

AIR CONDITIONING AND VENTILATION
DESIGN
FOR

JAMAICA CIVIL AVIATION AUTHORITY
(AIM PROJECT)

4 WINCHESTER ROAD

KINGSTON 10, JAMAICA, W.I.

VAC SHEET LIST (JCAA)				
Sheet Number	Sheet Name	Rev #	Revision Date	Revision Description
VAC-000	COVER SHEET			
VAC-001	VAC DETAILS & LEGEND			
VAC-101	FLOOR PLAN- EXISTING AIR CONDITIONING & SMOKE DETECTOR LAYOUT			
VAC-102	FLOOR PLAN- PROPOSED AIR CONDITIONING & SMOKE DETECTOR LAYOUT			
Sheet total : 4				

STATUS	DRAFT
FOR	SUBMISSION/APPROVAL
DATE:	2018-11-19

M.E.P. ENGINEERS

SATYN CONSULTANTS LTD

ELECTRICAL & MECHANICAL
ENGINEERS
24 WOODVILLE DRIVE KINGSTON 10
Tel: (876) 960-1404 • Fax: (876) 960-1404
Email: satyn@cvjamaica.com

ARCHITECTS:

MICHEAL LAKE & ASSOCIATES
20 Hope Road , Kingston 10
Jamaica, West Indies
Tel: (876) 929-0640-2
Fax: (876) 929-7598
Email: mlake@cvjamaica.com

ENGINEERS SEAL:

DRAWING STATUS

☒ FOR SUBMISSION / APPROVAL

☐ FOR TENDER

☐ FOR CONSTRUCTION

☐ FOR INFORMATION

☐ FOR OTHER SEE NOTES

REVISIONS

NO.	DESCRIPTION	DATE	INTL
—	FOR SUBMISSION/ APPROVAL	2018-11-19	H.S

PROJECT TITLE:

VAC SERVICES DESIGN
FOR
PROPOSED JAMAICA CIVIL AVIATION
AUTHORITY, KINGSTON,JAMAICA,WI

DRAWING TITLE:
VAC SERVICES DESIGN

SHEET TITLE:
COVER SHEET

DESIGNED BY: D.L.
DRAWN BY: B.H.
APPROVED BY: H.S.

SCALE: AS SHOWN

PROJECT NO.
SCL-1827

DRAWING NO.

REVISION

VAC-000

ABBREVIATIONS

A	AIR OR COMPRESSED AIR
ACD	AUTOMATIC CONTROL DAMPER
AHU	AIR HANDLE UNIT
DG	DOOR GRILL
AFFL	AT FINISH FLOOR
AFFG	AT FINISH FLOOR GRADE
AHU	AIR HANDLING UNIT
AMP	AMPERE
APD	AIR PRESSURE DROP
AUX	AUXILIARY
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
CD	CEILING DIFFUSER
CDP	CONDENSATE DRAIN PIPE
CENT.	CENTER OR CENTRIFUGAL
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CH	CHILLED OR CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
C/O	CLEAN OUT
CONN.	CONNECTION
CR	CEILING REGISTER
CT	COOLING TOWER
CU	CONDENSING UNIT
DB	DRY BULB (TEMPERATURE)
DEG.	DEGREE
DG	DOOR GRILL
DIA.	DIAMETER
DIM.	DIMENSION
E/A	EXHAUST AIR
EAD	EXHAUST AIR DUCT
EAF	EXHAUST AIR FAN
EAG	EXHAUST AIR GRILLE
EAR	EXHAUST AIR REGISTER
ELB	ELBOW
ERV	ENERGY RECOVER VENTILATOR
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FMAR	FILTERED MAKE-UP AIR REGISTER
FOAR	FILTERED OUTDOOR AIR
REGISTER	
HEPA	HGH-EFFICIENCY PARTICULATE ARRESTANCE FILTER
	HEPA FILTER
HF	
HP	HORSE POWER
LCD	LINEAR CEILING DIFFUSER
FLD	FULLY LOUVER DOOR
MAX.	MAXIMUM
MIN.	MINIMUM
OAR	OUTDOOR AIR REGISTER
R/A	RETURN AIR
RAD	RETURN AIR DUCT
RAG	RETURN AIR GRILLE
RAR	RETURN AIR REGISTER
SAD	SUPPLY AIR DUCT
SAG	SUPPLY AIR GRILLE
SAR	SUPPLY AIR REGISTER
SD	SMOKE DAMPER
SP	STATIC PRESSURE
SPEC.	SPECIFICATION
VOL.	VOLUME
VTR	VENT THRU ROOF
VAV	VARIABLE AIR VOLUME

