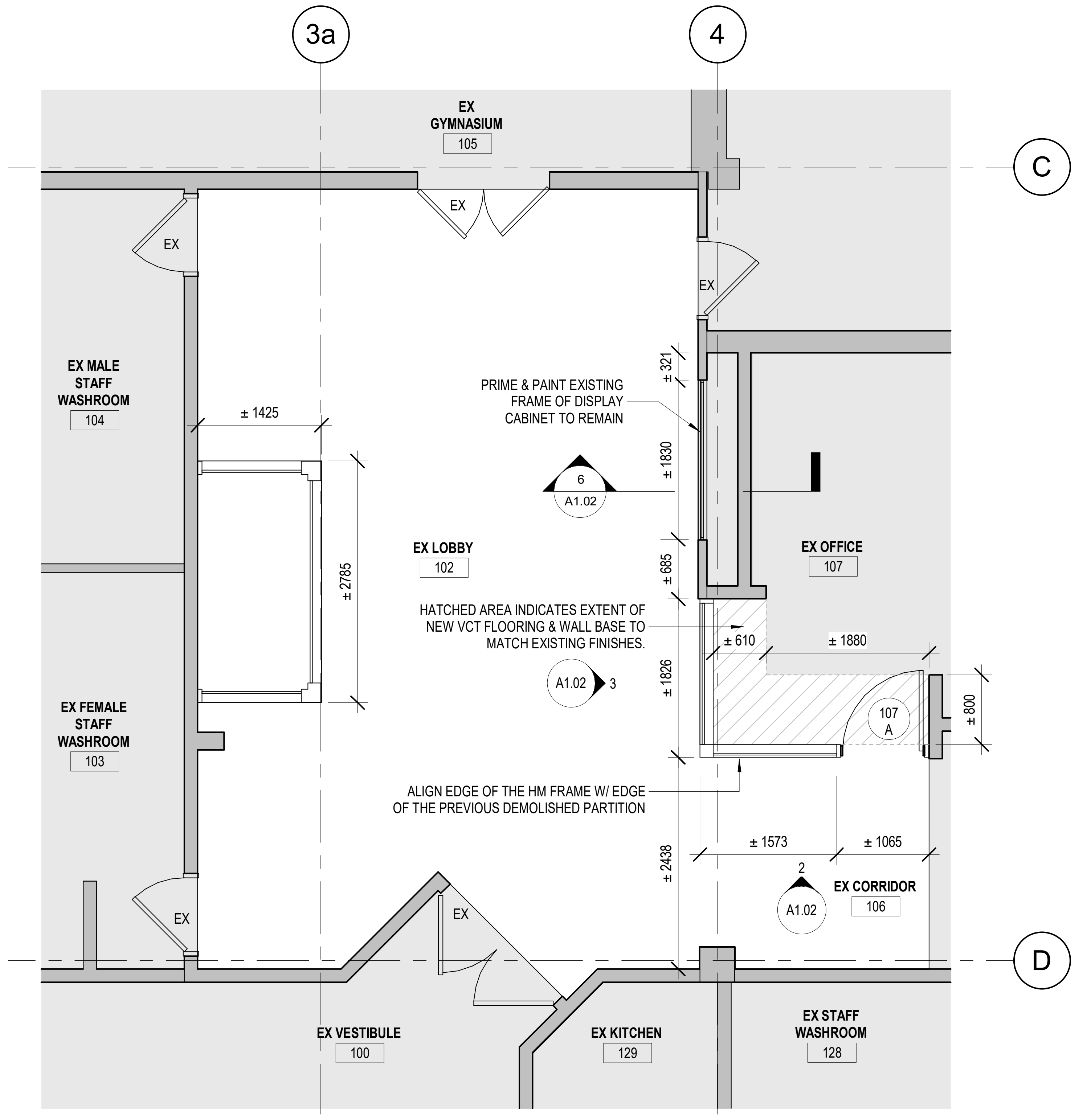
DOOR HARDWARE SCHEDULE

		Hand	Degree Act	Degree InAct
1 SGL	DOOR(S) 107A EX. CORRIDOR 106 TO EX. OFFICE 107 965 x 2134 x 44 x HMD x HMF x NON-RTD	RH	90	

Totals	Each Assembly to have:					
(3)	3	EA	HINGE	5BB1 127 X 114	652	IVE
(1)	1	EA	SEC. CLSRM. LOCK	ND78JD RHO	626	SCH
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH
(1)	1	EA	PERMANENT CORE	23-030 C123 SKD1 50-210, 50-216	626	SCH
(1)	1	EA	CONTROL KEY	49-003		SCH
(1)	1	EA	CONTROL KEY	49-003 SKD1		SCH
(1)	1	EA	SURFACE CLOSER	4040XP REG ARM	689	LCN
(1)	1	EA	KICKPLATE	K10A 200 X 927 TAPE MTG	32D	SMH
(1)	1	EA	COMBO FLOOR STOP	S102L	26D	SMH

DRAWING LEGEND

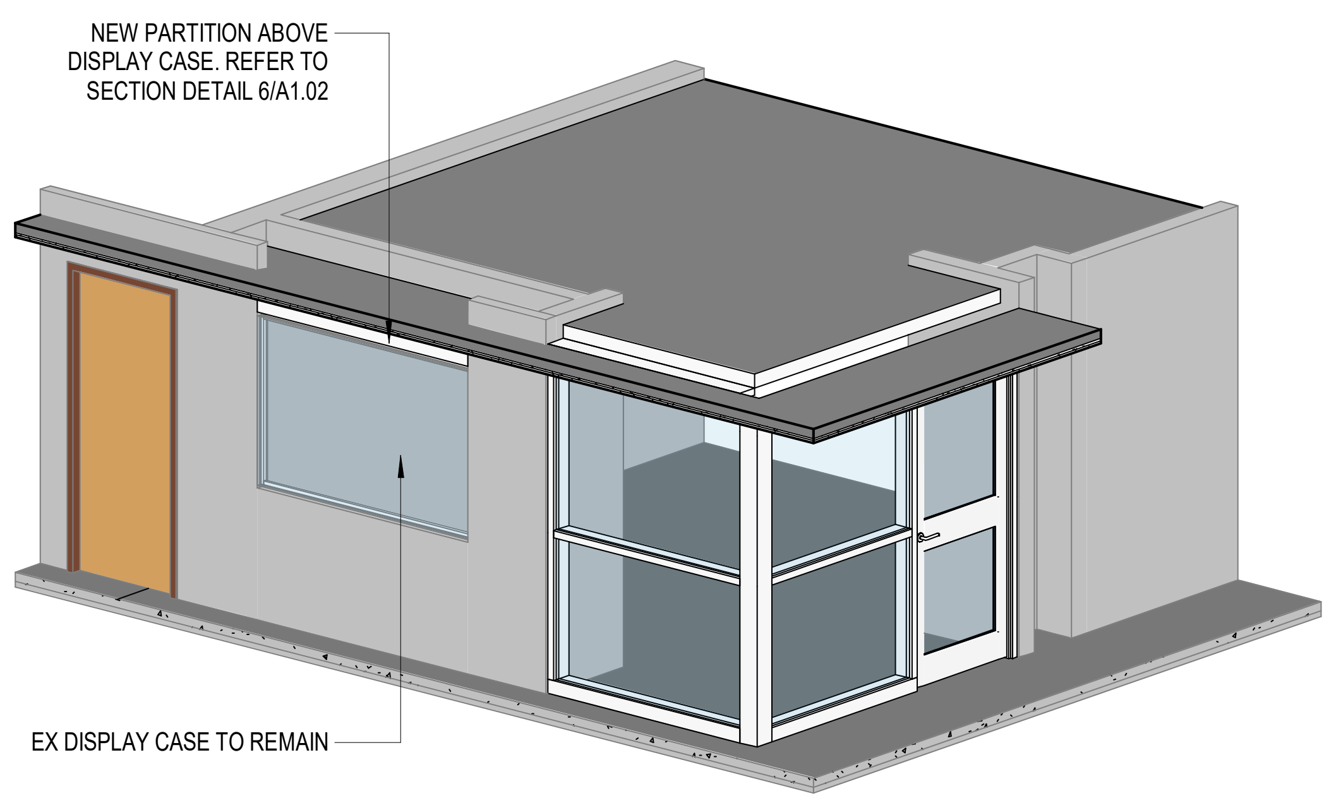
▨	EXISTING AREAS NOT IN SCOPE
☐	AREA OF WORK



EXISTING LOBBY WITH NEW OFFICE PARTITION

1

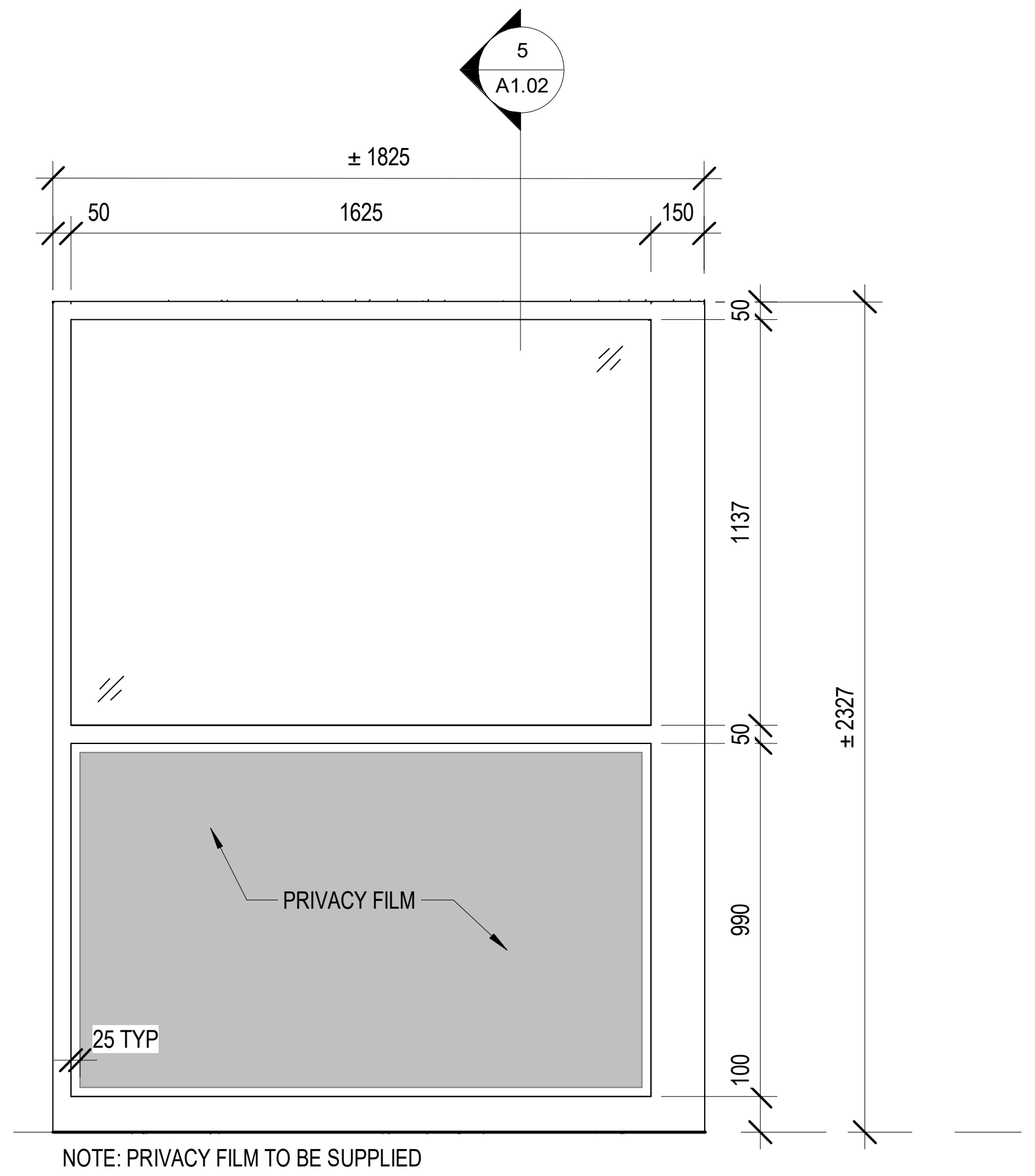
SCALE: 1 : 50



PROPOSED OFFICE ENTRANCE ISOMETRIC VIEW

4

SCALE:

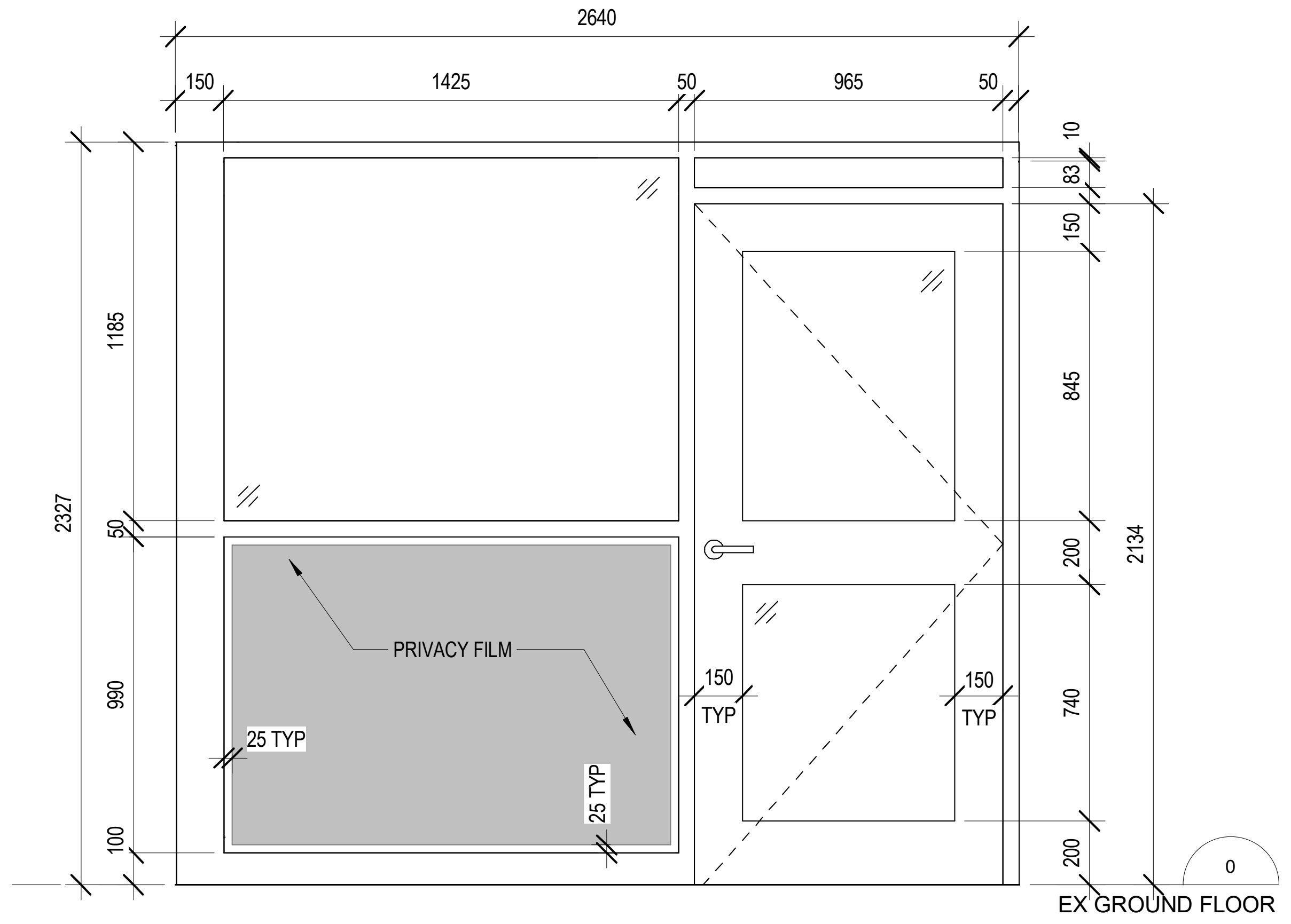


NOTE: PRIVACY FILM TO BE SUPPLIED AND INSTALLED BY HWDSB, TYP

INTERIOR SCREEN ELEVATION 2

3
A1.02

SCALE: 1 : 20



INTERIOR SCREEN ELEVATION 1

2
A1.02

SCALE: 1 : 20

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

PROJECT
SURVEY

No.	DESCRIPTION	DATE
1	ISSUED FOR TENDER	01/13/2024
0	ISSUED FOR BUILDING PERMIT	12/10/2024

REVISIONS

SEAL:

HWDSB

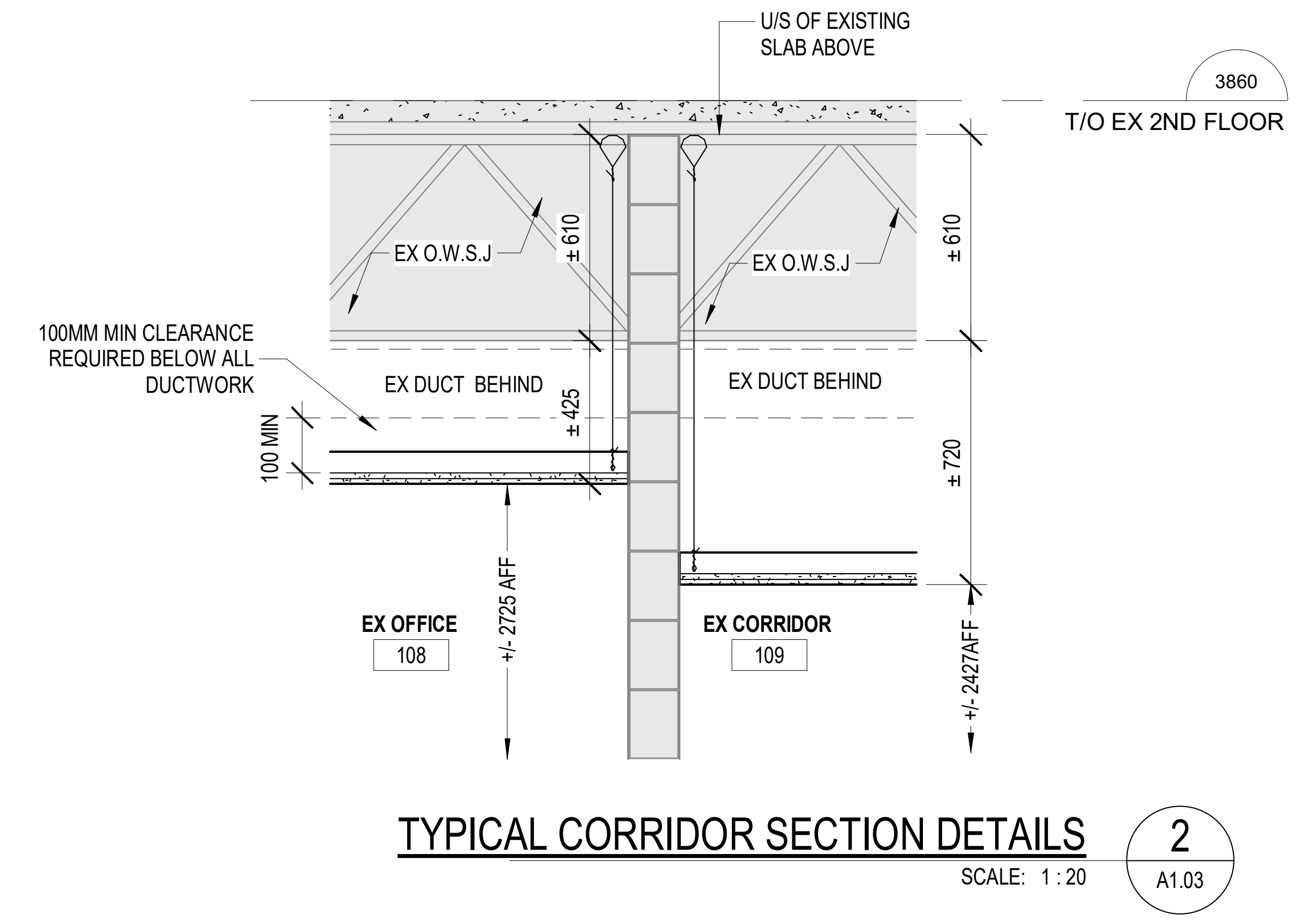
AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board
P02082 Hess Street Elem. School
Ground Floor Ceiling Replacement &
Lobby / Classroom Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
ENLARGED FLOOR PLANS,
SECTIONS & DETAILS

drawn: RMC
date: 09/2024
scale: As indicated
project number: 24-22
checked: SG
date: 09/2024
DRAWING NO: A1.02
1
Revision

1/10/2025 3:53:42 PM



TYPICAL CORRIDOR SECTION DETAILS

2
A1.03

SCALE: 1 : 20

ROOM FINISH SCHEDULE

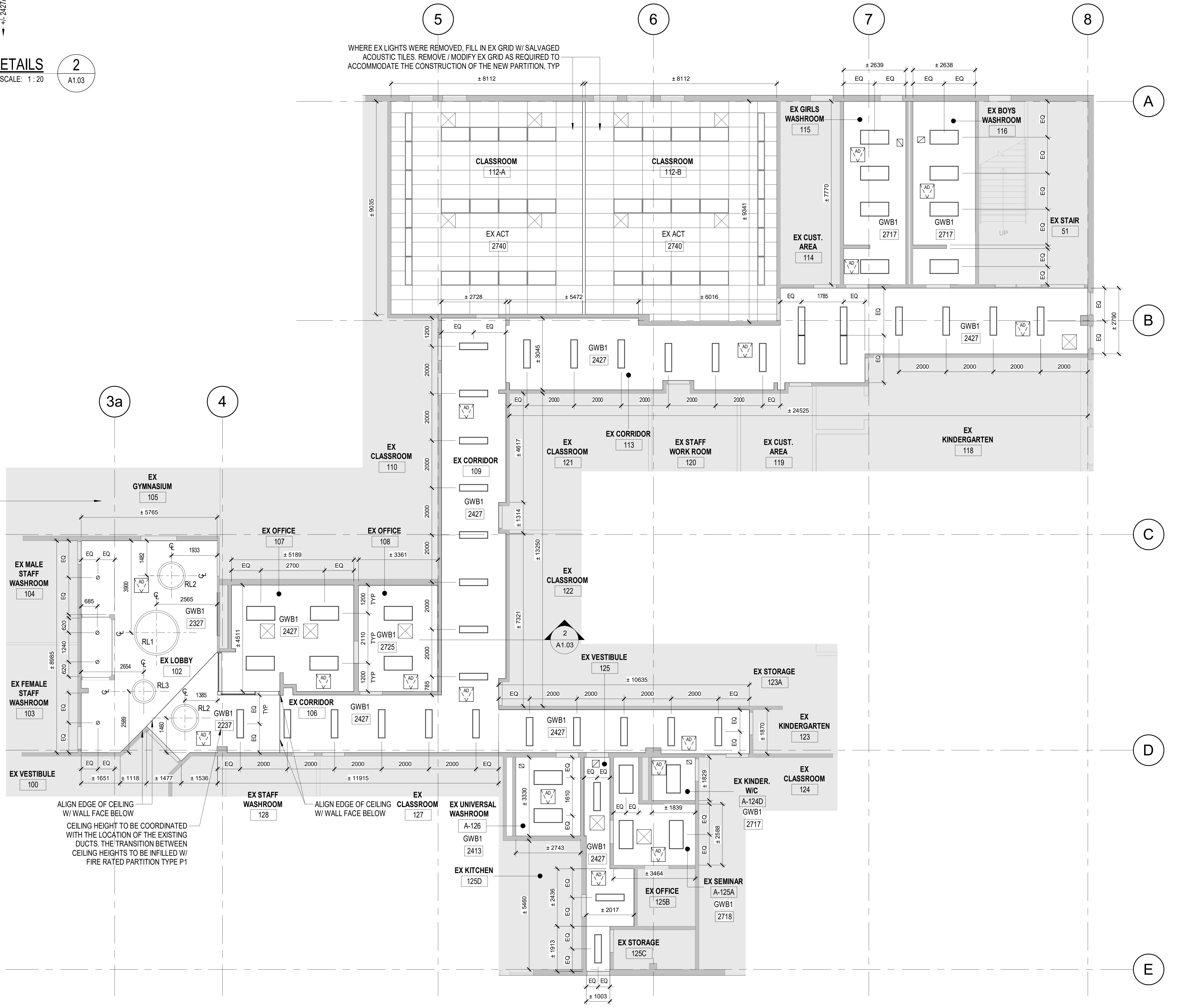
ROOM NO.	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	COMMENTS
102	EX LOBBY	EX	EX	EX	GWB/PAINT	2427	
106	EX CORRIDOR	EX	EX	EX	GWB/PAINT	2427	
107	EX OFFICE	EX	EX	EX	GWB/PAINT	2427	
108	EX OFFICE	EX	EX	EX	GWB/PAINT	2725	
109	EX CORRIDOR	EX	EX	EX	GWB/PAINT	2427	
112-A	CLASSROOM	EX	RB	EX	EX ACT	2427	RB TO BE INSTALLED ON NEW PARTITION WALL
112-B	CLASSROOM	EX	RB	EX	EX ACT	2427	RB TO BE INSTALLED ON NEW PARTITION WALL
113	EX CORRIDOR	EX	EX	EX	GWB/PAINT	2427	
115	EX GIRLS WASHROOM	EX	EX	EX	GWB/PAINT	2717	
116	EX BOYS WASHROOM	EX	EX	EX	GWB/PAINT	2717	
125	EX VESTIBULE	EX	EX	EX	GWB/PAINT	2427	
A-124D	EX KINDER. W/C	EX	EX	EX	GWB/PAINT	2717	
A-125A	EX SEMINAR	EX	EX	EX	GWB/PAINT	2717	
A-126	EX UNIVERSAL WASHROOM	EX	EX	EX	GWB/PAINT	2413	

NOTES:
RB: RUBBER BASE BY TARKETT OR APPROVED EQUAL. HEIGHT OF RUBBER BASE TO BE COORDINATED WITH BASE HEIGHT OF EXISTING BUILT-IN MILLWORK TO REMAIN. COLOUR TO MATCH EXISTING BASE.
PAINT: REFER TO SPECIFICATIONS. COLOURS TO BE SELECTED.

ARCHITECTURAL WORK WITHIN GYMNASIUM:

1. PAINT NEW REINFORCING STRUCTURE REQUIRED FOR NEW HVAC UNIT ON ROOF. PAINT TO MATCH EXISTING. REFER TO STRUCTURAL & MECHANICAL DRAWINGS FOR THE EXTENT OF WORK

2. STRUCTURALLY REQUIRED WOOD BLOCKING TO BE INSTALLED WITHIN DECK FLUTES: PRECISELY CUT WOOD BLOCKING TO MATCH WIDTH OF TOP CHORD OF OWSJ. PAINT BLOCKING TO MATCH U/S OF EXISTING ROOF DECK. REFER TO STRUCTURAL DRAWINGS FOR EXTENT OF WORK.



PROPOSED NEW REFLECTED CEILING PLAN

1

SCALE: 1 : 100

DRAWING LEGEND

▨	EXISTING AREAS NOT IN SCOPE
☐	AREA OF WORK

REFLECTED CEILING PLAN LEGEND

REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR DETAILED FIXTURE INFORMATION.

☒	SUPPLY DIFFUSER
▱	RETURN DIFFUSER
▭	610X1220 LED LIGHT FIXTURE
▭	305X1220 LIGHT FIXTURE
RL1	LED RING LIGHT FIXTURE 6'-0" Ø
RL2	LED RING LIGHT FIXTURE 4'-0" Ø
RL3	LED RING LIGHT FIXTURE 3'-0" Ø
⌀	POT LIGHTS
AD	FIRE RATED ACCESS DOOR WITHIN CEILING ASSEMBLY

NOTE:

1. ALL LIGHT FIXTURES TO BE CENTRED WITHIN THE ROOM OR CORRIDOR UNLESS NOTED OTHERWISE.
2. ALL LIGHT FIXTURE DIMENSIONS ARE LOCATED TO THE CENTRELINE OF FIXTURES.
3. EXACT LOCATIONS OF ALL ACCESS DOORS TO BE COORDINATED ON SITE.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

PROJECT
SURVEY

No.	DESCRIPTION	DATE
1	ISSUED FOR TENDER	01/13/2024
0	ISSUED FOR BUILDING PERMIT	12/10/2024

REVISIONS

SEAL:

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board
P02082 Hess Street Elem. School
Ground Floor Ceiling Replacement &
Lobby / Classroom Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
PROPOSED GROUND FLOOR
REFLECTED CEILING PLAN &
DETAILS

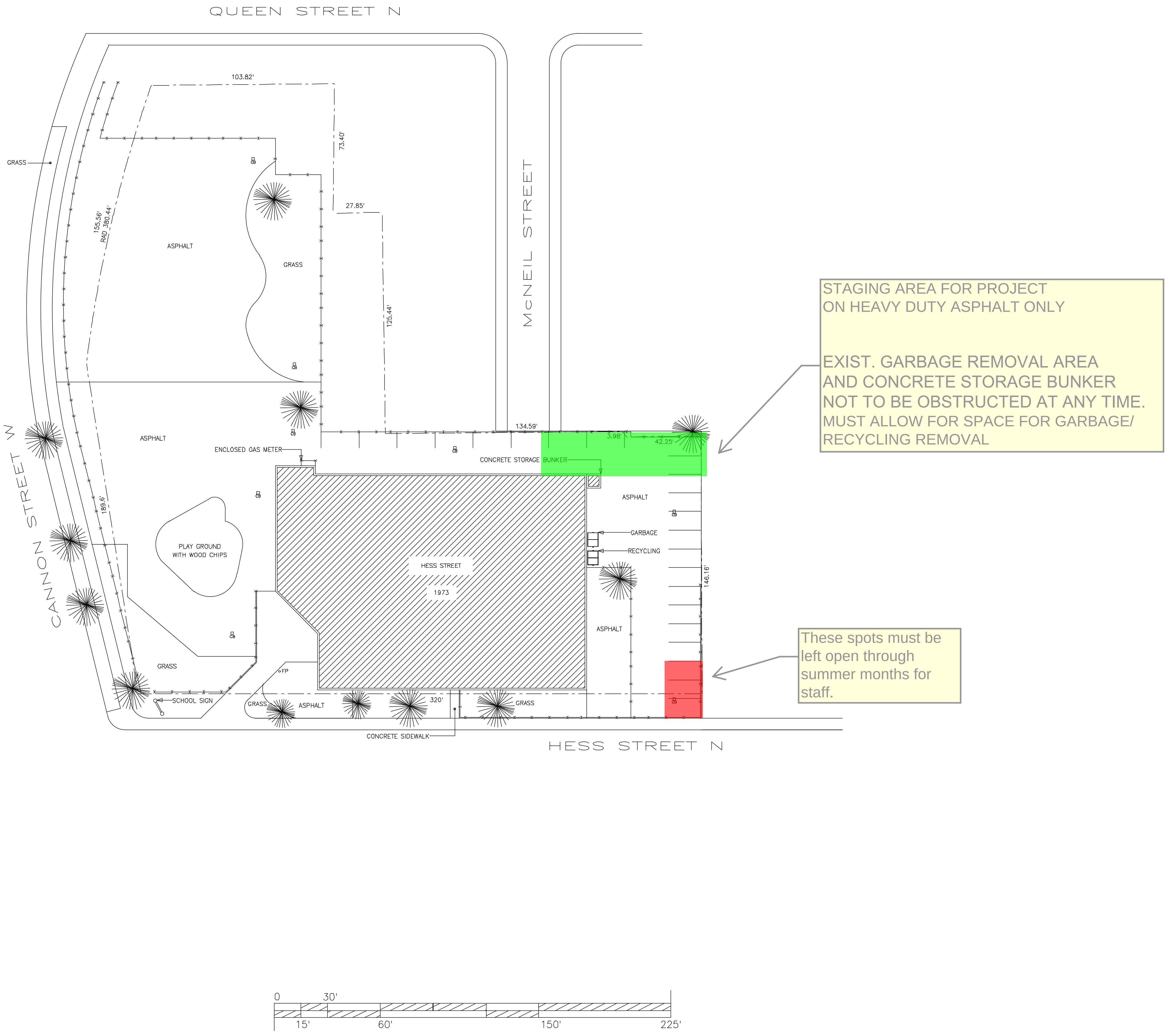
drawn: RMC
date: 09/2024
scale: As indicated
project number: 24-22
checked: SG
date: 09/2024
DRAWING NO: A1.03
1
Revision

Z:\Drawings\24-22 HWDSB Hess Street 400K\24-22 Hess Street\24-22 REVIT\24-22-01 HESS SCHOOL.rvt

NOTE FOR HWDSB

-PROPERTY LINE FROM HWDSB SITE REVIEW
-GRAPHICAL DATA TAKEN FROM GOOGLE EARTH ARE NOTICEABLY DIFFERENT

PLEASE REVIEW.



STAGING AREA FOR PROJECT
ON HEAVY DUTY ASPHALT ONLY

EXIST. GARBAGE REMOVAL AREA
AND CONCRETE STORAGE BUNKER
NOT TO BE OBSTRUCTED AT ANY TIME.
MUST ALLOW FOR SPACE FOR GARBAGE/
RECYCLING REMOVAL

These spots must be left open through summer months for staff.

SITE LEGEND

TREE

▨ OTHER EXISTING BUILDINGS

BASKETBALL NETS

◎ MANHOLES (MH)

HWDSB DRAWING CONVERSION
PROCESS & AVAILABLE DATA

- - - - - HWDSB SITE SURVEY

——— EXISTING AUTOCAD

——— BLUE PRINTS

HAMILTON – WENTWORTH
DISTRICT SCHOOL BOARD

REV	DATE	DESCRIPTION	BY	CHKD

HESS STREET
ELEMENTARY SCHOOL

TITLE
SITE PLAN

SCALE: 1" = 60'0"	DRAWN: DMS DATE: AUGUST 2014	CHKD: DMS DATE: AUG 14	APPVD: DMS DATE AUG 14
CONTRACT No. 010	DWG No. A–SP		REV 00

ELECTRICAL LEGEND

POWER & DISTRIBUTION SYSTEMS

	UTILITY DISCONNECT.
	DELTA STAR POWER TRANSFORMER.
	CIRCUIT BREAKER.
	CIRCUIT BREAKER. (DRAW OUT TYPE).
	CIRCUIT BREAKER. (DRAW OUT TYPE) WITH MICROPROCESSOR BASED TRIP UNIT.
	FUSED DISCONNECT.
	NON FUSED DISCONNECT.
	HI OR LOW VOLTAGE FUSE.
M	CUSTOMER OR UTILITY ENERGY METER.
⏚	ELECTRICAL GROUND.
3–LA	LIGHTNING, ARRESTORS(03) AND GROUND.
▬	PANELBOARD (SURFACE MOUNT).
▬	PANELBOARD (RECESSED MOUNT).
▬	ENCLOSED BUS ASSEMBLY.
▬	CABLE TRAY (LADDER OR TROUGH)

RECEPTACLE/DIRECT CONNECTIONS

	120V, 2P, 3W, 15A DUPLEX RECEPTACLE (CSA #5 SERIES).
	120V, 2P, 3W, 15A SPLIT TYPE DUPLEX RECEPTACLE.
	120V, 2P, 3W, 15/20A T–SLOT TYPE DUPLEX RECEPTACLE. CSA#5 SERIES FOR OFFICE AND GENERAL AREAS.
	120V, 2P, 3W, 15A FOUR PLEX RECEPTACLE 2. DUPLEXES UNDER COMMON PLATE).
	120V, 2P, 3W, 15A DUPLEX RECEPTACLE WITH USB CHARGING PORT.
	120V, 2P, 3W SINGLE RECEPTACLE (CSA #5 SERIES).
	250V, 2P, 3W SINGLE RECEPTACLE (CSA #6 SERIES).
	125/250V, 3P, 4W SINGLE RECEPTACLE (CSA #14 SERIES).
	250VDC/600VAC, 3P, 4W SINGLE RECEPTACLE (CSA #L17 SERIES).
	1 PHASE, 3W DIRECT CONNECTION (L, N, G) OR (L1, L2, G).
	3 PHASE, 4W DIRECT CONNECTION (L1, L2, L3, G).
	3 PHASE, 5W DIRECT CONNECTION (L1, L2, L3, N, G).
	1 PHASE, 4W DIRECT CONNECTION (L1, L2, N, G).
	FLOOR FLUSH MOUNTED OUTLET BOX C/W THREE(3) 120V, 2P, 3W, 15A DUPLEX RECEPTACLE, TWO(2) DATA OUTLETS.
⊞	FLOOR FLUSH MOUNTED OUTLET BOX C/W TWO(2) 120V, 2P, 3W, 15A DUPLEX RECEPTACLE
	MODULAR SYSTEM FURNITURE POWER & COMMUNICATION CABLING CONNECTION POINT OUTLET BOX. SUBSCRIPT 'F' DENOTES FLUSH MOUNTED IN FLOOR.
	FLOOR MOUNTED STATIC GROUNDING RECEPTACLE
HD	HAND DRYER
T	THERMOSTAT.
DH	MAGNETIC DOOR HOLD OPEN DEVICE.

