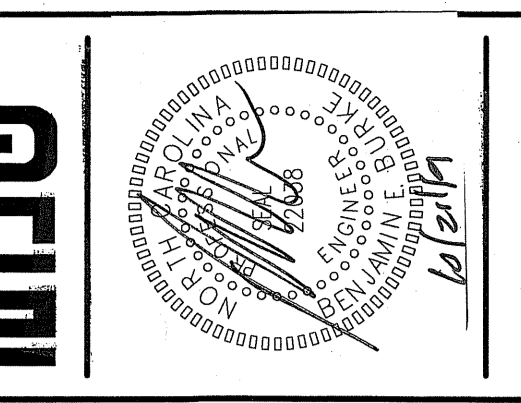




REVISIONS	BY

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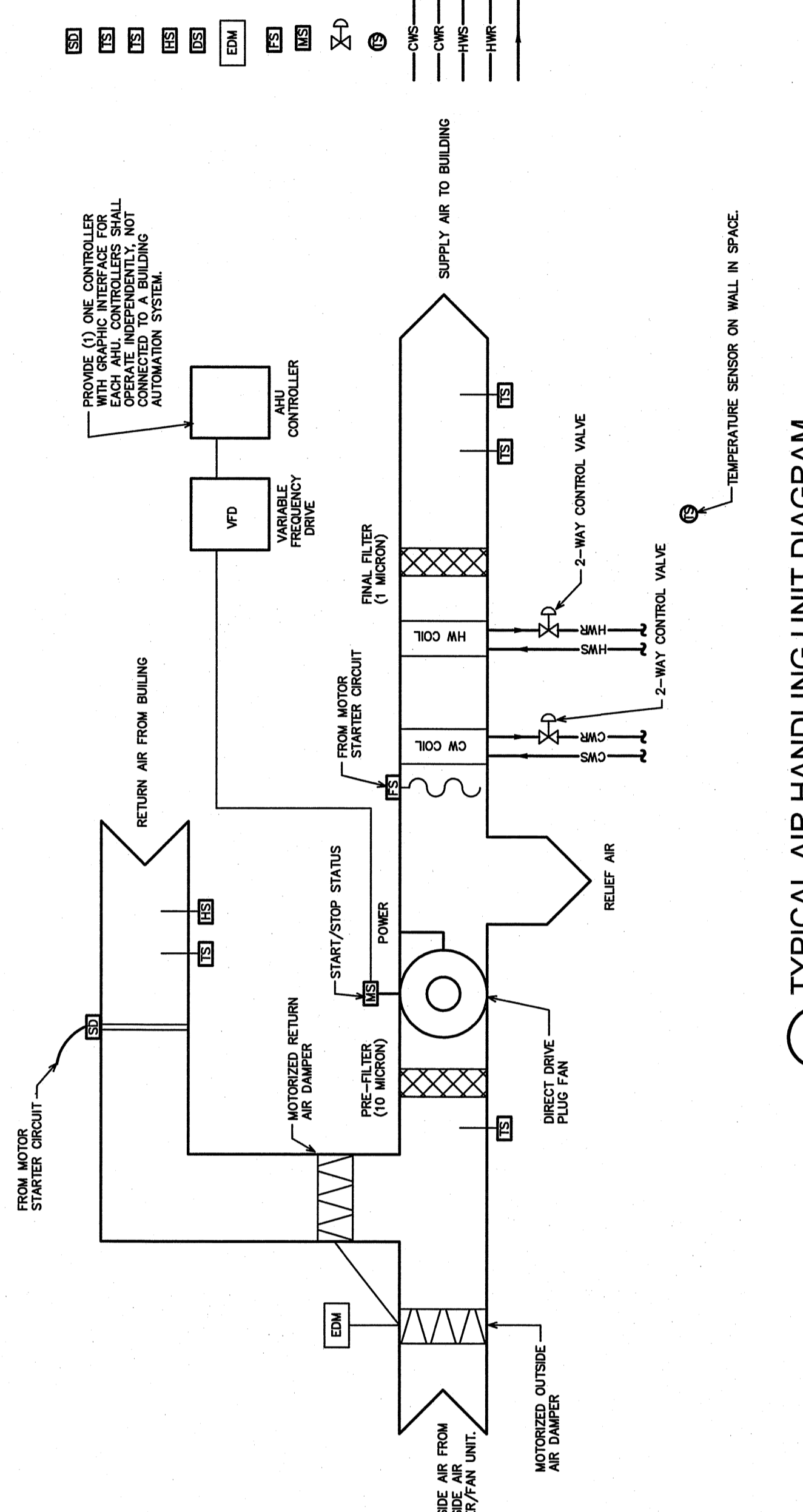


**KRIEEN PHARMACEUTICALS LLC**  
800 EDWARDS DR  
LILLINGTON, NC 27546

DATE	CLS
DESIGN	
ISSUE	
DATE	10/21/2019
SCALE	1/2"
BY	
CHECKED	
DATE	

**M1.1**

- ### CONTROLS SYMBOLS
- DUCT MOUNTED SMOKE DETECTOR
  - DUCT MOUNTED TEMPERATURE SENSOR
  - DUCT MOUNTED HUMIDITY SENSOR
  - DUCT MOUNTED DIFFERENTIAL PRESSURE SWITCH
  - ELECTRIC DAMPER MOTOR
  - FREEZE STAT
  - MOTOR STARTER
  - 2-WAY MODULATING CONTROL VALVE
  - WALL MOUNTED ADJUSTABLE TEMPERATURE SENSOR
  - WALL MOUNTED HUMIDITY SENSOR
  - CHILLED WATER SUPPLY PIPING
  - CHILLED WATER RETURN PIPING
  - HOT WATER SUPPLY PIPING
  - HOT WATER RETURN PIPING
  - DIRECTION OF FLOW



### AIR HANDLING UNIT CONTROLS SEQUENCE OF OPERATION.

PROVIDE (1) CONTROLLER WITH GRAPHIC INTERFACE FOR EACH AIR HANDLING UNIT. THE CONTROLLERS SHALL OPERATE IN SERIES AND BE CONNECTED TO A BUILDING AUTOMATION SYSTEM.  
PROVIDE (1) CONTROLLER WITH GRAPHIC INTERFACE FOR EACH AIR HANDLING UNIT.  
CONTROLLERS SHALL OPERATE IN SERIES AND BE CONNECTED TO A BUILDING AUTOMATION SYSTEM.  
CONTINUOUSLY DURING OCCUPIED HOURS.

#### AIR HANDLING UNIT FAN CONTROL

WHEN ALL THE ZONE RISING COOLED/AIR FLOW TO THE SPACE. THE VFD (VARIABLE FREQUENCY DRIVE) SHALL PROVIDE A CONSTANT (AS SCHEDULED) AIR FLOW TO THE SPACE.  
WHEN THE DUCT MOUNTED HUMIDITY SENSOR DETECTS HUMIDITY ABOVE THE SET POINT, THE VFD (VARIABLE FREQUENCY DRIVE) SHALL PROVIDE A CONSTANT (AS SCHEDULED) AIR FLOW TO THE SPACE.  
WHEN THE RELATIVE HUMIDITY IS BELOW THE SET POINT, THE VFD (VARIABLE FREQUENCY DRIVE) SHALL PROVIDE A CONSTANT (AS SCHEDULED) AIR FLOW TO THE SPACE.

#### COOLING MODE

WHEN THE SPACE TEMPERATURE IS ABOVE THE ZONE SET POINT, THE CHILLED WATER VALVE SHALL MODULATE OPEN TO THE COIL TO MAINTAIN ROOM TEMPERATURE SET POINT.  
WHEN THE SPACE TEMPERATURE IS BELOW THE HEATING SET POINT, THE CHILLED WATER VALVE SHALL MODULATE CLOSED AND THE HOT WATER VALVE SHALL MODULATE OPEN TO THE COIL MAINTAIN ROOM TEMPERATURE SET POINT.

#### COOLING PRODUCTION

WHEN THE FREEZE STAT DETECTS AIR TEMPERATURE BELOW 40 DEGREES F, THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE SUPPLY AIR FAN SHALL BE DE-ENERGIZED.

#### OUTSIDE AIR

WHEN THE SPACE TEMPERATURE IS ABOVE THE ZONE SET POINT, THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN ROOM TEMPERATURE SET POINT.  
WHEN THE SPACE TEMPERATURE IS BELOW THE HEATING SET POINT, THE OUTSIDE AIR DAMPER SHALL CLOSE.  
WHEN THE SPACE HUMIDITY IS ABOVE THE SET POINT, THE OUTSIDE AIR DAMPER SHALL CLOSE DURING UNOCCUPIED HOURS.

#### SCHEDULE

CONTROLS PROVIDER SHALL SET OCCUPANCY SCHEDULE FOR TENANTS REQUIREMENTS.

### AIR HANDLING UNIT CONTROLS INPUT/OUTPUT SUMMARY

PROVIDE THE FOLLOWING INPUT AND OUTPUT POINTS ON AHI CONTROLLERS

#### INPUTS

- ROOM AIR TEMPERATURE (WITH ADJUSTABLE AFTER HOURS OVERRID)
- SUPPLY AIR TEMPERATURE
- RETURN AIR TEMPERATURE
- RETURN AIR HUMIDITY
- SMOKE DETECTOR
- FREEZE STAT
- DUCT PRESSURE

#### OUTPUTS

- CHILLED WATER 2-WAY MODULATING CONTROL VALVE
- HOT WATER 2-WAY MODULATING CONTROL VALVE
- OUTSIDE AIR DAMPER/RETURN AIR DAMPER
- FAN SPEEDS

### BOILER SCHEDULE

MARK	NATURAL GAS (BTU)	OUTPUT (BTU)	STEAM PRESSURE (PSI)	STEAM FLOW (GPM)	BLOWN MOTOR HP	PUMP MOTOR HP	VOLTS	PHASE	SIZE IN	TYPE	BASE	CUSTOM INLET MODEL
B-1	7.79	6,600,000	85	6,500	15	7.5	460	3	40	INDUSTRIAL	2 IN MC	SP200-SE

THE INSTALLATION OF THE BOILER SHALL CONFORM TO ALL REQUIREMENTS OF THE 2018 N.C.S.C. MECHANICAL CODE, CHAPTER 10, AND TO THE MANUFACTURER'S INSTRUCTIONS. PROVIDE SHUT-OFF VALVE IN SUPPLY AND RETURN PIPING. CHECK OPENING SAFETY BLOWOFF VALVE. LOW WATER CUT-OFF CONTROL AND WATER-GAUGE GLASS AND PRESSURE GAUGE.

### HOT WATER GENERATOR

MARK	STEAM (TONS)	STEAM FLOW (GPM)	WATER FLOW (GPM)	PUMP MOTOR HP	VOLTS	PHASE
HW-1	862	43	992,500	200	131	3

PROVIDE STEAM TO HOT WATER GENERATOR WITH THE HEAT EXCHANGER. (2) CIRCULATING PUMPS (ONE WORKING/ONE STANDBY) WITH VFD DRIVES FOR PUMPS. AND ALL CONTROLS MOUNTED ON ONE PACKAGED SHED.

### PACKAGE AIR COOLED CHILLER SCHEDULE

MARK	CHILLER CAPACITY (TONS)	EVAPORATOR G.P.M.	E.W.T. L.W.T.	MAX F.W. FT.	E.A.T.	EER	MAX KW/TON	VOLTS	PHASE	MCA	MCCP	CARRIER MODEL
CH-1	76	190	54 F	44 F	7.0	95 F	9.7	460	3	100.6	175	3082080
CH-2	76	190	54 F	44 F	7.0	95 F	9.7	460	3	100.6	175	3082080

NOTE: PROVIDE C/C/OOL IN CHILLED WATER PER CHILLER MANUFACTURER'S RECOMMENDATIONS TO PREVENT FREEZING.

### PUMP SCHEDULE

MARK	SERVICES	FLOW (GPM)	HEAD (FT)	HP	TYPE	BASE OF DESIGN
P-1	COOLING WATER LOOP	300	60	10	BASE MOUNTED	BASE OF DESIGN
P-2	CHILLED WATER LOOP	200	70	10	BASE MOUNTED	BASE OF DESIGN
P-3	CHILLED WATER LOOP	200	70	10	BASE MOUNTED	BASE OF DESIGN
P-4	CHILLED WATER	215	130	18.5	BASE MOUNTED	BASE OF DESIGN
P-5	CHILLED WATER	215	130	18.5	BASE MOUNTED	BASE OF DESIGN

\* OTHER ACCEPTABLE MANUFACTURERS ARE APPROVED EQUALS BY TAGC OR AMSTONS. NOTE: 1. ALL PUMPS SHALL HAVE TEC MOTOR FOR OUTDOOR OR DAMP LOCATION. NOTE: 2. PROVIDE VARIABLE FREQUENCY DRIVE AND PUMP CONTROLLER FOR EACH PUMP.

### COOLING TOWER SCHEDULE

MARK	WATER FLOW (GPM)	E.B.T. (°F)	L.W.T. (°F)	F.W.T. (°F)	PHASE	AMP DRAW	BASE OF DESIGN			
CT-1	300	92	85	78	1	5	460	3	76	SP207

\* OTHER ACCEPTABLE MANUFACTURERS ARE APPROVED EQUALS BY MANLEY AND EMACO. NOTE: PROVIDE COOLING TOWER MANUFACTURER FACTORY STEEL STAND.

### AIR COMPRESSOR SCHEDULE

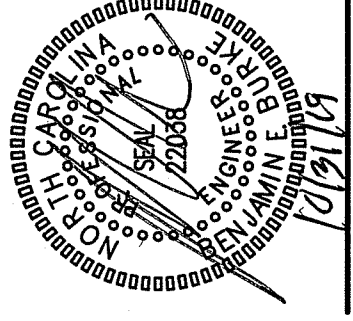
MARK	FREE AIR DELIVERY (CFM)	FREE AIR DELIVERY (PSI)	MOTOR (HP)	TYPE	BASE OF DESIGN
AC-1	200	115	460/3	75	RN724-OP
AC-2	200	115	460/3	75	RN724-OP

NOTE: PROVIDE INDEPENDENT RAMP HEATLESS DESCENDANT AIR DRIVERS. MODEL NUMBER H-300, 300 SCFM CAPACITY. NOTE: PROVIDE ONE (1) TANKET FOR EACH AIR COMPRESSOR.

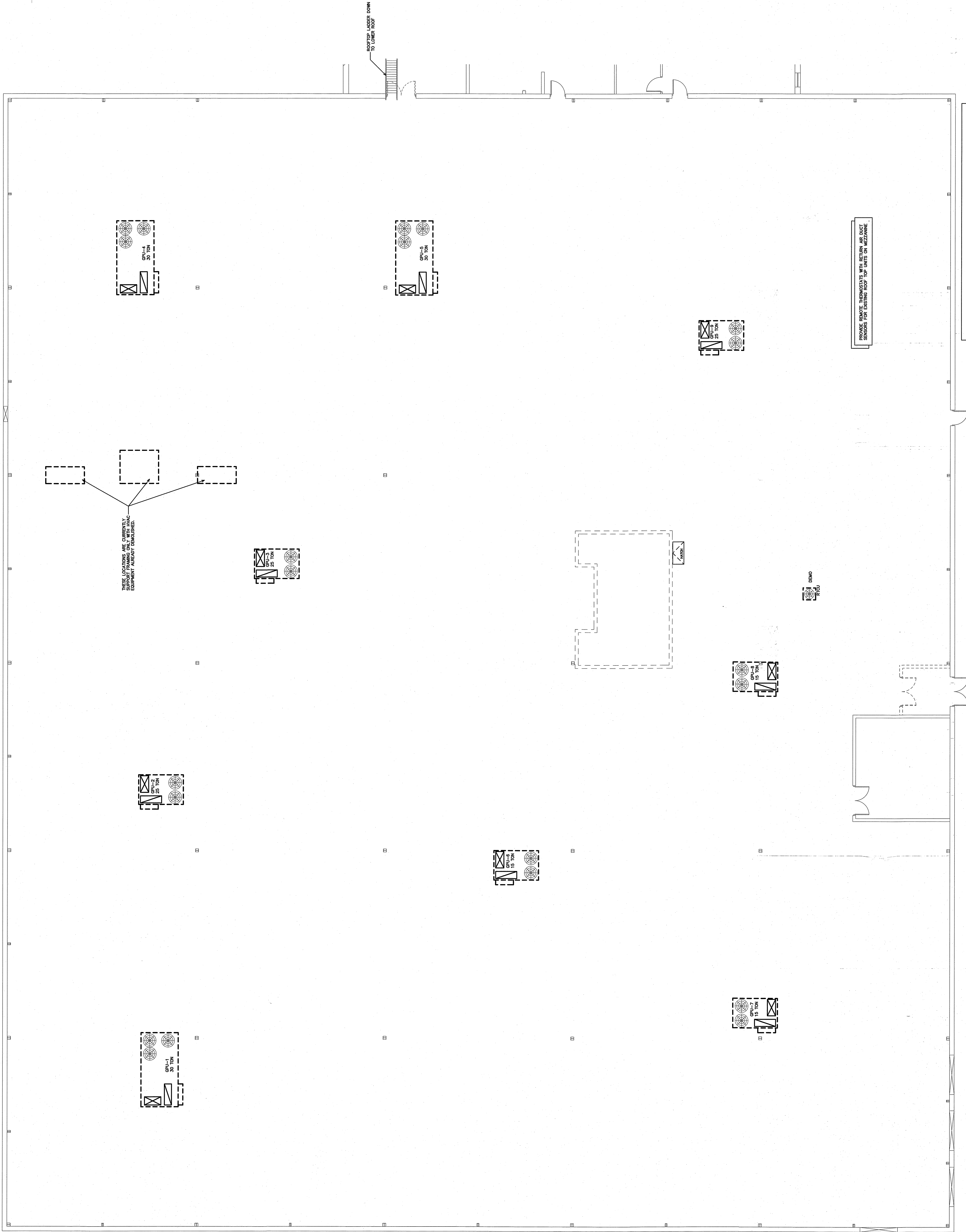
### AIR DISTRIBUTION SCHEDULE

MARK	MANUFACTURER	MODEL NO.	FACE SIZE	NECK SIZE	MATERIAL	SERVICE	NOTES
A	CARYVAE	AST04	12'X 12'	12'X 12'	ALUMINUM	SUPPLY	WHITE SURFACE MOUNT ON HARD CEILING
B	CARYVAE	AST04	12'X 12'	12'X 12'	ALUMINUM	SUPPLY	WHITE SURFACE MOUNT ON HARD CEILING
C	CARYVAE	AST04	24'X 24'	12'X 12'	ALUMINUM	SUPPLY	WHITE SURFACE MOUNT ON HARD CEILING
D	CARYVAE	AST04	24'X 24'	15'X 15'	ALUMINUM	SUPPLY	WHITE SURFACE MOUNT ON HARD CEILING
E	CARYVAE	AST04	15'X 15'	12'X 12'	ALUMINUM	SUPPLY	WHITE SURFACE MOUNT ON HARD CEILING
H1	PRICE	LPDC	24'X 48'	12' DIA	ALUMINUM	SUPPLY	WHITE SURFACE MOUNT ON HARD CEILING
H2	PRICE	LPDC	24'X 48'	12' DIA	ALUMINUM	SUPPLY	WHITE SURFACE MOUNT ON HARD CEILING
H3	PRICE	LPDC	24'X 48'	12' DIA	ALUMINUM	SUPPLY	WHITE SURFACE MOUNT ON HARD CEILING
RA	CARYVAE	O SERIES FIXED BAR GRILLE	30'X2'	30'X2'	ALUMINUM	RETURN	WHITE, SIDEWALL MOUNTED
RB	CARYVAE	O SERIES FIXED BAR GRILLE	30'X4'	30'X4'	ALUMINUM	RETURN	WHITE, SIDEWALL MOUNTED
RC	CARYVAE	O SERIES FIXED BAR GRILLE	24'X4'	24'X4'	ALUMINUM	RETURN	WHITE, SIDEWALL MOUNTED
RD	CARYVAE	O SERIES FIXED BAR GRILLE	17'X4'	17'X4'	ALUMINUM	RETURN	WHITE, SIDEWALL MOUNTED
RE	CARYVAE	O SERIES FIXED BAR GRILLE	16'X4'	16'X4'	ALUMINUM	RETURN	WHITE, SIDEWALL MOUNTED
RF	CARYVAE	O SERIES FIXED BAR GRILLE	24'X2'	24'X2'	ALUMINUM	RETURN	WHITE, SIDEWALL MOUNTED
RG	CARYVAE	O SERIES FIXED BAR GRILLE	17'X4'	17'X4'	ALUMINUM	RETURN	WHITE, SIDEWALL MOUNTED
RH	CARNES	RATA	16'X16'	16"	ALUMINUM	RETURN	WHITE, SURFACE MOUNT ON HARD CEILING
R	CARNES	RATA	16'X16'	14"	ALUMINUM	RETURN	WHITE, SURFACE MOUNT ON HARD CEILING
RI	CARNES	RATA	16'X16'	14"	ALUMINUM	RETURN	WHITE, SURFACE MOUNT ON HARD CEILING

\* OR APPROVED EQUAL. COORDINATE BORDER TYPE WITH THE CEILING TYPE. SEE ARCH SHEETS. PROVIDE CUT SHEETS TO OWNER/ARCH. PRIOR TO ORDERING.