GENERAL NOTES

DUCTWORK

1. RECTANGULAR DUCT DIMENSIONS SHOWN ARE IN INCHES; AND ARE THE CLEAR INTERNAL DIMENSIONS OF THE DUCT. IN PLAN VIEW, HORIZONTAL DIMENSIONS ARE SHOWN FIRST AND IN ELEVATION, VERTICAL DIMENSIONS ARE SHOWN FIRST.
2. ALL 90 DEG. BENDS IN THE RECTANGULAR SUPPLY DUCTWORK SHALL HAVE DOUBLE THICKNESS TURNING VANES.
3. RECTANGULAR DUCTWORK INTERNAL TO THE BUILDING SHALL BE CONSTRUCTED FROM PRE-INSULATED ALUMINIUM SANDWICH PANELS.
4. RECTANGULAR DUCTWORK EXTERNAL TO THE BUILDING SHALL BE AS ABOVE; BUT IN ADDITION IT SHALL BE WRAPPED USING 1" THK. DUCTBOARD, WHICH SHALL THEN BE WRAPPED WITH TWO LAYERS OF CALICO CLOTH AND PAINTED WITH AT LEAST TWO COATS OF WHITE EMULSION PAINT.
5. WHERE EXTERNAL DUCTWORK ENTERS THE BUILDING THE DUCT BOARD WRAPPING AND SUBSEQUENT TREATMENT OUTLINED ABOVE SHALL CONTINUE FOR AT LEAST 12"
6. WHERE DUCTS, CONDUITS, PIPES, ETC. PASS THRU EXTERNAL WALLS, ROOFS OR FLOORS, THE PERIMETER OF THE OPENINGS SHALL BE SEALED AND WATER-PROOFED TO PROTECT AGAINST WEATHERING AND LEAKAGE.

EQUIPMENT

1. ALL AIR CONDITIONING EQUIPMENT SHALL BE MOUNTED ON CONCRETE BASES OR PLINTHS PROVIDED BY OTHERS.
2. ROOF-TOP PACKAGE UNITS SHALL BE MOUNTED ON 8" HIGH CONCRETE BASES, AND SHALL BE ISOLATED FROM SAID BASES USING SUITABLE ANTI-VIBRATION PADS. EACH CONCRETE BASE SHALL EXTEND FOR 9". BEYOND THE UNIT ON ALL SIDES.
3. AIR HANDLING UNITS SHALL BE MOUNTED ON 8" HIGH CONCRETE BASES, AND SHALL BE ISOLATED FROM SAID BASES USING SUITABLE ANTI-VIBRATION PADS. EACH CONCRETE BASE SHALL EXTEND FOR 6" TO 9". BEYOND THE UNIT ON ALL SIDES.
4. CEILING-MOUNTED FAN COIL UNITS, WALL-MOUNTED FAN COIL UNITS AND CONDENSING UNITS, ENERGY RECOVERY VENTILATORS, VARIABLE AIR VOLUME BOXES, EXHAUST AIR FANS AND OTHER MOTORIZED EQUIPMENT AND ACCESSORIES ETC. SHALL BE ISOLATED FROM THE BUILDING USING SUITABLE ANTI-VIBRATION ACCESSORIES WHERE NECESSARY.
5. FAN COIL UNITS SHALL BE MOUNTED ON 8" HIGH CONCRETE BASES, AND SHALL BE ISOLATED FROM SAID BASES USING SUITABLE ANTI-VIBRATION PADS. EACH CONCRETE BASE SHALL EXTEND FOR 6" TO 9" BEYOND THE UNIT ON ALL SIDES.
6. CONDENSING UNITS SHALL BE MOUNTED ON 8 IN. HIGH CONCRETE BASES, AND SHALL BE ISOLATED FROM SAID BASES USING SUITABLE ANTI-VIBRATION PADS. EACH CONCRETE BASE SHALL EXTEND 6" TO 9" BEYOND THE UNIT ON ALL SIDES.

