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**SYMBOL LEGEND**

- DRAWING NUMBER → ① EXISTING GRID LINE MARKER
- SHEET NUMBER → A-XXX ELEVATION MARKER
- DRAWING NUMBER → X PLAN DETAIL MARKER
- SHEET NUMBER → A-XXX SECTION DETAIL MARKER
- NAME → # ROOM NAME / NUMBER MARKER
- 0 # DOOR NUMBER
- # DEMOLITION KEYNOTE
- x CONSTRUCTION KEYNOTE

DRAWING LIST - ARCHITECTURAL	
A-000	COVER SHEET
A-001	PHASING
A-100	SITE PLAN
A-101	MAIN FLOOR PLAN
A-102	ROOF PLAN
A-200	ELEVATIONS DETAILS

DRAWING LIST - STRUCTURAL	
S101	BLOCK B GENERAL NOTES
S201	BLOCK B ROOF PLAN
S202	BLOCK B ENLARGE ELEVATED MECHANICAL PLATFORM PLAN
S301	BLOCK B SECTIONS & DETAILS

DRAWING LIST - MECHANICAL	
M-1	MAIN PART PLAN FIELD OPERATION CENTRE BLOCK B HVAC MODIFICATIONS
M-2	MEZZANINE PLAN BLOCK B HVAC MODIFICATION
M-3	ROOF PLAN AND DETAILS BLOCK B HVAC MODIFICATION
M-4	SCHEMATIC BLOCK B HVAC MODIFICATION

DRAWING LIST - ELECTRICAL	
E-1	PART SINGLE LINE DIAGRAM (BUILDING B) & EQUIPMENT WIRING DETAILS
E-2	BUILDING B MEZZANINE & MECHANICAL EQ. SCHEDULE
E-3	FLOOR PLAN ROOF PLAN & ELECTRICAL ROOM PLAN

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**ARCHITECTURAL ABBREVIATIONS**

ACT ACOUSTICAL CEILING TILE  
AD AREA DRAIN  
ADJ ADJACENT  
AFF ABOVE FINISHED FLOOR  
ALUM ALUMINUM  
ANOD ANODIZED  
APPROX APPROXIMATE  
ARCH ARCHITECTURAL  
AUTO AUTOMATIC  
AVB AIR VAPOUR BARRIER  
AVM AIR VAPOUR MOISTURE BARRIER

B BASE  
BE BENCH  
BF BIFOLD DOOR  
BLDG BUILDING  
BM BEAM  
B/O BOTTOM OF  
BOL BOLLARD  
  
CAB CABINET  
CB CATCH BASIN  
CD COILING DOOR  
CG CORNER GUARD  
CIP CAST IN PLACE  
CJ CONTROL JOINT  
CL CENTRE LINE  
CLG CEILING  
CLR CLEARANCE  
CMP COMPOSITE METAL PANEL  
CMU CONCRETE MASONRY UNIT  
COL COLUMN  
COM CUSTOMERS OWN MATERIAL  
CONC CONCRETE  
CONST CONSTRUCTION  
CONT CONTINUOUS  
CORR CORRIDOR  
CPT CARPET  
CPT-T CARPET TILE  
CS COUNTER SHUTTER  
CSCI CONTRACTOR SUPPLIED; CONTRACTOR INSTALLED  
CT CERAMIC TILE  
CW CURTAIN WALL  
C/W COMPLETE WITH

DD DOUBLE SWING DOOR  
DEG DEGREES  
DEMO DEMOLITION  
DF DRINKING FOUNTAIN  
DIA DIAMETER  
DIM DIMENSION  
DL DEAD LOAD  
DN DOWN  
DP DEPTH  
DR DOOR  
DW DISH WASHER  
DWG DRAWING

EJ EACH  
EA EXPANSION JOINT  
EL ELEVATION  
ELEC ELECTRICAL  
ELEV ELEVATOR  
EP ELECTRICAL PANEL  
EPDM ETHYLENE PROPYLENE DIENE M-CLASS (ROOFING)  
EPX EPOXY  
EQ EQUAL  
ES EMERGENCY SHOWER  
EXIST EXISTING  
EXP EXPOSED  
EXP-S EXPOSED STRUCTURE  
EXT EXTERIOR  
EWS EYE WASH STATION

F FRAME  
FAAP FIRE ALARM ANNUNCIATOR PANEL  
FAB FABRIC  
FC FLASH COVE  
FD FLOOR DRAIN  
FDN FOUNDATION  
FE FIRE EXTINGUISHER  
F&E FURNITURE FIXTURES & EQUIPMENT  
FHC FIRE HOSE CABINET  
FLR FLOOR  
F/O FACE OF  
FOC FACE OF CONCRETE  
FOG FACE OF GLAZING  
FOS FACE OF STUD  
FP FRAME PROTECTION  
FRR FIRE RESISTANCE RATING  
FT FOOT/FEET

G ( ) GLASS (type)

GA GAUGE  
GALV GALVANIZED  
GB GRAB BAR  
GBN GARBAGE BIN  
  
GC GENERAL CONTRACTOR  
GL GLASS / GLAZING  
GRD GROUND  
GWB GYPSUM WALL BOARD  
GWG GEORGIAN WIRE GLASS  
GYP GYPSUM  
  
HB HOSE BIB  
HC HOLLOW CORE  
H/C HANDICAP  
HCW HOLLOW CORE WOOD  
HD HANGAR DOOR  
HDR HEADER  
HDWD HARDWOOD  
HDWR HARDWARE  
HM HOLLOW METAL  
HO HONEY-COMB  
HOR HORIZONTAL  
HR HOUR  
HSKG HOUSEKEEPING  
HSS HOLLOW STEEL SECTION  
HT HEIGHT  
HVAC HEATING / VENTIL / AIR CONDITIONING  
HVV HEAVY  
HW HOT WATER

ID INSIDE DIAMETER  
INFO INFORMATION  
INSUL INSULATION  
INT INTERIOR  
IMP IMPULSED METAL PANEL  
ISO POLYISOCYANURATE  
  
JAN JANITOR CLOSET  
  
KIT KITCHEN  
  
L LENGTH  
LAV LAVATORY  
LB LOCK-BLOCK  
LINO LINOLEUM  
LL LIVE LOAD  
LVR LOUVER

m METER  
MATL MATERIAL  
MAX MAXIMUM  
MECH MECHANICAL  
MED MEDIUM  
MEL MELAMINE  
MEP MECHANICAL, ELECTRICAL AND PLUMBING  
MEZZ MEZZANINE  
MF MINERAL FIBRE  
MFR MANUFACTURER  
MH MANHOLE  
MIN MINIMUM  
MISC MISCELLANEOUS  
MLDG MOULDING  
MLWK MILLWORK  
mm MILLIMETER  
MP METAL PANEL  
MTD MOUNTED  
MTL METAL

N/A NOT APPLICABLE  
NIC NOT IN CONTRACT  
No. NUMBER  
NTS NOT TO SCALE  
  
O.C. ON CENTRE  
OD OUTSIDE DIAMETER  
OH OVERHEAD DOOR  
O/H OVERHEAD  
OPNG OPENING  
OPP OPPOSITE  
OS OWNER SUPPLIED  
OSCI OWNER SUPPLIED; CONTRACTOR INSTALLED  
OWSJ OPEN WEB STEEL JOIST

P PAINT (colour)  
PC POWDER COAT  
P.CONC POLISHED CONCRETE  
PERP PERPENDICULAR  
PH PHASE  
PL PROPERTY LINE  
PLAM PLASTIC LAMINATE  
PLYWD PLYWOOD  
PO POLYSTYRENE  
POLY POLYETHYLENE

POLY-U POLYURETHANE  
PREFAB PREFABRICATED  
PREFIN PREFINISHED  
PS PRESSED STEEL  
PSFR PRESSED STEEL FRAME  
PT PRESSURE TREATED  
PTD PAINTED  
QT QUARRY TILE  
QTY QUANTITY  
  
R RADIUS  
R/A RETURN AIR  
RB RUBBER BASE  
RCP REFLECTED CEILING PLAN  
RD ROOF DRAIN  
RE REVOLVING DOOR  
REINF REINFORCED  
REF REFERENCE  
REFR REFRIGERATOR  
REQD REQUIRED  
RES RESILIENT FLOORING  
REV REVISION  
RM ROOM  
RO ROLLING DOOR  
RR RAPID ROLL DOOR  
RSF RESILIENT SHEET FLOORING  
RUB RUBBER  
RWL RAINWATER LEADER

S/A SUPPLY AIR  
SAM SELF-ADHERED MEMBRANE  
SC SOLID CORE  
SCW SOLID CORE WOOD  
SD SINGLE SWING DOOR  
SFL SAFETY FLOOR  
SG STRUCTURAL GLAZING  
SHT SHEET  
SIA SIAMSESE CONNECTION  
SIM SIMILAR  
SL SLIDING DOOR  
SMC STEEL METAL CARRIER  
SO SOFFIT  
SOG SLAB ON GRADE  
SP STAND PIPE  
SPEC SPECIFICATION  
SQ SQUARE  
SS STAINLESS STEEL  
SSM SOLID SURFACING MATERIAL  
ST STONE  
STC SOUND TRANSMISSION CLASS  
STD STANDARD  
STL STEEL  
STOR STORAGE  
STRUCT STRUCTURAL  
SUSP SUSPENDED  
SV SITE VERIFY

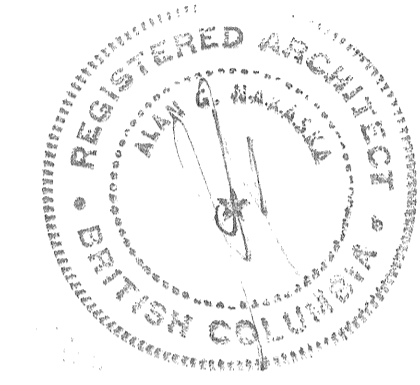
TBD TO BE DETERMINED  
TD TRENCH DRAIN  
TEL TELEPHONE  
TEMP TEMPORARY  
TERR TERRAZZO  
T/O TOP OF  
TOC TOP OF CURB  
TOF TOP OF FLOOR  
TOS TOP OF STEEL  
TPO THERMOPLASTIC POLYOLEFIN  
TS TRANSITION STRIP  
TSG TEMPERED SAFETY GLASS  
TYP TYPICAL

U/G UNDER GROUND  
UNO UNLESS NOTED OTHERWISE  
U/S UNDERSIDE  
  
V VENEER  
VB VAPOUR BARRIER  
VCT VINYL COMPOSITE TILE  
VERT VERTICAL  
VEST VESTIBULE

W WIDTH  
WC WALL COVERING  
W/C WATER CLOSET  
WD WOOD  
WH WATER HEATER  
WP WATERPROOF  
WPR WALL PROTECTION  
WRM WASHROOM  
WV WOOD VENEER  
  
X-HVV EXTRA HEAVY

**REAL PROPERTY SERVICES**  
Pacific Region  
**SERVICES IMMOBILIERS**  
Région de Pacifique

Real Property Management Division / Division Gestion des biens immobilier / Technical Services / Services Techniques



1	ISSUED FOR TENDER	2017-05-28
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Revision/Revision	Description/Description	Date/Date
Client/client		

**ENVIRONMENT CANADA**

Project title/Titre du projet  
**NORTH VANCOUVER, B.C**  
**2645 Dollarton Avenue,**  
**PACIFIC ENVIRONMENTAL SCIENCE CENTRE**

**PESC**  
**FUMEHOOD UPGRADES**

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Designed by/Concept par  
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Drawn by/Dessine par  
**D.P.**

PWGSC Project Manager/Administrateur de Projets TPSGC  
**Patrick Truong**

PWGSC Regional Manager, Architectural and Engineering Services / Gestionnaire régionale, Services d'architecture et de génie, TPSGC  
**PREETIPAL PAUL**

Drawing title/Titre du dessin

**COVER SHEET**

Project No./No. du projet <b>R.071030.001</b>	Sheet/Feuille <b>A-000</b> OF 6	Revision no./La Révision no. <b>1</b>
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1	ISSUED FOR TENDER	2017-05-26
Revision/Revision	Description/Description	Date/Date

Client/client

**ENVIRONMENT CANADA**

Project title/Titre du projet  
**NORTH VANCOUVER, B.C**  
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**PACIFIC ENVIRONMENTAL SCIENCE CENTRE**

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**FUMEHOOD UPGRADES**

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**D.P.**

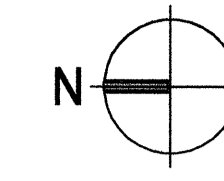
PWGSC Project Manager/Administrateur de Projets TPSGC  
**Patrick Truong**

PWGSC Regional Manager, Architectural and Engineering Services / Gestionnaire régionale, Services d'architecture et de génie, TPSGC  
**PREETIPAL PAUL**

Drawing title/Titre du dessin

**PHASING**

Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
<b>R.071030.001</b>	<b>A-001</b> OF 6	<b>1</b>




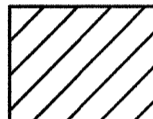

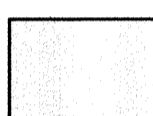
**PROJECT PHASING**

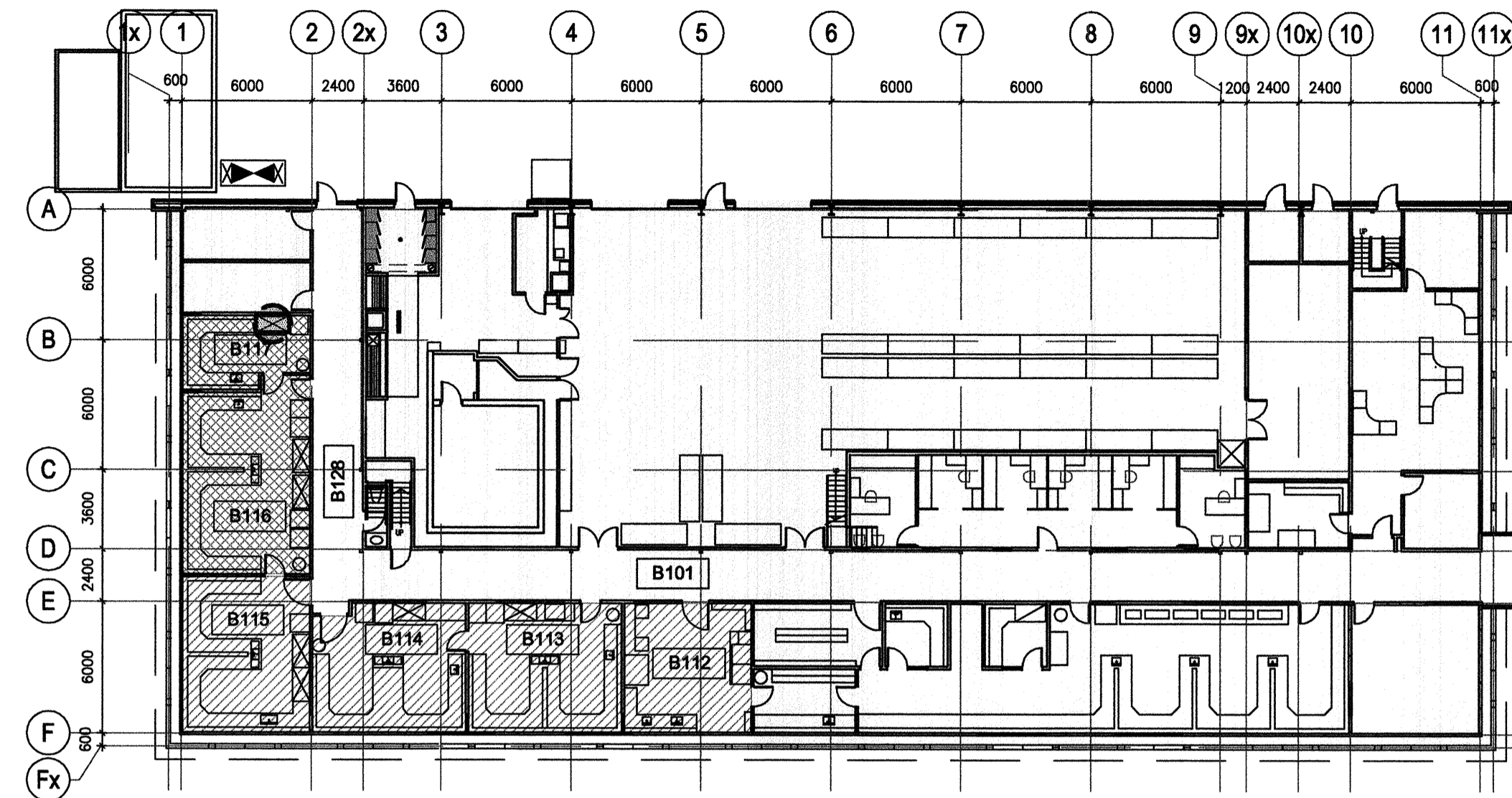
**PHASE ONE**  
 - ESTABLISH TEMPORARY EXHAUST FOR FUME HOOD FH-26. SEE 1 / A-102. REFER TO MECH, STRUCT AND ELECT FOR EXTENT OF WORK.

**PHASE TWO**  
 - CONSTRUCTION ON MAIN FLOOR TO BE LIMITED TO ROOMS B112, B113, B114 AND B115.  
 - ALL CONSTRUCTION IN NOTED ROOMS MUST BE COMPLETE PRIOR TO MOVING TO PHASE 3.  
 - CLIENT WILL CONTINUE TO OCCUPY ROOMS B116 AND B117 DURING PHASE TWO.  
 - ALLOW ONE WEEK BETWEEN PHASE TWO AND PHASE THREE FOR CLIENT RELOCATION.  
 - COMPLETE ALL WORK ON MEZZANINE AND ROOF LEVELS.

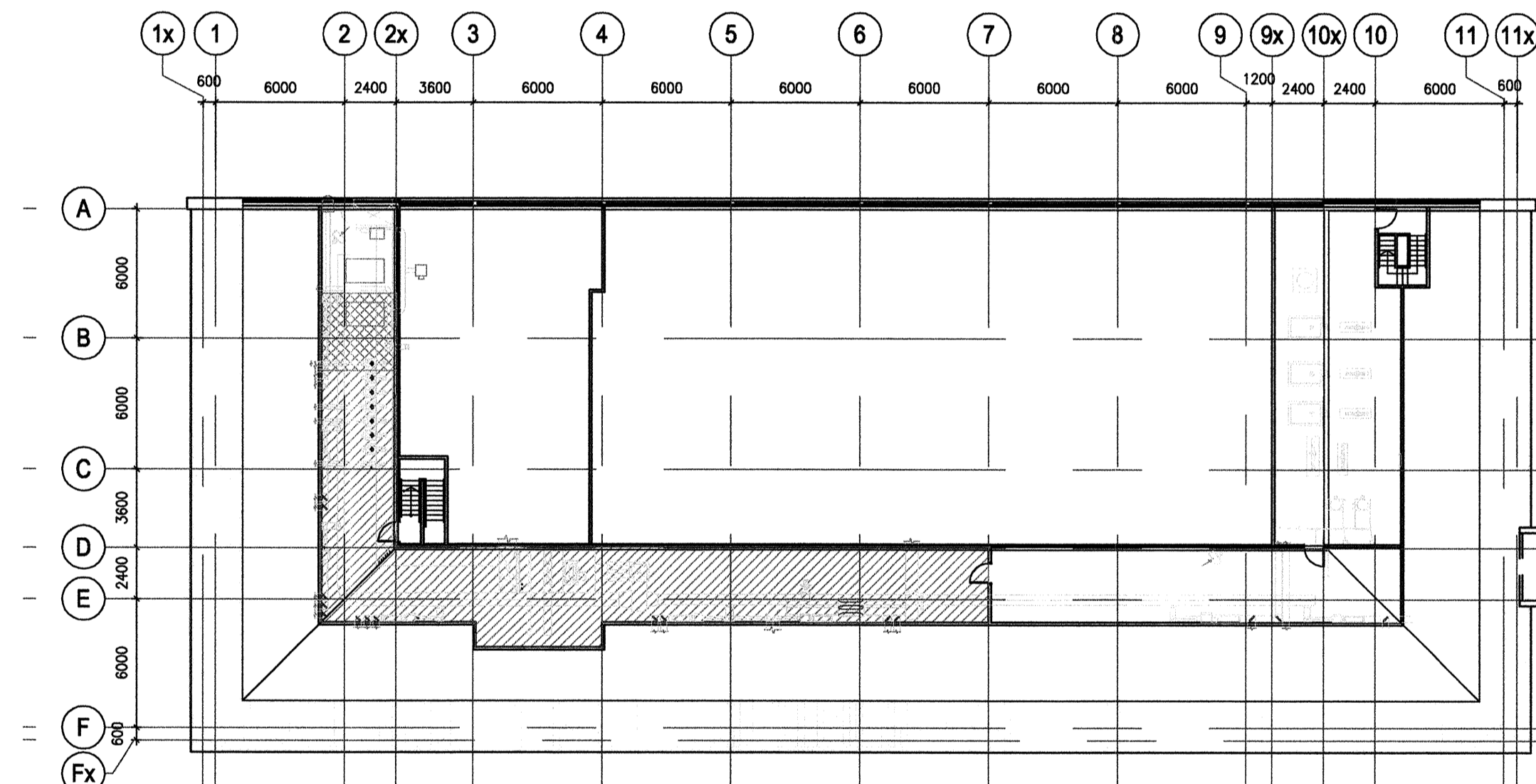
**PHASE THREE**  
 - CONSTRUCTION ON MAIN FLOOR TO BE LIMITED TO ROOMS B116 AND B117.  
 - COMPLETE ANY REMAINING WORK ON MEZZANINE AND ROOF LEVELS.

**PHASING LEGEND**

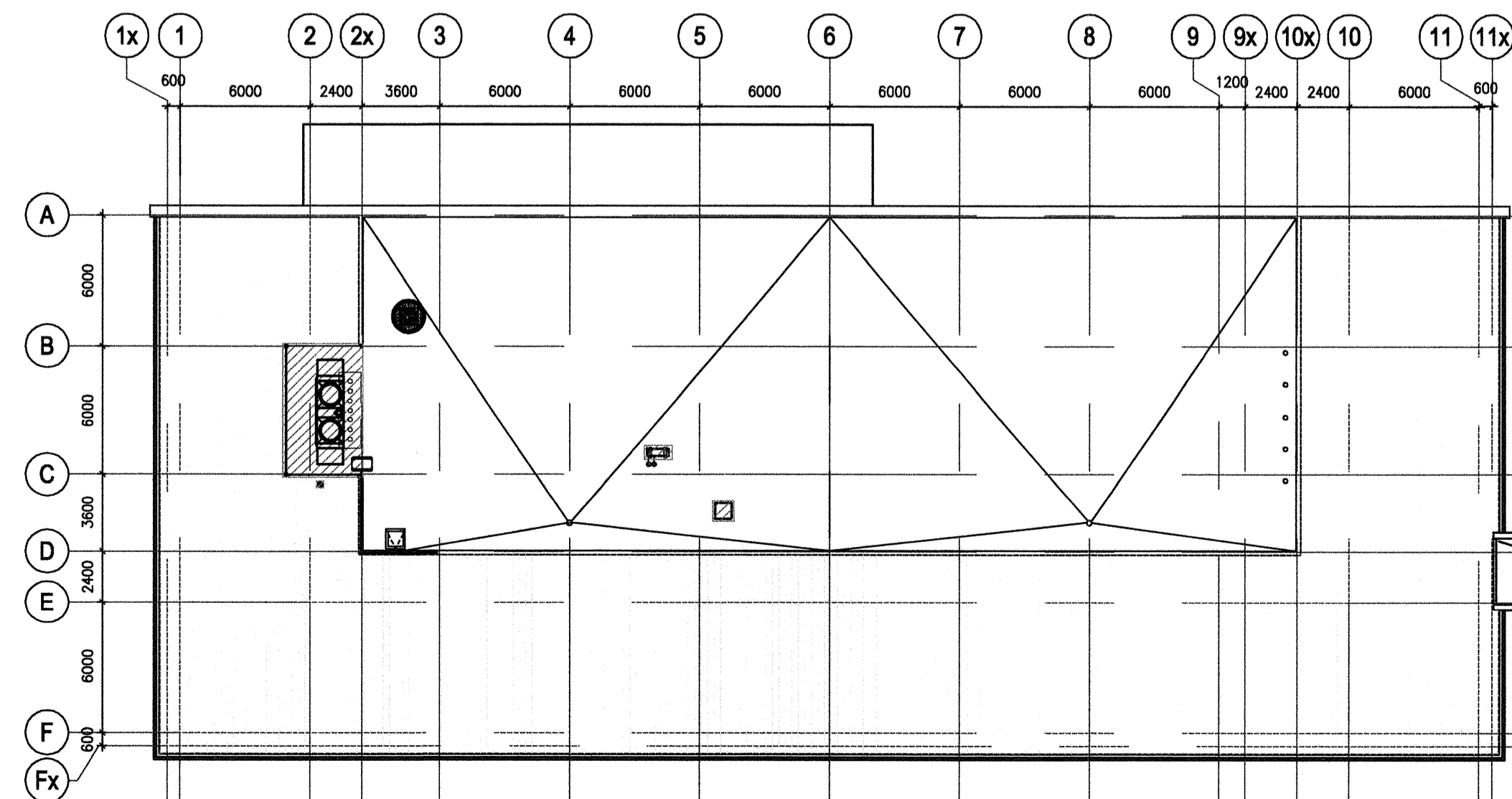
-  PHASE ONE
-  PHASE TWO
-  PHASE THREE
-  N.I.C.



**1 MAIN FLOOR - PHASING**  
1:250

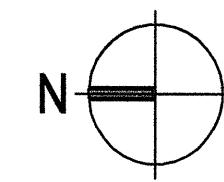


**2 MEZZANINE - PHASING**  
1:250



**3 ROOF - PHASING**  
1:250





Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada  
**REAL PROPERTY SERVICES**  
 Pacific Region  
**SERVICES IMMOBILIERS**  
 Région de Pacifique

Environment Canada / Environnement Canada  
 Real Property Management Division / Division Gestion des biens Immobilier  
 Technical Services / Services Techniques



Revision/Revision	Description/Description	Date/Date
1	ISSUED FOR TENDER	2017-05-26

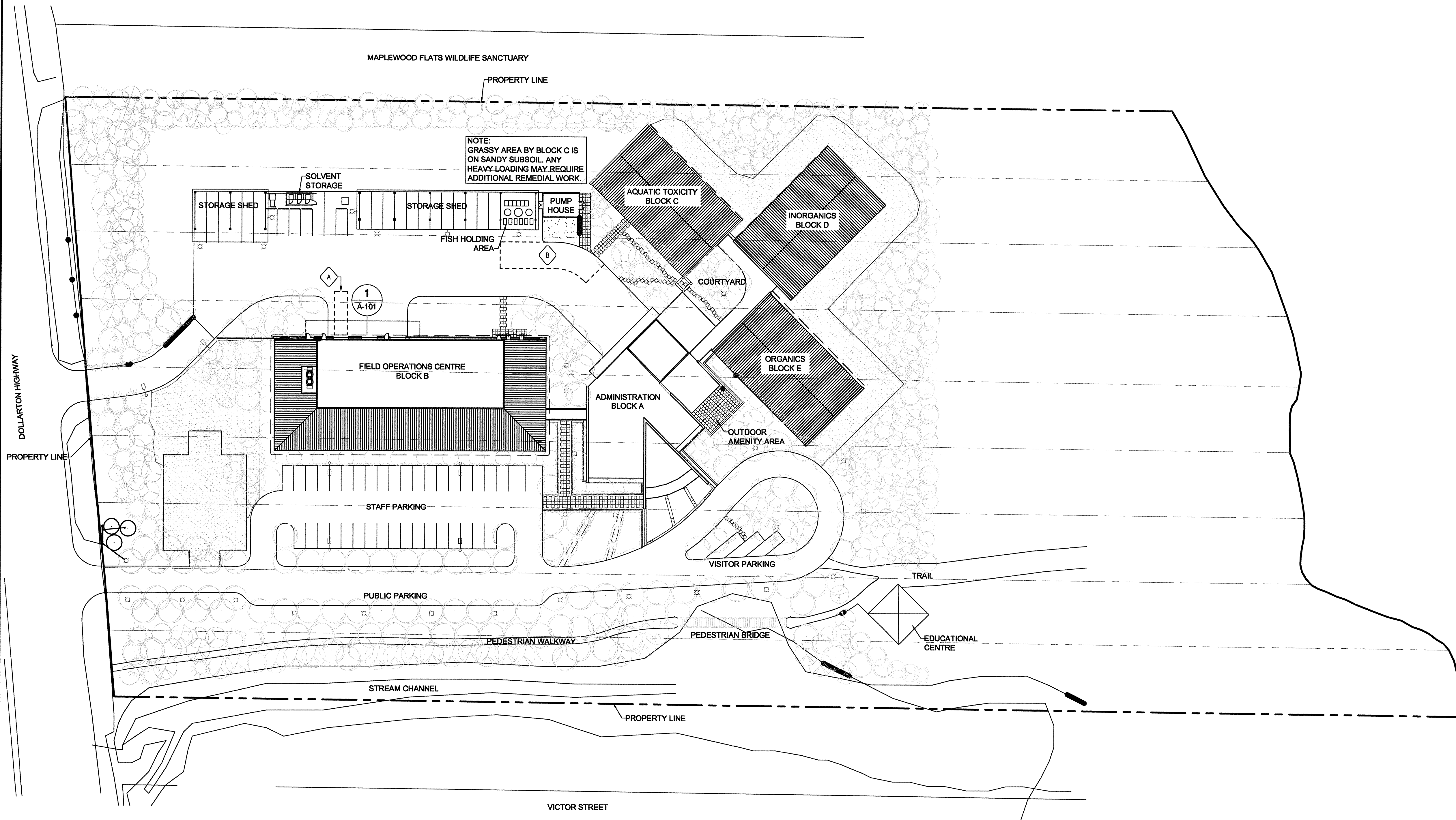
Client/client  
**ENVIRONMENT CANADA**

Project title/Titre du projet  
**NORTH VANCOUVER, B.C**  
**2645 Dollarton Avenue,**  
**PACIFIC ENVIRONMENTAL SCIENCE CENTRE**  
**PESC**  
**FUMEHOOD UPGRADES**

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**D.P.**  
 Drawn by/Dessiné par  
**D.P.**  
 PWSC Project Manager/Administrateur de Projets TPSGC  
**Patrick Truong**  
 PWSC, Regional Manager, Architectural and Engineering Services/  
 Gestionnaire régionale, Services d'architecture et de génie, TPSGC  
**PREETIPAL PAUL**

Drawing title/Titre du dessin  
**SITE PLAN**

Project No./No. du projet <b>R.071030.001</b>	Sheet/Feuille <b>A-100</b> of 6	Revision no./La Révision no. <b>1</b>
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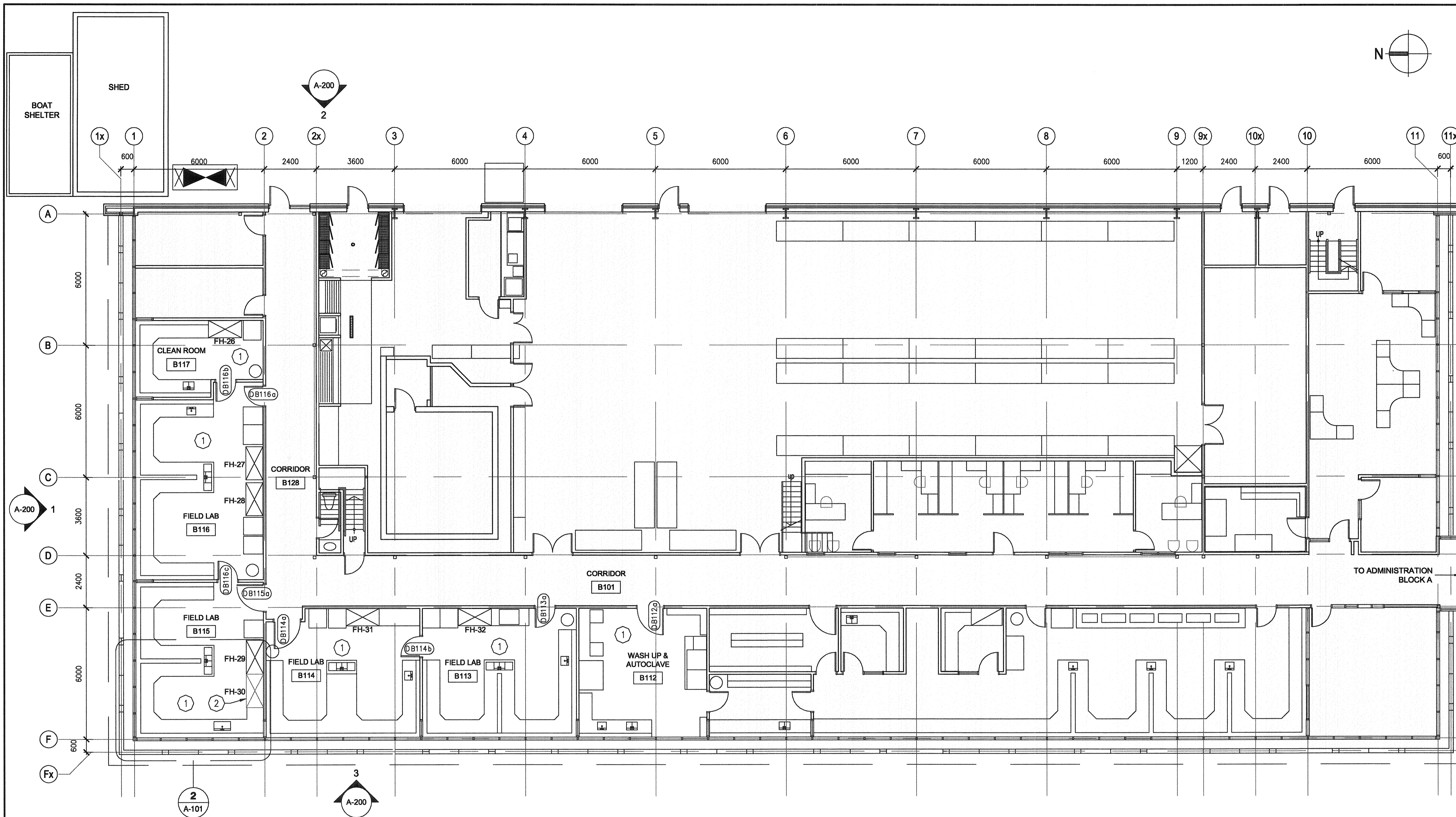
**1** SITE PLAN  
 1:500

ADDRESS:  
 2645 DOLLARTON AVENUE, NORTH VANCOUVER, BC

LEGAL DESCRIPTION:  
 A PORTION OF LOT 5, BLOCK D, DL 469 & 611, PI 8885 AND A PORTION OF BURRARD INLET FRONTING SAID LOTS 4 - 12 LYING SOUTH OF THE HIGHWAY IN REF PLAN 2383, BLOCK 4, DL 469, PI 1532 AND A PORTION OF BURRARD INLET FRONTING SAID LOTS.