NOTES

1. DIRECT CONNECTION VOLTAGE INFORMATION INDICATION BY CIRCUIT No.
2. UNLESS NOTED OTHERWISE MOUNTING HEIGHT OF ALL OUTLETS IS 455mm (18") A.F.F.
3. UNLESS NOTED OTHERWISE (IE: 30A, 20A) ALL RECEPTACLES/DIRECT CONNECTIONS RATED FOR 15A.

MISCELLANEOUS

	ROOM MODULAR CONTROL PANEL.
NM	NURSE CALL MASTER CONTROL WITH HANDSET
N	NURSE CALL DOME LIGHT (WALL MOUNTED).
N	NURSE CALL DOME LIGHT (CEILING MOUNTED).
	PUSH BUTTON
P	BELL

KITCHEN/LAUNDRY APPLICANCES

D	15A, 120V–1ø DUPLEX RECEPTACLE FOR DISHWASHER, LOCATED AS PER ARCHITECTURAL DRAWINGS.
F	15A, 120V–1ø DUPLEX RECEPTACLE FOR FRIDGE, LOCATED AS PER ARCHITECTURAL DRAWINGS.
U/F	15A, 120V–1ø DUPLEX RECEPTACLE FOR UNDER–COUNTER FRIDGE, LOCATED AS PER ARCHITECTURAL DRAWINGS.
H	15A, 120V–1ø DUPLEX RECEPTACLE FOR KITCHEN HOOD, LOCATED AS PER ARCHITECTURAL DRAWINGS.
X	30A, 120V/208V–1ø(14–30R) RECEPTACLE FOR DRYER, LOCATED AS PER ARCHITECTURAL DRAWINGS.
W	15A, 120V–1ø DUPLEX RECEPTACLE FOR WASHER, LOCATED AS PER ARCHITECTURAL DRAWINGS.
W/D	15A, 120V–1ø DUPLEX RECEPTACLE FOR WASHER, AND 30A, 120/280V–1ø(14–30R) RECEPTACLE FOR DRYER. LOCATED AS PER ARCHITECTURAL DRAWINGS.
S	50A, 120V/208V–1ø(14–50R) RECEPTACLE FOR STOVE, LOCATED AS PER ARCHITECTURAL DRAWINGS.
M	20A, 120V–1ø DUPLEX RECEPTACLE FOR MICROWAVE, LOCATED AS PER ARCHITECTURAL DRAWINGS.
O	20A, 120V–1ø DIRECT CONNECTION FOR BUILT–IN OVEN, LOCATED AS PER ARCHITECTURAL DRAWINGS.
E	15A, 120V/208V–1ø DUPLEX RECEPTACLE FOR EXHAUST FAN, LOCATED AS PER ARCHITECTURAL DRAWINGS.
CT	40A, 120V/208V–1ø DIRECT CONNECTION FOR BUILT–IN COOKTOP, LOCATED AS PER ARCHITECTURAL DRAWINGS.

COMMUNICATION SYSTEMS

W◀1F–2	COMBINATION DATA/TELEPHONE OUTLET. SECOND DIGIT (NUMBER 2.") INDICATES QUANTITY OF TELEPHONE CABLES AND TELEPHONE JACKS IN OUTLET. FIRST DIGIT (NUMBER 1.") INDICATES QUANTITY OF DATA CABLES AND DATA JACKS IN OUTLET. IF FIRST DIGIT INCLUDES A SUFFIX "F", IT INDICATES "FITLINXX" DATA CABLE AND OUTLET. ALL JACKS UNDER ONE(1) COMMON PLATE. REFER TO FLOOR PLANS FOR CABLE AND JACKS QUANTITIES. SUBSCRIPT "W" INDICATES C/W VOICE JACK FOR WALL MOUNTED TELEPHONE AT 1500mm A.F.F. SUBSCRIPT "P" INDICATES PAY TELEPHONE.
◁	DATA OUTLET – COMPUTER OR PRINTER.
◀	TELEPHONE – SUBSCRIPT "P" INDICATES PAY TELEPHONE.
	COMBINATION MULTI–FUNCTION COMMUNICATION OUTLET.
W	WIRELESS ACCESS POINT

INTERCOM SYSTEM

	INTERCOM MASTER STATION
	INTERCOM STATION

PAGING AND SOUND SYSTEM

P	RECESSED CEILING MOUNTED SPEAKER.
P	COMBINATION WALL MOUNTED SPEAKER AND TALK–LISTEN PRIVACY SWITCH.
1	SPEAKER MOUNTED IN ROOM MODULAR CONTROL PANEL.
2	RECESSED WALL MOUNTED SPEAKER.
3	RECESSED CEILING MOUNTED SPEAKER COMPLETE WITH HANDSFREE MIC. AND INTERCONNECTED TO WALL MOUNTED EMERGENCY PULLCORD ALARM DEVICE.
4	SURFACE WALL MOUNTED SPEAKER.
5	SURFACE CEILING MOUNTED SPEAKER.
CS	P.A. CALL SWITCH OR HANDSET.
▭	ADMINISTRATIVE CONSOLE UNIT OUTLET.
V	LOCAL VOLUME CONTROLLER.
AMP	AMPLIFIER.
M	MICROPHONE OUTLET

TELEVISION AND A.V.

TV	TELEVISION OUTLET.
AV	AUDIO/VIDEO STATION

CLOCK SYSTEM

	CLOCK RECEPTACLE. 120V, 15A, 1–GANG RECESSED SINGLE RECEPTACLE

MECHANICAL WIRING SYSTEMS

	MECHANICAL EQUIPMENT/MOTOR.
	DISCONNECT SWITCH (UNFUSED). SUBSCRIPT INDICATES SIZE. SUBSCRIPT 'N' INDICATES COMPLETE WITH SOLID NEUTRAL.
	DISCONNECT SWITCH (FUSED). SUBSCRIPT INDICATES FUSE RATING. SUBSCRIPT 'N' INDICATES COMPLETE WITH SOLID NEUTRAL.
P	MANUAL STARTER COMPLETE WITH PILOT LIGHT.
⊠	MAGNETIC STARTER.
⊠	COMBINATION MAGNETIC STARTER.
TS	TIME SWITCH.

FIRE ALARM SYSTEM

◪	MANUAL PULL STATION C/W PROTECTIVE 9VDC BATTERY OPERATED LEXAN COVER.
X	HEAT DETECTOR. COMBINATION, FIXED 57°C AND RATE OF RISE. SUBSCRIPT 'X' INDICATES 88°C FIXED TEMPERATURE.
X	HEAT DETECTOR. FIXED ONLY (57°C) SUBSCRIPT 'X' INDICATES 88°C RATING.
R	SMOKE DETECTOR. IONIZATION TYPE. SUBSCRIPT "R" INDICATES RELAY BASE.
	120V LOCAL SMOKE ALARM CEILING MOUNTED. IONIZATION TYPE.
	120V LOCAL SMOKE ALARM WITH STROBE.
	CARBON MONOXIDE.
	COMBINATION SMOKE/CARBON MONOXIDE/STROBE.
	AIR DUCT TYPE SMOKE DETECTOR.
R	REMOTE INDICATING LIGHT. SUBSCRIPT INDICATES FAN SYSTEM.
	FIRE ALARM HORN.
	FIRE ALARM BELL.
S	FIRE ALARM STROBE
F	COMBINATION FIRE HORN/STROBE LIGHT.
SV	SUPERVISED VALVE – SPRINKLER. SUBSCRIPT 'P' DENOTES STANDPIPE.
FS	SPRINKLER FLOW SWITCH.
PS	SPRINKLER LOW PRESSURE SWITCH.
D	MAGNETIC DOOR HOLD OPEN DEVICE.
F	RECESSED FIRE ALARM SPEAKER (CEILING MOUNTED).
F	RECESSED FIRE ALARM SPEAKER AND STROBE (CEILING MOUNTED).
F	FIRE ALARM SPEAKER (WALL MOUNTED).
F	FIRE ALARM SPEAKER AND STROBE (WALL MOUNTED).
F	SURFACE FIRE ALARM SPEAKER (CEILING MOUNTED).
F	SURFACE FIRE ALARM SPEAKER AND STROBE (CEILING MOUNTED).
FH	FIREFIGHTER HANDSET.
▬ ▬ ▬ ▬	FIRE ALARM ZONE DEMARCATION
F.A.Z.1.	FIRE ALARM ZONE. NUMBER INDICATES ZONE NUMBER.

ELECTRICAL CAR CHARGING STATION

EV1	PROVIDE SINGLE GANG BOX, 20mmøC CONDUIT AND 20A, 120V–1ø (5–20R) RECEPTACLE FOR 'TYPE 1' ELECTRICAL CAR CHARGE STATION. LOCATED AS SHOWN ON FLOOR PLANS.
EV2	PROVIDE TWO GANG BOX, 25mmøC CONDUIT AND 50A, 208V–1ø (5–60R) RECEPTACLE FOR 'TYPE 2' ELECTRICAL CAR CHARGE STATION. LOCATED AS SHOWN ON FLOOR PLANS.

SECURITY SYSTEM

ES	ELECTRIC DOOR STRIKE.
SKP	SECURITY SYSTEM KEY PAD
EB	REQUEST TO EXIT BUTTON
DO	AUTOMATIC DOOR OPERATOR.
DA	DOOR ACTUATOR
ML	MAGNETIC DOOR LOCK.
PD	LOW VOLTAGE POWER SUPPLY FOR THE DOOR STRIKE.
PB	PUSH BUTTON.
KP	KEY PAD.
K	SECURITY KEYSWITCH FOR ALARM SHUT OFF
CR	CARD READER.
IR	INFRA RED AUTOMATIC DOOR OPERATOR.
EM	EGRESS MOTION DETECTOR.
AA	AUDIBLE ALARM (BUZZER)
S	INTRUSION ALARM WITH STROBE
GB	GLASS BREAK DETECTOR
M	SECURITY SYSTEM MONITORING STATION
PA	PANIC ALARM
⬘	MOTION DETECTOR. SUBSCRIPT 'G' DENOTES GLASS BREAK
◆	DOOR/WINDOW CONTACT.
	CCTV CAMERA
	CEILING MOUNTED DOME CAMERA

EMERGENCY CALL ASSISTANCE

⊙	EMERGENCY CALL BUTTON.
EC	EMERGENCY CALL ASSISTANCE HORN.
L	CEILING MOUNTED DOME LIGHT.
L	WALL MOUNTED DOME LIGHT.
PL	"PUSH TO LOCK" PUSH BUTTON.
WL	"WAVE TO LOCK" BUTTON.

LIGHTING

$	LIGHT SWITCH SUBSCRIPTS: 2 – DOUBLE POLE (DPST). 3 – THREE WAY. 4 – FOUR WAY. D – DIMMER. K – KEY OPERATED. P – PILOT. S – SPEED SWITCH. LV – LOW VOLTAGE 2LVD – MULTI–ZONE/MULTI–BUTTON LOW VOLTAGE DIMMING SWITCH. NUMBER REPRESENTS NUMBER OF BUTTONS TO BE PROVIDED PLUS DIMMER.
$	MULTIPLE SWITCH INSTALLATION UNDER COMMON PLATE.
$	LOW VOLTAGE COMBINATION SWITCH AND OCCUPANCY SENSOR.
A B C NL	LIGHTING FIXTURES. LETTER WITHIN INDICATES TYPE. CROSS HATCHING INDICATES WIRED TO EMERGENCY CIRCUIT. SUBSCRIPT "NL" INDICATES NIGHT LIGHT.
	EXIT SIGNS ARROWS INDICATE DIRECTION CEILING MOUNT, SINGLE FACE CEILING MOUNT, DOUBLE FACE WALL MOUNT, SINGLE FACE WALL MOUNT, DOUBLE FACE END WALL MOUNT, DOUBLE FACE EXIT SIGN & REMOTE HEAD COMBO
⊙	DUAL TECHNOLOGY OCCUPANCY SENSOR LV – DENOTES LOW VOLTAGE W – DENOTES WALL MOUNT
PC	PHOTOCELL
DS	DAYLIGHT SENSOR
Y1 Y2	WALL MOUNTED EMERGENCY LIGHTS. ARROW DENOTES AIMING DIRECTION.
	BATTERY UNIT (REFER TO LIGHTING FIXTURE SCHEDULE FOR DETAILS)

MISCELLANEOUS ABBREVIATIONS/SUBSCRIPTS/SYMBOLS

SUBSCRIPTS

A	– MOUNTING HEIGHT FOR DEVICES ABOVE COUNTER/SINK MILLWORK TO BE 1020mm FROM TOP OF DEVICE TO A.F.F. (UNLESS NOTED OTHERWISE).
1–3	– TYPICAL NORMAL POWER CIRCUIT NUMBER EG. PANELBOARD LP–1 CIRCUIT NUMBER 3.
E1–3	– TYPICAL ESSENTIAL POWER CIRCUIT NUMBER EG. PANELBOARD LPE–1 CIRCUIT NUMBER 3.
1A–3	– TYPICAL CONTROL PANEL CIRCUIT NUMBER EG. PANELBOARD LP–1A CIRCUIT NUMBER 3.
3P+N	– 3 POLE & UNSWITCHED NEUTRAL.
AFF	– ABOVE FINISHED FLOOR.
A	– ABOVE COUNTER
B	– BENCH MOUNTED.
C	– CEILING SPACE MOUNTED.
CL	– CONTROLLED LOAD.
D/I	– WITH DISCONNECT AND VISIBLE ISOLATION.
EXP/EP	– EXPLOSION PROOF.
F	– FLOOR MOUNTED.
GF	– GROUND FAULT CIRCUIT INTERUPTER.
IG	– ISOLATED GROUND TYPE.
MH	– MOUNTING HEIGHT.
NL	– NIGHT LIGHT
HL	– MOUNT AT 1188mm A.F.F.(TO THE BOTTOM)
S	– SURGE SUPRESSION TYPE DEVICE.
T	– LOCKING TYPE (TWISTLOCK).
V	– MOUNT IN VERTICAL FACE.
WG	– WIREGUARD.
WP	– WEATHERPROOF TYPE.
Z	– MOUNT 42" (1065mm) A.F.F.
PTZ	– PAN, TILT, ZOOM
E	– EXISTING TO REMAIN.
ER	– EXISTING TO BE RELOCATED.
RE	– RELOCATED DEVICE AT NEW LOCATION
R	– EXISTING TO BE REMOVED
N	– EXISTING TO BE REPLACED WITH NEW
SR	– MOUNTED ON SURFACE RACEWAY

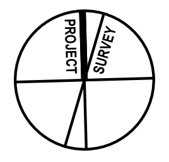
IDENTIFICATIONS

ACB	– AIR CIRCUIT BREAKER.
ATS	– AUTOMATIC TRANSFER SWITCH.
AV	– AUDIO VISUAL.
CM	– COFFEE MAKER.
CR	– CASH REGISTER.
CS	– COMMUNICATION STATION.
DP	– DISTRIBUTION PANEL.
EVR	– ELECTRONIC VOLTAGE REGULATOR.
FR	– FRIDGE.
GEN	– ELECTRICAL GENERATOR.
HWD	– HOT WATER DISPENSER
IM	– ICE MACHINE
MCB	– MINIATURE CIRCUIT BREAKER.
MCCB	– MOULDED CASE CIRCUIT BREAKER.
MSB	– MAIN SWITCH BOARD (SERVICE ENTRANCE RATED).
PC	– PHOTOCOPIER.
PF	– POWER FACTOR CORRECTION CAPACITOR BANKS.
PR	– PRINTER.
SB	– SMARTBOARD.
SP	– SPLITTER.
SPD	– SURGE PROTECTION DEVICE
TR	– LOW VOLTAGE TRANSFORMER.
TV	– TELEVISION.
TVSS	– TRANSIENT VOLTAGE SURGE SUPPRESSOR.
UPS	– UNINTERRUPTIBLE POWER SUPPLY.
VM	– VENDING MACHINE.
XFMR	– TRANSFORMER.

DRAWING LIST

E0–00	ELECTRICAL LEGEND, DRAWINGS LIST & KEY PLAN
E1–00	GROUND FLOOR DEMO – ELECTRICAL
E2–00	GROUND FLOOR NEW – ELECTRICAL
E3–00	ELECTRICAL SPECIFICATION
ME1–00	MECHANICAL & ELECTRICAL SCHEDULES

SITE LOCATION



107 HESS STREET NORTH
HAMILTON, ON

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal MD

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

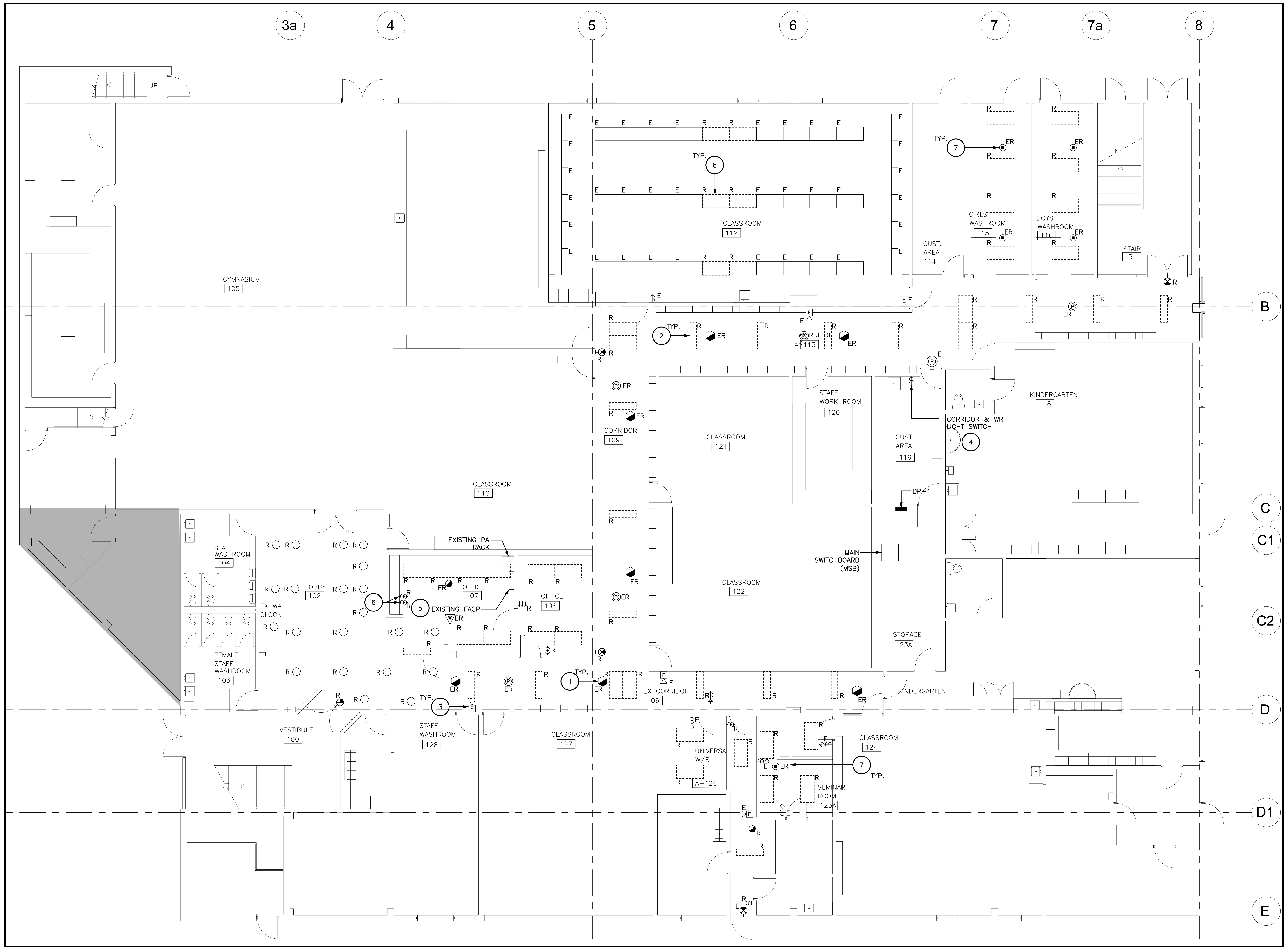
P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
ELECTRICAL LEGEND,
DRAWING LIST & KEY PLAN

drawn: MD
date:
scale: NTS
project number: 24-22-01
checked: MD
date:
DRAWING NO: E0-00
2
Revision



OVERALL PLAN DEMO GROUND FLOOR –ELECTRICAL

1
E1-00

SCALE– 1:100

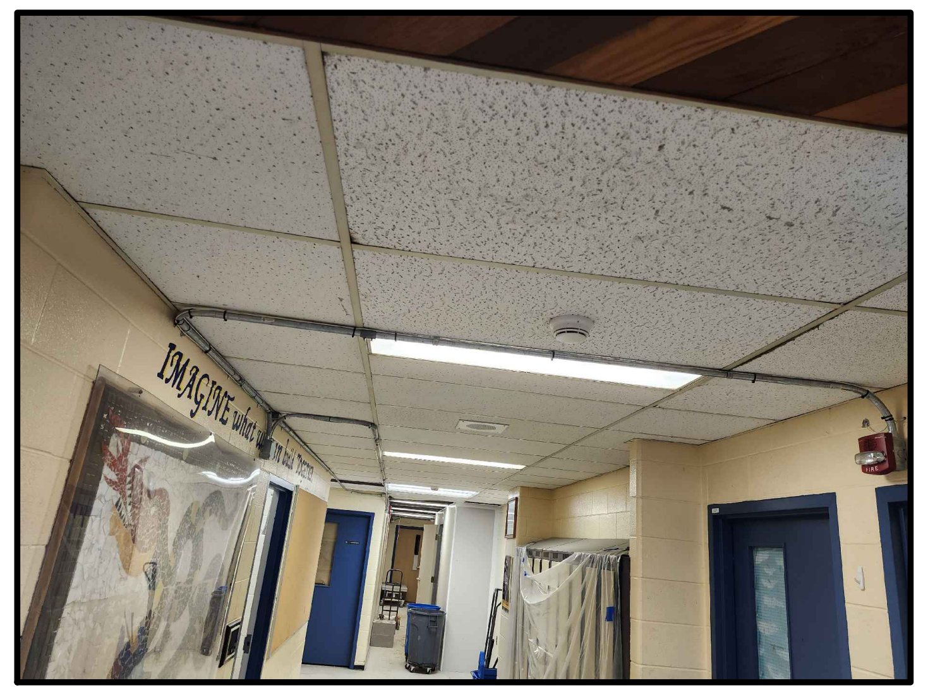


PHOTO #1

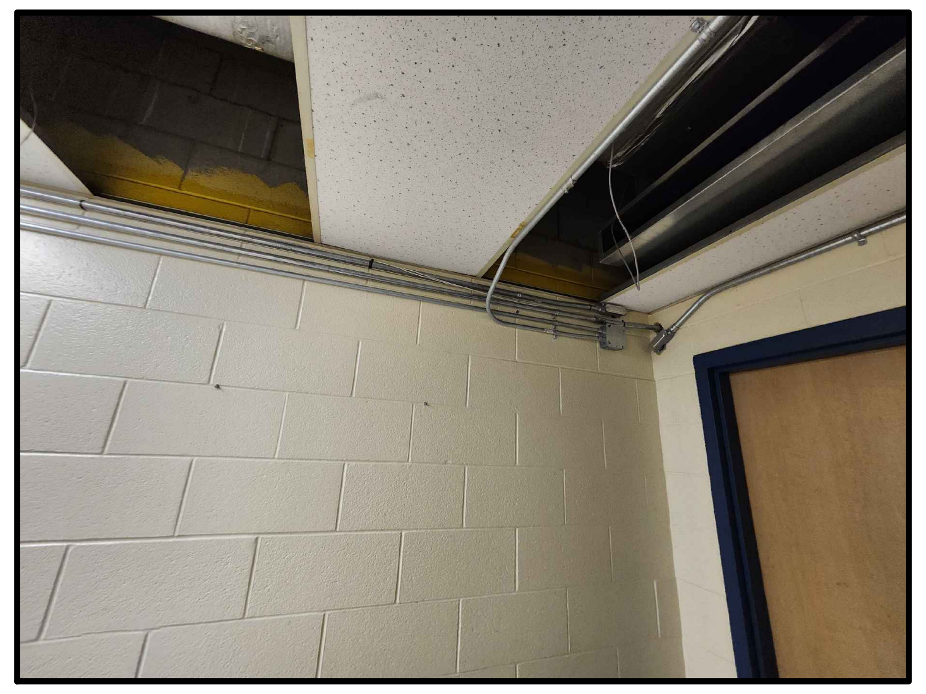


PHOTO #2

DRAWING NOTES

① ALL FIRE ALARM, PAGING DEVICES, WIRELESS ACCESS POINTS ETC LOCATED ON CEILING SHALL BE DISCONNECTED AND RELOCATED TO THE NEW CEILING.

② DISCONNECT & REMOVE ALL LIGHTING AS SHOWN. EXISTING CIRCUITS SHALL BE RE–USED FOR NEW LIGHTING. EXISTING SWITCHES SHALL BE DISCONNECTED & REMOVED. PROVIDE STAINLESS STEEL WALL PLATES FOR ALL RECESSED BACK BOXES.

③ EXISTING FIRE ALARM CIRCUITS HAVE BEEN RUN SURFACE MOUNTED TO THE EXISTING CEILING & WALLS. DISCONNECT AND RELOCATE ALL SURFACE CONDUITS/JUNCTION BOXES ABOVE NEW CEILING. EXTEND ANY WIRING AS REQUIRED. REFER TO PHOTO #1 & #2 ON THIS DRAWING FOR REFERENCE.

④ EXISTING SWITCH TO REMAIN FOR WASHROOM LIGHTING. CORRIDOR LIGHTING TO BE REMOVED AND ADDED TO NEW H/O/A SWITCH AS PER NEW DRAWINGS.

⑤ EXISTING SIMPLEX 4100ES FIRE ALARM CONTROL PANEL.

⑥ CONTRACTOR TO CONFIRM THE EXACT USE OF THESE LIGHT SWITCHES. ALLOW IN PRICE TO DEMOLISH IF NOT REQUIRED.

⑦ DISCONNECT EXISTING CEILING OCCUPANCY SENSORS & POWER PACKS ETC WITHIN THE ROOM TO RE–INSTALL ON NEW CEILING.

⑧ DISCONNECT & REMOVE LIGHTING FIXTURE TO ACCOMMODATE INSTALLATION OF NEW PARTITION WALL.

GENERAL NOTES

1. AS PART OF THIS WORK, RELOCATE ALL EXISTING SURFACE CONDUITS & IT CABLING MOUNTED TO THE EXISTING CEILING TO ABOVE NEW CEILING. ENSURE ALL DATA CABLES ARE PLENUM RATED. CONTRACTOR SHALL HAVE A THOROUGH LOOK DURING THE BIDDERS WALK–THROUGH TO DETERMINE THE ENTIRE SCOPE OF CONDUIT/IT CABLING RELOCATION. COORDINATE ALL IT WORK WITH SCHOOL BOARD IT REPRESENTATIVE.
2. ALL EXISTING LIGHTING CONTROL SWITCHES THAT ARE CONNECTED TO EXISTING LIGHTS THAT ARE BEING DEMOLISHED SHALL BE DISCONNECTED & REMOVED.

GENERAL DEMO NOTES

1. THE ELECTRICAL CONTRACTOR SHALL, AS PART OF HIS WORK, PERFORM ALL RELATED DEMOLITION, MODIFICATIONS, RELOCATION OF ELECTRICAL DISTRIBUTION AND OTHER EQUIPMENT AND RELATED WORK, INCLUDING NEW WORK NECESSARY TO COMPLETE THE PROJECT.
2. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING BIDS. REFER TO DRAWINGS AND VISIT THE SITE TO DETERMINE THE EXTENT OF THE DEMOLITION AND NEW WORK REQUIRED.
3. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL TECHNICAL DETAILS OF EQUIPMENT TO BE REMOVED. WHERE THERE IS A DISCREPANCY WITH THE TENDER DOCUMENTS, CONTRACTOR SHALL ENGAGE CONSULTANTS FOR DIRECTIONS. ELECTRICAL CONTRACTOR SHALL MAKE A LIST OF ALL EQUIPMENT TO BE REMOVED. THIS LIST SHALL BE WITH ALL FOLLOWING INFORMATION.
   ** MAKE/MODELS
   ** MANUFACTURER
   ** TECHNICAL DETAILS
   ** LOCATION
   THIS LIST SHALL BE SUBMITTED TO THE OWNER FOR RECORD PURPOSES.
4. THE ELECTRICAL CONTRACTOR SHALL NOT DISCONNECT EQUIPMENT AND ELECTRICAL CIRCUITS IN THE RENOVATION AREA OR ANY PART OF THE BUILDING WITHOUT PRIOR NOTIFICATION AND PERMISSION FROM THE OWNER. EXTREME CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO THE SURROUNDING AREA.
5. ITEMS REMOVED AND NOT SCHEDULED TO BE RELOCATED SHALL BE OFFERED TO THE OWNER FOR THEIR USE AND IF NOT ACCEPTED BY THE OWNER, THE ELECTRICAL CONTRACTOR SHALL DISPOSE OF THE MATERIAL FROM THE SITE IN ACCORDANCE WITH LOCAL REGULATIONS, THE ELECTRICAL CONTRACTOR SHALL DELIVER ITEMS ACCEPTED BY THE OWNER TO THE DESIGNATED LOCATIONS AS DIRECTED BY THE OWNER.
6. IN ALL CASES WHERE WORK IS REMOVED, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT AND LABOR TO SUSTAIN OPERATION OF ALL PARTS OF THE SYSTEMS CONNECTING TO OR FROM THE PART REMOVED, COMPLETING ALL WORK IN STRICT ACCORDANCE WITH APPLICABLE CODES.
7. ALL WIRING, CABLES AND FEEDERS INCLUDING BOTH CONNECTED TO DEVICES AND EQUIPMENT TO BE DEMOLISHED AND EXISTING THAT WERE ABANDONED IN PLACE SHALL BE REMOVED BACK TO THEIR SOURCES. UNLESS NOTED OTHERWISE, CONDUITS AND/OR WIRING SHALL, WHERE NECESSARY, BE RE––CIRCUIT AROUND THE REMOVED PART, KEEPING OCCUPIED PARTS OF THE BUILDING SYSTEM IN FULL SERVICE.
8. ALL EXISTING CONDUITS WHICH HAVE BEEN ABANDONED OR ARE UNUSED SHALL BE REMOVED.
9. PROVIDE BLANK METAL COVER PLATES FOR ALL JUNCTION/DEVICE BOXES NO LONGER IN USE THAT ARE EMBEDDED IN FLOOR SLAB OR MASONRY WALLS. PROVIDE PLUGS FOR ALL PANELS WHERE CONDUIT HAS BEEN REMOVED. COVER PLATES SHALL BE PAINTED TO MATCH EXISTING CONDITIONS.
10. WHERE REQUIRED COORDINATE WITH THE CONSULTANTS/OWNER FOR EXISTING PARTITIONS TO BE REMOVED TO FACILITATE WORK. DISCONNECT EXISTING BRANCH CIRCUITS SERVICING DEVICES IN PARTITIONS TO BE REMOVED. MAINTAIN CONTINUITY OF CIRCUITS SERVICING EXISTING DEVICES IN OTHER AREAS TO REMAIN.
11. LIGHTING FIXTURES: REMOVE LIGHTING FIXTURES AND SWITCH CONTROL WHEN THE FIXTURE TO BE REMOVED IS SERVED BY A CIRCUIT, THAT SUPPLIES FIXTURES IN OTHER, AREAS THAT ARE TO REMAIN, THE ELECTRICAL CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF THE CIRCUIT TO THE REMAINING FIXTURES.
12. POWER RECEPTACLES: REMOVE RECEPTACLES. WHEN THE RECEPTACLE TO BE REMOVED IS SERVED BY A CIRCUIT THAT SUPPLIES RECEPTACLES IN OTHER AREAS, THAT ARE TO REMAIN, THE ELECTRICAL CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF THE CIRCUIT TO THE REMAINING RECEPTACLES.
13. FIRE ALARM SYSTEM: COORDINATE AND CONSULT WITH CURRENT F/A SYSTEM SERVICE CONTRACTOR OR THEIR QUALIFIED REPRESENTATIVE FOR ALL FIRE ALARM DEMOLITION AND MODIFICATIONS. OPERATION SHALL BE MAINTAINED OF EXISTING FIRE ALARM SYSTEM SPECIFICALLY AS IT RELATES TO ADJACENT AREAS WHICH ARE NOT INCLUDED IN THE SCOPE OF THIS PROJECT.
14. ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED TYPE WRITTEN PANEL DIRECTORIES FOR ALL PANELS AFFECTED BY THE DEMOLITION AND/OR NEW WORK. CIRCUIT BREAKERS NOT USED FOR NEW WORK SHALL BE LABELED AS SPARE.
15. FOR EXISTING DEVICES/CIRCUITRY THAT ARE INDICATED TO BE REMOVED BACK TO POINT OF ORIGIN––THESE ITEMS ARE TO BE REMOVED BACK TO POINT OF ORIGIN UNLESS THEREWILL BE EXISTING DEVICES ON THE SAME CIRCUIT THAT ARE LOCATED OUTSIDE AREA OF WORK THAT ARE TO REMAIN. IN THAT CASE, REMOVE THE EXISTING DEVICES/CIRCUITRY IN AREA OF WORK BACK TO THESE EXISTING DEVICES TO REMAIN. ALL DEVICES/CIRCUITRY IN SURROUNDING AREAS THAT ARE TO REMAIN ARE TO BE KEPT ENERGIZED. FOR REMOVAL OF CONDUIT AND WIRING OUTSIDE OF AREA OF WORK COORDINATE AND SCHEDULE WITH OWNER PRIOR TO PERFORMING WORK.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal MD

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
GROUND FLOOR DEMO
- ELECTRICAL

drawn: MD
date:

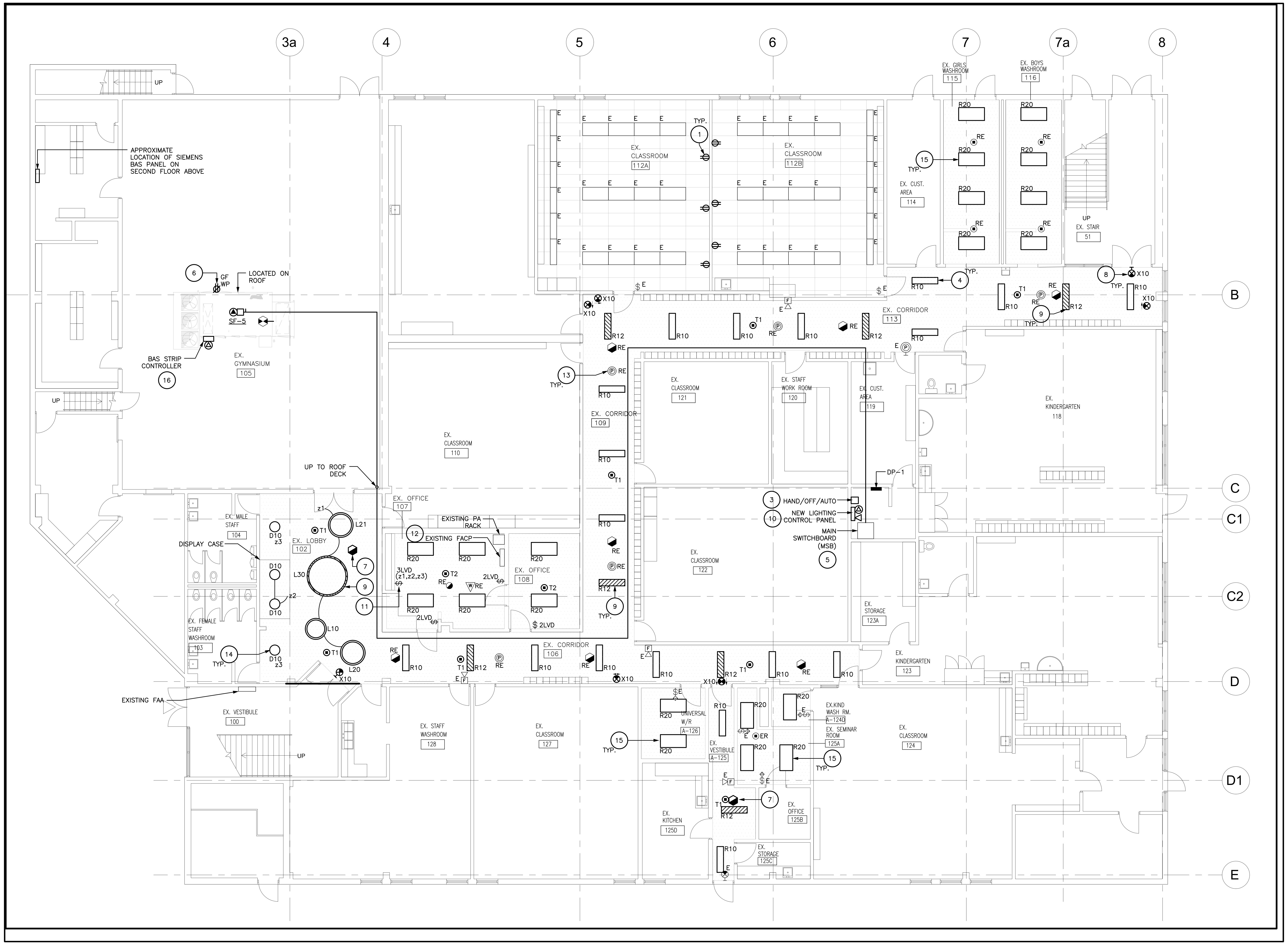
scale: AS SHOWN

project number: 24-22-01

checked: MD
date:

DRAWING NO: E1-00

2
Revision



1 / E2-00 OVERALL PLAN NEW GROUND FLOOR –ELECTRICAL

SCALE– 1:100

DRAWING NOTES

1. PROVIDE ONE(1) 15A–1P BREAKER IN EXISTING PANEL 'DP–1' FOR NEW RECEPTACLES IN CLASSROOMS 112–A & 112–B.
2. RE–INSTALL EXISTING OCCUPANCY SENSORS BACK ON THE NEW CEILING & WIRE TO NEW LIGHTING FIXTURES. RE–USE EXISTING POWER PACKS ETC.
3. PROVIDE HAND/OFF/AUTO SWITCH FOR CORRIDOR/LOBBY LIGHTING
   HAND: CORRIDOR LIGHTS 'ON'
   OFF : CORRIDOR LIGHTS 'OFF'
   AUTO: CORRIDOR LIGHTS CONTROLLED BY BAS
4. RE–CONNECT ALL NORMAL LIGHTING TO EXISTING NORMAL LIGHTING CIRCUIT. RE–CONNECT NEW EMERGENCY LIGHTING TO THE EXISTING EMERGENCY LIGHTING CIRCUIT.
5. PROVIDE NEW 60A–3P FUSIBLE SWITCH WITH 3–60A FUSES IN EXISTING MAIN SWITCHBOARD. PROVIDE NEW FEEDER TO ROOF TOP UNIT 'SF–5', CONDUCTOR SHALL BE 3#6 AWG +G IN 27mmC. FEEDER SHALL BE RUN IN CORRIDOR CEILING SPACE AS SHOWN.
6. PROVIDE NEW 15A–1P BREAKER IN EXISTING 'DP–1' AND FEED 'SF–5' SERVICE RECEPTACLE. SERVICE RECEPTACLE PROVIDED BY MECHANICAL DIVISION.
7. PROVIDE NEW SMOKE DETECTOR.
8. CONNECT ALL EXIT SIGNS TO EXISTING EXIT SIGN CIRCUIT.
9. PROVIDE UL924 LISTED EMERGENCY TRANSFER RELAY AND WIRE TO EXISTING EMERGENCY LIGHTING CIRCUIT. ALL LIGHTS SHOULD BE CONTROLLED TOGETHER WITH THE NORMAL LIGHTING. WHEN NORMAL POWER IS LOST, THE FIXTURE SHOULD BYPASS ALL CONTROLS AND TURN ONTO 100% BRIGHTNESS. THIS SHALL BE DEMONSTRATED TO THE CONSULTANT DURING THE FINAL WALK–THROUGH PRIOR TO OCCUPANCY.
10. PROVIDE NEW 15A–1P BREAKER IN EXISTING 'DP–1' AND FEED NEW LIGHTING CONTROL PANEL. PROVIDE DATA CONNECTION TO INTEGRATE WITH EXISTING BAS PANEL.
11. LOBBY LIGHTING OVERRIDE SWITCH. ONLY WHEN H/O/A SWITCH IS IN 'HAND' MODE.
12. ADD NEW FIRE ALARM ZONE 'SF–5 DUCT SMOKE DETECTOR' AND WIRE TO 'SF–5' DUCT SMOKE DETECTOR. CONTACT EXISTING FIRE ALARM SERVICING COMPANY TO DETERMINE THE EXTENT OF MODIFICATIONS REQUIRED IN THE EXISTING PANEL FOR THIS WORK AND INCLUDE IN PRICE. UPDATE EXISTING FIRE ALARM ANNUNCIATOR PANEL SHOWING THE NEW ZONE.
13. PROVIDE 1HR FIRE RATED SPEAKER COVERS FOR ALL PAGING SPEAKERS RECESSED IN CEILING. TENMAT FF109–FRSC OR EQUIVALENT.
14. PROVIDE 1HR FIRE RATED DOWNLIGHT COVERS FOR ALL RECESSED DOWNLIGHTS IN CEILING. TENMAT FF109–250 OR EQUIVALENT.
15. RE–CONNECT ALL EXISTING LIGHTING CONTROLS TO NEW LIGHTING FIXTURES. COMMISSIONING SHALL BE INCLUDED IN THE PRICE.
16. PROVIDE NEW 20A–1P BREAKER IN EXISTING 'DP–1' AND PROVIDE SINGLE POINT CONNECTION TO BAS STRIP CONTROLLER LOCATED ON SF–5.

