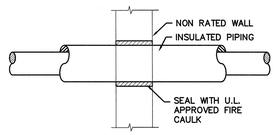
LEGEND

- REMOVE EXISTING DUCTWORK
- REMOVE EXISTING PIPING, LINE SYMBOL INDICATES SERVICE
- EXISTING DUCTWORK TO REMAIN
- EHWS — EXISTING HOT WATER SUPPLY
- EHWR — EXISTING HOT WATER RETURN
- ECHS — EXISTING CHILLED WATER SUPPLY
- ECHR — EXISTING CHILLED WATER RETURN
- ECWS — EXISTING CONDENSER WATER SUPPLY
- ECWR — EXISTING CONDENSER WATER RETURN
- HWS — HOT WATER SUPPLY PIPING
- HWR — HOT WATER RETURN PIPING
- CHS — CHILLED WATER SUPPLY PIPING
- CHR — CHILLED WATER RETURN PIPING
- R — REFRIGERANT PIPING
- C — AIR CONDITIONING CONDENSATE PIPING
- BALL VALVE
- GLOBE VALVE
- MULTIPURPOSE BALVE
- BUTTERFLY VALVE
- CHECK VALVE
- WATER PRESSURE REDUCING VALVE
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- SQUARE HEAD COCK
- AUTOMATIC FLOW CONTROL VALVE
- GAS VALVE
- VALVE IN RISE OR DROP
- UNION
- FLANGE
- PIPE ANCHOR
- PRESSURE RELIEF VALVE WITH FULL SIZE DISCHARGE PIPING TO WITHIN 6" OF FLOOR DRAIN
- PRESSURE TEMPERATURE RELIEF VALVE WITH FULL SIZE DISCHARGE PIPING TO WITHIN 6" OF FLOOR DRAIN
- STRAINER WITH BALL VALVE BLOWDOWN, NIPPLE AND CAP

- RECTANGULAR DUCTWORK
- SUPPLY AIR DUCTWORK TURNED DOWN
- SUPPLY AIR DUCTWORK TURNED UP
- RETURN AIR/EXHAUST AIR TURNED DOWN
- RETURN AIR/EXHAUST AIR TURNED UP
- SINGLE WALL SPIRAL DUCTWORK
- BRANCH TAKEOFF WITH TURNING VANES, SPLITTER DAMPER AND LOCKING QUADRANT
- DUCT TEE WITH TURNING VANES, SPLITTER DAMPER AND LOCKING QUADRANT
- DUCT WITH RUNOUT (SPIN-IN TAKE OFF WITH DAMPER)
- CEILING RETURN AIR/ EXHAUST AIR REGISTER
- CEILING SUPPLY AIR DIFFUSER
- (A) REGISTER, GRILLE OR DIFFUSER SYMBOL
- (T)2 HEATING AND COOLING THERMOSTAT WITH # INDICATING UNIT
- (T)C COOLING THERMOSTAT
- DISCONNECT SWITCH
- (1) KEYED NOTE SYMBOL

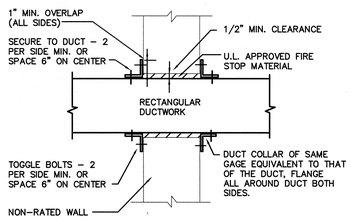
S.A.	SUPPLY AIR
R.A.	RETURN AIR
O.A.	OUTSIDE AIR
EX.A.	EXHAUST AIR
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
M.D.	MANUAL DAMPER
M.O.D.	MOTOR OPERATED DAMPER
A.F.F.	ABOVE FINISHED FLOOR
FIN. FL.	FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE
CONC.	CONCRETE
CONT.	CONTINUATION
CONTR.	CONTRACTOR

- TERMINATION POINT OF DEMOLITION
- POINT OF NEW CONNECTION TO EXISTING
- CO — CARBON MONOXIDE SENSOR
- 1 HOUR WALL DESIGNATION
- 2 HOUR WALL DESIGNATION



A / M-001

NON-RATED WALLS
FIRE PENETRATION DETAIL
NO SCALE



B / M-001

NON-RATED WALLS
WALL PENETRATION DETAIL
NO SCALE

GENERAL NOTES:

1. HVAC CONTRACTOR SHALL FIELD VERIFY ALL RELEVANT DIMENSIONS, CLEARANCES, LOCATIONS AND ELEVATIONS PRIOR TO ORDERING, FABRICATION, AND INSTALLATION OF HIS WORK. DISCREPANCIES OR INTERFERENCE'S SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER AS SOON AS POSSIBLE. THE DRAWINGS DIAGRAMMATICALLY INDICATE THE GENERAL LOCATION OF DUCTS, PIPING AND EQUIPMENT AND DO NOT SHOW ALL SUPPORTS, OFFSETS, FITTINGS, BOLTS, CONNECTIONS, ETC. REQUIRED FOR A COMPLETE SYSTEM. WHILE THE DRAWINGS ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE, IF IT IS FOUND NECESSARY TO CHANGE THE LOCATION OF ANY WORK TO ACCOMMODATE THE CONDITIONS AT THE BUILDING, SUCH CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER, AND AS DIRECTED BY THE ENGINEER.
2. ALL SUPPLY AND RETURN CONNECTIONS TO AHU SHALL BE MADE WITH A FLEXIBLE DUCT CONNECTION.
3. PIPING, DUCTWORK, ETC., SHALL NOT BE SUPPORTED FROM BAR JOIST BRIDGING OR ROOFDECK. EQUIPMENT SUPPORTED BY BAR JOISTS SHALL HAVE SUPPORTS ATTACHED AS CLOSE AS POSSIBLE TO BAR JOIST PANEL POINTS. HVAC CONTRACTOR SHALL SUPPLY ANY AND ALL STRUCTURAL MEMBERS NECESSARY TO SUPPORT WORK BETWEEN BAR JOISTS, BEAMS, ETC.
4. ALL DUCT JOINTS SHALL BE SEALED AS SPECIFIED.
5. IN AREAS WITH GYPBOARD CEILINGS, HVAC CONTRACTOR SHALL INSTALL EQUIPMENT, DUCTWORK AND PIPE HANGERS PRIOR TO GYPBOARD INSTALLATION.
6. HVAC CONTRACTOR/ CONTROLS CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR PROVISIONS OF POWER TO DDC CONTROL SYSTEM CONTROL PANELS, CONTROLLERS, ETC.. NOT SHOWN ON M OR E DRAWINGS. ELECTRICAL CONTRACTOR WILL PROVIDE POWER TO GENERAL POINTS, JUNCTION BOXES, ETC., AND POWER WIRING FROM THOSE POINTS TO EQUIPMENT SHALL BE BY THE HVAC CONTRACTOR/CONTROL CONTRACTOR.
7. ALL PIPING PENETRATIONS THROUGH RATED AND NONRATED WALLS SHALL BE FIRE STOPPED USING PIPE PENETRATIONS. ALL DUCT PENETRATIONS THRU RATED AND NONRATED WALLS SHALL BE FIRE STOPPED USING DETAILS SHOWN ON SHEET M-001.
8. RETURN AIR DUCTWORK SHALL BE INSTALLED IN SUCH A MANNER THAT DUCT MOUNTED SMOKE DETECTORS ARE NO MORE THAN 24" ABOVE LAY-IN CEILING TILES.
9. ALL THERMOSTATS AND SWITCHES FOR MECHANICAL SYSTEMS AND TOP OF HVAC CONTROL PANEL SHALL BE MOUNTED 44" A.F.F MAXIMUM.
10. STRAP ALL NEW ROOFTOP EQUIPMENT TO ROOF CURBS TO WITHSTAND HURRICANE FORCE WINDS (135 MPH - NCCSBC VOL. 1606).
11. COORDINATE MECHANICAL DUCTWORK AND PIPING TO AVOID ALL ELECTRICAL PANELS WITH ELECTRICAL CONTRACTOR.
12. TEST AND BALANCE SHALL INCLUDE:
    A. CHECK AND REBALANCE WATER AND AIR FLOW FOR EACH EXISTING DUAL DUCT TERMINAL BOX EDD1-1 THRU EDD1-5 AND THEIR SUPPLY AIR DIFFUSERS.
    B. BALANCE ALL WATER AND AIR FOR NEW BCAHU-1, BCAHU-2, BCAHU-3, AND ALL ASSOCIATED SUPPLY AIR, RETURN AIR AND OUTSIDE AIR FOR COMPLETE SYSTEM.
    C. BALANCE ALL WATER ASSOCIATED FOR PUMP P-13.
    D. BALANCE ALL WATER FLOW FOR NEW UNIT HEATERS 21 THRU 26.
    E. BALANCE ALL AIR ASSOCIATED WITH EF-22 AND EF-23.
    F. CHECK AND REBALANCE THE RENOVATED PORTIONS OF ALL SUPPLY AND RETURN AIR IN RENOVATED TICKETING AREA FROM EXISTING AHU#1 (ORIGINAL DESIGN 3940 CFM FOR THIS SUPPLY AIR TRUNK LINE).