- CONSTRUCTION NOTES**
- PROPOSED SITE OFFICE TRAILER
  - CONSTRUCTION MATERIAL STORAGE AREA



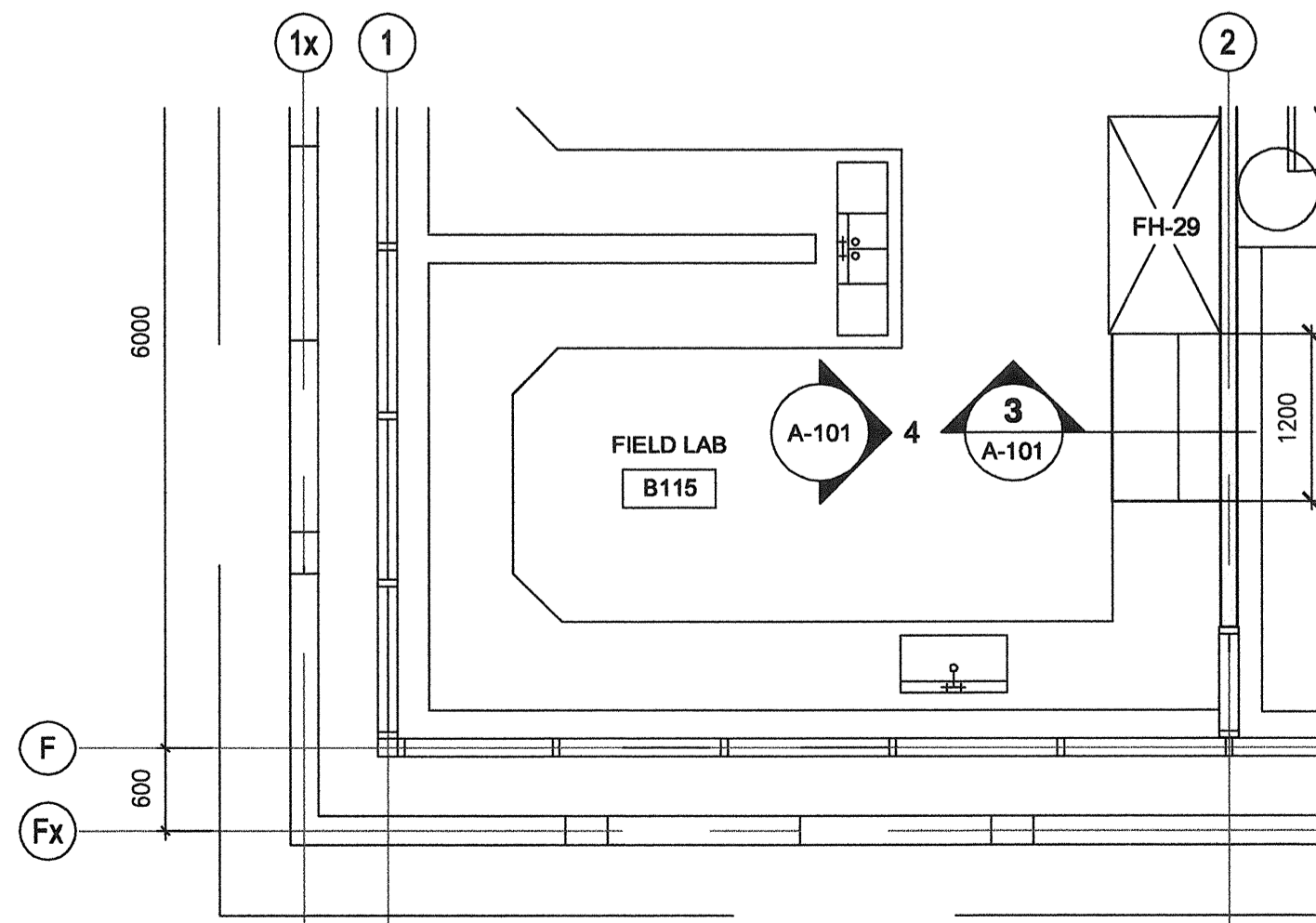
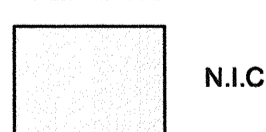


**1 MAIN FLOOR PLAN**  
1:100

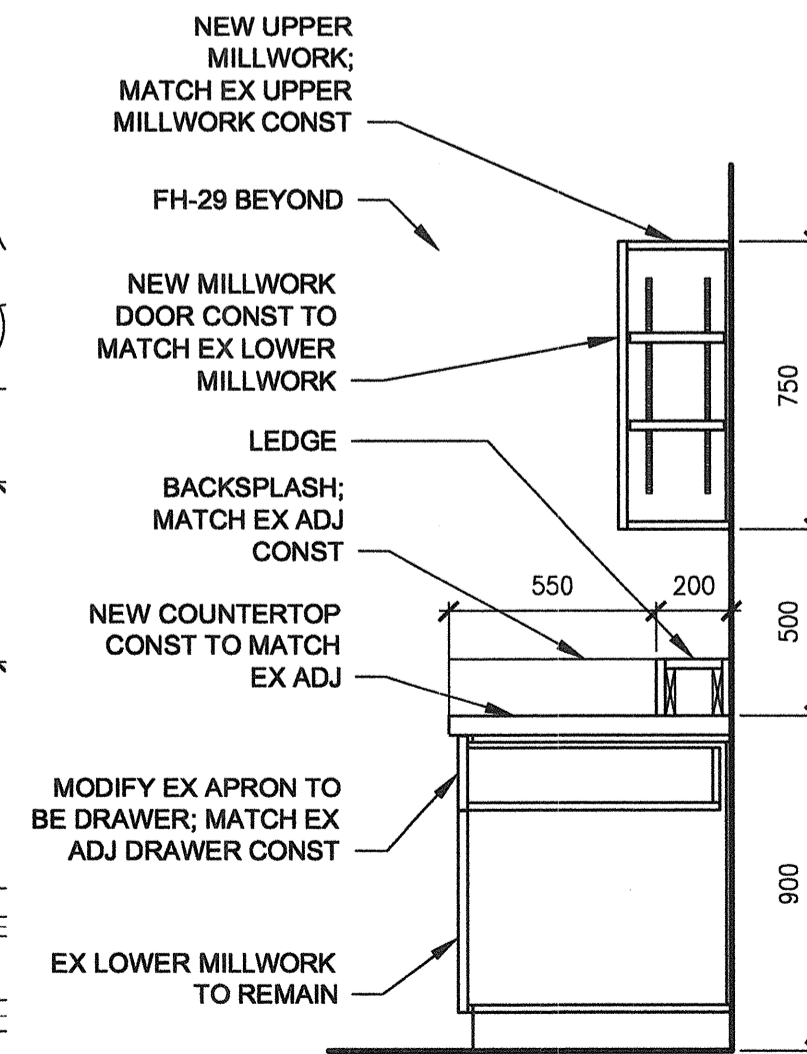
**DEMOLITION NOTES**

- ① REMOVE ACT AS NECESSARY TO ACCOMMODATE MECHANICAL INSTALLATIONS - SEE MECH. REINSTALL ACT FOLLOWING COMPLETION OF MECH INSTALLATION IN CEILING PLENUM. DAMAGED CEILING TILES AND/OR GRID TO BE REPLACED.
- ② REMOVE FH-30 AS PER MECH DOCUMENTS. PATCH AND REPAIR ADJACENT WALL AND CEILING SURFACES TO MATCH EXISTING. MILLWORK AS PER DRAWING A-101

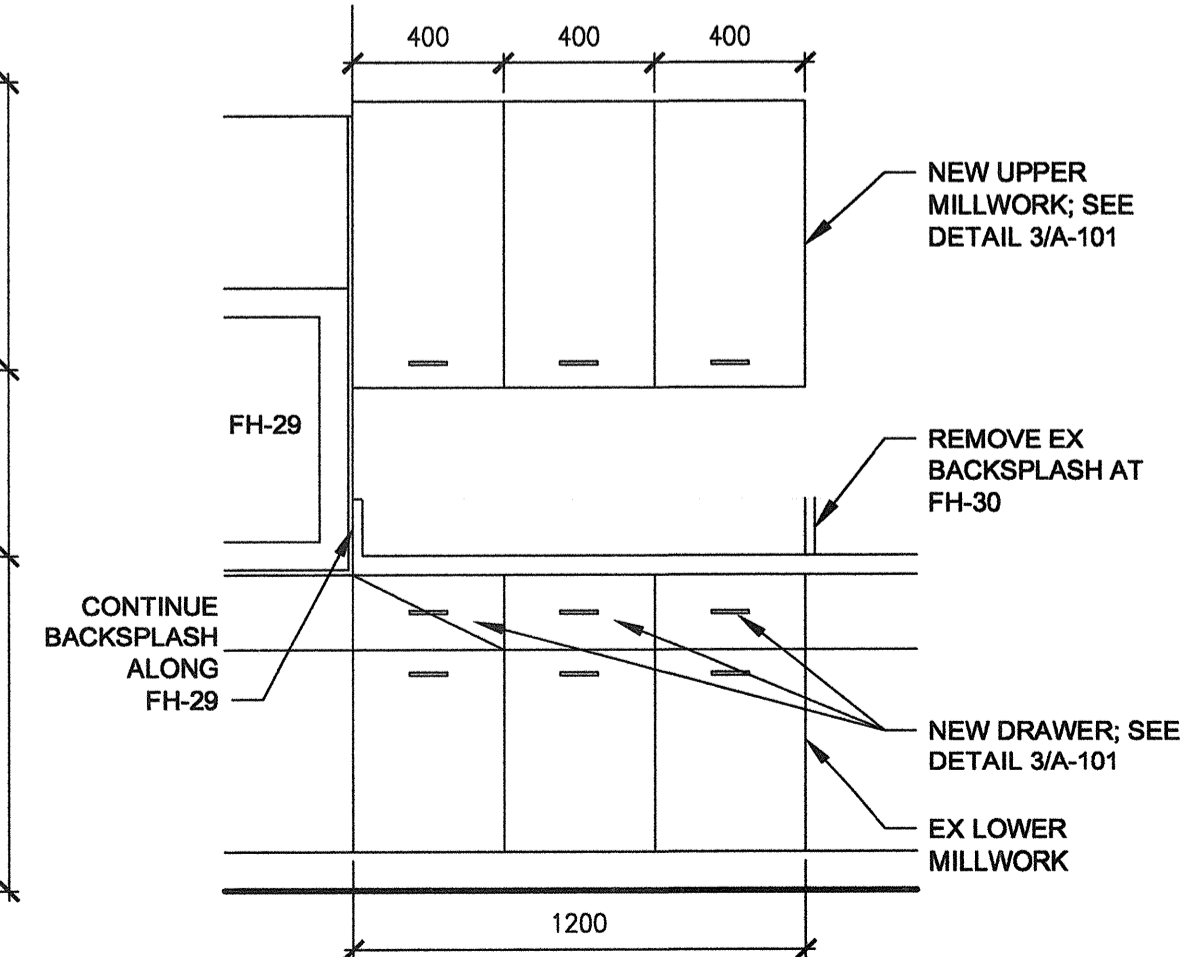
**DRAWING LEGEND**



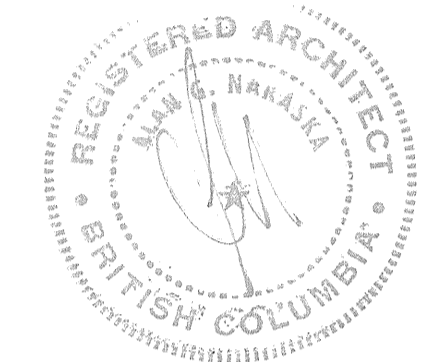
**2 MAIN FLOOR PLAN DETAIL**  
1:50



**3 MILLWORK DETAIL**  
1:20



**4 MILLWORK ELEVATION**  
1:20



1	ISSUED FOR TENDER	2017-05-26
Revision/Revision	Description/Description	Date/Date

Client/client: ENVIRONMENT CANADA

**ENVIRONMENT CANADA**

Project title/Titre du projet:  
**NORTH VANCOUVER, B.C**  
**2645 Dollarton Avenue,**  
**PACIFIC ENVIRONMENTAL SCIENCE CENTRE**

**PESC FUMEHOOD UPGRADES**

Consultant Signature Box Only

Designed by/Concept par: **D.P.**

Drawn by/Dessiné par: **D.P.**

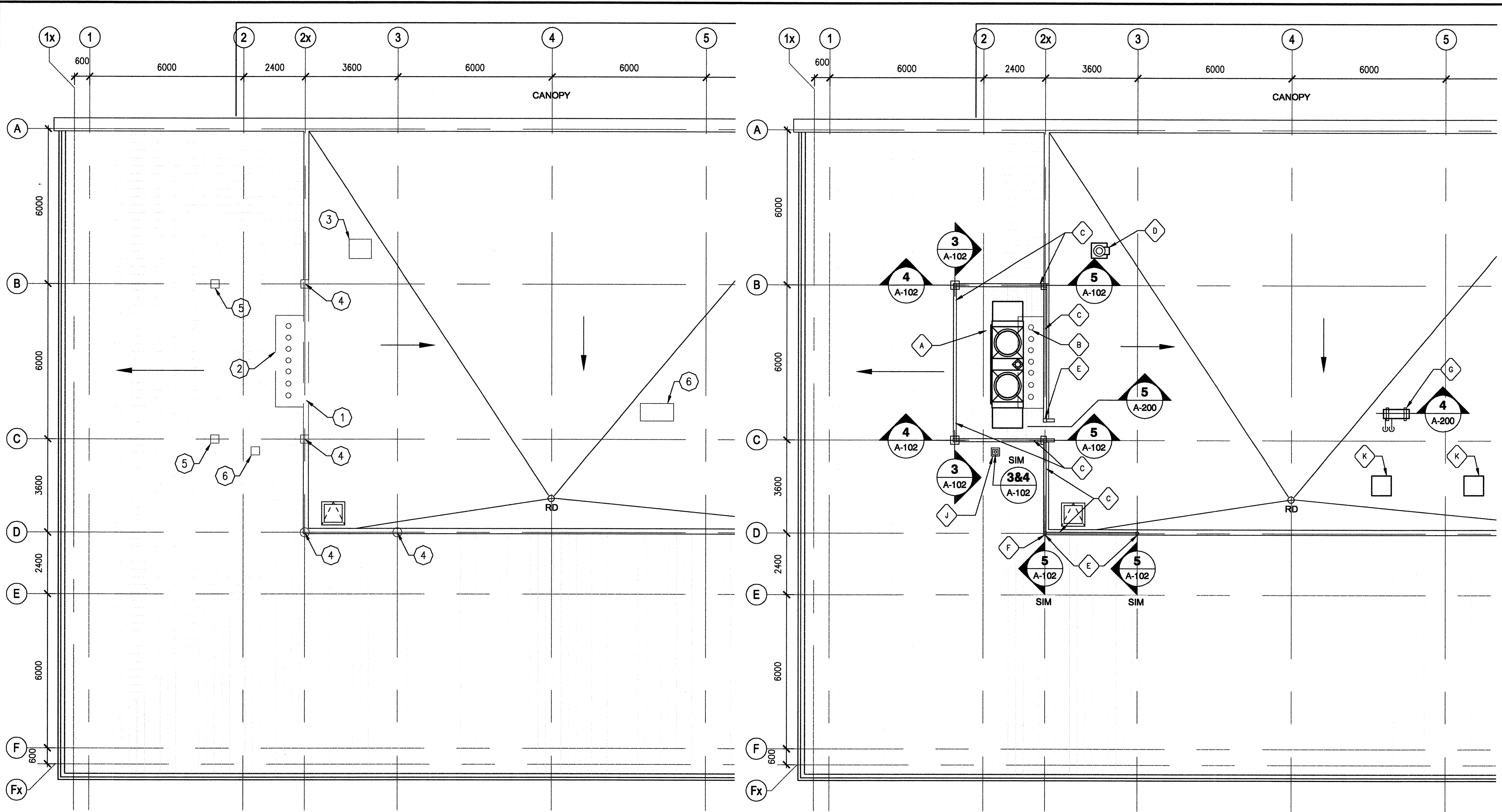
PWGSC Project Manager/Administrateur de Projets TPSGC: **Patrick Truong**

PWGSC, Regional Manager, Architectural and Engineering Services / Gestionnaire régionale, Services d'architecture et de génie, TPSGC: **PREETIPAL PAUL**

Drawing title/Titre du dessin: **MAIN FLOOR PLAN**

Project No./No. du projet: <b>R.071030.001</b>	Sheet/Feuille: <b>A-101</b>	Revision no./La Révision no.: <b>1</b>
	<b>OF 6</b>	

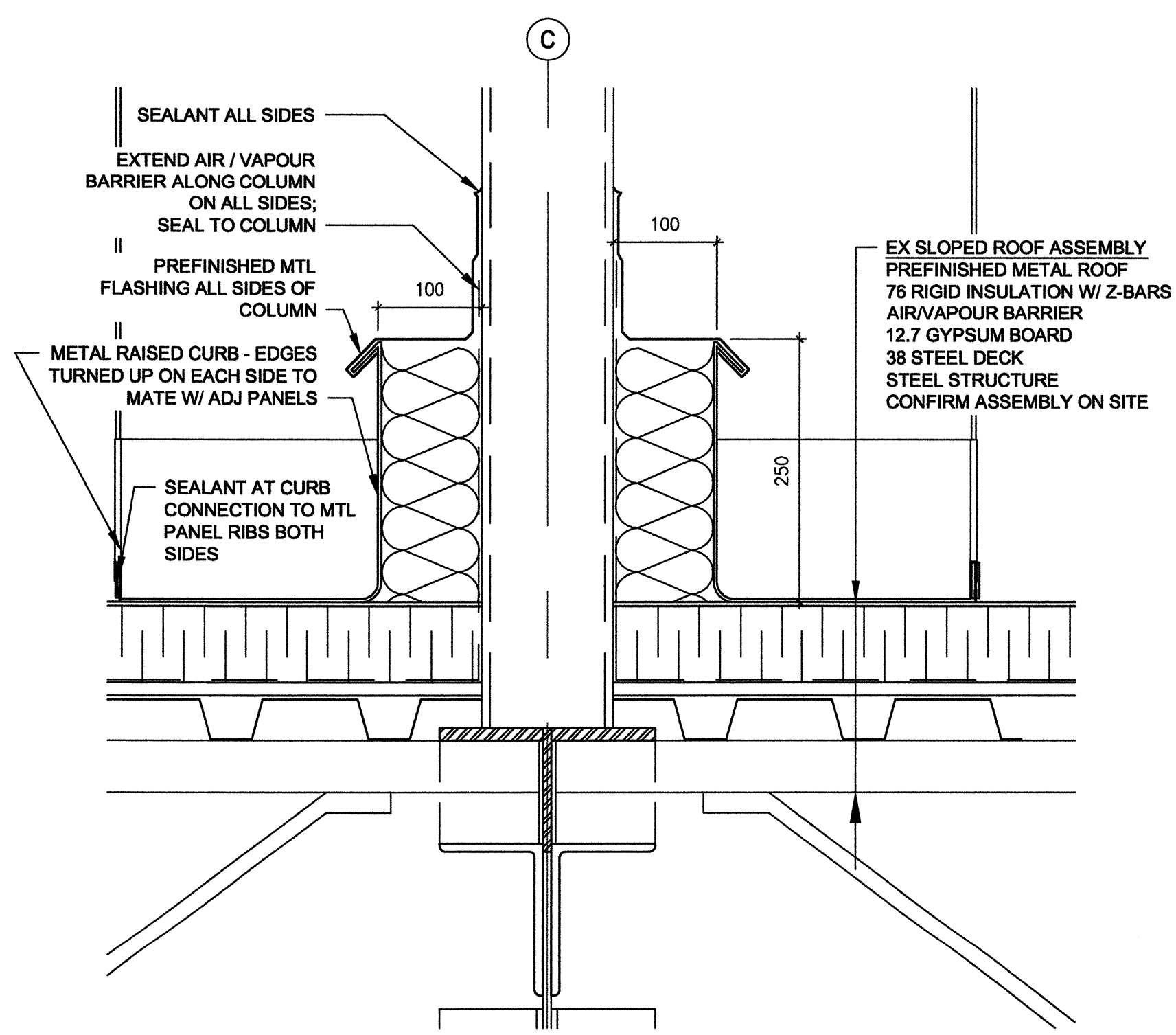




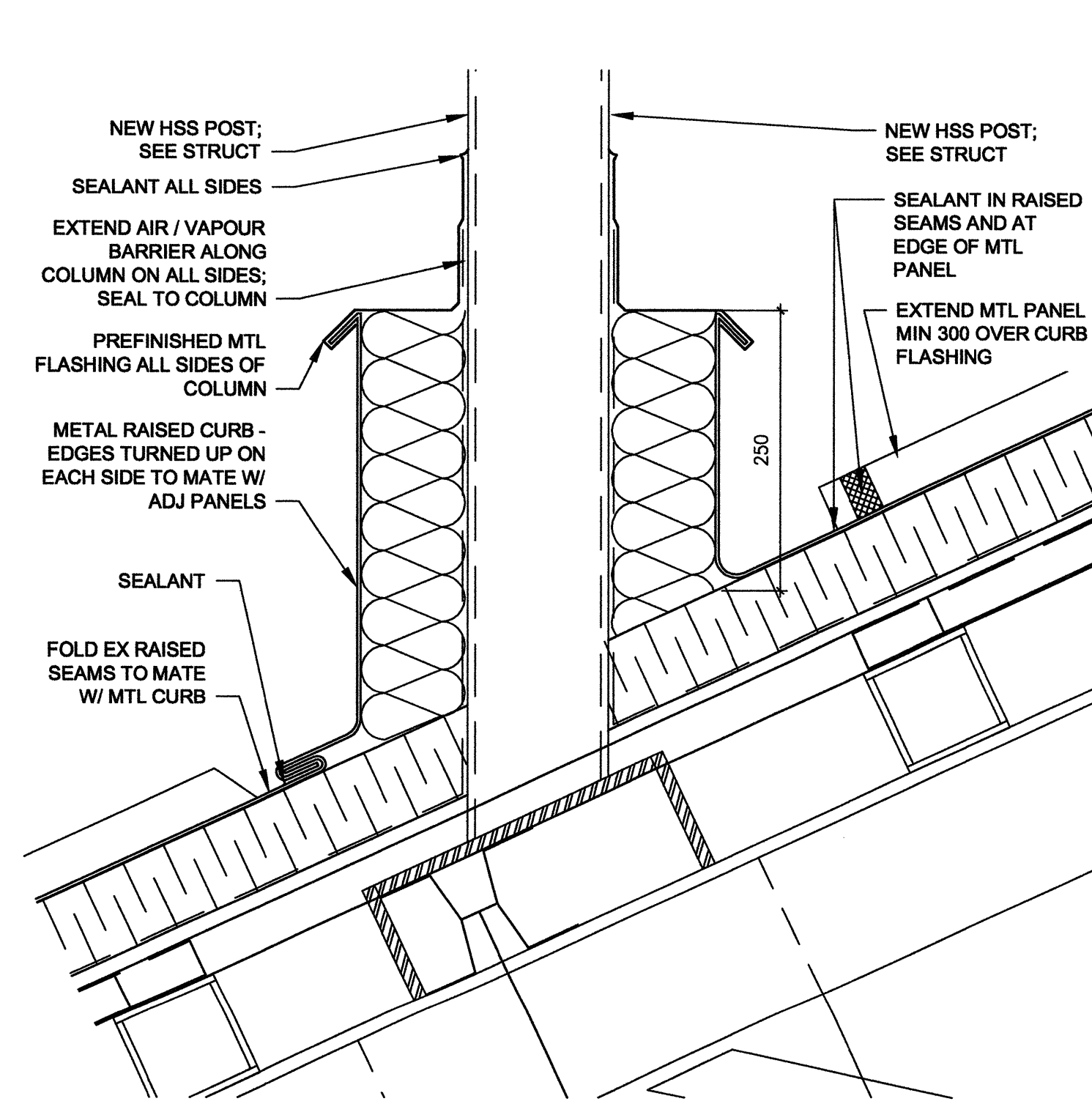
- DEMOLITION NOTES**
- REMOVE PARAPET AT NEW STRUCT PLATFORM BETWEEN NEW STRUCT COLUMNS AS SHOWN. REFER TO DTL 5 / A-200.
  - REMOVE EX MECH STACKS - SEE MECH
  - REMOVE ROOFING AS NECESSARY TO ACCOMMODATE FUME HOOD EXHAUST FAN - SEE MECH. REPAIR ROOFING TO MATCH EX ADJ.
  - REMOVE PARAPET AND ROOFING AS NECESSARY TO ACCOMMODATE NEW STRUCT. POSTS.
  - REMOVE ROOFING AS NECESSARY TO ACCOMMODATE NEW STRUCT POSTS. SEE STRUCTURAL DRAWINGS FOR THE EXTENT OF WORK.
  - REMOVE ROOFING AS NECESSARY TO ACCOMMODATE CONDENSING UNIT & EXHAUST FAN STACK - SEE MECH. REPAIR ROOFING TO MATCH EX ADJ.
- CONSTRUCTION NOTES**
- NEW STROBIC FAN UNIT - SEE MECH.
  - NEW STRUCT PLATFORM. SEE STRUCT.
  - NEW GUARDRAIL CONFORMING TO WORKSAFE BC STANDARDS. SEE STRUCTURAL DRAWINGS FOR DETAILS AND LOCATIONS.
  - FUME HOOD EXHAUST FAN - SEE MECHANICAL DRAWINGS.
  - NEW GUARD POSTS - SEE STRUCTURAL DRAWINGS.
  - REPAIR ROOF AND PARAPET CONST ADJ NEW STRUCT POST. REFER TO DTL. 5 / A-200 FOR ROOF AND PARAPET CONST. MATCH ADJ PARAPET HEIGHT. AIR / VAPOUR BARRIER AND FLASHING AT COL SIM DTL. 4 / A-200.
  - NEW CONDENSING UNIT ON ROOF. SEE MECHANICAL. REFER TO ARCHITECTURAL DRAWING 4/A-200 FOR WOOD CURB DETAIL.
  - NEW ROOF LADDER. SEE ARCHITECTURAL DWG. 5/A200
  - NEW EXHAUST FAN STACK. SEE MECHANICAL DRAWINGS. REFER TO ARCHITECTURAL 3/A-102 & 4/A-102 FOR SIMILAR DETAIL.
  - NEW EXHAUST TERMINAL ON ROOF- SEE MECHANICAL. REFER TO STRUCTURAL FOR CURB CONNECTION.