GENERAL NOTES

1. THIS DRAWING ILLUSTRATES INTENT AND DOES NOT REPRESENT ALL REQUIRED CONTROL COMPONENTS, FINAL WIRING METHODS OR FIXTURE MOUNTING LOCATIONS. DETERMINE THE FINAL SYSTEM INSTALLATION BASED ON THE PRODUCT MANUFACTURER'S SHOP DRAWINGS.
2. EXIT SIGNS SHALL BE MOUNTED SO THEY ARE VISIBLE UPON APPROACH. NO HIGHER THAN 3050 AFF AND NO LOWER THAN 2100 AFF.
3. OCCUPANCY SENSORS SHALL BE MOUNTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS SO THEY ARE CAPABLE OF OPERATING PROPERLY WITHOUT FALSE 'ON' OR PREMATURE 'OFF' OPERATIONS. DUAL TECHNOLOGY OCCUPANCY SENSORS SHALL NOT BE MOUNTED WITHIN 610mm OF ANY HVAC DIFFUSERS.
4. REMOTE MOUNTED POWER SUPPLIES AND CONTROL DEVICES SHALL BE MOUNTED IN ACCESSIBLE LOCATIONS OUT OF VIEW OF PUBLIC.
5. CEILING SPACE IS A RETURN AIR PLENUM. ANY DEVICES LOCATED IN CEILING SPACES SHALL BE PLENUM RATED.
6. ALL WIRING IN FINISHED AREAS SHALL BE RUN CONCEALED IN WALLS/CEILINGS WHERE POSSIBLE. OTHERWISE PROVIDE SURFACE RACEWAYS SUCH AS WIREMOLD OR EQUIVALENT. EMT WILL NOT BE ACCEPTED UNLESS OTHERWISE NOTED.
7. EXISTING BAS PANEL BY SIEMENS. CONTRACTOR SHALL INCLUDE IN PRICE TO INTEGRATE NEW CORRIDOR LIGHTING WITH BAS PANEL AS PER DRAWINGS FOR A FULLY FUNCTIONAL SYSTEM.
8. FINAL LIGHTING DIMMING PRE–SETS TO BE DETERMINED ON SITE WITH THE OWNER DURING COMMISSIONING.
9. ALL RECEPTACLES SHALL BE TAMPER RESISTANT TYPE.
10. PROVIDE A RED ROUND STICKER NEXT TO EACH EMERGENCY LIGHTING FIXTURE TO EASILY IDENTIFY THAT THEY ARE AN EMERGENCY LIGHT.
11. COORDINATE WITH MECHANICAL FOR FIRE RATED ACCESS PANELS. ALL IT CABLING ON J–HOOKS IN CEILING SPACES SHALL BE ACCESSIBLE.
12. CONSOLIDATE ALL JUNCTION BOXES/POWER PACKS ETC TO MINIMIZE THE REQUIREMENT FOR ACCESS HATCHES. COORDINATE WITH ARCHITECT & MECHANICAL DIVISION FOR EXACT LOCATIONS.
13. ALL CEILINGS ARE 1HR FIRE RATED. ENSURE FIRE RATING DOES NOT GET COMPROMISED. PROVIDE FIRE STOP WHERE REQUIRED.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	ACCEPTABLE PRODUCTS
X10	LED RUNNING MAN EXIT SIGN COMPLETE WITH THE FOLLOWING ATTRIBUTES. – CEILING/WALL MOUNTED AS PER PLANS – SINGLE/DOUBLE FACE AS PER PLANS – EXTRUDED ALUMINUM HOUSING – 120/347V INPUT – 12V DC INPUT	1. AIMLITE RPALW OR APPROVED EQUIVALENT
D10	RECESSED DOWNLIGHT LUMINAIRE WITH FOLLOWING ATTRIBUTES. – 4" RECESSED LED – 347V, 4000K CCT, 2500 LUMENS, 28W – OPEN STYLE, WHITE REFLECTOR – 90 CRI, 4000K CCT – 0–10V DIMMING (1%)	1. LIGHTOLIER Z6RDL SERIES OR APPROVED EQUIVALENT
R10	LED FLAT PANEL WITH THE FOLLOWING ATTRIBUTES: – 1'X4' – 28W, 3800 LUMENS, 4000K, 347V – 80+ CRI, ROUND SMOOTH DIFFUSER – DLC LISTED, 50K+ HOURS L70, EFFICACY > 110LPW – 0–10V DIMMING (1%) – SURFACE MOUNT FIELD INSTALLATION KIT – MIN. 5 YEAR WARRANTY	1. SIGNIFY CFI FLUXPANEL LED GEN 2 OR APPROVED EQUIVALENT
R12	SAME AS TYPE 'R10' EXCEPT THE FOLLOWING ATTRIBUTES: – 120V	1. SIGNIFY CFI FLUXPANEL LED GEN 2 OR APPROVED EQUIVALENT
R20	LED FLAT PANEL WITH THE FOLLOWING ATTRIBUTES: – 2'X4' – 29W, 3800 LUMENS, 4000K, 347V – 80+ CRI, SMOOTH DIFFUSER – DLC LISTED, 50K+ HOURS L70, EFFICACY > 110LPW – 0–10V DIMMING (1%) – SURFACE MOUNT FIELD INSTALLATION KIT	1. SIGNIFY CFI FLUXPANEL LED GEN 2 OR APPROVED EQUIVALENT
L10	RING SURFACE LUMINAIRE WITH FOLLOWING ATTRIBUTES. – SURFACE MOUNT, 3' DIAMETER, DIRECT DISTRIBUTION – PER 1' – 500 LUMENS, 4.3W, 120V, 4000K LED – STATIC WHITE, 80 CRI – 0–10V(1%) DIMMING	1. LUMENWERX CURVIA SERIES OR APPROVED EQUIVALENT
L20	SAME AS TYPE 'L10' EXCEPT THE FOLLOWING ATTRIBUTES: – 4' DIAMETER	1. LUMENWERX CURVIA SERIES OR APPROVED EQUIVALENT
L21	SAME AS TYPE 'L10' EXCEPT THE FOLLOWING ATTRIBUTES: – 4' DIAMETER – PER 1' – 750 LUMENS, 6.7W, 120V, 4000K LED	1. LUMENWERX CURVIA SERIES OR APPROVED EQUIVALENT
L30	SAME AS TYPE 'L10' EXCEPT THE FOLLOWING ATTRIBUTES: – 6' DIAMETER	1. LUMENWERX CURVIA SERIES OR APPROVED EQUIVALENT

LIGHTING CONTROLS	
ROOM	TYPE
CORRIDOR/A–125	CT1
OFFICES	CT2
DISPLAY CASE	CT3

LIGHTING CONTROL TYPES

NOT ALL CONTROL TYPES MAY HAVE BEEN USED. REFER TO LIGHTING DRAWINGS FOR ALL REQUIREMENTS. FOR ALL TYPES BELOW; 'UNOCCUPIED DURATION SHALL BE 5 MINUTES.

CT0 – NO CONTROL ALWAYS 'ON' 24/7

CT1 – BAS CONTROLLED BASED ON SECURITY PANEL
IF SYSTEM IS ARMED; LIGHTS ARE OFF
WHEN SYSTEM IS DISARMED:
– ON TO PRE–SET LEVEL
– DIM TO 50% WHEN NO OCCUPANCY IS DETECTED
UPON BURGLAR ALARM TURN LIGHTS ON UNTIL SYSTEM IS CLEARED

CT2 – STAND ALONE MANUAL 'ON' / AUTOMATIC 'OFF'
AUTO 'OFF' BY OCCUPANCY AFTER 15 MINUTES
MANUAL 'RAISE/LOWER'
PRESET 'ON' TO 75%

CT3 – BAS CONTROLLED BASED ON SECURITY PANEL
IF SYSTEM IS ARMED; LIGHTS ARE OFF
WHEN SYSTEM IS DISARMED:
– ON TO PRE–SET LEVEL
MANUAL OVERRIDE 'ON'/'OFF' SWITCH

OCCUPANCY SENSOR/SWITCH SCHEDULE

SYMBOL	DESCRIPTION	ACCEPTABLE PRODUCTS
⦿ T1	NETWORKED LOW VOLTAGE ULTRASONIC CEILING SENSOR (CORRIDOR APPLICATION)	1. WATTSTOPPER LMUC–100 OR APPROVED EQUIVALENT
⦿ T2	LOW VOLTAGE DUAL TECHNOLOGY CEILING MOUNT OCCUPANCY SENSOR.	1. WATTSTOPPER DT–300 OR APPROVED EQUIVALENT
$ 2LVD	LOW VOLTAGE 2 SCENE SWITCH WITH DIMMING	1. WATTSTOPPER LMSW–222 OR APPROVED EQUIVALENT

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal MD

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
GROUND FLOOR NEW
- ELECTRICAL

drawn: MD
date:
scale: AS SHOWN
project number: 24-22-01
checked: MD
date:
DRAWING NO: E2-00
2
Revision

ELECTRICAL SPECIFICATIONS

1. RELATED INSTRUCTIONS

1.1. THIS SPECIFICATION SHALL APPLY TO AND GOVERN ALL WORK BY DIVISION 16.

1.2. FURNISH ALL LABOUR, MATERIAL, TOOLS, EQUIPMENT, ETC., REQUIRED TO COMPLETE ALL WORK SHOWN ON THE DRAWINGS AND HEREIN SPECIFIED. THE WORK SHALL BE IN ACCORDANCE WITH RULES AND REGULATIONS OF ALL AUTHORITIES HAVING LEGAL JURISDICTION OVER THE WORK. PROVIDE ANY SMALL ITEMS OF WORK NOT SPECIFICALLY CALLED FOR BUT REQUIRED TO COMPLETE THE INTENDED INSTALLATION.

1.3. DEVICE/EQUIPMENT LOCATIONS ARE APPROXIMATE. CHANGE LOCATION OF ANY DEVICE/EQUIPMENT WITHIN 3M OF INDICATED LOCATION AT NO ADDITIONAL COST TO OWNER PROVIDED INSTRUCTIONS ARE RECEIVED PRIOR TO COMMENCING ROUGH–IN WORK. PRIOR TO COMMENCING ANY ROUGH–IN OR INSTALLATION WORK VISIT SITE, MEET WITH THE OWNERS REPRESENTATIVE AND CONFIRM EXACT LOCATION OF ALL DEVICES.

2. LIABILITY INSURANCE

2.1. OBTAIN AND CARRY PROPER INSURANCE TO FULLY PROTECT BOTH THE OWNER AND HIMSELF FROM ANY AND ALL CLAIMS DUE TO ACCIDENTS, MISFORTUNES, ACTS OF GOD, ETC.

3. CODES, PERMITS AND INSPECTION

3.1. BUILDING PERMIT SHALL BE OBTAINED BY OWNER.

ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR, AND OBTAIN ALL OTHER PERMITS, INSPECTIONS, VERIFICATIONS, ETC., AS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION OVER THIS WORK AND PAY FOR ALL FEES RELATED TO SAME.

3.2. DELIVER ALL PERMITS TO THE OWNER AS SOON AS THEY BECOME AVAILABLE.

3.3. AT THE CONCLUSION OF THE PROJECT, SUBMIT TO THE OWNER, THE ELECTRICAL SAFETY AUTHORITY FINAL ACCEPTANCE CERTIFICATE.

4. RECORD DRAWINGS AND EQUIPMENT MANUALS

4.1. AS THE PROJECT PROGRESSES, RECORD, ON A SET OF WHITE PRINTS, ALL ADDENDA, CHANGES TO AND DEVIATIONS FROM THE PLANS MADE DURING THE CONSTRUCTION PERIOD. ALSO, RECORD THE LOCATION OF ALL LIGHT FIXTURES AND OTHER ELECTRICAL EQUIPMENT AND WIRING FOR SAME.

4.2. MAKE THESE PROGRESS RECORD DRAWING WHITE PRINTS AVAILABLE TO THE CONSULTANTS FOR THEIR REVIEW AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

4.3. AT THE CONCLUSION OF THE PROJECT, TRANSFER ALL RECORD DRAWING INFORMATION TO A USB FLASH DRIVE.

4.4. THE CONSULTANT SHALL PROVIDE TO THE CONTRACTOR A COPY OF THE DRAWINGS IN AUTOCAD FORMAT. COMPLETE AND RETURN THE RELEASE FORM "TRANSFER OF FILES ON ELECTRONIC MEDIA" IN ORDER TO RECEIVE AND USE THE ELECTRONIC FILES. (SAMPLE OF THE FORM CAN BE PROVIDED ON REQUEST).

4.5. BEFORE SUBSTANTIAL PERFORMANCE OF THE CONTRACT, COMPLY WITH THE FOLLOWING:

4.5.1. PROVIDE USB FLASH DRIVE CONTAINING ALL UPDATED RECORD DRAWING INFORMATION IN AUTOCAD FORMAT AS SPECIFIED HEREIN.

4.5.2. PROVIDE TWO (2) SETS OF EQUIPMENT DATA SHEETS AND/OR MANUFACTURER'S MAINTENANCE MANUALS COVERING EACH SYSTEM AND ITS COMPONENTS IN ACCORDANCE WITH REQUIREMENTS OF EACH APPROPRIATE SECTION. THESE SETS ARE TO BE IN GOOD QUALITY BINDERS EQUAL TO VYN–L–LINE #VL–3096–B 2", (51mm) RINGS. THE BINDER IS TO BE DIVIDED INTO SECTIONS WITH TABS CLEARLY MARKED INDICATING THE SYSTEMS, ETC.

5. EQUIPMENT AND MATERIAL

5.1. ALL EQUIPMENT AND MATERIAL, UNLESS SPECIFICALLY NOTED OTHERWISE, SHALL BE NEW AND WITHOUT BLEMISH OR DEFECT. ALL MATERIAL AND EQUIPMENT SHALL BEAR ULC. OR CSA LABELS.

6. ACCESSIBILITY

6.1. INSTALL ALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION MAINTENANCE AND REPAIRS.

7. RESPONSIBILITY

7.1. BE RESPONSIBLE FOR WORK UNTIL COMPLETION AND FINAL ACCEPTANCE, FOR REPLACING ANY ITEM THAT MAY BE DEFECTIVE, DAMAGED, LOST OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER OR DELAY TO THE COMPLETION OF THE PROJECT.

8. CONDUIT, AND WIRING

8.1. USE EMT CONDUIT FOR ALL WIRING UNLESS NOTED OTHERWISE. ALL CONDUIT SHALL BE INSTALLED PARALLEL TO BUILDING LINES AND SECURELY FASTENED.

8.2. UNLESS NOTED OTHERWISE, CONDUITS SHALL BE CONCEALED EMT COMPLETE WITH STEEL SET SCREW TYPE CONNECTORS AND COUPLINGS.

8.3. DO NOT RUN CONDUITS IN FIRE RATED CEILING ASSEMBLIES.

8.4. SURFACE RACEWAY SYSTEM WITH WIRING LAID IN SHALL BE ACCEPTABLE BUT KEPT TO A MINIMUM IN AREAS WHERE EMT CONDUIT CAN NOT BE CONCEALED. TWO PIECE STEEL ASSEMBLY MANUFACTURED AS LAY–IN TYPE RACEWAY C/W TEES, ELBOWS AND HANGER FITTING AND SUPPORTS REQUIRED FOR A COMPLETE SYSTEM – WIREMOLD OR APPROVED EQUAL.

8.6. ALL SURFACE MOUNTED RACEWAYS IN AREAS OTHER THAN SERVICE ROOMS SHALL BE WIREMOLD OR EQUIVALENT. COLOUR TO MATCH WALL.

8.7. ALL CONDUCTORS SHALL BE COPPER, RW90 XLPE #12 AWG MINIMUM UNLESS NOTED OTHERWISE. WHERE THE DISTANCE FROM THE PANELBOARD TO THE LAST OUTLET EXCEEDS 50', #10 AWG CONDUCTOR MUST BE USED FOR THE FULL LENGTH OF THE CIRCUIT.

9. WIRING DEVICES

9.1. SWITCHES: RATED 125VAC, 20 AMPERES AND LOW VOLTAGE WHITE TOGGLE TYPE COMPATIBLE WITH EXISTING.

9.2. INSTALL SINGLE THROW SWITCHES WITH HANDLE IN "UP" POSITION WHEN SWITCH CLOSED (ON).

9.3. INSTALL SWITCHES IN GANG–TYPE OUTLET BOX WHEN MORE THAN ONE SWITCH IS REQUIRED IN ONE LOCATION AND AT 1200mm(48") ABOVE FINISHED FLOOR UNLESS INDICATED OTHERWISE.

9.4. 125V SWITCHES AS SHOWN SHALL BE LOW VOLTAGE COMPLETE WITH TRANSFORMERS AND CONTROL RELAYS LOCATED CONCEALED IN CEILING SPACES

9.5. RECEPTACLES: 3–WIRE, U–GROUND TYPE GENERAL PURPOSE, HEAVY DUTY, NEMA 5–15R.

9.6. INSTALL RECEPTACLES IN GANG–TYPE OUTLET BOX WHEN MORE THAN ONE SWITCH IS REQUIRED IN ONE LOCATION AND AT 450mm(18") ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.

9.7. FLOOR BOX : RFB4 SERIES BY LEGRAND WITH ALL REQUIRED ACCESSORIES FOR A COMPLETE SYSTEM. PROVIDE FLOOR SCANNING PRIOR TO CUTTING INTO EXISTING FLOORS.

9.8. COVERPLATES:

9.8.1. PROVIDE No.301 STAINLESS STEEL, BRUSHED COVERPLATES C/W PROTECTIVE PLASTIC FILM UNTIL PAINTING AND OTHER WORK IS FINISHED FOR ALL WIRING DEVICES MOUNTED IN A FLUSH MOUNTED OUTLET BOX. PROVIDE COMMON COVERPLATE WHEN WIRING DEVICES ARE GROUPED TOGETHER.

9.8.2. PROVIDE FITTING SHEET METAL (CAST) COVERPALTES FOR WIRING DEVICES MOUNTED IN SURFACE FS OR FD TYPE CONDUIT BOXES.

9.8.3. DO NOT USE COVERPLATES MEANT FOR FLUSH OUTLET BOXES ON SURFACE MOUNTED BOXES.

9.9. ACCEPTABLE MANUFACTURERS ARE:

9.9.1. BRYANT
9.9.2. CROUSE–HINDS
9.9.3. HUBBELL
9.9.4. LEVITON
9.9.5. PASS & SEYMOUR
9.9.6. LEGRAND
9.9.7. OR OTHER APPROVED EQUALS

10. WIRING FOR MECHANICAL EQUIPMENT

10.1. SUPPLY AND INSTALL ALL STARTERS, DISCONNECTS, RELAYS, WIRING, ETC., TO ACCOMMODATE THE COMPLETE MECHANICAL SYSTEM, UNLESS NOTED OTHERWISE.

10.2. OTHER DIVISIONS SUPPLYING MOTOR–DRIVEN EQUIPMENT SHALL SUPPLY AND INSTALL ALL NECESSARY MOTORS WITH SUCH EQUIPMENT. ALL INTERNAL CONTROL WIRING IN SUCH EQUIPMENT SHALL BE FACTORY INSTALLED, OR SHALL BE SUPPLIED AND INSTALLED BY THOSE SUPPLYING THE EQUIPMENT.

10.3. REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS DURING TENDERING AND CONSTRUCTION TO ENSURE ENTIRE MECHANICAL EQUIPMENT WIRING SCOPE OF WORK IS UNDERSTOOD.

10.4. THIS DIVISION IS RESPONSIBLE FOR THE FOLLOWING:

10.4.1. SUPPLY AND INSTALLATION OF ALL STARTERS, DISCONNECT SWITCHES, PUSHBUTTON STATIONS, SPLITTER TROUGHS, JUNCTION BOXES AND TIME SWITCHES, ETC., AS NOTED ON DRAWING.

10.4.2. INSTALLATION AND WIRING OF ALL SEPARATELY MOUNTED THERMOSTATS, MOTOR CONTROLLERS AND CONTROL UNITS WHICH ARE SUPPLIED BY MECHANICAL.

10.4.3. SUPPLY AND INSTALLATION OF ALL POWER WIRING AND CONDUITS FROM THE DISTRIBUTION PANEL THROUGH THE STARTER AND DISCONNECT SWITCH ONTO THE MOTOR (OR EQUIPMENT).

10.4.4. SUPPLY AND INSTALLATION OF ALL CONTROL WIRING FROM REMOTE SWITCHES OR PUSHBUTTON STATIONS TO CONTROL STARTERS.

10.4.5. SUPPLY AND INSTALLATION OF ALL WIRING TO PROVIDE INTERLOCKING BETWEEN STARTERS COMPLETE WITH NECESSARY DOUBLE VOLTAGE RELAYS.

10.4.6. SUPPLY AND INSTALLATION OF TRANSIENT (SURGE) SUPPRESSERS ON HOLDING COILS OF MAGNETIC STARTERS, RELAYS, ETC., WHERE INDICATED FOR PROTECTION TO SOLID STATE EQUIPMENT THAT IS SENSITIVE TO SURGES, SPIKES, ETC.

11. MOTOR STARTERS

11.1. MANUAL STARTER SHALL HAVE QUICK–MAKE, QUICK–BREAK, SWITCHING MECHANICAL COMPLETE WITH OVERLOAD HEATERS, MANUAL RESET, TRIP INDICATING HANDLE, AND LOCKING TAB TO PERMIT PADLOCKING IN "ON" OR "OFF" POSITION.

11.2. MAGNETIC AND COMBINATION MOTOR STARTERS TO BE MINIMUM SIZE 1 TYPE, AND RATING TO SUIT MOTOR LOAD. C/W CONTROL TRANSFORMER, CONTACTOR SOLENOID OPERATED, MOTOR OVERLOAD PROTECTIVE DEVICE IN EACH PHASE, MANUALLY RESET, POWER AND CONTROL TERMINALS, PUSHBUTTONS AND SELECTOR SWITCHES, TWO N/O AND TWO N/C AUXILIARY CONTACTS, PROVISION FOR PREVENTING SWITCHING TO "ON" POSITION WHILE ENCLOSURE DOOR IS OPEN.

12. LIGHTING

12.1. REFER TO LIGHTING FIXTURE SCHEDULE ON DRAWINGS FOR DETAILS.
12.2. MINIMUM CRI OF 80
12.3. 50,000+ HOURS L70 LUMEN PERFORMANCE
12.4. EFFICACY OF >110 LUMENS PER WATT
12.5. MINIMUM 5 YEARS WARRANTY
12.6. PROVIDE DLC LISTING NUMBER AND ENERGY STAR CERTIFICATION FOR REBATES.

13. FIRE ALARM SYSTEM

13.1. ALL NEW FIRE ALARM DEVICES SHALL BE COMPATIBLE WITH THE EXISTING SIMPLEX 4100ES FIRE ALARM PANEL, CONTRACTOR SHALL OBTAIN ADDITIONAL INFORMATION FROM THE SYSTEM MAINTENANCE COMPANY(SEE BELOW). TEST AND VERIFY SYSTEM UPON COMPLETION AND SUBMIT REPORT TO CONSULTANTS.

PASSWORD AT 1800–561–3009 TO PERFORM ALL MODIFICATIONS & ADDITIONS TO THE EXISTING SYSTEM AND INCLUDE ALL ASSOCIATED COSTS. CONFIRM SPACE FOR NEW DEVICES IN THE PANEL.

13.2. UPGRADE, RE–PROGRAM EXISTING CONTROL PANEL AND ALL REMOTE ANNUNCIATOR PANELS AS REQUIRED TO ACCOMMODATE NEW DEVICES AND INITIATING ZONES AS INDICATED ON PLANS FOR THE ADDITION OF NEW DEVICES AND NEW INITIATING ZONES TO THE EXISTING.

13.3. UNLESS INDICATED OTHERWISE ON PLANS, WIRE NEW DEVICES TO EXISTING LOCAL FIRE ALARM INITIATING ZONE AND NEW SPEAKERS TO EXISTING LOCAL SIGNAL CIRCUITS.

13.4. CODES AND STANDARDS

.1 AUDIBLE SIGNAL APPLIANCES STANDARD ULC–S525
.2 SMOKE DETECTORS STANDARD ULC–S529
.3 SYSTEM INSTALLATION STANDARD CAN/ULC–S524
.4 SYSTEM VERIFICATION STANDARD CAN/ULC–S537

13.5. PRODUCTS

.1 FIRE ALARM PULL STATION
  .1 PANEL #
.2 SMOKE DETECTOR IONIZATION TYPE
  .1 PANEL #
.3 HEAT DETECTOR FIXED TEMPERATURE
  .1 PANEL #
.4 HEAT DETECTOR FIXED TEMPERATURE AND RATE OF RISE
  .1 PANEL #
.5 HORN & STROBE
  .1 PANEL #
.6 CONTROL RELAY MODULES
  .1 PANEL # (RELAY IAM) WITH ONE FORM "C" DRY RELAY PER MODULE WITH CONTACTS RATED: 2A @24VDC AND 1.0A @120VAC.

13.6. TESTING AND VERIFICATION
.1 PERFORM SYSTEM TESTING AND VERIFICATION AND SUBMIT REPORT TO CONSULTANTS.

14. REVISIONS TO EXISTING PANEL BOARDS

14.1. ALL EXISTING PANEL BOARDS ON DRAWINGS TO REMAIN AND BE REUSED TO FEED NEW DEVICES. FOR IDENTIFIED PANELBOARDS WHERE APPLICABLE ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL NEW BRANCH AND FEEDER BREAKERS, TYPE, QUANTITY AND CAPACITY AS IDENTIFIED ON DRAWING AND INSTALL IN EXISTING PANEL. ON EACH PANEL BOARD MODIFIED PROVIDE REVISED AND UPDATED PANEL BOARD SCHEDULE TO REFLECT NEW LOADS. RE–USE ALL SPARE BREAKERS MADE REDUNDANT IN DEMOLITION PHASE AND UPDATE PANEL BOARD SCHEDULES TO REFLECT ALL NEW AND REVISED CIRCUITS.

15. MILLWORK, FURNITURE, AND EQUIPMENT WIRING

15.1. ALL EQUIPMENT MUST BE CAREFULLY COORDINATED FOR EXACT FLOOR OR WALL LOCATIONS PRIOR TO DRILLING CONDUIT SLEEVES THROUGH FLOOR SLABS OR WALLS.

16. LIGHTING CONTROL

16.1. BASIS OF DESIGN IS A WATTSTOPPER DLM LOW VOLTAGE CONTROLS FOR A COMPLETE SYSTEM.

16.2. EXTENT OF LIGHTING CONTROL SYSTEM WORK IS INDICATED ON DRAWINGS ALONG WITH SEQUENCE OF OPERATIONS. THE SYSTEM IS DEFINED TO INCLUDE, BUT NOT BY WAY OF LIMITATION.

16.2.1. OCCUPANCY SENSORS
16.2.2. DAYLIGHT SENSORS
16.2.3. DIGITAL ROOM CONTROLLERS
16.2.4. NETWORK DEVICES
16.2.5. WALL STATIONS
16.2.6. SOFTWARE

16.3. CORRIDOR LIGHTING SHALL BE TIED INTO BAS. REFER TO DRAWINGS FOR MORE DETAILS.

16.4. ACCEPTABLE MANUFACTURERS

16.4.1. LEGRAND WATTSTOPPER
16.4.2. ACUITY N–LIGHT
16.4.3. COOPER

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal MD

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

P2024-2082 Hess Street Elementary School Ceiling Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
ELECTRICAL SPECIFICATION

drawn: MD
date:
scale: AS SHOWN
project number: 24-22-01
checked: MD
date:
DRAWING NO: E3-00
2
Revision

ROOF TOP UNIT SCHEDULE – GYMNASIUM

TAG	AREA SERVED	MANUFACTURER	MODEL	SUPPLY AIR FAN					RETURN AIR FAN					COOLING CAPACITIES					HYDRONICS HEATING				REMARKS	ELECTRICAL POWER							
				AIRFLOW CFM	FAN RPM	ESP (INCHES WG)	TSP (INCHES WG)	BHP/HP	AIRFLOW CFM	FAN RPM	ESP (INCHES WG)	TSP (INCHES WG)	BHP/HP	TOOL LLG (MBH)	SENS LLG (MBH)	EDB/EWB (OF)	LDB/LWB (OF)	WATER RMVL LBS/HR	CAPACITY (MBH)	EAT/LAT (OF)	FLOW RATE (GPM)	FLUID DROP (FT.WC)		V/PH/HZ	MCA (A)	MOCP (A)	SUPPLY FAN FLA	RETURN FAN FLA	OUTDOOR AIR (CFM)	UNIT WEIGHT (LBS)	ELECTRICAL WIRING INSTRUCTION
SF–5	GYMNASIUM	ENGINEERDAIR	FWE224/C/O/MV/R	6500	999	0.5	3.0	5.27/7.5 HP	6500	722	0.5	1.5	2.98/5.0 HP	282	164	82.1/71.3	58.8/58.8	106	248.0	50/85.3	15.1	2.4	– SINGLE POINT POWER CONNECTION AND A DISCONNECT – SEE SPECIFICATIONS FOR UNIT DETAILS. – LOW GWP REFRIGERANT OR R410. – INCLUDE DUCT MOUNTED SMOKE DETECTOR. – SPACE THERMOSTAT. – DAMPER ACTUATORS (FACTORY INSTALLED) – SERVICE RECEPTACLE. – DJM CONTROLLER. – WIRE ALL DEVICES TO A TERMINAL STRIP MOUNTED ON TO THE HVAC UNIT FOR BAS SUPPLIER TO CONNECT. – PROVIDE A SPACE IN THE UNIT FOR THE BAS SUPPLIER TO INSTALL A CONTROL PANEL WITH STRIP TERMINALS AND OTHER REQUIRED ACCESSORIES. – THE UNIT IS TO BE INCLUDED WITH 2" MERV8 PRE–FILTERS AND MERV13 MAIN FILTERS. – SUPPLY FAN MOTOR VFD – MODEL ABB ACH580 7.5 HP, RETURN FAN MOTOR VFD – MODEL ABB ACH580 5.0 HP.	575/3/60	52.3	60	9.0	6.1	2,200	7,700	DIV. 23 TO PROVIDE A SINGLE POINT DISCONNECT SWITCH AND VFDS FOR FANS DIV. 26 TO WIRE DISCONNECT. CONTROL WIRING TO THE BAS IS BY DIV. 23.

ADDITIONAL NOTES,

1. IN ADDITION TO MANUFACTURER STARTUP AND COMMISSIONING INCLUDE ADDITIONAL PROGRAMMING ONCE ON SITE IF REQUESTED BY THE BAS INSTALLER.

BUILDING AUTOMATION SYSTEM

INCLUDE IN PRICE TO RETAIN SCHOOL BOARDS BAS SYSTEM PROVIDER (SIEMENS CANADA – JASON FORRESTER TP:289–808–9488) TO CONTROL THE ENTIRE SF–5 UNIT. ALL CONTROL WIRING AND CONDUITS SHALL BE INCLUDED. RE–USE EXISTING CONDUIT TO THE TEMPERATURE SENSOR IN THE GYMNASIUM.

BAS PROVIDER SHALL INFORM THE AHU MANUFACTURER REQUIRED SPACE FOR THE CONTROL PANEL. BAS PROVIDER SHALL PROVIDE TERMINAL STRIPS, CONTROL TRANSFORMERS AND ANY HEATERS NECESSARY AND MOUNT THE PANEL IN THE SPACE PROVIDED. BAS PROVIDER SHALL SHALL CHECK IF THE PROVIDED ELECTRICAL CIRCUIT ON ELECTRICAL DRAWINGS IS SUFFICIENT. WHERE IT IS NOT SUFFIEICIENT, BAS PROVIDER SHALL ESTIMATE AND INCLUDE THE COST REQUIRED TO CHANGE IT.

SEQUENCE OF CONTROL OF SF-5

THE CONSTANT VOLUME AIR HANDLING UNIT CONSISTS OF A MIXED AIR SECTION WITH OUTDOOR AIR, RETURN AIR, EXHAUST AIR DAMPERS, FILTER, HOT WATER HEATING COIL, DX COOLING COIL, SUPPLY FAN. THE UNIT SHALL BE DDC–CONTROLLED USING ELECTRIC ACTUATION.

THE AIR HANDLING UNIT SHALL BE SCHEDULED FOR AUTOMATIC OPERATION ON A TIME OF DAY BASIS FOR SUMMER AND WINTER MODES EACH HAVING OCCUPIED AND UNOCCUPIED MODES.