REVISIONS	BY

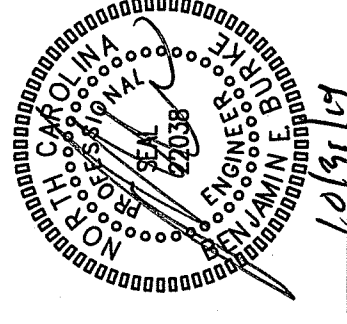


NOTE: OWNER SHALL BE RESPONSIBLE FOR THE SUBMISSION OF ALL NECESSARY PERMITS AND APPROVALS TO THE LOCAL JURISDICTION. THE SUBMISSION OF A BID INDICATES ACCEPTANCE OF EXISTING CONDITIONS. THE OWNER SHALL BE RESPONSIBLE FOR THE SUBMISSION OF ANY DISBURSANCE NOTICE.

NOTE: ALL EXISTING UNITS ARE TO REMAIN. MECHANICAL CONTRACTOR TO VERIFY OPERATION AND RETURN TO OPERABLE CONDITION. REMOVE FILTERS AND RETAIN. NEW REMOTE RETURN AIR DUCT.

REVISIONS	BY

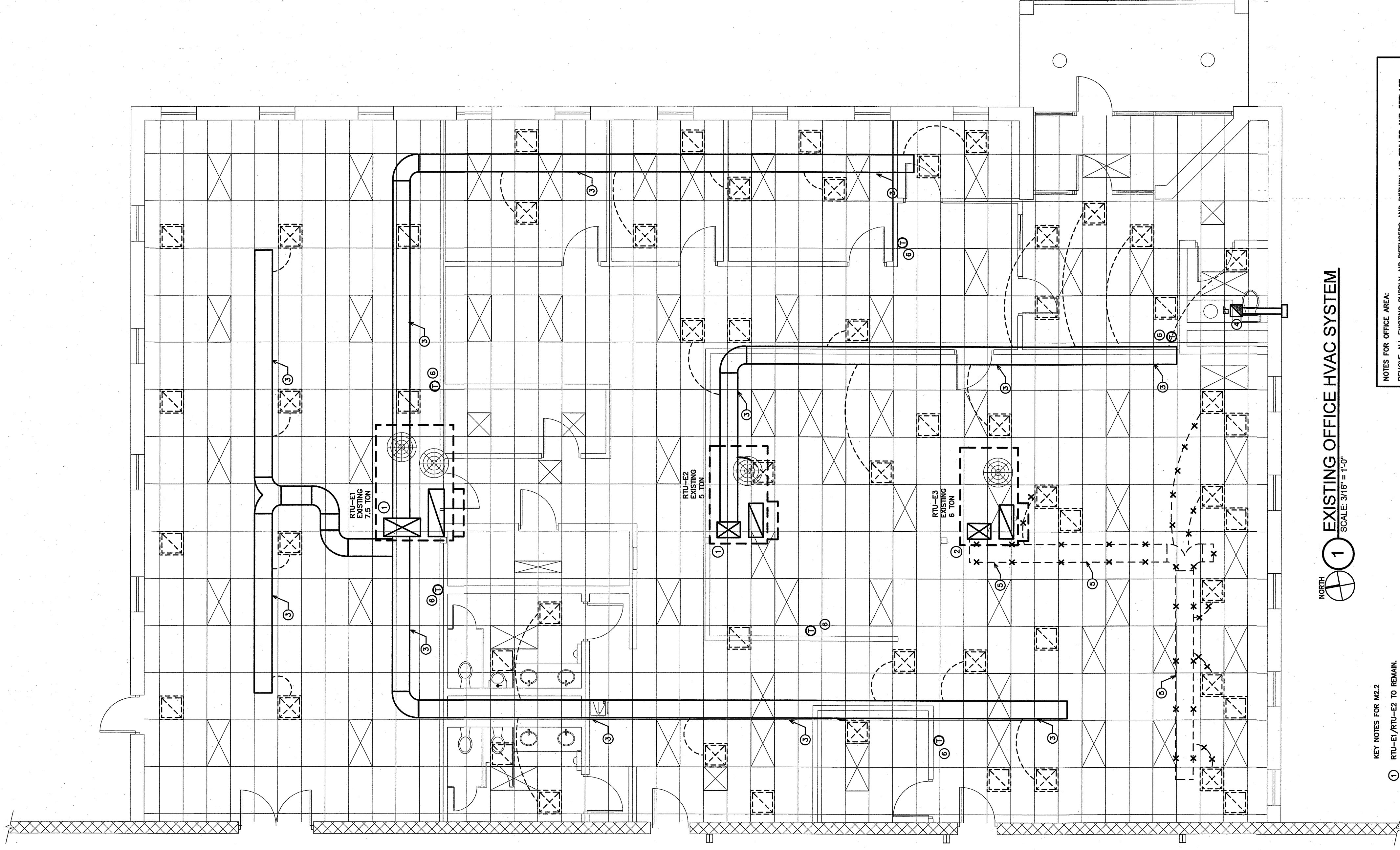
**BURKE DESIGN GROUP, PA**  
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 LILLINGTON, NC 27546

DATE	10/27/2019
BY	J/M
CHKD BY	BER
SCALE	3/16" = 1'-0"
SHEET NO.	1
TOTAL SHEETS	1
PROJECT NO.	19-001
PROJECT NAME	

**M 2.2**



**1 EXISTING OFFICE HVAC SYSTEM**  
 SCALE: 3/16" = 1'-0"

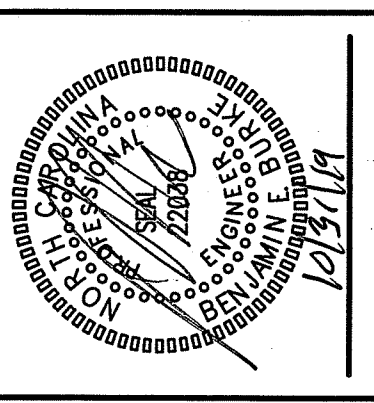
- KEY NOTES FOR M2.2**
- 1 RTU-E2/RTU-E3 TO REMAIN
  - 2 RTU-E3 TO BE ABANDONED IN PLACE & DE-ENERGIZED
  - 3 EXISTING RECTANGULAR SUPPLY AIR DUCTS TO REMAIN
  - 4 EXISTING TRILET EXHAUST FAN AND DUCTWORK TO REMAIN
  - 5 REMOVE SUPPLY DUCTWORK FOR RTU-E3
  - 6 REMOVE AND REPLACE THERMOSTATS, SEE SHEET M4.0 FOR NEW LOCATIONS
- NOTES FOR OFFICE AREA:**
- REMOVE ALL EXISTING SUPPLY AIR DIFFUSERS AND RETURN AIR GRILLES AND REPLACE WITH NEW SUPPLY AIR DIFFUSERS IN LOCATIONS TO BE SHOWN ON THIS DRAWING. THE CONDITION OF EXISTING FLEXIBLE DUCT MAKES REPLACEMENT NECESSARY.
- REMOVE ALL EXISTING RETURN AIR GRILLES IN OFFICE AREA AND RETURN TO PLUMB AREA. RETURN AIR GRILLES IN OFFICE AREA ARE NON-RECYCLED AND RETURN TO PLUMB AREA. ALL EXISTING NON-RETURN WATER MATERIAL SHALL BE REMOVED FROM PLUMB.

NOTE:  
 THE INFORMATION SHOWN ON THIS DRAWING IS FROM A FIELD INVESTIGATION AND THE EXISTING PERMIT RELEVANT INFORMATION. THE SUBMISSION OF THIS INDICATES ACCEPTANCE OF EXISTING CONDITIONS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES NOTED.

M3.0

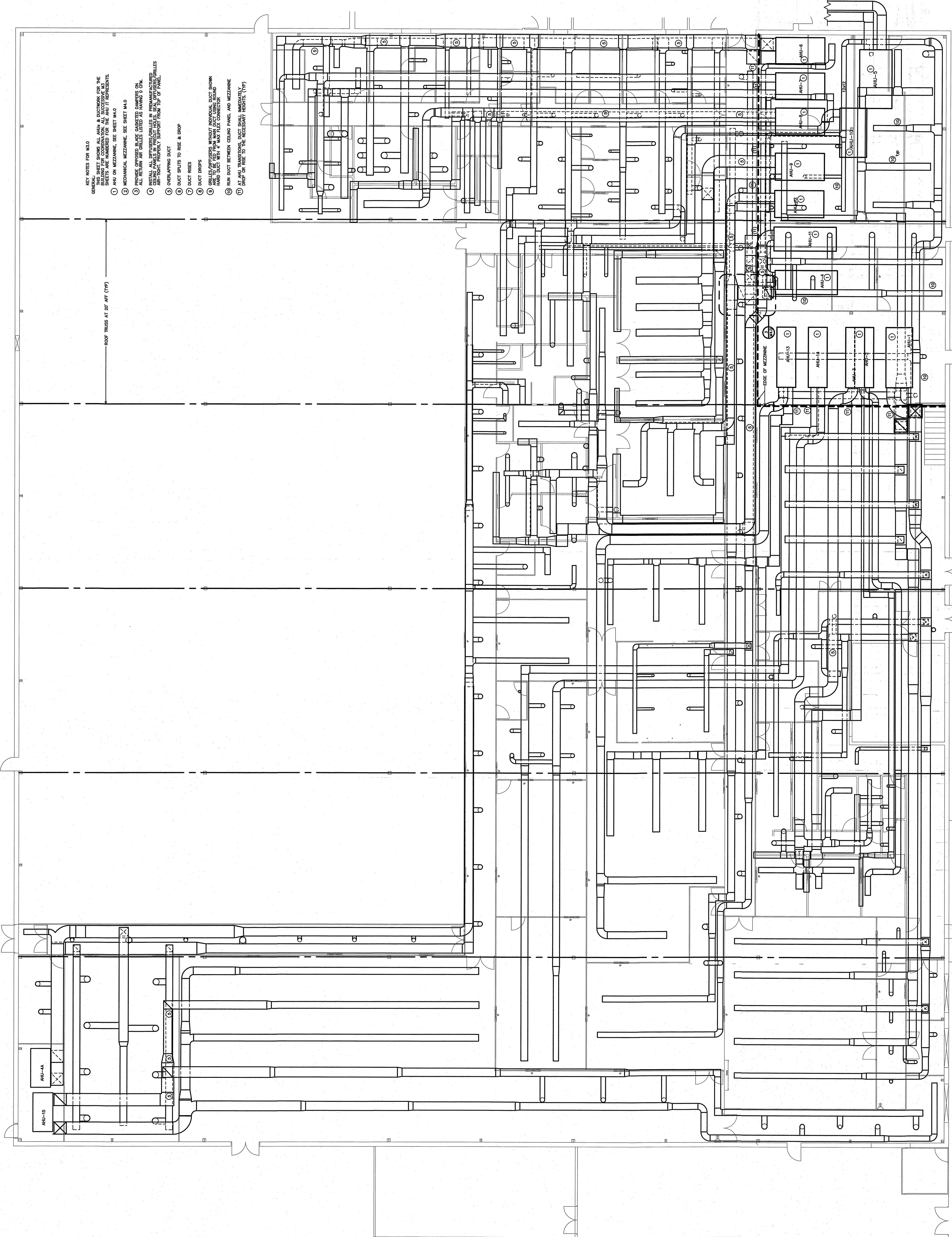
DATE: 10/28/2010  
BY: [Signature]  
SCALE: 1/8" = 1'-0"

KRIGEN PHARMACEUTICALS LLC  
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LILLINGTON, NC 27546



**GDW**  
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email: ben@bdg-nc.com

REVISIONS	BY



- KEY NOTES FOR M3.0**
- GENERAL SHEET SHOWS ALL AHU & DUCTWORK FOR THE BUILDING FOR COORDINATION. ALL SUCCESSIVE M3.0 SHEETS SHALL BE REFERENCED BY THIS SHEET.
1. AHU ON MEZZANINE, SEE SHEET M4.0
  2. MECHANICAL MEZZANINE, SEE SHEET M4.0
  3. PROVIDE OPPOSED BLADE GASKETED DAMPERS ON ALL RETURN AIR CHANGES LISTED AS HAVING 0 CFM.
  4. ALL DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH THE AIR-TIGHT, PROPERLY SUPPORT FROM TOP OF PANEL, OVERLAPPING DUCT.
  5. DUCT SPTS TO RISE & DROP
  6. DUCT RISERS
  7. DUCT DROPS
  8. DUCT DROPS
  9. OVERLAP DUCT JOINTS WITH 1" MINIMUM OVERLAP. DUCT SHALL BE HARD DUCT WITH 4" MAX FLEX CONNECTOR.
  10. RAIN DUCT BETWEEN CEILING PANEL AND MEZZANINE
  11. AT AHU TRANSITIONS, DUCT SHALL IMMEDIATELY DROP OR RISE TO THE NECESSARY HEIGHTS. (TYP)

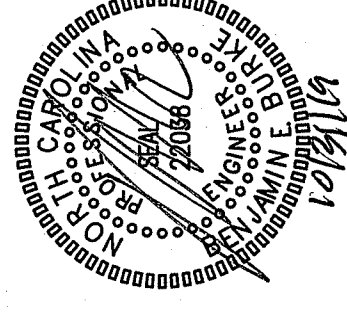
ROOF TRUSS AT 20' AFF (TYP)

NOTE: OVERALL DUCT PLAN FOR DUCT CONFLICTS, SHALL BE DUCT ASSES, ETC. PRIOR TO START OF WORK. PRIOR TO START OF WORK, PROCESS PIPING LOCATIONS PRIOR TO START OF WORK. COORDINATE WITH ALL OTHER CONTRACTORS, EQUIPMENT, CONTROL, TRANSDUCERS, ETC. PRIOR TO THE START OF WORK.

1 OVERALL DUCT LAYOUT  
SCALE: 1/8" = 1'-0"

REVISIONS	BY

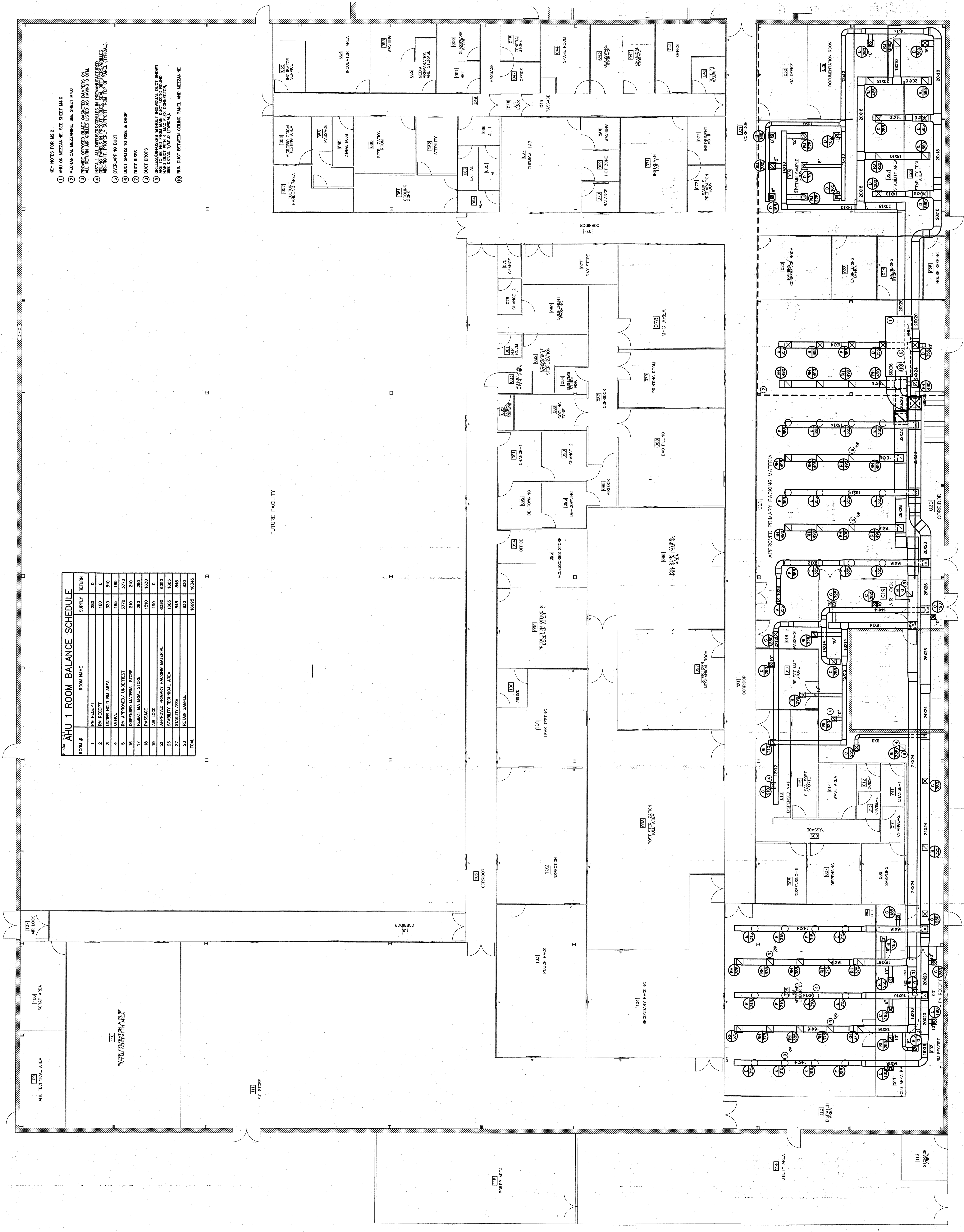
**BURKE DESIGN GROUP, PA**  
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 LILLINGTON, NC 27546

DATE	10/29/2019
BY	BDG
SCALE	1/8" = 1'-0"
PROJECT	

**M3.1**



**AHU 1 ROOM BALANCE SCHEDULE**

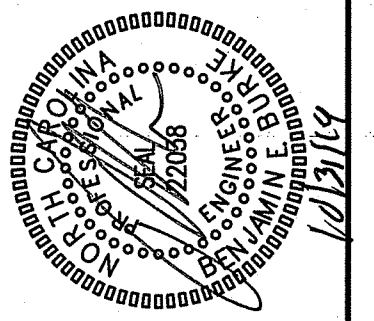
ROOM #	ROOM NAME	SUPPLY	RETURN
1	PH RECEIPT	280	0
2	PH RECEIPT	190	0
3	UNDER HOLD RM AREA	320	510
4	OFFICE	185	185
5	RM APPROVED/ UNDERTEST	3770	3770
15	DISPENSED MATERIAL STOVE	210	210
16	DISPENSED MATERIAL STOVE	420	420
17	PASSAGE	1500	1500
18	AIR LOCK	150	0
21	APPROVED PRIMARY PACKING MATERIAL	6300	6300
26	STABILITY TECHNICAL AREA	1695	1695
27	STABILITY AREA	845	845
28	RETAIN SAMPLE	830	830
TOTAL		16695	16340

- KEY NOTES FOR M3.2
- AHU ON MEZZANINE, SEE SHEET M4.0
  - MECHANICAL MEZZANINE, SEE SHEET M4.0
  - PROVIDE SPRING-BLUE ASSISTED DAMPERS ON ALL DUCTWORK
  - INSTALL ALL FILTERS/HEATERS IN MECHANICAL ROOMS
  - CEILING PANELS IN PRODUCTION AREAS SHALL BE SPRING-BLUE ASSISTED DAMPERS/VALVES AIR-TIGHT, PROPERLY SUPPORT FROM TOP OF PANEL (TYPICAL).
  - OVERLAPPING DUCT
  - DUCT SPLITS TO RISER & DROP
  - DUCT RISERS
  - DUCT DROPS
  - DUCTWORK SHALL BE INSTALLED IN MECHANICAL ROOMS AND TO BE FED FROM MAIN DUCTWORK ROOM. SEE DETAIL, PANEL A (TYPICAL).
  - RUN DUCT BETWEEN CEILING PANEL AND MEZZANINE