**1 ROOF PLAN - DEMOLITION**  
1:100

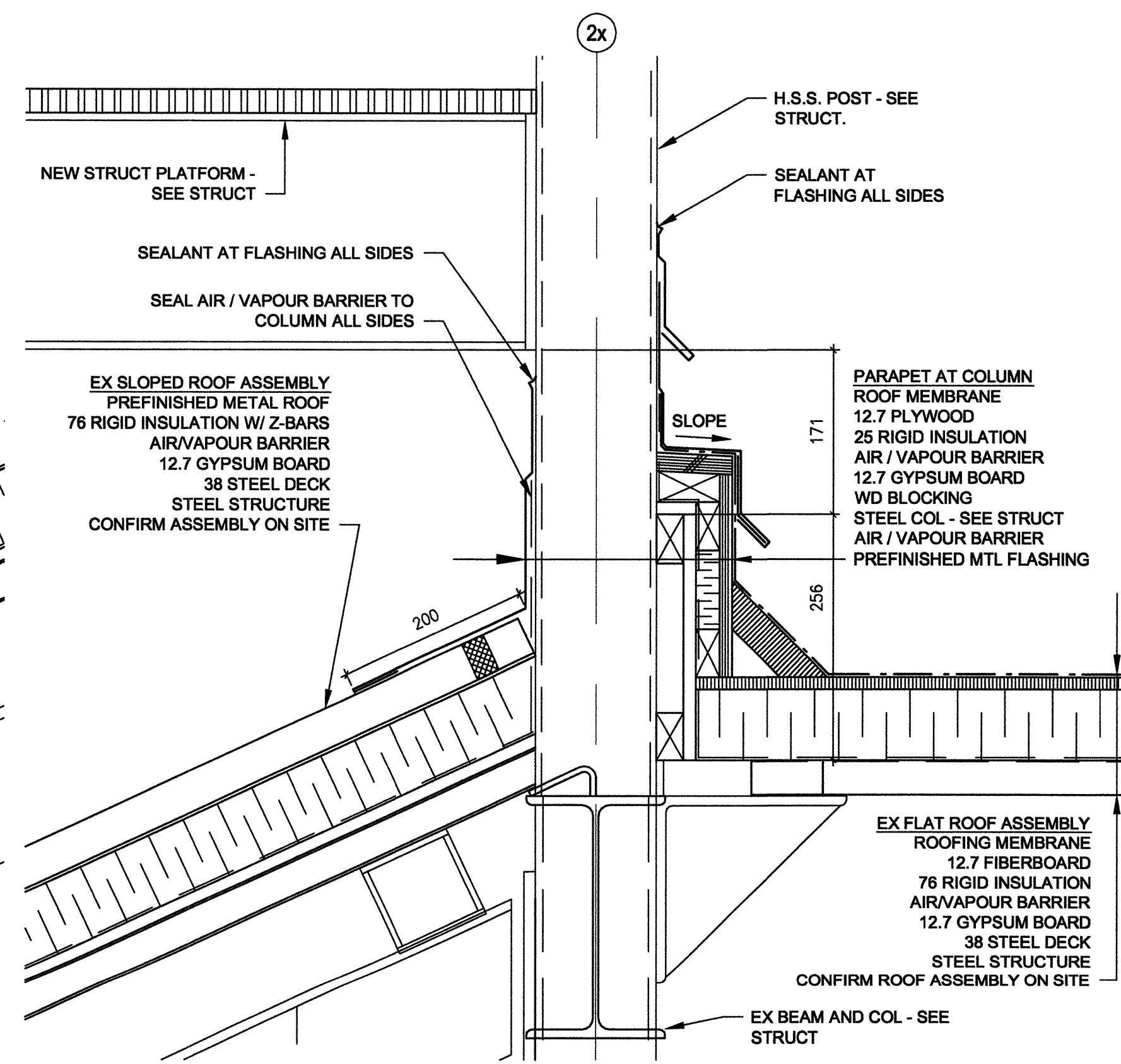
**2 ROOF PLAN**  
1:100



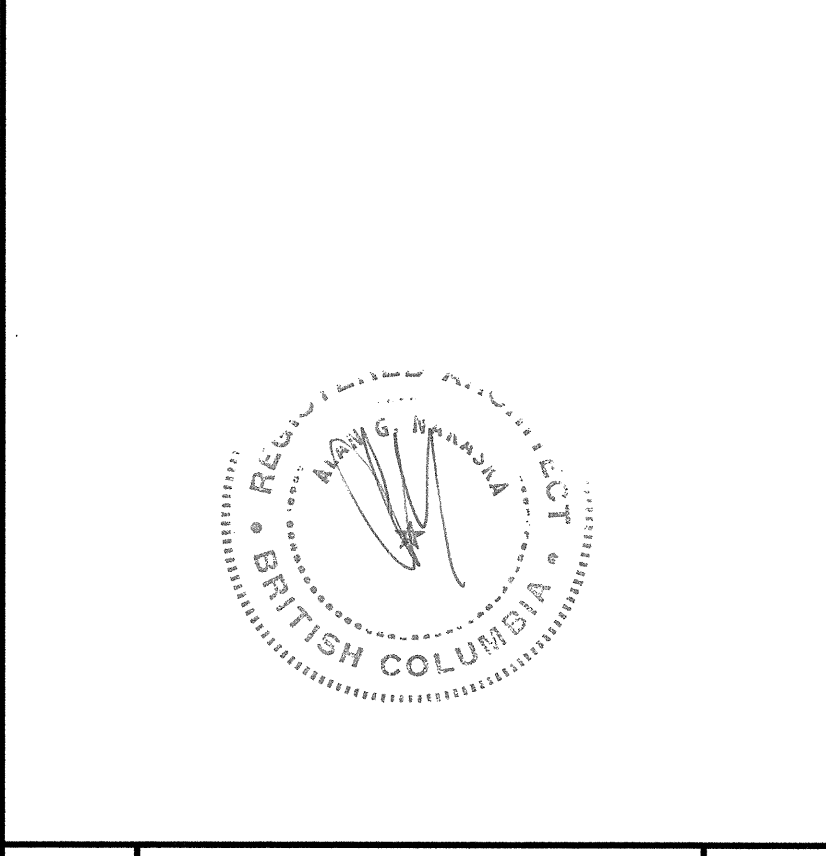
**3 ROOF DETAIL AT HSS POST - TYPICAL**  
1:5



**4 ROOF DETAIL**  
1:5



**5 ROOF DETAIL**  
1:5



1	ISSUED FOR TENDER	2017-05-26
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**ENVIRONMENT CANADA**

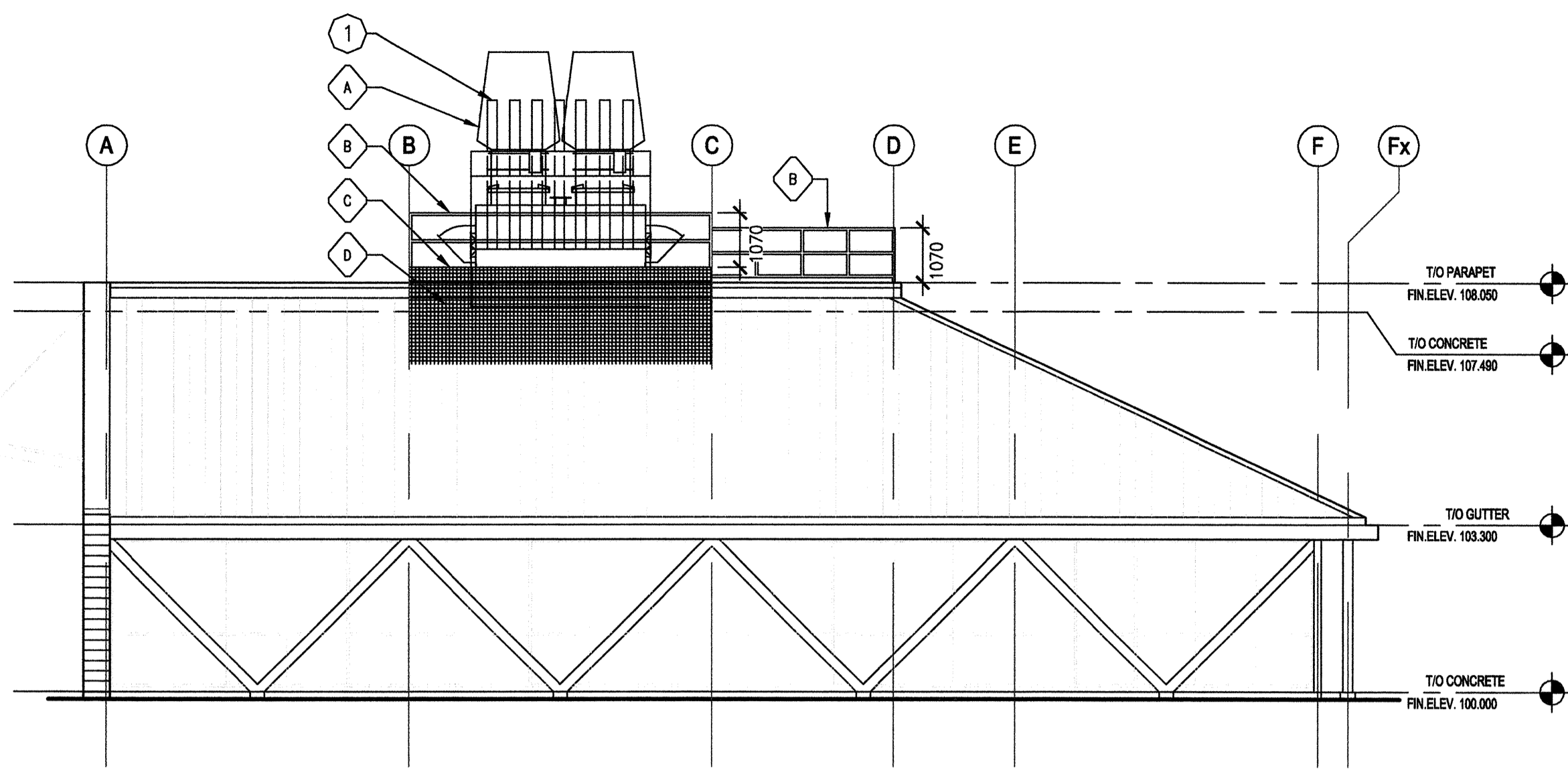
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**PACIFIC ENVIRONMENTAL SCIENCE CENTRE**  
**PESC**  
**FUMEHOOD UPGRADES**

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**Patrick Truong**  
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**PREETIPAL PAUL**

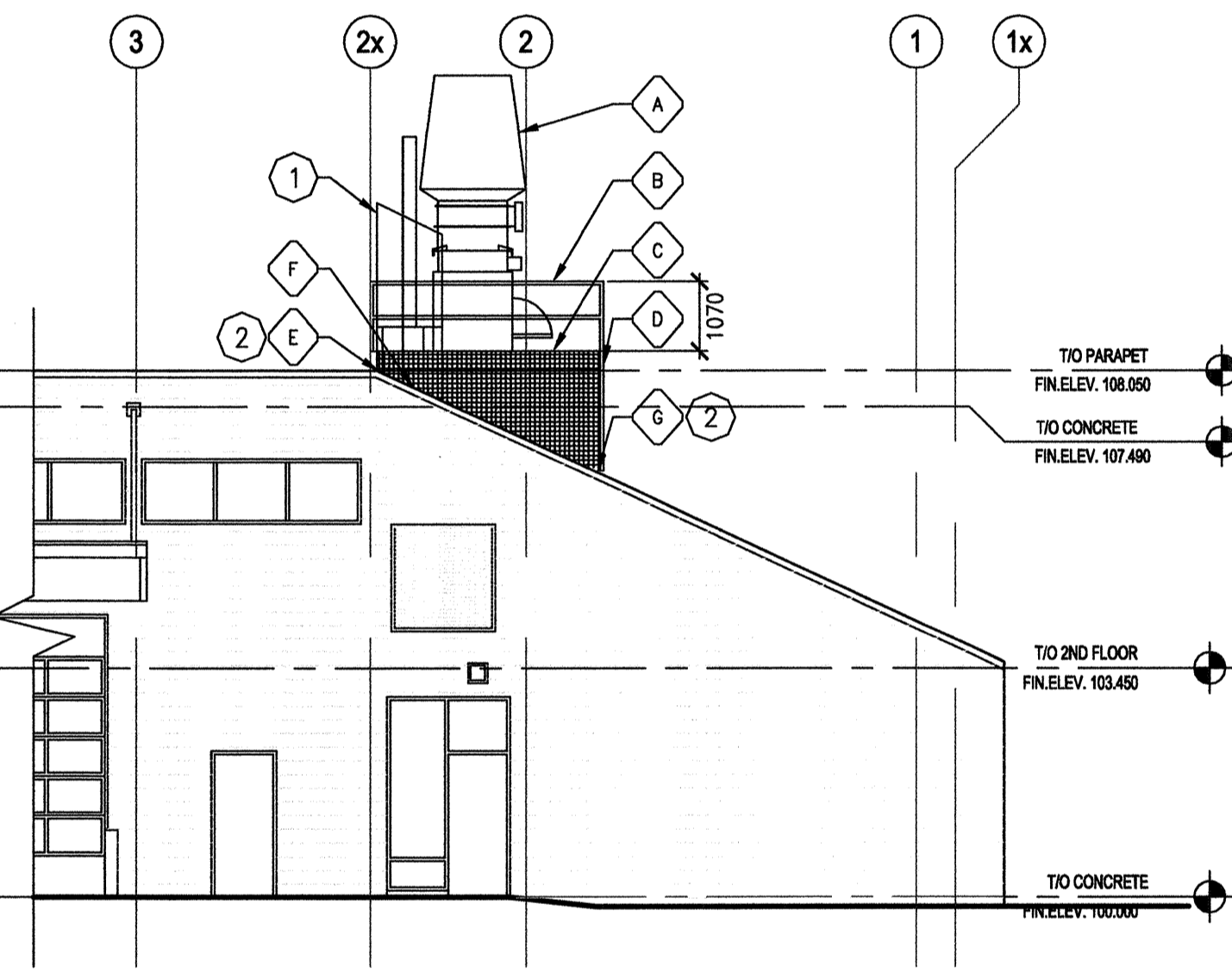
Drawing title/Titre du dessin  
**ROOF PLAN**

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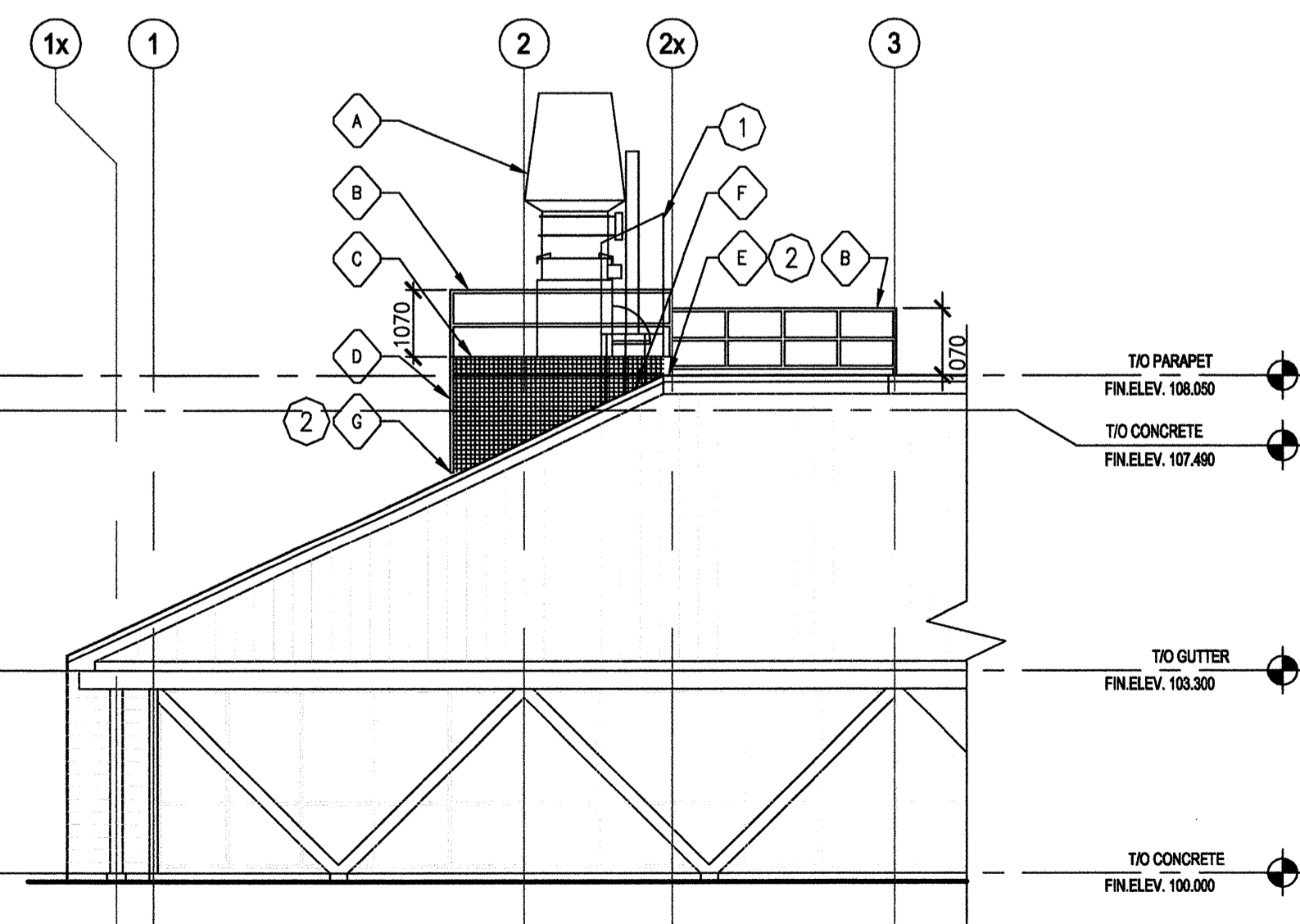




1 NORTH ELEVATION  
1:100

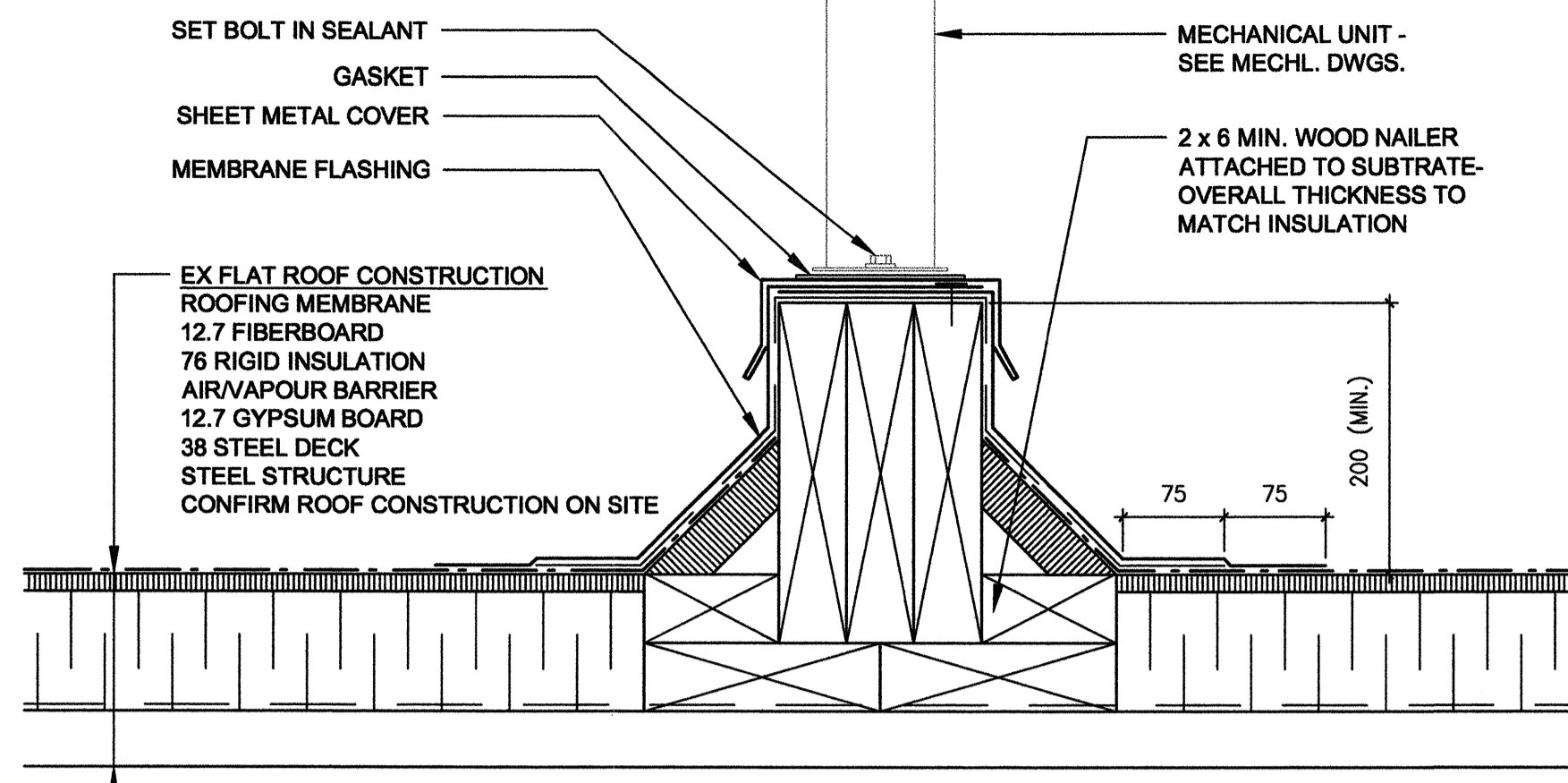


2 EAST ELEVATION  
1:100

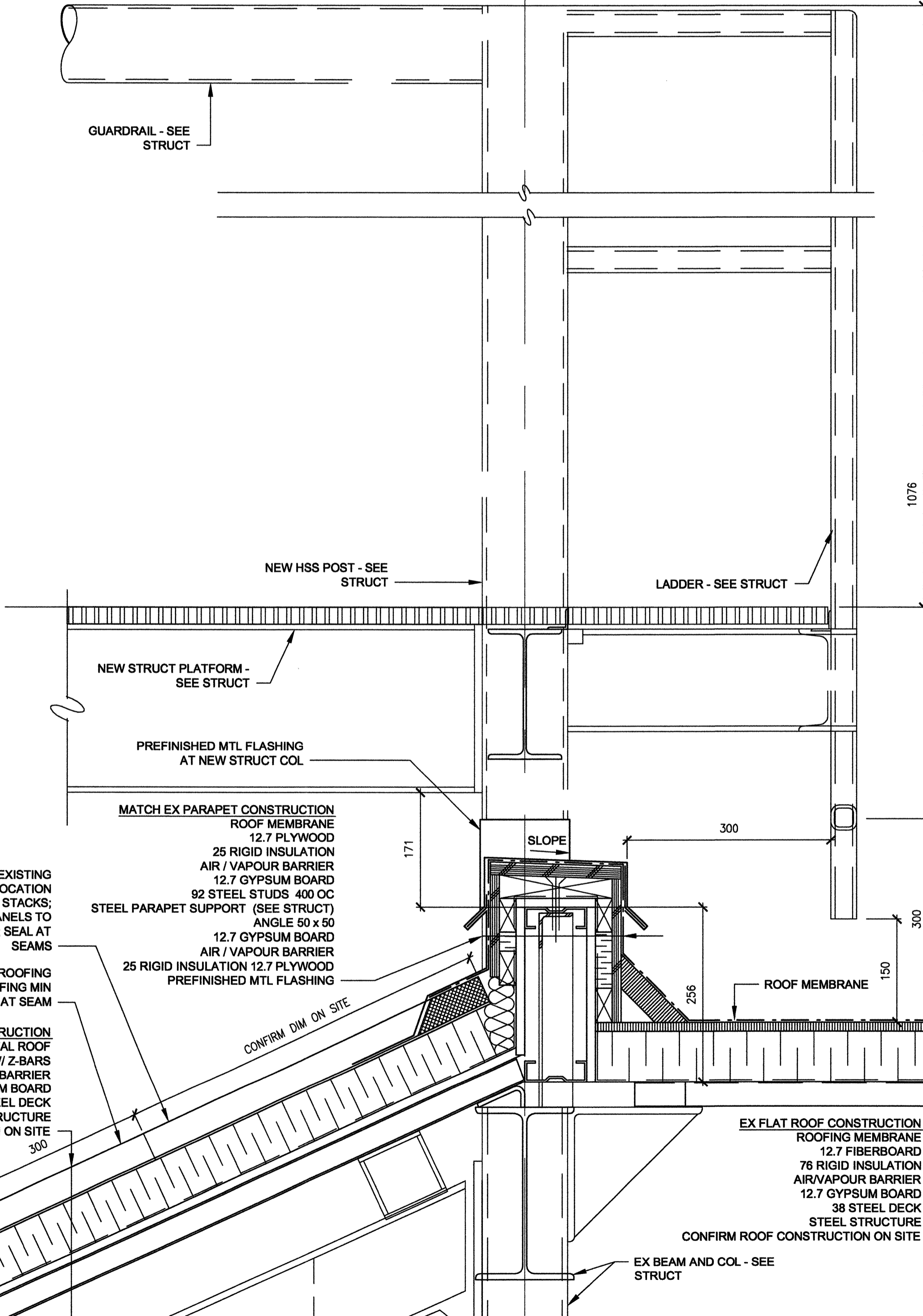


3 WEST ELEVATION  
1:100

- DEMOLITION NOTES**
- 1 REMOVE EX STACKS - SEE MECH.
  - 2 REMOVE ROOFING AS NECESSARY TO ACCOMMODATE NEW STRUCT POST. SEE STRUCT.
- CONSTRUCTION NOTES**
- A NEW STROBIC FAN UNIT - SEE MECH.
  - B NEW GUARDRAIL CONFORMING TO WORKSAFE BC STANDARDS. SEE STRUCT.
  - C NEW STRUCT PLATFORM. SEE STRUCT.
  - D NEW PERFORATED METAL EQUIPMENT SCREEN.
  - E PATCH EX ROOF AT NEW STRUCT POST LOCATIONS AS PER DTLs 4, 5 / A-200.
  - F PATCH EX ROOF AT REMOVED STACK LOCATION AS PER DTL 5 / A-200.
  - G PATCH EX ROOF AT NEW STRUCT POST LOCATIONS AS PER DTLs 3, 4 / A-102.



4 WOOD CURB  
1:10



5 PARAPET DETAIL  
1:10

INFILL ROOF TO MATCH EXISTING ROOF STRUCTURE AT LOCATION OF DEMOLISHED MECH. STACKS; CLIP NEW METAL PANELS TO EXISTING AT SEAMS; SEAL AT SEAMS

EXTEND NEW MTL ROOFING OVER EX MTL ROOFING MIN 300; SEAL AT SEAM

EX SLOPED ROOF CONSTRUCTION  
 PREFINISHED METAL ROOF  
 76 RIGID INSULATION W/ Z-BARS  
 AIR/VAPOUR BARRIER  
 12.7 GYPSUM BOARD  
 38 STEEL DECK  
 STEEL STRUCTURE  
 CONFIRM CONSTRUCTION ON SITE



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**PREETIPAL PAUL**

**ELEVATIONS**  
**DETAILS**

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	<b>OF 6</b>	



**GENERAL**

- THIS SET OF DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE STRUCTURAL SPECIFICATIONS AND WITH THE DRAWINGS AND SPECIFICATIONS FROM ALL OTHER CONSULTANTS. ANY DISCREPANCIES NOTED SHALL BE REPORTED IMMEDIATELY FOR CLARIFICATION.
- THIS SET OF DRAWINGS SHOWS THE COMPLETED STRUCTURE AND DOES NOT SHOW WORK WHICH MAY BE REQUIRED FOR SAFETY DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR GENERAL SAFETY ON AND ABOUT THE JOB SITE DURING THE CONSTRUCTION PERIOD AND FOR DESIGN AND ERECTION OF ALL FALSEWORK, SHORING, BRACING ETC. TO ENSURE THE SAFETY OF ALL CONSTRUCTION TEMPORARY LOADS AND TO COMPLETE THE WORK. ADHERE STRICTLY TO ALL REQUIREMENTS OF THE WORKERS' COMPENSATION BOARD OF BRITISH COLUMBIA. ALL TEMPORARY WORKS AND SHORING ETC. SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN BRITISH COLUMBIA.
- ALL CODE REFERENCES ARE TO LATEST EDITIONS AS REFERENCED IN THE NBC 2015.
- REFER TO SPECIFICATIONS FOR ALL MATERIAL SPECIFICATIONS AND CODE REFERENCES.

**FIELD REVIEW:**

- DEPARTMENTAL REPRESENTATIVE THROUGH CWMM CONSULTING ENGINEERS PROVIDES FIELD REVIEW FOR THE WORK SHOWN ON THE STRUCTURAL DRAWINGS PREPARED BY CWMM CONSULTING ENGINEERS LTD. THIS REVIEW IS A PERIODIC REVIEW AT THE PROFESSIONAL JUDGMENT OF CWMM CONSULTING ENGINEERS LTD. THE PURPOSE IS TO ASCERTAIN THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE PLANS AND SUPPORTING DOCUMENTS PREPARED BY CWMM CONSULTING ENGINEERS LTD. AND TO FULFILL THE REQUIREMENTS FOR THE COMPLETION OF LETTERS OF ASSURANCE REQUIRED BY THE APPLICABLE BUILDING CODE.
- ALL NON-CONFORMING WORKS THAT REQUIRE REMEDIAL ACTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY EXTRA TIME OR COST INCURRED TO PWGSC IN RECTIFYING THE WORK SHALL BE BORNE BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT.
- ENSURE THAT WORK TO BE INSPECTED IS COMPLETE AT THE TIME OF INSPECTION AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ADDITIONAL INSPECTIONS REQUIRED DUE TO INCOMPLETE WORK OR POORLY EXECUTED WORK, AS JUDGED BY THE DEPARTMENTAL REPRESENTATIVE, AS WELL AS ADDITIONAL DESIGN OR REMEDIAL WORK CAUSED BY DEVIATIONS FROM THESE DRAWINGS, MAY BE CHARGED TO THE CONTRACTOR.
- A MINIMUM 24 HOURS NOTICE SHALL BE GIVEN TO THE DEPARTMENTAL REPRESENTATIVE BY THE CONTRACTOR FOR ANY INSPECTION TO BE CARRIED OUT.

**DESIGN LOADS:**

- THE NEW STRUCTURE HAS BEEN DESIGNED FOR SNOW, WIND AND SEISMIC FORCES IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN THE NATIONAL BUILDING CODE OF CANADA 2015. IMPORTANT CATEGORY = NORMAL

GROUND SNOW: S<sub>s</sub> = 3.0 kPa  
 RAIN LOAD: S<sub>r</sub> = 0.3 kPa

IMPORTANCE FACTORS FOR SNOW  
 I<sub>s</sub> = 1.0 FOR STRENGTH  
 I<sub>s</sub> = 0.9 FOR SERVICEABILITY

WIND LOAD: PROBABILITY 1/50 = 0.45 kPa

IMPORTANCE FACTORS FOR WIND  
 I<sub>w</sub> = 1.0 FOR STRENGTH  
 I<sub>w</sub> = 0.75 FOR SERVICEABILITY

EARTHQUAKE FACTORS:  
 S<sub>a</sub> (0.2) = 0.794  
 P<sub>GA ref</sub> = 0.345  
 I<sub>E</sub> = 1.0 FOR STRENGTH  
 I<sub>E</sub> = 1.0 FOR SERVICEABILITY  
 (CLAUSE 4.1.8.13 FOR SERVICEABILITY)  
 F<sub>a</sub> = 1.0  
 S<sub>p</sub> = 3.0

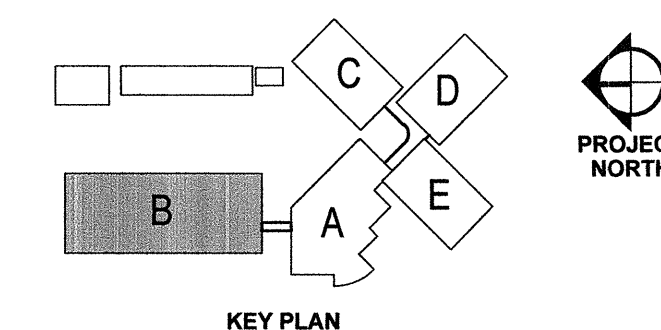
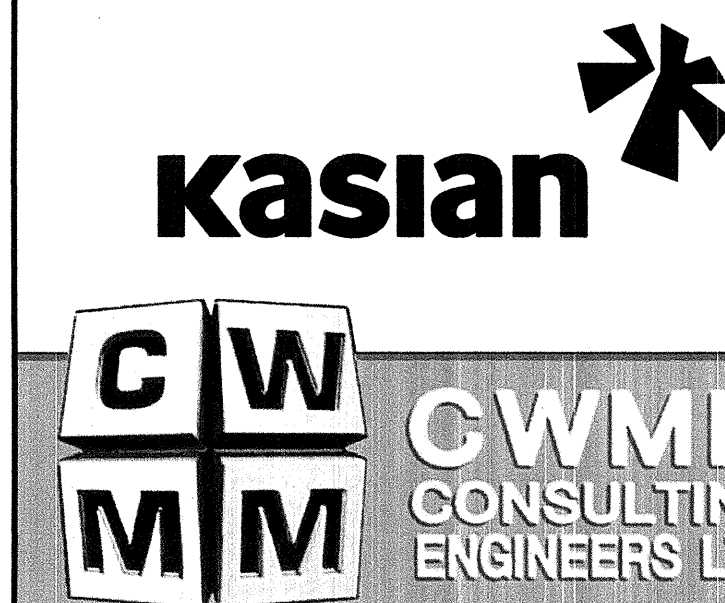
- SPECIFIED UNIFORM LIVE LOADS ON PLATFORM:  
 PLATFORM 3.6 kPa
- DESIGN SPECIFIED CONCENTRATED LIVE LOADS ON ROOF AND FLOORS:  
 PLATFORM 1.3 kN
- WORST CASE OF UNIFORM OR CONCENTRATED LIVE LOADS WILL BE USED FOR DESIGN OF STRUCTURAL MEMBERS.

**STRUCTURAL STEEL**

- REFER TO SPECIFICATIONS FOR STEEL WORK, DESIGN CODE REFERENCES AND OTHER REQUIREMENTS.
- GRADES OF MATERIALS:  
 W SHAPES 350W (ASTM A992, A572 GRADE 50)  
 C SHAPES AND ANGLES 300W  
 HOLLOW STRUCTURAL STEEL (HSS) 350W, CLASS C (ASTM A500)  
 STRUCTURAL PIPE ASTM A53, GRADE B  
 OTHER STRUCTURAL STEEL AND MISC. METAL 300W  
 BOLTS, NUTS AND WASHERS ASTM A325  
 ANCHOR BOLTS ASTM A307  
 STEEL DECKING CSSBI 101M, GRADE A  
 STEEL STUD CSA - W59, APP. H
- DRAWINGS FROM ALL CONSULTANTS SHALL BE EXAMINED FOR EXACT LOCATIONS, DIMENSIONS AND ELEVATIONS.
- ALL WELDS SHALL BE 6mm LEG MINIMUM. ALL CONNECTION BOLTS SHALL BE MINIMUM 2 - M20 BOLTS.
- STEEL FABRICATORS AND CONTRACTOR SHALL CONFIRM ALL LOCATIONS, DIMENSIONS AND ELEVATIONS WITH ACTUAL SITE MEASUREMENTS BEFORE FABRICATION. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY FABRICATION AND WORK DONE PRIOR TO REVIEW AND APPROVAL OF THE SHOP DRAWINGS.