IN THE WINTER WITHIN THE OCCUPIED MODE THE SYSTEM SHALL ENTER THE WARM–UP MODE WHEN THE SPACE TEMPERATURE IS BELOW SETPOINT. THE SYSTEM SHALL STAY IN THE WARMUP UNTIL THE MODE SETPOINT IS SATISFIED.

WITHIN THE UNOCCUPIED MODE, NIGHT HEATING SHALL BE AVAILABLE WHEN THE SPACE TEMPERATURE DROPS BELOW 18 DEGREE C.

IN THE SUMMER WITHIN OCCUPIED MODE THE SYSTEM SHALL ENTER THE COOLDOWN MODE WHEN THE SPACE TEMPERATURE IS ABOVE COOLING SETPOINT. SEE BELOW WRITEUP FOR COOLING STAGES

THE SYSTEM SHALL STAY IN THE COOLDOWN UNTIL THE MODE SETPOINT IS SATISFIED.

WITHIN THE UNOCCUPIED MODE, NIGHT COOLING SHALL BE DISABLED. THE LATEST START TIME IS THE SCHEDULED OCCUPANCY FOR THE SPACE.

RUN CONDITIONS - SCHEDULED.

THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES;
- OCCUPIED MODE: THE UNIT SHALL MAINTAIN THE SETPOINT
- COPY THE SAME SETPOINT OF EXISTING MAKEUP AIR UNIT OR A 23.8 °C (ADJ.) COOLING SETPOINT.
- COPY THE SAME SETPOINT OF EXISTING MAKEUP AIR UNIT OR A 21.3 °C (ADJ.) HEATING SETPOINT.

UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN
- COPY THE SAME SETPOINT OF EXISTING MAKEUP AIR UNIT OR A 28.3 °C (ADJ.) COOLING SETPOINT.
- COPY THE SAME SETPOINT OF EXISTING MAKEUP AIR UNIT OR A 18.3 °C (ADJ.) HEATING SETPOINT.

ALARM SHALL BE PROVIDED AS FOLLOWS.
- HIGH GYMNASIUM TEMP: IF THE GYMNASIUM TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.)
- LOW GYMNASIUM TEMP: IF THE GYMNASIUM TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

GYMNASIUM SETPOINT ADJUST:

BAS SHALL BE ABLE TO ADJUST THE GYMNASIUM TEMPERATURE HEATING AND COOLING SETPOINTS. SEE DRAWINGS FOR THE EXISTING GYMNASIUM TEMPERATURE SENSOR LOCATION.

OPTIMAL START.

THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR THE MORNING START_UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM UP OR COOL DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD.

PROOF OF AIRFLOW DETECTION:

AN ALARM SHALL BE GENERATED ON A LACK OF AIRFLOW.

SUPPLY FAN:

THE SUPPLY FAN SHALL RUN_ANYTIME_THE UNIT IS COMMANDED TO RUN ,UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING OF THE BOILER, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUN TIME. BAS SHALL MEASURE THE DIFFERENTIAL PRESSURE AT SUPPLY DUCT FOR MONITORING AND BALANCING PURPOSES.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN HAND: COMMANDED OFF , BUT THE STATUS IS ON.

RETURN AIR FAN:

THE RETURN AIR FAN SHALL RUN WHENEVER THE SUPPLY FANS RUNS. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- RETURN AIR FAN FAILURE; COMMANDED ON, BUT THE STATUS IS OFF.
- RETURN AIR FAN IN HAND; COMMANDED OFF, BUT THE STATUS IS ON.

SUPPLY AND RETURN FAN SPEED CONTROL

- DIFFERENTIAL PRESSURE SENSOR SHALL PROVIDE INPUT TO THE EXISTING BAS TO SPEED CONTROL THE SUPPLY AND RETURN AIR FANS.
- DISCUSS WITH THE SF–5 EQUIPMENT MANUFACTURER ABOUT THE MINIMUM AIR FLOW RATE THAT NEEDS TO BE MAINTAINED TO AVOID FREEZING COOLING COIL.

COOLING STAGE:

THE CONTROLLER SHALL MEASURE THE SPACE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT TO PREVENT SHORT CYCLING OF COMPRESSORS, AND SHALL HAVE A USER DEFINABLE (ADJ.) 5 MINUTES RUNTIME.

THE COOLING SHALL ENABLE WHENEVER:
- OUTSIDE AIR TEMPERATURE IS GREATER THAN 15.5 °C (ADJ.)
- AND THE ECONOMIZER IS DISABLED.
- AND THE GYMNASIUM TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE HEATING IS NOT ACTIVE.

THE COOLING CANNOT BE ACTIVATED UNTIL THE DIFFERENTIAL PRESSURE SWITCH SENSES AIRFLOW.

HYDRONIC HEATING:

THE CONTROLLER SHALL MEASURE THE GYMNASIUM TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS SETPOINT TO PREVENT BOILER SHORT CYCLING.

THE HEATING SHALL ENABLE WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 18.3 °C (ADJ.).
- AND THE GYMNASIUM TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE MIXED AIR TEMPERATURE IS LESS THAN" SUPPLY AIR SETPOINT(SAS) – 4°C, AND IS NOT ABOVE "SAS + 2°C.
- AND THE SUPPLY FAN STATUS IS ON.
- LOW RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS LESS THAN 7.2 °C (ADJ.),

THE HEATING CANNOT BE ACTIVATED UNTIL THE DIFFERENTIAL PRESSURE SWITCH SENSES AIRFLOW.

ECONOMIZER:

ECONOMIZER SHALL BE THE FIRST STAGE OF COOLING. OPTIMAL START IN SUMMER FOR COOL DOWN MODE SHALL HAVE DAMPERS OPEN. THE CONTROLLER SHALL MEASURE THE OUTDOOR TEMPERATURE AND IF IT IS 2°C BELOW THE COOLING SETPOINT, THE CONTROLLER SHALL MODULATE THE ECONOMIZER. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 20% (ADJ.) OPEN WHENEVER OCCUPIED.

THE ECONOMIZER SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 18.3°C (ADJ.)
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THEN THE RETURN AIR TEMPERATURE.
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN RETURN AIR ENTHALPY.
- AND THE SUPPLY FAN STATUS IS ON.

THE ECONOMIZER SHALL CLOSE WHENEVER:
- MIXED AIR TEMPERATURE DROPS BELOW 10°C (ADJ.).
- OR ON LOSS OF SUPPLY FAN STATUS.

THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF. TO ATTAIN THE OPTIMAL START UP INITIAL FREE COOLING REQUIREMENTS SHALL BE FOLLOWED I.E OA & EA DAMPERS SHALL BE OPEN AND MIXED AIR DAMPER SHALL CLOSE.

MIXED AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 32.2 °C (ADJ.)
- LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 7.2 °C (ADJ.)

RETURN AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:

BAS SHALL MEASURE THE RETURN AIR CO2 LEVEL AND MODULATE THE OUTSIDE AIR DAMPERS TO MAINTAIN A SETPOINT OF 1000 PPM (ADJ.). OUTDOOR AIR DAMPER SHALL HAVE A MINIMUM DAMPER POSITION (ADJ.) TO BE DETERMINED DURING BALANCING.

RETURN AIR HUMIDITY:

THE CONTROLLER SHALL MONITOR THE RETURN AIR HUMIDITY AND USE AS REQUIRED FOR ECONOMIZER CONTROL .

ALARM SHALL BE PROVIDED AS FOLLOWS:
- HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70%(ADJ.)
- LOW RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS LESS THAN 20%(ADJ.)

RETURN AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH RETURN AIR TEMP; IF THE RETURN AIR TEMPERATURE IS GREATER THAN 32.2°C (ADJ.).
- LOW RETURN AIR TEMP; IF THE RETURN AIR TEMPERATURE IS LESS THAN 7.2°C (ADJ.)

FILTER DIFFERENTIAL PRESSURE MONITOR:

THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE SWITCHES ACROSS THE FILTERS AND GENERATE AN ALARM WHEN DIRTY.

MD–MOTOR DAMPER
PS–PRESSURE SENSOR
MAT–MIXED AIR TEMPERATURE SENSOR
SAT–SUPPLY AIR TEMP SENSOR
EAT–EXHAUST AIR TEMPERATURE SENSOR
RAT–RETURN AIR HUMIDITY SENSOR
RAT–RETURN AIR TEMPERATURE SENSOR
RTS–ROOM TEMPERATURE SENSOR
CO_2–ROOM TEMPERATURE SENSOR
FSTAT–FREEZE STAT

BAS POINT LIST

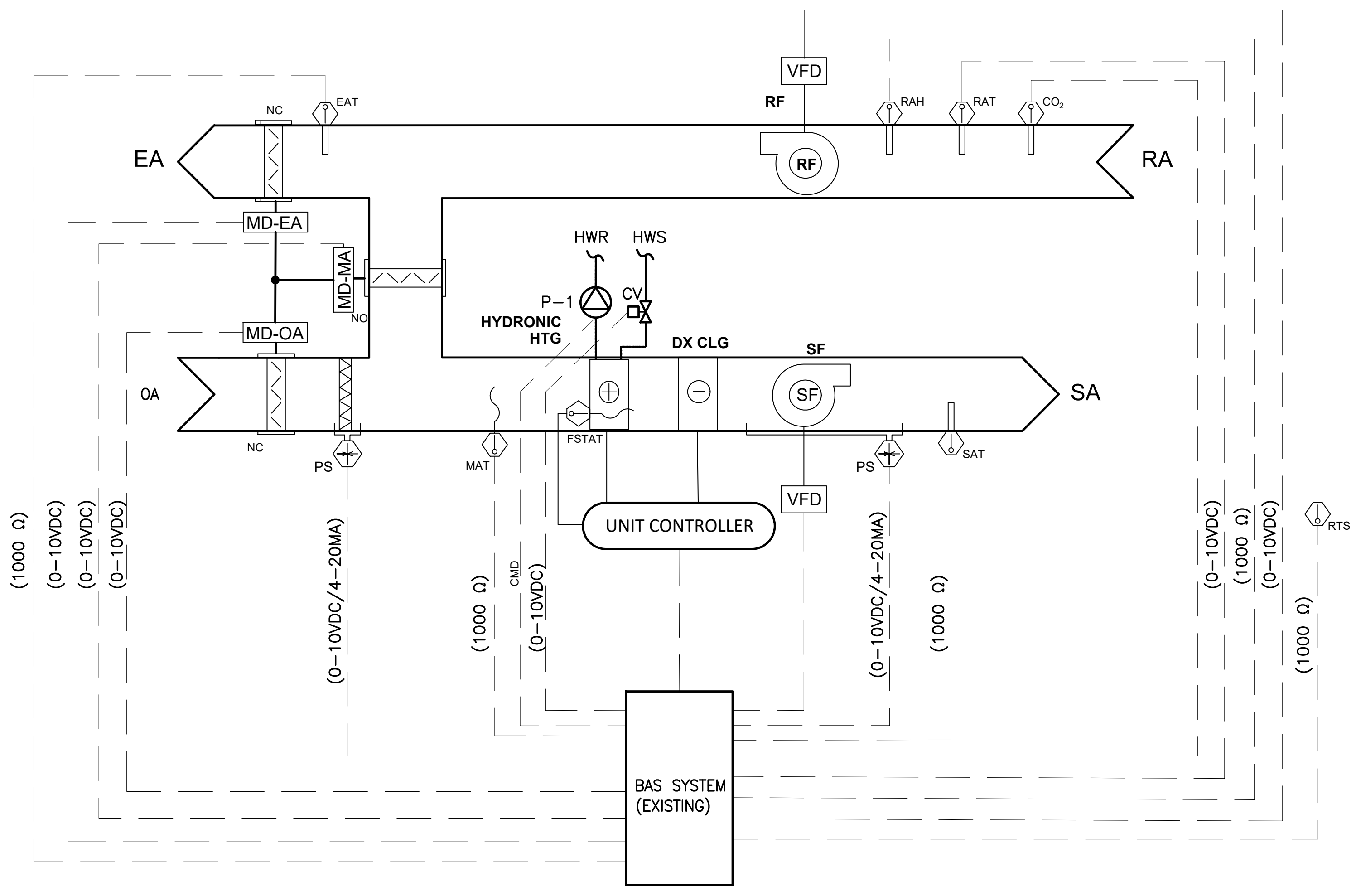
- HVAC UNIT STATUS.
- ROOM TEMPERATURE.
- SUPPLY AIR TEMPERATURE.
- MIXED AIR TEMPERATURE.
- COOLING ENABLED.
- COOLING STATUS.
- FILTER PRESSURES.
- SUPPLY FAN VFD STATUS.
- RETURN FAN VFD STATUS.
- HYDRONIC MODULATING VALVE.
- HYDRONIC PUMP STATUS.
- EACH CONDENSER FAN STATUS.
- HYDRONIC PUMP ON/OFF.
- COMPRESSOR STAGES.
- ENTERING AIR TEMPERATURE.
- RETURN AIR HUMIDITY.
- RETURN AIR TEMPERATURE.
- CO2 STATUS.

FOLLOWING SIGNALS WILL BE PROVIDED BY THE AHU MANUFACTURER ON A TERMINAL STRIP MOUNTED IN THE AHU
- UNIT ON/OFF CONTACT
- COOLING ON/OFF CONTACT
- COOLING BAS RESET (0–10VDC)
- COMPRESSOR STATUS
- 0–10VDC CONTROL OF MD–MA & MD–OA
- 0–10VDC FEEDBACK(POSITION) OF MD–MA & MD–OA –CLOGGED FILTER INDICATION.

VFD
- DIRECT 0–10VDC CONTROL
- FEEDBACK 0–10VDC
- STATUS ALARM

ADDITIONAL POINTS

INCLUDE IN PRICE TO WIRE ADDITIONAL 3 DIGITAL OUTPUTS AND 3 ANALOG OUTPUTS TO THE BAS FROM THE HVAC UNIT



- EXCEPT THE HVAC UNIT CONTROLLER, ALL OTHER THIRD PARTY DEVICES SHALL BE WIRED FROM A TERMINAL STRIP IN THE HVAC UNIT TO THE BAS SYSTEM.
- OTHER THAN THE TERMINAL DEVICES PROVIDED WITH THE HVAC UNIT, REST OF THE DEVICES SHALL BE PROVIDED BY THE BAS SYSTEM PROVIDER.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075
Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

P2024-2082 Hess Street Elementary School Ceiling Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
MECHANICAL DETAILS

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: ME1-00
2
Revision

MECHANICAL LEGEND

VENTILATION LEGEND

	SOUND INSULATION
SL-1	SILENCER
	FLEXIBLE CONNECTION
DN	DUCT OFFSET
BD	BALANCING DAMPER
FD	FIRE DAMPER
SD	SPLITTER DAMPER
BDD	BACKDRAFT DAMPER
MD	MOTORIZED DAMPER
☒	SUPPLY DUCT SECTION
◪	RETURN DUCT SECTION
	SUPPLY DIFFUSER
⧄	EXHAUST GRILLE
D-XXX 0	DIFFUSER DESIGNATION AND L/S
G-XXX 0	GRILLE DESIGNATION AND L/S
	CAPPED END DUCT
	DUCT REDUCER/ENLARGER
	TRANSITION □ TO ○ ROUND
CO	CARBON MONOXIDE DETECTOR
	AIR FLOW
	DUCT REDUCER
―▶―	AIR FLOW DIRECTIONS

ABBREVIATIONS

EF – EXHAUST FAN
SF – SUPPLY FAN
WL – WEATHER LOUVRE
CU – CONDENSING UNIT
FCU – FAN COIL UNIT
MUA – MAKE UP AIR
AC – AIR CONDITIONING
AD – ACCESS DOOR
ERV – ENERGY RECOVERY VENTILATOR
BS – BRANCH SELECTOR
LT – LINT TRAP
VAV – VARIABLE AIR VOLUME
BF – BOOSTER FAN
VRF – VARIABLE REFRIGERANT FLOW
UH – UNIT HEATER
DS – DUCT SUPPORT
SD – SMOKE DETECTOR
GEN E/A – GENERAL EXHAUST AIR
SA E/A – SANITARY EXHAUST AIR CFM
SA – SUPPLY AIR
RA – RETURN AIR
EA – EXHAUST AIR
CFSD – COMBINATION SMOKE AND FIRE DAMPER
DG – DOOR GRILLE

PIPING LEGEND

— HWS —	HEATING WATER SUPPLY
- - HWR - -	HEATING WATER RETURN
— CHWS —	CHILLED WATER SUPPLY
- - CHWR - -	CHILLED WATER RETURN
— GS —	GLYCOL WATER RETURN
- - GR - -	GLYCOL WATER RETURN
— CD —	EQUIPMENT CONDENSATE DRAIN LINE
— G —	NATURAL GAS
— S —	SUCTION LINE
— L —	LIQUID LINE
— V —	VENT LINE
— F —	FIRE LINE
—CA—	COMPRESSED AIR
— D —	DRAIN PIPE
— SP —	SPRINKLER PIPE
	PIPE ANCHOR
	PIPE GUIDE OR SLEEVE
	EXPANSION COMPENSATOR c/w GUIDES
	BOTTOM TAKE-OFF
	TOP TAKE-OFF
	ELBOW UP
	ELBOW DOWN
—⋈—	VALVE – SEE SPECIFICATIONS
	UNION CONNECTION
	FLANGED CONNECTION
	PLUG CAP
	FLEXIBLE CONNECTION
	THERMOMETER
PG	PRESSURE GAUGE
AV	AIR VENT
AAV	AUTOMATIC AIR VENT
FS	FLOW SWITCH
Ⓣ	THERMOSTAT
Ⓣ G	THERMOSTAT w/GUARD
Ⓗ	HUMIDITY SENSOR
Ⓢ	SWITCH
	CABINET HEATERS "CH" C_
	CONTINUOUS CONVECTORS "WF" X_
	RADIANT PANELS "RP' R_
TS	TEMPERATURE SENSOR
FR-?	FIRE RISER
FCR-?	FAN COIL RISER

ABBREVIATIONS

AFF – ABOVE FINISHED FLOOR
GPM – GALLONS PER MINUTE
(HP) – HIGH PRESSURE
MGSV – MASTER GAS SOLENOID VALVE
EXP – EXPANSION TANK
GT – GLYCOL TANK
HPR – HEATING PIPE RISER
LWCO – LOW WATER CUT OFF
TS – TEMPERATURE SENSOR
PS – PRESSURE SENSOR
SIM – SNOW MELTING
HE – HEAT EXCHANGER
B – BOILER
DHWH – DOMESTIC HOT WATER HEATER
DHST – DOMESTIC WATER STORAGE TANK
BAS – BUILDING AUTOMATION SYSTEM
RFH – RADIANT FLOOR HEATING
GM – REMOTE READING GAS METER

PLUMBING

▬ x ▬	STORM DRAIN ABOVE GRADE (STM)
▬ ‖ ▬	SANITARY ABOVE GRADE (SAN)
- - STM - -	STORM DRAIN BURIED (STM)
- - SAN - -	SANITARY BURIED (SAN)
— — W — —	WEEPING TILE
—·—·—	DOMESTIC COLD WATER (DCW)
—··—	DOMESTIC HOT WATER (DHW)
	DOMESTIC HOT WATER RECIRC (DHWR)
—••T—	DOMESTIC TEMPERED WATER (TW)
—•••T—	DOMESTIC TEMPERED WATER RECIRC (TWR)
— GS —	GLYCOL SUPPLY
— GR —	GLYCOL RETURN
— C —	CONDENSATE
— E —	EXPANSION
CO	CLEANOUT(ABOVE FLOOR)
CO	CLEANOUT(UNDERGROUND)
D	AREA DRAIN
○ FD	FLOOR DRAIN
○ FFD	FUNNEL FLOOR DRAIN
○ HD	HUB DRAIN
○ RD	ROOF DRAIN
● FE	FIRE EXTINGUISHER
▣ FEC	FIRE EXTINGUISHER c/w CABINET
◀ HSH	SHOWER (HANDICAPPED)
◀ SH	SHOWER
	RUNNING TRAP
NFHB	NON- FREEZE HOSE BIBB
HB	HOSE BIBB
	PIPE REDUCER
P-1	PUMP AND DESIGNATION
XXXX	KITCHEN EQUIPMENT IDENTIFICATION
PR-?	PLUMBING RISER

ABBREVIATIONS

HS – HOSE STATION
FHC – FIRE HOSE CABINET
RWL – RAIN WATER LEADER
WC – WATER CLOSET
WCH – WATER CLOSET (HANDICAPPED)
L – LAVATORY
LH – LAVATORY (HANDICAPPED)
S – STAINLESS STEEL SINK
MS – MOP SINK
HS – HAIR SINK
FLRS – FLOOR SINK
HBT – BATH TUB (HANDICAPPED)
EEW – EMERGENCY EYE WASH
INV. ELEV. – INVERT ELEVATION
OBV. ELEV. – OBVERT ELEVATION
BFP – APPROVED BACKFLOW PREVENTOR
TSP – TRAP SEAL PRIMER
SEP – SEWAGE EJECTOR PUMP
GINT – GREASE INTERCEPTOR
SINT – SOLID INTERCEPTOR
SP – STORM EJECTOR PUMP
TD – TRENCH DRAIN
HBS – HOSE BIBB STATION
WM – WATER METER
BFP – BACKFLOW PREVENTOR
FCO – FLOOR CLEAN OUT
DCW – DOMESTIC COLD WATER
DHW – DOMESTIC HOT WATER
DHWR – DOMESTIC HOT WATER RECIRC
DTW – DOMESTIC TEMPERED WATER
DTWR – DOMESTIC TEMPERED WATER RECIRC

SPRINKLER LEGEND

○	UPRIGHT SPRINKLER
●	PENDANT SPRINKLER
◎	UPRIGHT SPRINKLER w/GUARD
◉	PENDANT SPRINKLER w/GUARD
	UPRIGHT HI-TEMP. SPRINKLER
	PENDANT HI-TEMP. SPRINKLER
	UPRIGHT HI-TEMP. SPRINKLER w/GUARD
	PENDANT HI-TEMP. SPRINKLER W/GUARD
	DRY PENDANT SPRINKLER
	DRY PENDANT SPRINKLER w/GUARD
	RECESSED SPRINKLER
	CONCEALED SPRINKLER
	HORIZONTAL SIDEWALL SPRINKLER
	EXTENDED COVERAGE SIDEWALL SPRINKLER
FS	FLOW SWITCH
PS	PRESSURE SWITCH OR SENSOR
M M	APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTOR ASSEMBLY
M	ELECTRICALLY MONITORED SHUT-OFF VALVE
	CHECK VALVE
	ALARM CHECK VALVE
	SPRINKLER RISER
	SIAMESE FIRE DEPT. CONNECTION
	WATER GONG
— F —	FIRE LINE
	HORIZONTAL SIDEWALL SPRINKLER W/GUARD

VALVE LEGEND

—⋈—	VALVE – SEE SPEC
	CHECK VALVE
	STRAINER
	PRESSURE REDUCING VALVE (PRV)
	LOCK SHIELD VALVE
TCV	2-WAY CONTROL VALVE (TCV)
TCV	3-WAY CONTROL VALVE (TCV)
R	RELIEF VALVE
CBV	CIRCUIT BALANCE VALVE (CBV)
	PLUG VALVE
SV	SOLENOID VALVE
NC	NORMALLY CLOSED VALVE

LEGEND NOTES:

1. THESE ARE STANDARD LEGENDS. ALL SYMBOLS MAY NOT NECESSARILY BE USED ON THESE DRAWINGS.

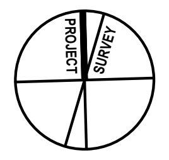
MISCELLANEOUS ABBREVIATIONS

EX – EXISTING TO REMAIN.
ER – EXISTING TO BE RELOCATED.
RE – RELOCATED DEVICE AT NEW LOCATION
R – EXISTING TO BE REMOVED
N – EXISTING TO BE REPLACED WITH NEW

DRAWING LIST

M0-00	MECHANICAL LEGEND, DRAWINGS LIST & KEY PLAN
M1-00	OVERALL PLAN GROUND FLOOR DEMOLITIONS – MECHANICAL
M1-01	OVERALL PLAN SECOND FLOOR DEMOLITIONS – MECHANICAL
M1-02	OVERALL PLAN ROOF DEMOLITIONS – MECHANICAL
M2-00	OVERALL PLAN GROUND FLOOR NEW – MECHANICAL
M2-01	OVERALL PLAN SECOND FLOOR NEW – MECHANICAL
M2-02	OVERALL PLAN ROOF NEW – MECHANICAL
M3-00	SPECIFICATIONS
M4-00	SPECIFICATIONS
ME1-00	MECHANICAL & ELECTRICAL SCHEDULES

SITE LOCATION



107 HESS STREET NORTH
HAMILTON, ON

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025-02-12
3	ISSUED FOR REVIEW	2025-02-04
2	ISSUED FOR TENDER	2025-01-09
1	ISSUED FOR PERMIT	2024-12-10
C	ISSUED FOR COORDINATION	2024-12-06
B	ISSUED FOR COORDINATION	2024-10-02
A	PROGRES DWG SET	2024-09-13

REVISIONS

24075
Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

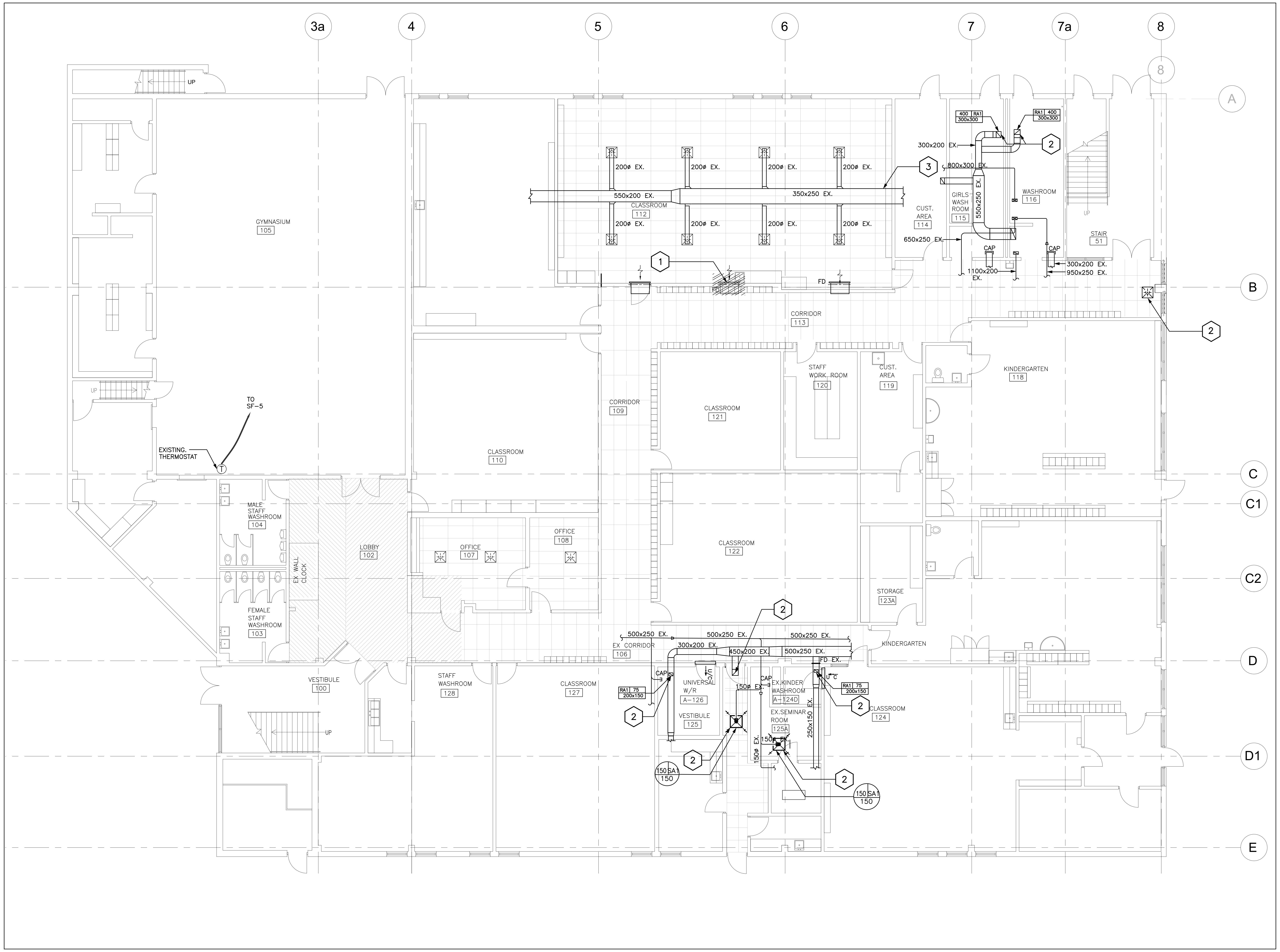
AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

P2024-2082 Hess Street Elementary School Ceiling Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
MECHANICAL LEGEND,
DRAWING LIST & KEY PLAN

drawn: AW
date:
scale: NTS
project number: 24-22-01
checked: KS
date:
DRAWING NO: M0-00
Revision 2



OVERALL PLAN GROUND FLOOR DEMOLITIONS–MECHANICAL

1
M1-00

SCALE– 1:100

DEMOLITION NOTES: HVAC SYSTEM ROOF MOUNTED EQUIPMENT

① EXISTING 900X150 TRANSFER AIR GRILLE C/W FIRE DAMPER IS TO BE DEMOLISHED AS SHOWN. THE WALL OPENING SHALL BE FILLED WITH ORIGINAL CONSTRUCTION MATERIAL. REEFER TO NEW OPENING LOCATION ON DWG. M2–00.

② EXISTING DIFFUSER, ITS FIRE DAMPER AND BRANCH DUCT SHALL BE TEMPORARILY REMOVED TO FACILITATE CEILING REMOVAL AND INSTALLING A NEW FIRE RATED CEILING.

③ EXISTING DUCTS. SEE NEW DRAWING FOR REQUIRED CHANGES.

GENERAL NOTES:

1. NOT ALL DEMOLITION ITEMS HAVE BEEN SHOWN ON DRAWINGS, VISIT JOB SITE AND EVALUATE EXTENT OF THE DEMOLITION PRIOR TO BIDDING.
2. EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM SITE SURVEY. DO NOT ASSUME THIS INFORMATION TO BE COMPLETE OR UP–TO–DATE. PRIOR TO WORK, CONTRACTOR SHALL CARRY OUT A FULL SURVEY OF ALL EXISTING SERVICES AND STRUCTURE TO CONFIRM SIZES AND LOCATIONS OF THESE SERVICES.
3. ALLOW IN PRICE TO COORDINATE WITH THE SPRAY FIRE PROOFING COMPANY TO FIREPROOF UNDERSIDE OF THE 2ND FLOOR CEILING AS SHOWN ON ARCHITECTURAL DRAWINGS. THIS CONTRACTOR SHALL IDENTIFY PIPES, DUCTS AND OTHER MECHANICALL SERVICES AND PROVIDE TAGS AND LABELS

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

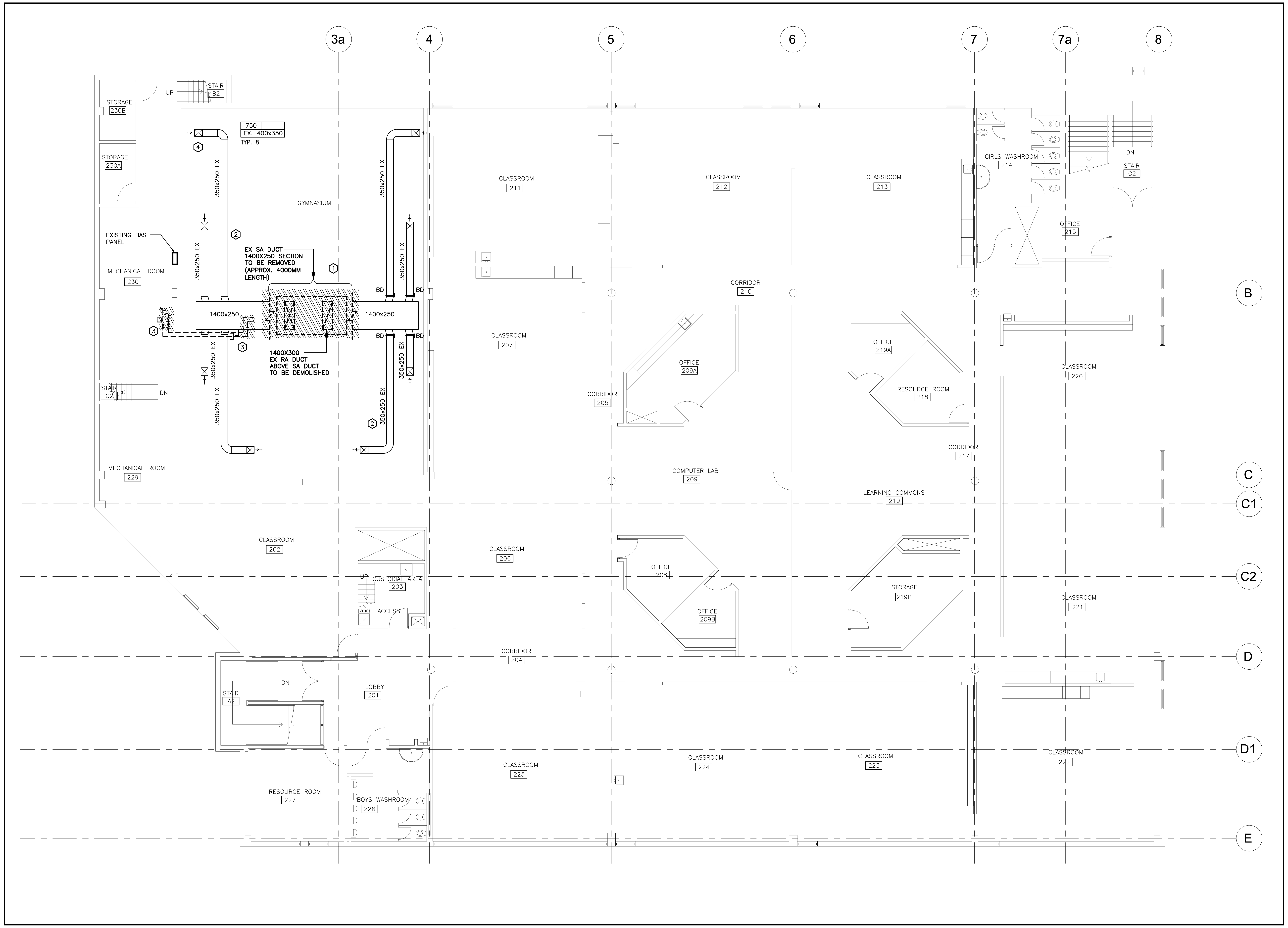
P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
OVERALL PLAN GROUND FLOOR DEMOLITIONS - MECHANICAL

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: M1-00
2
Revision



① M1-01 OVERALL PLAN SECOND FLOOR DEMOLITIONS—MECHANICAL

SCALE- 1:100

DEMOLITION NOTES: HVAC SYSTEM ROOF MOUNTED EQUIPMENT

1. DEMOLISH SECTION OF S/A DUCT (1400X250) TO ACCESS EXISTING R/A DUCT OF ROOF TOP UNIT (SF-5) SIZE OF THE R/A DUCT FROM UNIT IS APPROXIMATELY 535X1425. DEMOLISH THE REMAINING HORIZONTAL R/A DUCT 1400X300 (APPROXIMATE). (AS SHOWN IN THIS DRAWING)
2. EXISTING S/A DUCT SYSTEM (EXCEPT THE SECTION IN ITEM 1) C/W BRANCH DUCT WORK. S/A DIFFUSERS AT HIGH TO REMAIN AS IS. ALL S/A GRILLES (8PCS) ARE ON THIS SYSTEM (SF-5) TO BE CLEANED. EXISTING HORIZONTAL FIRE DAMPERS IN S/A & R/A DUCTS ARE TO BE DISCONNECTED.
3. CUT & REMOVE EXISTING 32ø HYDRONIC HEATING PIPES FOR SF-5 BELOW THE ROOF C/W CONTROL VALVE CV-5 & SHUTOFF VALVES/THERMOSTAT. CAP PIPING TEMPORARILY TO BE USED FOR THE NEW UNIT. THE EXISTING UNIT HAS BEEN LOCATED IN THE BOILER ROOM AT HIGH BELOW ROOF.
4. THE CONTROL THERMOSTAT(S) INCLUDING ALL WIRING INSIDE THE GYMNASIUM TO BE REMOVED.