1 MAIN LEVEL DUCT PLAN (AHU-1)  
 SCALE: 1/8" = 1'-0"

REVISIONS	BY

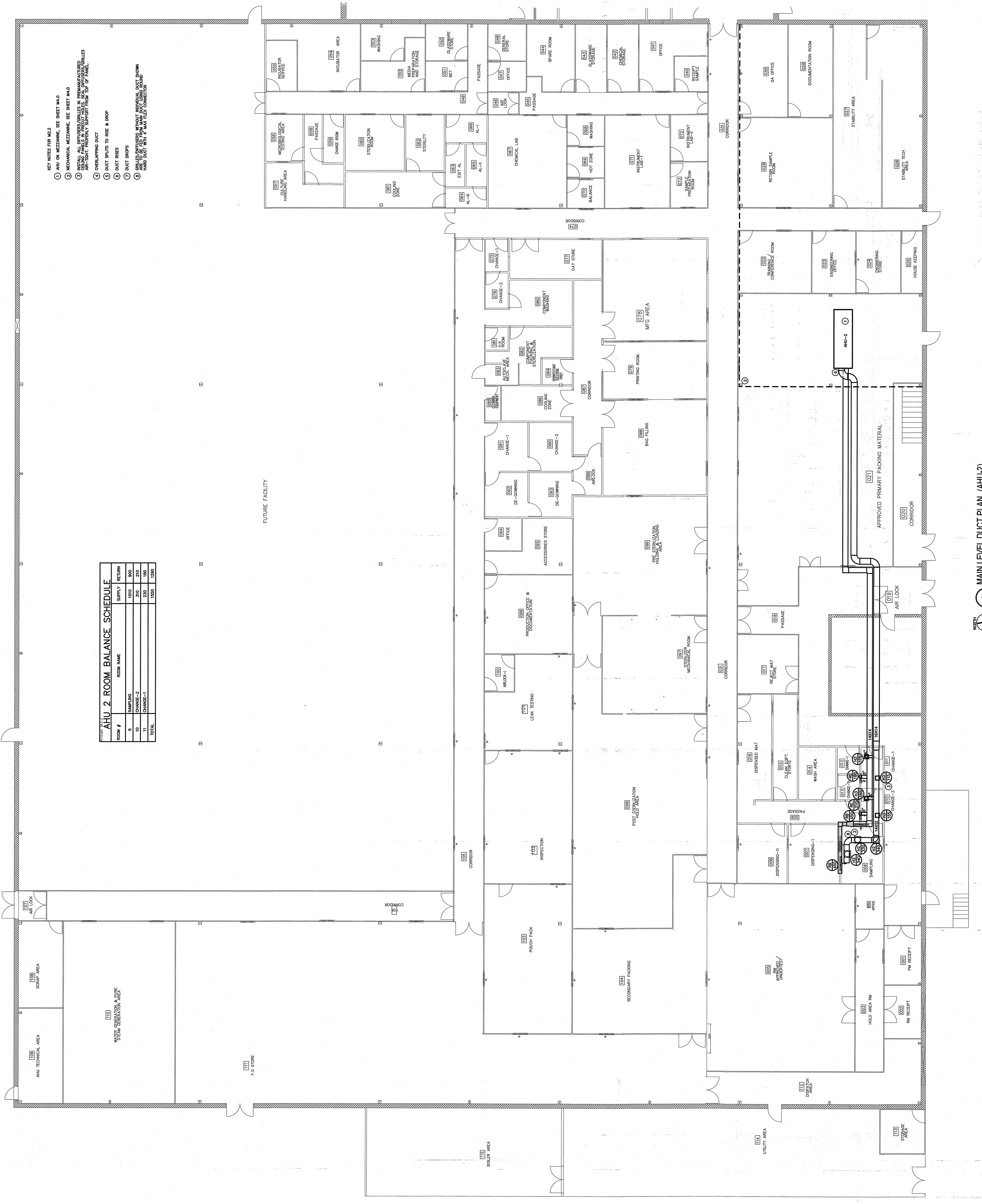
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DATE	10/20/2019
BY	MB
CHECKED BY	MB
SCALE	1/8" = 1'-0"

**MB.2**



**AHU 2 ROOM BALANCE SCHEDULE**

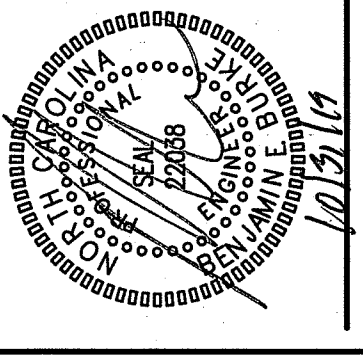
ROOM #	ROOM NAME	SUPPLY	RETURN
0	SAMPLING	100	800
10	CHANGING-2	20	20
11	CHANGING-1	20	20
TOTAL		140	840

- KEY NOTES FOR M22
- 1 AHU ON MEZZANINE, SEE SHEET M40
  - 2 MECHANICAL MEZZANINE, SEE SHEET M40
  - 3 INSTALL ALL DIFFUSERS/CELLS IN PREMANUFACTURED CEILING PANELS IN VESTIBULES, STAFF OFFICES/CHAIBS AND MECHANICAL ROOMS. SUPPORT PANEL TOP OF PANEL.
  - 4 OVERLAPPING DUCT
  - 5 DUCT SPLITS TO RISE & DROP
  - 6 DUCT RISERS
  - 7 DUCT DROPS
  - 8 CEILING DIFFUSERS WITHOUT MECHANICAL DUCT DOWN ARE TO BE FED FROM MAIN DUCT USING ROUND HARD DUCT WITH 4" DIA FLEX CONNECTOR

**1 MAIN LEVEL DUCT PLAN (AHU-2)**  
 SCALE: 1/8" = 1'-0"

REVISIONS	BY

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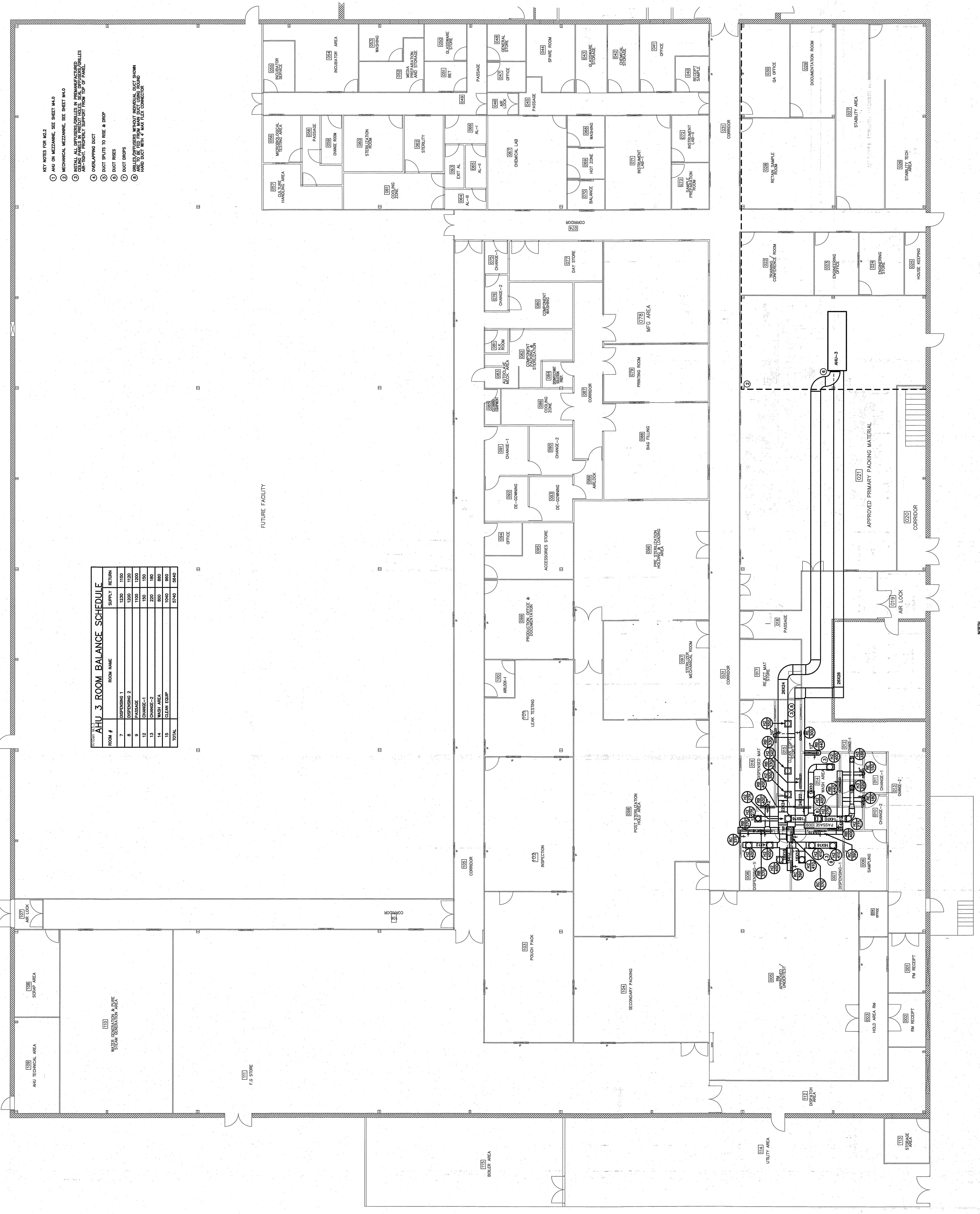
DESIGNED BY	C.S.
DRAWN BY	BEB
DATE	10/29/2019
SCALE	1/8" = 1'-0"
TITLE	

# M3.3

- KEY NOTES FOR M32
- AHU ON MEZZANINE. SEE SHEET M40
  - MECHANICAL MEZZANINE. SEE SHEET M40
  - INSTALL ALL DIFFUSERS/CANALS IN PROHIBITED AREAS. CEILING PANELS IN PROHIBITED AREAS SHALL BE SUPPORTED BY RISERS/STAYS. AIR-FLOW PANELS SHALL BE SUPPORTED FROM TOP OF PANEL.
  - OVERLAPPING DUCT
  - DUCT SPLITS TO USE & DROP
  - DUCT RISERS
  - DUCT DROPS
  - DUCT BRACES. BRACES MUST BE INSTALLED AT 15' ON CENTER. BRACES MUST BE 1/2" FROM MAIN DUCT USING ROUND HEAD BOLTS TO BE TIGHT FROM MAIN DUCT USING ROUND HEAD BOLTS WITH 1/2" WALK FLEX CONNECTOR.

**AHU 3 ROOM BALANCE SCHEDULE**

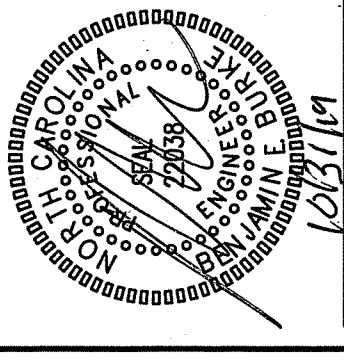
ROOM #	ROOM NAME	SUPPLY	RETURN
7	DISPENSING 1	1320	1150
8	DISPENSING 2	1200	1120
9	PASSAGE	1100	1200
12	CHANGE-1	150	150
13	CHANGE-2	220	180
14	WASH AREA	800	800
15	CLEAN COOP	1500	800
	<b>TOTAL</b>	<b>3790</b>	<b>3240</b>



**1 MAIN LEVEL DUCT PLAN (AHU-3)**  
 SCALE: 1/8" = 1'-0"

FUTURE FACILITY



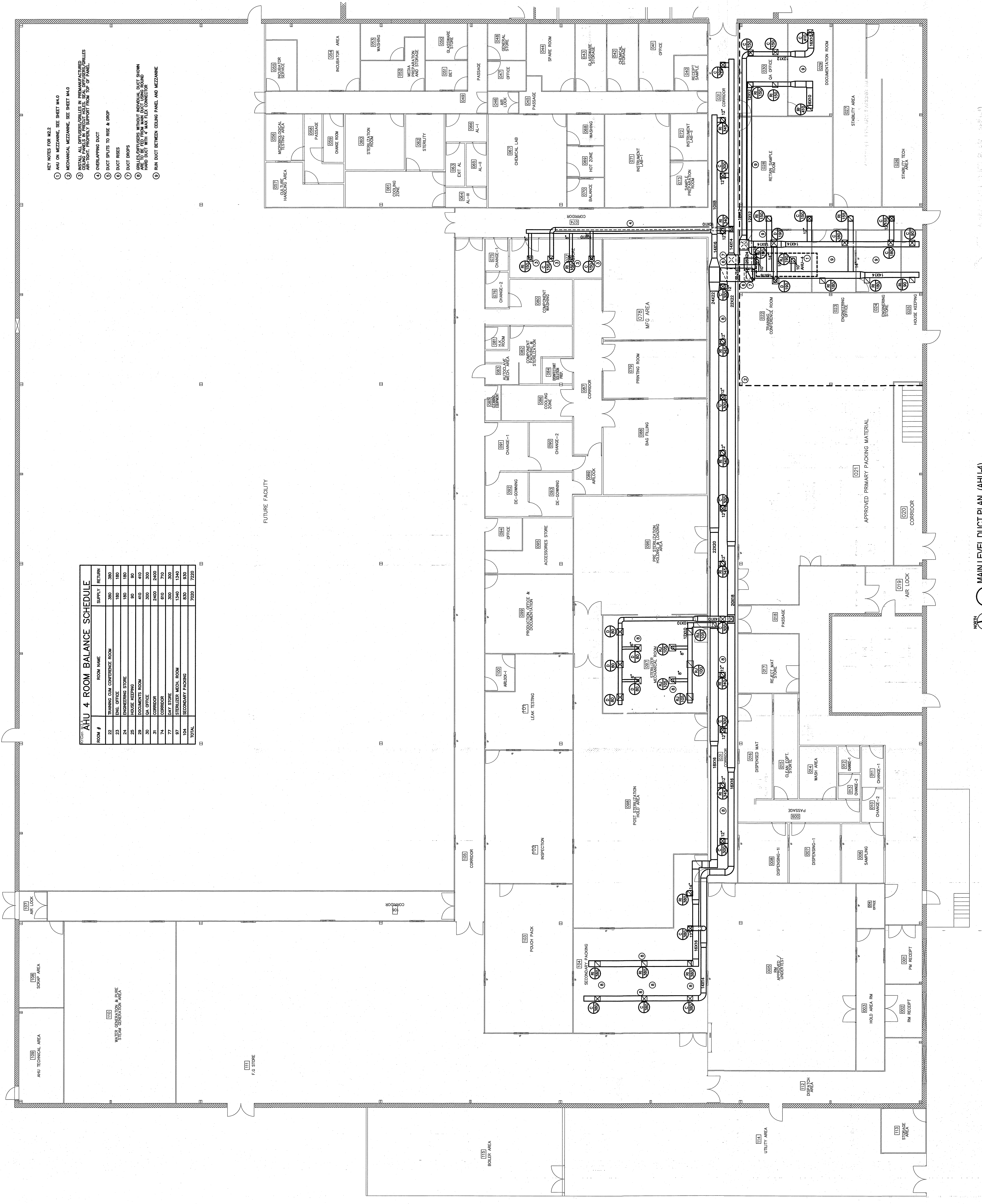


REVISIONS	BY

- KEY NOTES FOR M22**
- AHU ON MEZZANINE. SEE SHEET M4.0
  - MECHANICAL MEZZANINE. SEE SHEET M4.0
  - INSTALL ALL DIFFUSERS/CYLINDERS IN PREMANUFACTURED CEILING PANELS IN PROTECTIVE HOLES. SEAL DIFFUSERS/CYLINDERS AIR-TIGHT. PROVIDE SUPPORT FROM TOP OF PANEL.
  - OVERLAPPING DUCT
  - DUCT SPLITS TO RESE & DRIP
  - DUCT RISERS
  - DUCT DROPS
  - DUCT RISERS MUST BE INSTALLED IN THE SAME DUCT AS THE HAND DUCT WITH A MAX FLEX CONNECTOR
  - RUN DUCT BETWEEN PANEL AND MEZZANINE

**AHU 4 ROOM BALANCE SCHEDULE**

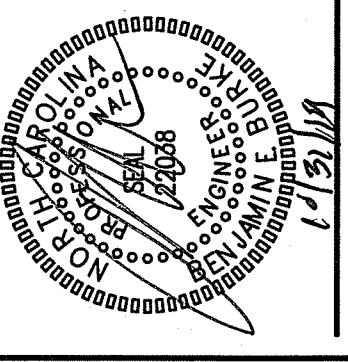
ROOM #	ROOM NAME	SUPPLY	RETURN
22	TRAINING OJM CONFERENCE ROOM	300	300
23	ENGL OFFICE	180	180
24	ENGINEERING STORE	180	180
25	HOUSE KEEPING	90	90
29	DOCUMENTS ROOM	410	410
30	QA OFFICE	300	300
31	CORRIDOR	2400	2400
71	TOILET	200	200
72	TOILET	200	200
27	STEELER MECH ROOM	1340	1340
104	SECONDARY PACKING	180	180
TOTAL		7020	7220



**1 MAIN LEVEL DUCT PLAN (AHU-4)**  
 SCALE: 1/8" = 1'-0"

REVISIONS	BY

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 LILLINGTON, NC 27546

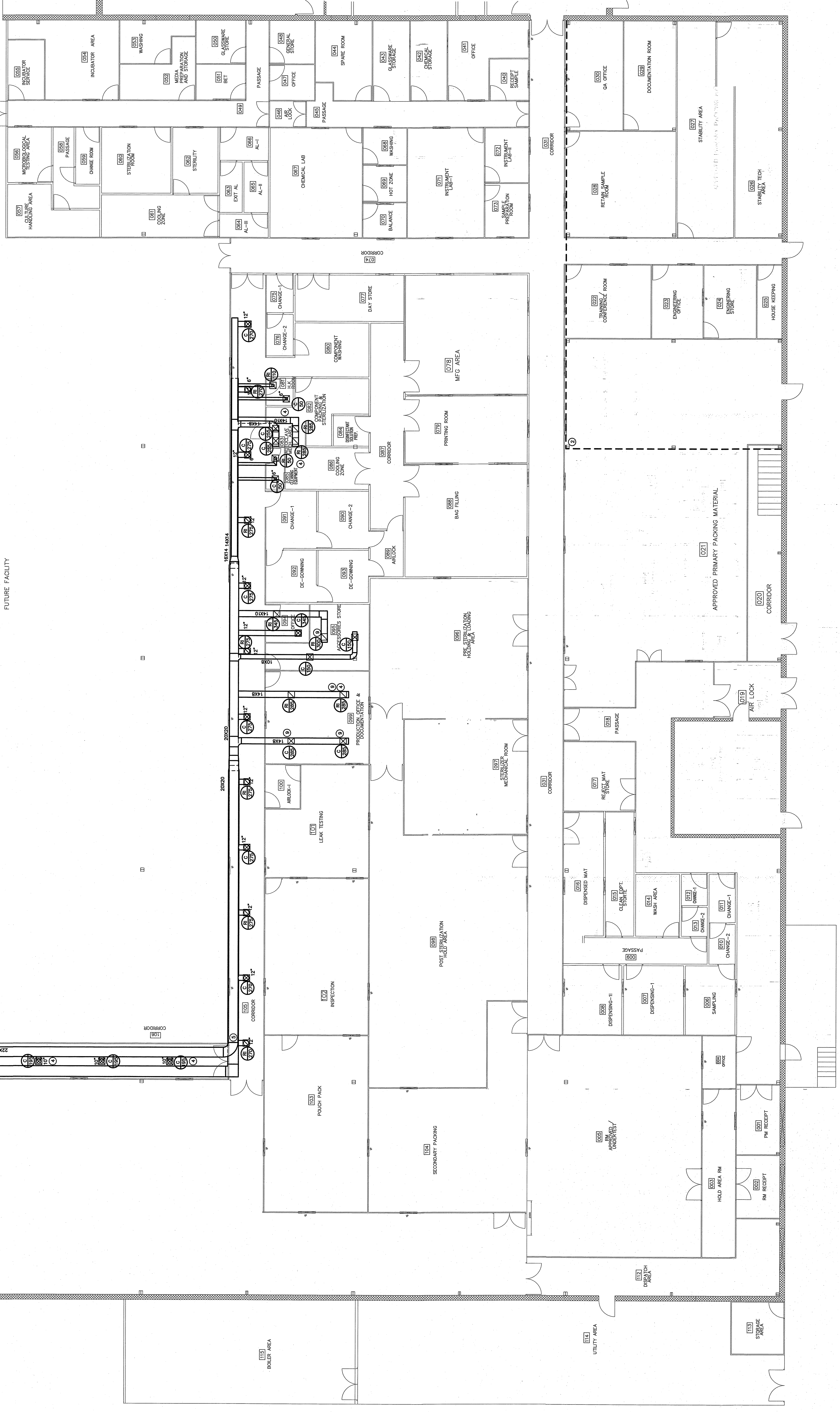
DATE: 05/11/2016	DATE: 05/11/2016
DESIGNED BY: C.S.	DRAWN BY: C.S.
CHECKED BY: C.S.	DATE: 10/20/2016
SCALE: 1/8" = 1'-0"	PROJECT: M3.4A
<b>M3.4A</b>	

- KEY NOTES FOR M3.4A**
- 1 AHU IN AHU TECHNICAL AREA.
  - 2 MECHANICAL MEZZANINE. SEE SHEET M3.4G.
  - 3 FANWALL BRASSES BEING ASSESSED. NUMBERS ON ALL RETURN AIR BRASSES LISTED AS HAVING 0 CHL.
  - 4 INSTALL ALL DIFFUSERS/GRILLES IN PREMANUFACTURED, AIR-TIGHT, PROPERLY SUPPORTED FRAM TOP OF PANELS.
  - 5 OVERLAPPING DUCT.
  - 6 DUCT SPLITS TO RESE & DRWP.
  - 7 DUCT RISERS.
  - 8 DUCT DROPS.
  - 9 GRILLES/DIFFUSERS WITHOUT INDIVIDUAL DUCT SHOWN HAVE DUCT TIGHTLY MAINTAINED CONNECTION.
  - 10 INSTALL DUCT TYPE SMOKE DETECTOR IN RETURN AIR DUCT. DETECTOR SHALL BE INSTALLED WITH THE DUCT AND SHALL HAVE SMOKE DETECTOR TO PROTECT FOR SHUT-DOWN OF AIR HANDLING UNIT.