**ABBREVIATIONS**

A.BOLT	ANCHOR BOLT	L.V.	LENGTH VARIES
ALT.	ALTERNATE	LG.	LONG
ARCH.	ARCHITECTURAL	LL	LOW LEVEL
BLDG.	BUILDING	LLV	LONG LEG VERTICAL
BOT.	BOTTOM	LLH	LONG LEG HORIZONTAL
BTW	BETWEEN	LONG.	LONGITUDINAL
C/C	CENTER TO CENTER	MAX.	MAXIMUM
C/W	COMPLETE WITH	MECH.	MECHANICAL
C.I.P.	CAST IN PLACE	MIN.	MINIMUM
CANT.	CANTILEVER	N/A	NOT AVAILABLE
CL	CLEAR	N.S.	NEAR SIDE
COL.	COLUMN	N.STUD	NELSON STUD
CONC.	CONCRETE	N.T.S.	NOT TO SCALE
CONT.	CONTINUOUS	O/C	ON CENTRES
DL	DEAD LOAD	OPP.	OPPOSITE HAND
DN	DOWN	OWSJ	OPEN WEB STEEL JOIST
DO.	DITTO	P.C.	PRECAST CONCRETE
DP.	DEEP	PL	PLATE
DWG.	DRAWING	PLY.	PLYWOOD
E.W.	EACH WAY	PROJ.	PROJECTION
E.F.	EACH FACE	R/W	REINFORCED WITH
ELEC.	ELECTRICAL	R/C	REINFORCED CONCRETE
ELEV.	ELEVATION	S.O.G.	SLAB ON GRADE
EXIST.	EXISTING	SIM.	SIMILAR
EXT.	EXTERIOR	STAGG.	STAGGERED
FL	FLOOR	STIFF.	STIFFENER
F.S.	FOOTING STEP	T&B	TOP AND BOTTOM
FDN.	FOUNDATION	T&G	TONGUED & GROOVED
FTG.	FOOTING	T.O.C/S	TOP OF CONCRETE/STEEL
G.L.	GRID LINE	THK.	THICK
GALV.	GALVANIZED	TJ	TIE JOIST
H1E	HOOK ONE END	TRAN.	TRANSVERSE
H2E	HOOK TWO ENDS	TYP.	TYPICAL
HL	HIGH LEVEL	U/S	UNDERSIDE
HORIZ.	HORIZONTAL	U.N.O.	UNLESS NOTED OTHERWISE
INT.	INTERIOR	VERT.	VERTICAL




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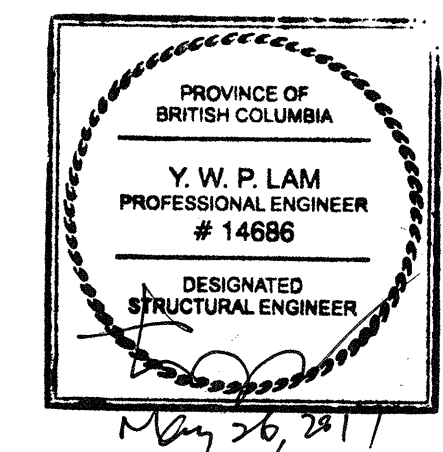
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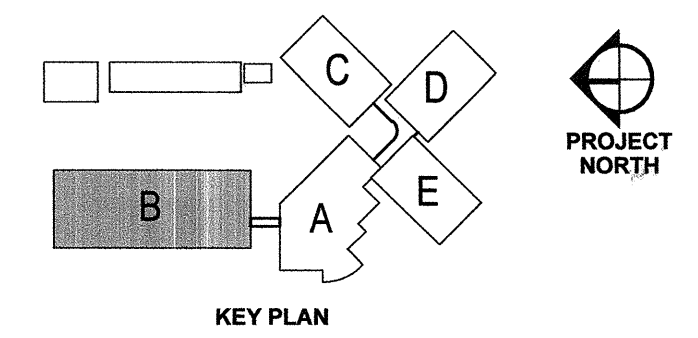
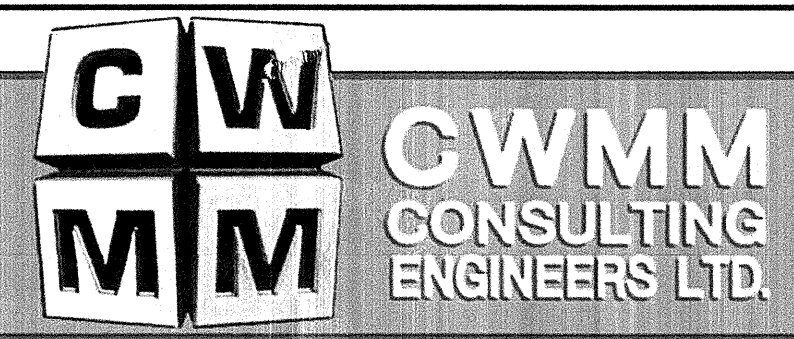
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**GENERAL NOTES**

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12594

S101	BLOCK B - GENERAL NOTES
S201	BLOCK B - ROOF PLAN
S202	BLOCK B - ENLARGE ELEVATED MECHANICAL PLATFORM PLAN
S301	BLOCK B - SECTIONS & DETAILS





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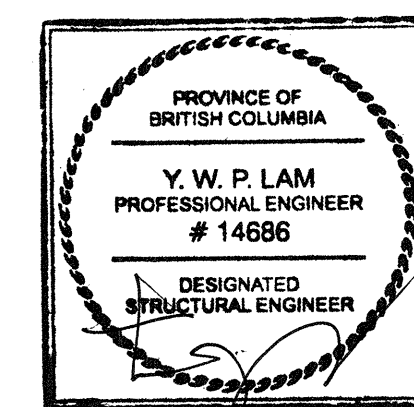
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**PREETIPAL PAUL**

Drawing title/Titre du dessin

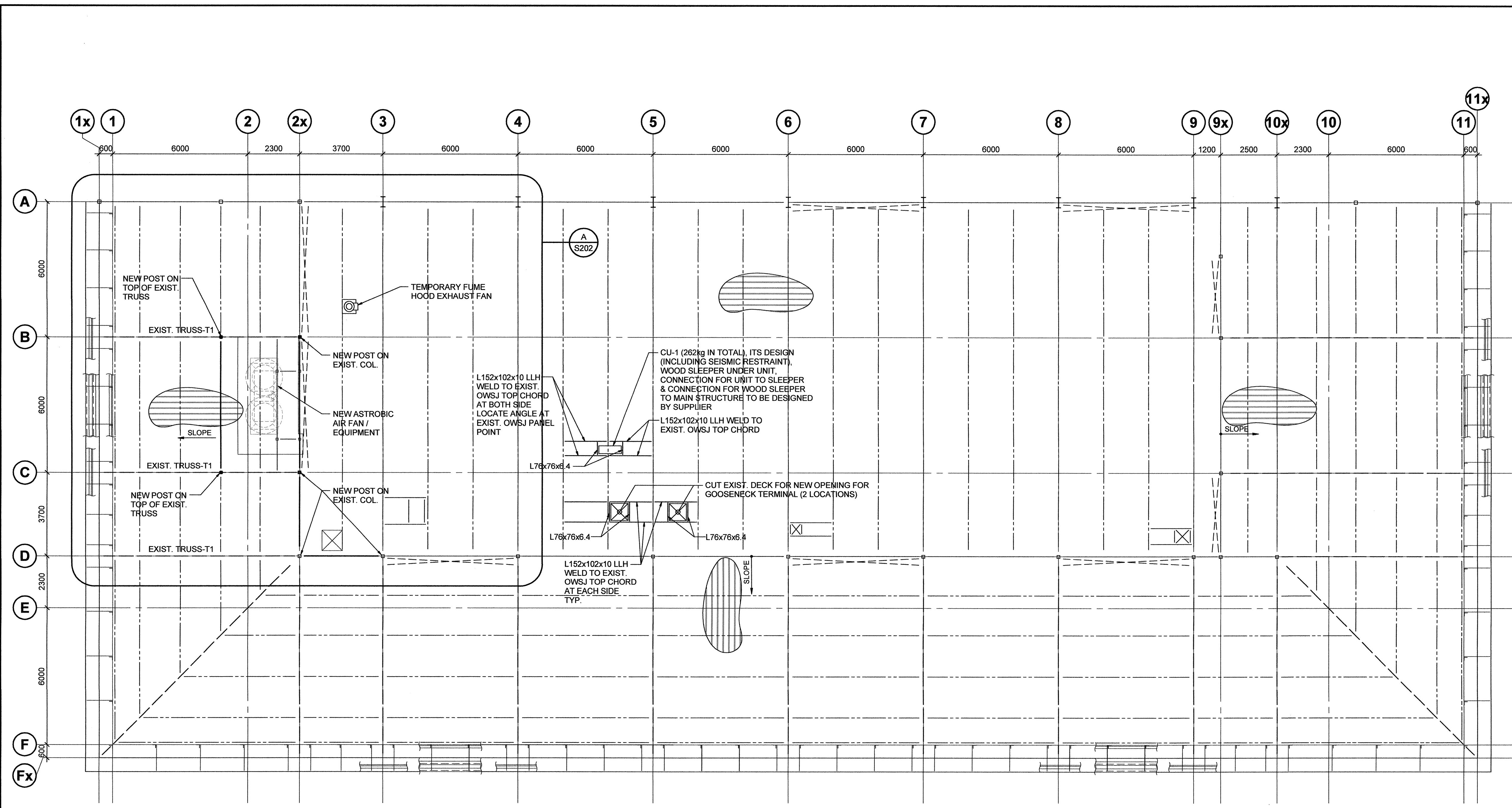
**BLOCK B**  
**ROOF PLAN**



May 26, 2017

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<b>R.071030.001</b>	<b>S201</b> OF	<b>0</b>

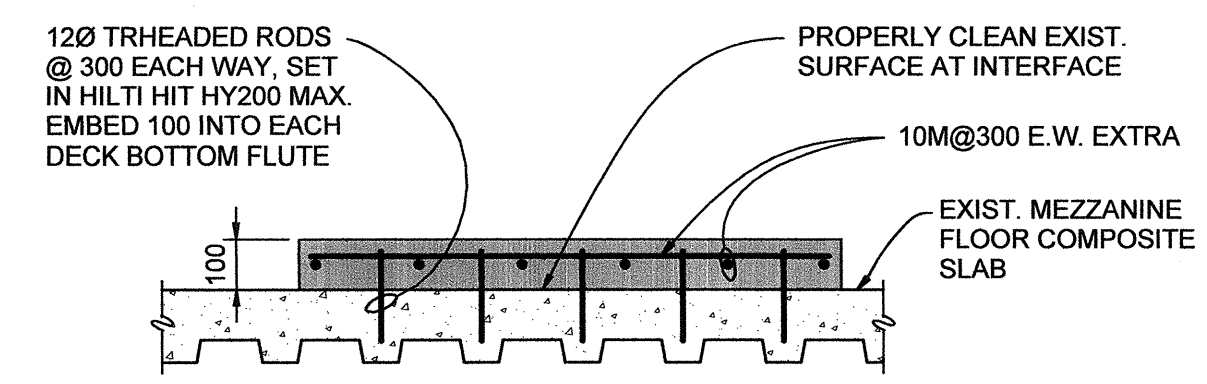
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- LEGEND:**
- DENOTES EXISTING OWSJ
  - DENOTES EXISTING TRUSS
  - DENOTES EXISTING BEAM
  - DENOTES EXISTING BRACE
  - DENOTES EXISTING ROOF DECK

**BLOCK B ROOF PLAN**  
 1:100

U.N.O., PROVIDE 20Ø PUDDLE WELDS @300 O/C (MIN. 2 WELDS PER MEMBER) FOR EXIST. DECK, CONNECTION TO NEW STEEL MEMBERS UNDER

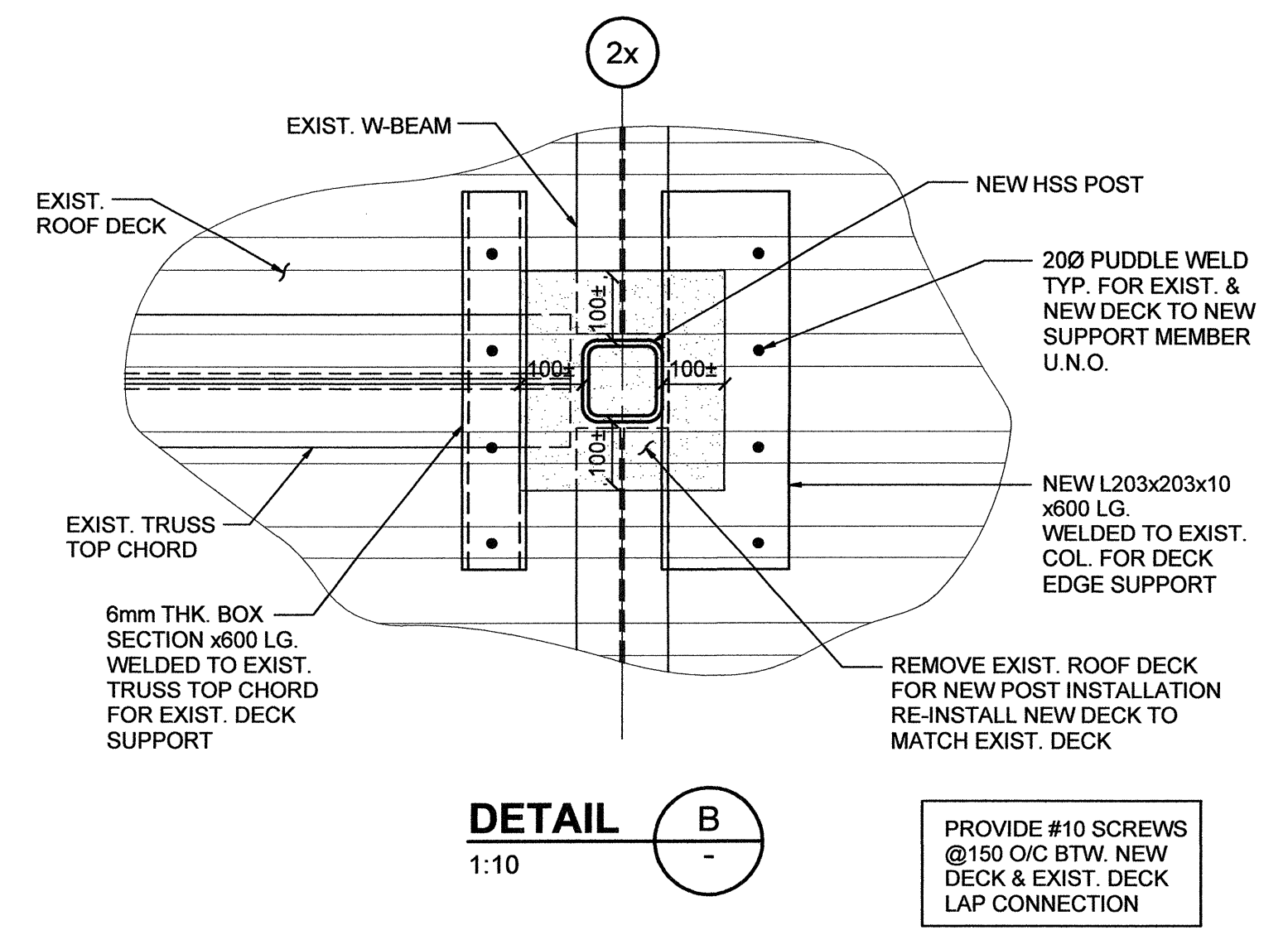
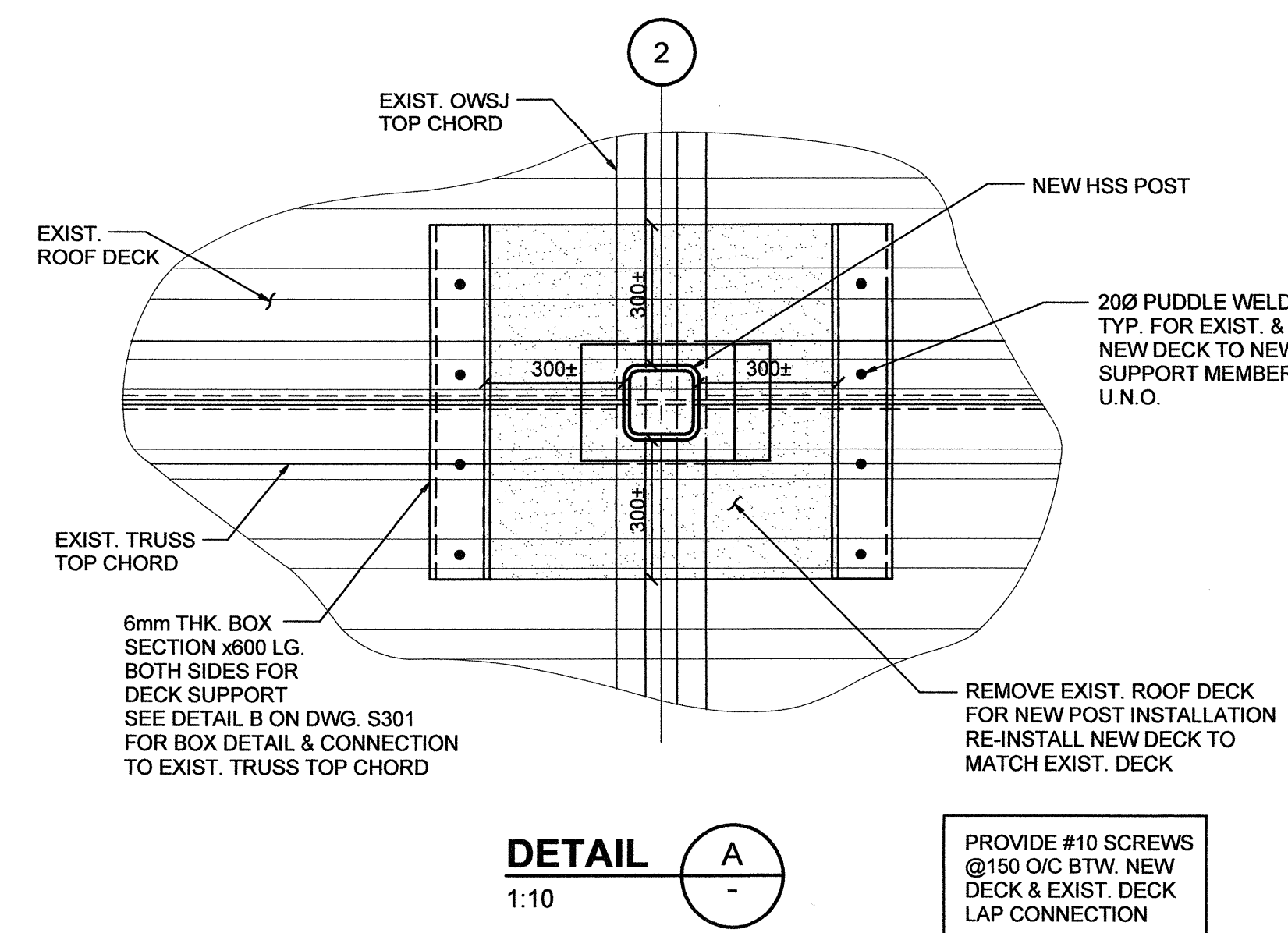
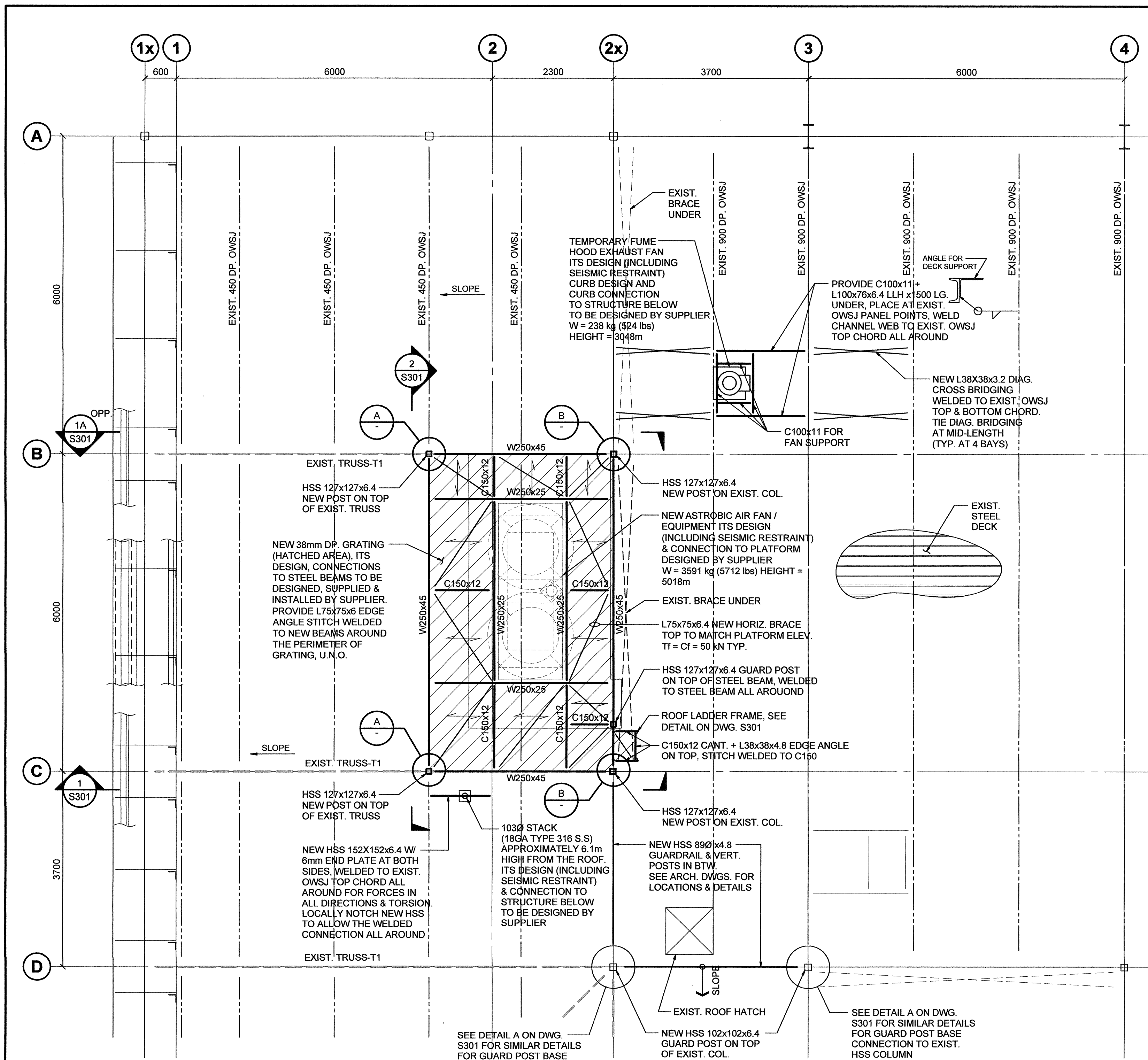


(FOR LOCATION AND SIZE OF PADS AND ANCHOR BOLTS FOR EQUIPMENT SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS)

**TYPICAL NEW 100 THK. HOUSEKEEPING PAD AT MEZZANINE FLOOR**







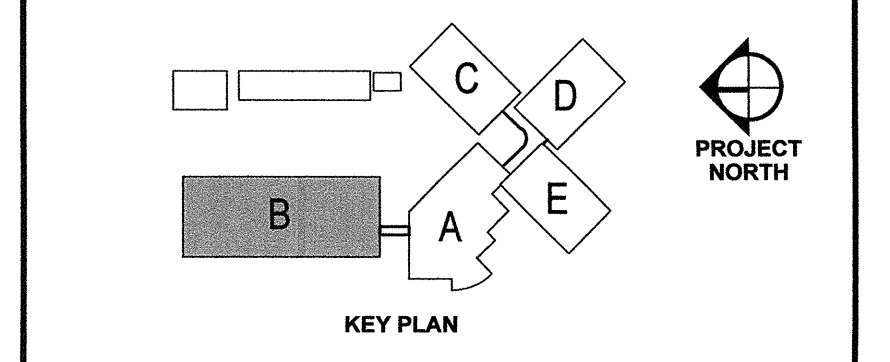
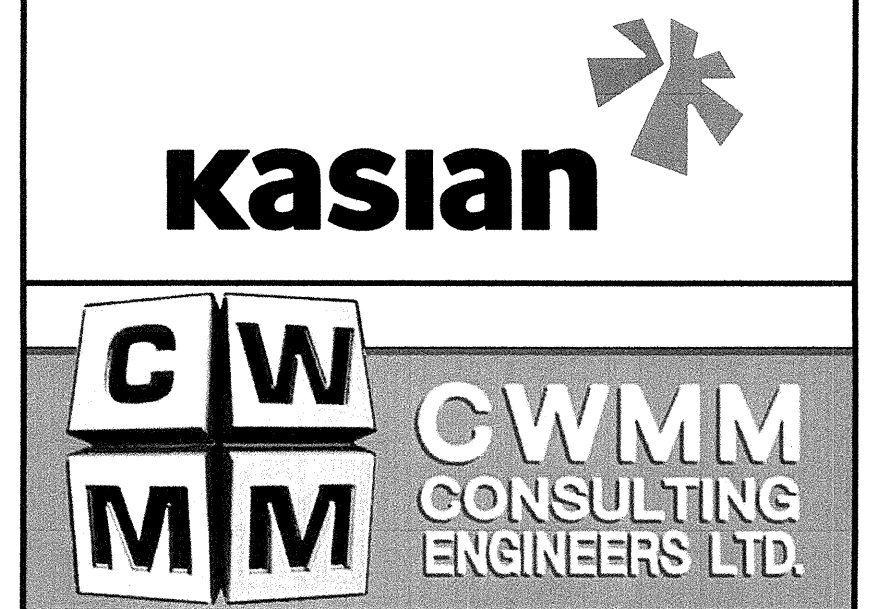
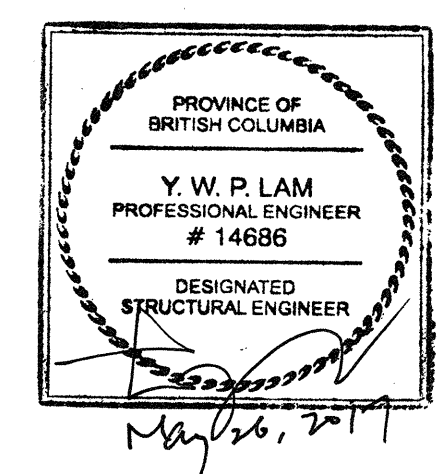
**LEGEND:**  
 --- DENOTES NEW GRATING SPAN  
 - - - - DENOTES EXIST. OWSJ

**BLOCK B - ENLARGE ELEVATED MECHANICAL PLATFORM PLAN**  
 1:50

- NOTES:**
- ALL NEW STEEL MEMBERS, CONNECTION PLATES AND BOLTS TO BE HOT DIP GALVANIZED.
  - PROVIDE DRAIN HOLES TO ALL HSS POSTS ABOVE ROOFING, PROVIDE INTERMEDIATE PLATE AT ROOFING LEVEL AS REQUIRED.
  - PROVIDE DRAIN HOLES TO U/S OF HSS GUARDRAILS AT BOTH ENDS, TYP.
  - PROVIDE MIN. 12mm THK. FULL HEIGHT WEB STIFFENERS AT BOTH SIDES TO NEW W250 BEAM ALONG GRID LINE 2X AT THE LOCATIONS WHERE ROOF LADDER IS ATTACHED.

U.N.O., PROVIDE 200 PUDDLE WELDS @300 O/C (MIN. 2 WELDS PER MEMBER) FOR EXIST. DECK, CONNECTION TO NEW STEEL MEMBERS UNDER

REFER TO MECH. DWG. FOR SUSPENSION CABLE DETAIL FOR EXHAUST FAN AT MEZZANINE CEILING



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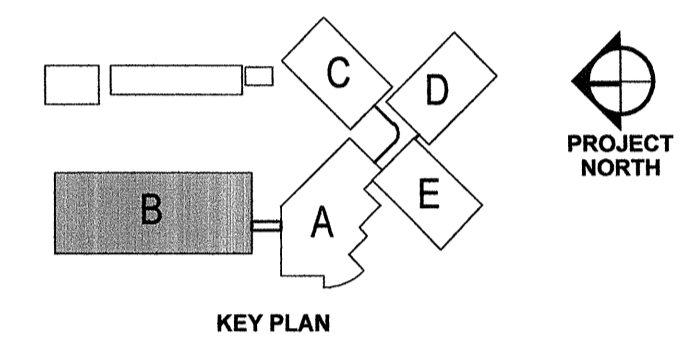
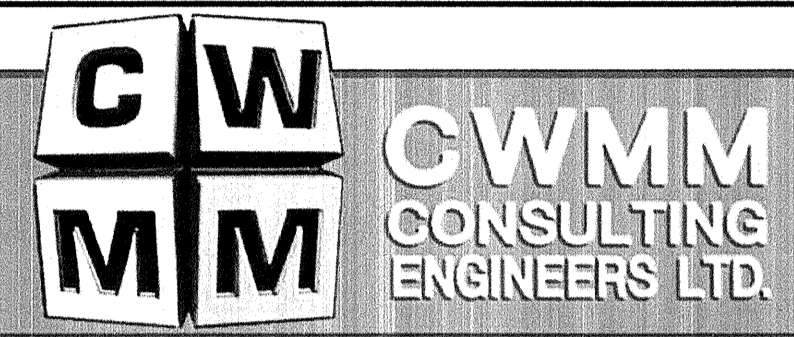
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**CAD**  
 PWGSC Project Manager/Administrateur de Projets TPSGC  
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**PREETIPAL PAUL**

Drawing title/Titre du dessin  
**BLOCK B**  
**ENLARGE ELEVATED**  
**MECHANICAL PLATFORM PLAN**

Project No./No. du projet <b>R.071030.001</b>	Sheet/ Feuille <b>S202</b> OF	Revision no./ Lo Révision no. <b>0</b>
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12594



1	ISSUED FOR TENDER	2017-05-28
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**CAD**

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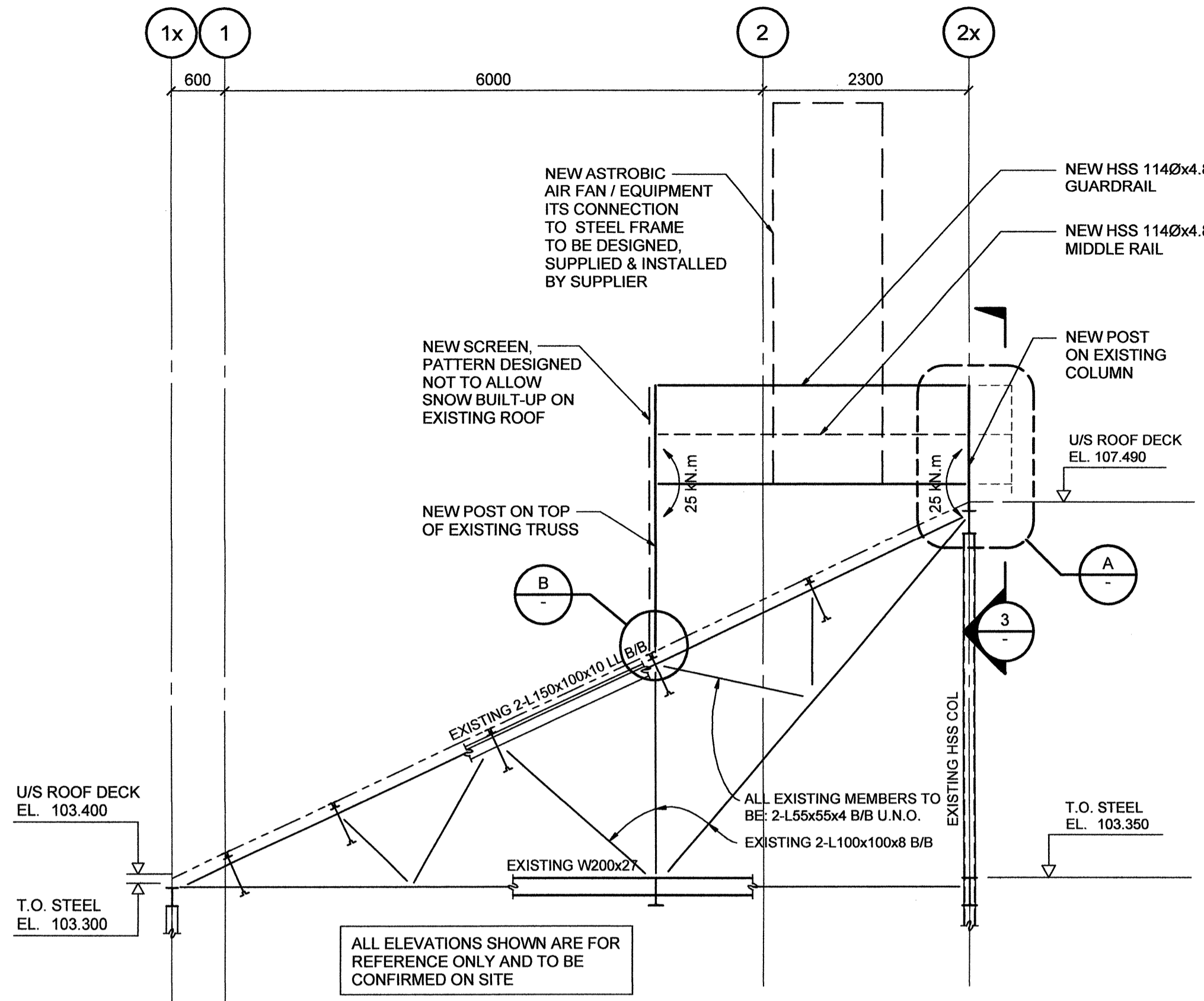
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**PREETIPAL PAUL**