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE

☐ COMPLIANCE PER CHAPTER 5 NORTH CAROLINA ENERGY CONSERVATION CODE - SECTIONS 503.2, 503.3 SIMPLE SYSTEMS AND 506 ADDITIONAL PRESCRIPTIVE COMPLIANCE REQUIREMENTS.
- ☐ 506.2.1 MORE EFFICIENT MECHANICAL EQUIPMENT
- ☐ 506.2.2 REDUCED LIGHTING POWER DENSITY
- ☐ 506.2.3 ENERGY RECOVERY VENTILATION SYSTEMS
- ☐ 506.2.4 HIGHER EFFICIENCY SERVICE WATER HEATING
- ☐ 506.2.5 ON-SITE SUPPLY OF RENEWABLE ENERGY
- ☐ 506.2.6 AUTOMATIC DAYLIGHTING CONTROL SYSTEM

☐ COMPLIANCE PER CHAPTER 5 NORTH CAROLINA ENERGY CONSERVATION CODE - SECTIONS 503.2, 503.4 COMPLEX SYSTEMS AND 506 ADDITIONAL PRESCRIPTIVE COMPLIANCE REQUIREMENTS.
- ☐ 506.2.1 MORE EFFICIENT MECHANICAL EQUIPMENT
- ☒ 506.2.2 REDUCED LIGHTING POWER DENSITY
- ☐ 506.2.3 ENERGY RECOVERY VENTILATION SYSTEMS
- ☐ 506.2.4 HIGHER EFFICIENCY SERVICE WATER HEATING
- ☐ 506.2.5 ON-SITE SUPPLY OF RENEWABLE ENERGY
- ☐ 506.2.6 AUTOMATIC DAYLIGHTING CONTROL SYSTEM

☐ COMPLIANCE PER CHAPTER 5 NORTH CAROLINA ENERGY CONSERVATION CODE - SECTION 507 TOTAL ENERGY PERFORMANCE.

☐ COMPLIANCE PER ASHRAE/IESNA STANDARD 90.1-2010

☐ COMPLIANCE PER NORTH CAROLINA SPECIFIC COMCHECK.

CLIMATE ZONE 3A

EXTERIOR DESIGN CONDITIONS
winter dry bulb: 28°F
summer dry bulb: 78°F DB/92°F WB

INTERIOR DESIGN CONDITIONS
winter dry bulb: 70°F
summer dry bulb: 75°F
relative humidity: 50%

BUILDING HEATING LOAD: BLOCK LOAD = 113.9 MBH (NEW ADDITION ONLY)

BUILDING COOLING LOAD: BLOCK LOAD = 9.5 TONS (NEW ADDITION ONLY)

MECHANICAL SPACING CONDITIONING SYSTEM
Unitary:
description of unit:
heating efficiency:
cooling efficiency:
heat output of unit:
cooling output of unit:
} SEE SCHEDULES SHEET M-601

Boiler: EXISTING
total boiler output. If oversized, state reason.

Chiller: EXISTING
total chiller capacity. If oversized, state reason.

LIST EQUIPMENT EFFICIENCIES: SEE SCHEDULES ON SHEET M-601

EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS)
motor horsepower:
number of phases:
minimum efficiency:
motor type:
# of poles:
} SEE SCHEDULES ON SHEET M-601

DESIGNER STATEMENT

To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the North Carolina Energy Conservation Code.

SIGNED: _____
NAME: Kenneth Lynch, P.E.
TITLE: Professional Engineer

ILM

TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073
JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17655 ENGINEER KENNETH LYNCH

ARCHITECT
THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

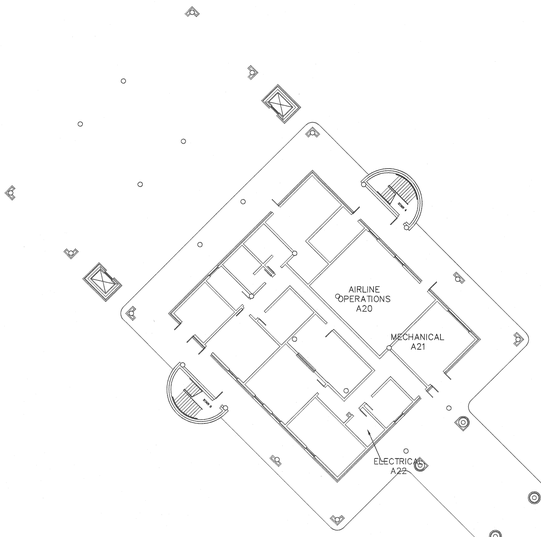
REVISIONS

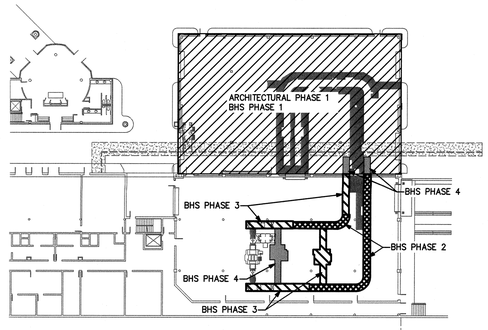
DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

MECHANICAL LEGEND, DETAILS AND GENERAL NOTES

SHEET NUMBER:

M-001





PHASING KEY PLAN

PHASING NOTES:

ARCHITECTURAL PHASE 1:	CONSTRUCT ADDITION.
BHS PHASE 1:	INSTALL EQUIPMENT.
BHS PHASE 2:	INSTALL EQUIPMENT.
BHS PHASE 3:	INSTALL EQUIPMENT.
BHS PHASE 4:	INSTALL EQUIPMENT.

SEE ARCHITECTURAL PLANS A-131 THROUGH A-137 FOR ADDITIONAL PHASING INFORMATION.

SEE BAGGAGE HANDLING SYSTEM PLANS B-701 THROUGH B-708 FOR ADDITIONAL PHASING INFORMATION.

1 M-110 OVERALL RAMP LEVEL FLOOR PLAN – MECHANICAL
SCALE: 1" = 20'-0"

GRAPHIC SCALES
20' 10' 0 20' 40'
SCALE: 1"=20'

ILM

TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073

JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17655 ENGINEER KENNETH LYNCH

ARCHITECT

THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER

TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT

LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER

STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER

CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS

BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT

HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

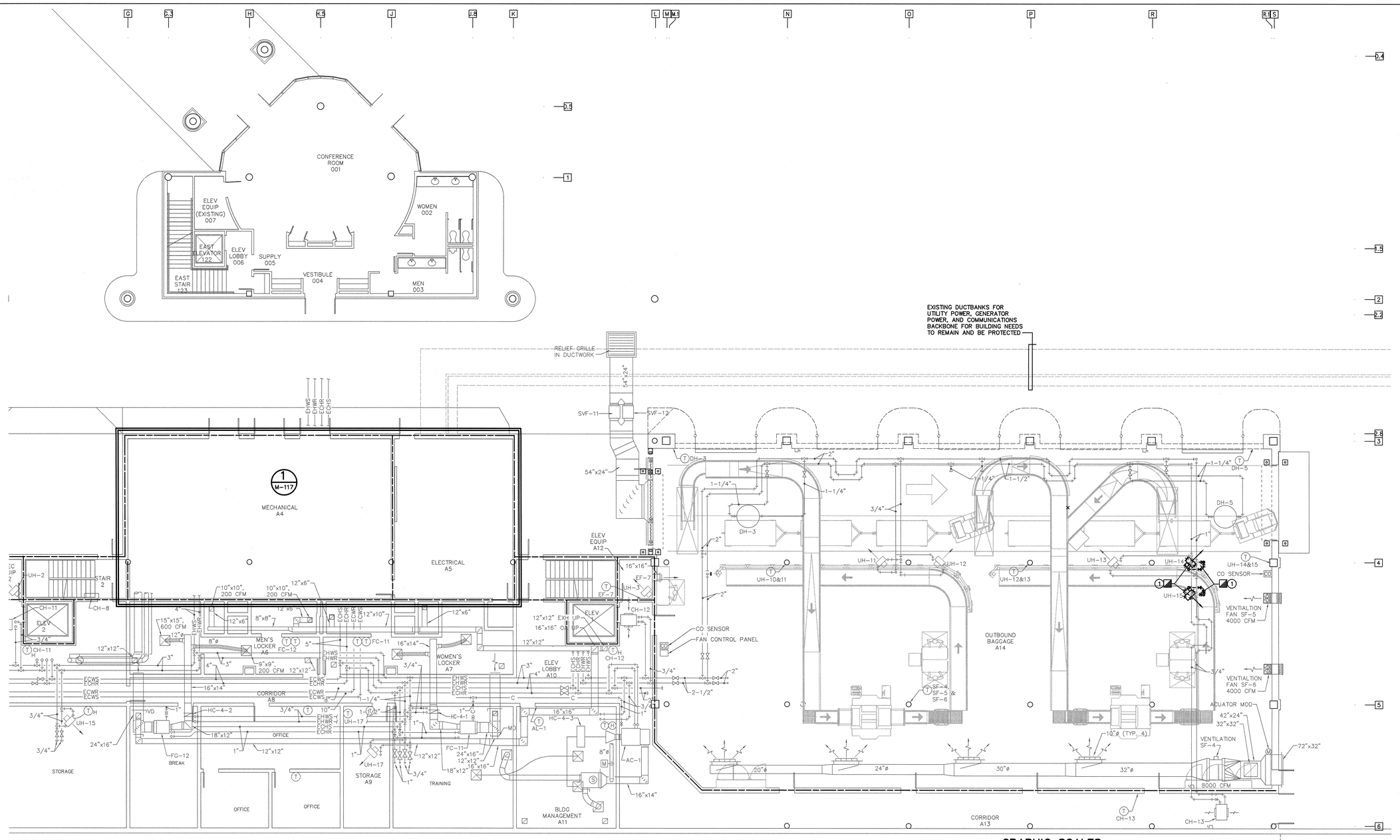
REVISIONS

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

OVERALL RAMP LEVEL FLOOR PLAN MECHANICAL

SHEET NUMBER:

M-110



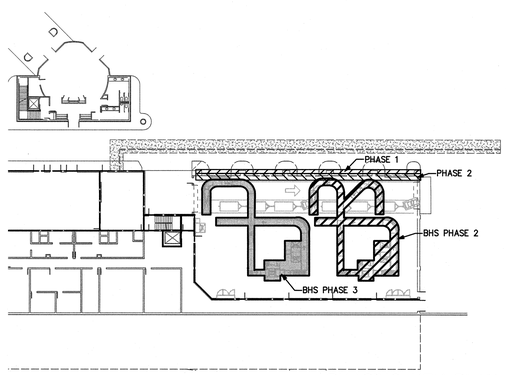
1 M-115 ENLARGED RAMP LEVEL FLOOR PLAN – MECHANICAL DEMOLITION

SCALE: 1/8" = 1'-0"

GRAPHIC SCALES

8' 4' 0 8' 16'

GRAPHIC SCALE: 1/8"=1'-0"



PHASING KEY PLAN

PHASING NOTES:

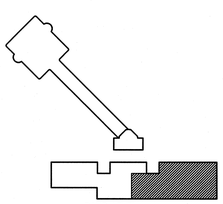
ARCHITECTURAL PHASE 1:	DEMO BRICK VENEER.
ARCHITECTURAL PHASE 2:	DEMO REMAINING EXTERIOR WALL.
BHS PHASE 2:	DEMO BHS EQUIPMENT.
BHS PHASE 3:	DEMO BHS EQUIPMENT.