**AHU 4A ROOM BALANCE SCHEDULE**

ROOM #	ROOM NAME	SUPPLY	RETURN
81	HOUSE KEEPING	50	110
82	AUTOClave MECH. AREA	210	570
83	CLEANING EQUIPMENT	50	50
84	OFFICE	235	345
85	PRODUCTION OFFICE	320	370
105	CORRIDOR	1640	1840
106	AIR LOCK	300	0
107	SCRAP AREA	300	300
108	WATER & PURE STEAM CONDENSATION	4370	4370
TOTAL		9415	9370

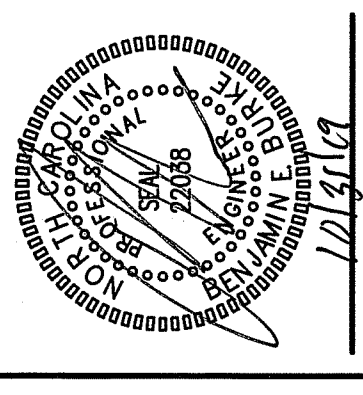
NOTE: CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL AIR-HANDLING MECHANICAL EQUIPMENT. ALL MECHANICAL EQUIPMENT SHALL BE SUBMITTED TO THE MECHANICAL ENGINEER FOR APPROVAL. ALL MECHANICAL EQUIPMENT SHALL BE SUBMITTED TO THE MECHANICAL ENGINEER FOR APPROVAL. ALL MECHANICAL EQUIPMENT SHALL BE SUBMITTED TO THE MECHANICAL ENGINEER FOR APPROVAL.



**1 MAIN LEVEL DUCT PLAN (AHU-4A)**  
 SCALE: 1/8" = 1'-0"

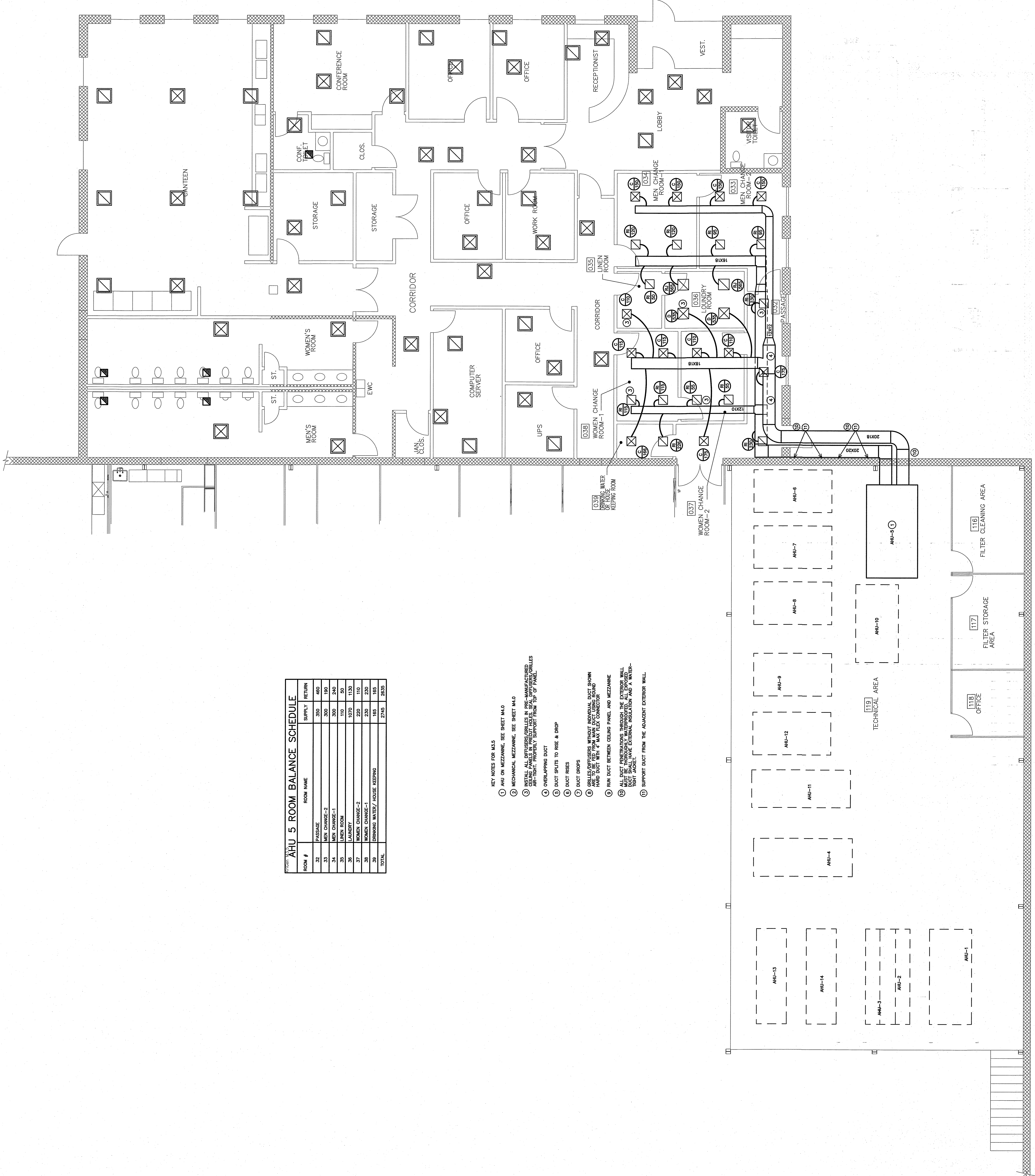
REVISIONS	BY

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**M3.5**  
 DATE: 10/20/2019  
 DRAWN BY: BDB  
 CHECKED BY: BDB  
 PROJECT: KRIGEN PHARMACEUTICALS LLC



**AHU 5 ROOM BALANCE SCHEDULE**

ROOM #	ROOM NAME	SUPPLY	RETURN
32	PASSAGE	350	460
33	MEN CHANGE-2	300	190
34	MEN CHANGE-1	300	240
35	LINEN ROOM	110	50
36	LAUNDRY	1070	1130
37	WOMEN CHANGE-2	230	110
38	WOMEN CHANGE-1	230	230
39	DINKING WATER/ HOUSE KEEPING	105	105
<b>TOTAL</b>		<b>2745</b>	<b>2835</b>

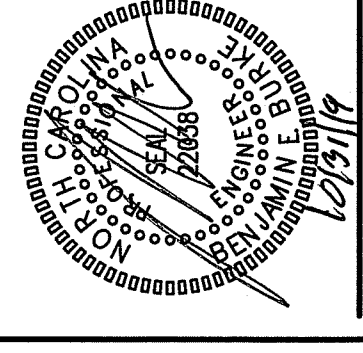
- KEY NOTES FOR M3.5
- AHU ON MEZZANINE, SEE SHEET M4.0
  - MECHANICAL MEZZANINE, SEE SHEET M4.0
  - INSTALL ALL DUCTWORK/PIPES IN RISE MANUFACTURER'S ARE-TIGHT, PROPERLY SUPPORT FROM TOP OF PANEL.
  - OVERLAPPING DUCT
  - DUCT SPLICERS TO RISE & DROP
  - DUCT RISERS
  - DUCT DROPS
  - GRILLIES/DIFFUSERS WITHOUT INDIVIDUAL DUCT SHOWN HAVE DUCT WITH 4" MAX FLEX CONNECTOR
  - RAN DUCT BETWEEN CEILING PANEL AND MEZZANINE
  - ALL DUCT PENETRATIONS THROUGH THE EXTERIOR WALL MUST BE PROPERLY WATERPROOFED, ALL EXPOSED DUCT MUST BE INSULATED WITH 1" MINIMUM EXTERNAL INSULATION AND A WATER-TIGHT SLEEVE.
  - SUPPORT DUCT FROM THE ADJACENT EXTERIOR WALL

1 MAIN OFFICE LEVEL DUCT PLAN (AHU-5)  
 SCALE: 3/16" = 1'-0"

2 MEZZANINE AHU-5 PLAN  
 SCALE: 3/16" = 1'-0"

REVISIONS	BY

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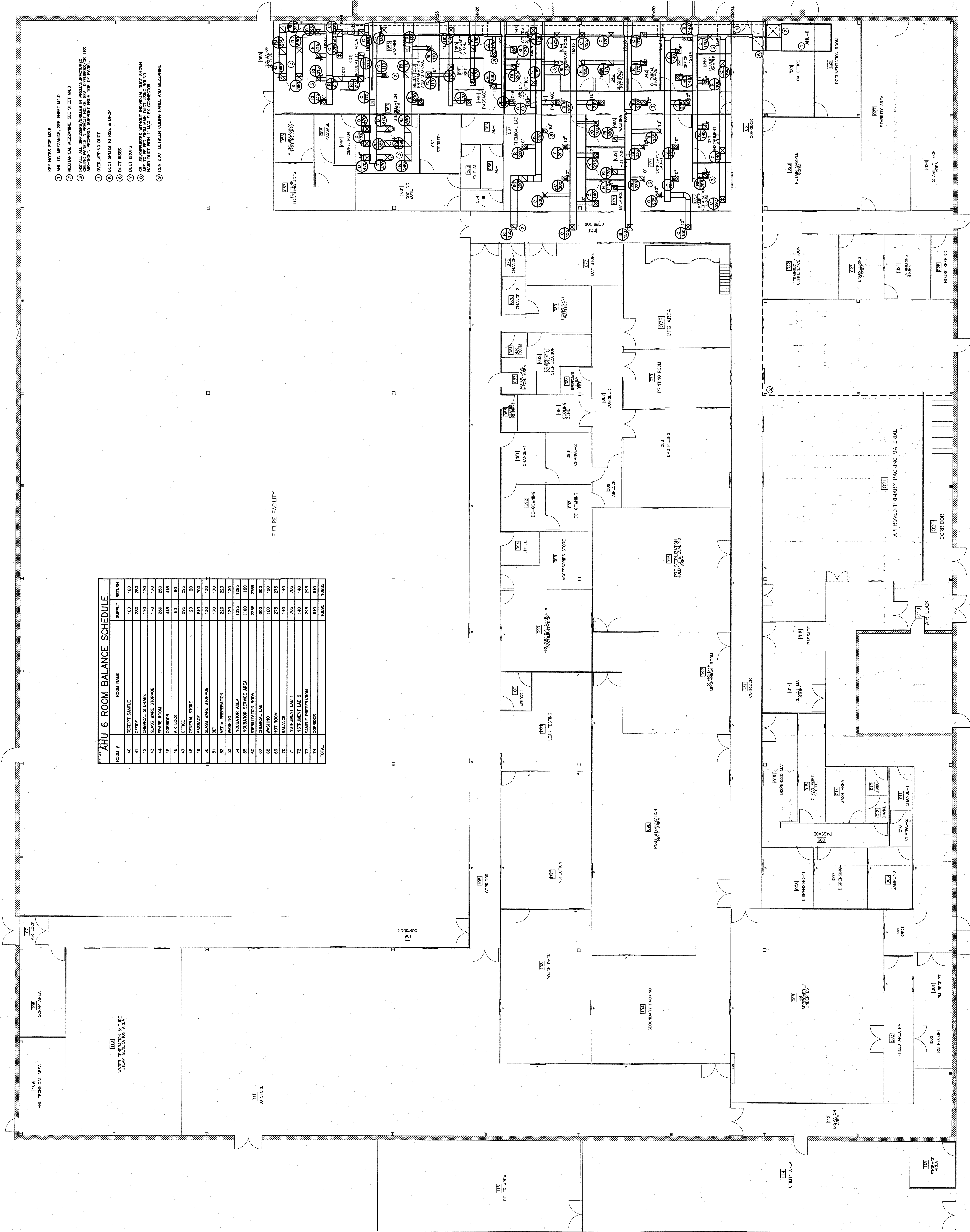
**KRIGEN PHARMACEUTICALS LLC**  
 800 EDWARDS DR  
 LILLINGTON, NC 27546

**M3.6**  
 DATE: 10/20/2010  
 SCALE: 1/8" = 1'-0"

- KEY NOTES FOR M3.6
- AHU ON MEZZANINE, SEE SHEET M4.0
  - MECHANICAL MEZZANINE, SEE SHEET M4.0
  - INSTALL ALL DEVICES/CONTROLS IN PREMANUFACTURED CEILING PANELS IN PRODUCE AREAS. SEAL UNDESIRABLE AIR-TIGHT PRODUCT SUPPORT FROM TOP OF PANEL.
  - OVERLAPPING DUCT
  - DUCT SPLITS TO RISE & DROP
  - DUCT RISERS
  - DUCT DROPS
  - DUCT RISERS MUST BE INSTALLED IN THE MIDDLE OF THE RISE TO BE FULLY EFFECTIVE. HARD DUCT WITH # 4 MAX FLEX CONNECTOR.
  - RUN DUCT BETWEEN CEILING PANEL AND MEZZANINE

**AHU 6 ROOM BALANCE SCHEDULE**

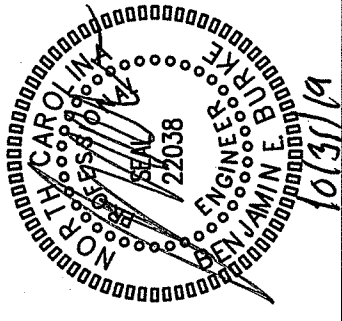
ROOM #	ROOM NAME	SUPPLY	RETURN
40	RECEIPT SAMPLE	100	100
41	OFFICE	260	260
42	CHEMICAL STORAGE	170	170
43	GLASS WARE STORAGE	170	170
44	SPARE ROOM	250	250
45	CORRIDOR	415	415
46	AIR LOCK	60	60
47	OFFICE	295	295
48	CHEMICAL STORAGE	170	170
49	GLASS WARE STORAGE	130	130
50	GLASS WARE STORAGE	130	130
51	BET	170	170
52	MEDIA PREPARATION	220	220
53	WASHING	130	130
54	INCUBATOR AREA	1295	1295
55	INCUBATOR SERVICE AREA	1160	1160
60	STERILIZATION ROOM	2355	2355
67	CHEMICAL LAB	600	600
68	WASHING	100	100
69	HOT ROOM	275	275
70	WASHING	145	145
71	INSTRUMENT LAB 1	140	140
72	INSTRUMENT LAB 2	140	140
73	SAMPLE PREPARATION	295	295
74	CORRIDOR	610	610
TOTAL		10895	10895



1 MAIN LEVEL DUCT PLAN (AHU-6)  
 SCALE: 1/8" = 1'-0"

REVISIONS	BY

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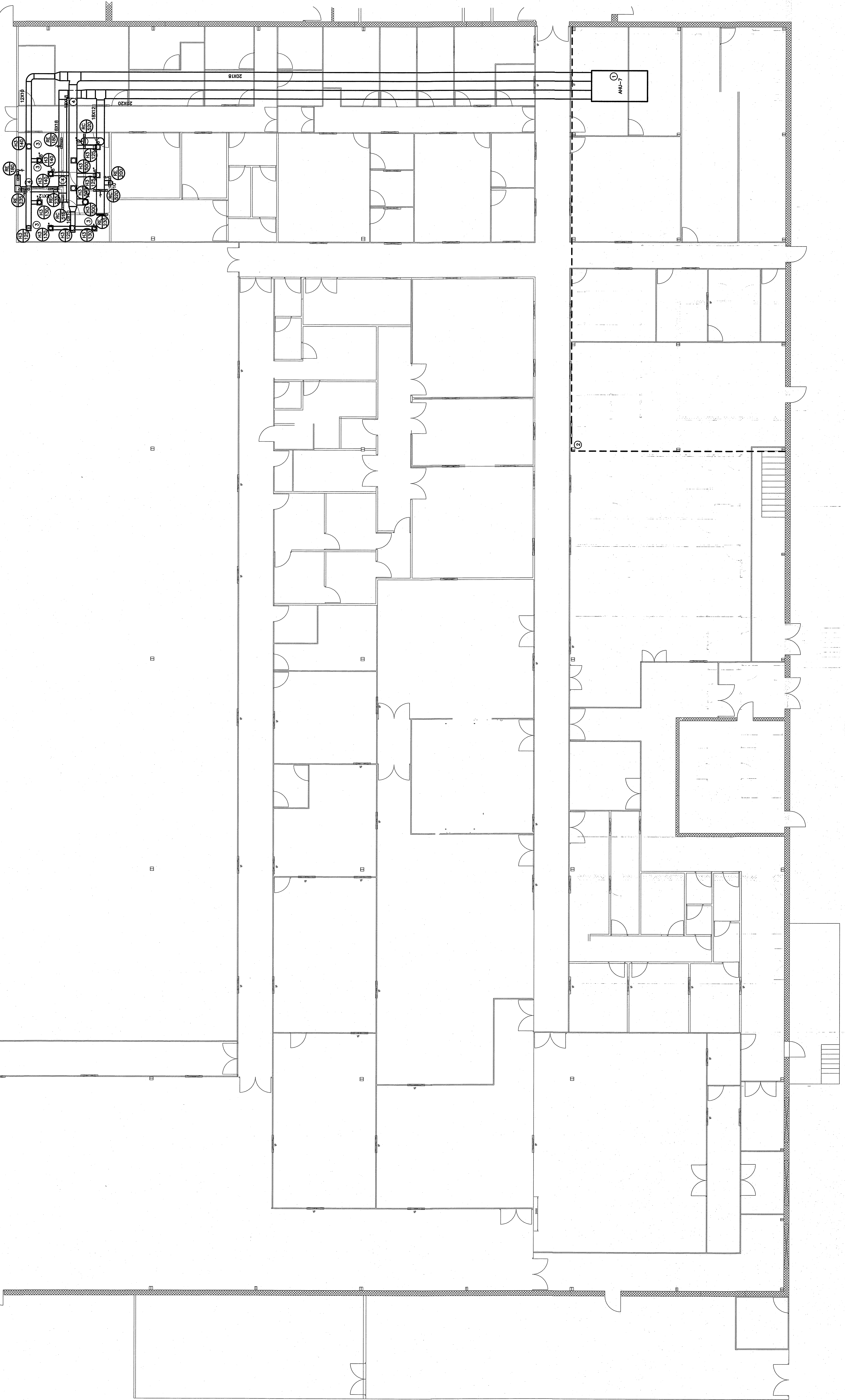
DATE	10/20/2010
BY	
CHECKED	
SCALE	1/4" = 1'-0"

**M3.7**

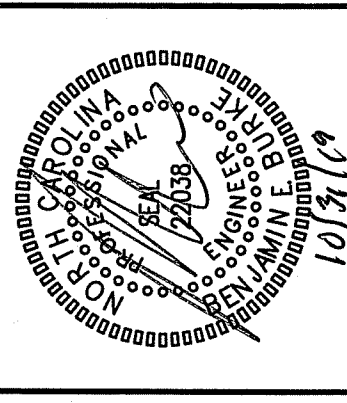
- KEY NOTES FOR M3.7
- ① AHU ON MEZZANINE. SEE SHEET M4.0
  - ② MECHANICAL MEZZANINE. SEE SHEET M4.0
  - ③ METALS AND FINISHES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL METALS SHALL BE PROTECTED FROM CORROSION. ALL METALS SHALL BE PROTECTED FROM CORROSION. ALL METALS SHALL BE PROTECTED FROM CORROSION.
  - ④ OVERLAPPING DUCT
  - ⑤ DUCT SPLITS TO RISE & DROP
  - ⑥ DUCT RISERS
  - ⑦ DUCT DROPS
  - ⑧ GALLERIES/REFUSERS WITHOUT INDIVIDUAL DUCT SHOWN SHALL BE INSTALLED WITH A MAX FLEX CONNECTOR
  - ⑨ RUN DUCT BETWEEN CEILING PANEL AND MEZZANINE

**AHU 7 ROOM BALANCE SCHEDULE**

ROOM #	ROOM NAME	SUPPLY	RETURN
56	MICROBIOLOGICAL TESTING AREA	450	300
57	CULTURE HANDLING AREA	840	700
58	PASSAGE	1050	1050
59	CHANGE ROOM	250	200
TOTAL		2610	2250