Drawing title/Titre du dessin

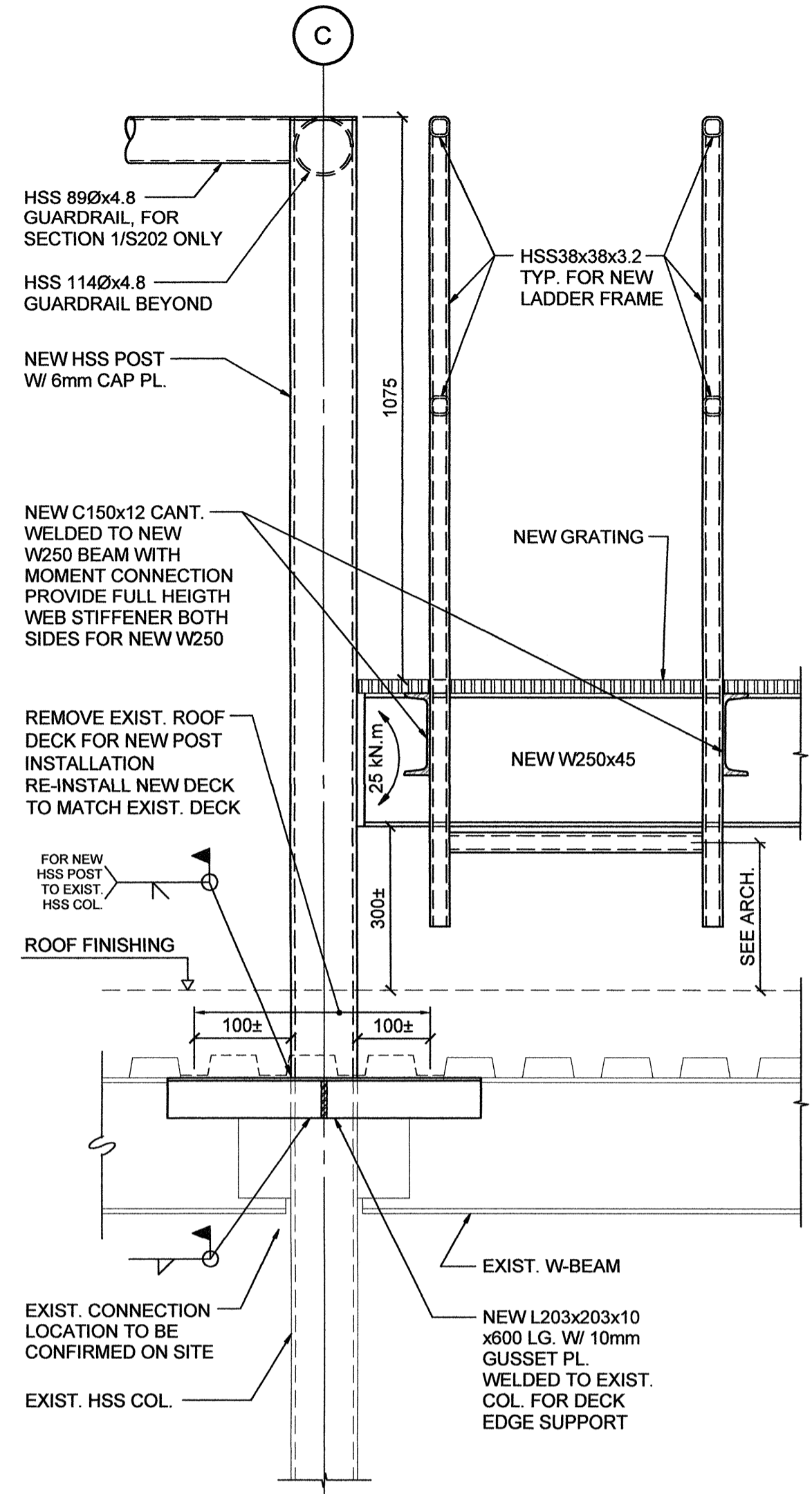
**BLOCK B**  
**SECTIONS & DETAILS**

Project No./No. du projet	Sheet/Feuille	Revision no./ Lo Révision no.
<b>R.071030.001</b>	<b>S301</b> OF	<b>0</b>

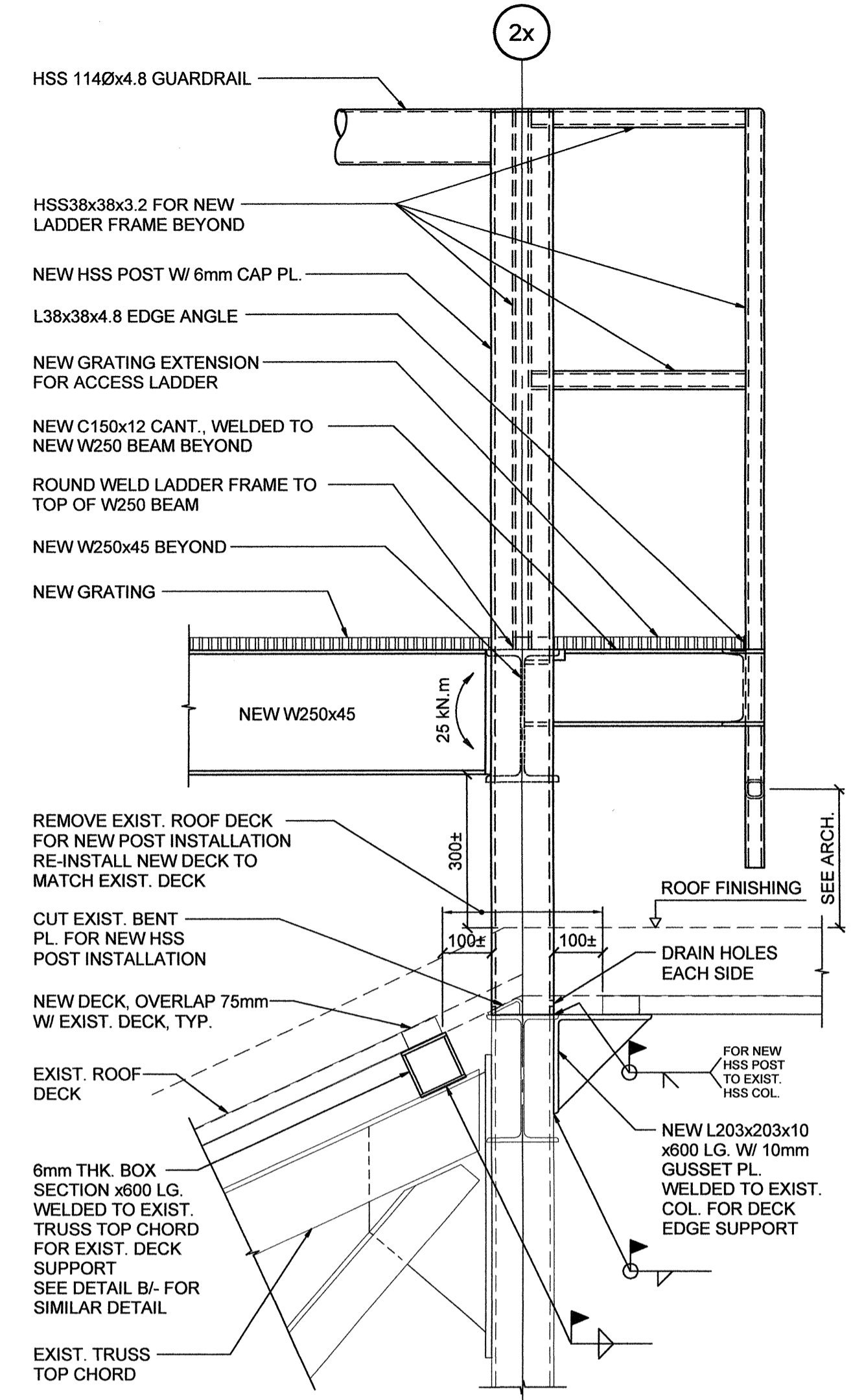
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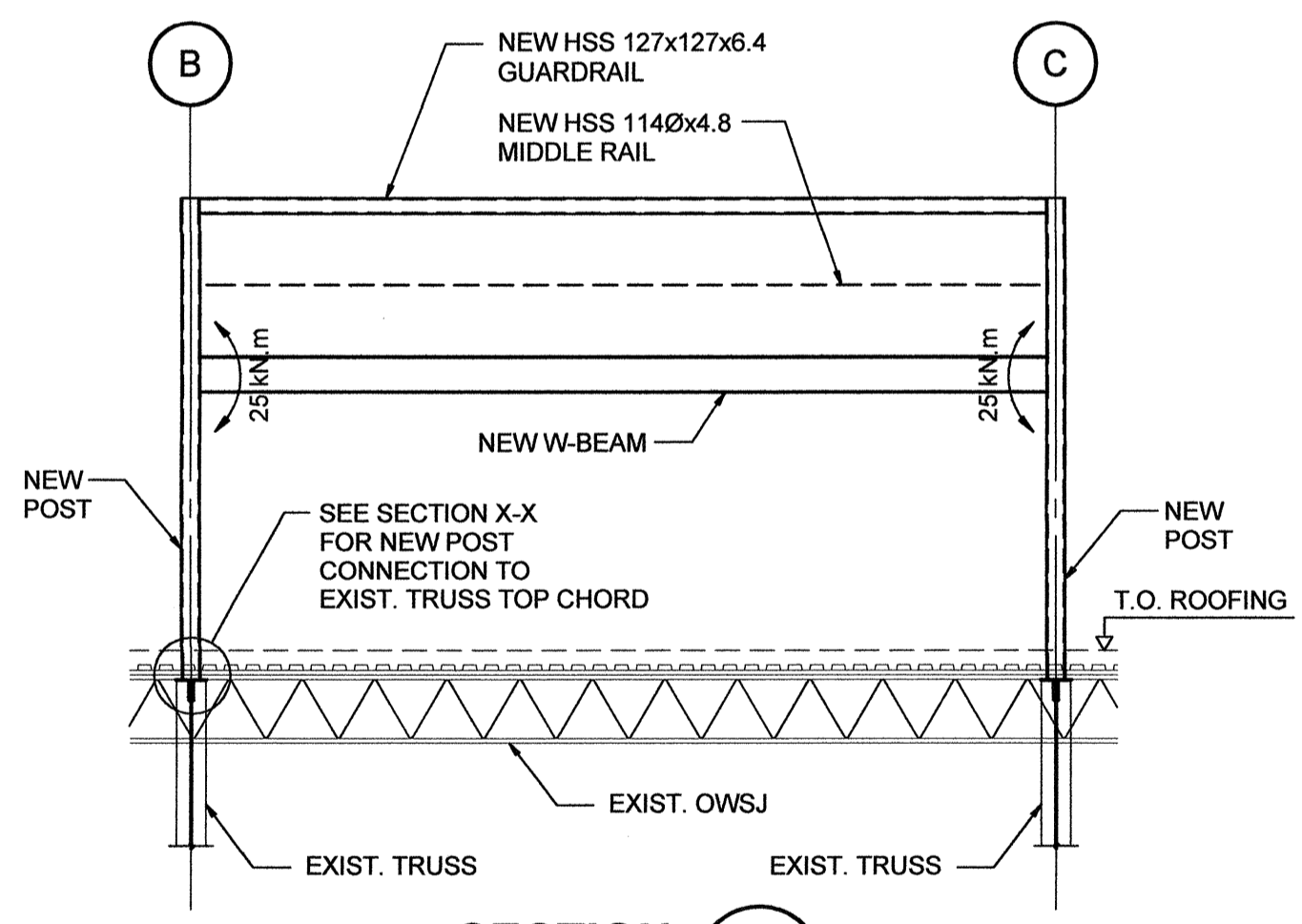
**TYPICAL ROOF TRUSS SECTION FOR BLOCKS B**  
 1:50



**SECTION 3**  
 1:10



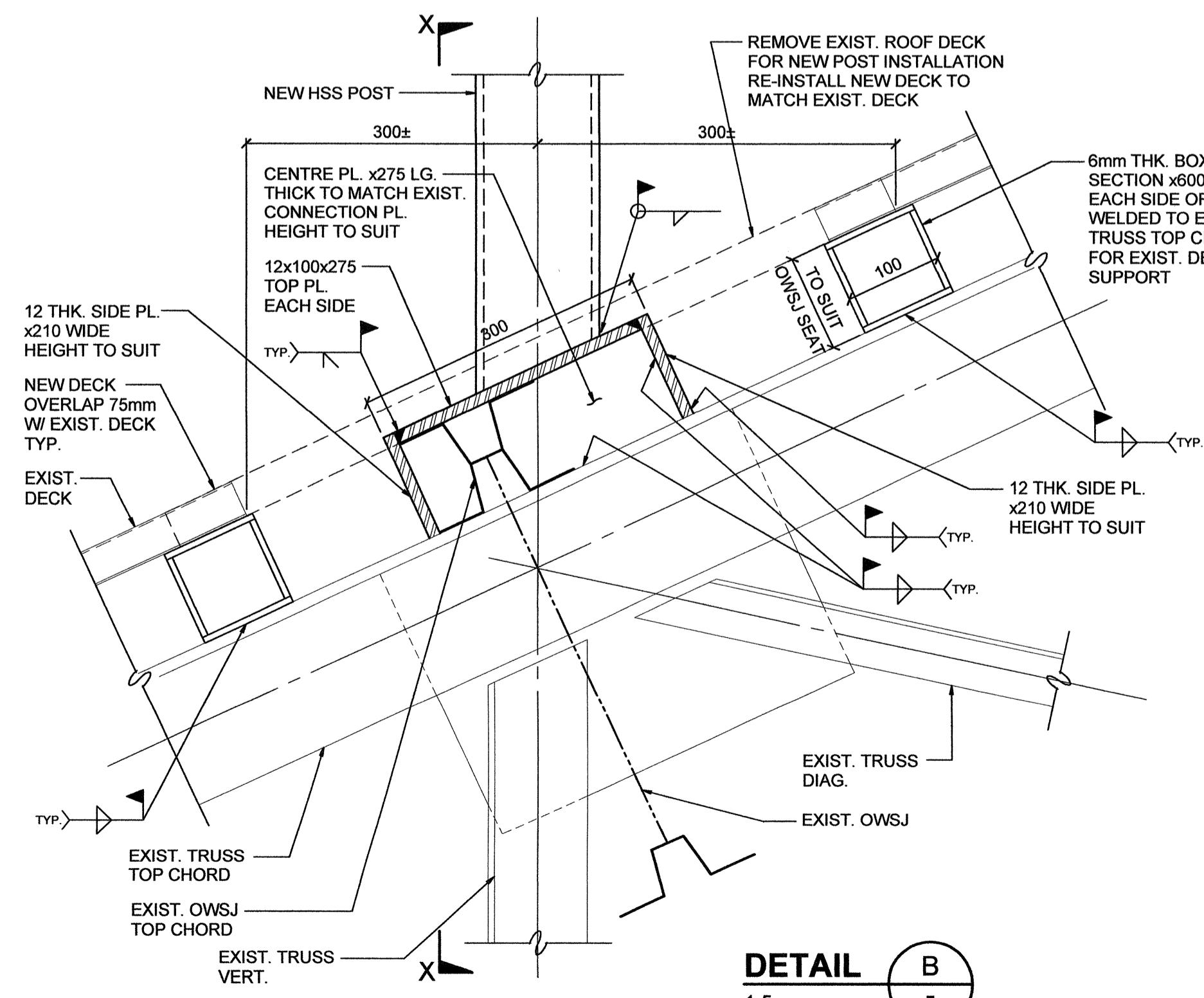
**DETAIL A**  
 1:10



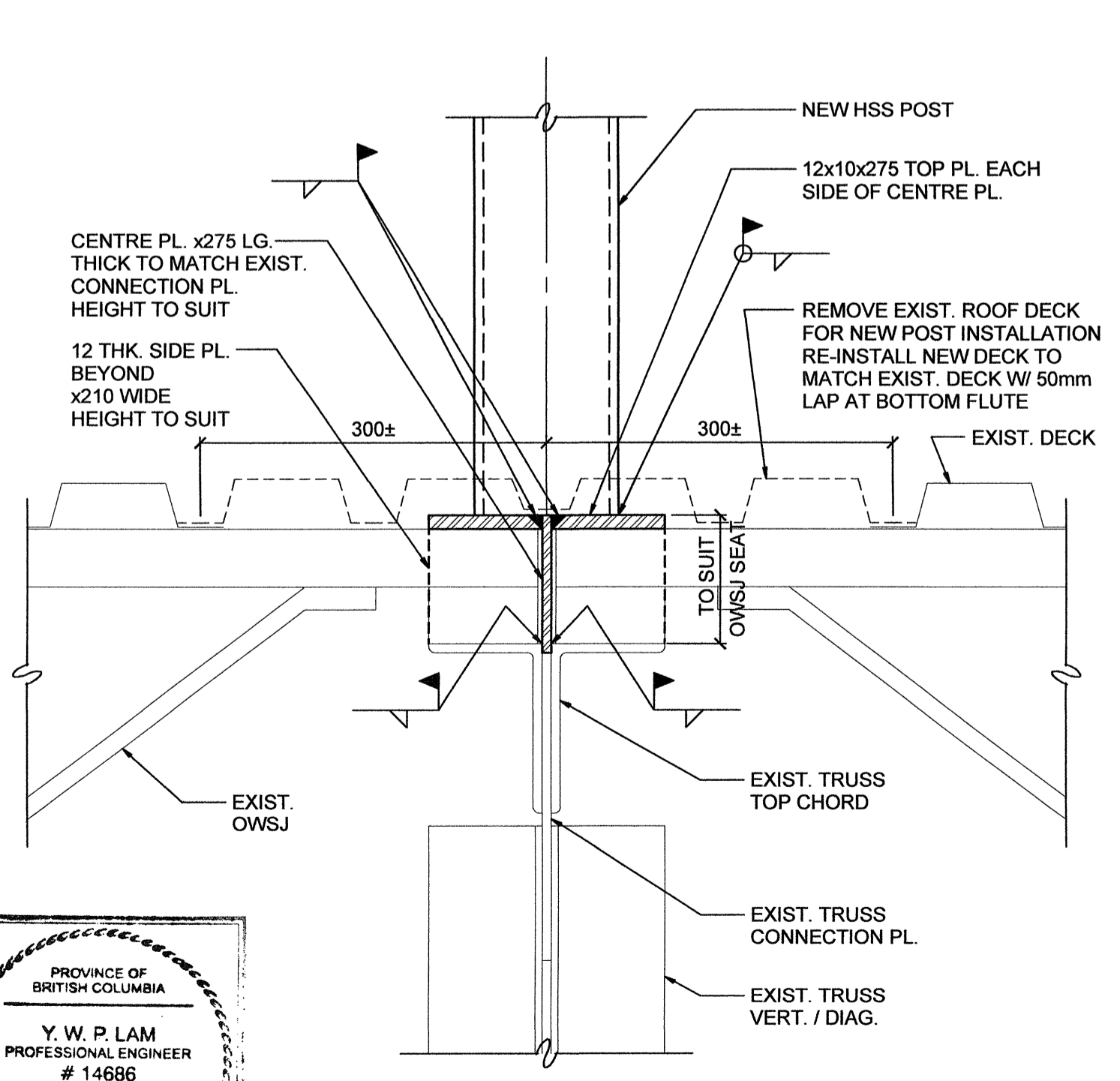
**SECTION 2**  
 1:50

**LEGEND:**  
 25 kN.m DENOTES MOMENT CONNECTION W/ FULL FIXITY AND MIN. MOMENT CAPACITY OF 25 kN.m FOR CONNECTION DESIGN.

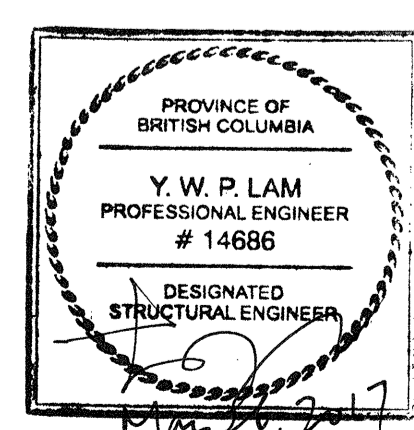
- NOTES:**
- ALL NEW STEEL MEMBERS, CONNECTION PLATES AND BOLTS TO BE HOT DIP GALVANIZED.
  - PROVIDE DRAIN HOLES TO ALL HSS POSTS ABOVE ROOFING. PROVIDE INTERMEDIATE PLATE AT ROOFING LEVEL AS REQUIRED.
  - PROVIDE DRAIN HOLES TO U/S OF HSS GUARDRAILS AT BOTH ENDS, TYP.
  - U.N.O., PROVIDE 6mm CAP PL. FOR ALL HSS POSTS.
  - REMOVE & RE-INSTALL EXIST. ROOFING, PARAPET & STEEL DECK AS REQUIRED TO ALLOW FOR NEW HSS INSTALLATION.
  - U.N.O. PROVIDE #10 SCREWS @150 O/C BETWEEN NEW DECK & EXIST. DECK LAP CONNECTION



**DETAIL B**  
 1:5



**SECTION X - X**  
 1:5

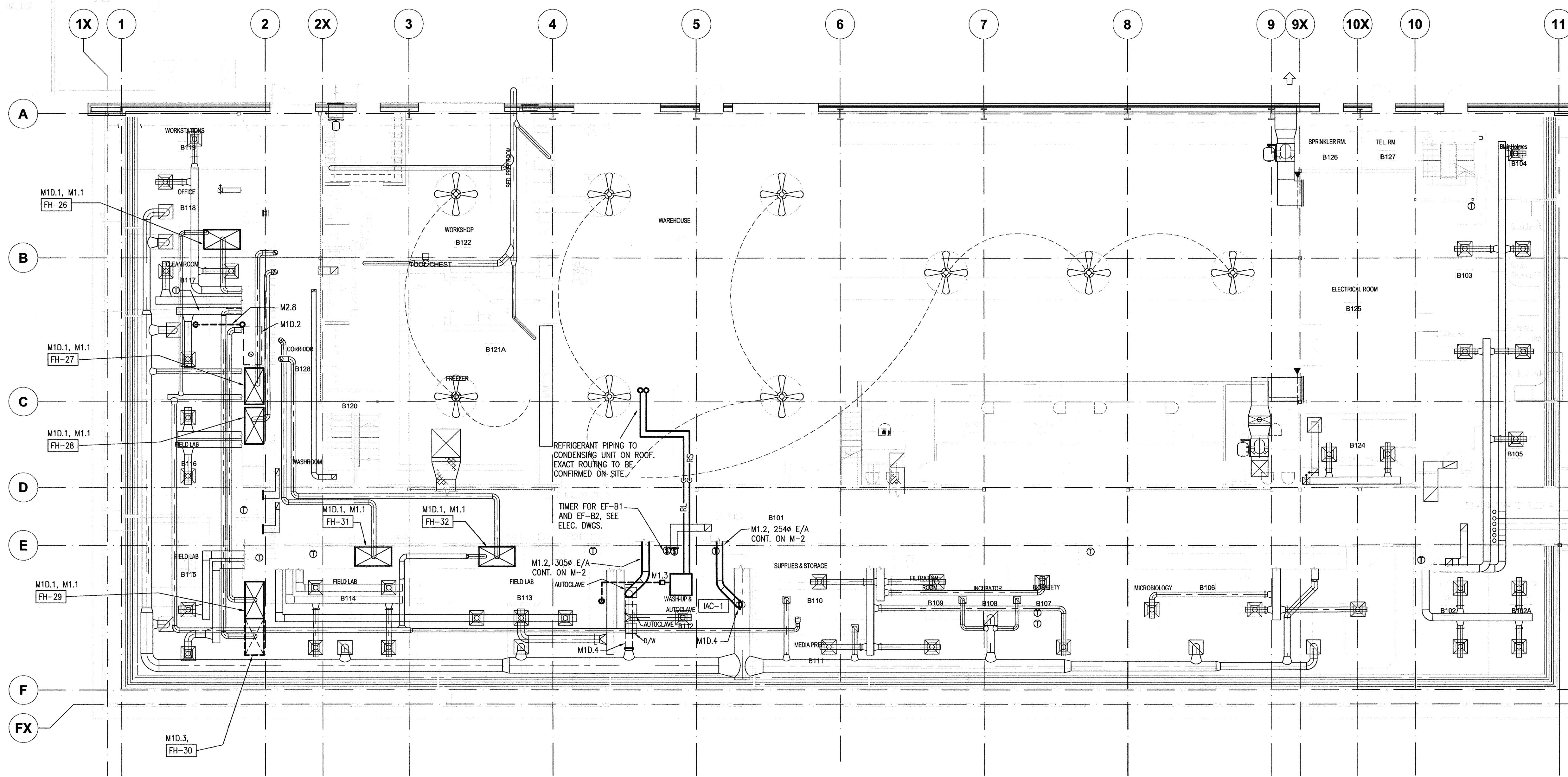


**MECHANICAL DRAWING GENERAL NOTES:**  
 M1.1 ALL EXISTING AND NEW DUCTWORK AND AIR STREAM COMPONENTS TO BE PROFESSIONALLY CLEANED INCLUSIVE OF ALL HVAC SYSTEMS NOT ALTERED IN THIS PROJECT.

**MECHANICAL DRAWING DEMOLITION NOTES:**  
 M1D.1 EXISTING FUME HOOD TO REMAIN. REMOVE EXISTING BYPASS AND AIR FLOW MONITORING. REMOVE AND BLANK OFF EXISTING FUME EXHAUST FAN SWITCH.  
 M1D.2 REMOVE EXISTING EXHAUST CANOPY OVER REFRIGERATORS, CAP EXISTING DUCTWORK IN CEILING.  
 M1D.3 REMOVE EXISTING FUME EXHAUST HOOD AND ASSOCIATED CONTROLS, DUCTWORK, AND PLUMBING SERVICES. CAP OFF REDUNDANT SERVICES CONCEALED.  
 M1D.4 REMOVE SECTION OF EXISTING DUCTWORK FROM THE EXISTING EXHAUST HOOD SYSTEM, CAP DUCTWORK AT THE GENERAL EXHAUST DUCT CONNECTION.

**MECHANICAL DRAWING RENOVATION NOTES:**  
 M1.1 PROVIDE PROFESSIONALLY FABRICATED BLANK OFF PANEL TO REPLACE THE EXISTING BYPASS AIR PANEL. CONSTRUCTION OF PANELS TO MATCH EXISTING FUME HOOD INTERIOR LINER. PROVIDE FUME HOOD SASH CONTROL, MONITORING SENSOR, INTERLOCK WITH THE FUME HOOD EXHAUST AND MAKE-UP AIR VAV VALVES.  
 M1.2 MODIFY DUCTWORK FOR EXISTING EXHAUST HOODS. PROVIDE DUCTWORK IN CEILING INTO MEZZANINE TO DEDICATED EXHAUST FANS (SEE DWG M-2). EXHAUST AIR DUCT CONSTRUCTION TO MATCH THAT SPECIFIED FOR TEMPORARY E/A DUCT SERVING FUME HOOD FH-26 (SEE DWG M-2). VERIFY LOCATION OF EQUIPMENT AND DUCT ROUTING ON SITE.  
 M1.3 PROVIDE CONDENSATE PUMP AND 25mm THICK INSULATED 25# DWV COND. DRAIN PIPING IN CEILING PIPED TO ADJACENT LAB. SINK.

M1.4 CONTROL CONTRACTOR TO EXPAND THE EXISTING JOHNSON CONTROLS (JCI) DDC SYSTEM TO MONITOR THE OPERATING STATUS OF THE NEW FUME HOOD VENTILATION CONTROL SYSTEMS. PARAMETERS SUCH AS SASH HEIGHT AND AIRFLOW FOR EACH FUME HOOD AND ASSOCIATED SUPPLY VAV BOX SHALL BE READILY VIEWABLE BY THE BUILDING OPERATOR.  
 M1.5 COMMISSIONED AND BALANCE THE MECHANICAL SYSTEMS. TEST THE "AS INSTALLED" FUME HOODS AND ASSOCIATED FAN SYSTEM MODIFICATIONS TO APPLICABLE GOVERNING STANDARDS, SUCH AS BUT NOT LIMITED TO WORKSAFE BC OHS REGULATIONS 30, ASHRAE 110-1995 AND PWGSC MD 15128-2013..



**MAIN FLOOR PART FLOOR PLAN**  
 1:100

H.V.A.C. (RENOVATION) LEGEND					

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

**REAL PROPERTY SERVICES**  
 Pacific Region  
**SERVICES IMMOBILIERS**  
 Région de Pacifique

**Environment Canada**  
 Environment Canada

Real Property Management Division Technical Services / Division Gestion des biens immobilier Services Techniques

MEMBER OF  
**INTEGRAL GROUP**  
 PROJECT NUMBER: 148800

KEY PLAN

PROFESSIONAL ENGINEER  
 May 23, 2017

Revision/Revision	Description/Description	Date/Date
1	ISSUED FOR TENDER	2017-05-26

**ENVIRONMENT CANADA**

Project title/Titre du projet  
**NORTH VANCOUVER, B.C**  
 2645 Dollarton Avenue,  
**PACIFIC ENVIRONMENTAL SCIENCE CENTRE**  
**PESC**  
**FUMEHOOD UPGRADES**

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Designed by/Concept par  
**RV**

Drawn by/Dessine par  
**RV**

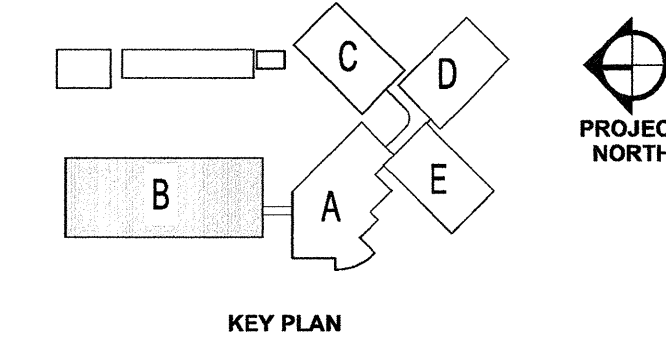
PWGSC Project Manager/Administrateur de Projets TPSGC  
**PATRICK TRUONG**

PWGSC, Regional Manager, Architectural and Engineering Services/  
 Gestionnaire régional, Services d'architecture et de génie, TPSGC  
**PREETIPAL PAUL**

Drawing title/Titre du dessin  
**MAIN PART PLAN**  
**FIELD OPERATION CENTRE**  
**BLOCK B**  
**HVAC MODIFICATION**

Project No./No. du projet	Sheet/feuille	Revision no./ La Révision no.
<b>R.071030.001</b>	M-1 of 4	<b>1</b>





MAY 23, 2017

Revision/Revision	Description/Description	Date/Date
1	ISSUED FOR TENDER	2017-05-26

ENVIRONMENT CANADA

Project title/Titre du projet: NORTH VANCOUVER, B.C. 2645 Dollarton Avenue, PACIFIC ENVIRONMENTAL SCIENCE CENTRE

PESC FUMEHOOD UPGRADES

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Designed by/Concept par: RV

Drawn by/Dessiné par: RV

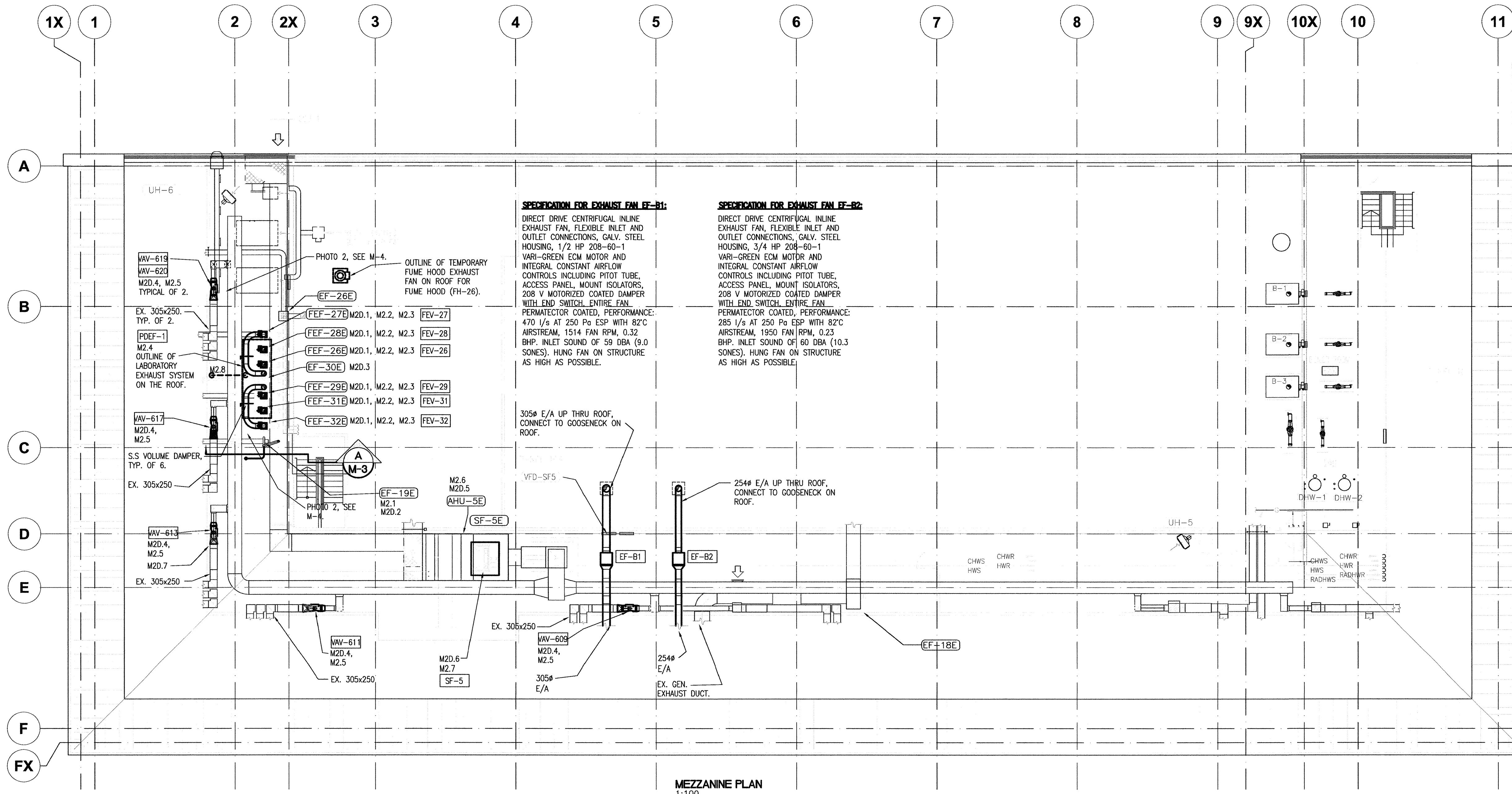
PWOSC Project Manager/Administrateur de Projets TPSOC: PATRICK TRUONG

PWOSC, Regional Manager, Architectural and Engineering Services / Gestionnaire régional, services d'architectural et de génie, TPSOC: PREETIPAL PAUL

Drawing title/Titre du dessin

MEZZANINE PLAN BLOCK B HVAC MODIFICATION

Project No./No. du projet: R.071030.001	Sheet/Feuille: M-2 of 4	Revision no./Le Révision no.: 1
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**SPECIFICATION FOR EXHAUST FAN EF-B1:**  
DIRECT DRIVE CENTRIFUGAL INLINE EXHAUST FAN, FLEXIBLE INLET AND OUTLET CONNECTIONS, GALV. STEEL HOUSING, 1/2 HP 208-60-1 VARI-GREEN ECM MOTOR AND INTEGRAL CONSTANT AIRFLOW CONTROLS INCLUDING PITOT TUBE, ACCESS PANEL, MOUNT ISOLATORS, 208 V MOTORIZED COATED DAMPER WITH END SWITCH, ENTIRE FAN PERMATECTOR COATED, PERFORMANCE: 470 l/s AT 250 Pa ESP WITH 82°C AIRSTREAM, 1514 FAN RPM, 0.32 BHP, INLET SOUND OF 59 DBA (9.0 SONES), HUNG FAN ON STRUCTURE AS HIGH AS POSSIBLE.