TREATMENT OF EQUIPMENT

1. ALL EQUIPMENT AND ACCESSORIES SHALL BE MANUFACTURED AND OR TREATED SO AS TO ENDURE THE OUTDOOR ENVIRONMENT OF THE SITE.

OTHER NOTES:

1. DO NOT SCALE DRAWING. REFER ANY DISCREPANCY TO THE ENGINEERS.
2. SYMBOLS NOTED ARE STANDARD THEREFORE NOT ALL SYMBOLS ARE DEFINITIVE TO THIS DRAWING.

GENERAL NOTES

GENERAL NOTES

1. ALL BUILDERS WORK TO BE DONE BY OTHERS.
2. WHERE DUCTWORK AND PIPE WORK PASS THRU WALLS, DECKING OR ROOF, THE OPENING SHALL BE MADE GOOD AND WATER-PROOFED (BY OTHERS), USING SUITABLE CAULKING AND WATER-RESISTANT MATERIAL AND PAINT.
4. ALL THE VAC DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATION, BILLS OF QUANTITY, SKETCHES AND ALL OTHER DOCUMENTATION RELATED TO THE PERFORMANCE OF THE WORK.
5. IT SHALL NOT BE THE INTENT OF THESE DRAWING/PLAN TO SHOW EVERY MINOR DETAILS OF THE CONSTRUCTION. THE CONTRACTOR SHALL BE EXPECTED TO FINISH AND INSTALL ALL ITEMS FOR A COMPLETE VAC, AND ALSO PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING CONDITION.

NOTES

DUCT WORK

Rectangular duct dimensions shown are in inches;and are the clear internal dimensions of the duct. In plan view, horizontal dimensions are shown first and in elevation,vertical dimensions are shown first

All 90 deg. bends in rectangular supply ductwork shall done thickness turning vanes

Rectangular ductwork internal to the building shall be constructed from pre-insulated aluminum sandwich panels.

Rectangular ductwork internal to the building shall be as above ; but in addition it shall be wrapped using 1" thk. ductwork, which shall be wrapped with two layers of calico cloth and painted with at least two coats of white emulsion pain.

Where external ductwork enters the building the duct board wrapping and subsequent treatment outline above shall continue for at least 12" .

Where ducts,conduits,pipes,etc.pass thru external walls ,roofs or floors,the perimeter of the openings shall be sealed and water-proofed to protect against weathering and leakage.

CHILLED WATER PIPE

Chilled water pipe piping shall be Sch. 80 vpc

Chilled water pipe piping shall be insulated with 2" thk. poly-urathane pipe insulation,which shall then be wrapped with two layers of calico cloth and painted with at least 2 coats of white emulsion paint

Chilled water piping equipment and accessories (pumps , valves, strainers,etc.)shall be insulated with 3/4 " thk. sheet vascoeel insulation,which shall then be wrapped with two layers of calico cloth and painted with at least two coats of white emulsion .

out door pipe work (on roof) shall generally run at (6'-0")above finished roof and connect to equipment via a riser.

Pipe work shall be supported on angle iron stands at intervals as follows:

Nominal Pipe Size : (3/4"-1 ¼") (1 ½"-2 ½") (3"-3 ½") (4"-6") (8"-12") (14"-24")
Dist.bet. Supports: 8' 10' 12' 14' 16' 20'

Pipes work shall be connected as follows:

Nominal Pipe Size: (3/4 thru 2") (2 ½ " thru 12")
Types of connection: screwed flanged

Gate valves shall be installed as shown on drawings to facilitate equipment of zone isolation.

Flanges or unions shall be provided at essential points to facilitate the easy removal of coils or the isolation of equipment and sections of system.