SEE ARCHITECTURAL PLANS A-131 THROUGH A-137 FOR ADDITIONAL PHASING INFORMATION.

SEE BAGGAGE HANDLING SYSTEM PLANS B-701 THROUGH B-708 FOR ADDITIONAL PHASING INFORMATION.

KEYED NOTES: (THIS SHEET ONLY)

1. UNIT HEATER TO BE REMOVED AND RELOCATED. SEE NEW LOCATION M-116.



RAMP LEVEL KEY PLAN NO SCALE

ILM

TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073
JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17658 ENGINEER KENNETH L. LYNCH

THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

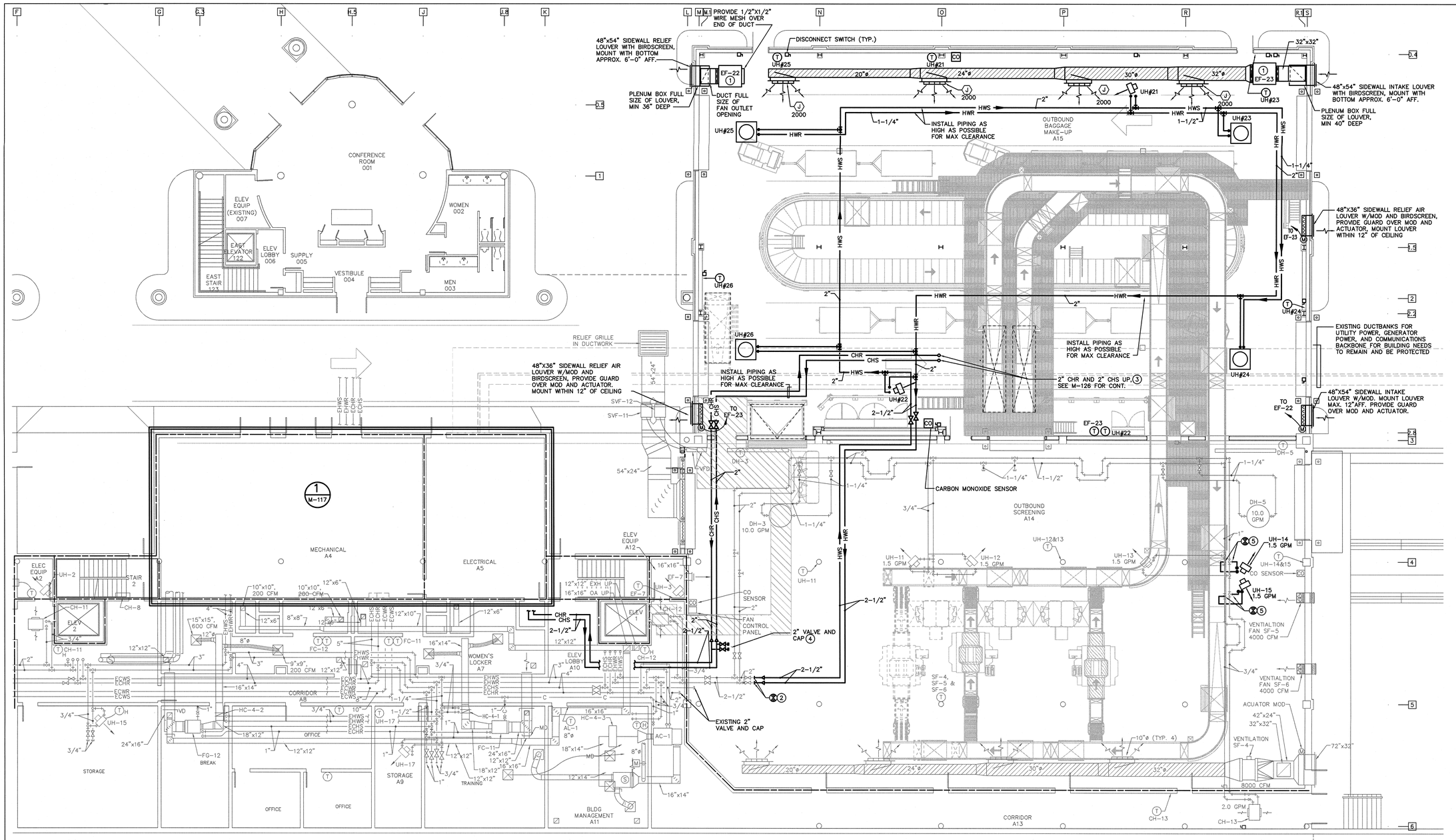
REVISIONS

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

ENLARGED RAMP LEVEL FLOOR PLAN MECHANICAL DEMOLITION

SHEET NUMBER:

M-115



1 M-117

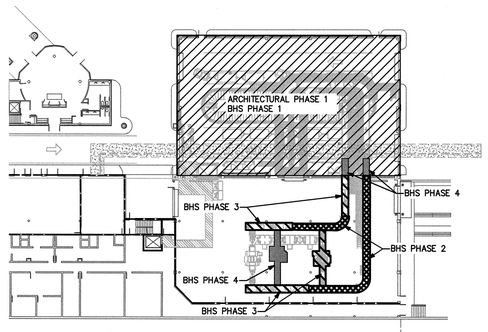
1 M-116 ENLARGED RAMP LEVEL FLOOR PLAN – MECHANICAL

SCALE: 1/8" = 1'-0"

GRAPHIC SCALES

8' 4' 0 8' 16'

GRAPHIC SCALE: 1/8"=1'-0"



PHASING KEY PLAN

PHASING NOTES:

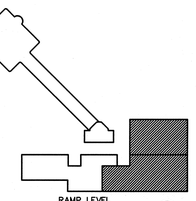
ARCHITECTURAL PHASE 1: BHS PHASE 1:	CONSTRUCT ADDITION. INSTALL EQUIPMENT.
BHS PHASE 2:	INSTALL EQUIPMENT.
BHS PHASE 3:	INSTALL EQUIPMENT.
BHS PHASE 4:	INSTALL EQUIPMENT.

SEE ARCHITECTURAL PLANS A-131 THROUGH A-137 FOR ADDITIONAL PHASING INFORMATION.

SEE BAGGAGE HANDLING SYSTEM PLANS B-701 THROUGH B-708 FOR ADDITIONAL PHASING INFORMATION.

KEYED NOTES: (THIS SHEET ONLY)

1. PROVIDE NEOPRENE VIBRATION ISOLATION ON ALL FAN SUPPORTS HANGERS.
2. CONNECT NEW HOT WATER PIPING TO EXISTING.
3. CHILLED WATER PIPING UP THROUGH THE FLOOR TO THE SECOND LEVEL, SEE M-126.
4. 2" CHS AND 2" CHR VALVE AND CAP.
5. NEW LOCATION OF EXISTING UNIT HEATER. EXTEND PIPING AND CONTROLS AS NECESSARY FOR NEW LOCATION. MAINTAIN PIPING AS HIGH AS POSSIBLE FOR MAXIMUM CLEARANCE, AND INSULATE PIPING AS SPECIFIED.



RAMP LEVEL KEY PLAN NO SCALE

ILM TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073
JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17655 ENGINEER KENNETH H. LYNCH

ARCHITECT
THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

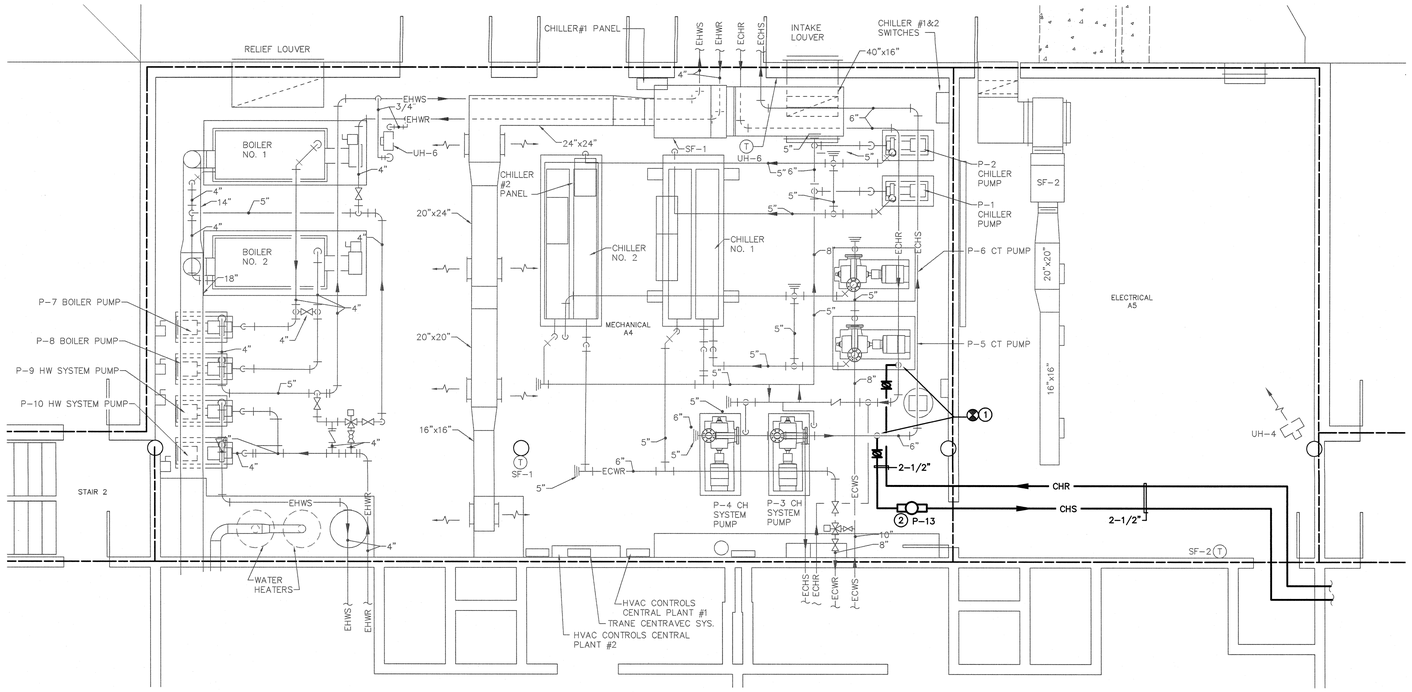
REVISIONS

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

ENLARGED RAMP LEVEL FLOOR PLAN MECHANICAL

SHEET NUMBER:

M-116

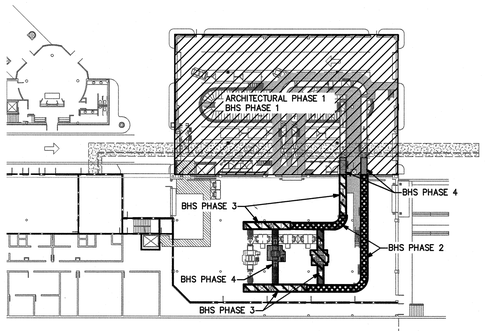


1 M-117 ENLARGED BOILER CHILLER MECHANICAL ROOM
SCALE: 1/4" = 1'-0"

GRAPHIC SCALES
4' 2' 0 4' 8'
SCALE: 1/4"=1'-0"

KEYED NOTES: (THIS SHEET ONLY)

1. HOT TAP CHILLED WATER SUPPLY AND RETURN PIPING INTO EXISTING. FIELD VERIFY EXISTING PIPE SIZES AND LOCATIONS.
2. NEW INLINE PUMP P-13, MOUNTED MIN. 9'-0" AFF. SEE INLINE PUMP DETAIL E/M-501.



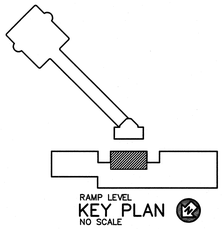
PHASING KEY PLAN

PHASING NOTES:

ARCHITECTURAL PHASE 1:	CONSTRUCT ADDITION.
BHS PHASE 1:	INSTALL EQUIPMENT.
BHS PHASE 2:	INSTALL EQUIPMENT.
BHS PHASE 3:	INSTALL EQUIPMENT.
BHS PHASE 4:	INSTALL EQUIPMENT.

SEE ARCHITECTURAL PLANS A-131 THROUGH A-137 FOR ADDITIONAL PHASING INFORMATION.

SEE BAGGAGE HANDLING SYSTEM PLANS B-701 THROUGH B-708 FOR ADDITIONAL PHASING INFORMATION.



ILM

TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073
JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17658 ENGINEER KENNETH LYNCH

ARCHITECT
THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

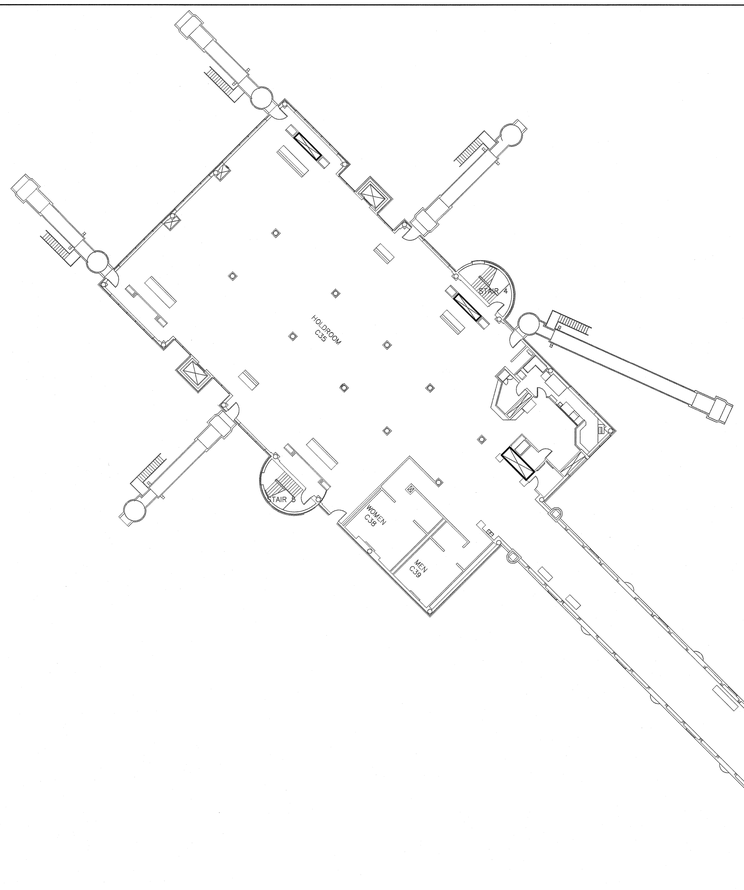
REVISIONS

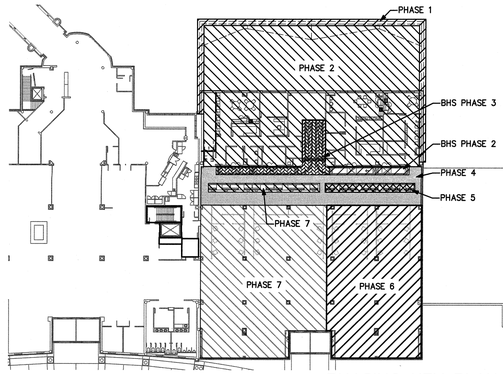
DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

ENLARGED BOILER CHILLER MECHANICAL ROOM

SHEET NUMBER:

M-117





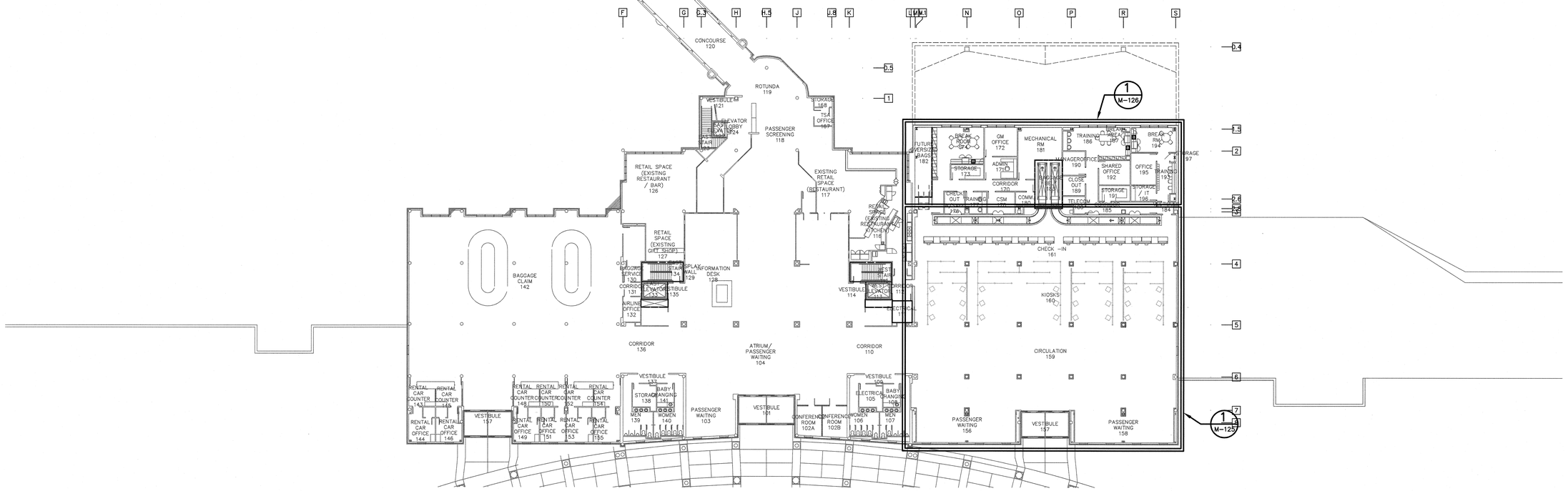
PHASING KEY PLAN

PHASING NOTES:

PHASE 1:	CONSTRUCTION NEW SHELL
PHASE 2:	INTERIOR UPFIT.
BHS PHASE 2:	INSTALL CONVEYOR.
PHASE 3:	N/A.
PHASE 4:	INSTALL NEW CEILING.
BHS PHASE 3:	INSTALL CONVEYORS.
PHASE 5:	INSTALL NEW COUNTERS.
PHASE 6:	INSTALL KIOSKS; EXSTG AREA RENOVATIONS.
PHASE 7:	INSTALL NEW COUNTERS; INSTALL KIOSKS; EXSTG AREA RENOVATIONS.

SEE ARCHITECTURAL PLANS A-131 THROUGH A-137 FOR ADDITIONAL PHASING INFORMATION.

SEE BAGGAGE HANDLING SYSTEM PLANS B-701 THROUGH B-708 FOR ADDITIONAL PHASING INFORMATION.