GENERAL NOTES:

1. EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM SITE SURVEY. DO NOT ASSUME THIS INFORMATION TO BE COMPLETE OR UP-TO-DATE. PRIOR TO WORK, CONTRACTOR SHALL CARRY OUT A FULL SURVEY OF ALL EXISTING SERVICES AND STRUCTURE TO CONFIRM SIZES AND LOCATIONS OF THESE SERVICES.
2. NOT ALL DEMOLITION ITEMS HAVE BEEN SHOWN ON DRAWINGS, VISIT JOB SITE AND EVALUATE EXTENT OF THE DEMOLITION PRIOR TO BIDDING.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025-02-12
3	ISSUED FOR REVIEW	2025-02-04
2	ISSUED FOR TENDER	2025-01-09
1	ISSUED FOR PERMIT	2024-12-10
C	ISSUED FOR COORDINATION	2024-12-06
B	ISSUED FOR COORDINATION	2024-10-02
A	PROGRES DWG SET	2024-09-13

REVISIONS

24075

Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

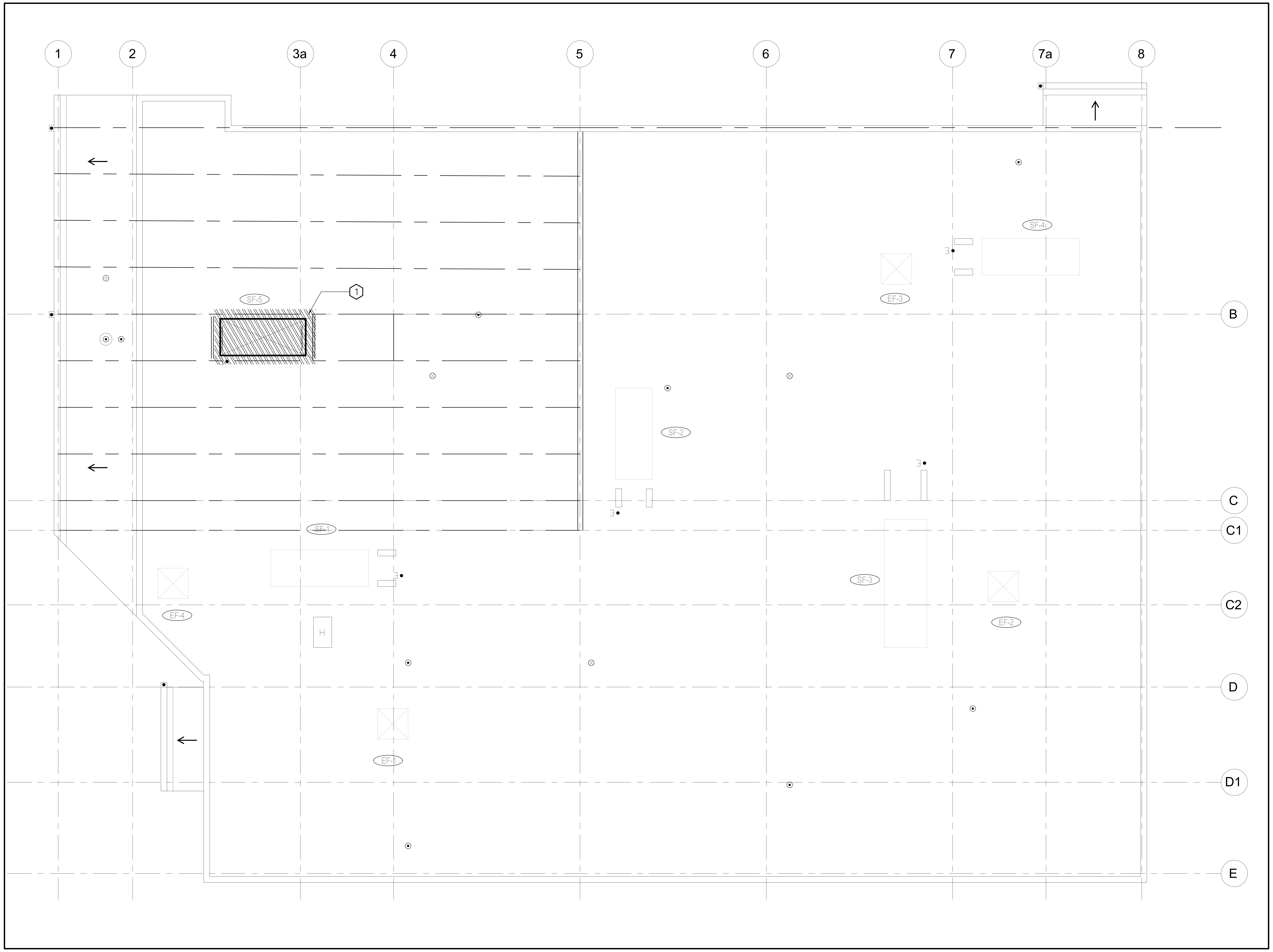
P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
OVERALL PLAN SECOND FLOOR DEMOLITIONS - MECHANICAL

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: M1-01
2
Revision



1
M1-02

OVERALL PLAN ROOF DEMOLITIONS–MECHANICAL

SCALE– 1:100

GENERAL NOTES:

1. NOT ALL DEMOLITION ITEMS HAVE BEEN SHOWN ON DRAWINGS, VISIT JOB SITE AND EVALUATE EXTENT OF THE DEMOLITION PRIOR TO BIDDING.
2. EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM SITE SURVEY. DO NOT ASSUME THIS INFORMATION TO BE COMPLETE OR UP–TO–DATE. PRIOR TO WORK, CONTRACTOR SHALL CARRY OUT A FULL SURVEY OF ALL EXISTING SERVICES AND STRUCTURE TO CONFIRM SIZES AND LOCATIONS OF THESE SERVICES.

DEMOLITION NOTES:

1 EXISTING ROOF TOP UNIT SF–5 SHALL BE DISCONNECTED AND REMOVED FROM SITE. EXISTING ROOF CURB TO REMAIN, EXISTING ROOF OPENINGS SHALL BE RE–USED FOR NEW UNIT. SEE STRUCTURAL DRAWINGS FOR REQUIRED STRUCTURAL MODIFICATIONS. DISCONNECT POWER SUPPLY AND REMOVE WIRING UP TO THE SOURCE.
RETAIN SCHOOL BOARDS MOVE BUILDING AUTOMATION SYSTEM PROVIDER (SIEMENS) TO DISCONNECT WIRING. SEE ME1–00 FOR ADDITIONAL REQUIREMENTS.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13
No.	DESCRIPTION	DATE

REVISIONS

24075

Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

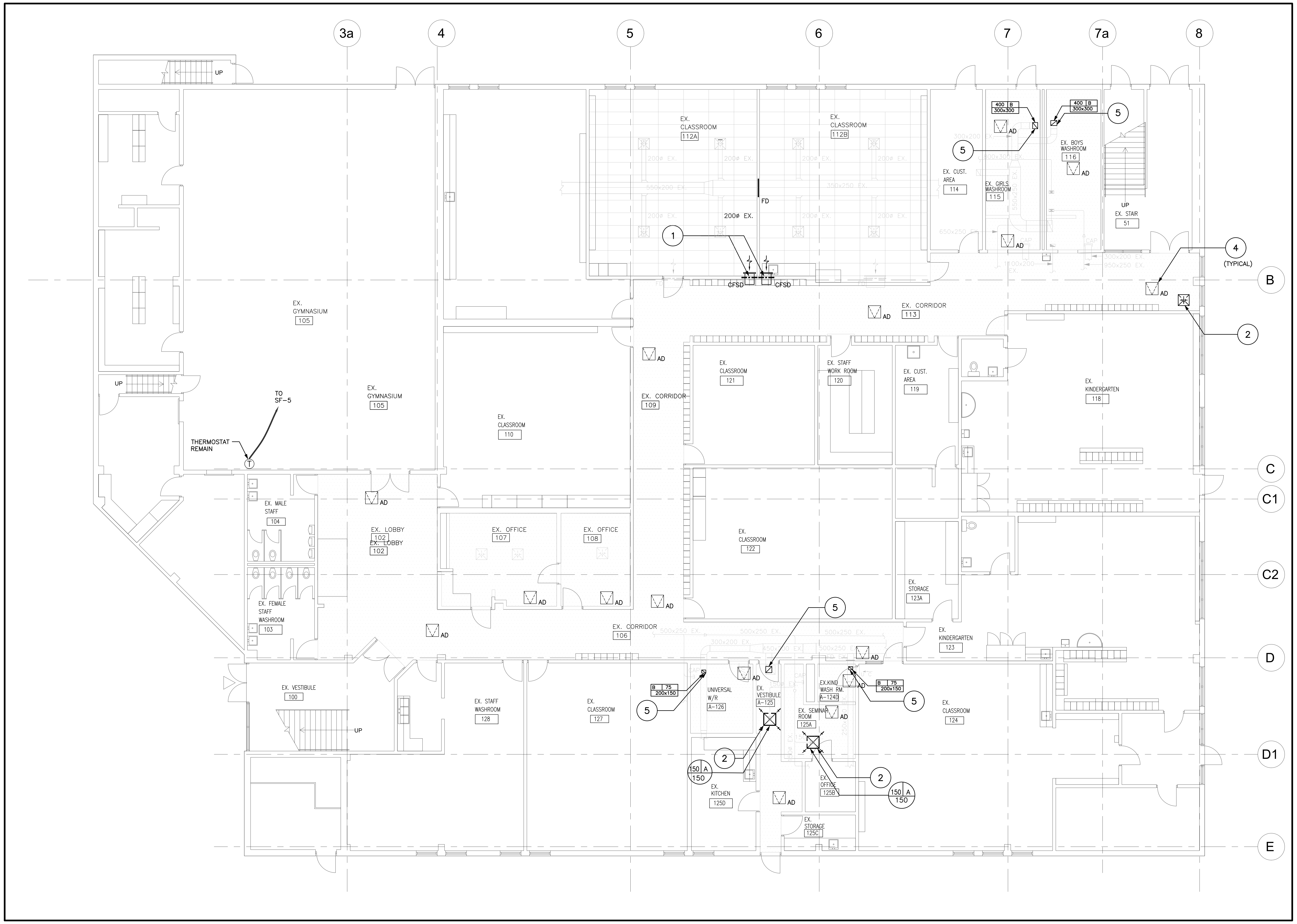
P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
OVERALL PLAN ROOF DEMOLITIONS - MECHANICAL

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: M1-02
2
Revision



① OVERALL PLAN GROUND FLOOR NEW —MECHANICAL

M2-00

SCALE– 1:100

DRAWING NOTES:

1. INSTALL TWO NEW TRANSFER AIR DUCT SIZE 450X150 C/W 25MM THICK INTERNAL ACOUSTIC LINER AS SHOWN ON TWO LOCATIONS. ALSO PROVIDE "FIRE AND SMOKE DAMPER", RATED FOR 1 HRS. REFER TO STRUCTURAL DRAWINGS FOR WALL OPENINGS AND LINTEL DETAILS.
2. NEW DIFFUSERS EH–PRICE MODEL SCD–FR 24X24 SQUARE CONE FIRE RATED ASSEMBLY WITH NEW FLEXIBLE DUCT TO MATCH THE SIZE OF EXISTING DUCT. ALLOW IN PRICE TO RAISE THE MAIN DUCT WHEN THE DIFFUSER IS DIRECTLY CONNECTED TO IT WITHOUT A FLEXIBLE.
3. INSTALL A NEW FIRE DAMPER. SEE ARCHITECTURAL DRAWING FOR THE FIRE RATING OF THE WALL.
4. NOMINAL 600X600 FIRE RATED (1 1/2HR) INSULATED CEILING ACCESS PANEL PRODUCTS FROM "ACCESS DOORS CANADA" OR EQUIVALENT. THEY SHALL BE PROVIDED FOR BOTH MECHANICAL AND ELECTRICAL PURPOSES. COORDINATE ON SITE FOR EXACT LOCATIONS.
5. EH_PRICE 80 SERIES RETRURN AIR GRILLE WITH FIRE RATED ASSEMBLY:

   WITH THE FIRE RATED OPTION, THE 80 SERIES GRILLE IS A FIRE RATED ASSEMBLY LISTED IN THE UNDERWRITERS LABORATORIES (UL) FIRE RESISTANCE DIRECTORY. + FIRE RATED MODELS MEET UL TIME VS. TEMPERATURE TEST CRITERIA AND NFPA 90A REQUIREMENTS. + FIRE RATED CONSTRUCTION INCORPORATES A THERMAL BLANKET AND FIRE DAMPER. + THE BUTTERFLY–TYPE FIRE DAMPER IS AVAILABLE WITH EITHER A 165°F OR 212°F FUSIBLE LINK. + THE FIRE RATED OPTION IS ONLY AVAILABLE FOR USE IN EXPOSED GRID SUSPENDED CEILINGS (T–BAR & DRYWALL LAY–IN) AND MUST BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS.

GENERAL NOTES:

1. EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM SITE SURVEY. DO NOT ASSUME THIS INFORMATION TO BE COMPLETE OR UP–TO–DATE. PRIOR TO WORK, CONTRACTOR SHALL CARRY OUT A FULL SURVEY OF ALL EXISTING SERVICES AND STRUCTURE TO CONFIRM SIZES AND LOCATIONS OF THESE SERVICES.
2. NOT ALL DEMOLITION ITEMS HAVE BEEN SHOWN ON DRAWINGS, VISIT JOB SITE AND EVALUATE EXTENT OF THE DEMOLITION PRIOR TO BIDDING.

GRILLE AND DIFFUSER SCHEDULE

TAG	MODEL		SERVICE	SIZE (MM)	FINISH	BORDER	REMARKS
	MANUF.	MODEL					
A	E.H. PRICE	SCDA–FR	CEILING SUPPLY DIFFUSER	600x600	B–12	7	SIZE REFER TO DRAWING
B	E.H. PRICE	80 SERIES	RETURN/EXHAUST GRILLE	–	B–12	7	SIZE REFER TO DRAWING

ALL THE DIFFUSER & GRILLS SHALL BE INCLUDED WITH FIRE RATED ASSEMBLIES.

NOTE :
1. ALUMINUM DAMPERS ARE REQUIRED FOR ALL ALUMINUM GRILLES AND DIFFUSERS.
2. UP TO 47 LPS = 150MMø NECK; 47 LPS to 105 LSP = 200MMø ; 105 LPS to 178 LPS = 250MMø NECK
3. ALL DIFFUSERS AND GRILLES RATED AT NC30 OR LESS.
4. EACH GRILLE AND DIFFUSER SHALL HAVE BALANCING DAMPER.
5. COLORS SHALL BE SUBMITTED WITH SHOP DRAWINGS.
6. COORDINATE WITH THE GENERAL CONTRACTOR FOR GRILLS INSTALLATION.
7. CEILING TYPE TO SELECT THE BORDER.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

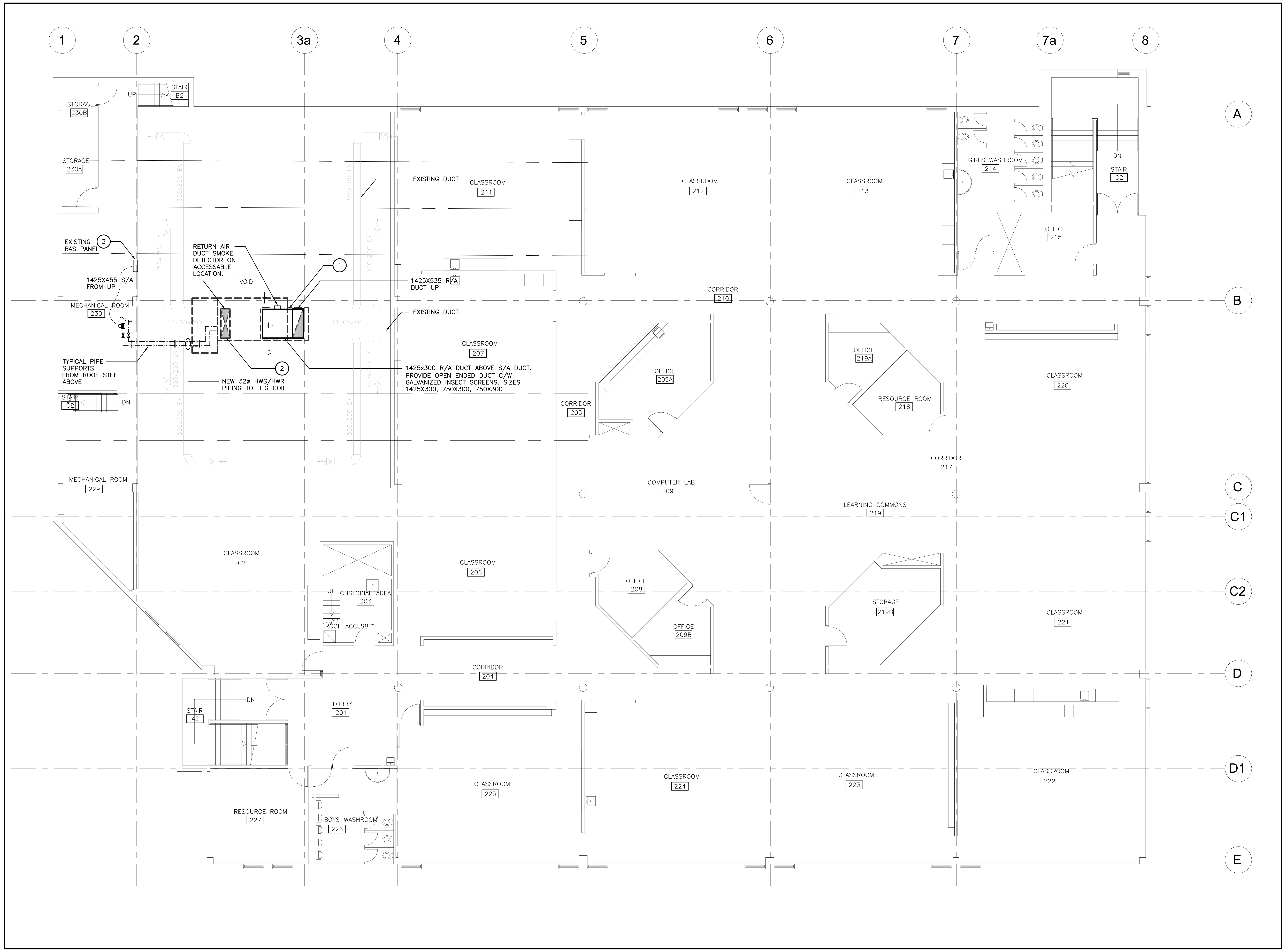
P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
OVERALL PLAN GROUND FLOOR NEW - MECHANICAL

drawn: AW	scale: AS SHOWN	
date: 2024-09-12	project number: 24-22-01	
checked: KS	DRAWING NO: M2-00	2
date: 2024-09-12		Revision



OVERALL PLAN SECOND FLOOR NEW–MECHANICAL

1 / M2-01

SCALE– 1:100

DRAWING NOTES:

① PROVIDE NEW RETURN AIR DUCT 1425X535 FROM SF–5 TO BELOW AND TURN HORIZONTALLY WITH 1425X300X2000L AND TERMINATED WITH ALL THREE SIDE MOUNTED GALVANIZED INSECT SCREENS.

② PROVIDE NEW S/A DUCT 1425X445 FROM NEW UNIT SF–5 DISCHARGE OUTLET, RUN HORIZONTALLY & CONNECT TO EXISTING S/A DUCTS AT TWO SIDES. PROVIDE ALL NEW DUCT SUPPORTS, ALL SUPPLY DUCTS SHALL BE INSTALLED WITH AN INTERNAL ACOUSTIC LINING UP TO 1.5 METER. THE SUPPLY AIR VERTICAL PIECE ALL THE WAY FROM THE UNIT TO INSIDE SHALL BE INSULATED AS SPECIFIED.

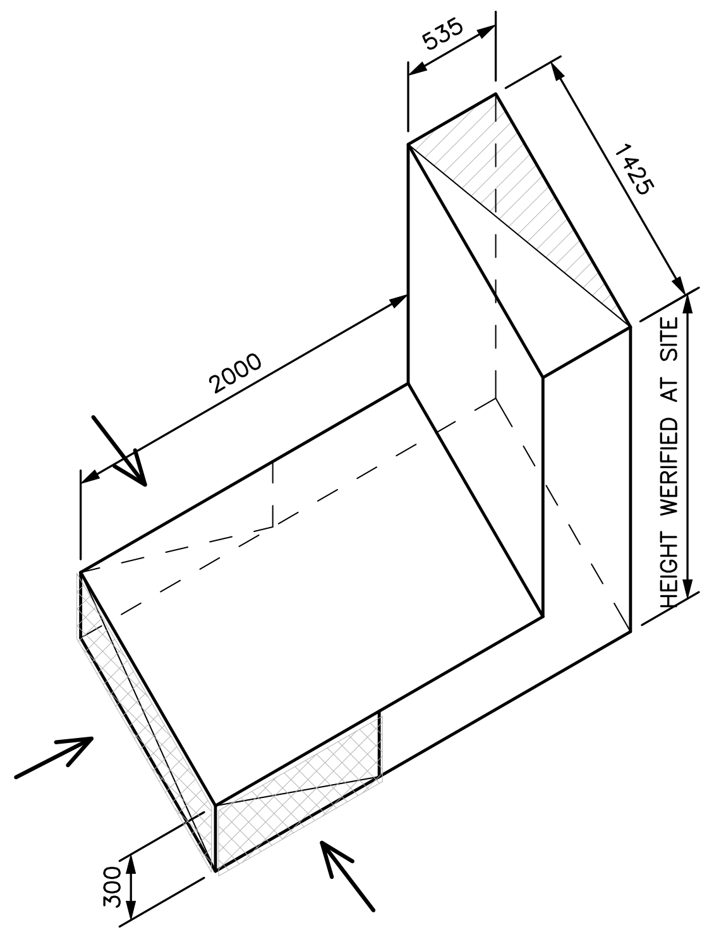
③ WIRE THE NEW SF–5 HVAC UNIT TO THE EXISTING BAS PANEL. SEE HVAC UNIT SPECIFICATION AND SEQUENCE OF OPERATION ON ME1–00.

④ PROVIDE NEW INSULATED 32ø HWS/HWR PIPING TO NEW SF–5 AS SHOWN. VALVE PACKAGE TO INCLUDE 2WAY CONTROL VALVE (BAS INTEGRATED), CIRCUIT BALANCING VALVE, SHUTOFF VALVES.

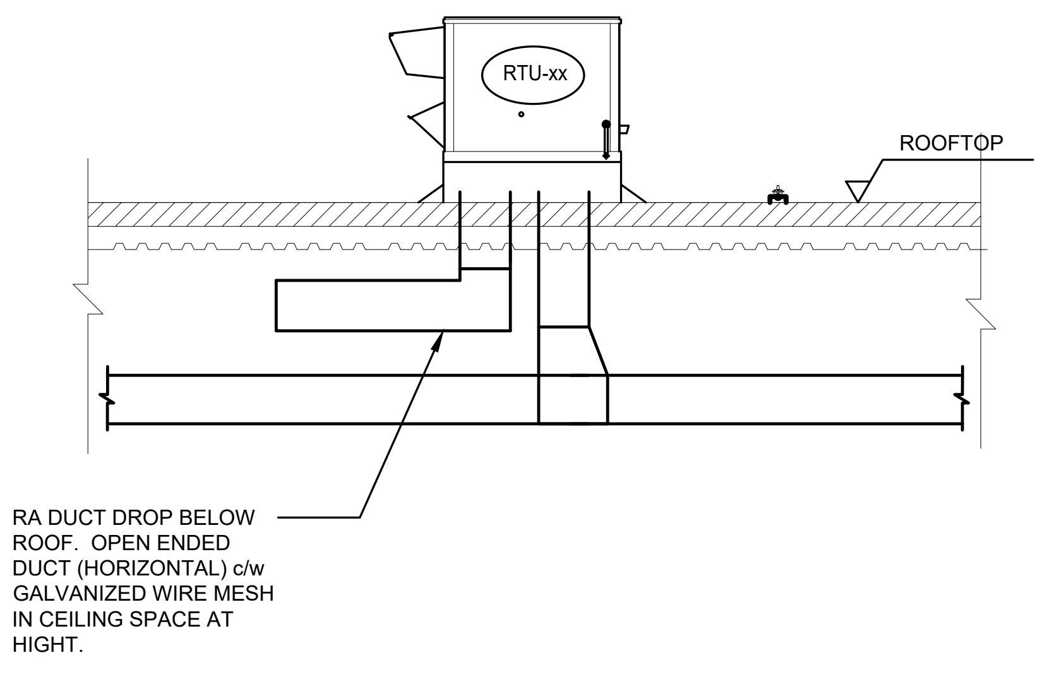
⑤ ALL NEW POWER REQUIREMENT TO NEW BAS CONTROLLERS BY ELETRICAL DIVISION.

⑥ TYPICAL SF–5 HEATING COIL PIPING CONNECTION REFER TO DETAIL ON THIS DRAWINGS.

⑦ PROVIDE RETURN AIR DUCT MOUNTED SMOKE DETECTOR,

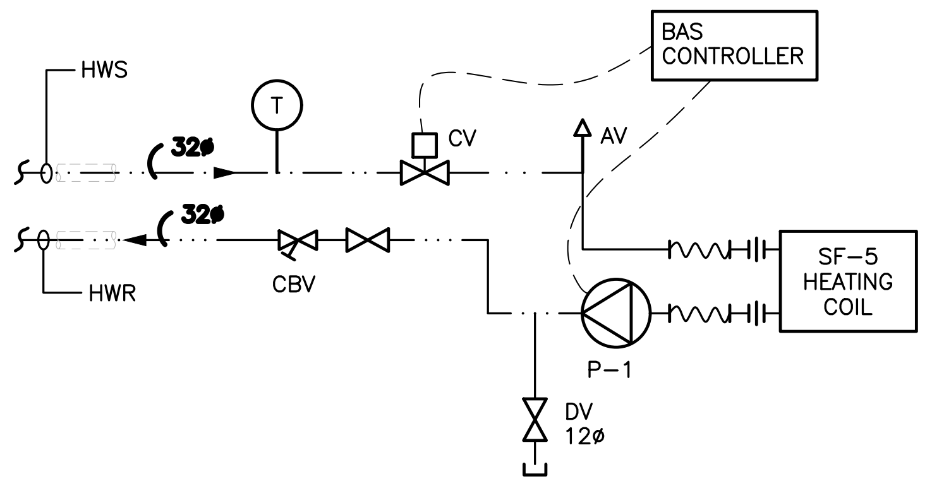


RETURN AIR DUCT –ISOMETRIC VIEW



1 RTU–XX SECTIONAL VIEW

NTS



SF–5 HOT WATER SINGLE COIL PIPING CONNECTION

NTS

NOTE: A. 32ø CONTROL VALVE, SHALL BE HONEYWELL VBN2 SERIES OR EQUAL. TWO WAY MODULATING C/W ACTUATOR (BY BAS CONTRACTOR), FLOW SET AT 15.1 GPM.

B. ALLOW FOR CIRCULATION PUMP IF REQUIRED 1/6HP, 115V/IPS, 1.7AMP C/W ELECTRICAL POWER & POWER ON THROUGH BAS.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

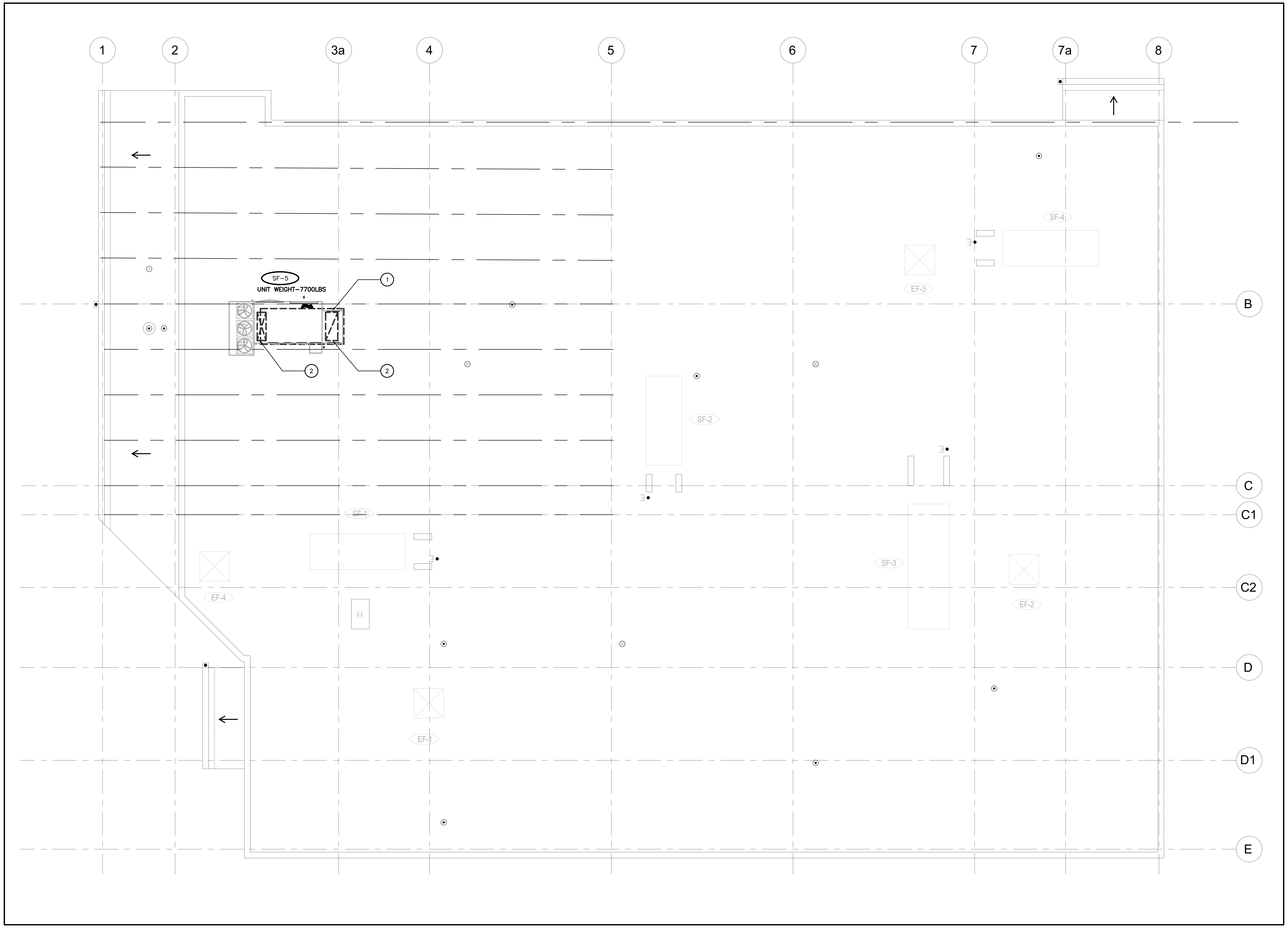
P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
OVERALL PLAN SECOND FLOOR NEW - MECHANICAL

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: M2-01
Revision 2



1 M2-02 OVERALL PLAN ROOF NEW-MECHANICAL

SCALE- 1:100

DRAWING NOTES:

① ON EXISTING ROOF CURB WITH CONTROLS AND ELECTRICAL POWER SUPPLIES ETC. SEE MECHANICAL SCHEDULE ME1-00 FOR DETAILS. BASIS OF DESIGN IS FOR THE ENGINEERED AIR UNIT.

② RE-USE EXISTING ROOF CURB AND SEE STRUCTURAL DRAWINGS FOR REQUIRED MODIFICATIONS. THE BASIS OF DESIGN OF THE ROOFTOP UNIT IS FOR ENGINEERED AIR. WHERE OTHER EQUIVALENT MANUFACTURER PRODUCTS ARE USED AND IF THE EXISTING ROOF CURB IS NOT USABLE, INCLUDE IN PRICE TO REPLACE THE ROOF CURB, ROOFING AROUND IT, MAKING LARGE OPENINGS OR REDUCING OPENINGS, ANY STRUCTURAL, MECHANICAL AND OTHER MODIFICATIONS. NO ADDITIONAL CHARGES WILL BE ALLOWED FOR FAILING TO ASSESS REQUIREMENTS.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025-02-12
3	ISSUED FOR REVIEW	2025-02-04
2	ISSUED FOR TENDER	2025-01-09
1	ISSUED FOR PERMIT	2024-12-10
C	ISSUED FOR COORDINATION	2024-12-06
B	ISSUED FOR COORDINATION	2024-10-02
A	PROGRES DWG SET	2024-09-13

REVISIONS

24075

Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

P2024-2082 Hess Street Elementary School Ceiling Renovation

107 Hess Street North

Hamilton, Ontario

drawing title:
OVERALL PLAN ROOF
NEW - MECHANICAL

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: M2-02
Revision: 2

MECHANICAL SPECIFICATIONS

A GENERAL CONDITIONS

1.1 GENERAL

.1 THE WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE ONTARIO BUILDING CODE, THE ONTARIO WATER RESOURCES ACT, THE MINISTRY OF LABOUR, THE CITY OF HAMILTON AND ALL CODES HAVING JURISDICTION, WHICH ARE TO BE CONSIDERED AN INTEGRAL PART OF THESE SPECIFICATIONS. THE GENERAL CONDITIONS OF THE ARCHITECTURAL SPECIFICATIONS ARE HEREBY MADE PART OF THESE SPECIFICATIONS.

.2 ALL LABOUR, MATERIALS, EQUIPMENT, FEES, PERMITS AND CHARGES TO PERFORM THE OPERATIONS FOR THE COMPLETE INSTALLATION OF THE PLUMBING, PIPING, VENTILATION AND HEATING WORK, AS INDICATED ON THE DRAWINGS.

.3 VISIT THE JOB SITE AND EXAMINE ALL EXISTING CONDITIONS WHICH AFFECT THE WORK.

.4 PAY FOR AND OBTAIN ALL REQUIRED PERMITS, FEES. LICENCES, CERTIFICATES OF INSPECTION, ETC. PROVIDE AND SUBMIT REQUIRED DRAWINGS TO THE AUTHORITIES HAVING JURISDICTION. ALL WORK SHALL BE IN ACCORDANCE WITH LAWS AND OF THE AUTHORITIES HAVING JURISDICTION. PROVIDE THE EQUIPMENT WITH APPLICABLE CGA, CSA AND ULC LABELS.

.5 CONFORM TO THE ONTARIO BUILDING CODE, CSA STANDARDS, MINISTRY OF ENVIRONMENT (MOE), LOCAL BY–LAWS AND AUTHORITIES HAVING JURISDICTION.

.6 CO–ORDINATE WITH OTHER TRADES REGARDING THE LOCATIONS OF EQUIPMENT, CONTROL DEVICES, LOCATIONS, DISTRIBUTION SYSTEM, ETC.

.7 SCHEDULE WORKING HOURS WITH THE OWNER.

.8 THE CONTRACTOR IS TO LOCATE THE EXACT DIMENSIONS AND POSITIONS OF OPENINGS AND HOLES WHERE CUTTING MAY BE REQUIRED IN FLOORS, ROOFS, CEILINGS AND/OR WALLS FOR THE PASSAGE OF PIPES, DUCTS, ETC. WHERE CUTTING, PATCHING IS NECESSARY, IT SHALL BE DONE BY THE MECHANICAL.

.9 CONNECTIONS INTO EXISTING SYSTEMS TO BE MADE AT TIME APPROVED BY OWNER. REQUEST WRITTEN APPROVAL OF TIME WHEN CONNECTIONS CAN BE MADE. BE RESPONSIBLE FOR DAMAGE TO EXISTING PLANT BY THIS WORK.

.10 CLEAN INTERIOR AND EXTERIOR OF ALL SYSTEMS. VACUUM INTERIOR OF DUCTWORK AND AIR HANDLING UNITS. IN PREPARATION FOR FINAL ACCEPTANCE, CLEAN AND REFURBISH ALL EQUIPMENT AND LEAVE IN OPERATING CONDITION INCLUDING REPLACEMENTS OF ALL FILTERS IN ALL SYSTEMS.

.11 FOR ALL CONCEALED VALVES AND VOLUME DAMPERS, PROVIDE ACCESS DOORS AND ARRANGE THESE DOORS TO BE INSTALLED BY THE RESPECTIVE TRADES SUCH AS MAINTENANCE INSTRUCTIONS FROM THE MANUFACTURER.

.12 PROVIDE MANUFACTURER RECOMMENDED SPACE FOR SERVICING, DISASSEMBLY AND REMOVAL OF EQUIPMENT AND COMPONENTS. PIPE EQUIPMENT DRAINS TO NEAREST DRAIN.

.13 PROVIDE SCHEDULE 40 PIPE SLEEVES AT POINTS WHERE PIPES PASS THROUGH MASONRY, CONCRETE OR FIRE RATED ASSEMBLIES. SLEEVE SIZES: MINIMUM 6 MM CLEARANCE ALL AROUND, BETWEEN SLEEVE AND UNINSULATED PIPEOR BETWEEN SLEEVES AND PIPE IN FOUNDATION WALLS AND BELOW GRADE FLOORS WITH WATERPROOF FIRE RETARDANT NON–HARDENING MASTIC. WHERE SLEEVES PASS THROUGH WALLS OR FLOORS, PROVIDE SPACE FOR FIRE STOPPING. WHERE PIPES/DUCTS PASS THROUGH FIRE RATED WALLS, FLOORS AND PARTITIONS, PROVIDE FIRE AND SMOKE SEALS TO MAINTAIN THE FIRE RESISITANT RATING (FRR) OF THE WALL.

.14 SUPPLY TOOLS, EQUIPMENT AND PERSONNEL TO DEMONSTRATE AND INSTRUCT OPERATING AND MAINTENANCE PERSONNEL IN OPERATING, CONTROLLING, ADJUSTING, TROUBLE–SHOOTING AND SERVICING OF ALL SYSTEMS AND EQUIPMENT DURING REGULAR WORK HOURS, PRIOR TO ACCEPTANCE.