**SPECIFICATION FOR EXHAUST FAN EF-B2:**  
DIRECT DRIVE CENTRIFUGAL INLINE EXHAUST FAN, FLEXIBLE INLET AND OUTLET CONNECTIONS, GALV. STEEL HOUSING, 3/4 HP 208-60-1 VARI-GREEN ECM MOTOR AND INTEGRAL CONSTANT AIRFLOW CONTROLS INCLUDING PITOT TUBE, ACCESS PANEL, MOUNT ISOLATORS, 208 V MOTORIZED COATED DAMPER WITH END SWITCH, ENTIRE FAN PERMATECTOR COATED, PERFORMANCE: 285 l/s AT 250 Pa ESP WITH 82°C AIRSTREAM, 1950 FAN RPM, 0.23 BHP, INLET SOUND OF 60 DBA (10.3 SONES), HUNG FAN ON STRUCTURE AS HIGH AS POSSIBLE.

MEZZANINE PLAN 1:100

**SUGGESTED MECHANICAL WORK PHASING SCHEME FOR BUILDING B:**

THE EXISTING LABORATORY SHALL REMAIN PARTIALLY IN OPERATION DURING THE COURSE OF CONSTRUCTION. ALL MECHANICAL WORK SHALL BE COORDINATED AND APPROPRIATE MEASURES SHALL BE TAKEN BY THE CONTRACTOR TO CONTROL DUST, DEBRIS AND ROOM TEMPERATURE DURING CONSTRUCTION.

THE FOLLOWING IS A SUGGESTED GENERAL PHASING SCHEME, THE CONTRACTOR MAY, AT THEIR OWN DISCRETION, UTILIZE THIS INFORMATION TO FORMULATE A DETAILED PHASING SCHEME THAT IS ACCEPTABLE TO THE DEPARTMENTAL REPRESENTATIVE.

- CONTRACTOR TO COORDINATE WITH THE DEPARTMENTAL REPRESENTATIVE FOR PROVIDING APPROPRIATE PROTECTION OF EXISTING EQUIPMENT IN THE EXISTING LABORATORY PRIOR TO STARTING OF CONSTRUCTION.
- PROVIDE TEMPORARY FUME HOOD EXHAUST SYSTEM FOR FUME HOOD (FH-26). TEST, BALANCE AND COMMISSION TEMPORARY FUME HOOD SYSTEM.
- SHUT DOWN REMAINING FUME HOOD EXHAUST SYSTEM, REMOVE ASSOCIATED FANS AND REDUNDANT DUCTWORK.
- INSTALL PLATFORM, FLUME DILUTION EXHAUST FAN, EXHAUST MANIFOLD, DUCTWORK AND FUME EXHAUST AIR VALVES FOR ALL FUME HOODS (INCLUDING CAPPED-OFF DUCT AND VALVE FOR FH-26). REPLACE EXISTING VAV BOXES ON FUME HOOD SYSTEM MAKE UP AIR WITH FAST ACTING PRESSURE INDEPENDENT VAV BOXES. PROVIDE NEW SUPPLY FAN MOTOR AND VFD FOR EXISTING AHU-5.
- LABORATORY ROOM B116: MODIFY EXISTING FUME HOODS (FH-27 AND FH-28). TEST, BALANCE AND COMMISSION FUME HOODS.
- LABORATORY ROOM B113 AND B115: MODIFY EXISTING FUME HOODS (FH-29, FH-31 AND FH-32). TEST, BALANCE AND COMMISSION FUME HOODS.
- SHUT DOWN TEMPORARY FUME EXHAUST SYSTEM FOR FUME HOOD (FH-26), CONNECTING TEMPORARY FUME EXHAUST DUCT TO CAPPED CONNECTION OF NEW FUME EXHAUST SYSTEM, MODIFY FUME HOOD (FH-26). TEST, BALANCE AND COMMISSION FUME HOOD.
- DECOMMISSION TEMPORARY FUME HOOD EXHAUST FAN FOR FUME HOOD (FH-26), INCLUDING CAPPING E/A FOR FUTURE. SEE ELEC. DWGS. FOR MOTOR LOCK OUT.

**MECHANICAL DRAWING GENERAL NOTES:**

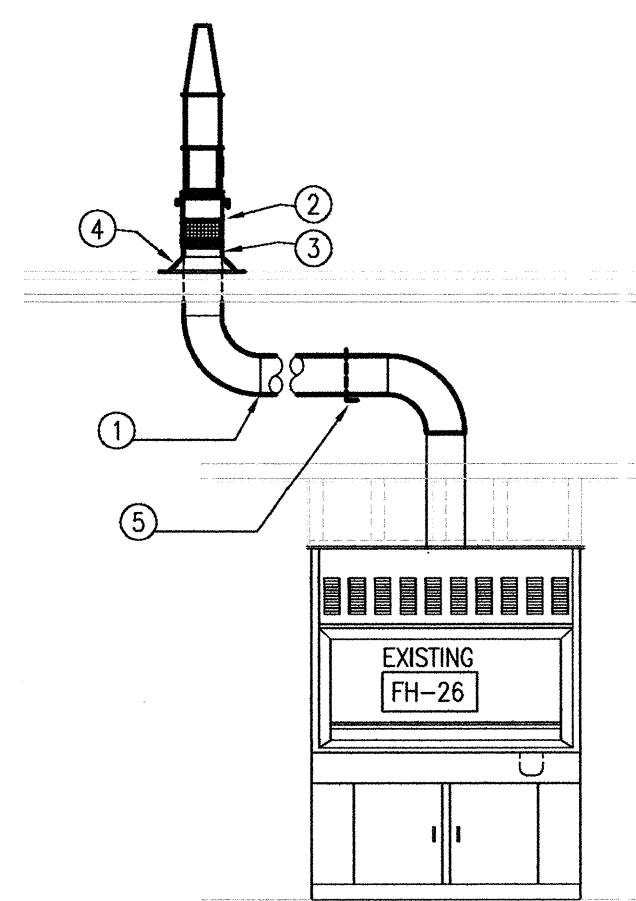
- M.1 ALL EXISTING AND NEW DUCTWORK AND AIR STREAM COMPONENTS TO BE PROFESSIONALLY CLEANED INCLUSIVE OF ALL HVAC SYSTEMS NOT ALTERED IN THIS PROJECT.

**MECHANICAL DRAWING DEMOLITION NOTES:**

- M2D.1 REMOVE EXISTING FUME EXHAUST FAN, SILENCER AND ASSOCIATED DISCHARGE AIR DUCT AND STACK TO ACCEPT FUME EXHAUST AIR VALVE AND DUCTWORK MODIFICATION.
- M2D.2 EXISTING EXHAUST FAN TO REMAIN. REMOVE SECTION OF DISCHARGE DUCT AND STACK TO ALLOW FOR NEW DISCHARGE DUCT REROUTING AND DISCHARGE STACK LOCATION.
- M2D.3 REMOVE EXISTING FUME EXHAUST FAN SYSTEM (FH-30) INCLUDING SILENCER, CONTROLS AND ASSOCIATED DUCTWORK AND STACK.
- M2D.4 REMOVE AND REPLACE EXISTING NON-FAST ACTING VARIABLE AIR VOLUME BOX UNIT AND SECTION OF DUCTWORK FOR FUME HOOD MAKE UP AIR AS INDICATED. EXISTING HEATING COIL AND SILENCER DOWNSTREAM OF VAV VALVE TO REMAIN. CONFIRM EXACT LOCATION ON SITE.
- M2D.5 REMOVE EXISTING AIR HANDLING UNIT VFD FOR REPLACEMENT.
- M2D.6 REMOVE EXISTING AIR HANDLING UNIT'S SUPPLY FAN FOR REPLACEMENT.
- M2D.7 REMOVE EXISTING MAKE UP AIR SYSTEM FOR FUME HOOD (FH-30). CAP DUCT AND HYDRONIC PIPING. REMOVE EXISTING CONTROL.

**MECHANICAL DRAWING RENOVATION NOTES:**

- M2.1 REROUTE AND EXTEND EXISTING 103# DISCHARGE EXHAUST DUCT TO NEW STACK LOCATION, CONFIRM EXACT LOCATION ON SITE. PROVIDE NEW CURB AND STACK MATCHING THE FAN DISCHARGE HEIGHT OF PDEF-1.
- M2.2 REROUTE AND EXTEND EXISTING 203# FUME EXHAUST DUCT THRU ROOF TO CONNECT TO LABORATORY EXHAUST SYSTEM'S FAN PLENUM, CONFIRM EXACT ROUTING AND LOCATION ON SITE. PROVIDE STAINLESS STEEL VOLUME DAMPER DOWNSTREAM OF VAV. REFER TO STRUCTURAL AND ARCHITECTURAL DRAWINGS.
- M2.3 PROVIDE PRESSURE-INDEPENDENT VENTURI-TYPE, FAST ACTING VAV FUME HOOD EXHAUST VALVE FOR FUME HOOD EXHAUST MATCHING FUME HOOD SASH HEIGHT SENSOR TO PROPERLY REGULATE VARIABLE AIR FLOW IN RESPONSE TO THE FH SASH HEIGHT. SYSTEM SHALL BE COMPLETE WITH AIR FLOW MONITORING DEVICE PROVIDED AND INTERFACED WITH DDC BY CONTROL CONTRACTOR THAT WILL INITIATE AN ALARM MODE SHOULD THE ACTUAL AIR FLOW THROUGH THE SASH OPERATE BEYOND WORKSAFE BC LIMITS. PROVIDE DUCT TRANSITIONS, PROVIDE MIN. 305mm LONG DUCT UPSTREAM OF VALVE TO CLEAR MOVEMENT OF ROD INSIDE VALVE.
- M2.4 PROVIDE CENTRALIZED ROOFTOP HIGH-PLUME, DILUTION-TYPE LABORATORY EXHAUST SYSTEM ON ROOF, CAPACITY @ 2030 L/S, 625 Pa S.P., 5 HP, 600-60-3 POWER SUPPLY.
- M2.5 PROVIDE PRESSURE-INDEPENDENT VENTURI-TYPE, FAST ACTING VAV FUME HOOD MAKE-UP AIR VALVE AND DUCTWORK TRANSITIONS TO SUIT EXISTING FUME EXHAUST MAKE UP AIR. PROVIDE MIN. 305mm LONG DUCT UPSTREAM OF VALVE TO CLEAR MOVEMENT OF ROD INSIDE VALVE. VAV VALVE TO REGULATE THE VARIABLE MAKE UP AIR FLOW IN RESPONSE TO THE FUME HOOD OPERATION.
- M2.6 PROVIDE NEW VFD SERVING SUPPLY FAN MOTOR OF EX. AIR HANDLING UNIT (AHU-5), 20 HP, 600 V 3 PH.
- M2.7 PROVIDE 20 HP VFD RATED SUPPLY AIR FAN MOTOR TO REPLACE THE EXISTING (15 HP). PROVIDE ALL NECESSARY MODIFICATION (BELTS, FAN BASE, SHEAVES AND ETC.) TO ACCOMMODATE NEW SUPPLY AIR FAN. REFER TO MECHANICAL EQUIPMENT SCHEDULES IN THE SPECIFICATIONS.
- M2.8 PROVIDE 20# LABORATORY EXHAUST SYSTEM DRAIN PIPED DOWN THROUGH THE EXISTING FLOOR OF THE MEZZ. MECH. ROOM AND INTO THE LABORATORY CEILING AND DOWN TO DISCHARGE TO EXISTING LABORATORY SINK. PROVIDE AIR GAP. EXACT ROUTING TO BE CONFIRMED ON SITE.



FUME EXHAUST HOOD (FH-26) N.T.S.



*Signature*  
MAY 23, 2017

1	ISSUED FOR TENDER	2017-05-26
Revision/	Description/Description	Date/Date
Client/client		

**ENVIRONMENT CANADA**

Project title/Titre du projet  
**NORTH VANCOUVER, B.C  
2645 Dollarton Avenue,  
PACIFIC ENVIRONMENTAL SCIENCE CENTRE**

**PESC  
FUMEHOOD UPGRADES**

Consultant Signature Box Only

Designed by/Concept par  
**RV**

Drawn by/Dessiné par  
**RV**

PWGSC Project Manager/Administrateur de Projets TPSGC  
**PATRICK TRUONG**

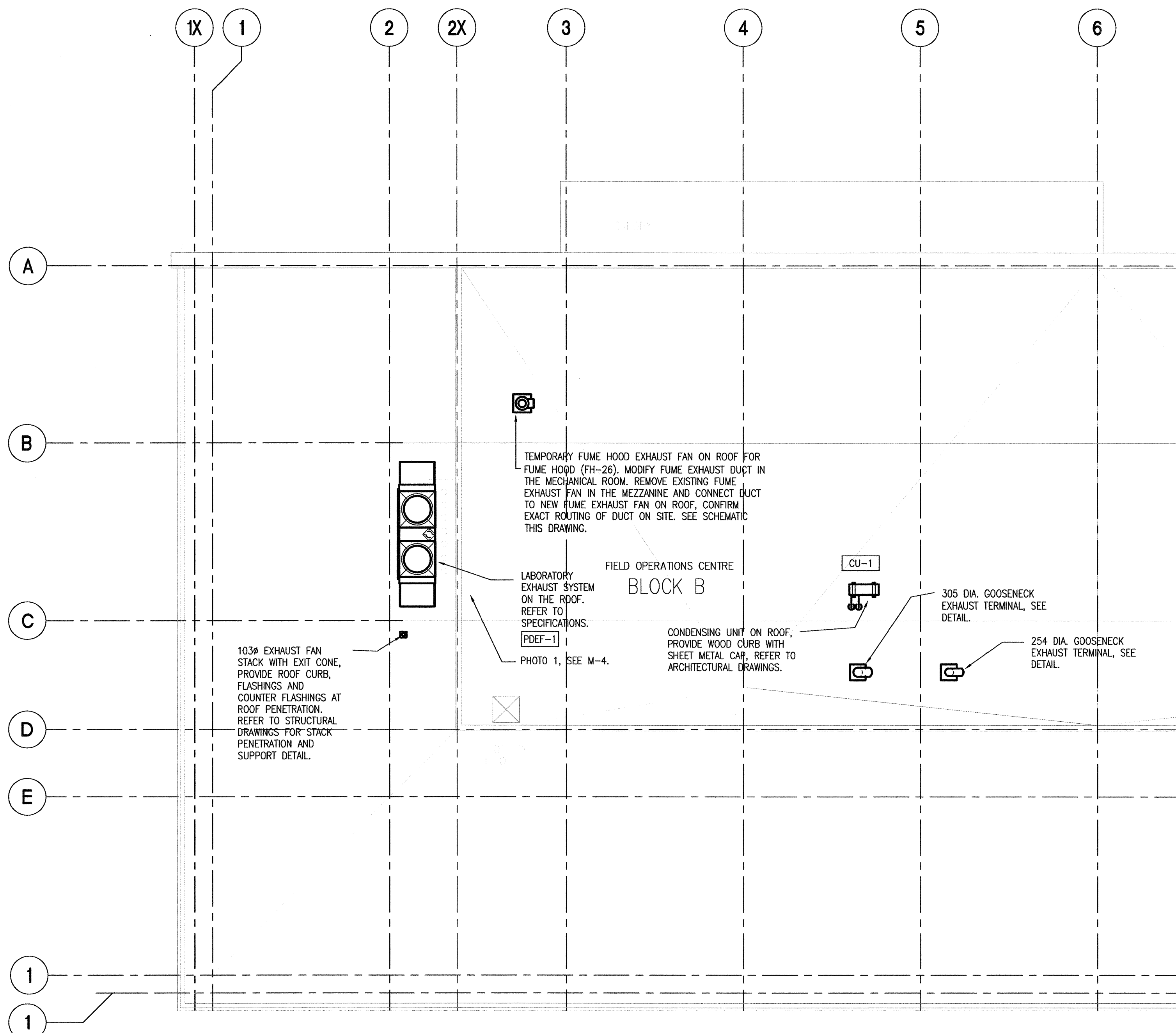
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**PREETIPAL PAUL**

Drawing title/Titre du dessin

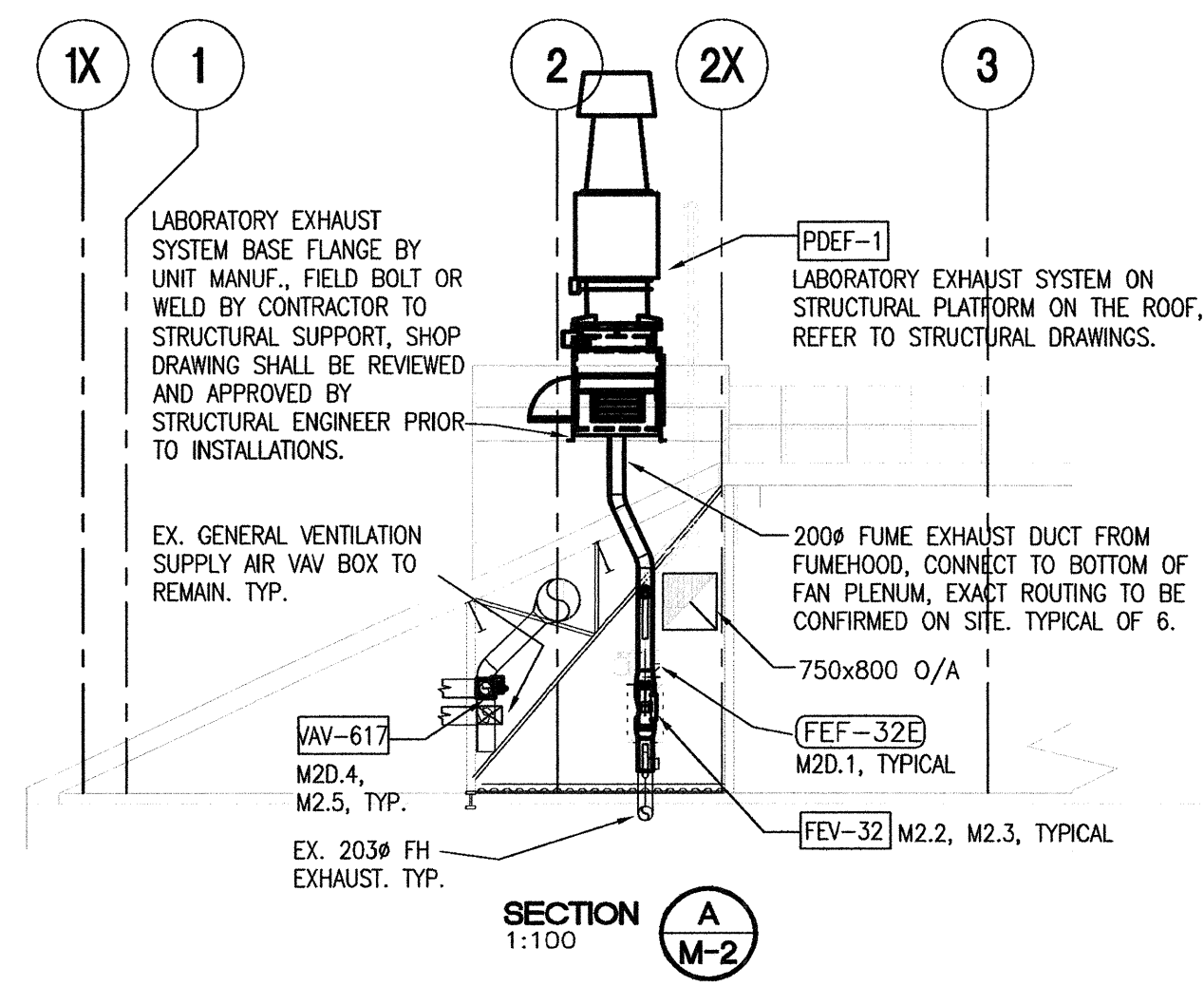
**ROOF PLAN AND DETAILS  
BLOCK B  
HVAC MODIFICATION**

Project No./No. du projet Sheet/feuille Revision no./  
La Révision no.

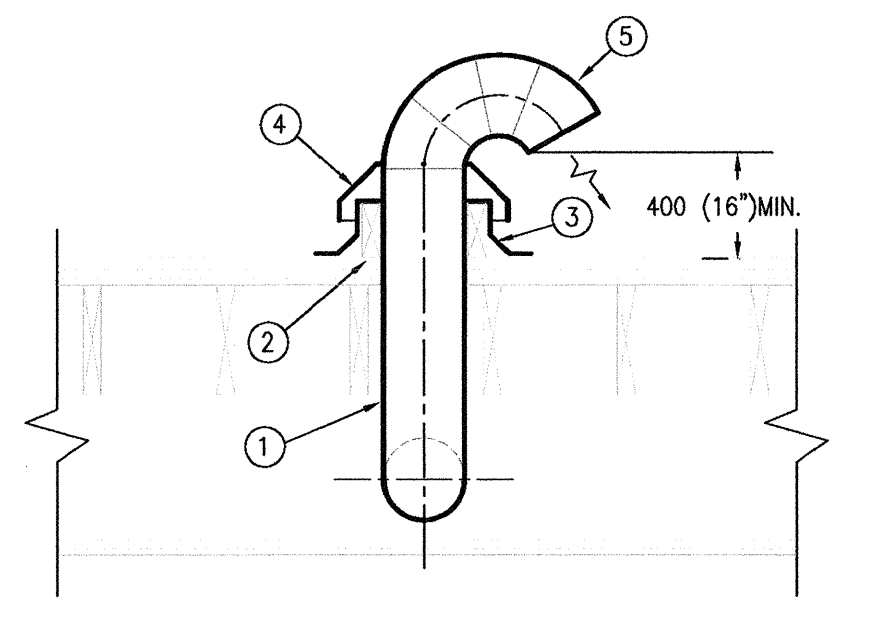
**R.071030.001** M-3 of 4 **1**



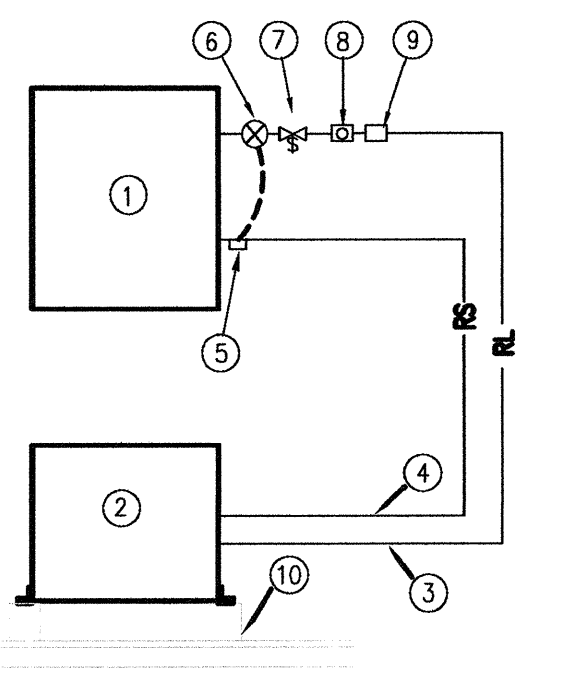
**ROOF PART PLAN  
1:100**



**SECTION A  
M-2  
1:100**



**GOOSENECK  
N.T.S.**



- EVAPORATOR COIL
- CONDENSING UNIT TO BE MOUNTED ON LEVEL PLATFORM W/ NEOPRENE PAD.
- LIQUID LINE
- SUCTION LINE
- EXPANSION VALVE SENSOR
- THERMOSTATIC EXPANSION VALVE
- SOLENOID VALVE
- SIGHT GLASS
- FILTER DRYER.
- EQUIPMENT CURB W/ SHEET METAL CAP. SEE ARCH DWG FOR DETAILS. ANCHORS THROUGH SHEET METAL CAPS SHALL BE SEALED WATERTIGHT.

**REFRIGERANT PIPING SCHEMATIC  
N.T.S.**

**PESC North Vancouver PDEF-1  
Fans: 1 [operating] / 1 [redundant]**

A: Inlet Flow **4300 cfm**  
B: Bypass Flow **518 cfm**  
C: Entrained Flow **2409 cfm**  
D: Total System Flow **7227 cfm**

**Operating Conditions**  
Inlet Flow per Fan: **4300 cfm**  
Ambient Air Temp.: **70 deg F**  
Ambient Air Dens: **0.075 lb/cu ft**

**Fan Performance Data - (single fan)**  
Fan Model: **TS1S050B12**  
Nozzle Velocity: **5295 fpm**  
Wind Band Area: **7.07 sq. ft**  
Min. Motor Hp: **5 hp**  
Corrected BHP: **4.13 hp**

**Altitude and Temperature Corrections**  
Mixed Air Temperature: **70 deg F**  
Corrected Static Pressure: **2.5 in w.g.**

Inlet Static Pressure: **2.5 in w.g.**  
Inlet Air Temperature: **70 deg F**  
Inlet Air Density: **0.075 lb/cu ft**

Fan Flow Rate: **4818 cfm**  
Total Flow: **7227 cfm**  
Operating Speed: **1200 rpm**  
Dilution Ratio: **168 %**

Inlet Flow Total: **4300 cfm**  
Altitude at Site: **0 ft**  
Operating Frequency: **60 Hz**

Effective Stack Height:  
10 mph Wind: **43 ft**  
15 mph Wind: **31 ft**

Mixed Air Density: **0.075 lb/cu ft**

**Comments**  
1. Number of fans running does not include redundant fan.  
2. Inlet static pressure had been derated for discharge nozzle, windband, airfoil isolation damper, and outlet silencer configurations.  
3. Inlet static pressure had been derated for system effects through the mixing box, based on the factory-recommended duct configurations.  
4. Consult factory for additional derations when duct configurations do not meet factory guidelines.  
5. Add an additional 0.15 inches static pressure for gravity isolation dampers (usable on single fan mixing boxes only).  
6. Effective stack height from roof line is given for fan without a mixing box, mounted on an 18 inch high curb.  
7. Stack height calculated using Briggs equation, per ASHRAE Fundamentals (1997).

Air Balance Table-Laboratory Rooms Block B															
Room #	Room name	Valve Tag	Area m <sup>2</sup>	Ceiling Height m	Existing Ventilation		Existing ACH	Proposed Design						Pressure Relation	
					S/A (L/s)	E/A (L/s)		Fume Hood	S/A (L/s)	E/A (L/s)	Fumehood closed		Min ACH		Max ACH
					S/A (L/s)	E/A (L/s)			S/A (L/s)	E/A (L/s)					
B106	Microbiology	604	81	2.90	378	382	5.6							Neg.	
B107	Biosafety	607	8	2.90	43	45	5.6							Neg.	
B108	Incubator		29	2.90		135	5.3							Neg.	
B109	Filtration	607	8	2.90	43	45	7.1							Neg.	
B110	Supplies/Sto.	607	17	2.90	86	87	6.8							Neg.	
B111	Media Prep	606	13	2.90	80	48	6.6							Pos.	
B112	Wash/Autoclave	608	35	2.90	224	345	7.9							Neg.	
B113	Field Lab	612	43	2.90	246	194	7.1							Neg.	
		VAV-609						FH-32	222	241	50.0	63	8.5	13.5	Neg.
B114	Field Lab	610	41	2.90	203	188	6.1							Neg.	
		VAV-611						FH-31	219	236	50.0	63	7.6	12.7	Neg.
B115	Field Lab	614	41	2.90	192	175	5.6							Pos.	
		VAV-613						FH-29	189	212	50.0	63	7.3	11.5	Neg.
B116	Field Lab	616	51	2.90	198	150	4.8							Pos.	
		VAV-620						FH-27	222	257	50.0	63			Neg.
		VAV-617						FH-28	217	255	60.0	73	7.5	15.4	Neg.
B117	Clean Room	618	19	2.90	63	65	4.2							Neg.	
		VAV-619						FH-26	205	241	50.0	63	7.5	17.9	Neg.

Notes:  
1. Existing supply and exhaust ventilation air capacities are based on the 2012 KD Engineering Balancing Report.