**1 MAIN LEVEL DUCT PLAN (AHU-7)**  
 SCALE: 1/8" = 1'-0"

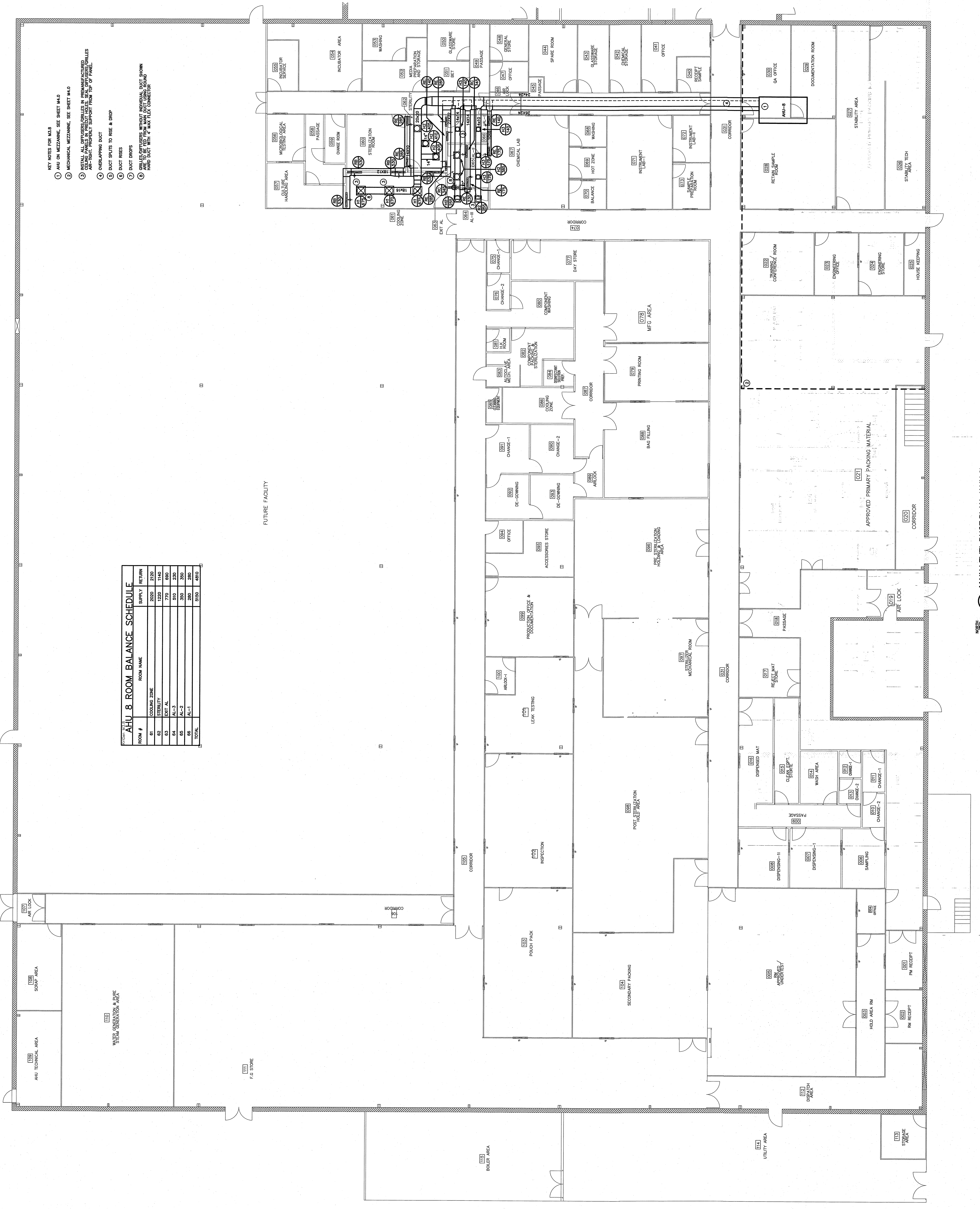


REVISIONS	BY

- KEY NOTES FOR M3.8**
- AHU ON MEZZANINE, SEE SHEET M4.0
  - MECHANICAL MEZZANINE, SEE SHEET M4.0
  - INSTALL ALL DIVERSERS/GRILLES IN REMANUFACTURED CEILING PANELS IN PRODUCT AREAS. SEE DIFFUSERS/GRILLES MANUFACTURER'S SUPPORT FROM TOP OF PANEL.
  - OVERLAPPING DUCT
  - DUCT SPLITS TO RISER & DRIP
  - DUCT RISERS
  - DUCT DROPS
  - CEILING DIFFUSERS/WASHOUT/REINFORCED PLAST RIGID ARE TO BE FED FROM MAIN DUCT USING ROUND HARD DUCT WITH 4" MAX FLEX CONNECTOR

**TABLE 1.1 - AHU 8 ROOM BALANCE SCHEDULE**

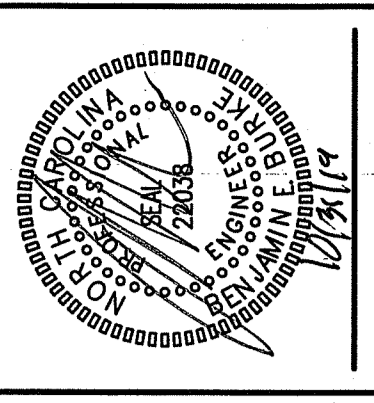
ROOM #	ROOM NAME	SUPPLY	RETURN
61	COOKING ZONE	2020	2120
62	STERILITY	1220	1140
63	EXIT AL	770	890
64	AC-3	510	230
65	AC-2	350	250
66	AC-1	380	300
<b>TOTAL</b>		<b>5350</b>	<b>4810</b>



**1 MAIN LEVEL DUCT PLAN (AHU-8)**  
 SCALE: 1/8" = 1'-0"

REVISIONS	BY

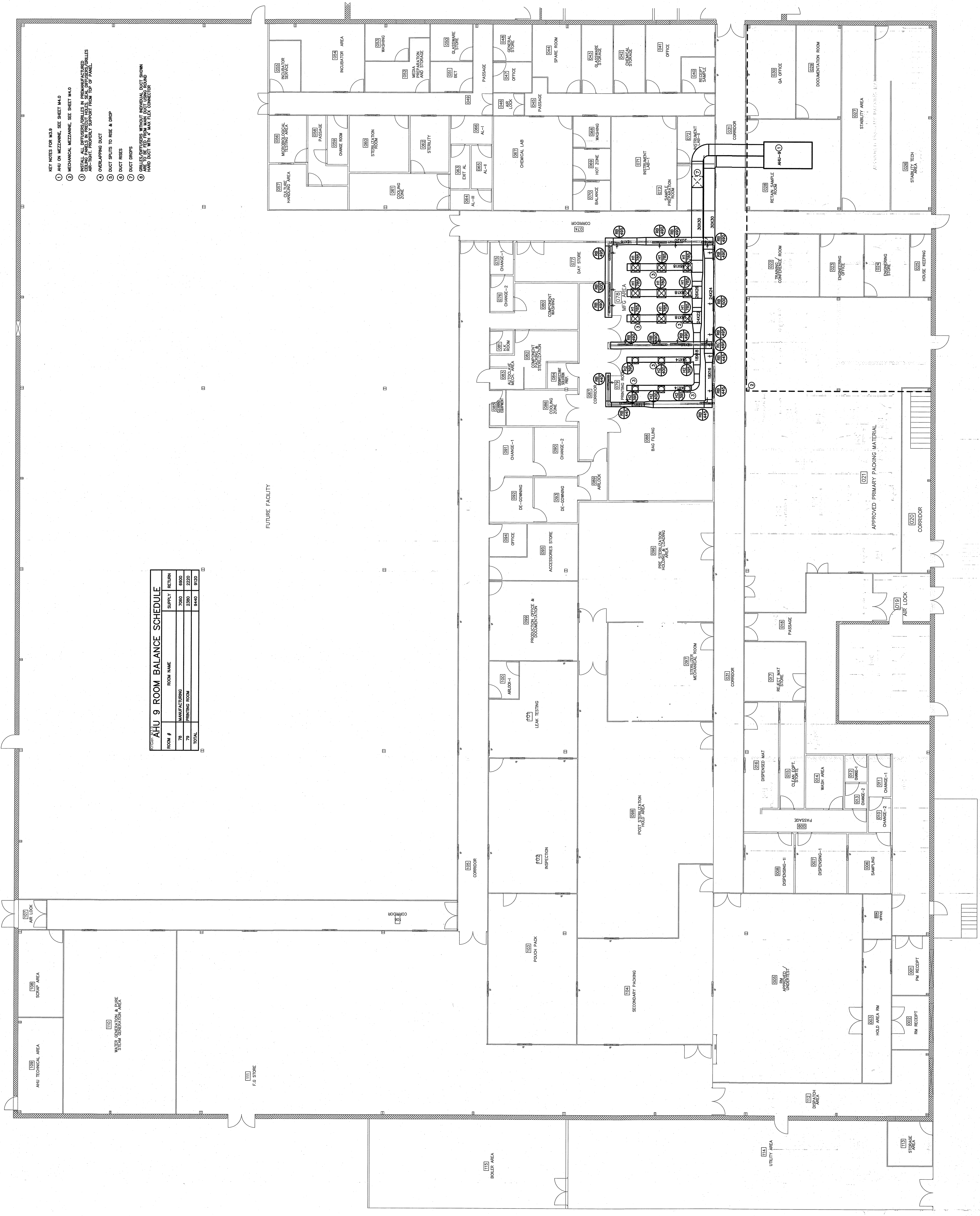
**BURKE DESIGN GROUP, PA**  
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**M3.9**

DATE: 10/27/2019  
 DRAWN BY: JFC  
 CHECKED BY: CJS  
 SCALE: 1/8" = 1'-0"



- KEY NOTES FOR M3.9
- AHU ON MEZZANINE. SEE SHEET M4.0
  - MECHANICAL MEZZANINE. SEE SHEET M4.0
  - INSTALL ALL DEFENSERS/CHEMILES IN PREMANUFACTURED AIR HANDLING UNITS. ALL DEFENSERS/CHEMILES ARE TO BE INSTALLED ON THE OUTSIDE OF THE PANELS. DEFENSERS/CHEMILES ARE TO BE INSTALLED ON THE INSIDE OF THE PANELS.
  - OVERLAPPING DUCT
  - DUCT SPLITS TO ROSE & DRIP
  - DUCT RISERS
  - DUCT DROPS
  - CHEMILES/DEFENSERS WITHOUT MINORIAL DUCT WORK ARE TO BE FED FROM MAIN DUCT USING ROUND HANG DOWN WITH 4 BAR TEE CONNECTOR

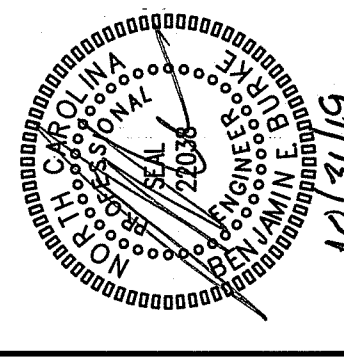
**AHU 9 ROOM BALANCE SCHEDULE**

ROOM #	ROOM NAME	SUPPLY	RETURN
76	MANUFACTURING	7060	6900
78	PRINTING ROOM	2300	2220
79	PRINTING ROOM	8440	9120
TOTAL			

1 MAIN LEVEL DUCT PLAN (AHU-9)  
 SCALE: 1/8" = 1'-0"

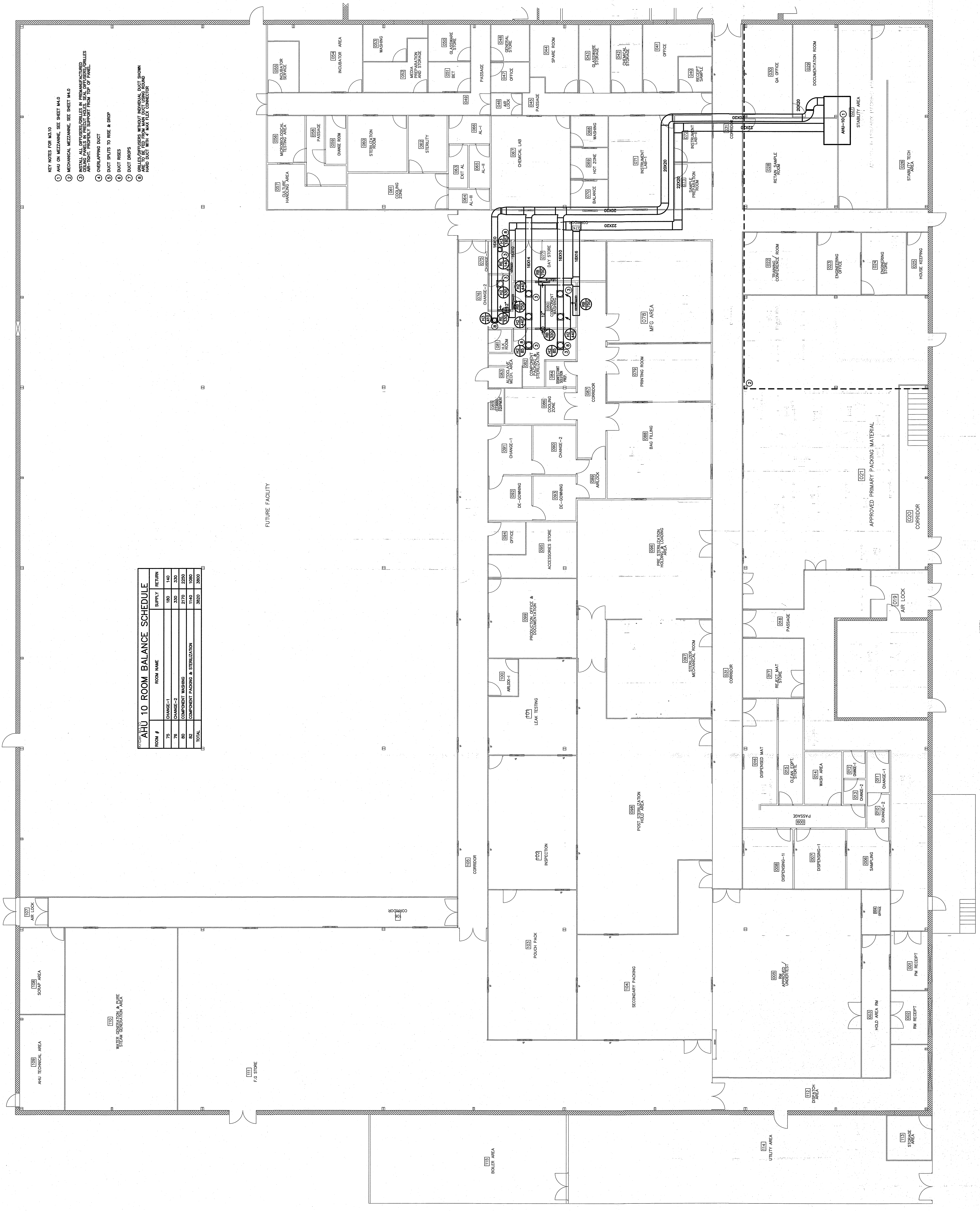
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DATE	10/20/2019
DESIGNED BY	BBB
CHECKED BY	BBB
SCALE	1/8" = 1'-0"
<b>M3.10</b>	



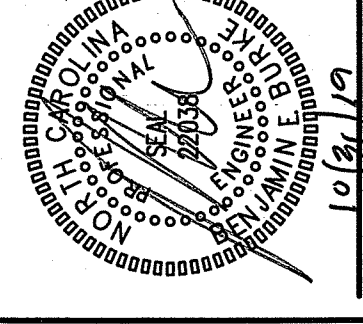
- KEY NOTES FOR M3.10
- 1 AHU ON MEZZANINE. SEE SHEET M4.0
  - 2 MECHANICAL MEZZANINE. SEE SHEET M4.0
  - 3 ALL ROOMS MUST BE PRESSURIZED TO 0.05 INCHES WATER GAGE DIFFERENTIAL FROM ADJACENT AREAS. AIR-FLOW MUST BE PROPERLY SUPPORTED FROM TOP OF PANEL.
  - 4 OVERLAPPING DUCT
  - 5 DUCT SPLICERS TO ROSE & DRIP
  - 6 DUCT RISERS
  - 7 DUCT DRIPS
  - 8 GELDED/FUSERS WITHIN INDIVIDUAL DUCT SHOWN HARD DUCT WITH 4" MAIN FLEX CONNECTOR

**AHU 10 ROOM BALANCE SCHEDULE**

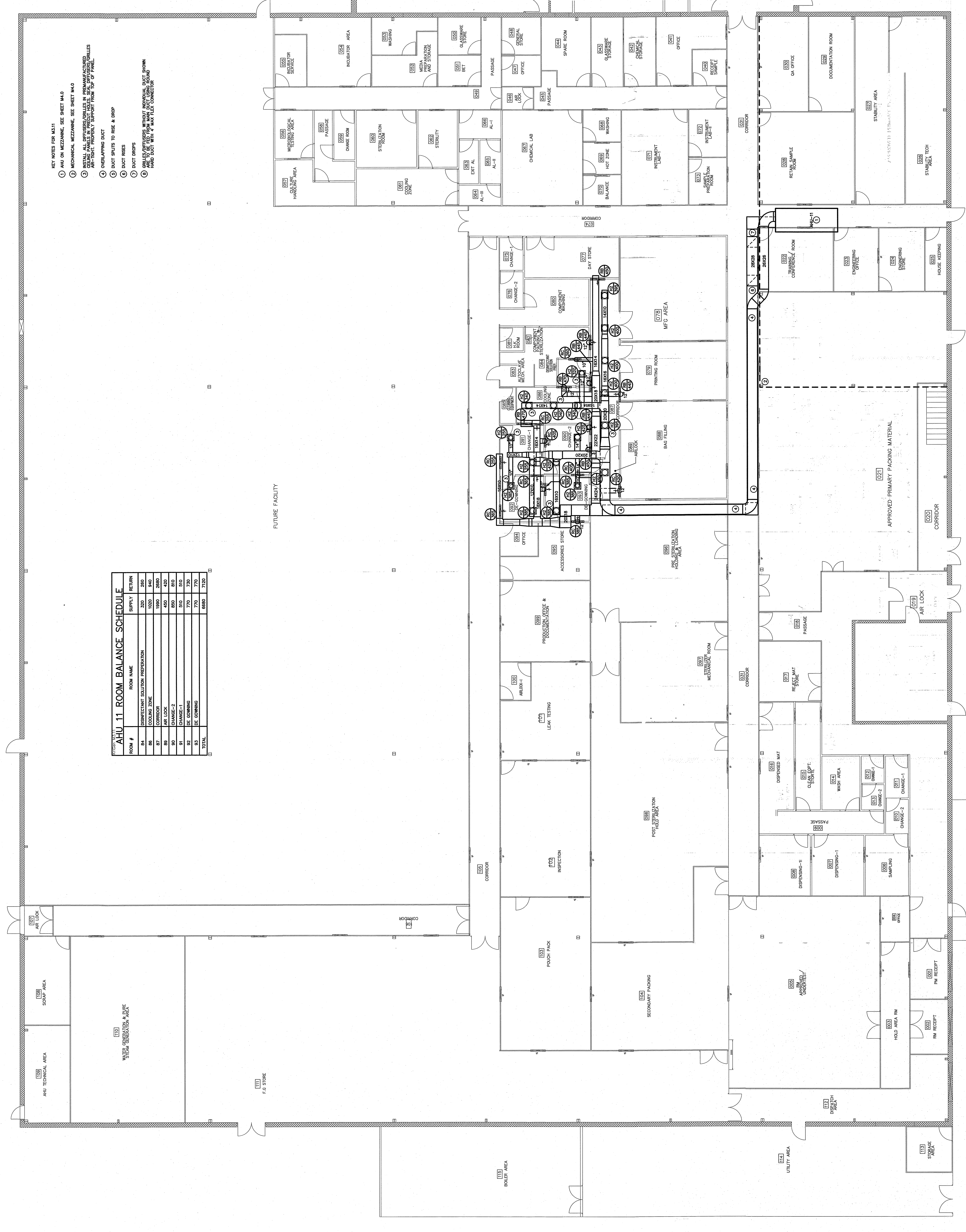
ROOM #	ROOM NAME	SUPPLY	RETURN
70	CHANGE-1	180	140
71	CHANGE-2	330	330
80	COMPONENT WASHING	2170	2250
82	COMPONENT PACKING & STERILIZATION	1140	1000
TOTAL		3820	3660

1 MAIN LEVEL DUCT PLAN (AHU-10)  
 SCALE: 1/8" = 1'-0"





REVISIONS	BY



- KEY NOTES FOR M.11**
- 1 AHU ON MEZZANINE. SEE SHEET M.10
  - 2 MECHANICAL MEZZANINE. SEE SHEET M.10
  - 3 INSTALL ALL DIFFUSERS/GRILLS IN SPAN/STIFFENERS. ALL-TECH. PROPERLY SUPPORT FROM TOP OF PANEL.
  - 4 OVERLAPPING DUCT
  - 5 DUCT SPIGOTS TO RISE & DROP
  - 6 DUCT RISERS
  - 7 DUCT DROPS
  - 8 GRILLS/DIFFUSERS WITHOUT INDIVIDUAL DUCT SHOWN HAVE DUCT WITH A MAX FLEX CONNECTOR

**TABLE 1 - AHU 11 ROOM BALANCE SCHEDULE**

ROOM #	ROOM NAME	SUPPLY	RETURN
84	DISINFECTANT SOLUTION PREPARATION	320	260
86	COOLING ZONE	1020	840
87	CORRIDOR	1890	2680
88	AIR LOCK	500	410
89	CHANGE-1	500	410
90	CHANGE-2	500	410
91	CHANGE-3	500	410
92	EE CORRIDOR	770	720
93	EE CORRIDOR	770	720
TOTAL		8880	7150