1 / M-120 OVERALL TICKET LEVEL FLOOR PLAN – MECHANICAL
SCALE: 1" = 20'-0"

GRAPHIC SCALES
20' 10' 0 20' 40'
SCALE: 1"=20'

ILM

TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073

JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 176396 ENGINEER KENNETH LYNCH

THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

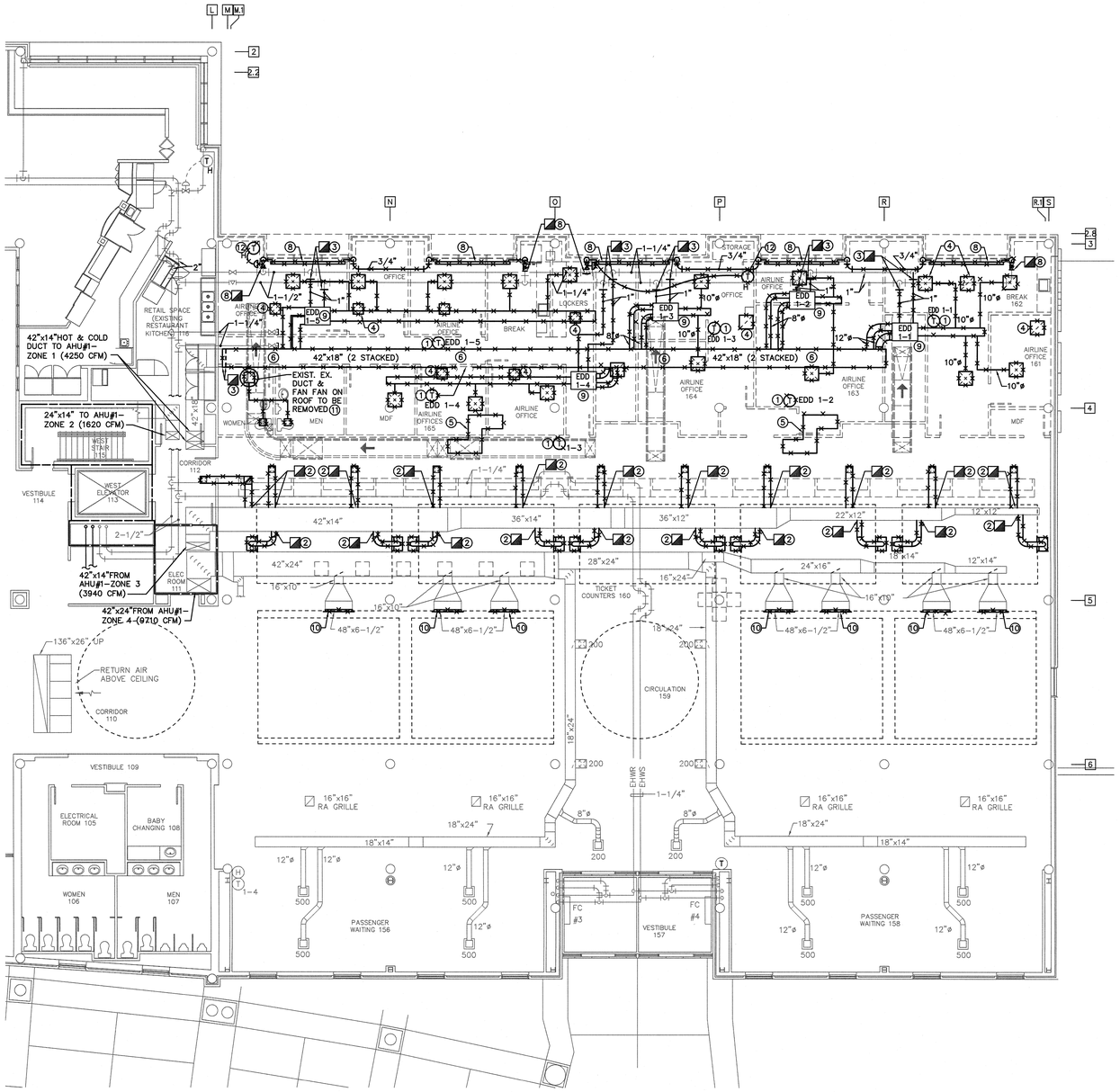
REVISIONS

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

OVERALL TICKET LEVEL FLOOR PLAN MECHANICAL

SHEET NUMBER:

M-120

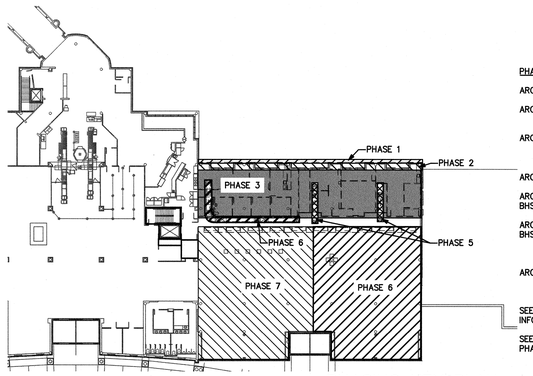


1 M-125 ENLARGED TICKET LEVEL FLOOR PLAN MECHANICAL DEMOLITION
SCALE: 1/8" = 1'-0"

GRAPHIC SCALES
8' 4' 0 8' 16'
SCALE: 1/8"=1'-0"

KEYED NOTES: (THIS SHEET ONLY)

1. EXISTING TEMPERATURE SENSOR TO BE RELOCATED, VERIFY FUNCTIONALITY.
2. REMOVE RUNOUT TO POINT INDICATED. WHERE RUNOUT OPENING IS NOT BEING REUSED, SEAL DUCTWORK AIRTIGHT AND INSULATE TO MATCH EXISTING.
3. REMOVE PIPING TO POINT INDICATED.
4. REMOVE RETURN AIR GRILLES.
5. REMOVE RETURN AIR TRANSFER DUCT.
6. REMOVE DUCTWORK.
7. REMOVE EXHAUST FAN, DUCTWORK, GRILLES, CONTROL AND ALL ACCESSORIES.
8. REMOVE EXISTING CONVECTOR, CONTROL VALVE, PIPING, AND ACCESSORIES, CAP PIPING AND INSULATE TO MATCH EXISTING. FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING PIPING. DUCTWORK, GRILLES, HANGERS AND ACCESSORIES TO ALL BE REMOVED.
9. EXISTING DUAL DUCT VAV TERMINAL BOX TO BE REUSED AND RELOCATED. SEE 1/M-126 FOR NEW LOCATION.
10. REMOVE EXISTING SIDEWALL LINEAR BAR DIFFUSER.
11. REMOVE EXISTING EXHAUST DUCTWORK, GRILLES, HANGERS, FAN ON ROOF AND ACCESSORIES. PROVIDE AN INSULATED 18 GAUGE SHEETMETAL ROOF CAP ON THE ROOF CURB, CURB TO REMAIN.
12. HEATING THERMOSTAT AND CONTROL WIRING TO BE REMOVED.



PHASING KEY PLAN

PHASING NOTES:

ARCHITECTURAL PHASE 1: DEMO BRICK VENEER.

ARCHITECTURAL PHASE 2: DEMO REMAINING EXTERIOR WALL; CONSTRUCT TEMPORARY PARTITION.

ARCHITECTURAL PHASE 3: DEMO TEMPORARY PARTITION; DEMO INTERIOR OFFICE AREAS; MAINTAIN LIGHTING FOR OCCUPANT PATHS THROUGH CONTRACTOR WORK SPACE.

ARCHITECTURAL PHASE 4: N/A.

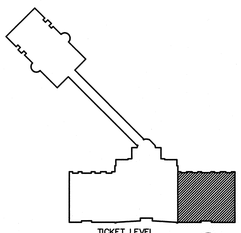
ARCHITECTURAL PHASE 5 BHS PHASE 2: DEMO CONVEYORS.

ARCHITECTURAL PHASE 6 BHS PHASE 3: DEMO COUNTERS; DEMO CONVEYOR; DEMO COLUMN MTD DEVICES. MAINTAIN LIGHTING FOR OCCUPANT PATHS THROUGH CONTRACTOR WORK SPACE.

ARCHITECTURAL PHASE 7: DEMO COUNTERS; DEMO COLUMN MTD DEVICES. MAINTAIN LIGHTING FOR OCCUPANT PATHS THROUGH CONTRACTOR WORK SPACE.

SEE ARCHITECTURAL PLANS A-131 THROUGH A-137 FOR ADDITIONAL PHASING INFORMATION.

SEE BAGGAGE HANDLING SYSTEM PLANS B-701 THROUGH B-708 FOR ADDITIONAL PHASING INFORMATION.