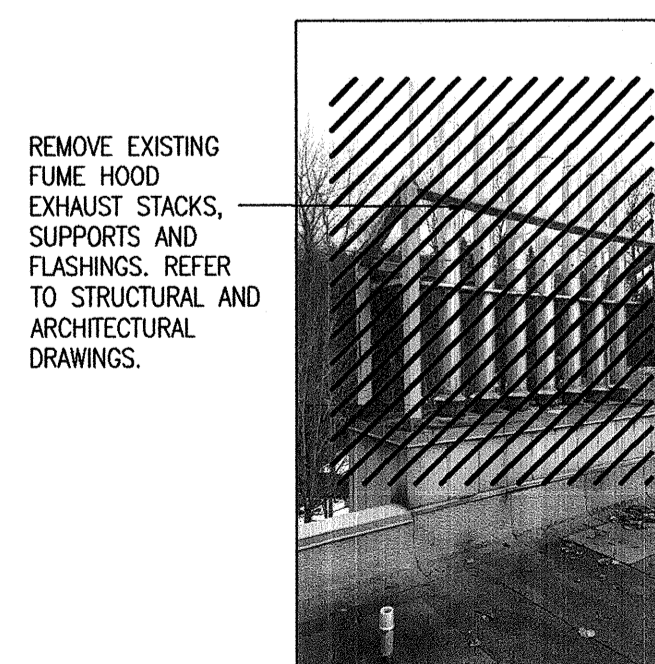
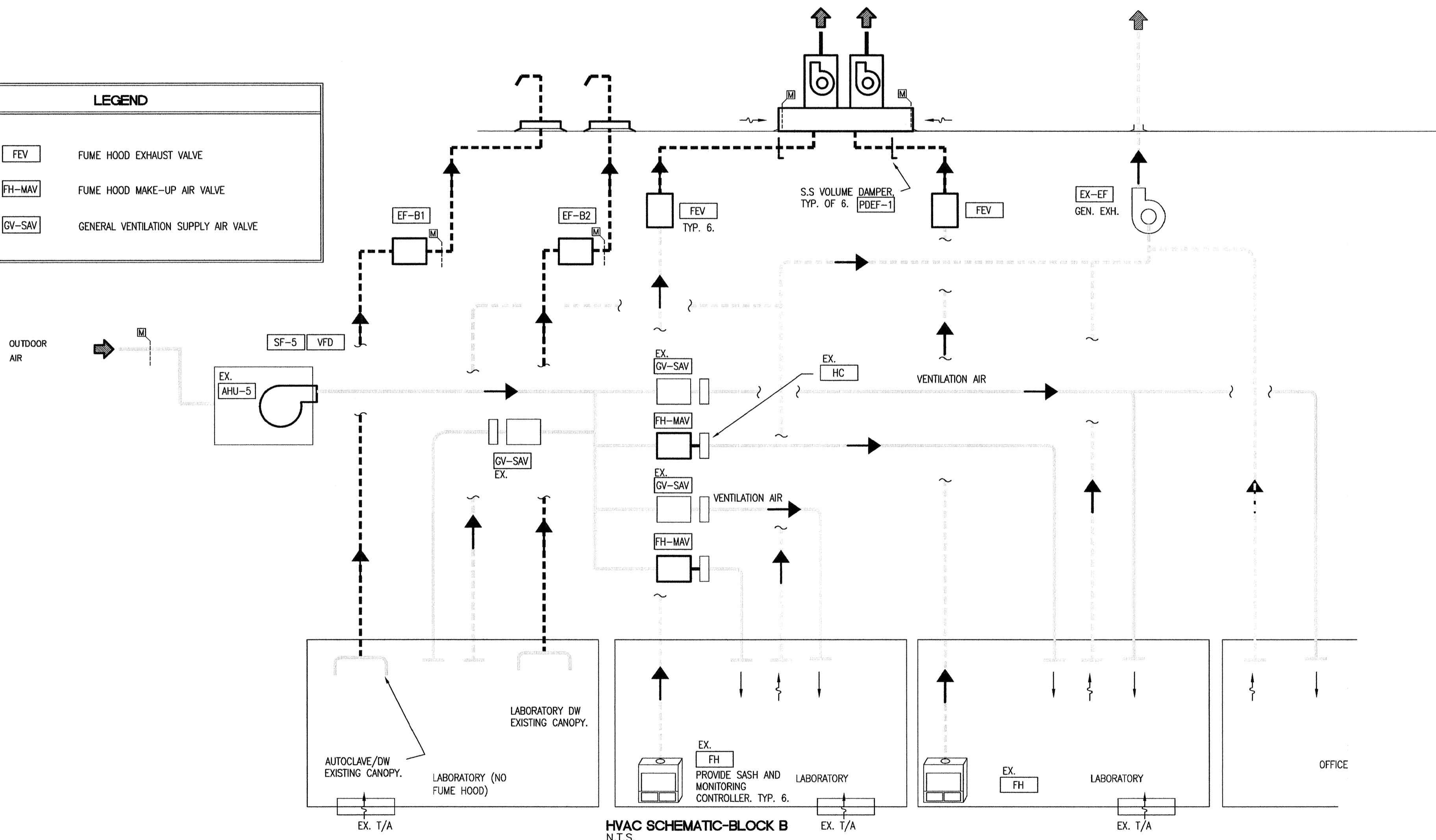
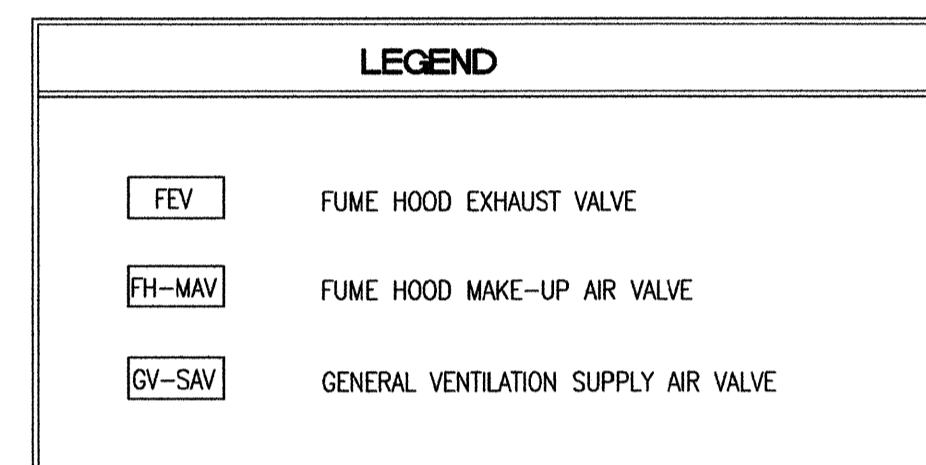


PHOTO 1  
N.T.S.

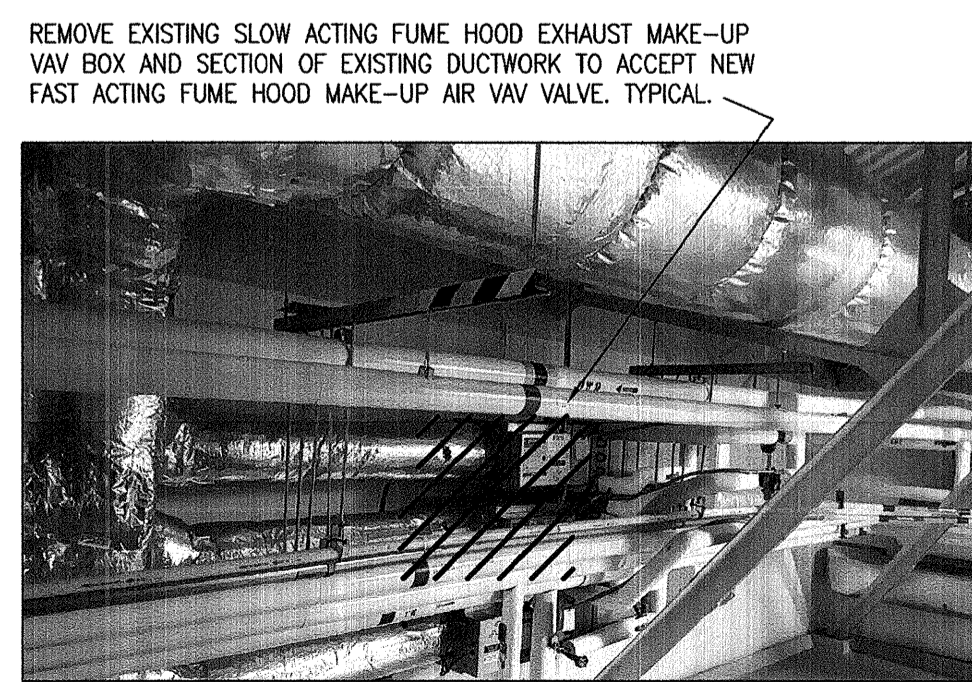


PHOTO 2  
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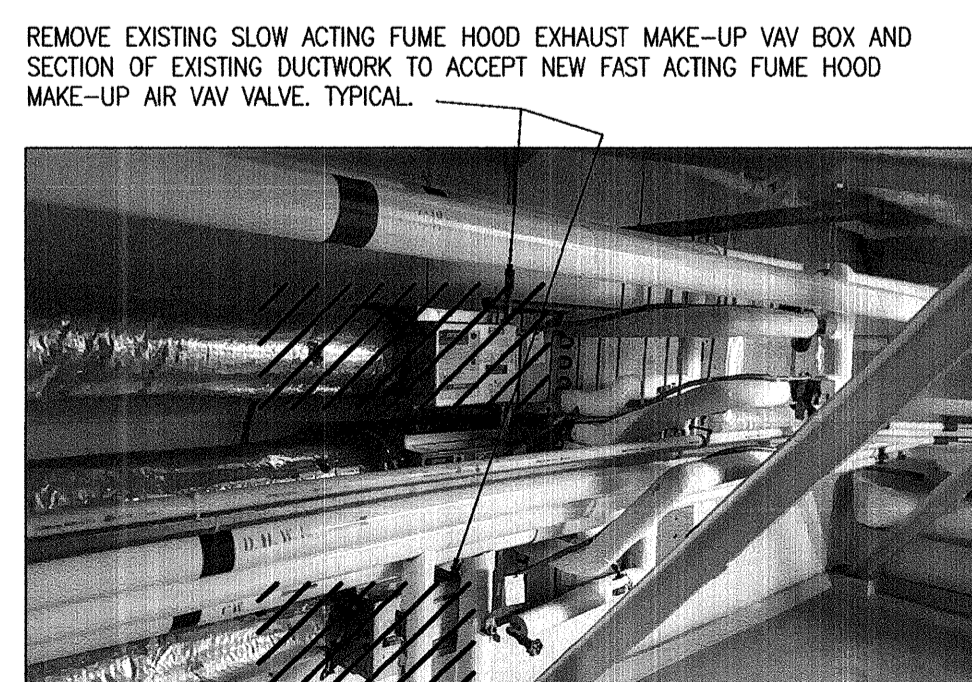


PHOTO 3  
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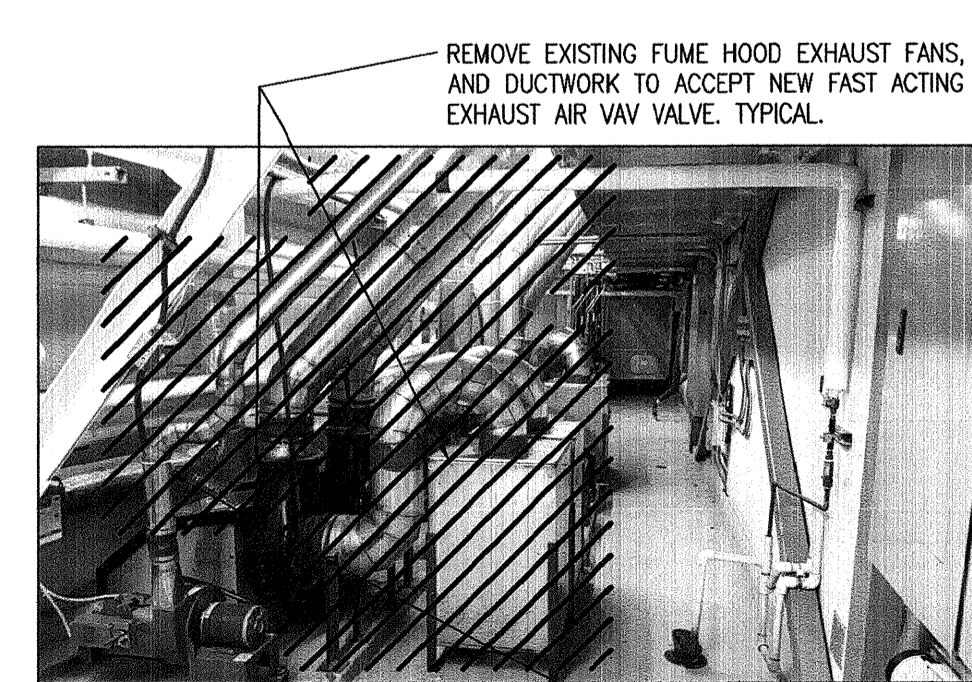


PHOTO 4  
N.T.S.

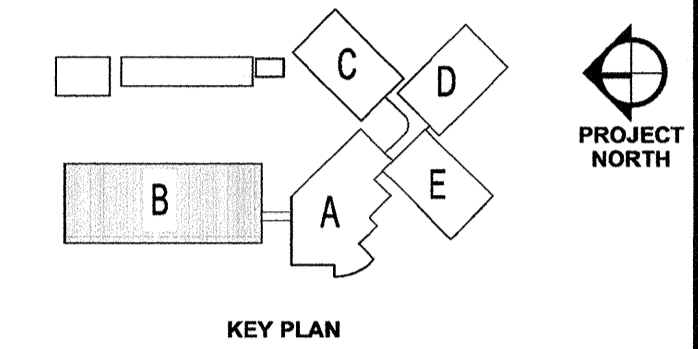
REMOVE EXISTING FUME HOOD EXHAUST STACKS, SUPPORTS AND FLASHINGS. REFER TO STRUCTURAL AND ARCHITECTURAL DRAWINGS.

REMOVE EXISTING SLOW ACTING FUME HOOD EXHAUST MAKE-UP VAV BOX AND SECTION OF EXISTING DUCTWORK TO ACCEPT NEW FAST ACTING FUME HOOD MAKE-UP AIR VAV VALVE. TYPICAL.

REMOVE EXISTING SLOW ACTING FUME HOOD EXHAUST MAKE-UP VAV BOX AND SECTION OF EXISTING DUCTWORK TO ACCEPT NEW FAST ACTING FUME HOOD MAKE-UP AIR VAV VALVE. TYPICAL.

REMOVE EXISTING FUME HOOD EXHAUST FANS, SILENCERS AND DUCTWORK TO ACCEPT NEW FAST ACTING FUME HOOD EXHAUST AIR VAV VALVE. TYPICAL.

REMOVE SECTION OF EXISTING EXHAUST FAN DISCHARGE STACK TO ACCEPT RELOCATION OF NEW STACK.



PROFESSIONAL ENGINEER  
MAY 23, 2017

1	ISSUED FOR TENDER	2017-05-24
Revision/	Description/Description	Date/Date
Revision		

Client/client  
**ENVIRONMENT CANADA**

Project title/Titre du projet  
**NORTH VANCOUVER, B.C**  
**2645 Dollarton Avenue,**  
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**PESC**  
**FUMEHOOD UPGRADES**

Consultant Signature Box Only

Designed by/Concept par  
**RV**

Drawn by/Dessiné par  
**RV**

PWGSC Project Manager/Administrateur de Projets TPSGC  
**PATRICK TRUONG**

PWGSC, Regional Manager, Architectural and Engineering Services/  
Gestionnaire régional, services d'architecture et de génie, TPSGC  
**PREETIPAL PAUL**

Drawing title/Titre du dessin  
**SCHEMATIC**  
**BLOCK B**  
**HVAC MODIFICATION**

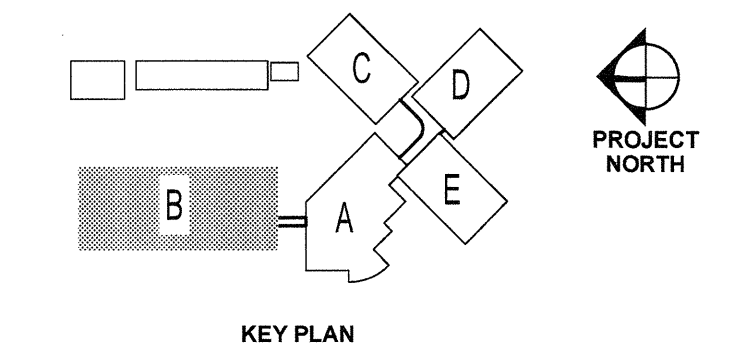
Project No./No. du projet  
**R.071030.001**

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**M-4 OF 4**

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La Révision no.  
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1	ISSUED FOR TENDER	2017-05-26
Revision/Revision	Description/Description	Date/Date

Client/client  
**ENVIRONMENT CANADA**

Project title/Titre du projet  
**NORTH VANCOUVER, B.C**  
 2645 Dollarton Avenue,  
**PACIFIC ENVIRONMENTAL SCIENCE CENTRE**  
**PESC**  
**FUMEHOOD UPGRADES**

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 F.N.  
 Drawn by/Dessiné par  
 F.N.  
 PWGSC Project Manager/Administrateur de Projets TPSGC  
 Patrick Truong  
 PWGSC, Regional Manager, Architectural and Engineering Services /  
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 PREETIPAL PAUL

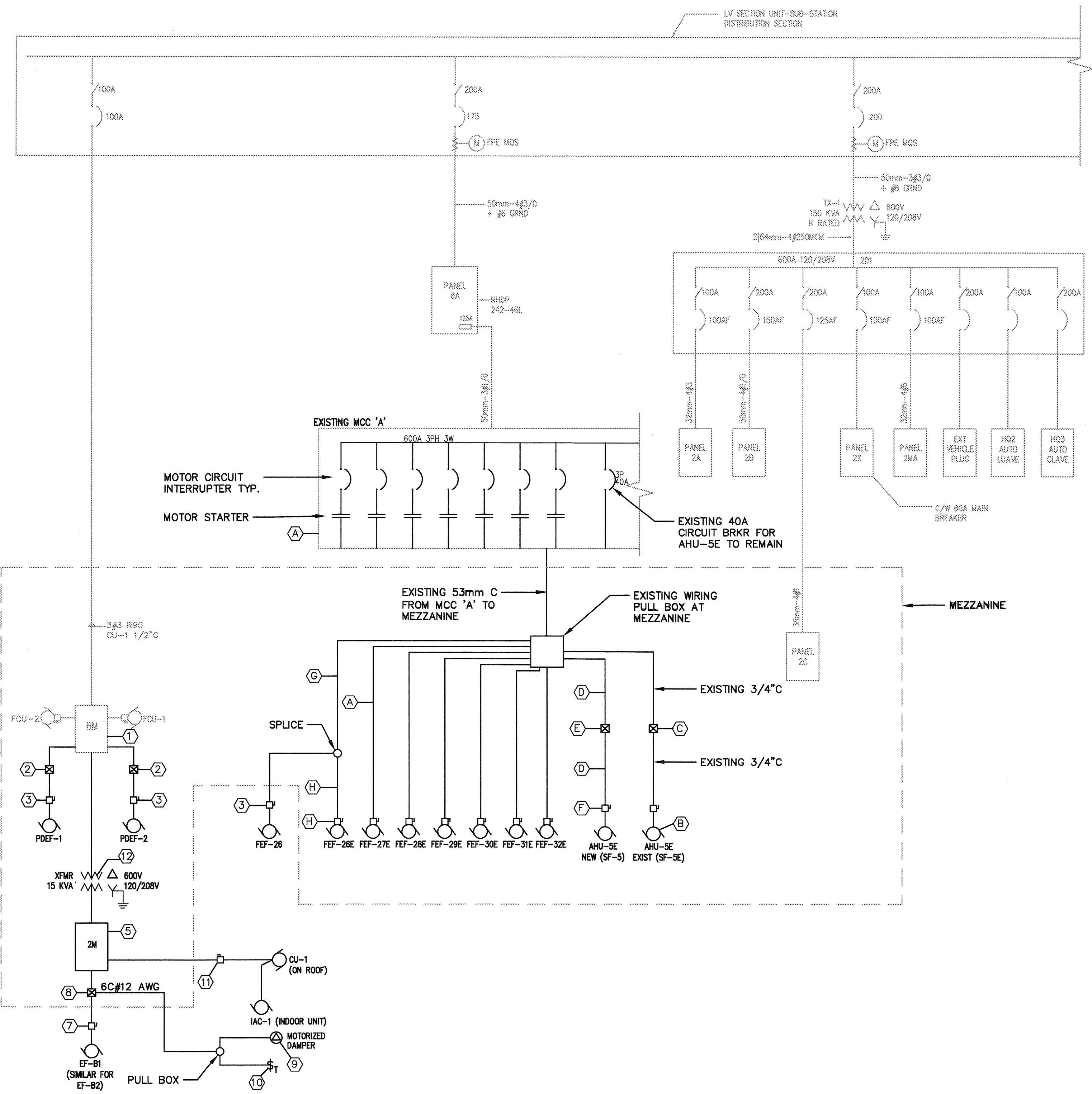
Drawing title/Titre du dessin  
**PART SINGLE LINE DIAGRAM**  
**(BUILDING B)**  
**& EQUIPMENT WIRING DETAILS**  
 Project No./No. du projet  
**R.071030.001**  
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**E1**  
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**1**

**MCC 'A' WIRING DETAILS**

ITEM	DESCRIPTION	COMMENT
A	FOR EACH OF FEF FANS 27E, 28E, 29E, 30E, 31E, 32E, DISCONNECT WIRING AND CONDUIT FROM FAN TO DISCONNECT SWITCHES. REMOVE DISCONNECT SWITCHES AND PULL WIRING BACK TO MCC AT MAIN ELECTRICAL ROOM.	DISCONNECT WIRING IN MCC. REMOVE LABEL OFF MCC BUCKET. PROVIDE NEW TAPE LABEL WITH UPPER CASE PRINTED LETTERING INDICATING SPARE
B	EXISTING 15 HP 600V SUPPLY FAN MOTOR FOR AHU-5E IS TO BE REPLACED WITH A NEW 20HP MOTOR. REWIRE FROM MCC WITH 3#8 AWG IN EXISTING CONDUIT TO PULL BOX AT MEZZANINE	DISCONNECT EXISTING MOTOR. REMOVE EXISTING WIRING TO MCC. PROVIDE NEW WIRING FROM MCC TO TO REPLACEMENT MOTOR.
C	EXISTING VFD FOR 15HP AHU-5E WILL BE REPLACED WITH NEW VFD.	DISCONNECT AND REMOVE EXISTING WIRING. RE-WIRE TO NEW UNIT.
D	PROVIDE 21mm C FROM EXISTING PULL BOX TO UPGRADED FAN.	ROUTE 3#8 IN C. TO VFD AND THEN TO FAN
E	REPLACEMENT VFD FOR 20 HP MOTOR.	VFD SUPPLIED AND MOUNTED BY MECHANICAL CONTRACTOR. WIRED BY ELECTRICAL CONTRACTOR
F	PROVIDE LOCAL DISCONNECT FOR UPGRADED FAN MOTOR.	SUITABLE FOR 20HP MOTOR.
G	RE-PURPOSE WIRING, EXTEND TO TEMPORARY FAN FEF-26 ON ROOF	AT MCC REMOVE STARTER AND MCP AND ALL GUTS. INSTALL 15A 3P 25kAIC BREAKER IN STARTER BUCKET. WIRE OUT OF STARTER BUCKET TO NEW MAGNETIC STARTER ON WALL. EXTEND FUME HOOD ON/OFF SWITCH CONTROL WIRING OUT OF MCC TO STARTER TO CONTROL FAN.
H	REMOVE WIRING BETWEEN SPLICE AND FEF-26E UNIT	REMOVE EXISTING DISCONNECT SWITCH.

**NEW FAN INSTALLATION DETAILS**

ITEM	DESCRIPTION	COMMENT
1	PROVIDE 3P-15A AND 3P-20A 600V BREAKERS AND IN EXISTING SPARE SPACES IN PANEL	FOR PLUME DILUTION EXHAUST FANS AND NEW 30kVA XFMR FOR NEW PANEL 2M
2	WIRE TO VFD UNITS FROM PANEL 6M	LOCATE VFD UNITS IN MEZZANINE IN APPROPRIATE LOCATION TO SUIT, MOUNT AT NORMAL MIN 1200mm AFF TO BOTTOM.
3	WIRE WEATHER PROOF DISCONNECT SUPPLIED BY MECHANICAL CONTRACTOR	
4	REMOVE HOOD FAN CONTROL SWITCH AND WIRING. PROVIDE BLANK BRUSHED STAINLESS STEEL COVER OVER OUTLET BOX.	REMOVE WIRING FOR CONTROL SWITCHES FOR FHs 27, 28, 29, 30, 31, 32 FROM FUME HOOD TO ASSOCIATED STARTER AT MCC-A. LEAVE WIRING AND SWITCH FOR TEMPORARY USE OF FH-26
5	PROVIDE NEW 12CCT PANEL 2M.	ACCOMMODATE PANEL 2M ON THE MEZZANINE WALL BY PANEL 6M. IF THERE IS NO SPACE ON THE MEZZANINE WALL, ARRANGE MOUNTING WITH P-1000 UNISTRUTS.
6	AT COMPLETION OF USE OF FEF-26 AS TEMPORARY FUME HOOD EXHAUST FAN, DO AS DESCRIBED IN ITEM 4 FOR FEF-26	REMOVE WIRING FOR CONTROL SWITCH FOR FH-26E FROM FUME HOOD TO ASSOCIATED STARTER AT MCC 'A'.
7	PROVIDE DISCONNECT FOR FAN UNIT (SIMILAR FOR EF-B2)	ADJACENT FAN, PROVIDE LABEL TO SUIT.
8	NEW VFD FOR EF-B1 (SIMILAR FOR EF-B2)	LOCATE IN MEZZANINE. PROVIDE LABEL INDICATING PURPOSE AS WELL AS CIRCUIT NUMBER.
9	208V MOTORIZED DAMPER. SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR. WIRED BY ELECTRICAL CONTRACTOR (SIMILAR FOR EF-B2)	LOCATED IN MEZZANINE.
10	120V ELECTRONIC TIMER SWITCH WITH 5, 10, 15, 30 MINUTE SELECTIONS, BUT NO "HOLD" SELECTION. NOMINAL RATING 1800W (SIMILAR FOR EF-B2)	FLUSH MOUNTED IN WALL STAINLESS STEEL COVERPLATE. LOCATED IN B112.
11	PROVIDE WEATHER PROOF DISCONNECT SWITCH ON ROOF	
12	PROVIDE 15kVA DRY-TYPE XFMR FOR PANEL-2M IN MEZZANINE	PROVIDE GALVANIZED MOUNTING FRAMEWORK OVERHEAD FOR MOUNTING XFMR. EXACT LOCATION TO SUIT CONNECTION INTO STRUCTURE. PROVIDE SEISMIC RESTRAINT.



**PART SINGLE LINE DIAGRAM**  
 NTS

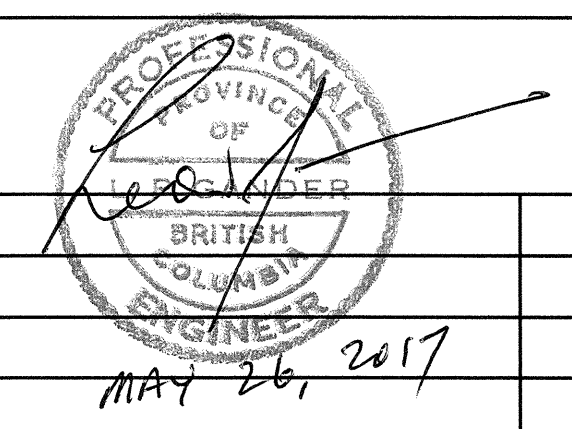
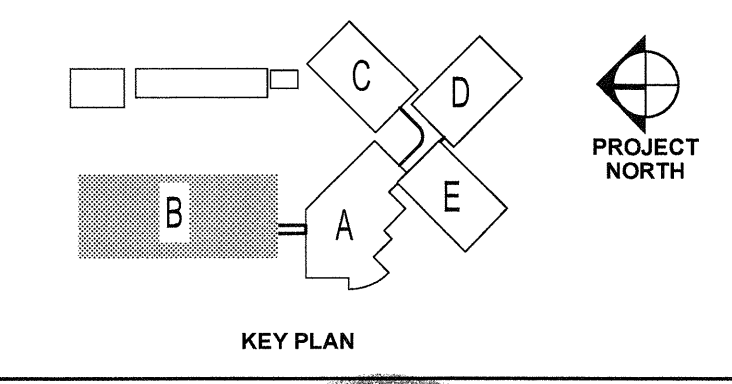
PANEL 2M	3φ 4W 120/208V			
EF-B1	15	1	2	40
		3	4	
MECHANICAL EQ. CONTROL CCT	15	5	6	20
		7	8	15
EF-B2	15	9	10	15
		11	12	
		13	14	
		15	16	
		17	18	

PANEL 6M	3φ 4W 347/600V 200A							
FCU-2	25	1	2	25	FCU-1			
		3	4					
		5	6					
PDEF-2	15	7	8	15	PDEF-1			
		9	10					
		11	12					
SPARE	15	13	14	20	15kVA XFMR FOR PANEL 2M			
		15	16					
		17	18					
		19	20					
		21	22					
		23	24					

EXISTING PANEL 6M IS OF EATON (WESTINGHOUSE) MANUFACTURE



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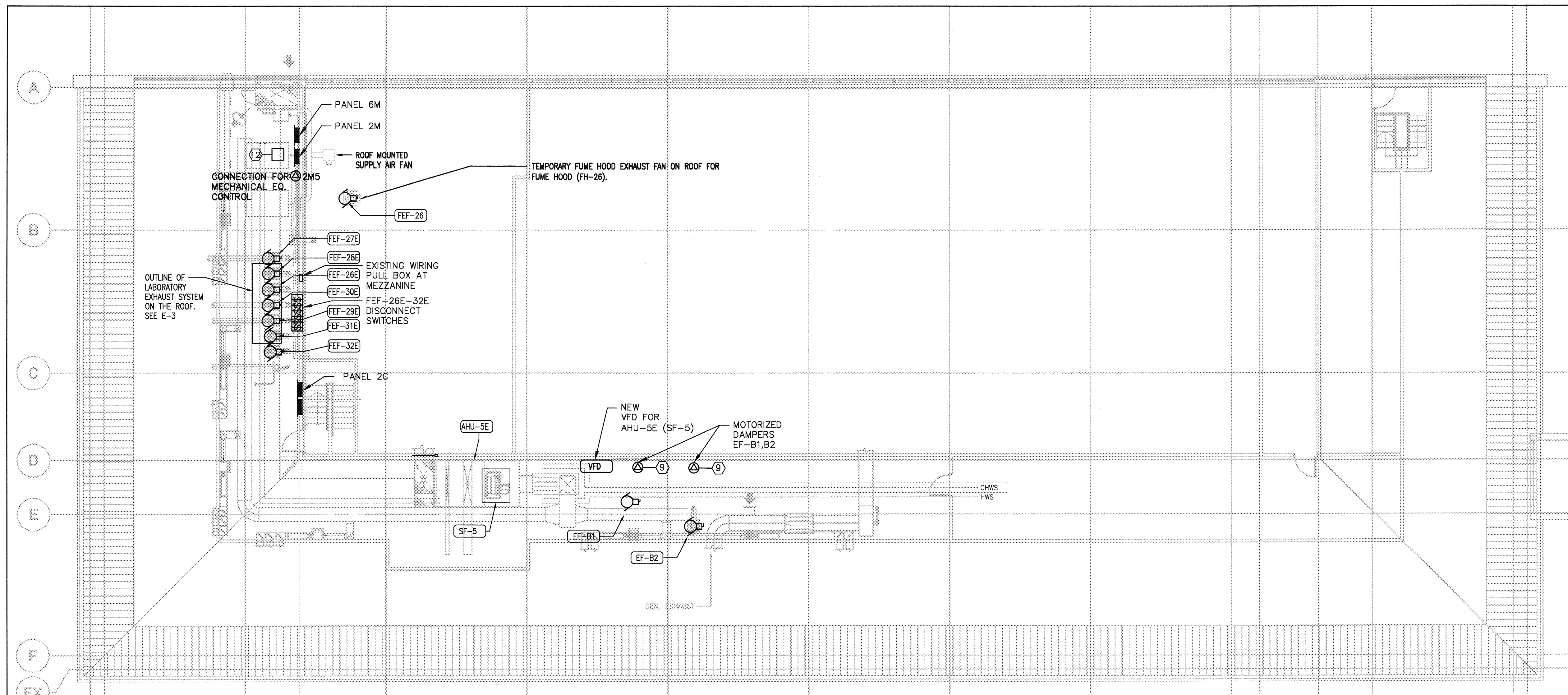
**ENVIRONMENT CANADA**

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 Patrick Truong  
 PWGSC, Regional Manager, Architectural and Engineering Services/  
 Gestionnaire régionale, Services d'architecture et de génie, TPSGC  
 PREETIPAL PAUL

**BUILDING B MEZZANINE & MECHANICAL EQ. SCHEDULE**

Project No./No. du projet <b>R.071030.001</b>	Sheet/Fauille <b>E2</b> OF 4	Revision no./ Le Révision no. <b>1</b>
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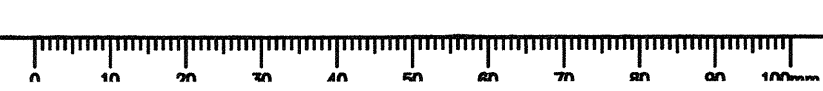
**BUILDING B MEZZANINE**  
 SCALE 1:100

**MECHANICAL EQUIPMENT SCHEDULE**

UNIT NUMBER	DESCRIPTION	LOCATION	LOAD			VOLT/PHASE	FEEDER	STARTER				DISC. AT MOTOR	OPERATION	NOTES	
			HP	KW	MCA			TYPE	SUPPLY	MOUNT	CONNECT				LOCATION
PDEF-1	PLUME DILUTION EXH. FAN 1 OF 2	ROOF	5			600/3	3c# 12	VFD	-	-	X	MEZZANINE	-	ONLY (1) OF THE TWO (2) EX. FANS OPERATE AT ANY GIVEN TIME WITH THE SECOND UNIT ON STANDBY	
PDEF-2	PLUME DILUTION EXH. FAN 2 OF 2	ROOF	5			600/3	3c# 12	VFD	-	-	X	MEZZANINE	-	ONLY (1) OF THE TWO (2) EX. FANS OPERATE AT ANY GIVEN TIME WITH THE SECOND UNIT ON STANDBY	
EF-B1	EXHAUST FAN FOR AUTOCLAVE HOOD	MEZZANINE	0.5			208/1	2c# 12	VFD	-	-	X	MEZZANINE	S		c
EF-B2	EXHAUST FAN FOR DISHWASHER HOOD	MEZZANINE	0.8			208/1	2c# 12	VFD	-	-	X	MEZZANINE	S		c
AHU-5E (SFU-5)	NEW SUPPLY FAN OF EXISTING AIR HANDLING UNIT (AHU-5E)	MEZZANINE	20		29	600/3	3c# 8	VFD	-	-	X	MEZZANINE	S		
FEF-26	TEMPORARY EXHAUST FAN FOR FUME HOOD	ROOF	1			600/3	3c# 12	MG-2,4	X	X	X	MAIN ELEC RM.	S		b
CU-1	NEW OUTDOOR ROOFTOP CONDENSING UNIT OF DUCTLESS SPLIT SYSTEM	ROOF OF WAREHOUSE B123			26	208/1	2c# 12	MN	X	X	X	MEZZANINE	S		
IAC-1	NEW INDOOR CEILING CASSETTE OF DUCT SPLIT SYSTEM	WASH-UP&AUTOCLAVE B112			2	208/1	2c# 12	-	-	-	-	-	S		
FEF-26E	EXISTING FUME HOOD EXHAUST FAN					600/3	3c# 12	MG	X	X	X	MCC A			a
FEF-27E	EXISTING FUME HOOD EXHAUST FAN					600/3	3c# 12	MG	X	X	X	MCC A			a
FEF-28E	EXISTING FUME HOOD EXHAUST FAN					600/3	3c# 12	MG	X	X	X	MCC A			a
FEF-29E	EXISTING FUME HOOD EXHAUST FAN					600/3	3c# 12	MG	X	X	X	MCC A			a
FEF-30E	EXISTING FUME HOOD EXHAUST FAN					600/3	3c# 12	MG	X	X	X	MCC A			a
FEF-31E	EXISTING FUME HOOD EXHAUST FAN					600/3	3c# 12	MG	X	X	X	MCC A			a
FEF-32E	EXISTING FUME HOOD EXHAUST FAN					600/3	3c# 12	MG	X	X	X	MCC A			a

**MECHANICAL EQUIPMENT SCHEDULE NOTES:**  
 a. EXH FAN TO BE REMOVED. REMOVE WIRING AND ASSOCIATED CONDUITS/RACEWAY TO EXISTING PULL BOX AT MEZZANINE. FROM PULL BOX TO MCC, REMOVE CONDUCTORS FROM EXISTING CONDUIT BETWEEN MEZZANINE & MCC.  
 b. RE-PURPOSE, RE-ROUTE AND EXTEND WIRING TO EXTERIOR TEMPORARY EXHAUST FAN FEF-26.  
 c. IN WIRING TO UNIT, PROVIDE NEUTRAL FOR CONTROLS. SEE E4 OF 4.