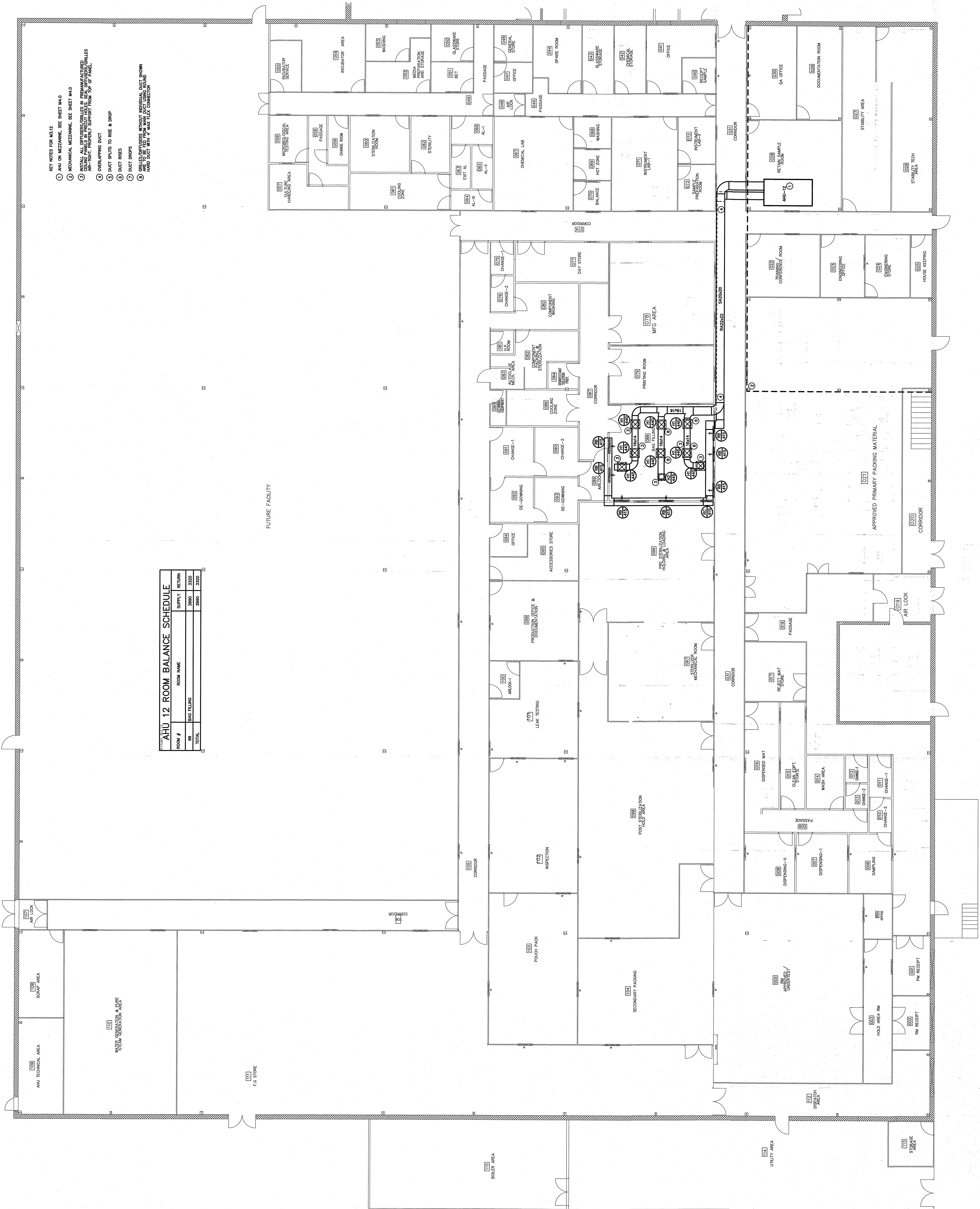
**1 MAIN LEVEL DUCT PLAN (AHU-11)**  
SCALE: 1/8" = 1'-0"

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**M3.12**  
 SHEET NO. M3.12  
 DATE 10/27/2018  
 SCALE 1/8" = 1'-0"



- KEY NOTES FOR M3.12**
- AHU ON MEZZANINE, SEE SHEET M4.0
  - MECHANICAL MEZZANINE, SEE SHEET M4.0
  - INSTALL ALL DUCTWORK/GULERS IN PREMANUFACTURED CEILING PANELS IN PRODUCE ROOMS, SEAL DIFFUSERS/VALVES AND HANGERS TO SUPPORT FROM TOP OF PANEL.
  - OVERLAPPING DUCT
  - DUCT SPLITS TO RISER & DRIP
  - DUCT RISERS
  - DUCT DROPS
  - CEILING DIFFUSERS MUST BE INSTALLED WITH 2\"/>

**AHU 12 ROOM BALANCE SCHEDULE**

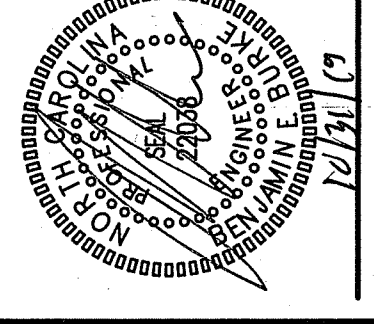
ROOM #	ROOM NAME	SUPPLY	RETURN
001	BAG FILLING	3500	3500
<b>TOTAL</b>		<b>3500</b>	<b>3500</b>

**1 MAIN LEVEL DUCT PLAN (AHU-12)**  
 SCALE: 1/8" = 1'-0"

DATE	REV
09/20/2019	02
10/12/2019	03
01/17/2020	04

**M3.13**

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 LILLINGTON, NC 27546



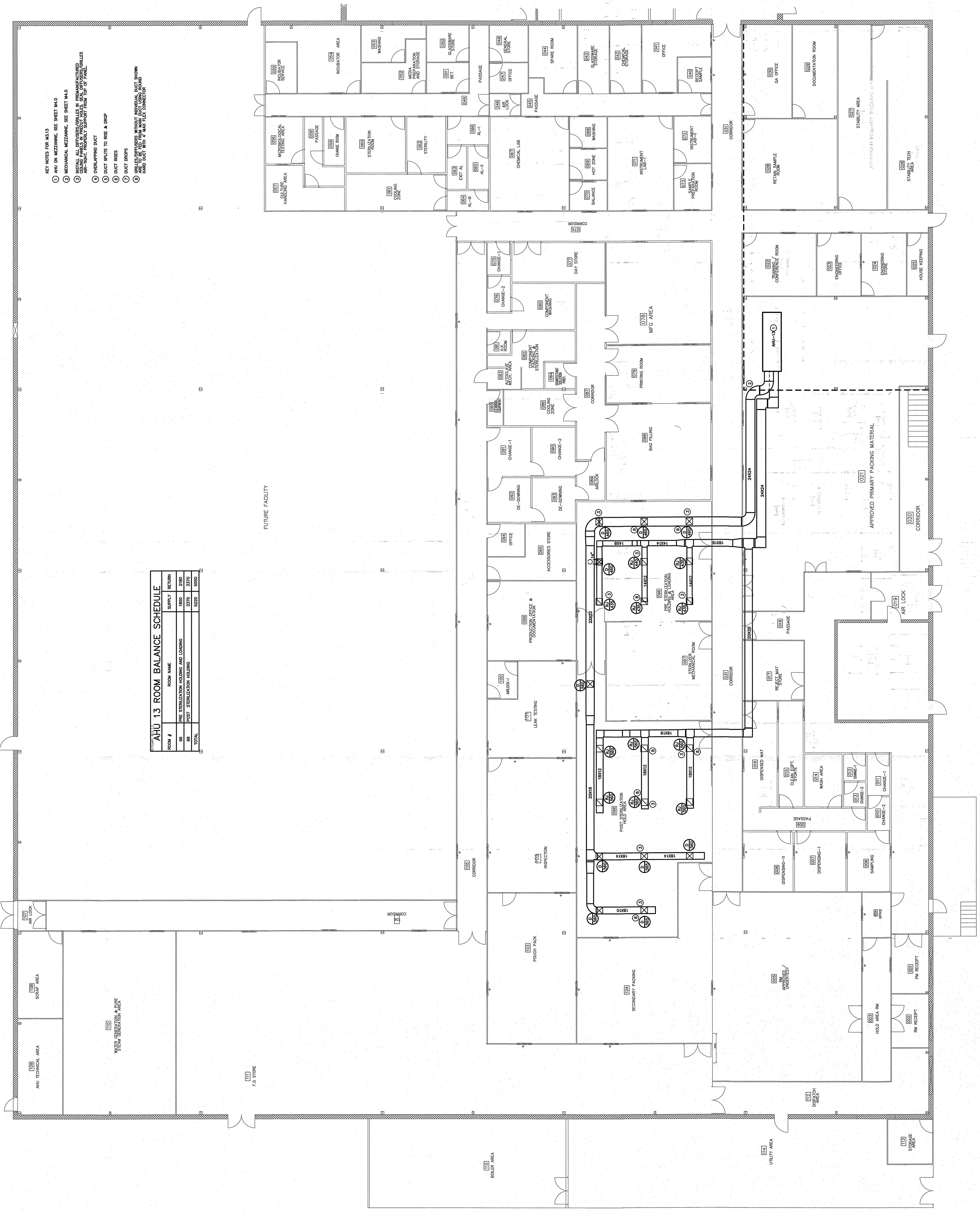
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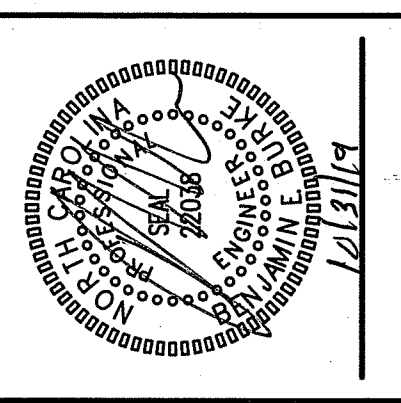
- KEY NOTES FOR M3.13
- 1 AHU ON MEZZANINE, SEE SHEET M3.0
  - 2 MECHANICAL MEZZANINE, SEE SHEET M3.0
  - 3 DETAIL FOR THIS MECHANICAL MEZZANINE IN SECTION M3.13.1, 13.2, 13.3 AND 13.4. EXHAUST THROUGH MECHANICAL MEZZANINE AS-SHOWN. PROPERLY SUPPORT FROM TOP OF PANEL.
  - 4 OVERLAPPING DUCT
  - 5 DUCT SPLITS TO RISE & DROP
  - 6 DUCT RISERS
  - 7 DUCT DROPS
  - 8 GRIDDED/SPANNERS WITHOUT INDIVIDUAL DUCT SHOWN HARD DUCT WITH 4" MAX FLEX CONNECTOR

**AHU 13 ROOM BALANCE SCHEDULE**

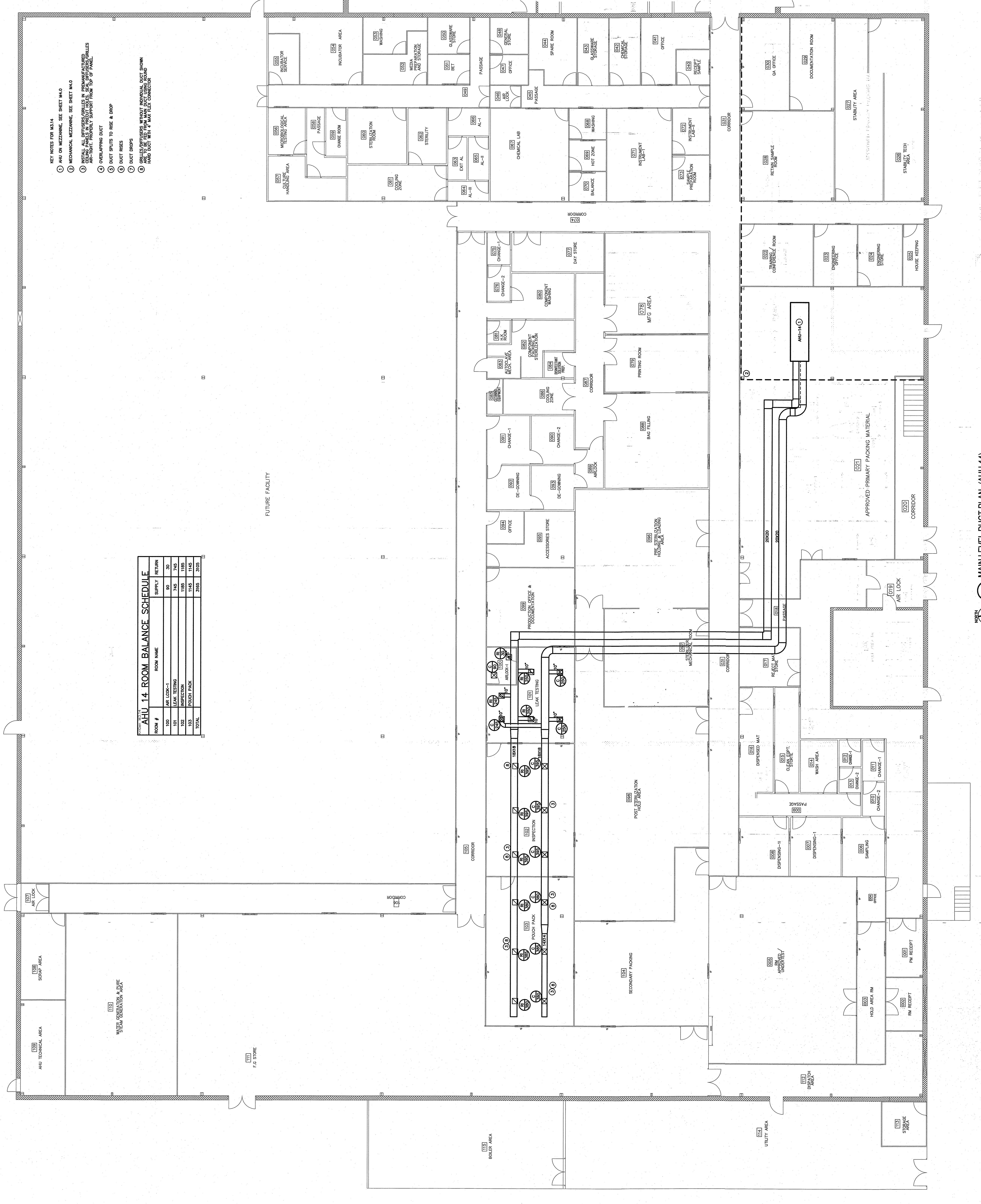
ROOM #	ROOM NAME	SUPPLY	RETURN
06	POSE STERILIZATION HOLDING AND LOADING	1850	2100
08	POST STERILIZATION HOLDING	3370	3370
	TOTAL	5220	5500



1 MAIN LEVEL DUCT PLAN (AHU-13)  
 SCALE: 1/8" = 1'-0"



REVISIONS	BY



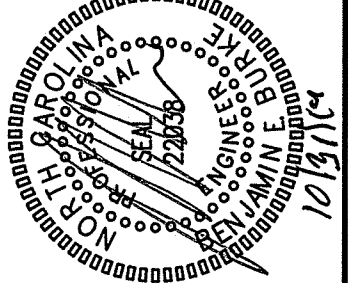
- KEY NOTES FOR M3.14**
- 1 AHU ON MEZZANINE, SEE SHEET M4.0
  - 2 MECHANICAL MEZZANINE, SEE SHEET M4.0
  - 3 INSTALL ALL DEFENSES/VALVES IN PREMANUFACTURED PANELS AND TEST PROPERLY SUPPORT FROM TOP OF PANEL.
  - 4 OVERLAPPING DUCT
  - 5 DUCT SPOUTS TO ROSE & DRIP
  - 6 DUCT RISERS
  - 7 DUCT DRIPS
  - 8 GRILL/OUTLETERS WITHOUT INDIVIDUAL DUCT SHOWN HAVE DUCT WITH 4" MAX FLEX CONNECTOR

**AHU\_14 ROOM BALANCE SCHEDULE**

ROOM #	ROOM NAME	SUPPLY	RETURN
100	AIR LOCK-1	80	30
101	LEAK TESTING	745	745
102	INSPECTION	1185	1185
103	POUCH PACK	1145	1145
TOTAL		3105	3105

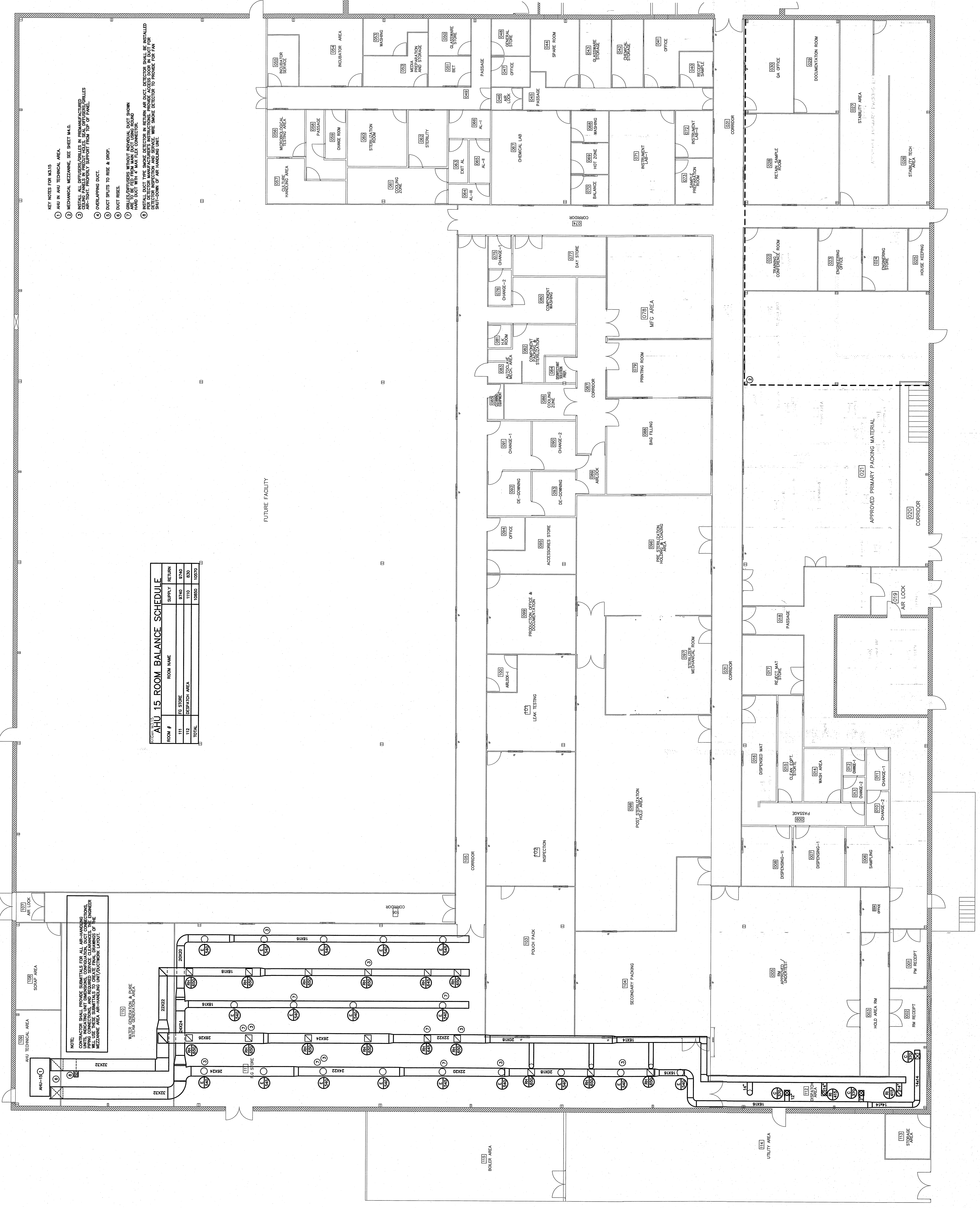
REVISIONS	BY

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**BDG**  
**BURKE DESIGN GROUP, PA**

**M3.15**  
 DATE: 03/15/2019  
 DRAWN: BDB  
 10/21/2019  
 CHECKED: JVC  
 DATE: 03/15/2019



- KEY NOTES FOR M3.15**
- AHU IN AHU TECHNICAL AREA.
  - MECHANICAL MEZZANINE, SEE SHEET M4.0.
  - INSTALL ALL OFFENSERS/CURLES IN PERMANENTLY LOCATED AIR-TIGHT, PROPERLY SUPPORT FROM TOP OF PANEL.
  - OVERLAPPING DUCT.
  - DUCT SPLITS TO ROSE & DROP.
  - DUCT RISER.
  - GRILES/SPRINGS WITHOUT INDIVIDUAL DUCT SHOWN SHALL BE INSTALLED IN RETURN AIR DUCT. DETECTOR SHALL BE INSTALLED IN RETURN AIR DUCT WITH 4" MAIN FLEX CONNECTOR.
  - INSTALL DUCT TYPE SMOKE DETECTOR IN RETURN AIR DUCT. DETECTOR SHALL BE INSTALLED IN RETURN AIR DUCT WITH 4" MAIN FLEX CONNECTOR.
  - INSTALL DUCT TYPE SMOKE DETECTOR IN RETURN AIR DUCT. DETECTOR SHALL BE INSTALLED IN RETURN AIR DUCT WITH 4" MAIN FLEX CONNECTOR.