TICKET LEVEL KEY PLAN 12 NO SCALE

ILM

TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073
JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17655 ENGINEER KENNETH L. LYNCH

ARCHITECT
THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

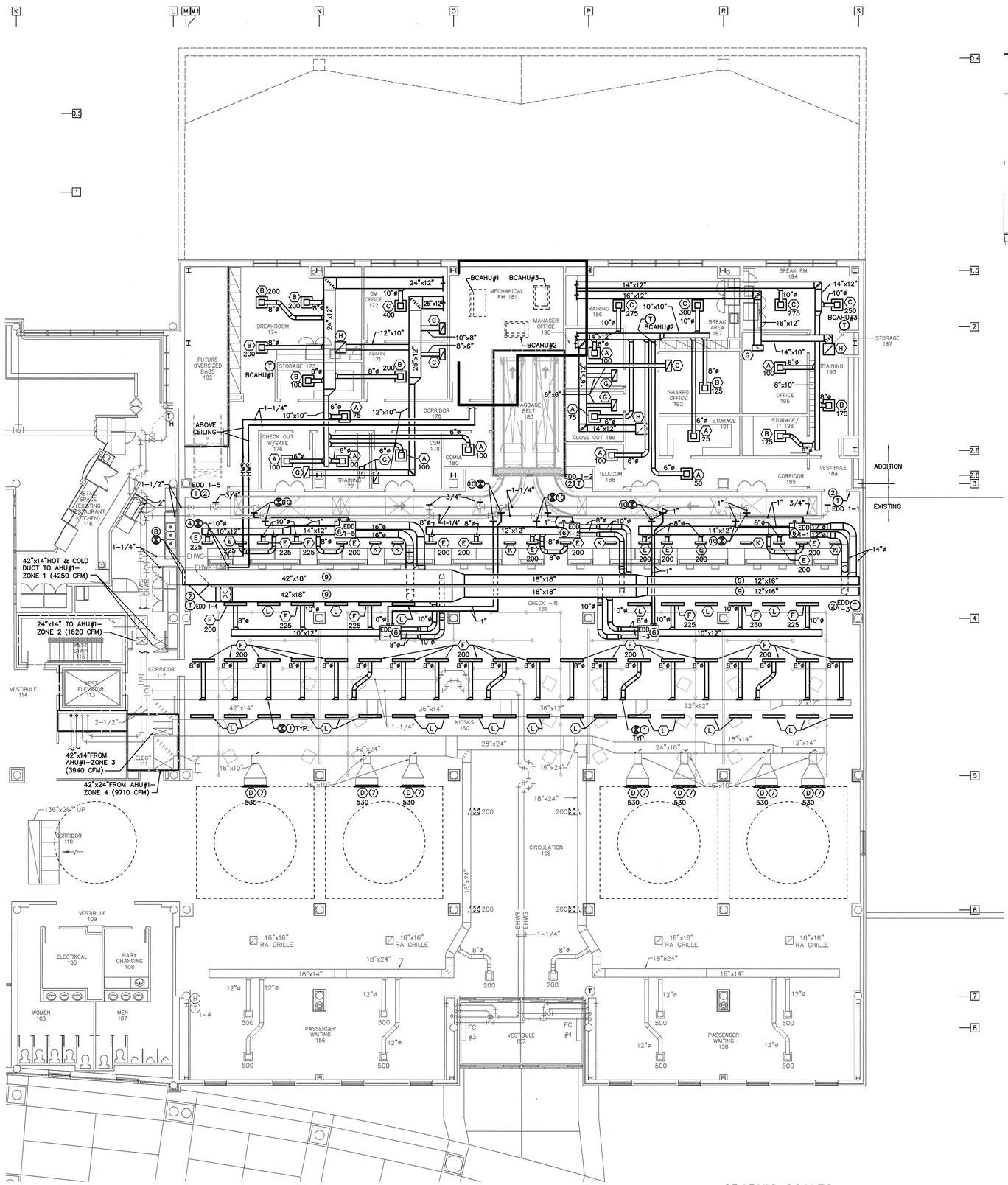
REVISIONS

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

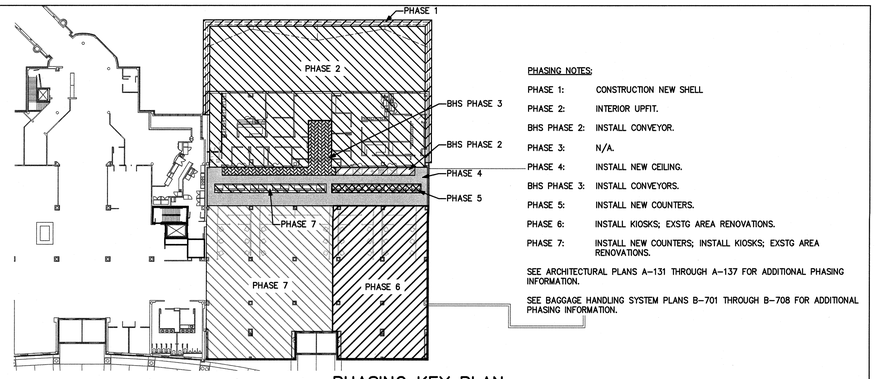
ENLARGED TICKET LEVEL FLOOR PLAN MECHANICAL DEMOLITION

SHEET NUMBER:

M-125



1 M–126 ENLARGED TICKET LEVEL FLOOR PLAN – MECHANICAL
SCALE: 1/8" = 1'–0"



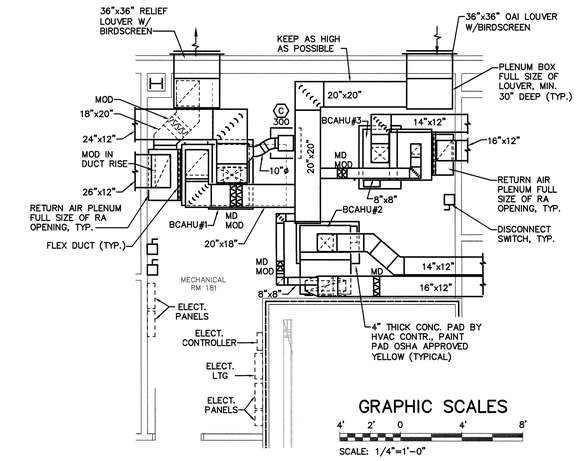
PHASING NOTES:

PHASE 1:	CONSTRUCTION NEW SHELL
PHASE 2:	INTERIOR UPFIT.
BHS PHASE 2:	INSTALL CONVEYOR.
PHASE 3:	N/A.
PHASE 4:	INSTALL NEW CEILING.
BHS PHASE 3:	INSTALL CONVEYORS.
PHASE 5:	INSTALL NEW COUNTERS.
PHASE 6:	INSTALL KIOSKS; EXSTG AREA RENOVATIONS.
PHASE 7:	INSTALL NEW COUNTERS; INSTALL KIOSKS; EXSTG AREA RENOVATIONS.

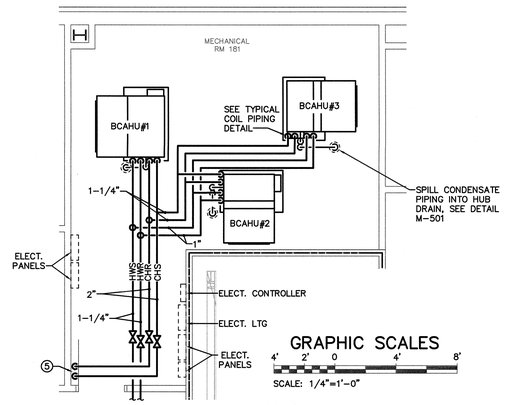
SEE ARCHITECTURAL PLANS A–131 THROUGH A–137 FOR ADDITIONAL PHASING INFORMATION.

SEE BAGGAGE HANDLING SYSTEM PLANS B–701 THROUGH B–708 FOR ADDITIONAL PHASING INFORMATION.

PHASING KEY PLAN



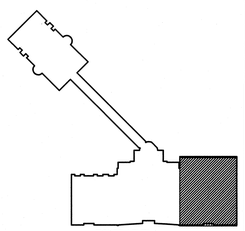
2 M–126 MECH. ROOM 181 – DUCTWORK PLAN
SCALE: 1/4" = 1'–0"



3 M–126 MECH. ROOM 181 – PIPING PLAN
SCALE: 1/4" = 1'–0"

KEYED NOTES: (THIS SHEET ONLY)

1. CONNECT NEW RUNOUT TO EXISTING DUCTWORK AT POINT INDICATED. PROVIDE TRANSITION AS NECESSARY TO CONNECT TO EXISTING DUCTWORK/RUNOUT.
2. NEW LOCATION OF EXISTING THERMOSTAT. VERIFY FUNCTIONALITY AND REPLACE AS NECESSARY. EXTEND CONTROL WIRING TO NEW LOCATION AS SPECIFIED.
3. RETAB BOXES TO EXISTING CFM'S, SEE SCHEDULE M–601.
4. CONNECT NEW 1–1/4" HOT WATER SUPPLY AND RETURN PIPING TO EXISTING 1–1/4" PIPING ABOVE CEILING AND EXTEND TO NEW MECHANICAL ROOM.
5. NEW 2" CHS AND 2" CHR UP FROM BELOW, PROVIDE ISOLATION VALVES 48" ABOVE FINISHED FLOOR. SEE 1/M–116 FOR CONTINUATION.
6. NEW LOCATION OF EXISTING DUAL DUCT VAV TERMINAL BOX. EXTEND HOT WATER PIPING TO NEW LOCATION.
7. NEW SIDEWALL LINEAR BAR DIFFUSER. MECHANICAL CONTRACTOR SHALL FIELD VERIFY EXACT SIZE AND LOCATION TO MATCH EXISTING OPENINGS.
8. CONNECT NEW HOT DUCT AND COLD DUCT (STACKED) TO EXISTING. FIELD VERIFY EXACT SIZE AND LOCATION. PROVIDE TRANSITION AS NECESSARY.
9. KEEP DUCT TIGHT TO STRUCTURE.
10. CONNECT NEW 1" HWS AND 1" HWR PIPING TO EXISTING AT POINT INDICATED. FIELD VERIFY EXISTING CONNECTION LOCATION. PROVIDE TRANSITION AS NECESSARY FOR NEW PIPING RUNOUTS.



TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452–4210
FAX (910) 452–4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C–1073
JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17658 ENGINEER KENNETH W. YATES

ARCHITECT
THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

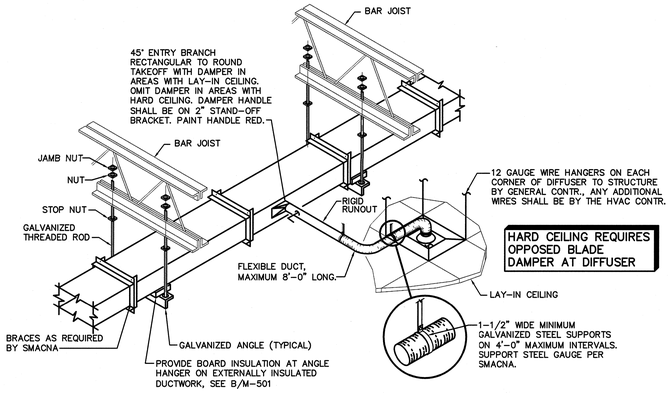
REVISIONS

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

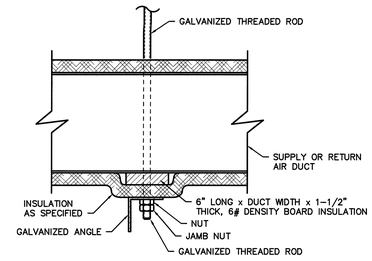
ENLARGED TICKET LEVEL FLOOR PLAN MECHANICAL

SHEET NUMBER:

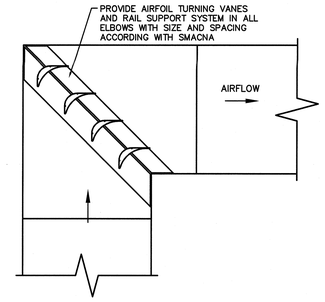
M-126



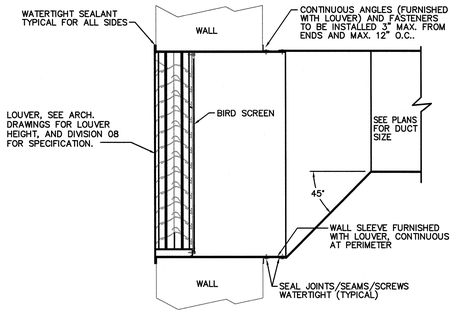
A M-501 TYPICAL SUPPLY DUCT DETAIL
SCALE: NONE



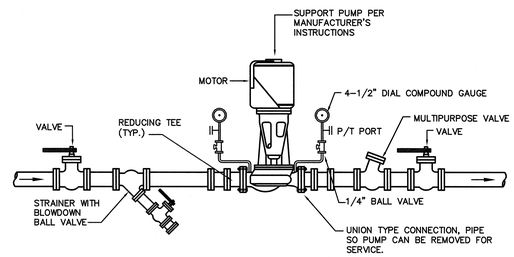
B M-501 TYPICAL DUCT HANGER DETAIL
SCALE: NONE



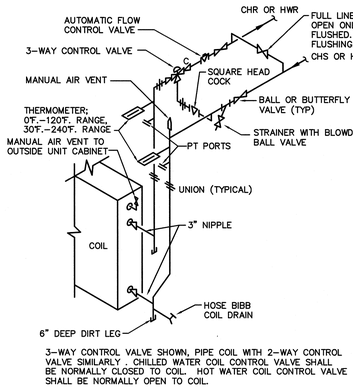
C M-501 TYPICAL DUCT ELBOW WITH TURNING VANES
NO SCALE



D M-501 TYPICAL WALL LOUVER DETAIL
NO SCALE

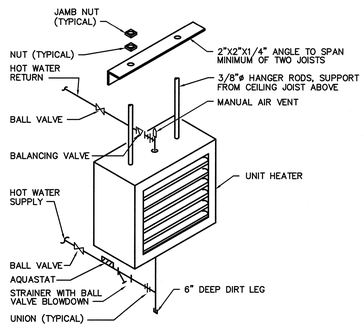


E M-501 INLINE PUMP DETAIL
NO SCALE



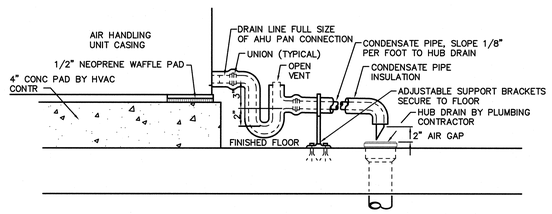
3-WAY CONTROL VALVE SHOWN, PIPE COIL WITH 2-WAY CONTROL VALVE SIMILARLY . CHILLED WATER COIL CONTROL VALVE SHALL BE NORMALLY CLOSED TO COIL. HOT WATER COIL CONTROL VALVE SHALL BE NORMALLY OPEN TO COIL.

F M-501 TYPICAL COIL PIPING DETAIL
NO SCALE



HORIZONTAL HOT WATER UNIT HEATERS PIPED SIMILAR

G M-501 UNIT HEATER PIPING DETAIL
NO SCALE



H M-501 BLOWER COIL UNIT SUPPORT AND CONDENSATE PIPING DETAIL
NO SCALE

TERMINAL IMPROVEMENTS CONTRACT 2
WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073
JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17655 ENGINEER KENNETH L. NG

ARCHITECT
THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

REVISIONS

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

MECHANICAL DETAILS

SHEET NUMBER:
M-501

POWER VENTILATOR SCHEDULE

SYMBOL	CFM	ESP	RPM	TIP SPEED	ELECTRICAL		TYPE	DRIVE	CONTROL	ROOF OPENING	REMARKS
					HP	VOLTAGE					
EF-22	8000	0.50"	555	4055	1-1/2	460V-3ø	INLINE CENTRIFUGAL - EXHAUST	BELT	DDC	-	OUTBOUND BAGGAGE A14 (1)
EF-23	8000	0.50"	555	4055	1-1/2	460V-3ø	INLINE CENTRIFUGAL - SUPPLY	BELT	DDC	-	OUTBOUND BAGGAGE A14 (1)

(1) INTERLOCKED FAN CONTROLS WITH MOTORIZED DAMPER(S), SEE PLANS.

BLOWER COIL AIR HANDLING UNIT SCHEDULE

SYMBOL	AIRFLOW		EXT. S.P. "H2O (1)	ELECTRICAL		COOLING COIL (3)(4)						REHEAT POSITION COIL (2)				CONTROL VALVES	BASIS OF DESIGN	REMARKS
	SUPPLY AIR	OUTSIDE AIR		SUPPLY FAN HP	VOLTAGE & PHASE	EDB °F	EWB °F	LDB °F	LWB °F	GTH-MBH	GPM	PIPE SIZE	EAT °F	GTH-MBH	GPM	PIPE SIZE			
BCAHU#1	2075	210	0.60	1.0	460V-3ø	76.8	64.6	54.9	54.4	65.0	13.0	1-1/4"	65.3	60.0	6.0	1"	3-WAY	TRANE BCVD072	AIRLINE OFFICES ATO
BCAHU#2	1050	120	0.50	1.0	460V-3ø	77.0	64.8	54.5	53.9	35.0	7.0	1"	64.7	30.0	3.0	3/4"	3-WAY	TRANE BCVD036	AIRLINE OFFICES ATO
BCAHU#3	925	100	0.60	1.0	460V-3ø	76.9	64.7	54.5	54.0	30.0	6.0	1"	65.0	27.5	2.75	3/4"	3-WAY	TRANE BCVD036	AIRLINE OFFICES ATO

(1) EXT. S.P. INCLUDES DUCTWORK & GRILLES. COMPONENTS INTERNAL TO THE AHU SUCH AS FILTERS, COILS AND DAMPERS ARE NOT INCLUDED IN THIS FIGURE.

(2) BASED ON 180°F EWT & 20°F DROP. MAXIMUM WATER PRESSURE DROP OF 10 FT FOR COIL PLUS CONTROL VALVE.

(3) BASED ON 45°F EWT & 10°F RISE. MAXIMUM WATER PRESURE DROP OF 15 FT. FOR COIL PLUS CONTROL VALVE.

(4) BASED ON MAXIMUM COIL FACE VELOCITY OF 500 FPM AND MAXIMUM AIRSIDE PRESSURE DROP OF 2.0" WATER COLUMN. COIL SHALL HAVE A MINIMUM OF 4 ROWS. UNIT'S FILTERS SHALL HAVE A MAXIMUM FACE VELOCITY OF 300 FPM.

PUMP SCHEDULE

SYMBOL	GPM	HEAD IN FEET	RPM	MINIMUM % EFFICIENCY	ELECTRICAL		TYPE	MIN. SIZE		LOCATION	REMARKS
					HP	VOLTAGE		SUCTION	DISCHARGE		
P-13	30	45	1750	43	1-1/2	460V-3ø	VERTICAL INLINE	2"	2"	MECH. A4	CHILLED WATER SYSTEM PUMP - FOR BCAHU'S

DUAL DUCT VAV TERMINAL BOX SCHEDULE (EXISTING FOR TAB PURPOSES)

TERMINAL NUMBER	BOX CFM			BOX INLET SIZE (1)	BOX RUNOUT SIZE (1)	HEATING COIL (2)			CONTROL VALVES	REMARKS
	COOLING DAMPER MAXIMUM	COOLING & HEATING MINIMUM	HEATING (BYPASS) MAXIMUM			HEATING CAPACITY MBH	GPM	SUPPLY & RETURN PIPE SIZE		
EDD 1-1	1000	200	750	12"	(4)	30.0	3.0	(4)	(4)	ACTIVE CHECK-IN ZONE
EDD 1-2	800	150	600	8"	(4)	25.0	2.5	(4)	(4)	ACTIVE CHECK-IN ZONE
EDD 1-3	700	125	525	8"	(4)	20.0	2.0	(4)	(4)	ACTIVE CHECK-IN ZONE
EDD 1-4	650	125	500	8"	(4)	20.0	2.0	(4)	(4)	ACTIVE CHECK-IN ZONE - RELOCATE BOX (3)
EDD 1-5	1100	200	825	16"	(4)	32.5	3.25	(4)	(4)	ACTIVE CHECK-IN ZONE

(1) INLET SIZE IS ROOM TERMINAL BOX INLET SIZE. RUNOUT SIZE ARE EXISTING.

(2) COIL BASED ON 180°F EWT AND 20°F WATER TEMPERATURE DROP. WATER PRESSURE DROP SHALL BE 10 FT. MAXIMUM FOR THE COIL PLUS CONTROL VALVE.

(3) RELOCATE EXISTING BOX AND EXTEND PIPING TO NEW BOX LOCATION. PROVIDE NEW SUPPLY RUNOUT TO BOX AS SHOWN ON DRAWINGS. FIELD VERIFY EXACT PIPE RUNOUT SIZES AND DUCT RUNOUT SIZES.