.15 GUARANTEE IN WRITING FOR THE MATERIAL AND WORKMANSHIP INCLUDING THE MANUFACTURER'S GUARANTEE FOR THE PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE.

.16 CERTIFY IN WRITING FOR ALL WORK COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS. SUBMIT AS–BUILT DRAWINGS WHERE REVISIONS

.17 WHERE THESE STANDARDS ARE SUPERCEDED BY PUBLISHED LOCAL MUNICIPAL STANDARDS AND DESIGN CRITERIA, THE MUNICIPAL STANDARDS SHALL APPLY. THESE STANDARDS APPLY TO ALL PHASES OF THE WORK.

1.2 DESCRIPTION OF WORK

1. SELECTIVE DEMOLITION WORK.
2. REPLACEMENT OF EXISTING ROOFTOP HVAC UNIT WITH A NEW UNIT.
3. RELOCATION AND REPLACEMENT OF SOME OF THE TRANSFER AIR DUCTS & GRILLES.
4. OTHER MISCELLANEOUS WORK AS SHOWN ON DRAWING.

1.3 SHOP DRAWINGS

SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

.1 ROOF TOP UNIT.
.2 DIFFUSERS & GRILLES.
.3 ACCESS DOORS.
.4 FIRE DAMPERS.
.5 BAS CONTROL SHOP DRAWINGS.

1.4.1 STANDARDS OF MATERIAL AND EQUIPMENT

MATERIAL AND EQUIPMENT ARE SPECIFICALLY DESCRIBED AND NAMED IN THIS SPECIFICATION AS EITHER BASE BID, BASE BID ALTERNATES AND ACCEPTABLE PRODUCTS.

.2 WHERE THE TERM "ACCEPTABLE PRODUCTS" IS USED, THE BID MAY BE BASED ON ANY OF THE ACCEPTABLE PRODUCTS.

.3 WHERE THE "BASE BID" SPECIFICATION IS USED, THE BID MUST BE BASED ON THE SPECIFIED EQUIPMENT. THE "ALTERNATE PRODUCTS" SHALL BE LISTED ON THE SUPPLEMENTARY TENDER FORM WITH THE COST SAVING (IF ANY), AND THE OWNER SHALL HAVE THE FINAL OPTION OF ACCEPTING OR REJECTING ALTERNATE EQUIPMENT.

.4 IF THIS DIVISION STATES THE USE OF "ALTERNATE PRODUCTS", HE SHALL HAVE MADE ALLOWANCE IN HIS SAVINGS FOR ANY STRUCTURAL OR ELECTRICAL CHANGES NECESSARY, AND SAID CHANGES SHALL BE AT THE EXPENSE OF THIS DIVISION.

1.5 INTERRUPTION OF EXISTING SERVICES

.1 ALL INTERRUPTIONS OF EXISTING MECHANICAL SYSTEMS MUST BE APPROVED BY AND CO–ORDINATED WITH THE OWNER.

.2 DISRUPTION OF NORMAL OPERATIONS WILL NOT BE ALLOWED. ALL INTERRUPTIONS SHALL OCCUR AFTER THE CLOSE OF NORMAL HOURS. PREMIUM TIME TO BE INCLUDED IN THE TENDER PRICE.

1.6 SLEEVES, CUTTING, PATCHING AND FIRE STOPPING

.1 INSTALL SLEEVES AND FRAMES FOR PIPING AND SIMILAR EQUIPMENT TO BE BUILT INTO THE BUILDING AS THE CONSTRUCTION PROGRESSES. IF THESE ARE NOT INSTALLED AT THE TIME OF CONSTRUCTION, THE COST OF CUTTING AND PATCHING AT A LATER DATE, WILL BE AT THE EXPENSE OF THIS CONTRACTOR.

.2 THE PRIME MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE CUTTING AND PATCHING OF ALL HOLES AND OPENINGS UP TO AND INCLUDING 200 mm (8") DIAMETER.

.3 THE PRIME MECHANICAL CONTRACTOR IS TO LOCATE THE EXACT POSITIONS AND DIMENSIONS OF LARGER OPENINGS FOR CUTTING BY THE GENERAL DIVISION.

.4 THE PRIME MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE SUPPLY AND INSTALLATION OF APPROVED FIRE STOPPING FOR ALL NEW MECHANICAL PENETRATIONS THROUGH BOTH EXISTING AND NEW FIRE SEPARATIONS. VERIFY ALL FIRE SEPARATIONS WITH THE ARCHITECTURAL DRAWINGS. FIRE STOPPING IS TO BE RATED TO MATCH AND MAINTAIN THE INTEGRITY OF THE RATED ASSEMBLY.

1.7 RECORD DRAWINGS AND EQUIPMENT MANUALS

.1 AS THE PROJECT PROGRESSES, RECORD, ON A SET OF WHITE PRINTS, ALL ADDENDA, CHANGES TO AND DEVIATIONS FROM THE PLANS MADE DURING THE CONSTRUCTION PERIOD. ALSO, RECORD THE LOCATION OF ALL DIFFUSERS, GRILLES AND OTHER MECHANICAL EQUIPMENT.

.2 MAKE THESE PROGRESS RECORD DRAWING WHITE PRINTS AVAILABLE TO THE CONSULTANTS FOR THEIR REVIEW AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

.3 AT THE CONCLUSION OF THE PROJECT, TRANSFER ALL RECORD DRAWING INFORMATION ONTO AUTOCAD RELEASE 2010 OR LATER TO A UNIVERSAL SERIAL BUS STICK (USB).

.4 THE CONSULTANT SHALL PROVIDE TO THE CONTRACTOR A USB CONTAINING GRAPHIC (ELECTRONIC) REPRESENTATION OF THE DRAWINGS. A RELEASE FORM "TRANSFER OF OF FILES ON ELECTRONIC MEDIA" WILL BE PROVIDED BY THE CONSULTANT TO THE CONTRACTOR FOR SIGNING IN ORDER TO RECEIVE AND USE THE ELECTRONIC FILES.

.5 BEFORE SUBSTANTIAL PERFORMANCE OF THE CONTRACT, COMPLY WITH THE FOLLOWING:

  .1 PROVIDE USB CONTAINING ALL UPDATED RECORD DRAWING INFORMATION AS SPECIFIED HEREIN.

  .2 PROVIDE TWO (2) SETS OF EQUIPMENT DATA SHEETS AND/OR MANUFACTURER'S MAINTENANCE MANUALS COVERING EACH SYSTEM AND ITS COMPONENTS IN ACCORDANCE WITH REQUIREMENTS OF EACH APPROPRIATE SECTION. THE BINDER IS TO BE DIVIDED INTO SECTIONS WITH TABS CLEARLY MARKED INDICATING THE SYSTEMS, ETC.

B. BALANCING IDENTIFICATION AND START–UP

1 IDENTIFICATION IS TO BE CARRIED OUT BY THE RESPECTIVE TRADE WITH NAME TAGS IDENTIFYING THE USE OR SERVICE OF ALL NEW MAIN VALVES AND NEW EQUIPMENT.

2 CLEAN ALL NEW EQUIPMENT AND OTHER INSTALLATIONS.

3 PROVIDE MAINTENANCE INSTRUCTIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

4 SUBMIT TWO (2) COPIES OF MANUFACTURER'S MAINTENANCE MANUALS TO OWNER FOR ALL NEW EQUIPMENT.

5 PROVIDE TWO BOUND COPIES OF THE AIR BALANCING REPORT TO OWNER.

6 AIR BALANCING SHALL BE DONE BY PROFESSIONAL TESTING AND BALANCING FIRM. AIR QUANTITIES OF EACH OUTLET SHALL BE AS INDICATED ON THE DRAWINGS. THE AIR BALANCING REPORT SHALL SHOW THE QUANTITIES, VELOCITIES, AND AREA OF EACH OUTLET, TYPE AND MODEL NUMBER OF FANS AND MOTORS INSTALLED, ACTUAL AIR DELIVERED BY THE FAN WITH TOTAL STATIC PRESSURE AND VOLTAGE DRAWN BY THE MOTORS. ADJUST AND RETEST THE SYSTEMS TO THE SATISFACTION OF THE PROJECT CO–ORDINATOR. PROVIDE AN ADDITIONAL COPY OF THE AIR BALANCING REPORT TO THE MECHANICAL CONSULATANT.

7 APPLICATION TOLERANCES: HVAC SYSTEMS: PLUS 5%, MINUS 5%

8 AIR SYSTEMS: TO TAB STANDARDS OF AABC.

9 THE HVAC CONTRACTOR SHALL CO–OPERATE WITH TAB AGENCY, PROVIDE REQUIRED PERSONNEL ATTENDANCE AND AT NO ADDITIONAL COST, CHANGE OR ADJUST THE SHEAVES, MOTOR AND BELTS IF NECESSARY TO ACHIEVE THE SPECIFIED AIR VOLUME.

10 SUBMIT THREE (3) COPIES OF TAB REPORT WITH SCHEMATICS FOR ENGINEERS APPROVAL.

C VENTILATION

.1 VENTILATION MATERIALS

ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND FREE FROM DEFECTS, CSA APPROVED.

.2 AIR DISTRIBUTION

ALL DUCTWORK SHALL BE FABRICATED TO SMACNA DUCT MANUAL STANDARDS, SECTION NO. 1, AND AS FOLLOWS

.3 MATERIAL AND THICKNESS

DUCTWORK SHALL BE FABRICATED FROM BEST QUALITY LOCK–FORMING GALVANIZED STEEL SHEETS AS MANUFACTURED BY STELCO OR DOFASCO OF THE FOLLOWING THICKNESS:

SIZE OF DUCT	GAUGE OF SHEET STEEL
300 OR LESS IN WIDTH OR DEPTH OF UP TO 200 DIAMETER	NO.26 US
325 TO 750 IN WIDTH OR DEPTH OF 225 TO 550 DIAMETER	NO.24 US
750 TO 1350 IN WIDTH OR DEPTH	NO.22 US

.4 CONSTRUCTION

LONGITUDINAL SEAMS SHALL BE MADE WITH PITTSBURGH LOCK OR BUTTON PUNCH SEAMS IN ALL SIZES. ALL DUCTWORK SHALL BE CROSS BROKEN OR BEADED 12" O.C. FOR RIGIDITY.

DUCTS SHALL HAVE PLAIN "S" SLIPS ON THE LONG SIDES, AND DRIVE CLEATS ON THE SHORT SIDES, FOLDED OVER TO PREVENT AIR LEAKAGE. MINIMUM END JOINT SPACING IS 3000mm

ALL BENDS OR ELBOWS SHALL BE MADE WITH A RADIUS OF NOT LESS THAN 1–1/2 TIMES THE WIDTH OF THE DUCT. WHERE IT IS NOT POSSIBLE, TURNING VANES SHALL BE USED. VANES SHALL BE OF SINGLE VANE CONSTRUCTION WITH SPACE UP TO 600 WIDTH AND 80mm SPACING OVER 600

.5 HANGERS

DUCTWORK SHALL HAVE SUBSTANTIAL HANGERS ATTACHED TO STRUCTURE WITH CONCRETE INSERTS TO SECURE THE DUCTS IN PLACE AND PREVENT VIBRATION. NO CADDY CLIPS OR PLUMBERS TAPE PERMITTED FOR HANGING DUCTS.

HORIZONTAL DUCTWORK UP TO 725 WIDE SHALL BE SUPPORTED BY GALVANIZED 25mm 16 GAUGE OR HEAVIER HANGERS PLACED NOT OVER 1800mm APART, WITH ENDS TURNED UNDER THE DUCT. SECURE TO DUCT WITH SHEET METAL SCREWS, TWO (2) PER SIDE, AND ONE (1) IN BOTTOM.

HORIZONTAL DUCTWORK OVER 750 mm WIDE SHALL REST ON GALVANIZED ANGLE IRON SUPPORTS OR UNISTRUT CHANNELS, WITH ROD HANGERS AT 1800mm SPACING AS FOLLOWS:

DUCT SIZE	ROD	ANGLE
750 TO 1225	6mm	40mm X 40mm X 3mm

.6 DUCT SEALING

ALL JOINTS DURING MANUFACTURE OF LOW VELOCITY DUCTWORK SHALL BE SEALED WITH 3–M, HIGH VELOCITY SEALER, TOUGH BOND OR DURO DYNE S–2H.V. SEALER ON THE FACES OF THE JOINTS AND AFTER CLEATS HAVE BEEN INSTALLED.

.7 BALANCING DAMPERS

PROVIDE BALANCING DAMPERS IN DUCTWORK WHERE SHOWN AND WHERE REQUIRED FOR PROPER ADJUSTMENT OF AIR QUANTITIES. OPEN AND CLOSED POSITIONS MUST BE CLEARLY MARKED.

.1 SPLITTER DAMPERS: SHALL BE AIRFOIL SHAPE DOUBLE THICKNESS ON GAUGE HEAVIER THAN DUCT WITH LOCKING QUADRANT ON EXTERIOR OF DUCT.

.2 SINGLE BLADE ROUND BUTTERFLY U.S. 22 GA THICK WITH LOCKING QUADRANT.

.3 MULTI–LEAF OPPOSED BLADE DAMPERS DESIGNED TO SMACNA DETAILS WITH LOCKING QUADRANT.

.8 DUCT INSULATION

COMPONENTS OF INSULATION SYSTEM TO HAVE MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50 IN ACCORDANCE WITH CAN/ULC–S102 MATERIALS TO BE TESTED IN ACCORDANCE WITH ASTM C411.

PROVIDE CAN/CGSB–51.10, RIGID MINERAL FIBRE BOARD; CGSB 51–GP–52MA VAPOUR BARRIER, JACKET AND FACING MATERIAL INSULATION ON RECTANGULAR DUCTING LARGER THAN 300x150 SIZE FOR SUPPLY AIR DUCTING, FROM FAN TO SUPPLY GRILLE.

THICKNESS: ONE 25 MM LAYER ON SUPPLY AIR DUCTS. INSTALL IN ACCORDANCE WITH ANSI/NFPA 90A AND ANSI/NFPA 90B.

PROVIDE 25mm THICKNESS MINERAL FIBRE BLANKET WITH RRFRK FACING TO CAN/CGSB–51.11 ON ROUND AND RECTANGULAR SUPPLY AIR DUCTWORK UP TO 300x150 SIZE.

JACKETS:
INDOOR EXPOSED: ULC LISTED PLAIN WEAVE COTTON FABRIC.
OUTDOOR: GLASSFAB MEMBRANE FINISHED WITH TWO (2) COATS BAKELITE #110–14.

INSULATE:
ALL SUPPLY AIR DUCTWORK INCLUDING DUCTS IN CEILING RETURN AIR PLENUMS.

DO NOT INSULATE:
RETURN AIR DUCTS, ACOUSTICALLY LINED DUCTS

D PIPE AND FITTINGS – PRODUCTS

1.1 PLUMBING & DRAINAGE

.1 PIPE MATERIALS
  .1 SOIL, VENT AND RAINWATER LEADERS NOT BURIED 3" (80 MM) AND LARGER:
    .1 CLASS 4000 CAST IRON SHALL BE CERTIFIED TO CSA B70 – MECHANICAL JOINT.
  .2 DRAINAGE VENTS AND WASTES 2–1/2" (65 MM) AND SMALLER:
    .1 CLASS 4000 CAST IRON SHALL BE CERTIFIED TO CAN/CSA B70–M91 – MECHANICAL JOINT.
    .2 DRAINAGE COPPER PIPE DWV SHALL COMPLY WITH ASTM B306 – SOLDER JOINTS.
    .3 SCHEDULE 40 GALVANIZED STEEL – THREADED JOINTS.
  .3 ALL BURIED DRAINAGE PIPING WITHIN BUILDING;
    .1 CLASS 4000 CAST IRON SHALL BE CERTIFIED TO CAN/CSA B70–M91 – MECHANICAL JOINT.
    .2 DWV PLASTIC PIPE ABS AND SOLVENT WELD, 4" (100 MM) AND SMALLER.
    .3 PVC SDR, 6" (150 MM) AND LARGER.

1.2 STEEL PIPE AND FITTINGS

.1 SERVICE: HOT WATER HEATING.
.2 PIPING: CONTINUOUS WELDED SCHEDULE 40 ASTM–A120 FOR SCREWED PIPING AND MECHANICAL JOINTS AND ASTM–A53 FOR WELDING.
.3 JOINTS:
  .1 15 MM TO 65 MM CLASS 150 MI THREADED UNIONS, CLASS 150 DART PATTERN MI THREADED BRASS TO IRON GROUND SEAT.
.4 VALVES:
  .1 ALL INSULATED VALVES SHALL HAVE EXTENDED NECKS OR SHAFTS WHERE THE THICKNESS OF THE INSULATION INTERFERES WITH THE OPERATING HANDLE.
  .2 BALL:
    .1 15 MM TO 50 MM CLASS 150 STANDARD PORT BRONZE BODY BRONZE FITTED SCREWED ENDS PTFE SEATS AND PACKING, LEVER HANDLE.
      ACCEPTABLE PRODUCTS:
      .1 CRANE 9202
      .2 JENKINS 201J
      .3 NEWMAN–HATTERSLEY 1969
      .4 VICTAULIC 726
      .5 MILWAUKEE BA–200
  .3 CHECK:
    .1 15 MM TO 65 MM CLASS 125 BRONZE BODY, SCREWED ENDS, SWING DISC, SCREW–ON CAP.
      ACCEPTABLE PRODUCTS:
      .1 CRANE 37/1707
      .2 JENKINS 4092
      .3 MILWAUKEE 509
      .4 NEWMAN–HATTERSLEY A60
  .4 STRAINERS:
    .1 15 mm TO 50 mm CAST IRON 'Y' BODY PATTERN, SCREWED ENDS AND CAP WITH BRASS PLUG, STAINLESS STEEL SCREEN WITH 0.125 PERFORATIONS FOR WATER SERVICE.
      ACCEPTABLE PRODUCTS:
      .1 SARCO
      .2 ITT

1.3 COPPER PIPE AND FITTINGS

.1 SERVICE: ALL DOMESTIC WATER PIPING
.2 PIPING: PLAIN END TYPE "L" HARD DRAWN COPPER.
.3 FITTINGS: SOLDER END WROUGHT COPPER.
.4 JOINTS: ALL DOMESTIC HOT AND COLD POTABLE WATER PIPING SHALL BE JOINED USING 95/5 SOLDER CONTAINING NO LEAD COMPOUNDS (95% TIN/5% ANTIMONY). NON–POTABLE WATER PIPING SHALL BE JOINED USING A STANDARD 50/50 TIN/LEAD COMPOUND SOLDER.
.5 VALVES:
  .1 BALL: 15 MM TO 65 MM FULL PORT BRASS OR BRONZE BODY, BRONZE FITTED SOLDER ENDS, PTFE SEATS AND PACKING, LEVER HANDLE.
  .2 ACCEPTABLE PRODUCTS:
    .1 CRANE F9222
    .2 JENKINS 902
    .3 APOLLO 77FLF–200
    .4 NIBCO 585–80–LF

E PLUMBING FIXTURES – PRODUCTS

PLUMBING FIXTURES

.1 CONNECTIONS TO FIXTURES:
  .1 TRAP AND VENT EACH FIXTURE, ACCORDING TO THE PLUMBING CODE.

.2 SUPPLY AND INSTALL THE FOLLOWING PLUMBING FIXTURES WITH ALL REQUIRED FITTINGS:

.3 LAVATORY (WALL HUNG–VITREOUS CHINA–4" CENTRES) – DESIGNATED L
  .1 BOWL – AMERICAN STANDARD 'LUCERNE' 0355.012, 20 1/2"x18 1/2"x8 1/8" (521mm x 464mm x 206mm)
  .2 FAUCET – SLOAN OPTIMA #ETF–600–A–VPB–MIX60–A
  .3 WASTE – MCGUIRE 155A CP CAST PLUG WITH OPEN GRID STRAINER
  .4 TRAP – MCGUIRE 8872CP C CAST P–TRAP WITH CLEANOUT, ESCUTCHEON
  .5 SUPPLIES – MCGUIRE H165LKN5
  .6 MIXING VALVE – SLOAN MIX60A WITH SS BOX AND EL–154 120/24V TRANSFORMER
  .7 ACCEPTABLE PRODUCTS:
    .1 CRANE, AMERICAN STANDARD, KOHLER
    .2 DELTA, CRANE, SLOAN, CHICAGO
    .3 POWERS, WATTS, SLOAN, CHICAGO

F PIPES AND FITTINGS – EXECUTION

1.1 PIPING INSTALLATION

.1 PROVIDE ALL NECESSARY PIPING INCLUDING FITTINGS AND UNIONS TO COMPLETE SYSTEMS SHOWN. CUT PIPES TRUE AND SQUARE, REAM FILE ENDS TO SMOOTH SURFACE, ALL TO PIPE MANUFACTURER'S AND ACCEPTED TRADE STANDARDS. FITTINGS SHALL BE OF EQUIVALENT BORE AS PIPE, OF EQUAL STRENGTH AND WEIGHT. INSTALL PIPING TO MANUFACTURER'S SPECIFICATIONS AND PUBLISHED DIRECTIONS. INSTALL PIPING TO CONFORM TO ONTARIO BUILDING CODE (CHAPTER 7).

.2 INSTALL ABOVE GROUND PIPING TO CLEAR OTHER PIPING, INSULATION, OBSTRUCTIONS, ACCESS DOORS AND CONTROLS. TAKE BRANCHES OFF MAINS WITH FITTINGS AND 45° AND 90 °ELBOWS. LOCATE VALVES FOR EACH OPERATION. LOCATE CLEANOUTS IN ACCESSIBLE LOCATIONS TO APPROVAL AND TO SUIT ACCESS.

.3 DO NOT USE FERROUS PIPING, FITTINGS, BUSHINGS, NIPPLES OR PLUGS IN COPPER PIPING. PROVIDE DIELECTRIC BUSHINGS AT CONNECTIONS TO FERROUS MATERIALS OR EQUIPMENT ON WATER SYSTEMS.

.4 SUPPLY AND INSTALL FLANGES, UNIONS OR COMPRESSION FITTINGS ON EQUIPMENT SIDE OF SHUT–OFF VALVES IN PIPING CONNECTIONS TO EQUIPMENT, TANKS AND FIXTURES SO SAME CAN BE DISCONNECTED FOR SERVICE. FLANGES AND UNIONS SHALL BE OF SAME MATERIAL AS PIPING.

.5 CO–ORDINATE ROUTING OF PIPING WITH OTHER TRADES. PROVIDE INTERFERENCE DRAWINGS AS REQUIRED.

.6 REFER TO MANUFACTURER'S INSTALLATION DRAWINGS.

.7 INSTALL SYSTEMS SO THAT THEY CAN BE THOROUGHLY DRAINED AND ALL AIR ELIMINATED.

.8 DURING WELDING OR SOLDERING PROCEDURES, PROVIDE A FIRE RETARDANT CLOTH, MAT OR BLANKET TO PROTECT THE STRUCTURE, AND ADEQUATE FIRE PROTECTION EQUIPMENT AT ALL LOCATIONS WHERE WORK IS BEING DONE.

.9 PLUG AND/OR CAP ALL PIPE OPENINGS/FITTINGS DURING CONSTRUCTION.

.10 CAST IRON PIPE TO HAVE ANTHES RUBBER GASKET MECHANICAL JOINTS, PC4 COLD CAULKING COMPOUND HUB AND SPIGOT JOINTS, CAULKED LEAD JOINTS WITH OAKUM AND SOFT PIG LEAD, OR BIBBY BISEAL. CONFINED SPACES TO BE MECHANICAL JOINTS.

.11 THREADED PIPE JOINTS TO BE TRUE AND ROUND WITH FULL CUT THREADS, ENDS REAMED AND FILED WITH ALL BURRS REMOVED IRON TO IRON WITH A FILLER OF GRAPHITE AND OIL.

.12 SOLDER JOINTS SHALL BE CAREFULLY CLEANED WITH EMERY CLOTH. USE "SILFOS" SILVER SOLDER FOR BURIED PIPING. SEE SECTION 15700 FOR TYPE OF SOLDER TO BE USE ON VARIOUS PIPING SYSTEMS.

.13 MAKE JOINTS IN COPPER PIPING WITH 95/5 TIN/ANTIMONY SOLDER WITH NON–CORROSIVE SOLDERING FLUX. CLEAN, REAM AND THOROUGHLY TIN EACH JOINT AND REMOVE EXCESS SOLDER AND FLUX.

.14 GRADING: UNLESS OTHERWISE NOTED, DRAINAGE AND WASTE SHALL GRADE DOWN IN THE DIRECTION OF FLOW, AS FOLLOWS:
  .1 UP TO AND INCLUDING 3" (80 MM): 1/4" IN 1 FOOT (1:50).
  .2 4" (100 MM) AND LARGER: 1/8" IN 1 FOOT (1:100).

.15 GRADE VENT PIPING UP FROM FIXTURES SO IT IS SELF DRAINING.

.16 IN ADDITION TO TESTS REQUIRED BY LOCAL AUTHORITIES, TEST PIPING AND DRAINS IN THE PRESENCE OF CONSULTANT AS HEREINAFTER DESCRIBED.

.17 NOTIFY THE CONSTRUCTION MANAGER IN WRITING AT LEAST FORTY–EIGHT (48) HOURS PRIOR TO START OF TESTS. FAILURE TO DO SO MAY REQUIRE TEST TO BE RE–DONE.

.18 PERFORM TESTS BEFORE APPLICATION OF PIPE INSULATION AND COVERING. TEST BURIED AND CONCEALED PIPING BEFORE BACKFILLING OR CONCEALING IN STRUCTURE. PROTECT EQUIPMENT AND PARTS NOT CAPABLE OF WITHSTANDING TEST PRESSURE DURING TESTS. MAKE LEAKS TIGHT WHILE SYSTEMS ARE STILL UNDER TEST. IF THIS IS IMPOSSIBLE, REMOVE AND RE–FIT DEFECTIVE PARTS. CAULKING OF THREADED JOINTS OR WELDS WILL NOT BE PERMITTED.

.19 AFTER LEAKS HAVE BEEN REPAIRED, REPEAT TESTS AS OFTEN AS NECESSARY, AND TO ENSURE TIGHTNESS OF EACH SYSTEM.

.20 INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION COMPLETE WITH SWING JOINTS, EXPANSION LOOPS, AND ANCHORS AS NECESSARY. SILVER SOLDER EACH JOINT IN EXPANSION LOOPS WHERE USED.

.21 PRESSURE TEST HOT WATER HEATING PIPING WITH 150 PSI (1034 KPA) FOR NOT LESS THAN FOUR (4) HOURS WITHOUT DECREASE IN PRESSURE.

1.2 PIPE HANGERS

.1 ALL HORIZONTAL PIPING SHALL BE SUPPORTED AT LEAST EVERY 10'–0" (3000 MM), EXCEPT FOR PIPE 1–1/4" (32 MM) AND SMALLER WHERE 8'–0" (2400 MM) SPACING IS REQUIRED. PIPE HANGERS FOR COPPER PIPING SHALL BE ADJUSTABLE CLEVIS TYPE ANVIL FIG. 260 COMPLETE WITH INSULATION SHIELD SIMILAR TO ANVIL FIG. 168. HANGER ROD SHALL BE STEEL WITH COPPER NUT. CLEVIS HANGERS TO BE OUTSIDE PIPE INSULATION. BETWEEN THE SHIELD AND THE PIPE, INSTALL A SECTION OF HIGH DENSITY INSULATION EQUAL TO FOAMED GLASS (3.75 TO 5.0 LB DENSITY MATERIAL) COMPLETE WITH CONTINUOUS VAPOUR BARRIER. EXTEND HIGHER DENSITY INSULATION 2" (50 MM) BEYOND SHIELD. PIPE HANGERS AND SUPPORTS SHALL BE SECURED TO BEAMS, STEEL JOISTS, WALLS, FLOORS, ETC. DO NOT SUPPORT FROM METAL DECK.

.2 ALL HANGERS AND RODS SHALL BE OF A SIZE AND WEIGHT TO SAFELY SUPPORT THE PIPING SYSTEM.

.3 ALL HANGER RODS SHALL BE RUST RESISTANT GALVANIZED DIPPED.

.4 ACCEPTABLE PRODUCTS: ANVIL, MYATT, TAYLOR

1.3 PIPING INSULATION

.1 INSULATION SHALL CONFORM TO ASHRAE STANDARD 90.1 (LATEST EDITION).

.2 ALL NEW PIPING AND FITTINGS SHALL BE INSULATED WITH INORGANIC GLASS FIBRES, BONDED WITH A THERMOSETTING RESIN COMPLETE WITH SELF SEALING LAP, "ASJ" ALL SERVICE JACKET AND 3" (80 MM) WIDE "ASJ" BUTT STRIPS.

.3 DOMESTIC COLD AND HOT WATER PIPING INSULATION THICKNESS TO BE 1/2" (15 MM) FOR PIPE SIZES 1/2" TO 3" (13 MM TO 80 MM), COMPLETE WITH VAPOUR BARRIER, USING INSULATION K FACTOR .24 AT 75°F (24°C).

.4 HOT WATER HEATING PIPING INSULATION THICKNESS TO BE 1" (25 MM) FOR PIPE SIZES 1/2" TO 3" (13 MM TO 80 MM), 1 1/2" (40 MM) THICK FOR PIPES SIZES 4" (100 MM) AND LARGER COMPLETE WITH VAPOUR BARRIER, USING INSULATION K FACTOR .24 AT 75°F (24°C).

.5 ACCEPTABLE PRODUCTS: KNAUF, MANVILLE SCHULLER INTERNATIONAL, MANSON

.6 ALL INSULATION SHALL BE APPLIED OVER A CLEAN, DRY SURFACE, AFTER ALL PRESSURE TESTING HAS BEEN CARRIED OUT AND REVIEWED BY THE CONSULTANT.

.7 INSTALL INSULATION SHIELDS SUPPLIED BY MECHANICAL DIVISION.

.8 THE INSULATION JOINTS SHALL BE BUTTED TIGHTLY. ADHERE THE VAPOUR BARRIER JACKET LAP WITH VAPOUR BARRIER ADHESIVE AND ADHERE THE 3" (80 MM) WIDE BUTT JOINT STRIPS OVER ALL END JOINTS WITH ADHESIVE TO ENSURE CONTINUOUS VAPOUR BARRIER. INSULATE ALL FITTINGS UP TO 2" (50 MM) WITH MITRE–CUT PIECES OF INSULATION AND PRESSURE–SENSITIVE, COLOUR–MATCHING TAPE. ALL EXPOSED FITTINGS 2" (50 MM) AND LARGER SHALL HAVE PRE–MOLDED "PVC" INSULATING FITTINGS COVERS.

.9 ALL EXPOSED INSULATED PIPING AND FITTINGS SHALL BE FINISHED WITH A FIRE RETARDANT PVC JACKET.

.10 NO ADDITIONAL FINISH NEED BE APPLIED TO CONCEALED PIPING.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

P2024-2082 Hess Street Elementary School Ceiling Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
SPECIFICATIONS

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: M3-00
Revision: 2

MECHANICAL SPECIFICATIONS

F AIR HANDLING UNIT

1.2 REFERENCES

.1 AFBMA 9 – LOAD RATINGS AND FATIGUE LIFE FOR BALL BEARINGS.
.2 AMCA 99 – STANDARDS HANDBOOK.
.3 AMCA 210 – LABORATORY METHODS OF TESTING FANS FOR RATING PURPOSES.
.4 AMCA 300 – TEST CODE FOR SOUND RATING AIR MOVING DEVICES.
.5 AMCA 500 – TEST METHODS FOR LOUVER, DAMPERS, AND SHUTTERS.
.6 AHRI 410 – FORCED–CIRCULATION AIR–COOLING AND AIR–HEATING COILS.
.7 AHRI 430 – CENTRAL–STATION AIR–HANDLING UNITS.
.8 AHRI 435 – APPLICATION OF CENTRAL–STATION AIR–HANDLING UNITS.
.9 NEMA MG1 – MOTORS AND GENERATORS.
.10 NFPA 70 – NATIONAL ELECTRICAL CODE.
.11 SMACNA – HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE.
.12 UL 723 – TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS.
.13 UL 900 – TEST PERFORMANCE OF AIR FILTER UNITS.
.14 UL 1995 – STANDARD FOR HEATING AND COOLING EQUIPMENT.
.15 UL 94 – TEST FOR FLAMMABILITY OF PLASTIC MATERIALS FOR PARTS IN DEVICES AND APPLIANCES.
.16 NFPA 90A – STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS.
.17 NFPA 5000 – BUILDING CONSTRUCTION AND SAFETY CODE.
.18 ASHRAE 90.1 ENERGY CODE.

1.3 SUBMITTALS

.1 SHOP DRAWINGS: INDICATE ASSEMBLY, UNIT DIMENSIONS, WEIGHT LOADING, REQUIRED CLEARANCES, CONSTRUCTION DETAILS, FIELD CONNECTION DETAILS, AND ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS. COMPUTER GENERATED FAN CURVES FOR EACH AIR HANDLING UNIT SHALL BE SUBMITTED WITH SPECIFIC DESIGN OPERATING POINT NOTED. A COMPUTER GENERATED PSYCHOMETRIC CHART SHALL BE SUBMITTED FOR EACH COOLING COIL WITH DESIGN POINTS AND FINAL OPERATING POINT CLEARLY NOTED. SOUND DATA FOR DISCHARGE, RADIATED AND RETURN POSITIONS SHALL BE SUBMITTED BY OCTAVE BAND FOR EACH UNIT. CALCULATIONS FOR REQUIRED BASERAIL HEIGHTS TO SATISFY CONDENSATE TRAPPING REQUIREMENTS OF COOLING COIL SHALL BE INCLUDED.

.2 PRODUCT DATA:
  .1 PROVIDE LITERATURE THAT INDICATES DIMENSIONS, WEIGHTS, CAPACITIES, RATINGS, FAN PERFORMANCE, FINISHES OF MATERIALS, ELECTRICAL CHARACTERISTICS, AND CONNECTION REQUIREMENTS.
  .2 PROVIDE DATA OF FILTER MEDIA, FILTER PERFORMANCE DATA, FILTER ASSEMBLY, AND FILTER FRAMES.
  .3 PROVIDE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

1.4 QUALIFICATIONS

.1 MANUFACTURER: COMPANY SPECIALIZING IN MANUFACTURING AIR HANDLER PRODUCTS SPECIFIED IN THIS SECTION MUST SHOW A MINIMUM FIVE YEARS DOCUMENTED EXPERIENCE AND COMPLETE CATALOG DATA ON TOTAL PRODUCT.

1.5 SAFETY AGENCY LISTED & CERTIFICATION

.1 AIR HANDLING UNITS SHALL BE CETLUS SAFETY LISTED TO CONFORM WITH UL STANDARD 1995 AND CAN/CSA STANDARD C22.2 NO. 236.

.2 AIR HANDLER FURNISHED WITH DOUBLE WIDTH, DOUBLE INLET (DWDI) FANS AND/OR PLENUM FANS WHERE APPLICABLE, SHALL BE CERTIFIED IN ACCORDANCE WITH THE CENTRAL STATION AIR HANDLING UNITS CERTIFICATION PROGRAM, WHICH IS BASED ON AHRI STANDARD 430.

.3 AIR HANDLING UNIT WATER HEATING & COOLING COILS SHALL BE CERTIFIED IN ACCORDANCE WITH THE FORCED CIRCULATION AIR COOLING AND AIR HEATING COILS CERTIFICATION PROGRAM, WHICH IS BASED ON AHRI STANDARD 410.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 DELIVER, STORE, PROTECT AND HANDLE PRODUCTS TO SITE.

.2 ACCEPT PRODUCTS ON SITE ON FACTORY–FURNISHED SHIPPING SKIDS. INSPECT FOR DAMAGE.

.1 STORE IN CLEAN DRY PLACE AND PROTECT FROM CONSTRUCTION TRAFFIC. HANDLE CAREFULLY TO AVOID DAMAGE TO COMPONENTS, ENCLOSURES, AND FINISH.

PART 2 – PRODUCTS

2.1 AIR HANDLING UNITS – DESIGNATED SF–5

.1 ACCEPTABLE MANUFACTURERS
  .1 ACCEPTABLE PRODUCTS:
    .1 ENGINEERED AIR
    .2 TRANE
    .3 DAIKIN APPLIED

2 GENERAL DESCRIPTION:
  .1 CONFIGURATION: FABRICATE AS DETAILED ON DRAWINGS.
  .2 PERFORMANCE: CONFORM TO AHRI 430. SEE SCHEDULES ON PRINTS. (NOTE: ABOVE DOES NOT APPLY TO FAN ARRAY)
  .3 ACOUSTICS: SOUND POWER LEVELS (DB) FOR THE UNIT SHALL NOT EXCEED THE SPECIFIED LEVELS SHOWN ON THE UNIT SCHEDULE. THE MANUFACTURER SHALL PROVIDE THE NECESSARY SOUND TREATMENT TO MEET THESE LEVELS IF REQUIRED.
  .4 UNIT BASE AND DUCT OPENINGS SHALL MEET EXISTING DIMENSIONS AT SITE
  .5 EXISTING BASE SHALL BE RE–USED.
  .6 WHERE EXISTING BASE NEEDS TO BE REPLACED CONTRACTOR SHALL INCLUDE IN PRICE TO CARRY A ROOFING CONSULTANT TO PREPARE DRAWINGS AND ALSO A ROOFING CONTRACTOR.