The chilled water system shall have an expansion tank ,roof-mounted at thre highest point in the system (ie.above the Air -cooler Chillers).

The expansion tank shall feed into the chill water return line.

Provide automatic air bleeding valves in the system high points which cannot vent back to the expansion tank.

Equipments

All air condition equipment shall be mounted on cc bases or plinths provided by others.

Chilled water pumps shall be mounted on 8 inc. high concrete base ,an shall be isolated from said bases using suitable anti -vibration pads.each concrete base shall extend for 6 inc. beyond the unit on all sides.

LEGEND

SYMBOL	DESCRIPTION
	SUPPLY DIFFUSER
	RETURN DIFFUSER
	EXHAUST DIFFUSER
	SIDEWALL SUPPLY DIFFUSER
	TAP-OFF WITH FLEX DUCT
	VAINED ELBOW; TYPICAL AT ALL SQUARE AND RECTANGULAR ELBOWS
	VAINED ELBOW; SHORT RADIUS
	SUPPLY DUCT - UP
	SUPPLY DUCT - DOWN
	RETURN DUCT - UP
	RETURN DUCT - DOWN
	EXHAUST DUCT - UP
	EXHAUST DUCT - DOWN
	FLEXIBLE CONNECTION
	ELEVATION INCLINE - RISE; IN DIRECTION OF FLOW
	ELEVATION INCLINE - DROP; IN DIRECTION OF FLOW
	A/C REMOTE CONTROL
	HUMIDISTAT CONTROL
	VAV CONTROL POINT
	THERMOSTAT CONTROL
	A/C UNIT MASTER CONTROL
	4 WAY CASSETTE UNIT
	CONDENSING UNIT
	FIRE DAMPER
	SMOKE DAMPER
	AIR CONDITIONING UNIT
	INVERTER CONDENSING UNIT
	DOOR GRILL

Chillers shall be mounted on 8" high concrete base,all shall be isolated from said bases using suitable anti-vibration pads.Each concrete base shall extend 9" beyond unit on all sides

Roof-top Package Units shall be mounted on 8" high concrete bases,and shall be isolated from said bases using suitable anti-vibration pads,each concrete base shall extend for 9' beyond the units on all sides.

Condensing Units shall be mounted on 8" high concrete bases,and shall be isolated from said bases using suitable anti-vibration pads,each concrete base shall extend for 9' beyond the units on all sides.

Air Handling units shall be mounted on 8" high concrete bases,and shall be isolated from said bases using suitable anti-vibration pads,each concrete base shall extend for 6" to 9' beyond the units on all sides.

Fan coil units shall be mounted on 8" high concrete bases,and shall be isolated from said bases using suitable anti-vibration pads,each concrete base shall extend for 6" to 9' beyond the units on all sides.

Ceiling-mounted Fan Coil Units,wall mounted Fan Coil Units and condensing Units,Energy Recovery Ventilators,Variable Air Volume boxes,Exhaust Air Fans and other motorized equipment and accessories etc. shall be isolated from the building using suitable

All equipment (chillers,pumps and chw air handling units)shall have lock-off (gate) valves installed on the inlet and outlet sides

Each pump discharge shall have a check (non return)valve installed ahead of gate valve.

Each pump suction shall have a vertical elbow installed ahead of an eccentric reducer.

Each pair of pumps(duty an stan-by)shall have a wye strainer installed ahead of suction.

Pumps suction and discharge ports shall be fitted with flexible connections to reduce transmission of vibration piping.

Each chiller,pump and air handling unit shall be mounted on rubber -in-shear anti-vibration pads.

Each chiller,pump and air handling unit shall be fitted with pressure gauges on both the inlet and outlets sides.

Each chiller and air handling unit shall be fitted with thermometer in well on both the inlet and outlet sie

Each chiller and air handling unit shall be fitted with thermometer in well on both the inlet and outlet sides

GENERAL

All builders work to be done by other.

Where ductwork and pipe work pass thru walls,decking of roof,the opening shall be made good and water-proofed (by others),using suitable caulking and water -resistant material and paint.

Do not scale symbols.Refer any discrepancy to the engineers.