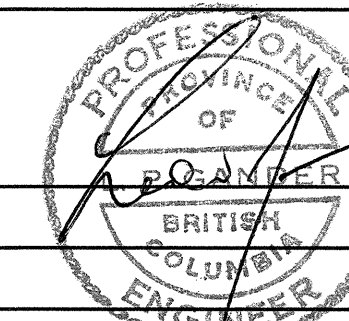
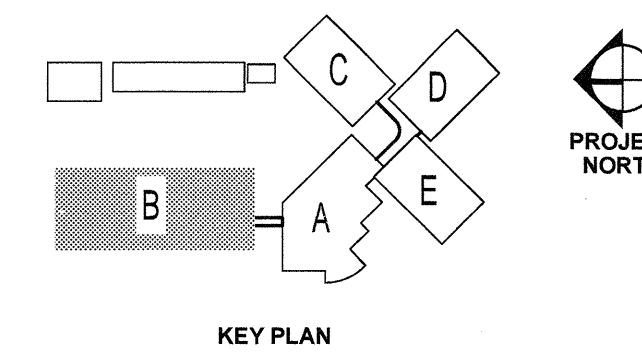
MG = MAGNETIC      MN = MANUAL      MC = MAGNETIC COMBINATION      X = INCLUDED UNDER DIV 26      S = SUPPLY  
 1 = STOP/START PUSHBUTTON      2 = HAND-OFF-AUTO SELECTOR SW.      3 = FUSED CONTROL CIRCUIT TRANSFORMER      4 = PILOT LIGHT      T = SUPPLIED BY OTHERS  
 5 = EXTRA AUXILIARY CONTACTS, 2 NO, 2 NC, INTERCHANGEABLE      VFD=VARIABLE FREQUENCY DRIVE







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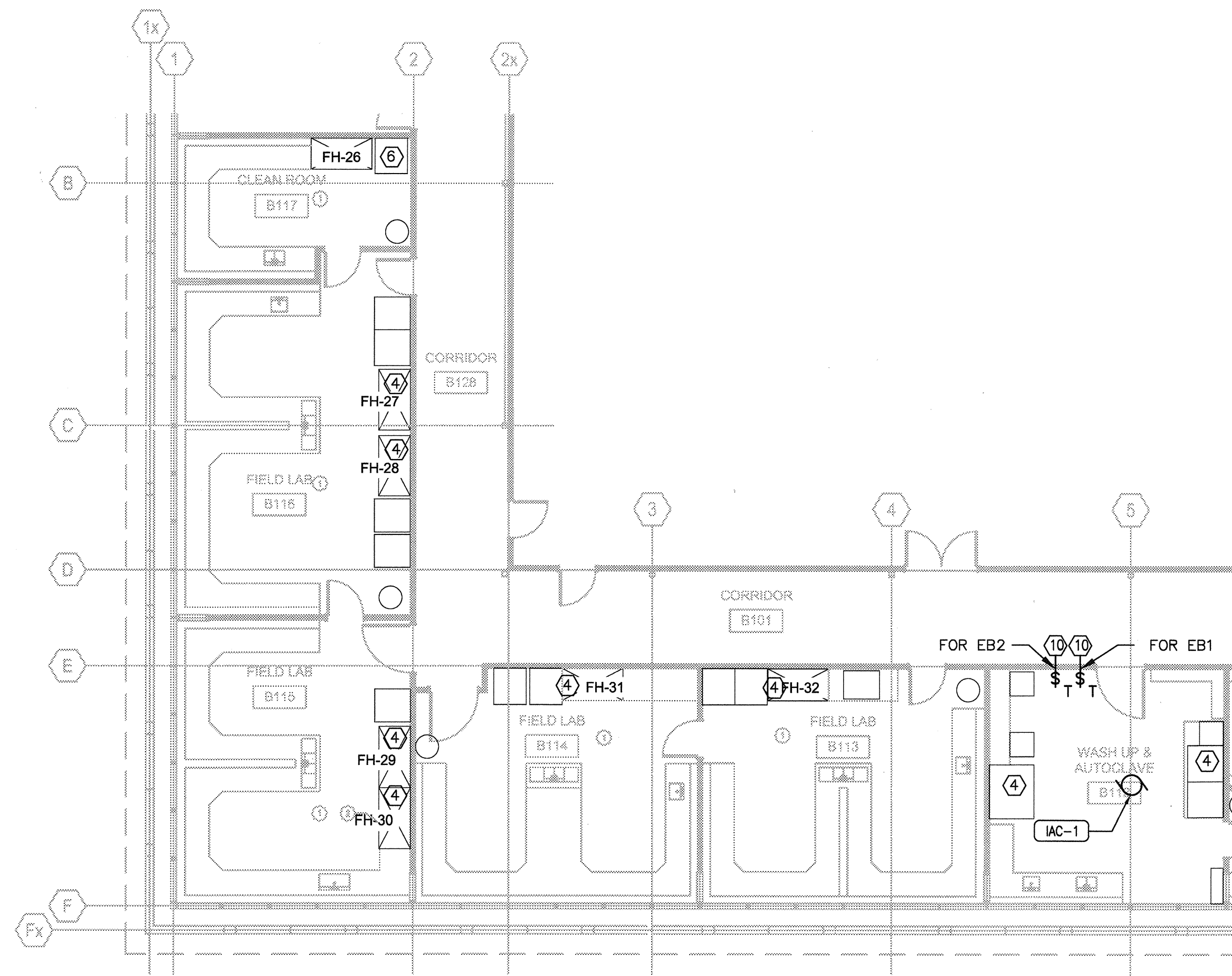
PWGSC Project Manager/Administrateur de Projets TPSGC  
Patrick Truong

PWGSC, Regional Manager, Architectural and Engineering Services/  
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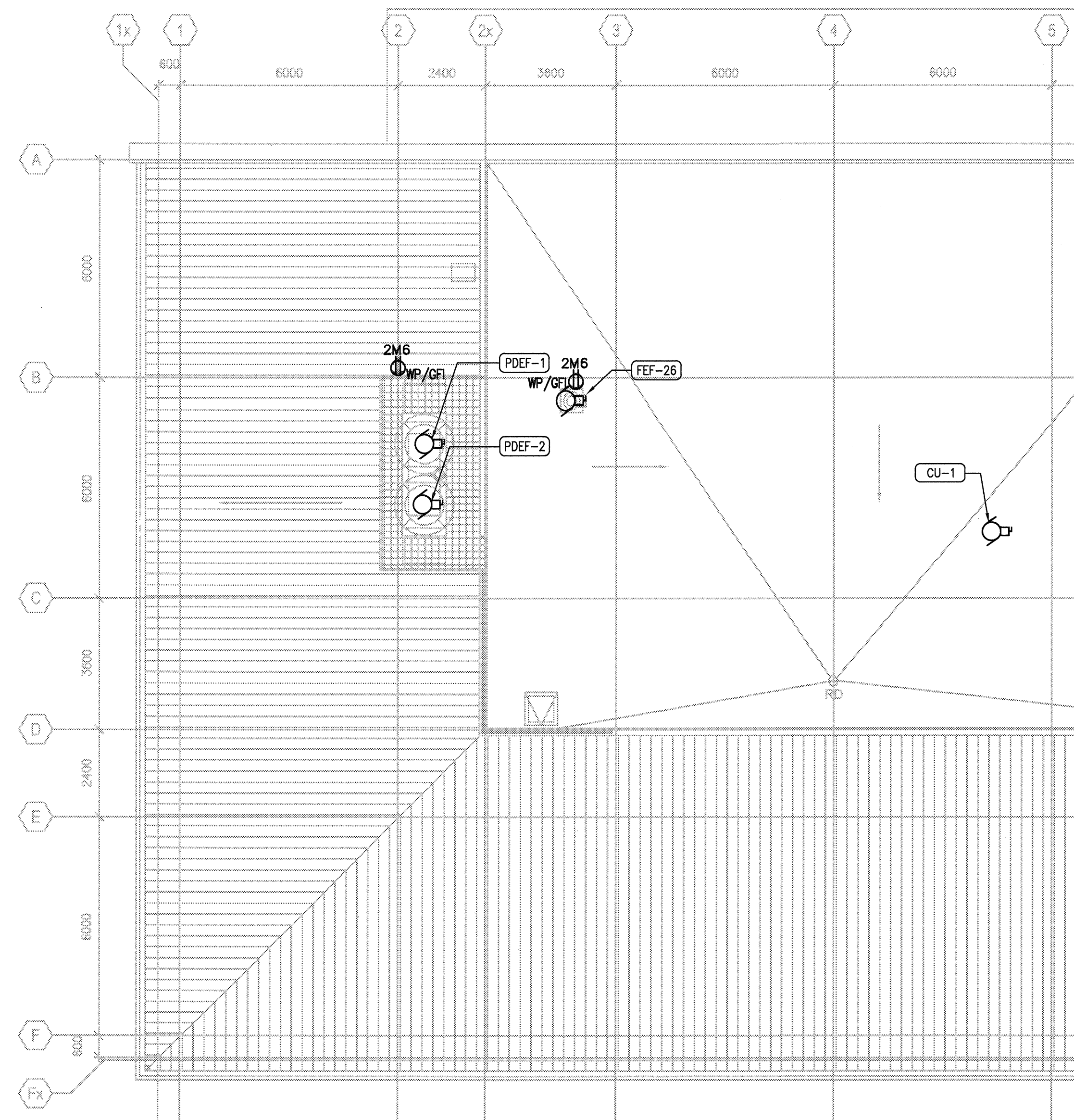
Drawing title/Titre du dessin

**FLOOR PLAN**  
**ROOF PLAN &**  
**ELECTRICAL ROOM PLAN**

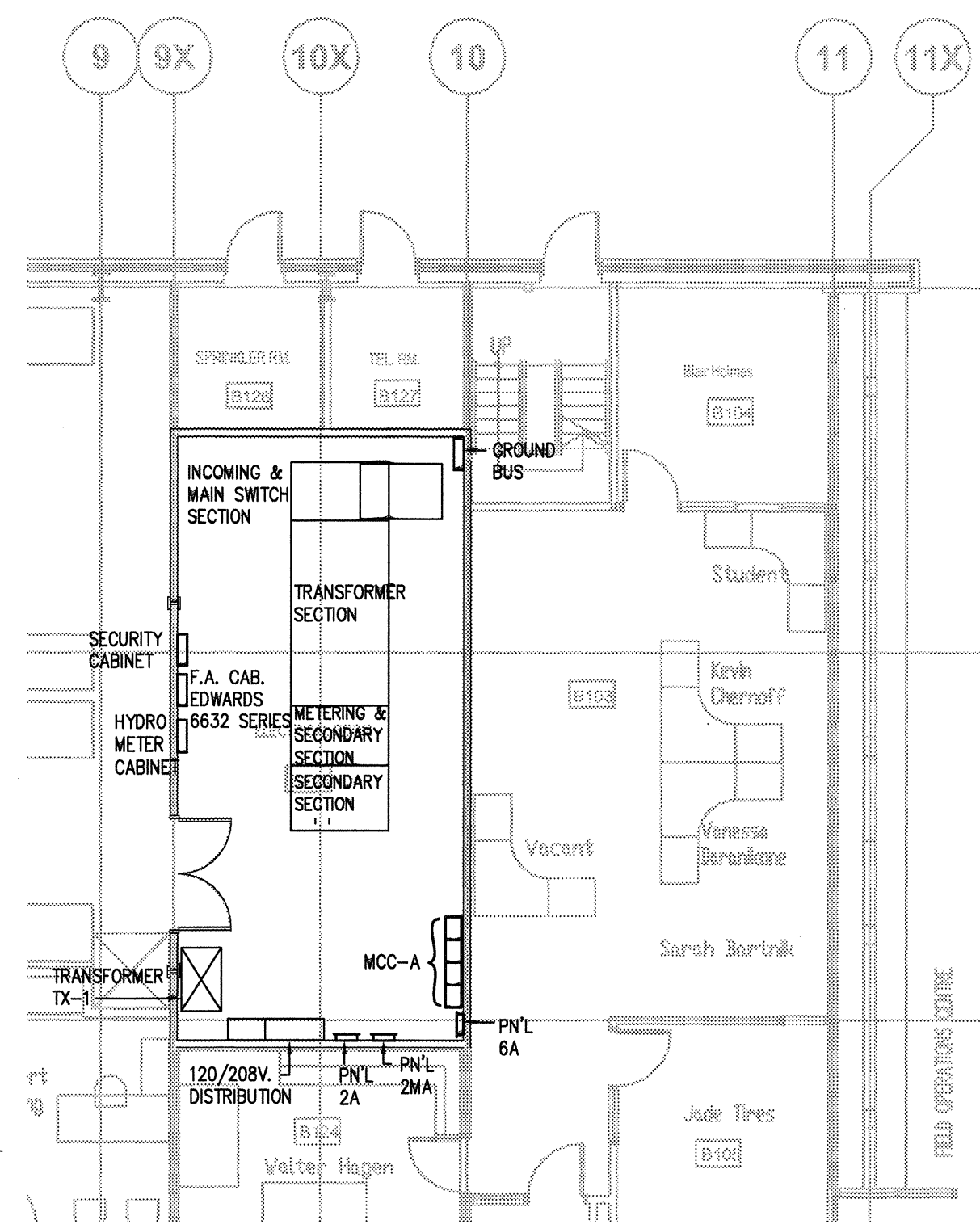
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R.071030.001	<b>E3</b> OF 4	<b>1</b>



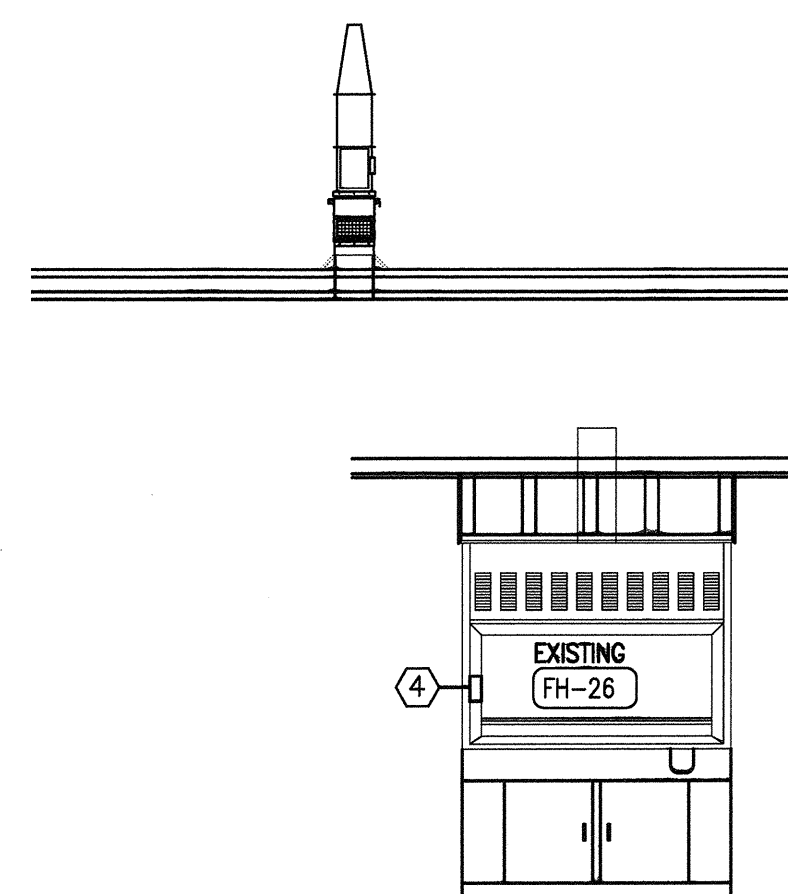
PART BUILDING B MAIN FLOOR  
SCALE 1:100



PART ROOF PLAN  
SCALE 1:100



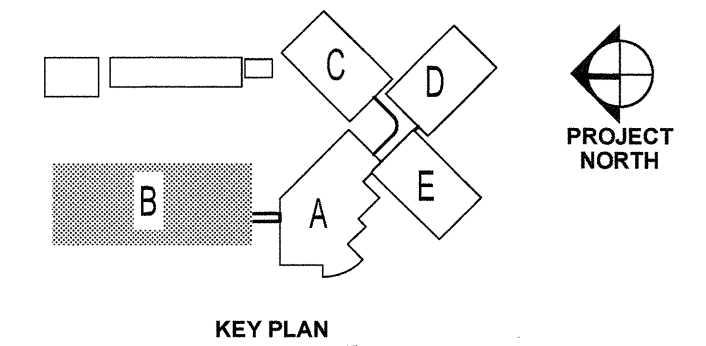
MAIN ELECTRICAL ROOM (REFER TO MECHANICAL DRAWING M-1)  
SCALE 1:100



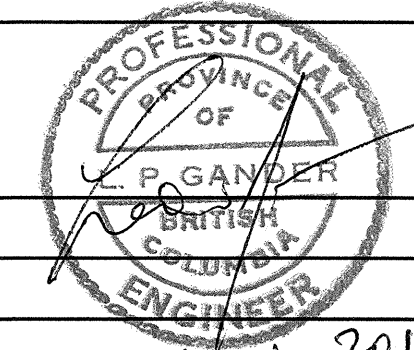
EXISTING FUME HOOD FH-26  
(TYPICAL FOR FHs 27, 28, 29, 30, 31, 32)  
SCALE NTS



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KEY PLAN



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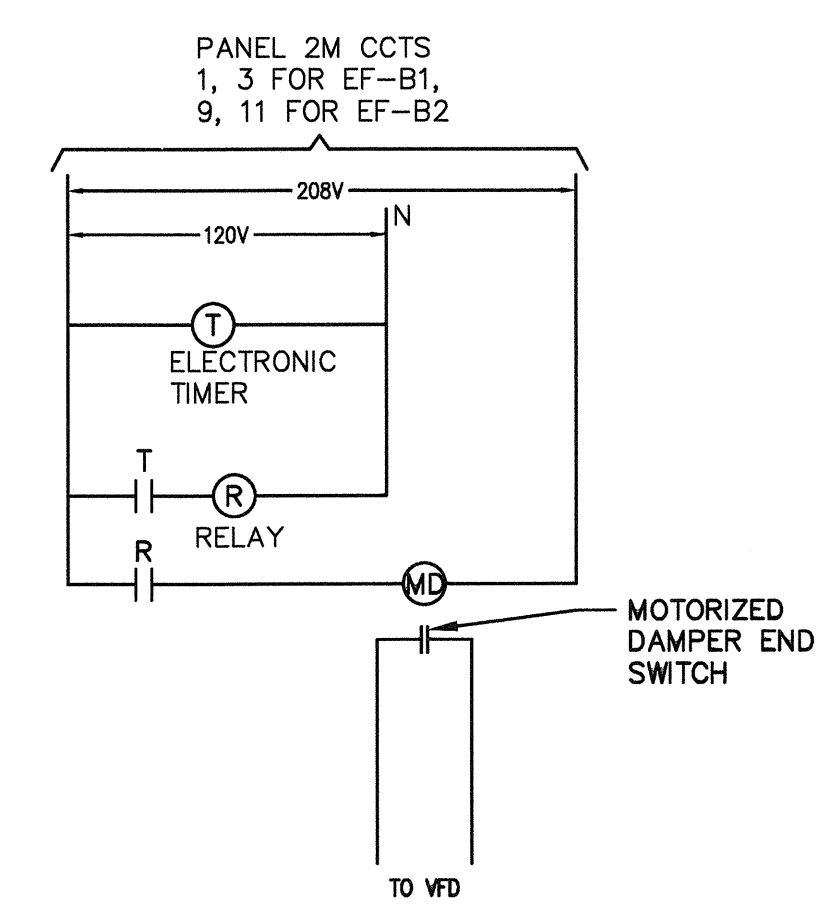
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DETAILS

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R.071030.001	E4 OF 4	1

ELECTRICAL COMMISSIONING REQUIREMENT

ITEM	MOTORIZED EQUIPMENT SOURCE OF SUPPLY	STARTER TYPE/SOURCE OF SUPPLY	TYPICAL INSTALLATION BY DIV 23 CONTRACTOR	INSTALLATION BY DIV 26 CONTRACTOR	COMMISSIONING BY DIV 26 CONTRACTOR	TYPICAL COMMISSIONING BY DIV 23 CONTRACTOR
CU-1 AND AC-1	DIV 23	INBUILT MAGNETIC IN CU-1 UNIT /DIV 23. INBUILT IN AC-1 UNIT/DIV 23	1. SET MOTORIZED EQUIPMENT IN PLACE 2. CONTROL WIRING INTERCONNECTION BETWEEN AC-1 AND CU-1 3. THERMOSTAT 4. WIRING FROM THERMOSTAT TO AC-1	1. WIRING FROM POWER SOURCE TO CU-1 UNIT AND FROM CU-1 UNIT TO AC-1 UNIT	1. CHECK MOTOR ROTATIONS AT CU-1 AND AC-1 ARE CORRECT	1. MEASURE MOTOR LOAD CURRENT IN THE CU-1 UNIT TO ENSURE IT IS LESS THAN OR EQUAL TO NAMEPLATE RATING. 2. ENSURE STARTER THERMAL OVERLOADS IN THE CU-1 UNIT ARE CORRECT FOR THE MOTOR. 3. CONFIRM CONTROL WIRING INCLUDING THERMOSTAT WIRING OPERATES TO CONTROL OPERATION OF AC-1 AND CU-1 CORRECTLY
TEMPORARY FEF-26	DIV 23	MAGNETIC /DIV 26	1. SET MOTORIZED EQUIPMENT IN PLACE	1. STARTER 2. WIRING FROM POWER SOURCE TO STARTER THEN TO MOTOR 3. WIRING FROM ADJACENT MCC TO STARTER FOR CONTROL 4. WHEN FEF-26 IS NO LONGER IN USE PADLOCK OFF THE FEED BREAKER IN THE MCC AND INDICATE THE BUCKET IN THE MCC IS SPARE. 5. ALSO INDICATE THE STARTER BESIDE THE MCC IS WIRED TO A SPARE FAN ON THE ROOF AND THAT IS NOT LABELED FEF -26.	1. CHECK MOTOR ROTATION 2. FOR MAGNETIC STARTER CHECK OVERLOADS SUIT CURRENT RATING OF MOTOR NAMEPLATE 3. MEASURE MOTOR LOAD CURRENT TO ENSURE IT IS LESS THAN OR EQUAL TO NAMEPLATE RATING 4. CONFIRM MANUAL SWITCH ON FUME HOOD 26 IN THE LAB OPERATES THE FAN 5. FOR STARTER, WHICH HAS H/O/A SWITCH AND PILOT LIGHTS ENSURE CONTROL IS WIRED INTO AUTO POSITION AND HAND POSITION STARTS MOTOR. 6. IF THERE IS OVERHEAT, FREEZE OR FIRE ALARM PROTECTION FOR EXISTING STARTER IN MCC ENSURE THIS IS WIRED INTO CONTROL CIRCUIT OF NEW STARTER TO OPERATE REGARDLESS OF H/O/A SWITCH BEING IN HAND OR AUTO POSITION	NIL
PDEF-1 PDEF-2	DIV 23	VARIABLE FREQUENCY DRIVE/DIV 23	1. SET MOTORIZED EQUIPMENT IN PLACE 2. SET VFD IN PLACE 3. CONTROL WIRING AND CONNECTION TO VFD	1. WIRING FROM POWER SOURCE TO VFD THEN TO LOCAL DISCONNECT SWITCH THEN TO MOTOR	1. CHECK MOTOR ROTATION	1. PROGRAM VFD TO SUIT MOTOR CHARACTERISTICS. ENSURE ALL INDICATING LIGHTS AND READOUTS OPERATE 2. MEASURE MOTOR LOAD CURRENT TO ENSURE IT IS LESS THAN OR EQUAL TO NAMEPLATE RATING 3. CONFIRM CONTROL SYSTEM OPERATES TO CONTROL OPERATION OF MOTOR CORRECTLY 4. FOR VFDs WITH BYPASS CIRCUITRY CONFIRM BYPASS OPERATES CORRECTLY. 5. IF THERE IS OVERHEAT, FREEZE OR FIRE ALARM PROTECTION ENSURE THIS IS WIRED INTO THE CONTROL CIRCUIT TO OPERATE REGARDLESS OF WHETHER VFD IS IN NORMAL POSITION
AHU-5E	DIV 23	VARIABLE FREQUENCY DRIVE/DIV 23	1. REPLACE FAN MOTOR IN AHU 2. REPLACE VFD	1. REMOVE WIRING TO EXISTING AHU UNIT. 2. PROVIDE NEW WIRING FROM POWER SOURCE TO VFD THEN TO LOCAL DISCONNECT SWITCH THEN TO MOTOR	1. CHECK MOTOR ROTATION	1. PROGRAM VFD TO SUIT MOTOR CHARACTERISTICS. ENSURE ALL INDICATING LIGHTS AND READOUTS OPERATE 2. MEASURE MOTOR LOAD CURRENT TO ENSURE IT IS LESS THAN OR EQUAL TO NAMEPLATE RATING 3. CONFIRM CONTROL SYSTEM OPERATES TO CONTROL OPERATION OF MOTOR CORRECTLY 4. FOR VFDs WITH BYPASS CIRCUITRY CONFIRM BYPASS OPERATES CORRECTLY. 5. IF THERE IS OVERHEAT, FREEZE OR FIRE ALARM PROTECTION ENSURE THIS IS WIRED INTO THE CONTROL CIRCUIT TO OPERATE REGARDLESS OF WHETHER VFD IS IN NORMAL POSITION OR BYPASS POSITION
EF-B1	DIV 23	VARIABLE FREQUENCY DRIVE/DIV 23	1. SET MOTORIZED EQUIPMENT IN PLACE INCLUDING MOTOR AND MOTORIZED DAMPER 2. SET VFD IN PLACE 3. CONTROL WIRING AND CONNECTION TO VFD EXCEPT AS INDICATED OTHERWISE FOR DIV 26	1. SUPPLY AND INSTALLATION OF TIMER 2. WIRING OF TIMER TO MOTORIZED DAMPER 3. WIRING OF MOTORIZED DAMPER 4. WIRING OF MOTORIZED DAMPER END SWITCH TO VFD 5. WIRING FROM POWER SOURCE TO VFD THEN TO DISCONNECT THEN TO MOTOR	1. SET TIMER TO OPERATE MOTORIZED DAMPER. 2. ENSURE MOTORIZED DAMPER END SWITCH CLOSURES AND SIGNAL IS RECEIVED AT VFD	1. PROGRAM VFD TO SUIT MOTOR CHARACTERISTICS. ENSURE ALL INDICATING LIGHTS AND READOUTS OPERATE 2. MEASURE MOTOR LOAD CURRENT TO ENSURE IT IS LESS THAN OR EQUAL TO NAMEPLATE RATING 3. CONFIRM CONTROL SYSTEM OPERATES TO CONTROL OPERATION OF MOTOR CORRECTLY 4. FOR VFDs WITH BYPASS CIRCUITRY CONFIRM BYPASS OPERATES CORRECTLY. 5. IF THERE IS OVERHEAT, FREEZE OR FIRE ALARM PROTECTION ENSURE THIS IS WIRED INTO THE CONTROL CIRCUIT TO OPERATE REGARDLESS OF WHETHER VFD IS IN NORMAL POSITION OR BYPASS POSITION
FEF-27E, FEF-28E, FEF-29E, FEF-30E, FEF-31E, FEF-32E	EXISTING FANS WERE SUPPLIED BY DIV 23	EXISTING MAGNETIC STARTERS IN MCC WERE SUPPLIED BY DIV 26	1. REMOVE EXISTING FANS	1. RETAIN EXISTING STARTERS IN MCC 2. REMOVE POWER WIRING FROM STARTERS TO FANS. 3. REMOVE CONTROL WIRING FROM FUME HOODS TO STARTERS.	1. CONFIRM WIRING REQUIRED TO BE REMOVED, IS IN FACT REMOVED	NIL
EF-B2	DIV 23	VARIABLE FREQUENCY DRIVE/DIV 23	1. SET MOTORIZED EQUIPMENT IN PLACE INCLUDING MOTOR AND MOTORIZED DAMPER 2. SET VFD IN PLACE 3. CONTROL WIRING AND CONNECTION TO VFD EXCEPT AS INDICATED OTHERWISE FOR DIV 26	1. SUPPLY AND INSTALLATION OF TIMER 2. WIRING OF TIMER TO MOTORIZED DAMPER 3. WIRING OF MOTORIZED DAMPER 4. WIRING OF MOTORIZED DAMPER END SWITCH TO VFD 5. WIRING FROM POWER SOURCE TO VFD THEN TO DISCONNECT THEN TO MOTOR	1. SET TIMER TO OPERATE MOTORIZED DAMPER. 2. ENSURE MOTORIZED DAMPER END SWITCH CLOSURES AND SIGNAL IS RECEIVED AT VFD	1. PROGRAM VFD TO SUIT MOTOR CHARACTERISTICS. ENSURE ALL INDICATING LIGHTS AND READOUTS OPERATE 2. MEASURE MOTOR LOAD CURRENT TO ENSURE IT IS LESS THAN OR EQUAL TO NAMEPLATE RATING 3. CONFIRM CONTROL SYSTEM OPERATES TO CONTROL OPERATION OF MOTOR CORRECTLY 4. FOR VFDs WITH BYPASS CIRCUITRY CONFIRM BYPASS OPERATES CORRECTLY. 5. IF THERE IS OVERHEAT, FREEZE OR FIRE ALARM PROTECTION ENSURE THIS IS WIRED INTO THE CONTROL CIRCUIT TO OPERATE REGARDLESS OF WHETHER VFD IS IN NORMAL POSITION OR BYPASS POSITION



EF-B1 FAN CONTROL (EF-B2 FAN CONTROL SIMILAR)

- NOTES:
- ALL WIRING SHOWN TO BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
  - ELECTRONIC TIMER TO BE 120V SILENT OPERATING, FLUSH MOUNTED IN WALL BOX. AUTO OFF TIMER WITH 5, 10, 15 AND 30 MIN SELECTOR BUTTONS WITH LED BACK-LIGHT.
  - ELECTRONIC TIMER TO BE FLUSH MOUNTED IN WALL IN LAB.
  - RELAY TO BE PLUG-IN TYPE MOUNTED IN BOX IN CEILING SPACE OF LAB. PROVIDE LABEL ON BOX TO SAY "CONTROL RELAY FOR EF-B1"