.3 UNIT CONSTRUCTION:
  .1 GENERAL:

THE UNIT SHALL BE A PACKAGED FACTORY ASSEMBLED HEATING AND/OR COOLING SYSTEM. THE UNIT SHALL CONSIST OF ALL FACTORY WIRING WITH A SINGLE POINT POWER CONNECTION, REFRIGERANT PIPING AND CHARGE (R–LOW GWP OR R410), OPERATING OIL CHARGE, SINGLE REFRIGERANT CIRCUIT (SIZES 036–096) OR DUAL REFRIGERANT CIRCUITS (SIZES 120–840), WITH A MICROPROCESSOR BASED CONTROL SYSTEM. THE UNIT SHALL BE, BASED ON PROJECT REQUIREMENTS, INCLUDE ALL SPECIAL FEATURES NECESSARY TO PROVIDE FULLY CONDITIONED VENTILATION AIR AT NEUTRAL CONDITIONS TO THE BUILDING.

  .2 UNIT CABINET:
1. DOUBLE WALL DESIGN, CONSTRUCTED OF G–90 GALVANIZED STEEL, BONDERIZED AND PRE–COATED WITH A POLYESTER PRE–COAT FINISH.
   1.1. TOP COVER SHALL BE A MINIMUM OF 18–GAGE SHEET METAL WITH 2.0–IN. THICK, CLOSED CELL POLYISOCYANURATE FOAM R13 INSULATION WITH A 24–GAGE SHEET METAL INTERIOR LINER.
   1.2. ACCESS PANELS AND DOORS SHALL BE A MINIMUM OF 20–GAGE SHEET METAL WITH 2.0–IN. THICK, CLOSED CELL POLYISOCYANURATE FOAM INSULATION WITH A 24–GAGE SHEET METAL INTERIOR LINER. ACCESS DOORS SHALL BE EQUIPPED WITH STAINLESS STEEL HINGES AND QUARTER TURN, ADJUSTABLE, DRAW TIGHT CAM–ACTION LATCHES.
   1.3. CORNER AND CENTER POSTS SHALL BE 16 OR 18–GAGE GALVANIZED STEEL, INSULATED
   1.4. BASE PANS SHALL BE 16 OR 18–GAGE GALVANIZED STEEL. ALL OPENINGS THROUGH THE BASE PAN SHALL HAVE UPTURNED FLANGES AT LEAST 0.5 INCHES IN HEIGHT.
   1.5. BASE PANS SHALL BE INSULATED WITH 0.375–IN. THICK CLOSED CELL FOAM INSULATION.
   1.6. CONDENSATE PAN DOUBLE SLOPED SHALL BE 20–GAGE STAINLESS STEEL INSULATED WITH CLOSED CELL NEOPRENE INSULATION.
   1.7. BASE RAIL SHALL BE DOUBLE FLANGED 12–GAGE GALVANIZED STEEL OR WELDED CLOSED SECTION STRUCTURAL STEEL TUBING.
   1.8. ROOF SECTIONS SHALL BE SLOPED FOR PROPER DRAINAGE.
2. UNIT CASING SHALL BE CAPABLE OF WITHSTANDING 1000–HOUR SALT SPRAY EXPOSURE PER ASTM B117.
3. EXTERIOR PAINT: ELECTROSTATICALLY APPLIED ALUMINUM GRAY COLOR
4. UNIT SHALL HAVE INSULATED ACCESS DOORS, HINGED FOR EASY ACCESS TO THE CONTROLS COMPARTMENT AND ALL OTHER AREAS REQUIRING SERVICING. EACH DOOR SHALL SEAL AGAINST A TRIPLE EDGE CO–EXTRUDED EPDM GASKET TO HELP PREVENT AIR AND WATER LEAKAGE AND FOR EASE AND SAFETY DURING SERVICING.
5. ACCESS DOORS SHALL INCLUDE A THERMAL BREAK.
6. INTERIOR CABINET SURFACES SHALL BE LINED WITH 24 GAGE GALVANIZED STEEL.
7. UNIT SHALL HAVE A FACTORY–INSTALLED SLOPED CONDENSATE DRAIN CONNECTION FABRICATED OF STAINLESS STEEL WITH WELDED CORNERS AND DRAIN CONNECTION.
8. UNIT SHALL BE EQUIPPED WITH FITTINGS IN FRAME RAILS TO FACILITATE OVERHEAD RIGGING.
9. FILTERS SHALL BE ACCESSIBLE THROUGH A HINGED ACCESS PANEL.
10. THE OUTDOOR AIR OPENING SHALL HAVE A FACTORY PROVIDED HOOD WITH BIRD SCREEN.

.3 FANS:

1\. INDOOR EVAPORATOR FANS:
  1. DIRECT–DRIVE PLENUM FAN(S) OR BELT DRIVEN PLENUM FANS SHALL BE PROVIDED AND BOTH AXIAL AND RADIAL CLEARANCES.
     MUST BE EQUAL TO OR GREATER THAN FAN MANUFACTURER'S RECOMMENDATIONS FOR FULL RATED FAN PERFORMANCE AND EFFICIENCY.
  2. BASE MOUNTED AND EXTERNAL ROTOR FANS WITH ELECTRONICALLY COMMUNICATED (EC) MOTORS SHALL BE STATICALLY AND DYNAMICALLY BALANCED AT THE FACTORY AS A SINGLE ROTATING ASSEMBLY TO A QUALITY LEVEL OF G=2.5 IN ACCORDANCE WITH DIN ISO 1940

1\. CONDENSER FANS:
  1. FANS SHALL BE EXTERNAL ROTOR DIRECT DRIVEN AXIAL FANS WITH A MINIMUM 5–1/2" SPUN VENTURI FOR HIGH EFFICIENCY AND LOW NOISE, WITH CAST PROFILED BLADES.
  2. THE FAN MOTOR ASSEMBLY SHALL BE END MOUNTED TO A STRUCTURALLY RIGID WELDED FINGER GUARD.
  3. FANS SHALL DISCHARGE AIR VERTICALLY UPWARD AND THE FINGER GUARD SHALL BE POWDER COATED.
  4. FANS SHALL BE STATICALLY AND DYNAMICALLY BALANCED AS AN ASSEMBLY TO A QUALITY LEVEL OF G=6.3 IN ACCORDANCE WITH DIN ISO 1940–1.

.4 COMPRESSORS:
  .1 WHERE DIGITAL COMPRESSORS ARE AVAILABLE FOR LEAD OR BOTH REFRIGERATION CIRCUITS. A DIGITAL CONTROL MODULE (DCM) SHALL BE INCLUDED. THE CONTROL SYSTEM SHALL BE CAPABLE OF UNLOADING THE COMPRESSOR IN AN UNLIMITED NUMBER OF STEPS FROM 100% CAPACITY DOWN TO 10% CAPACITY
  .2 FULLY HERMETIC, SCROLL TYPE COMPRESSORS WITH OVERLOAD PROTECTION AND SHORT CYCLE PROTECTION WITH MINIMUM ON AND OFF TIMERS.
  .3 COMPRESSOR SHALL BE INSTALLED IN AN INSULATED COMPARTMENT ACCESSIBLE THRU HINGED ACCESS DOORS, ISOLATED FROM THE TREATED AIR STREAM.
  .4 LINE VOLTAGE CONTROLS, OPERATING CONTROLS, REFRIGERANT CIRCUIT ACCESS POINTS, REFRIGERANT FLOW CONTROL DEVICES AND COMPRESSORS SHALL BE ACCESSIBLE FROM A SINGLE LOCATION BEHIND LEFT AND RIGHT HINGED ACCESS DOORS FOR EASE OF SERVICE.
  .5 COMPRESSORS SHALL BE MOUNTED ON RUBBER IN SHEAR ISOLATORS AND REFRIGERANT LINES TO INCLUDE REACTION TORQUE LOOPS.
  .6 REVERSE ROTATION PROTECTION SHALL BE PROVIDED OR ALL COMPRESSORS.
  .7 CRANKCASE HEATERS SHALL ONLY BE ACTIVATED DURING COMPRESSOR OFF MODE.

.5 COILS:
  1. STANDARD EVAPORATOR COIL SHALL HAVE ENHANCED SURFACE ALUMINUM PLATE FINS MECHANICALLY BONDED TO SEAMLESS INTERNALLY GROOVED COPPER TUBES WITH BRAZED TUBE JOINTS.
  2. EVAPORATOR COILS SHALL BE MINIMUM FOUR (4) ROWS. OPTIONAL SIX (6) ROW COILS SHALL ARE AVAILABLE.
  3. STANDARD CONDENSER COIL SHALL HAVE ENHANCED SURFACE ALUMINUM PLATE FINS MECHANICALLY BONDED TO SEAMLESS INTERNALLY GROOVED COPPER TUBES WITH BRAZED TUBE JOINTS.
  4. COILS SHALL BE PRESSURE TESTED AT 650 PSIG PRIOR TO UNIT ASSEMBLY; LEAK TESTED AT 150 PSIG WITH A FINAL TEST AT 475 PSIG.
  5. OPTIONAL COIL COATINGS FOR CORROSION PROTECTION SHALL BE AVAILABLE.

2\. REFRIGERANT COMPONENTS:

1\. UNIT SHALL BE EQUIPPED WITH SINGLE REFRIGERANT CIRCUIT (SIZES 036–096) OR DUAL REFRIGERANT CIRCUITS (SIZES 120–840, WITH EACH CIRCUIT CONTAINING:
  1. SOLID CORE FILTER DRIER.
  2. FIELD ADJUSTABLE EXTERNALLY EQUALIZED THERMOSTATIC EXPANSION VALVE.
  3. MINIMUM LOAD VALVE (OPTIONAL HOT GAS BYPASS).
  4. SERVICE ACCESS PORTS

2\. UNIT SHALL BE EQUIPPED WITH VFD–CONTROLLED VARIABLE CONDENSER FAN SPEED LOW AMBIENT HEAD PRESSURE CONTROL TO ALLOW OPERATION DOWN TO 35°F.

1\. FILTER SECTION:
  1. THE UNIT IS TO BE INCLUDED WITH 2" MERV8 PRE–FILTERS AND MERV13 MAIN FILTERS
  2. CONTROLS AND SAFETIES:
    1. CONTROLS:
      .1 UNIT SHALL BE FULLY CONTROLLED BY THE BAS. SEE SEQUENCE OF OPERATION ON DRAWINGS.
      .2 CAPACITY IS MODULATED BY DIGITAL COMPRESSOR UNLOADING ON SINGLE CIRCUIT AND BY SEQUENCING AND DIGITAL UNLOADING ON DUAL CIRCUIT SYSTEMS
      .3 SHALL PROVIDE AN ALARM INDICATOR AND AN AUDIBLE ALARM SIGNAL.
      .4 SHALL PROVIDE AND DISPLAY A CURRENT ALARM LIST AND AN ALARM HISTORY LIST.
      .5 COMPRESSOR MINIMUM RUN TIME (3 MINUTES) AND MINIMUM OFF TIME (5 MINUTES) SHALL BE PROVIDED.
      .6 SHALL HAVE SERVICE RUN TEST CAPABILITY
      .7 SHALL HAVE A SERVICE DIAGNOSTIC MODE.
      .8 UNIT SHALL BE COMPLETE WITH SELF–CONTAINED LOW VOLTAGE CONTROL CIRCUIT.

9\. SAFETIES:

1\. UNIT SHALL INCORPORATE A SOLID–STATE COMPRESSOR LOCKOUT WHICH PROVIDES OPTIONAL RESET CAPABILITY AT THE SPACE THERMOSTAT SHOULD ANY OF THE FOLLOWING SAFETY DEVICES TRIP AND SHUT OFF COMPRESSOR:
  .1 COMPRESSOR LOCKOUT PROTECTION PROVIDED FOR EITHER INTERNAL OR EXTERNAL OVERLOAD.
  .2 LOW–PRESSURE PROTECTION.
  .3 FREEZE PROTECTION (EVAPORATOR COIL).
  .4 HIGH–PRESSURE PROTECTION.
  .5 LOSS OF CHARGE PROTECTION.

2\. SUPPLY–AIR SENSOR SHALL BE USED FOR COMPRESSOR STAGE CONTROL.

3\. UNIT SHALL BE EQUIPPED WITH A SUPPLY FAN STATUS SWITCH TO PROTECT THE SYSTEM IN THE EVENT OF A FAN DRIVE FAILURE.

4\. INDUCED DRAFT HEATING SECTION SHALL BE PROVIDED WITH THE FOLLOWING MINIMUM PROTECTIONS:
  1. HIGH–TEMPERATURE LIMIT SWITCH.
  2. DIFFERENTIAL PRESSURE SWITCH FOR PROOF OF INDUCED DRAFT.
  3. FLAME ROLLOUT SWITCH.
  4. FLAME PROVING CONTROLS.
  5. REDUNDANT STYLE GAS VALVE.

10\. OPERATING CHARACTERISTICS:
  1. UNIT SHALL BE CAPABLE OF STARTING AND RUNNING AT 115° F. OUTDOOR AMBIENT AIR TEMPERATURE PER MAXIMUM LOAD CRITERIA OF AHRI STANDARD 340/360.
  2. UNIT WITH STANDARD CONTROLS WILL OPERATE IN COOLING DOWN TO AN OUTDOOR AMBIENT

11\. ELECTRICAL REQUIREMENTS:
  1. ALL UNIT POWER WIRING SHALL ENTER UNIT CABINET AT A SINGLE LOCATION WITH A SINGLE POWER POINT CONNECTION.
  2. CONTROL PANEL.

12\. MOTORS:
  1. COMPRESSOR MOTORS SHALL BE COOLED BY REFRIGERANT GAS PASSING THROUGH MOTOR WINDINGS AND SHALL HAVE EITHER INTERNAL LINE BREAK THERMAL AND CURRENT OVERLOAD PROTECTION OR EXTERNAL CURRENT OVERLOAD MODULES WITH COMPRESSOR TEMPERATURE SENSORS.
  2. ALL CONDENSER FAN MOTORS SHALL BE TOTALLY ENCLOSED AIR–OVER (IP54) WITH PERMANENTLY LUBRICATED BALL BEARINGS, CLASS F INSULATION AND MANUAL RESET OVERLOAD PROTECTION.
  3. ALL INDOOR FAN MOTORS SHALL MEET THE MINIMUM EFFICIENCY REQUIREMENTS AS ESTABLISHED BY THE ENERGY POLICY ACT OF 1992 (EPACT), EFFECTIVE OCTOBER 24, 1997.
  4. STANDARD INDOOR FAN MOTORS SHALL BE OPEN DRIP PROOF DESIGN. OPTIONAL TOTALLY ENCLOSED FAN–COOLED MOTORS (NON– ECM) ARE AVAILABLE.

.13 HYDRONIC HEATING:
  .1 INSTALL RE–CIRCULATION PUMP AT SF–5 AS SHOWN AND NOTED ON THIS DRAWINGS.
  .2 HOT WATER PIPING SHALL BE CARBON STEEL A53, CLASS 150, SCHEDULE 40. PIPE SIZES 65ø(2 1/2ø") AND LARGER SHALL BE WELDED AND SIZES 50ø(2ø") AND SMALLER SHALL BE SCREWED.
  .3 PROVIDE CLASS 150 BALL VALVES ON HOT WATER PIPING 50ø(2ø") AND SMALLER VALVES SHALL BE KITZ#59 COPPER & KITZ#58 FOR STEEL VALVES.

.14 MODULATING SUPPLY & RETURN FAN(S):
  1. PACKAGE SHALL INCLUDE A VFD CONTROLLED SUPPLY & RETURN FANS. VFD CONTROL SHALL BE BASED ON DISCHARGE DUCT PRESSURE. FANS SHALL BE:
    .1 RIGID–MOUNT FOR OPTIMAL PERFORMANCE
    .2 RUBBER PAD ISOLATION MOUNT
    .3 INSTALLED ON A SLIDE–OUT DECK THAT IS REMOVABLE FOR MAINTENANCE AND SERVICE.

.15 LIQUID SUBCOOLING COIL:
  .1 THE UNIT COULD BE EQUIPPED WITH A FACTORY–INSTALLED LIQUID SUB–COOLING COIL ON ALL CIRCUITS. THE COIL SHALL BE LOCATED IMMEDIATELY DOWNSTREAM OF THE EVAPORATOR COIL. COIL CIRCUIT(S) SHALL BE SWITCHABLE. OPERATION OF SUB–COOLING COIL SHALL PRODUCE BETWEEN 6 AND 10° F. REHEAT.

.16 SUPPLY AND EXHAUST FAN MOTORS:
  .1 MOTORS SHALL BE SELECTED BASED ON BRAKE HORSEPOWER TO MEET SYSTEM TOTAL STATIC PRESSURE.

.17 NEMA 3R NON–FUSED DISCONNECT SWITCH:
  .1 SHALL BE FACTORY–INSTALLED, EXTERNALLY MOUNTED, AND UL APPROVED. NON–FUSED SWITCH SHALL PROVIDE UNIT POWER SHUTOFF. SHALL BE ACCESSIBLE FROM OUTSIDE THE UNIT AND SHALL PROVIDE POWER OFF LOCKOUT CAPABILITY.

.18 FIRESTAT:
  .1 A FACTORY–INSTALLED, MANUAL–RESET FIRESTAT SHALL BE MOUNTED IN THE RETURN AIR OPENING OF THE UNIT. THE FIRESTAT SHALL BE SET TO OPEN AT 135° F.

.19 DIRTY FILTER STATUS SWITCH:
  .1 THE MANUAL RESET FILTER STATUS SWITCH SHALL BE A PRESSURE DIFFERENTIAL SWITCH AND WILL INDICATE A DIRTY FILTER. THE SWITCH SHALL BE FACTORY INSTALLED FOR THE BAS SYSTEM PROVIDER TO WIRE IT.

.20 PHASE/VOLTAGE MONITOR:
  .1 A FACTORY–INSTALLED UNDER–VOLTAGE AND PHASE LOSS SENSOR SHALL STOP THE UNIT WHENEVER VOLTAGE IS TOO LOW, PHASES ARE OUT OF SEQUENCE, OR A PHASE IS DROPPED. THE UNIT WILL RESTART AUTOMATICALLY WITHIN FIVE MINUTES AFTER THE CORRECT POWER IS SUPPLIED.

.21 COMMISSIONING USER INTERFACE:
  .1 THE COMMISSIONING KEYPAD/DISPLAY UNIT (BACVIEW) SHALL HAVE A NUMERIC KEYPAD, DIRECTION KEYS, AND PROGRAMMABLE FUNCTION KEYS. DISPLAY SHALL BE A 4 LINE BY 40 CHARACTER BACKLIT LCD DISPLAY.

.22 FULL PERIMETER ROOF CURB:
  .1 USE EXISTING ROOF CURB. WHERE A NEW CURB IS PROVIDED IT SHALL BE FORMED OF MINIMUM 14–GAGE GALVANIZED STEEL WITH WOOD NAILER STRIP AND SHALL BE CAPABLE OF SUPPORTING ENTIRE UNIT WEIGHT.

Part 1 – EXECUTION

1.1 INSTALLATION
  .1 INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION & MAINTENANCE INSTRUCTIONS.
  .2 CONTRACTOR TO SUPPLY HANGERS AND SUPPORT (UNISTRUT OR OTHER) TO HANG THE UNIT.

1.2 ENVIRONMENTAL REQUIREMENTS
  .1 DO NOT OPERATE UNITS FOR ANY PURPOSE, TEMPORARY OR PERMANENT, UNTIL DUCTWORK IS CLEAN, FILTERS ARE IN PLACE, BEARINGS LUBRICATED, AND FAN HAS BEEN TEST RUN UNDER OBSERVATION.

1.3 EXTRA MATERIALS
  PROVIDE TWO EXTRA SET(S) OF FAN BELTS, FILTERS.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075
Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board
P2024-2082 Hess Street Elementary School Ceiling Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
SPECIFICATIONS

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: M4-00
Revision 2

ROOF TOP UNIT SCHEDULE – GYMNASIUM

TAG	AREA SERVED	MANUFACTURER	MODEL	SUPPLY AIR FAN					RETURN AIR FAN					COOLING CAPACITIES					HYDRONICS HEATING				REMARKS	ELECTRICAL POWER							
				AIRFLOW CFM	FAN RPM	ESP (INCHES WG)	TSP (INCHES WG)	BHP/HP	AIRFLOW CFM	FAN RPM	ESP (INCHES WG)	TSP (INCHES WG)	BHP/HP	TOOL LLG (MBH)	SENS LLG (MBH)	EDB/EWB (OF)	LDB/LWB (OF)	WATER RMVL LBS/HR	CAPACITY (MBH)	EAT/LAT (OF)	FLOW RATE (GPM)	FLUID DROP (FT.WC)		V/PH/HZ	MCA (A)	MOCP (A)	SUPPLY FAN FLA	RETURN FAN FLA	OUTDOOR AIR (CFM)	UNIT WEIGHT (LBS)	ELECTRICAL WIRING INSTRUCTION
SF–5	GYMNASIUM	ENGINEERDAIR	FWE224/C/O/MV/R	6500	999	0.5	3.0	5.27/7.5 HP	6500	722	0.5	1.5	2.98/5.0 HP	282	164	82.1/71.3	58.8/58.8	106	248.0	50/85.3	15.1	2.4	– SINGLE POINT POWER CONNECTION AND A DISCONNECT – SEE SPECIFICATIONS FOR UNIT DETAILS. – LOW GWP REFRIGERANT OR R410. – INCLUDE DUCT MOUNTED SMOKE DETECTOR. – SPACE THERMOSTAT. – DAMPER ACTUATORS (FACTORY INSTALLED) – SERVICE RECEPTACLE. – DJM CONTROLLER. – WIRE ALL DEVICES TO A TERMINAL STRIP MOUNTED ON TO THE HVAC UNIT FOR BAS SUPPLIER TO CONNECT. – PROVIDE A SPACE IN THE UNIT FOR THE BAS SUPPLIER TO INSTALL A CONTROL PANEL WITH STRIP TERMINALS AND OTHER REQUIRED ACCESSORIES. – THE UNIT IS TO BE INCLUDED WITH 2" MERV8 PRE–FILTERS AND MERV13 MAIN FILTERS. – SUPPLY FAN MOTOR VFD – MODEL ABB ACH580 7.5 HP, RETURN FAN MOTOR VFD – MODEL ABB ACH580 5.0 HP.	575/3/60	52.3	60	9.0	6.1	2,200	7,700	DIV. 23 TO PROVIDE A SINGLE POINT DISCONNECT SWITCH AND VFDS FOR FANS DIV. 26 TO WIRE DISCONNECT. CONTROL WIRING TO THE BAS IS BY DIV. 23.

ADDITIONAL NOTES,

1. IN ADDITION TO MANUFACTURER STARTUP AND COMMISSIONING INCLUDE ADDITIONAL PROGRAMMING ONCE ON SITE IF REQUESTED BY THE BAS INSTALLER.

BUILDING AUTOMATION SYSTEM

INCLUDE IN PRICE TO RETAIN SCHOOL BOARDS BAS SYSTEM PROVIDER (SIEMENS CANADA – JASON FORRESTER TP:289–808–9488) TO CONTROL THE ENTIRE SF–5 UNIT. ALL CONTROL WIRING AND CONDUITS SHALL BE INCLUDED. RE–USE EXISTING CONDUIT TO THE TEMPERATURE SENSOR IN THE GYMNASIUM.

BAS PROVIDER SHALL INFORM THE AHU MANUFACTURER REQUIRED SPACE FOR THE CONTROL PANEL. BAS PROVIDER SHALL PROVIDE TERMINAL STRIPS, CONTROL TRANSFORMERS AND ANY HEATERS NECESSARY AND MOUNT THE PANEL IN THE SPACE PROVIDED. BAS PROVIDER SHALL SHALL CHECK IF THE PROVIDED ELECTRICAL CIRCUIT ON ELECTRICAL DRAWINGS IS SUFFICIENT. WHERE IT IS NOT SUFFIEICIENT, BAS PROVIDER SHALL ESTIMATE AND INCLUDE THE COST REQUIRED TO CHANGE IT.

SEQUENCE OF CONTROL OF SF-5

THE CONSTANT VOLUME AIR HANDLING UNIT CONSISTS OF A MIXED AIR SECTION WITH OUTDOOR AIR, RETURN AIR, EXHAUST AIR DAMPERS, FILTER, HOT WATER HEATING COIL, DX COOLING COIL, SUPPLY FAN. THE UNIT SHALL BE DDC–CONTROLLED USING ELECTRIC ACTUATION.

THE AIR HANDLING UNIT SHALL BE SCHEDULED FOR AUTOMATIC OPERATION ON A TIME OF DAY BASIS FOR SUMMER AND WINTER MODES EACH HAVING OCCUPIED AND UNOCCUPIED MODES.

IN THE WINTER WITHIN THE OCCUPIED MODE THE SYSTEM SHALL ENTER THE WARM–UP MODE WHEN THE SPACE TEMPERATURE IS BELOW SETPOINT. THE SYSTEM SHALL STAY IN THE WARMUP UNTIL THE MODE SETPOINT IS SATISFIED.

WITHIN THE UNOCCUPIED MODE, NIGHT HEATING SHALL BE AVAILABLE WHEN THE SPACE TEMPERATURE DROPS BELOW 18 DEGREE C.

IN THE SUMMER WITHIN OCCUPIED MODE THE SYSTEM SHALL ENTER THE COOLDOWN MODE WHEN THE SPACE TEMPERATURE IS ABOVE COOLING SETPOINT. SEE BELOW WRITEUP FOR COOLING STAGES

THE SYSTEM SHALL STAY IN THE COOLDOWN UNTIL THE MODE SETPOINT IS SATISFIED.

WITHIN THE UNOCCUPIED MODE, NIGHT COOLING SHALL BE DISABLED. THE LATEST START TIME IS THE SCHEDULED OCCUPANCY FOR THE SPACE.

RUN CONDITIONS - SCHEDULED.

THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES;

- OCCUPIED MODE: THE UNIT SHALL MAINTAIN THE SETPOINT
- COPY THE SAME SETPOINT OF EXISTING MAKEUP AIR UNIT OR A 23.8 ^{0}C (ADJ.) COOLING SETPOINT.
- COPY THE SAME SETPOINT OF EXISTING MAKEUP AIR UNIT OR A 21.3 ^{0}C (ADJ.) HEATING SETPOINT.

UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN

- COPY THE SAME SETPOINT OF EXISTING MAKEUP AIR UNIT OR A 28.3 ^{0}C (ADJ.) COOLING SETPOINT.
- COPY THE SAME SETPOINT OF EXISTING MAKEUP AIR UNIT OR A 18.3 ^{0}C (ADJ.) HEATING SETPOINT.

ALARM SHALL BE PROVIDED AS FOLLOWS.

- HIGH GYMNASIUM TEMP: IF THE GYMNASIUM TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.)
- LOW GYMNASIUM TEMP: IF THE GYMNASIUM TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

GYMNASIUM SETPOINT ADJUST:

BAS SHALL BE ABLE TO ADJUST THE GYMNASIUM TEMPERATURE HEATING AND COOLING SETPOINTS. SEE DRAWINGS FOR THE EXISTING GYMNASIUM TEMPERATURE SENSOR LOCATION.

OPTIMAL START.

THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR THE MORNING START_UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM UP OR COOL DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD.

PROOF OF AIRFLOW DETECTION:

AN ALARM SHALL BE GENERATED ON A LACK OF AIRFLOW.

SUPPLY FAN:

THE SUPPLY FAN SHALL RUN_ANYTIME_THE UNIT IS COMMANDED TO RUN ,UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING OF THE BOILER, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUN TIME. BAS SHALL MEASURE THE DIFFERENTIAL PRESSURE AT SUPPLY DUCT FOR MONITORING AND BALANCING PURPOSES.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN HAND: COMMANDED OFF , BUT THE STATUS IS ON.

RETURN AIR FAN:

THE RETURN AIR FAN SHALL RUN WHENEVER THE SUPPLY FANS RUNS. ALARMS SHALL BE PROVIDED AS FOLLOWS:

- RETURN AIR FAN FAILURE; COMMANDED ON, BUT THE STATUS IS OFF.
- RETURN AIR FAN IN HAND; COMMANDED OFF, BUT THE STATUS IS ON.

SUPPLY AND RETURN FAN SPEED CONTROL

- DIFFERENTIAL PRESSURE SENSOR SHALL PROVIDE INPUT TO THE EXISTING BAS TO SPEED CONTROL THE SUPPLY AND RETURN AIR FANS.
- DISCUSS WITH THE SF–5 EQUIPMENT MANUFACTURER ABOUT THE MINIMUM AIR FLOW RATE THAT NEEDS TO BE MAINTAINED TO AVOID FREEZING COOLING COIL.

COOLING STAGE:

THE CONTROLLER SHALL MEASURE THE SPACE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT TO PREVENT SHORT CYCLING OF COMPRESSORS, AND SHALL HAVE A USER DEFINABLE (ADJ.) 5 MINUTES RUNTIME.

THE COOLING SHALL ENABLE WHENEVER:

- OUTSIDE AIR TEMPERATURE IS GREATER THAN 15.5 ^{0}C (ADJ.)
- AND THE ECONOMIZER IS DISABLED.
- AND THE GYMNASIUM TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE HEATING IS NOT ACTIVE.

THE COOLING CANNOT BE ACTIVATED UNTIL THE DIFFERENTIAL PRESSURE SWITCH SENSES AIRFLOW.

HYDRONIC HEATING:

THE CONTROLLER SHALL MEASURE THE GYMNASIUM TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS SETPOINT TO PREVENT BOILER SHORT CYCLING.

THE HEATING SHALL ENABLE WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 18.3 ^{0}C (ADJ.).
- AND THE GYMNASIUM TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE MIXED AIR TEMPERATURE IS LESS THAN" SUPPLY AIR SETPOINT(SAS) – 4^{0}C, AND IS NOT ABOVE "SAS + 2^{0}C.
- AND THE SUPPLY FAN STATUS IS ON.
- LOW RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS LESS THAN 7.2 ^{0}C (ADJ.),

THE HEATING CANNOT BE ACTIVATED UNTIL THE DIFFERENTIAL PRESSURE SWITCH SENSES AIRFLOW.

ECONOMIZER:

ECONOMIZER SHALL BE THE FIRST STAGE OF COOLING. OPTIMAL START IN SUMMER FOR COOL DOWN MODE SHALL HAVE DAMPERS OPEN. THE CONTROLLER SHALL MEASURE THE OUTDOOR TEMPERATURE AND IF IT IS 2^{0}C BELOW THE COOLING SETPOINT, THE CONTROLLER SHALL MODULATE THE ECONOMIZER. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 20% (ADJ.) OPEN WHENEVER OCCUPIED.

THE ECONOMIZER SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 18.3^{0}C (ADJ.)
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THEN THE RETURN AIR TEMPERATURE.
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN RETURN AIR ENTHALPY.
- AND THE SUPPLY FAN STATUS IS ON.

THE ECONOMIZER SHALL CLOSE WHENEVER:

- MIXED AIR TEMPERATURE DROPS BELOW 10^{0}C (ADJ.).
- OR ON LOSS OF SUPPLY FAN STATUS.

THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF. TO ATTAIN THE OPTIMAL START UP INITIAL FREE COOLING REQUIREMENTS SHALL BE FOLLOWED I.E OA & EA DAMPERS SHALL BE OPEN AND MIXED AIR DAMPER SHALL CLOSE.

MIXED AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 32.2 ^{0}C (ADJ.)
- LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 7.2 ^{0}C (ADJ.)

RETURN AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:

BAS SHALL MEASURE THE RETURN AIR CO2 LEVEL AND MODULATE THE OUTSIDE AIR DAMPERS TO MAINTAIN A SETPOINT OF 1000 PPM (ADJ.). OUTDOOR AIR DAMPER SHALL HAVE A MINIMUM DAMPER POSITION (ADJ.) TO BE DETERMINED DURING BALANCING.

RETURN AIR HUMIDITY:

THE CONTROLLER SHALL MONITOR THE RETURN AIR HUMIDITY AND USE AS REQUIRED FOR ECONOMIZER CONTROL .

ALARM SHALL BE PROVIDED AS FOLLOWS:

- HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70%(ADJ.)
- LOW RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS LESS THAN 20%(ADJ.)

RETURN AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH RETURN AIR TEMP; IF THE RETURN AIR TEMPERATURE IS GREATER THAN 32.2^{0}C (ADJ.).
- LOW RETURN AIR TEMP; IF THE RETURN AIR TEMPERATURE IS LESS THAN 7.2^{0}C (ADJ.)

FILTER DIFFERENTIAL PRESSURE MONITOR:

THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE SWITCHES ACROSS THE FILTERS AND GENERATE AN ALARM WHEN DIRTY.

MD–MOTOR DAMPER
PS–PRESSURE SENSOR
MAT–MIXED AIR TEMPERATURE SENSOR
SAT–SUPPLY AIR TEMP SENSOR
EAT–EXHAUST AIR TEMPERATURE SENSOR
RAT–RETURN AIR HUMIDITY SENSOR
RAT–RETURN AIR TEMPERATURE SENSOR
RTS–ROOM TEMPERATURE SENSOR
CO$_2$–ROOM TEMPERATURE SENSOR
FSTAT–FREEZE STAT

BAS POINT LIST

- HVAC UNIT STATUS.
- ROOM TEMPERATURE.
- SUPPLY AIR TEMPERATURE.
- MIXED AIR TEMPERATURE.
- COOLING ENABLED.
- COOLING STATUS.
- FILTER PRESSURES.
- SUPPLY FAN VFD STATUS.
- RETURN FAN VFD STATUS.
- HYDRONIC MODULATING VALVE.
- HYDRONIC PUMP STATUS.
- EACH CONDENSER FAN STATUS.
- HYDRONIC PUMP ON/OFF.
- COMPRESSOR STAGES.
- ENTERING AIR TEMPERATURE.
- RETURN AIR HUMIDITY.
- RETURN AIR TEMPERATURE.
- CO2 STATUS.

FOLLOWING SIGNALS WILL BE PROVIDED BY THE AHU MANUFACTURER ON A TERMINAL STRIP MOUNTED IN THE AHU

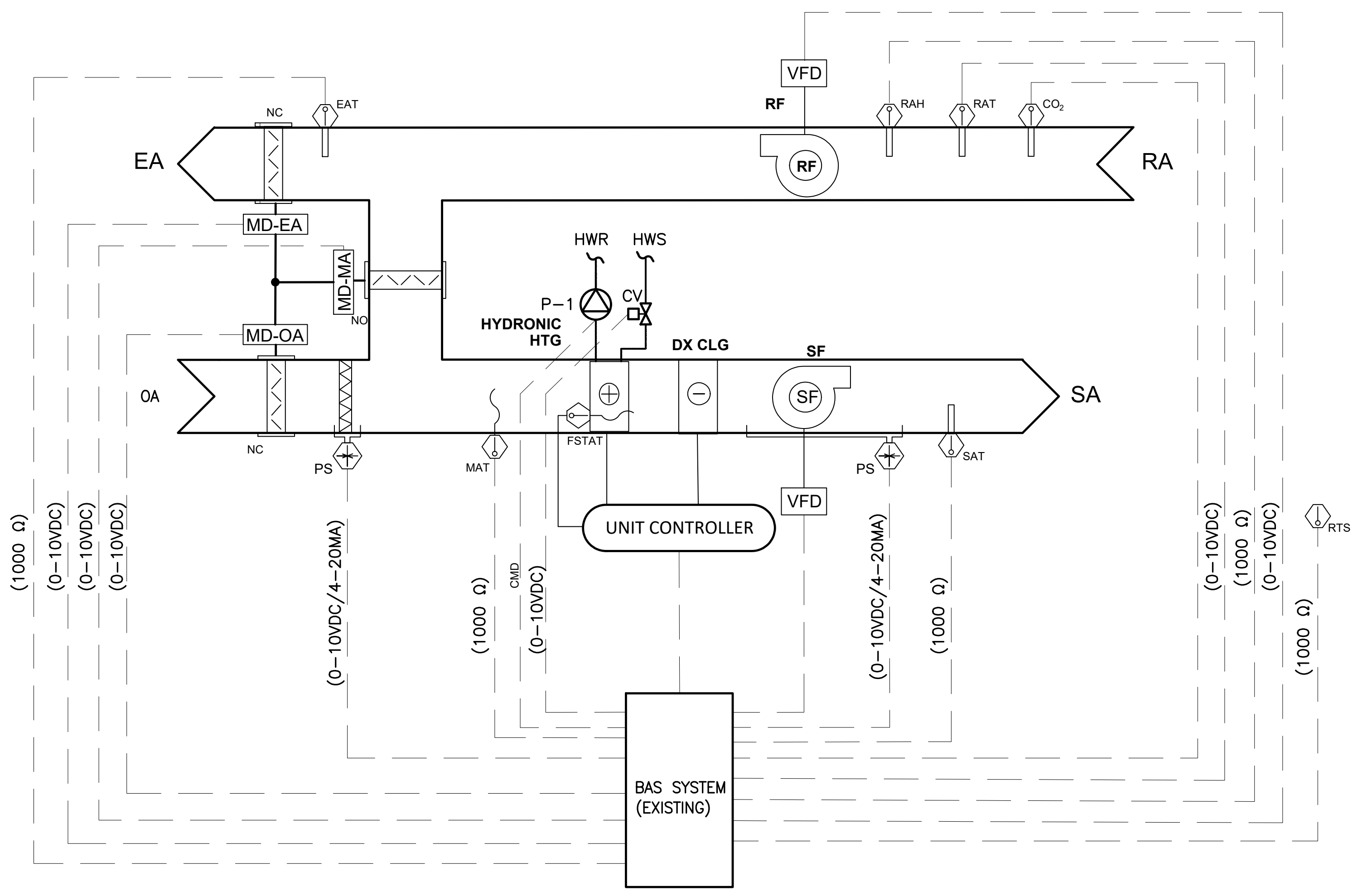
- UNIT ON/OFF CONTACT
- COOLING ON/OFF CONTACT
- COOLING BAS RESET (0–10VDC)
- COMPRESSOR STATUS
- 0–10VDC CONTROL OF MD–MA & MD–OA
- 0–10VDC FEEDBACK(POSITION) OF MD–MA & MD–OA –CLOGGED FILTER INDICATION.