M.E.P. ENGINEERS

SATYN CONSULTANTS LTD

ELECTRICAL & MECHANICAL
WORKING DRAWINGS
2 WOODVILLE DRIVE KINGSTON 10
Tel: (876) 960-1469-70 • Fax: (876) 960-1404
Email: satyn@ojamaica.com

ARCHITECTS:

MICHEAL LAKE & ASSOCIATES
20 Hope Road , Kingston 10
Jamaica, West Indies
Tel: (876) 929-0640-2
Fax: (876) 926-7598
Email: mikelakeee@ojamaica.com

ENGINEERS SEAL:

DRAWING STATUS			
<input checked="" type="checkbox"/>	FOR SUBMISSION / APPROVAL		
<input type="checkbox"/>	FOR TENDER		
<input type="checkbox"/>	FOR CONSTRUCTION		
<input type="checkbox"/>	FOR INFORMATION		
<input type="checkbox"/>	FOR OTHER SEE NOTES		

REVISIONS			
NO.	DESCRIPTION	DATE	INTL
—	FOR SUBMISSION/ APPROVAL	2018-11-19	H.S

PROJECT TITLE:
VAC SERVICES DESIGN
FOR
PROPOSED JAMAICA CIVIL AVIATION
AUTHORITY, KINGSTON,JAMAICA,WI

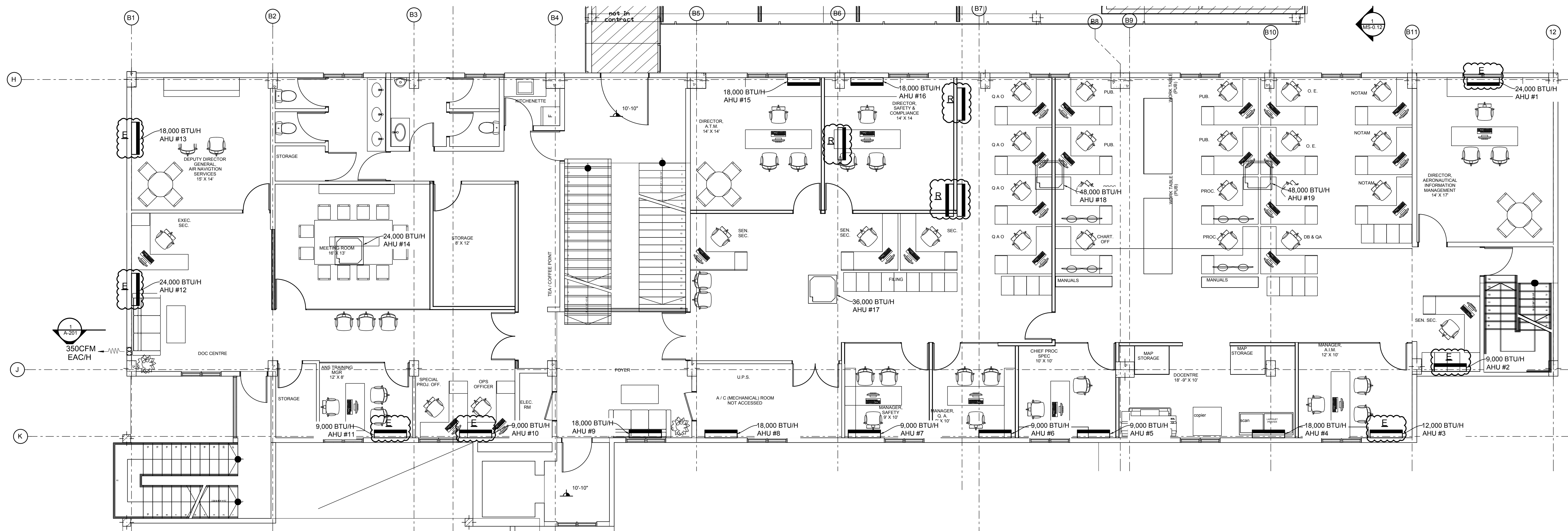
DRAWING TITLE: VAC SERVICES DESIGN	SHEET TITLE: VAC LEGEND AND NOTES
---------------------------------------	--------------------------------------

DESIGNED BY: D.L.
DRAWN BY: B.H.
APPROVED BY: H.S.