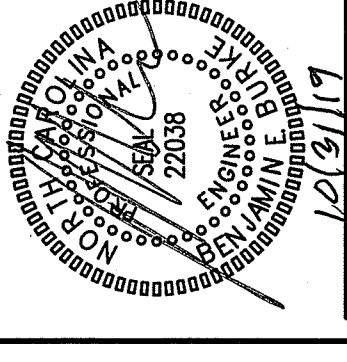
**AHU 15 ROOM BALANCE SCHEDULE**

ROOM #	ROOM NAME	SUPPLY	RETURN
111	IS STORE	6740	6740
112	DESPATCH AREA	1110	830
TOTAL		10850	10070

NORTH  
 1 MAIN LEVEL DUCT PLAN (AHU-15)  
 SCALE: 1/8" = 1'-0"

BY	
REVISIONS	

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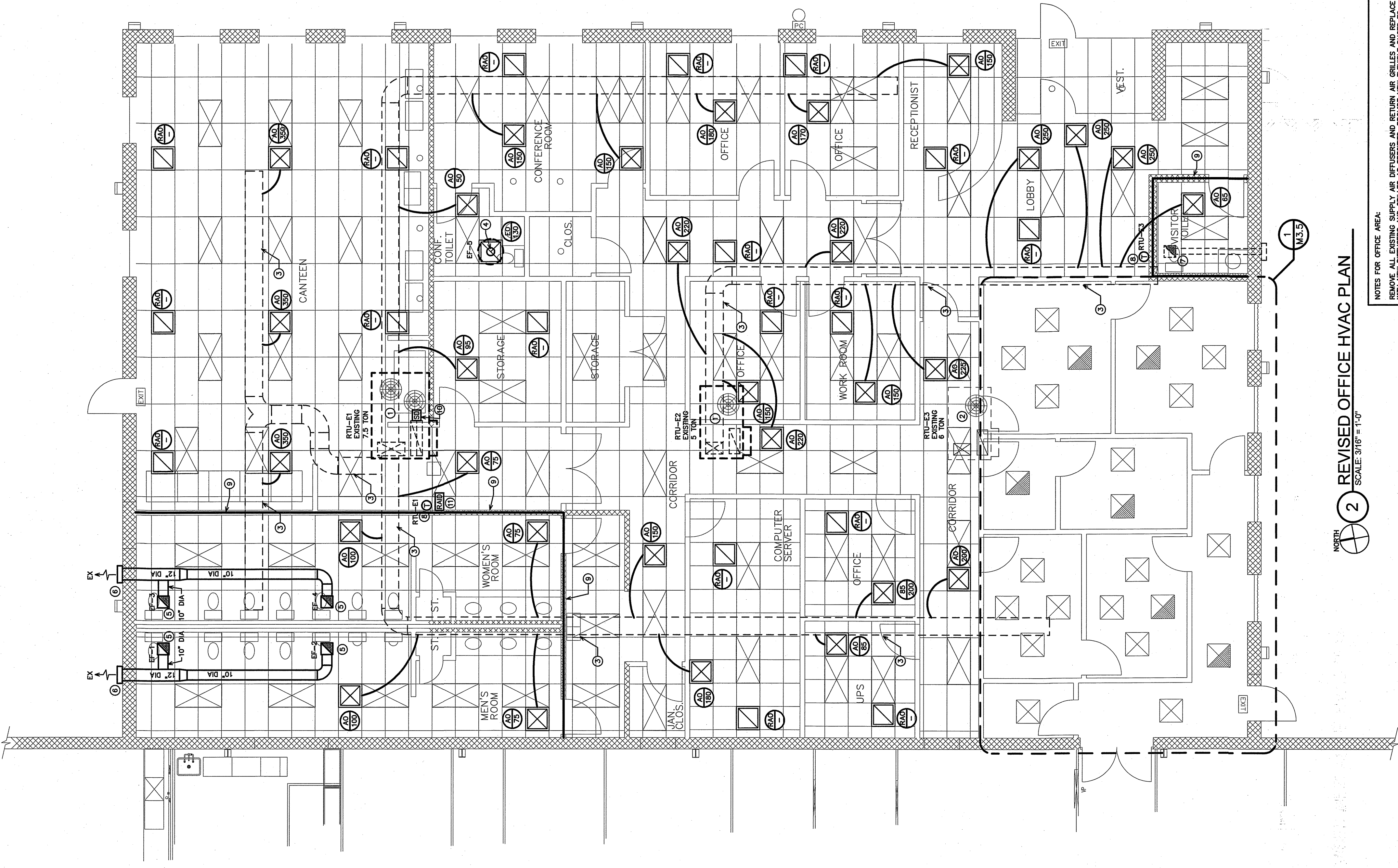


12/31/17

**KRIGEN PHARMACEUTICALS LLC**  
 800 EDWARDS DR  
 LILLINGTON, NC 27546

DATE	10/29/2019
BY	MB
CHECKED	MB
SCALE	3/16" = 1'-0"
PROJECT	

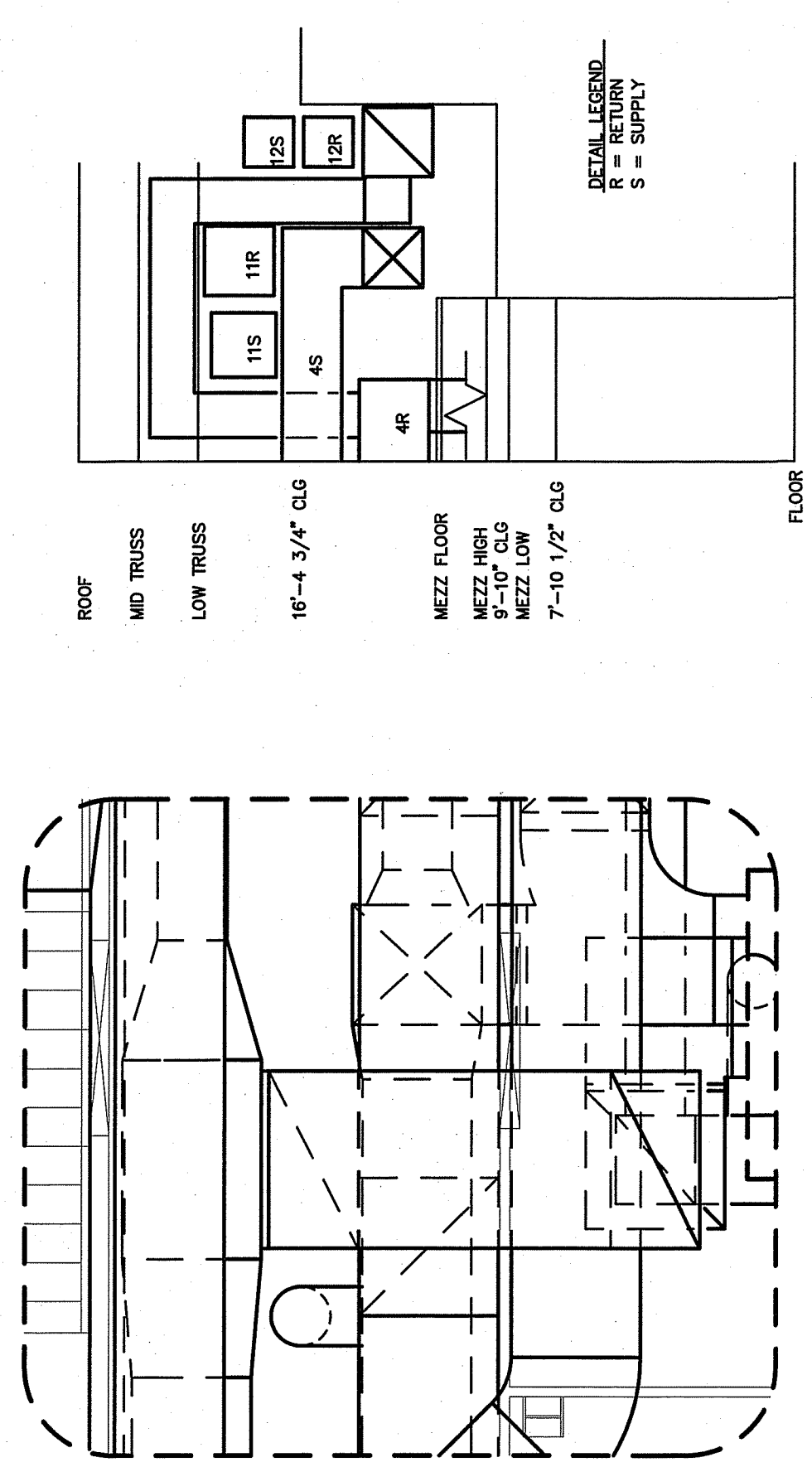
**M4.0**



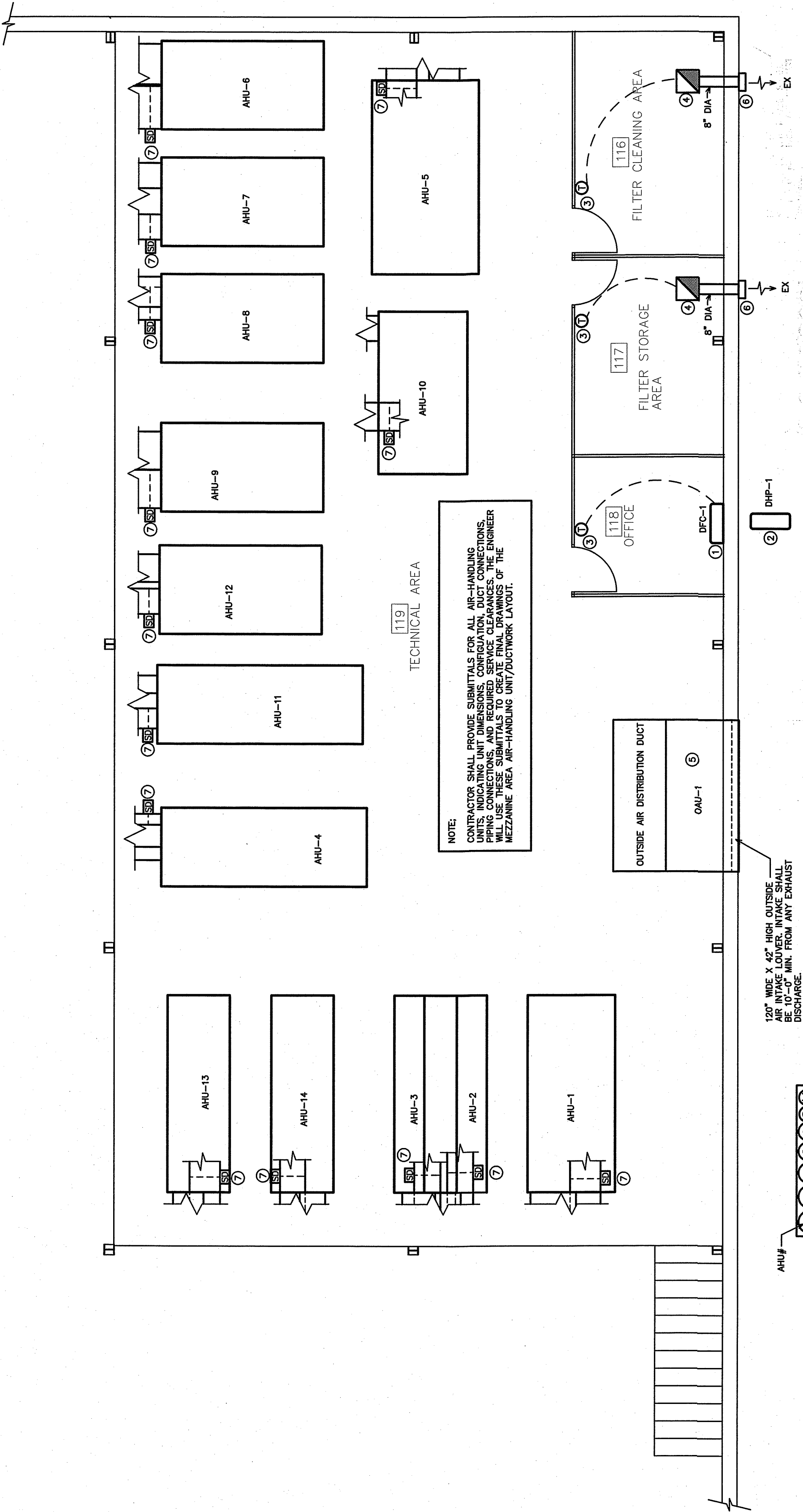
**NOTES FOR OFFICE AREA:**  
 REMOVE ALL EXISTING SUPPLY AIR DIFFUSERS AND RETURN AIR GRILLES AND REPLACE WITH NEW SUPPLY AIR DIFFUSERS IF REQUIRED TO REACH NEW LOCATION OR IF CONDITION OF EXISTING FLEXIBLE DUCT MAKES REPLACEMENT NECESSARY.  
 REMOVE ALL EXISTING RETURN AIR GRILLES IN OFFICE AREA ARE NOT TO BE REMOVED. RETURN AIR GRILLES IN OFFICE AREA ARE NOT TO BE REMOVED AND OPEN TO RETURN AIR. ALL EXISTING NON-FLEXIBLE DUCT MATERIAL SHALL BE REMOVED FROM FLOOR.

**2 REVISED OFFICE HVAC PLAN**  
 SCALE: 3/16" = 1'-0"

- KEY NOTES FOR 2/M4.0**
- RTU-E1/RTU-E2 TO REMAIN.
  - EXISTING RECTANGULAR SUPPLY AIR DUCTS TO REMAIN.
  - 8" DIA. RIGID EXHAUST DUCT FROM NEW CEILING GRILLE UP TO ROOF TO BE REMOVED. EXHAUST DUCT DISCHARGE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR INTAKE.
  - NEW CEILING CABINET EXHAUST FAN.
  - NEW WALL EXHAUST HOOD. EXHAUST DISCHARGE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR INTAKE.
  - EXISTING TIE-IN EXHAUST FAN AND DUCTWORK TO REMAIN.
  - NEW ELECTRONIC PROGRAMMABLE THERMOSTAT MOUNT AT 48" AFF.
  - NEW WALL MOUNTED REMOTE THERMOSTAT MOUNT AT 48" AFF. THE SPACE ABOVE THE TIE-IN DOES NOT COMMUNICATE WITH THE SPACE ABOVE THE TIE-IN. THE TIE-IN IS NOT A RETURN AIR INTAKE.
  - INSTALL NEW DUCT-TYPE SMOKE DETECTOR IN RETURN AIR DUCT FOR EXISTING SMOKE DETECTOR. SMOKE DETECTOR SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND SHALL NOT BE SHUT-DOWN OF UNIT.
  - WALL MOUNTED REMOTE ALARM INDICATING DEVICE (RAID) FOR RTU-E1 SMOKE DETECTOR.



**3 DUCT COORDINATION DIAGRAM**  
 SCALE: NTS

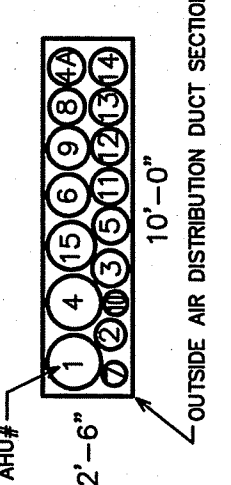


**1 REVISED MEZZANINE HVAC PLAN**  
 SCALE: 3/16" = 1'-0"

- KEY NOTES FOR 1/4.0**
- DUCTLESS SPLIT SYSTEM FAN-ONLY UNIT MOUNTED WITH TOP AT 12" BELOW CEILING. RIN REFRIGERANT PIPING CONCEALED IN WALL TO OUTDOOR HEAT PUMP UNIT.
  - DUCTLESS SPLIT SYSTEM OUTDOOR HEAT PUMP UNIT MOUNTED ON WALL. SHUT-OUT AT 4" ABOVE FINISH GRADE WITH ELBOW TURNED DOWN.
  - DUCTLESS SPLIT SYSTEM OUTDOOR HEAT PUMP UNIT MOUNTED AT GRADE ON CONCRETE PAD.
  - WALL MOUNTED CHANGEST FAN FAN SHALL BE CONTROLLED BY THERMOSTAT.
  - OUTSIDE AIR UNIT WITH FAN AND FILTERS.
  - NEW CEILING MOUNTED CHANGEST FAN FAN SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR INTAKE.
  - INSTALL DUCT-TYPE SMOKE DETECTOR IN RETURN AIR DUCT. DETECTOR SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND SHALL NOT BE SHUT-DOWN OF UNIT.

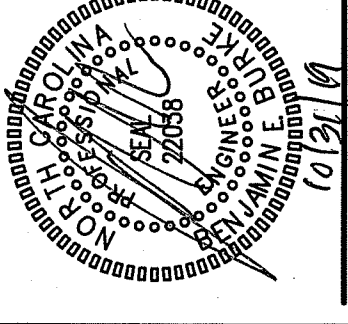
**NOTE:**  
 CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL AIR-HANDLING UNITS, INCLUDING: UNIT, PIPING, CONNECTIONS, AND REQUIRED SERVICE CLEARANCES. THE ENGINEER SHALL REVIEW AND APPROVE ALL SUBMITTALS. MEZZANINE AREA AIR-HANDLING UNIT/OUTLETWORK LAYOUT.

100" WIDE X 42" HIGH OUTSIDE AIR INTAKE LOWER INTAKE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR DISCHARGE.



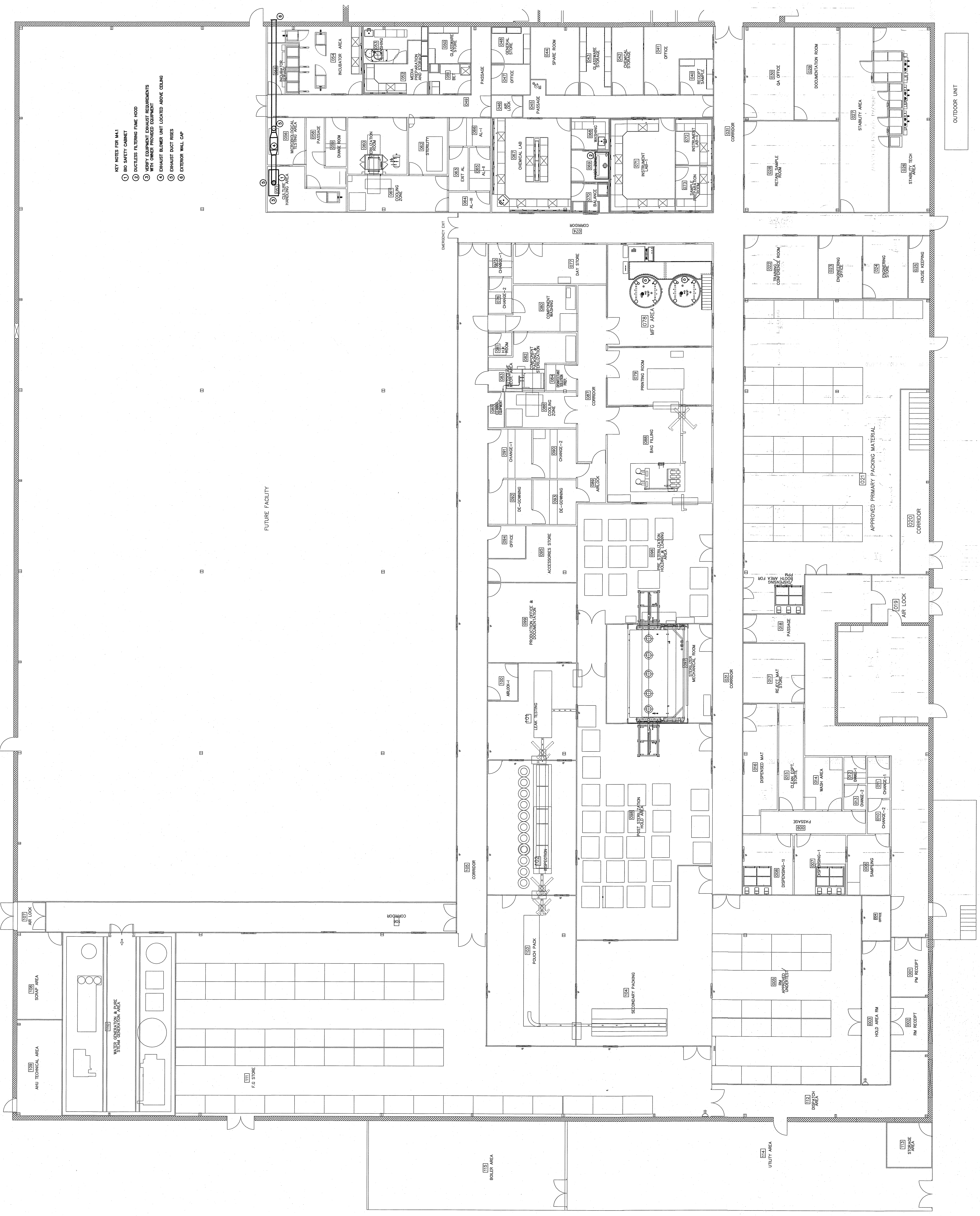
REVISIONS	BY

**KRIGEN PHARMACEUTICALS LLC**  
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 email: ben@bdg-nc.com

**M4.1**  
 MAIN LEVEL EXHAUST PLAN  
 DATE: 10/21/2018  
 DRAWN BY: C.S.  
 CHECKED BY: B.B.

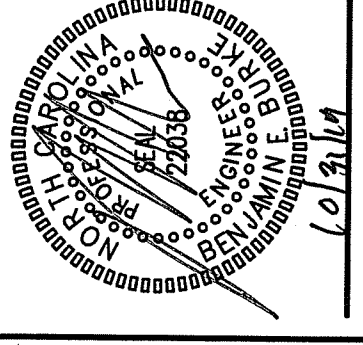


- KEY NOTES FOR M4.1
- 1 NO SAFETY CABINET
  - 2 DUCTLESS FILTERING FUME HOOD
  - 3 VERIFY EQUIPMENT EXHAUST REQUIREMENTS WITH OWNER PROVIDED EQUIPMENT
  - 4 EXHAUST BLOWER UNIT LOCATED ABOVE CEILING
  - 5 EXHAUST DUCT RISERS
  - 6 EXTERIOR WALL CAP