VFD

- DIRECT 0–10VDC CONTROL
- FEEDBACK 0–10VDC
- STATUS ALARM

ADDITIONAL POINTS

INCLUDE IN PRICE TO WIRE ADDITIONAL 3 DIGITAL OUTPUTS AND 3 ANALOG OUTPUTS TO THE BAS FROM THE HVAC UNIT



- EXCEPT THE HVAC UNIT CONTROLLER, ALL OTHER THIRD PARTY DEVICES SHALL BE WIRED FROM A TERMINAL STRIP IN THE HVAC UNIT TO THE BAS SYSTEM.
- OTHER THAN THE TERMINAL DEVICES PROVIDED WITH THE HVAC UNIT, REST OF THE DEVICES SHALL BE PROVIDED BY THE BAS SYSTEM PROVIDER.

DO NOT SCALE DRAWING. DIMENSIONS ARE TO BE CHECKED AND VERIFIED BY THE CONTRACTOR ON SITE

ALL DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS, AND RELATED DOCUMENTS IN WHOLE OR IN PART IS STRICTLY FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION.

No.	DESCRIPTION	DATE
4	ISSUED FOR TENDER	2025–02–12
3	ISSUED FOR REVIEW	2025–02–04
2	ISSUED FOR TENDER	2025–01–09
1	ISSUED FOR PERMIT	2024–12–10
C	ISSUED FOR COORDINATION	2024–12–06
B	ISSUED FOR COORDINATION	2024–10–02
A	PROGRES DWG SET	2024–09–13

REVISIONS

24075

Seal KS

E & M
Consulting Engineers Inc.
6004 Osprey Blvd,
Mississauga, ON, L5N 8K1
Canada
www.eandmconsultingeng.com

HWDSB

AMRA J
ARCHITECTS INC.
www.aja.design I info@aja.design I 905.920.5121

project title:
Hamilton District School Board

P2024-2082 Hess Street Elementary School Ceiling Renovation
107 Hess Street North
Hamilton, Ontario

drawing title:
MECHANICAL DETAILS

drawn: AW
date: 2024-09-12
scale: AS SHOWN
project number: 24-22-01
checked: KS
date: 2024-09-12
DRAWING NO: ME1-00
Revision 2

GENERAL NOTES

A. EXAMINATION OF SITE AND DRAWINGS

1. VISIT THE SITE AND EXAMINE IT FOR ALL CHARACTERISTIC FEATURES AFFECTING NEW CONSTRUCTION. COMPARE THE ACTUAL ORIGINAL ELEVATIONS WITH THOSE SHOWN ON PLAN. CHECK ALL DIMENSIONS, LEVELS AND DETAILS SHOWN ON STRUCTURAL DRAWINGS AGAINST MECHANICAL, ELECTRICAL, LANDSCAPE AND OTHER RELEVANT DRAWINGS. REPORT ANY DISCREPANCIES TO THE CLIENT BEFORE SUBMITTING PRICE. REPORT ANY DISCREPANCY TO THE CLIENT BEFORE COMMENCEMENT OF WORK.
2. EXISTING STRUCTURE IS SHOWN DOTTED AND SHALL REMAIN, UNLESS NOTED OTHERWISE IN THE CONTRACT DOCUMENTS. ANY STRUCTURE NOT SHOWN DOTTED SHALL BE ASSUMED TO BE NEW.
3. OBTAIN ALL DETAILS AND DIMENSIONS OF EXISTING WORK IN FIELD AND INCORPORATE SAME INTO NEW CONSTRUCTION. IF DETAILS VARY FROM WHAT IS ASSUMED IN DRAWINGS CONTACT ARCHITECT IMMEDIATELY.
4. WHERE TWO OR MORE INTERPRETATIONS CAN BE MADE FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS RELATING TO STRUCTURAL ITEMS, THE MOST EXPENSIVE INTERPRETATION SHALL BE ASSUMED FOR PRICING.
5. NO ALLOWANCE WILL BE MADE FOR DIFFICULTIES ENCOUNTERED OR EXPENSES INCURRED RESULTING FROM CONDITIONS CONSIDERED KNOWN AT THE TIME THE TENDERS ARE OPEN.
6. COMPLY WITH THE PROVINCIAL BUILDING CODE, NATIONAL BUILDING CODE, CANADIAN CONSTRUCTION CODE, LOCAL BY–LAWS AND ALL REGULATIONS SET BY AUTHORITIES HAVING JURISDICTION. THE MORE STRINGENT REQUIREMENTS SHALL APPLY IN CASE OF DISCREPANCIES OR CONFLICTS.
7. UNDER NO CIRCUMSTANCES SHALL STRUCTURAL DRAWINGS BE USED TO DETERMINE THE EXTENTS OF DEMOLITION. DEMOLITION MUST BE COORDINATED BY THE GENERAL CONTRACTOR BY USING ARCHITECT DRAWINGS.
8. J. P. SAMUEL & ASSOCIATES INC. SHALL NOT TAKE RESPONSIBILITY FOR AREAS TO BE DEMOLISHED NOT SHOWN ON STRUCTURAL DRAWINGS. GENERAL CONTRACTOR MUST COORDINATE DEMOLITIONS WITH ARCHITECT/MECHANICAL & ELECTRICAL DRAWINGS. SHOULD DEMOLITION ON OTHER DRAWINGS INTERFERE WITH THE INTENT OF THE STRUCTURAL DRAWINGS, DO NOT PROCEED WITH WORK UNTIL ISSUES HAVE BEEN RESOLVED WITH ALL CONSULTANTS.

B. PLANNING OF CONSTRUCTION

1. ALL REQUIREMENTS FOR MECHANICAL EQUIPMENT AND ANY OTHER TRADES OR SERVICES AFFECTING THE STRUCTURE, SHALL BE ESTABLISHED IN CONSULTATION WITH CORRESPONDING MANUFACTURERS OR SUPPLIERS AND THE ARCHITECT (ENGINEER).
2. DRAINAGE SHALL BE WORKED IN CONFORMITY TO RELEVANT DETAILS. REPORT ANY DEVELOPING PROBLEMS TO ARCHITECT AND OBTAIN THE NECESSARY INSTRUCTIONS BEFORE PROCEEDING WITH CONSTRUCTION.

C. CONSTRUCTION PROCEDURES AND SAFETY

1. J. P. SAMUEL & ASSOCIATES INC. SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION SAFETY, MEANS, TECHNIQUES AND CONSTRUCTION PROCEDURES OR ANY TEMPORARY WORK AS MAY BE REQUIRED BY THE CONSTRUCTOR TO BUILD AND COMPLETE THE STRUCTURE IN CONFORMITY WITH CONTRACT DOCUMENTS. CONTRACTOR TO RETAIN AN INDEPENDENT STRUCTURAL ENGINEER TO CARRY OUT THE NECESSARY TECHNIQUES TO BE USED TO BUILD AND COMPLETE THE STRUCTURE ACCORDING TO THE CONTRACT DOCUMENTS AND SAFETY GUIDELINES FROM LOCAL CODES/AUTHORITIES. CONTRACTOR SHALL SUPPLY DRAWINGS STAMPED BY A PROFESSIONAL ENGINEER TO J. P. SAMUEL & ASSOCIATES INC.
2. THE CONTRACTOR SHALL MAKE ADEQUATE PROVISIONS FOR CONSTRUCTION STRESSES AND FOR SUFFICIENT TEMPORARY BRACING TO KEEP THE STRUCTURE PLUMB AND IN TRUE ALIGNMENT AT ALL PHASES OF THE WORK, UNTIL COMPLETION (INCLUDING MASONRY WALLS, FLOOR AND ROOF DECKS, ETC). ANY BRACING MEMBERS SHOWN ON PLANS ARE THOSE REQUIRED FOR THE FINISHED STRUCTURE, AND MAY NOT BE SUFFICIENT FOR ERECTION PURPOSES.
3. ALL CONSTRUCTION WORK FOR TEMPORARY SHORING AND BRACING OF EXISTING STRUCTURE SHALL BE DONE ONLY AFTER PERMISSION HAS BEEN GRANTED BY THE CONSTRUCTION HEALTH AND SAFETY BRANCH OF THE GOVERNING MINISTRY OF LABOUR.
4. PROTECT EXISTING BUILDINGS, TREES, FENCING, UTILITIES POLES, CABLES, ACTIVE UNDERGROUND SERVICES AND PAVING ON THE SITE OR ANY ADJOINING PROPERTIES FROM DAMAGE. ANY DAMAGE RESULTING FROM THIS CONSTRUCTION WORK SHALL BE MADE GOOD TO THE APPROVAL OF THE ARCHITECT/ENGINEER AT NO COST TO THE OWNER.
5. TRUCKS, CRANES, HOISTS, OR ANY HEAVY EQUIPMENT OR MATERIALS ARE NOT ALLOWED TO ENTER ANY STRUCTURAL FLOOR OR ROOF AREA UNLESS SPECIFICALLY DESIGNED AND DESIGNATED FOR THESE PURPOSES. INSTALL TEMPORARY BARRIERS TO PREVENT ACCIDENTAL OVERLOADING DURING CONSTRUCTION. DESIGN, INSTALL AND MAINTAIN ADEQUATE SHORING SYSTEM AS REQUIRED TO CARRY ANY SUCH TEMPORARY LOADING FROM CONSTRUCTION MATERIALS AND/OR EQUIPMENT.
6. NOTIFY CLIENT IMMEDIATELY UPON DISCOVERY OF ANY CONSTRUCTION ERROR, OMISSION, DEFECTIVE WORK, ETC., SO THAT THE MOST ECONOMICAL REMEDIAL MEASURES MAY BE DESIGNED AT THE EARLIEST POSSIBLE TIME.
7. DO NOT PROCEED WITH ANY REPAIR WORK UNTIL INSPECTION AND WRITTEN INSTRUCTIONS ARE OBTAINED FROM ARCHITECT AND THE ENGINEER.
8. GENERAL CONTRACTOR SHALL NOTIFY MECHANICAL/ELECTRICAL CONTRACTORS THAT SUPPORTS AND THE DESIGN OF SUCH SUPPORTS TO CARRY MECHANICAL/ELECTRICAL EQUIPMENT SHALL BE BY THE MECHANICAL/ELECTRICAL CONTRACTORS. OBTAIN STRUCTURAL ENGINEERS APPROVAL TO CONNECT TO EXISTING BUILDING STRUCTURE. DESIGN OF SUPPORTS SHALL BE STAMPED BY A QUALIFIED STRUCTURAL ENGINEER RETAINED BY THE MECHANICAL/ELECTRICAL CONTRACTOR.

ANALYSIS AND DESIGN OF STRUCTURE

1. EXAMINE ALL DRAWINGS, SPECIFICATIONS AND REMAINING CONTRACT DOCUMENTS TO OBTAIN ALL APPLICABLE LOADINGS. REPORT ANY DISCREPANCIES TO THE ARCHITECT/ENGINEER.

REVIEW OF CONSTRUCTION

A. GENERAL

1. CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR FULL SUPERVISION OF CONSTRUCTION WORK. SITE VISITS AND REVIEW BY DESIGN ENGINEER OR HIS REPRESENTATIVE ARE INTENDED FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. HIS REVIEW SHALL NOT MEAN THAT J. P. SAMUEL & ASSOCIATES INC., HAS SEEN ALL CONSTRUCTION PROCEDURES. RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONSTRUCTOR PERFORMING THE WORK. REVIEW BY THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR ERRORS AND OMISSIONS AND FOR MEETING ALL THE REQUIREMENTS OF THE CONSTRUCTION AND CONTRACT DOCUMENTS.
2. NOTIFY J. P. SAMUEL & ASSOCIATES INC. 24 HOURS IN ADVANCE OF ANY REQUIRED SITE VISIT. NO ACCEPTANCE WILL BE GIVEN FOR ANY WORK THAT HAS NOT BEEN REVIEWED BY OUR REPRESENTATIVE.
3. NOTIFY ARCHITECT SUFFICIENTLY IN ADVANCE OF OPERATIONS TO ALLOW FOR ASSIGNMENT OF LABORATORY PERSONNEL & SCHEDULING OF TEST, SHOP INSPECTIONS, ETC.
4. PAY COSTS FOR UNCOVERING AND MAKING GOOD WORK THAT IS COVERED BEFORE REQUIRED INSPECTION OR TESTING IS COMPLETED & ACCEPTED BY THE ARCHITECT.

STRUCTURAL STEEL NOTES

1. ALL MATERIALS, COMPONENTS AND WORKMANSHIP SHALL CONFORM TO CURRENT C.S.A. STANDARD S16–14
2. ALL STRUCTURAL STEEL TO BE OF NEW MATERIAL CONFORMING TO C.S.A. STANDARD G40.21 – GRADE 350W
3. ALL STEEL WORK SHALL BE GIVEN ONE COAT OF APPROVED PRIMER.
4. QUALIFIED INSPECTORS WILL BE EMPLOYED BY THE OWNER FOR THIS WORK. INSPECTION ORGANIZATION UNDERTAKING TO INSPECT WELDING SHALL BE QUALIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF CSA W178.1– (LATEST EDITION) "QUALIFICATION CODE FOR WELDING INSPECTION ORGANIZATIONS" AND APPROVED BY THE CANADIAN WELDING BUREAU
5. DESIGN CONNECTIONS FOR ONE HALF OF TOTAL UNIFORMLY DISTRIBUTED FACTORED LOADS FOR LATERALLY SUPPORTED BEAM.
6. ALL CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH STRUCTURAL BOLTS CONFORMING TO ASTM F3125/ F3125M
7. WELDING SHALL CONFORM TO LATEST C.S.A. SPECIFICATION W59 AND BE UNDERTAKEN BY A FABRICATOR APPROVED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF C.S.A. W47.1
8. MIN. SIZE OF WELDS TO BE 6mm (1/4") EXCEPT FOR SEAL WELDS.
9. ALL EXPOSED WELDS TO BE CONTINUOUS AND GROUND SMOOTH.
10. SUPPLY AND INSTALL ALL DECK CLOSURES WHERE REQUIRED.
11. WEDGE OF THE FLUTES OF STEEL ROOF DECK UNDER WOOD SLEEPERS CARRYING ROOF TOP UNITS (THIS SHALL ALSO APPLY TO ROOF TOP UNITS WITH METAL CURBS)
12. PROVIDE L65x65x5 FRAME AROUND OPENINGS IN STEEL DECK GREATER THAN 450 (18") BUT LESS THAN 1200 (48") IN SIZE.
13. REINFORCE ALL OPENINGS IN DECK 450 (18") IN SIZE AND SMALLER WITH L55x55x5 ALL AROUND.

NOTE:
CONFIRM ALL GRIDS, DIMENSIONS AND ELEVATIONS WITH ARCHITECTURAL DRAWINGS.

CONTACT ARCHITECT AND ENGINEER FOR ANY DISCREPANCIES.

PLANS AND SPECIFICATIONS ARE THE PROPERTY OF THE ENGINEER AND MUST BE RETURNED UPON REQUEST. PLANS MUST NOT BE USED IN ANY OTHER LOCATION WITHOUT WRITTEN PERMISSION OF THE ENGINEER.

THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED BY THE ENGINEER.

________________ DATE: ________

KEY PLAN
SCALE NTS

N

NO	REVISIONS	DATE	BY
3	ISSUED FOR TENDER	09/01/25	J.S.
2	ISSUED FOR PERMIT	10/12/24	J.S.
1	ISSUED FOR REVIEW	13/09/24	J.S.

CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

CLIENT:
E & M
Consulting Engineers Inc.

PROJECT:
RTU REPLACEMENT
HESS STREET SCHOOL
107 HESS STREET N,HAMILTON,
ON L8R 2T1

J. P. SAMUEL AND ASSOCIATES INC.
STRUCTURAL ENGINEERS
1040 Garner Road West, Suite C203
Ancaster, ON L9G 0J2
Tel:(647) 671-8530 email:jsamuel@jpsamuel.com
www.jpsamuel.com

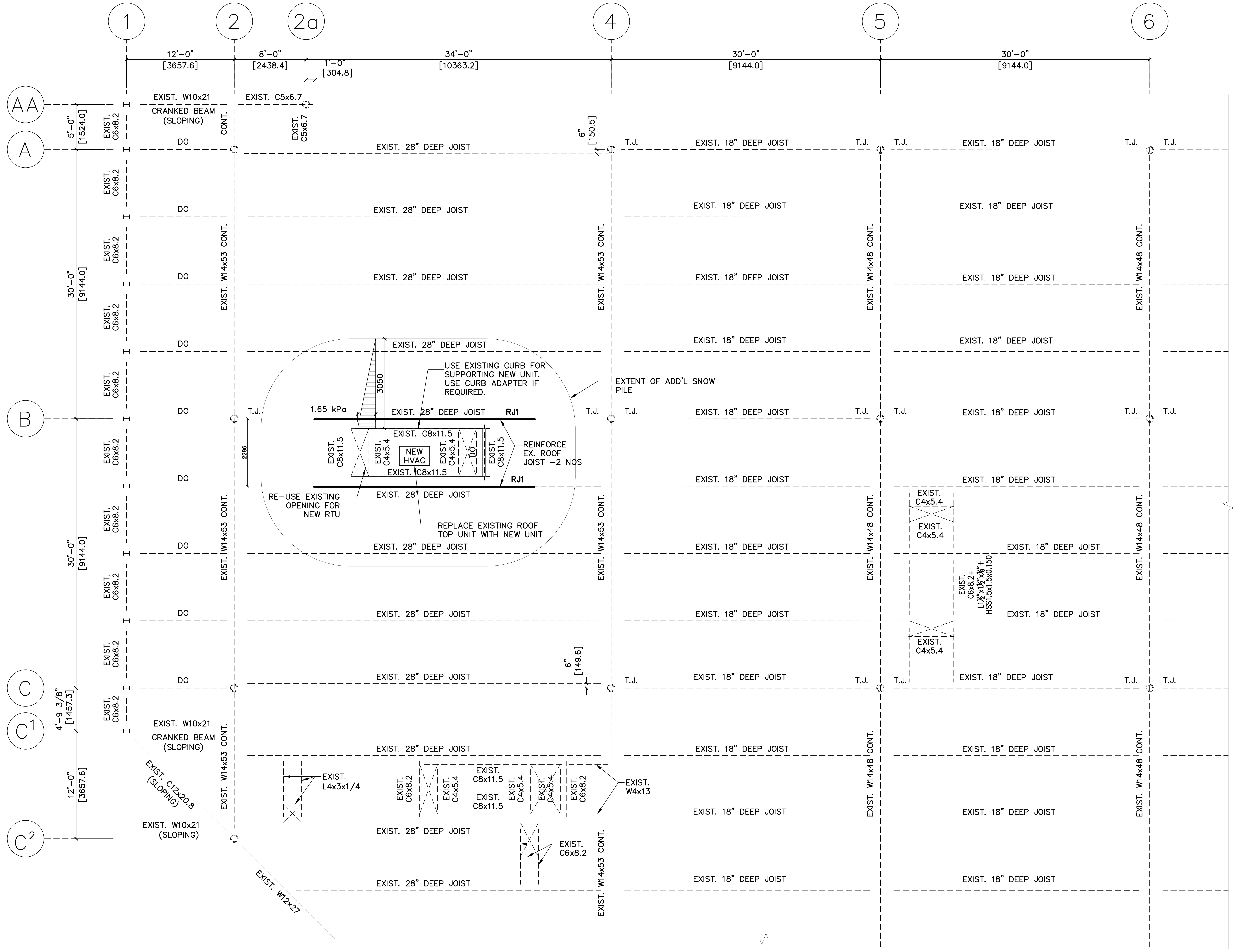
Scale: AS NOTED

DRAWING:
GENERAL NOTES

DRAWN BY:	P.F.
CHECKED BY:	J.S.
DATE:	SEPT. 09/24
ISSUED:	JAN. 09/25

JOB No.
2024–JPS–127

DRAWING No.
S1.1



PARTIAL EXIST. ROOF FRAMING PLAN
SCALE = 1:75
1
S1.1

NOTES:

NEW UNIT DETAILS:

MODEL	:ENGINEERED AIR– FWE224/C/O/MV/R
BASE DIMENSIONS (APPROX.)	:180"(L)X64"(W)X76"(H) APPROX.
WEIGHT	:7,000LBS (MAX.)

SNOW LOADS:

SNOW LOAD AS PER OBC 2012:
S = Is[Ss(Cb.Cw.Cs.Ca)+Sr]
Ss = 1.10kPa (HAMILTON)
Sr = 0.40kPa
Is = 1.15 (HIGH IMPORTANCE), Cb=0.8, Cw=1, Cs=1, Ca=1
S = 1.15[1.10(0.8x1x1x1)+0.4]
1.47kPa + S.B.U

AS PER THE EXISTING DRAWINGS, ORIGINAL BUILDING ROOF JOISTS DESIGNED FOR A DEAD LOAD OF 23 PSF AND LIVE LOAD (SNOW) OF 32 PSF

NOTES:

RJ1: REINFORCE EXISTING JOIST AS PER NOTED SCHEDULE

NEW MECHANICAL UNIT TO SIT DIRECTLY ABOVE THE EXISTING FRAMINGS.

NEW MECHANICAL UNIT WILL USE THE EX. ROOF OPENINGS. IF NEW OPENING IS REQUIRED,ADDITIONAL FRAMING FOR THE OPENING SHOULD BE PROVIDED.

NOTE:
CONFIRM ALL GRIDS, DIMENSIONS AND ELEVATIONS WITH ARCHITECTURAL DRAWINGS.

CONTACT ARCHITECT AND ENGINEER FOR ANY DISCREPANCIES.

PLANS AND SPECIFICATIONS ARE THE PROPERTY OF THE ENGINEER AND MUST BE RETURNED UPON REQUEST. PLANS MUST NOT BE USED IN ANY OTHER LOCATION WITHOUT WRITTEN PERMISSION OF THE ENGINEER.

THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED BY THE ENGINEER.

DATE:

KEY PLAN
SCALE NTS
N

NO	REVISIONS	DATE	BY
3	ISSUED FOR TENDER	09/01/25	J.S.
2	ISSUED FOR PERMIT	10/12/24	J.S.
1	ISSUED FOR REVIEW	13/09/24	J.S.

CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

CLIENT: E&M Consulting Engineers Inc.

PROJECT: **RTU REPLACEMENT**
HESS STREET SCHOOL
107 HESS STREET N,HAMILTON,
ON L8R 2T1

J. P. SAMUEL AND ASSOCIATES INC.
STRUCTURAL ENGINEERS
1040 Garner Road West, Suite C203
Ancaster, ON L9G 0J2
Tel:(647) 671-8530 email:jsamuel@jpsamuel.com
www.jpsamuel.com

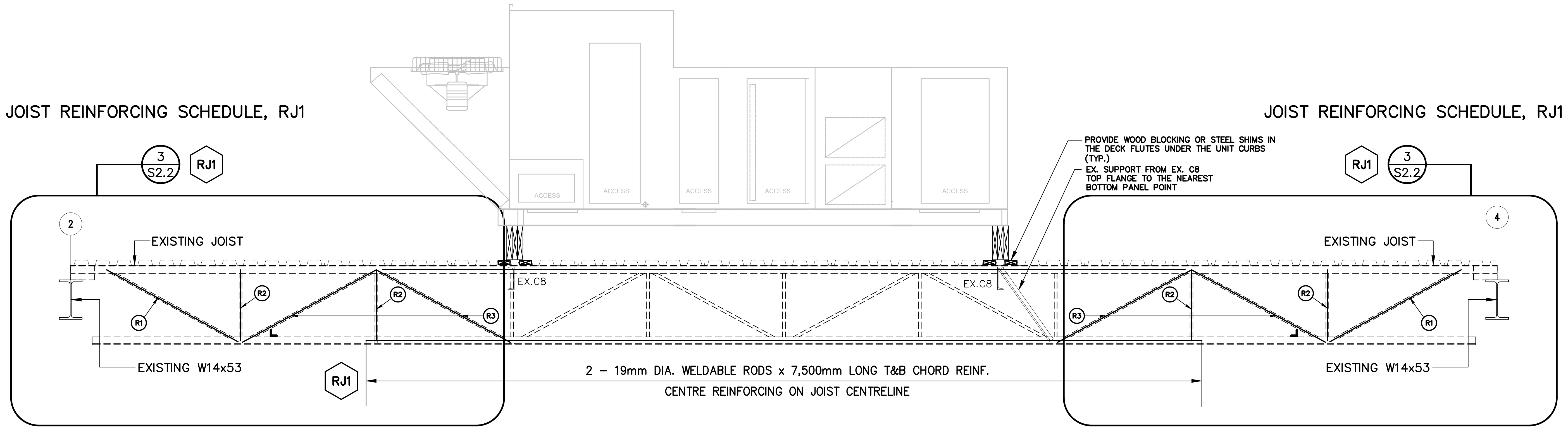
Scale: AS NOTED

DRAWING: PARTIAL EX. ROOF PLAN

DRAWN BY:	P.F.
CHECKED BY:	J.S.
DATE:	SEPT. 09/24
ISSUED:	JAN. 09/25

JOB No. 2024–JPS–127

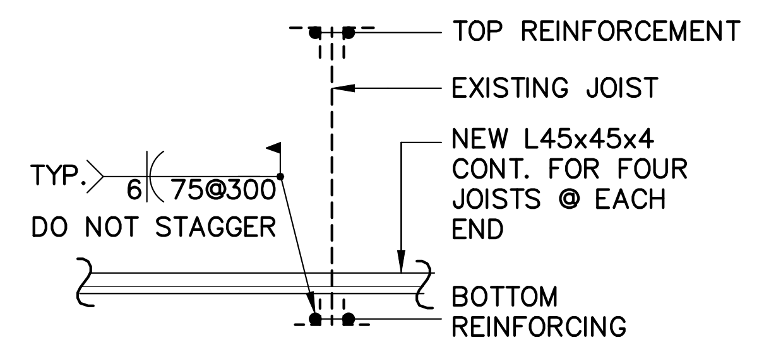
DRAWING No. S2.1



- Ⓡ1 WELD NEW 19MM DIA. STEEL ROD (OR L35x35x5) FROM TOP FLANGE OF BEAM TO BOTTOM CHORD OF JOIST.
- Ⓡ2 WELD NEW 19MM DIA. STEEL ROD (OR L35x35x5) FROM TOP CHORD TO BOTTOM CHORD OF FIRST 2 VERTICAL WEB MEMBERS)
- Ⓡ3 WELD NEW 19MM DIA. STEEL ROD (OR L35x35x5) FROM BOTTOM CHORD OF JOIST TO TOP CHORD **(FIRST 2 DIAGONAL WEB MEMBERS AFTER 1ST DIAG. TO BE REINFORCED FOR RJ1)**

TYP. JOIST REINFORCING– RJ1 1/S2.2
SCALE = 1:30

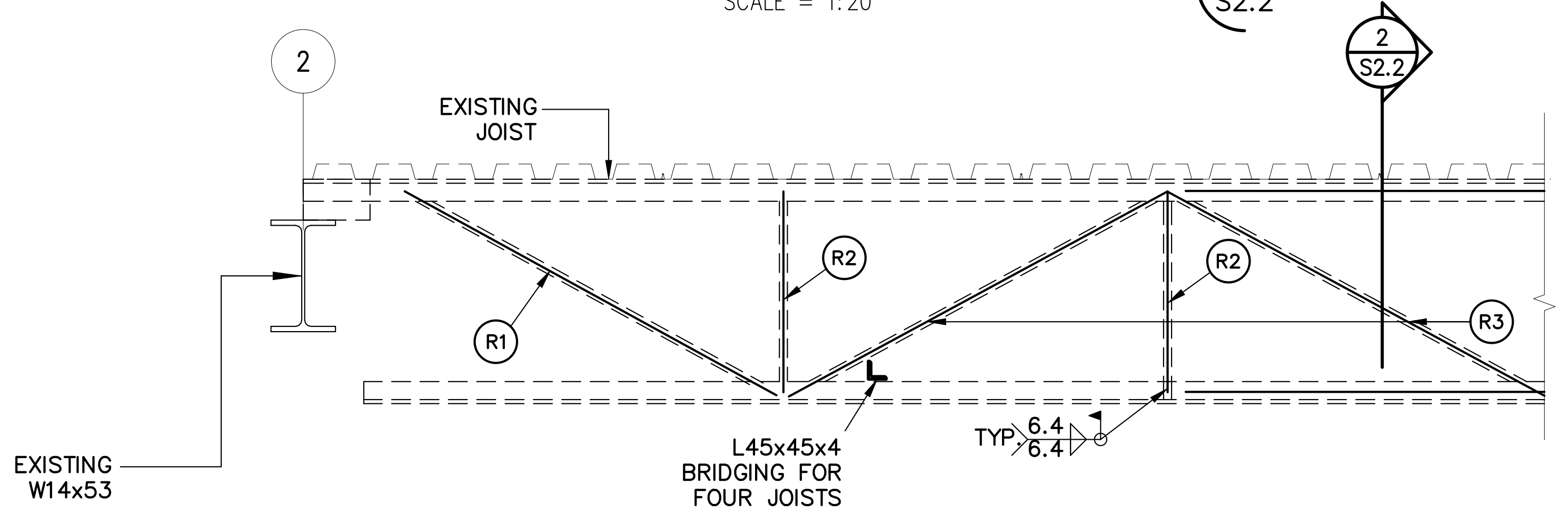
WELD TOP CHORD TOGETHER WITH A FILLER PIECE FOR FIVE PANELS AT MID–SPAN OF JOISTS.



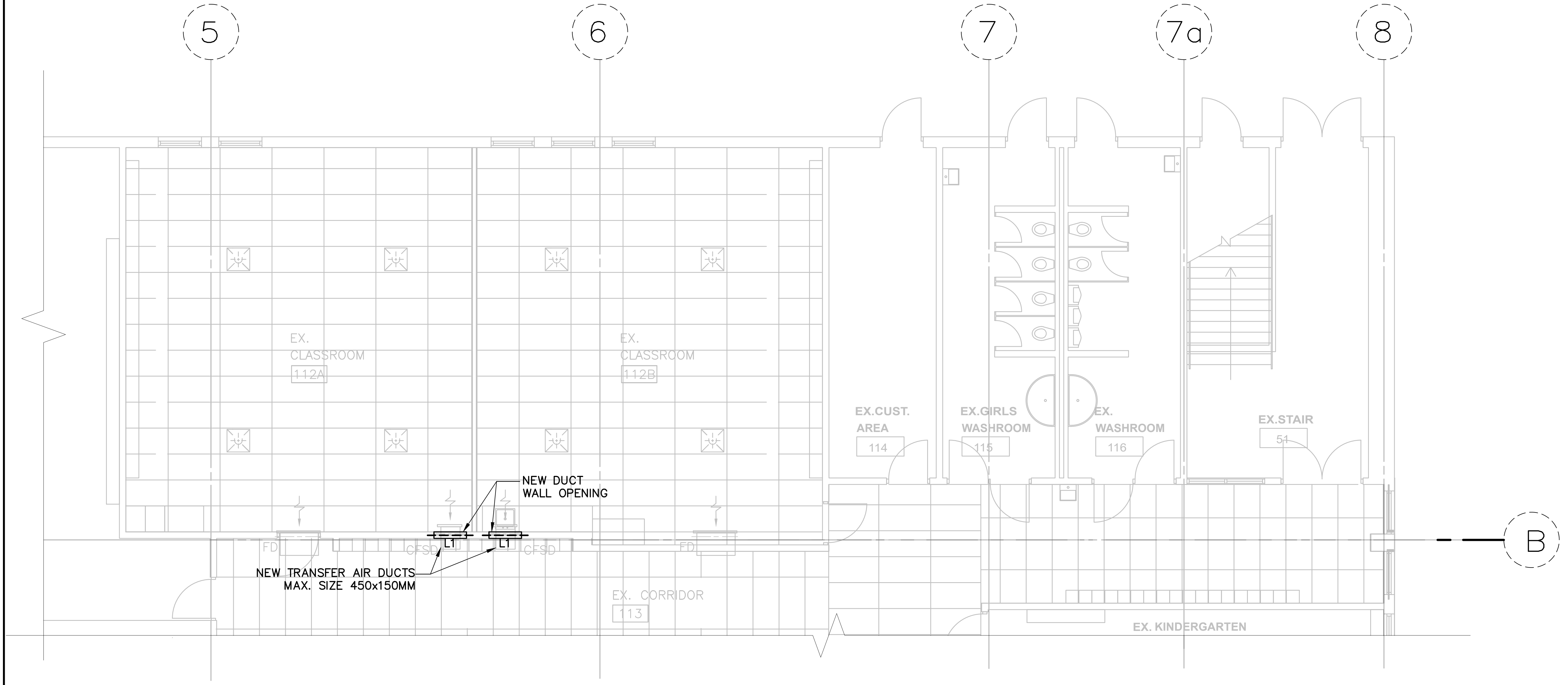
LOCATE JOIST REINFORCING AS PER DETAIL

ALL REINFORCING TO BE CONTINUOUS – ANY SPLICING PERFORMED TO BE DETAILED, SIGNED AND STAMPED BY A LICENSED P. ENG. OF ONTARIO AND SUBMITTED TO ENGINEER FOR REVIEW.

TYP. JOIST REINFORCEMENT 2/S2.2
SCALE = 1:20



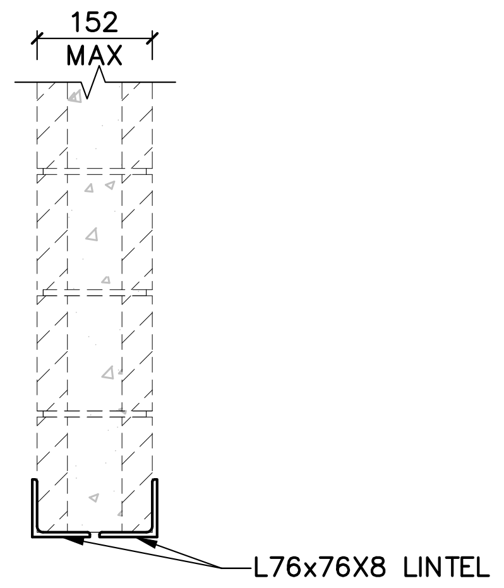
JOIST WEB REINFORCING DETAIL 3/S2.2
SCALE = 1:20



PARTIAL EXIST. GROUND FLOOR PLAN 4/S2.2
SCALE = 1:75

LINTEL SCHEDULE

MARK	SIZE	REMARKS
L1	2–L76x76x8	150mm END BEARING, MAX. OPENING SIZE 550mm



LINTEL–L1 SECTION 5/S2.2
SCALE = 1:10

NOTE:
CONFIRM ALL GRIDS, DIMENSIONS AND ELEVATIONS WITH ARCHITECTURAL DRAWINGS.

CONTACT ARCHITECT AND ENGINEER FOR ANY DISCREPANCIES.

PLANS AND SPECIFICATIONS ARE THE PROPERTY OF THE ENGINEER AND MUST BE RETURNED UPON REQUEST. PLANS MUST NOT BE USED IN ANY OTHER LOCATION WITHOUT WRITTEN PERMISSION OF THE ENGINEER.

THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED BY THE ENGINEER.

DATE:

KEY PLAN
SCALE NTS

N

NO	REVISIONS	DATE	BY
3	ISSUED FOR TENDER	09/01/25	J.S.
2	ISSUED FOR PERMIT	10/12/24	J.S.
1	ISSUED FOR REVIEW	13/09/24	J.S.

CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

CLIENT:
E&M
Consulting Engineers Inc.

PROJECT:
RTU REPLACEMENT
HESS STREET SCHOOL
107 HESS STREET N,HAMILTON,
ON L8R 2T1

J. P. SAMUEL AND ASSOCIATES INC.
STRUCTURAL ENGINEERS
1040 Garner Road West, Suite C203
Ancaster, ON L9G 0J2
Tel:(647) 671-8530 email:jsamuel@jpsamuel.com
www.jpsamuel.com

Scale: AS NOTED

DRAWING: JOIST REINFORCING & DETAILS

DRAWN BY:	P.F.	JOB No.	2024–JPS–127
CHECKED BY:	J.S.		
DATE:	SEPT. 09/24	DRAWING No.	S2.2
ISSUED:	JAN. 09/25		