SCALE: AS SHOWN
PROJECT NO.
SCL-1827

DRAWING NO.	REVISION
-------------	----------

VAC-001 ---



AIR CONDITIONING AND VENTILATION SCHEDULE (JCAA)					
ITEM	AREA SERVED	UNIT CAPACITY BTU/H	IDENTIFICATION	UNIT TYPES	APPROXIMATE PIPE RUNS
1	DIRECTOR-AIM	24000	AHU #1	Wall Mounted	
2	SEN.SEG-AIM	9000	AHU #2	Wall Mounted	
3	MANAGER-AIM	12000	AHU #3	Wall Mounted	
4	DOCU CENTER	18000	AHU #4	Wall Mounted	
5	CHIEF PRO SPEC.	9000	AHU #5	Wall Mounted	
6	MANAGER Q.A	9000	AHU #6	Wall Mounted	
7	MANAGER SAFETY	9000	AHU #7	Wall Mounted	
8	UPS/ELECT ROOM	18000	AHU #8	Wall Mounted	
9	FOYER	18000	AHU #9	Ceiling Hung	
10	UPS/SPEC .PROJ.OFFICERS	9000	AHU #10	Wall Mounted	
11	ANS TRAINING MANAGER	9000	AHU #11	Wall Mounted	
12	DOC CNTE # 2	24000	AHU #12	Wall Mounted	
13	DEP.DR.GEN.ANS	18000	AHU #13	Wall Mounted	
14	MEETING ROOM	24000	AHU #14	Cassette	
15	DIRECTOR A.T.M	18000	AHU #15	Wall Mounted	
16	DR.SAFETY & COMPLIANCE	18000	AHU #16	Wall Mounted	
17	GEN.SEGS & FILING	36000	AHU #17	Cassette	
18	GENERAL OFFICE	48000 X 2	AHU #18/19	Cassette	
19					
20	DOC CENTER #1	350 CFM EXH.FAN		Wall Exhaust	
21	DOC CENTER # 2	350 CFM EXH.FAN		Wall Exhaust	

1 FLOOR PLAN- PROPOSED AIR CONDITIONING & SMOKE DETECTOR LAYOUT
Scale: 1/75(3/16"=1'0")

NOTES

E -EXISTING UNIT LOCATION TO REMAIN

R -UNITS TO BE RELOCATED

M.E.P. ENGINEERS

SATYN CONSULTANTS LTD

ELECTRICAL & MECHANICAL
ENGINEERING
2 WOODS LANE DRIVE KINGSTON 10
Tel: (876) 960-1468/70 • Fax: (876) 960-1404
Email: satyn@satynjamaica.com

ARCHITECTS:

MICHAEL LAKE & ASSOCIATES
20 Hope Road , Kingston 10
Jamaica, West Indies
Tel: (876) 928-0640-2
Fax: (876) 928-7598
Email: mlake@mlakejamaica.com

ENGINEERS SEAL:

DRAWING STATUS

☒ FOR SUBMISSION / APPROVAL
☐ FOR TENDER
☐ FOR CONSTRUCTION
☐ FOR INFORMATION
☐ FOR OTHER SEE NOTES

REVISIONS

NO.	DESCRIPTION	DATE	INTL
1	FOR SUBMISSION/ APPROVAL	2018-11-19	H.S

PROJECT TITLE:
VAC SERVICES DESIGN
FOR
PROPOSED JAMAICA CIVIL AVIATION
AUTHORITY, KINGSTON,JAMAICA,WI

DRAWING TITLE:
VAC SERVICES DESIGN

SHEET TITLE:
FLOOR PLAN- PROPOSED AIR
CONDITIONING & SMOKE DETECTOR
LAYOUT

DESIGNED BY: D.L.
DRAWN BY: B.H.
APPROVED BY: H.S.

SCALE: AS SHOWN

PROJECT NO.
SCL-1827

DRAWING NO. REVISION

VAC-102 ---