**1 MAIN LEVEL EXHAUST PLAN**  
 SCALE: 1/8" = 1'-0"

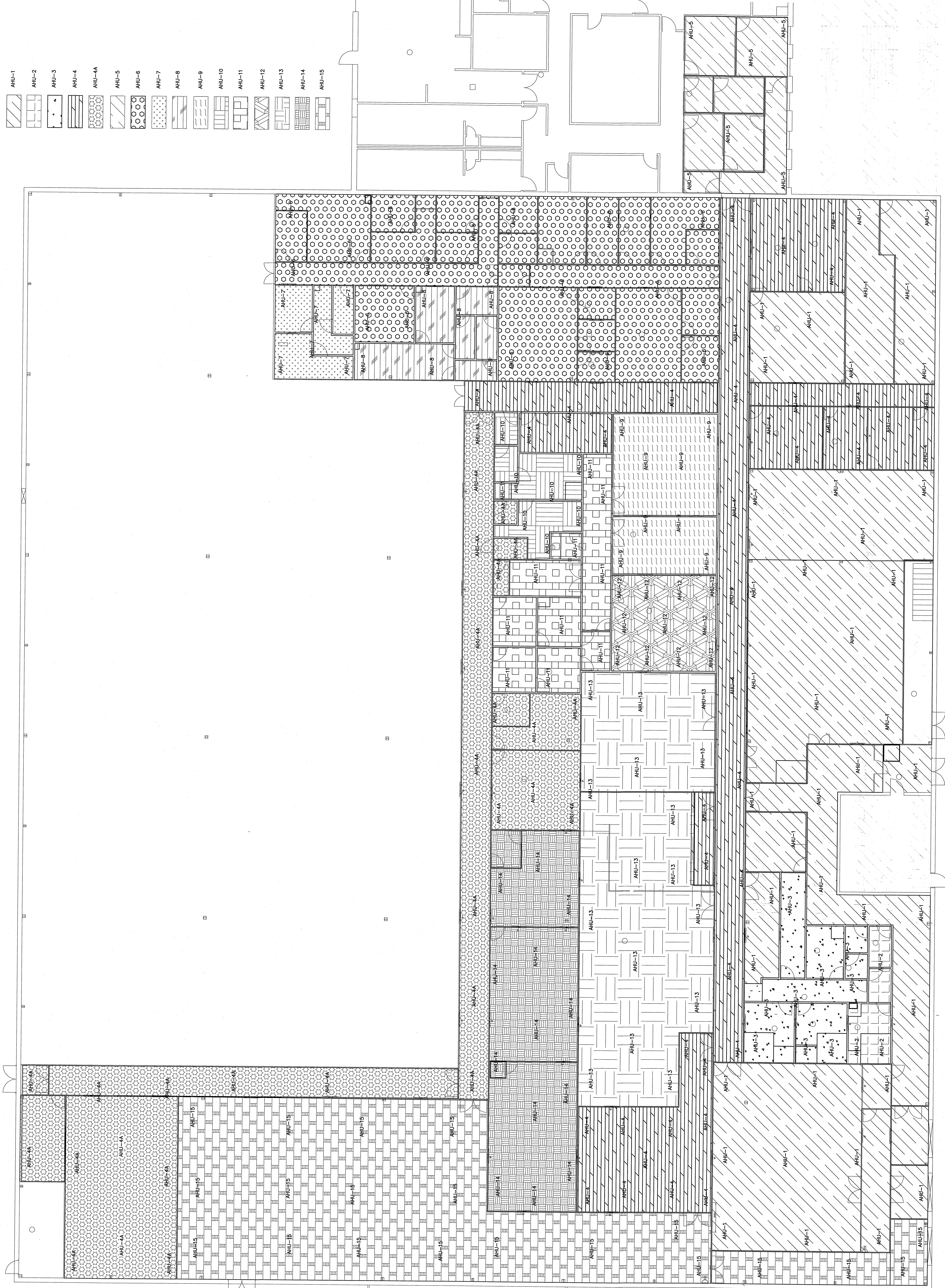
DATE	10/27/2019
SCALE	1/8" = 1'-0"
BY	BBB
CHECKED BY	CLS

**KRIGEN PHARMACEUTICALS LLC**  
 800 EDWARDS DR  
 LILLINGTON, NC 27546



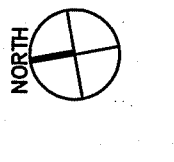
**BURKE DESIGN GROUP, PA**  
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REVISIONS	BY



AHU-1	
AHU-2	
AHU-3	
AHU-4	
AHU-4A	
AHU-5	
AHU-6	
AHU-7	
AHU-8	
AHU-9	
AHU-10	
AHU-11	
AHU-12	
AHU-13	
AHU-14	
AHU-15	

**1 AIR HANDLER ZONING PLAN**  
 SCALE: 1/8" = 1'-0"





REVISIONS	BY

800 EDWARDS DR  
LILLINGTON, NC 27546

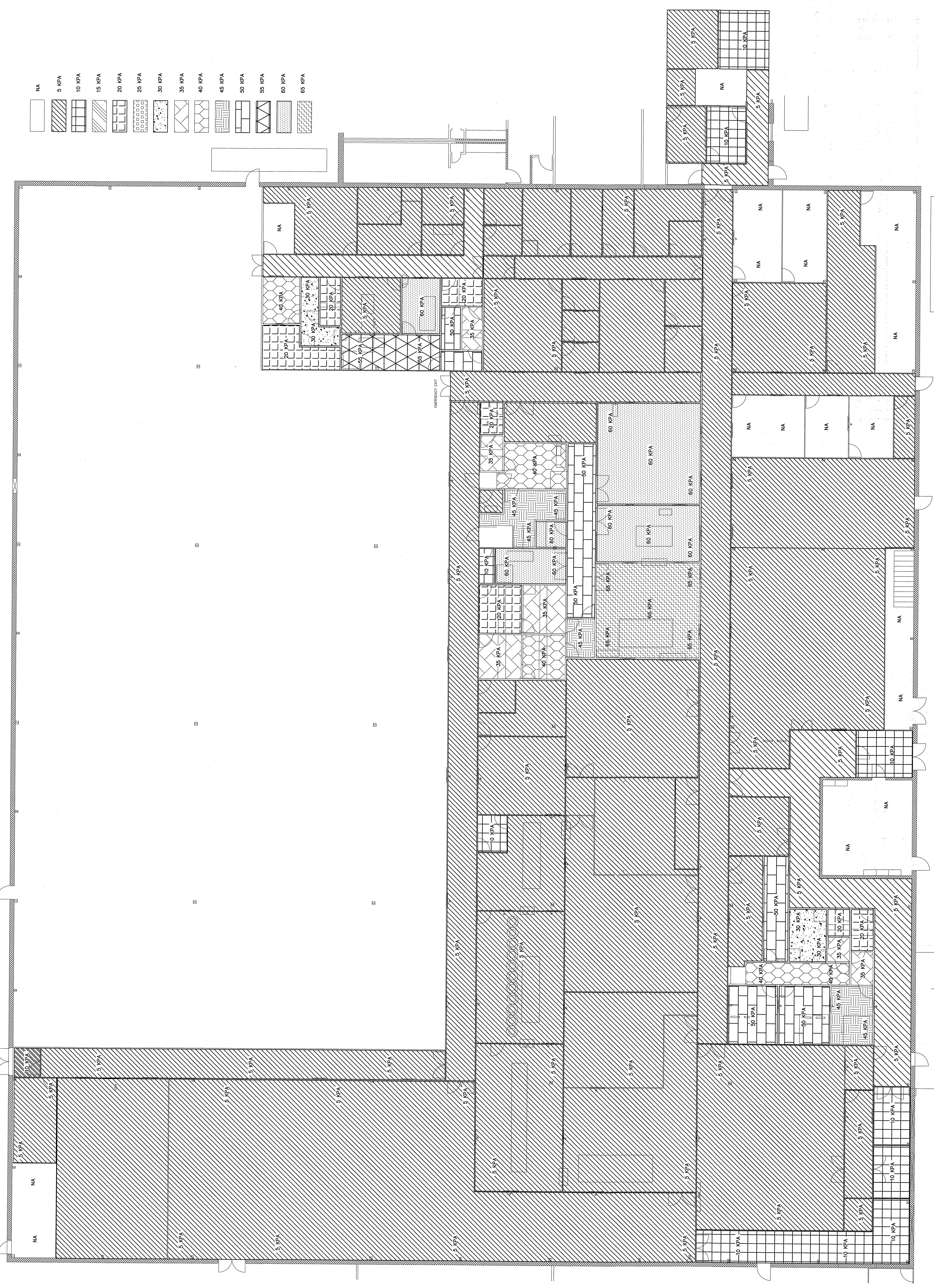
**KRIGEN PHARMACEUTICALS LLC**

**BDG**

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FAX: (919) 779-0826  
email: ben@bdg-nc.com

DATE	10/27/2018
PROJECT	PHARMACEUTICALS
ISSUE	REV 001
DESIGNED BY	
CHECKED BY	
SCALE	1/8" = 1'-0"

M4.3

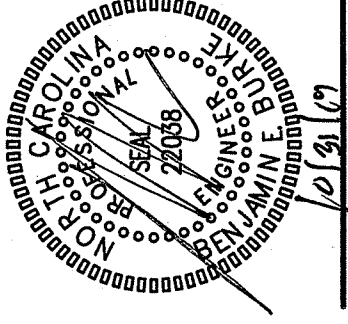


1 PRESSURE ZONING PLAN  
SCALE: 1/8" = 1'-0"





REVISIONS	BY

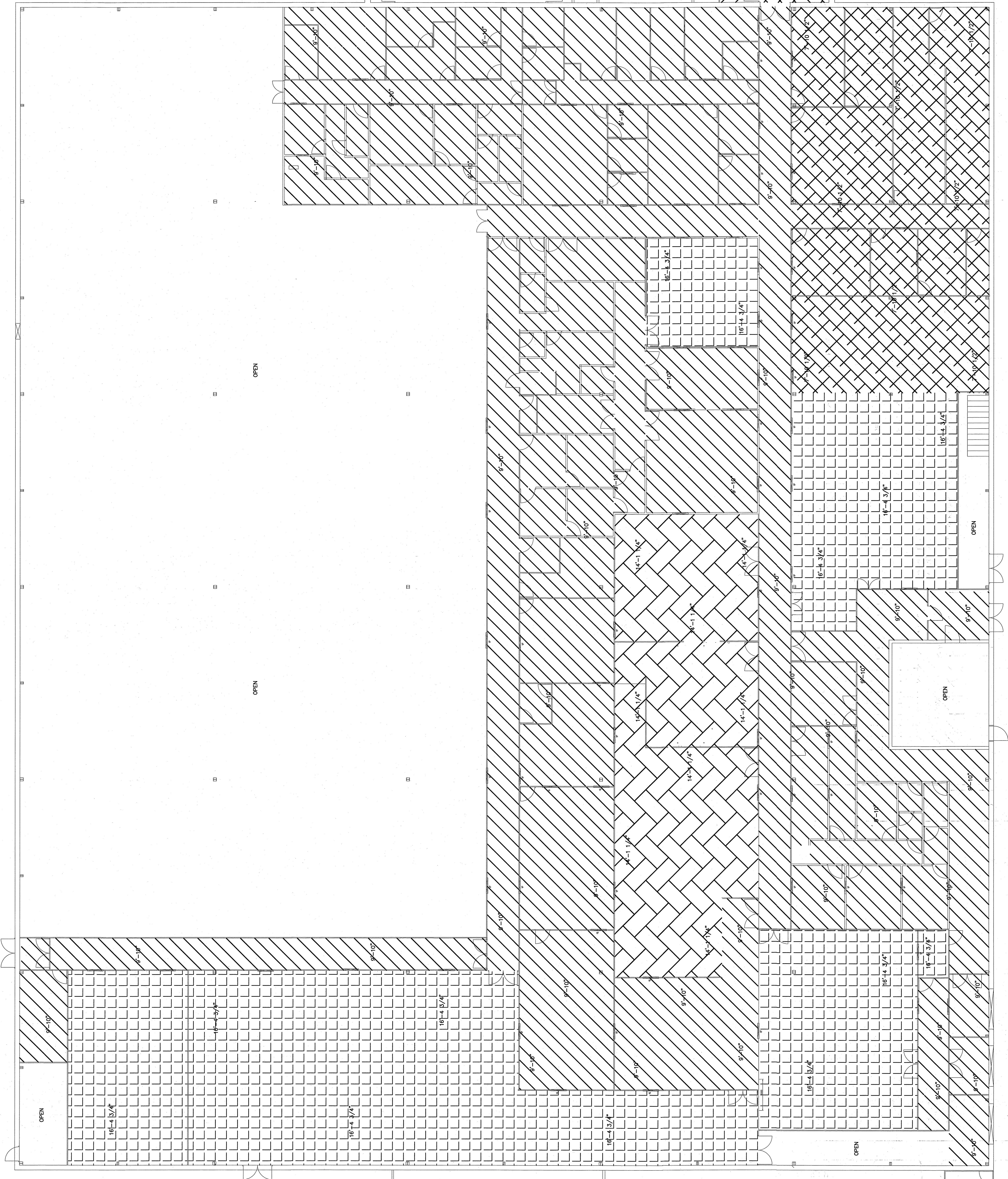
**KRIGEN PHARMACEUTICALS LLC**  
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 LILLINGTON, NC 27546

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**M4.4**  
 DATE: 10/29/2018  
 TIME: 1:14 PM  
 DRAWN BY: [Signature]  
 CHECKED BY: [Signature]

-  CEILING HEIGHT 16'-4 3/4"
-  CEILING HEIGHT 9'-10"
-  CEILING HEIGHT 7'-10 1/2"
-  CEILING HEIGHT 14'-1 1/4"



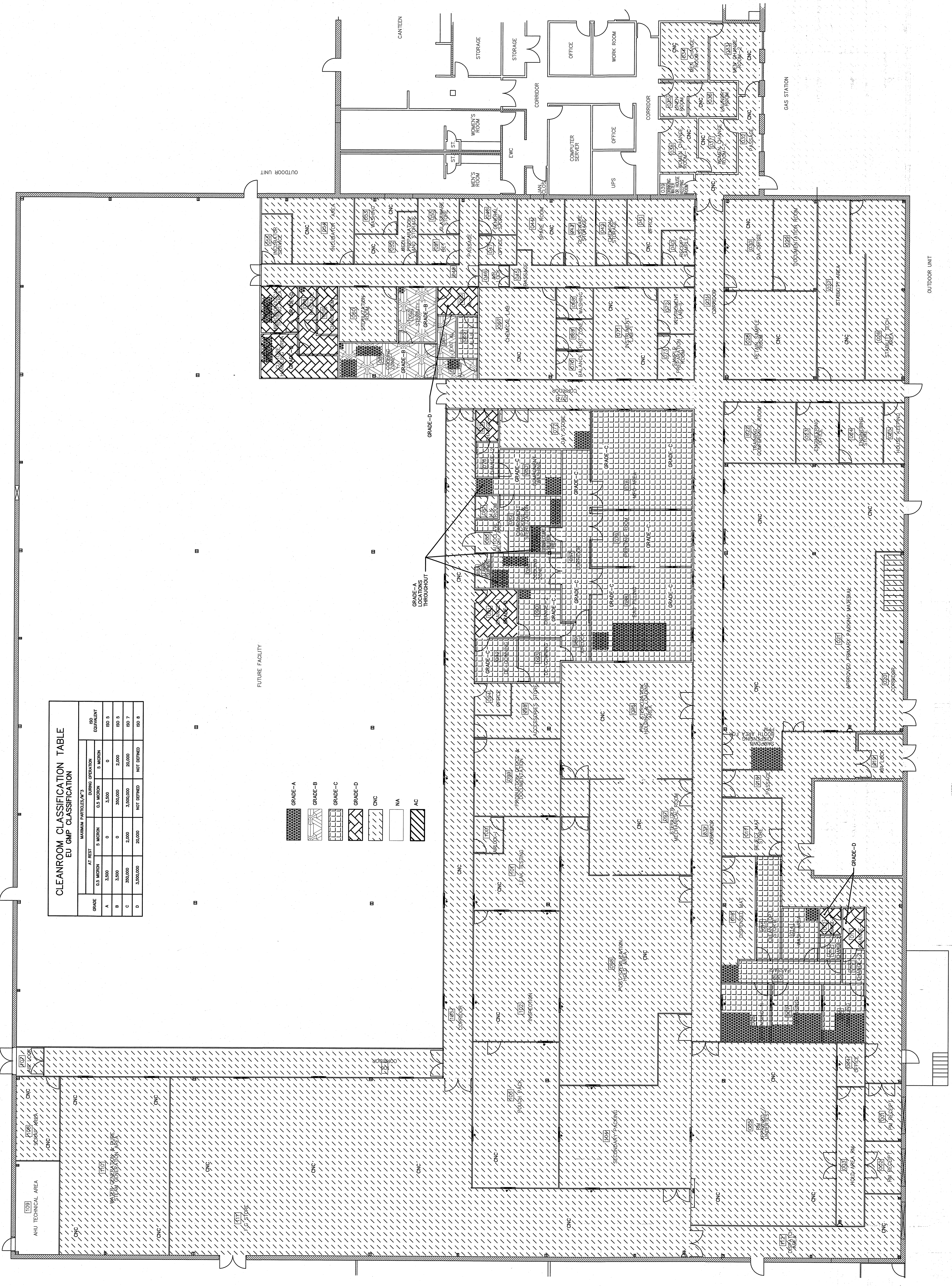
1 CEILING HEIGHT PLAN  
 SCALE: 1/8" = 1'-0"

REVISIONS	BY

**KRIEEN PHARMACEUTICALS LLC**  
 800 EDWARDS DR  
 LILLINGTON, NC 27546

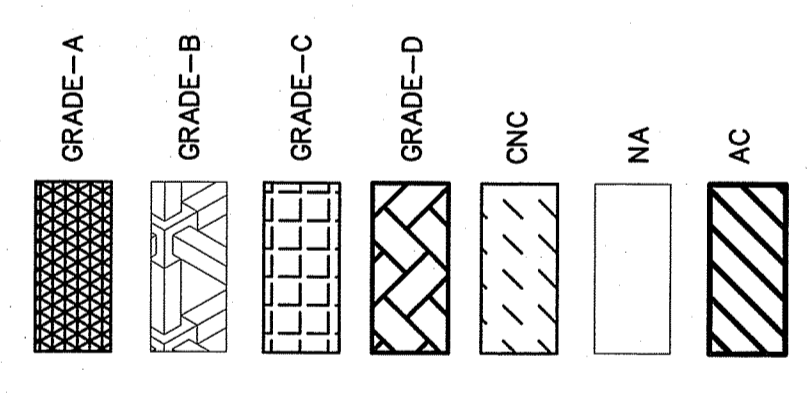
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 email: ben@bdg-nc.com

**M4.5**  
 DATE: 10/20/2018  
 TIME: 1:00 PM  
 SHEET NO. 4 OF 4



**CLEANROOM CLASSIFICATION TABLE**  
EU GMP CLASSIFICATION

GRADE	MAXIMUM PARTICLES/M <sup>3</sup>		DURING OPERATION		ISO EQUIVALENT
	A1 TEST	A2 TEST	0.5 MICRON	5 MICRON	
A	3,500	0	3,500	0	ISO 5
B	3,500	0	350,000	2,000	ISO 5
C	350,000	2,000	3,500,000	20,000	ISO 7
D	3,500,000	20,000	NOT DEFINED	NOT DEFINED	ISO 8



**AREA CLASSIFICATION PLAN**  
 SCALE: 1/8" = 1'-0"