(4) EXISTING.

REGISTER, GRILLE & DIFFUSER SCHEDULE

SYMBOL	C.F.M.	NECK SIZE	TYPE	RUNOUT SIZE	REMARKS
⟨A⟩	50-100	6"X6"	2'X2' LAY-IN CEILING S.A. DIFFUSER	6"ø	
⟨B⟩	125-225	9"X9"	2'X2' LAY-IN CEILING S.A. DIFFUSER	8"ø	
⟨C⟩	250-400	12"X12"	2'X2' LAY-IN CEILING S.A. DIFFUSER	10"ø	
⟨D⟩	125 CFM/LF MAX	PLENUM BOX	6-1/2"X48" SIDEWALL LINEAR BAR DIFFUSER	SEE DWGS.	WIDE SPACING - 15° DEFLECTION CORE
⟨E⟩	125 CFM/LF MAX	PLENUM BOX	2' LAY-IN SA SLOT DIFFUSER (2)	SEE DWGS.	3 SLOT W/1" WIDE SLOTS (6" WIDE MAX.) (1)
⟨F⟩	100 CFM/LF MAX	PLENUM BOX	4' LAY-IN SA SLOT DIFFUSER (2)	SEE DWGS.	3 SLOT W/1" WIDE SLOTS (6" WIDE MAX.) (1)
⟨G⟩	0-500	10"X22"	1'X2' LAY-IN R.A. REGISTER	-	
⟨H⟩	525-1000	22"X22"	2'X2' LAY-IN R.A. REGISTER	-	
⟨J⟩	0-600 PER DIFFUSER	NOZZLE PANEL	AIR NOZZLE CURVED FRAME PANEL (4 DIFFUSERS)	-	35° DEFLECTION - 360° ROTATION (1)
⟨K⟩	125 CFM/LF MAX	PLENUM BOX	2' LAY-IN RA SLOT GRILLE	SEE DWGS.	3 SLOT W/1" WIDE SLOTS (6" WIDE MAX.)
⟨L⟩	100 CFM/LF MAX	PLENUM BOX	4' LAY-IN RA SLOT GRILLE	SEE DWGS.	3 SLOT W/1" WIDE SLOTS (6" WIDE MAX.)

(1) WITH AIR PATTERN CONTROLLERS.

(2) WITH CABLE OPERATING INLET DAMPER.

HOT WATER UNIT HEATER SCHEDULE

SYMBOL	CFM	MBH	GPM (1)	RUNOUT SIZE	ELECTRICAL		DISCHARGE	REMARKS
					HP	VOLTAGE		
UH#21	1760	50.0	5.0	1"	1/6	115V-1ø	VERTICAL	OUTBOUND BAGGAGE A14 - EXPANSION
UH#22	1760	50.0	5.0	1"	1/6	115V-1ø	VERTICAL	OUTBOUND BAGGAGE A14 - EXPANSION
UH#23	3200	100.0	10.0	1-1/4"	1/4	115V-1ø	HORIZONTAL	OUTBOUND BAGGAGE A14 - EXPANSION
UH#24	3200	100.0	10.0	1-1/4"	1/4	115V-1ø	HORIZONTAL	OUTBOUND BAGGAGE A14 - EXPANSION
UH#25	3200	100.0	10.0	1-1/4"	1/4	115V-1ø	HORIZONTAL	OUTBOUND BAGGAGE A14 - EXPANSION
UH#26	3200	100.0	10.0	1-1/4"	1/4	115V-1ø	HORIZONTAL	OUTBOUND BAGGAGE A14 - EXPANSION

(1) BASED ON 180°F E.W.T. & 20°F DROP.

PIPE INSULATION THICKNESS SCHEDULE

PIPE SIZE	INSULATION THICKNESS		REMARKS
	CHILLED WATER	HOT WATER	
3/4"	1-1/2"	1"	
1"	1-1/2"	1-1/2"	
1-1/4"	1-1/2"	1-1/2"	
1-1/2"	1-1/2"	1-1/2"	
2"	1-1/2"	2"	
2-1/2"	2"	2"	

ILM

TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073
JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17858 ENGINEER KENNETH L. LYNCH

ARCHITECT
THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER
TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT
LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER
STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER
CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS
BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT
HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

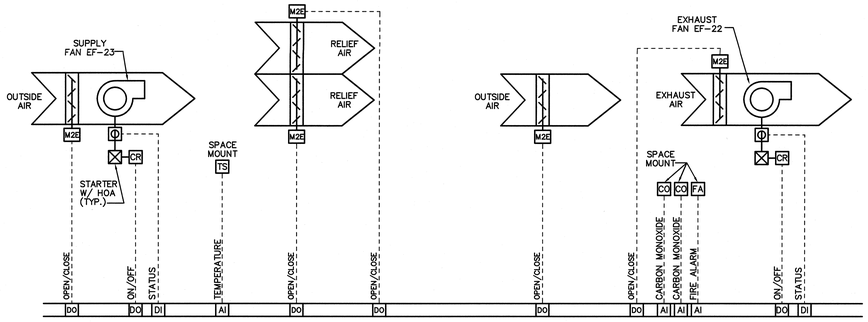
REVISIONS

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

MECHANICAL SCHEDULES

SHEET NUMBER:

M-601

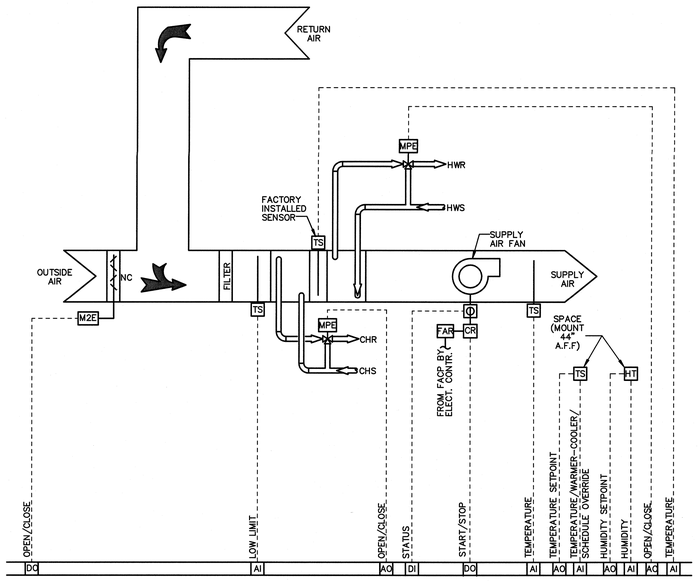


BAGGAGE AREA VENTILATION SYSTEMS

SEQUENCE OF OPERATION

BAGGAGE AREA VENTILATION SYSTEM

1. FOR OCCUPIED MODE OPERATIONS, SPACE TEMPERATURE SENSOR SHALL INPUT A SIGNAL TO THE DDC SYSTEM. THE DDC SYSTEM SHALL COMPARE THE SIGNAL TO THE COOLING SETPOINT (ADJUSTABLE). ON A RISE IN SPACE TEMPERATURE ABOVE SETPOINT, SUPPLY FAN INTAKE DAMPER AND RELIEF DAMPERS SHALL OPEN. FOLLOWING A PRESET TIME DELAY FOR DAMPERS TO FULLY OPEN, THE VENTILATION SUPPLY FAN EF-23 SHALL BE ENERGIZED TO OPERATE. WHEN THE SETPOINT IS SATISFIED, THE FAN SHALL BE DE-ENERGIZED. FOLLOWING FAN SHUTDOWN, AFTER A PRESET TIME DELAY, THE INTAKE DAMPER AND RELIEF DAMPERS SHALL CLOSE.
2. INTERLOCK TO BUILDING FIRE ALARM SYSTEM AND CARBON MONOXIDE (CO) GAS DETECTION SYSTEM SHALL OVERRIDE TEMPERATURE CONTROLS, OPEN ALL INTAKE AND RELIEF DAMPERS AND ENERGIZE ALL SUPPLY AND EXHAUST FANS EF-22 AND EF-23 UPON DETECTION OF SMOKE OR CARBON MONOXIDE (CO) GAS IN THE AREA.
3. FOR UNOCCUPIED MODE OPERATION, THE DDC SYSTEM SHALL OPERATE THE VENTILATION AS FOR OCCUPIED MODE USING A SET BACK TEMPERATURE SETPOINT.
4. CURRENT SENSOR SHALL INDICATE FAN OPERATING STATUS TO DDC SYSTEMS.



BLOWER COIL AIR HANDLING UNIT

SEQUENCE OF OPERATION

AIR-HANDLING UNIT (AHU) WITH SPACE TEMPERATURE AND HIGH LIMIT HUMIDITY CONTROL. CONSTANT AIR VOLUME (CAV) SYSTEM, NO ECONOMIZER CYCLE.

DESCRIPTION: CONSTANT AIR VOLUME SYSTEM UTILIZING CHILLED WATER FOR PRIMARY COOLING AND HOT WATER FOR PRIMARY HEATING, SERVING ONE OR MORE SPACES AS A SINGLE CONTROL ZONE.

UNIT UTILIZES A CONSTANT SPEED SUPPLY AIR FAN.

"ON" PERIOD: TEMPERATURE: 70-75°F COMFORT ZONE (ADJ.)
HUMIDITY: 60% RH HIGH LIMIT (ADJ.)

"OFF" PERIOD: MAX. TEMPERATURE: 80°F HIGH LIMIT (ADJ.)
MIN. TEMPERATURE: 65°F LOW LIMIT (ADJ.)
MAX. HUMIDITY: 65% RH HIGH LIMIT (ADJ.)

SPACE TEMPERATURE SETPOINTS MAY BE ADJUSTABLE BY SPACE OCCUPANTS.

SPACE HUMIDITY SETPOINTS SHALL NOT BE ADJUSTABLE BY SPACE OCCUPANTS.

MONITOR EACH SPACE TEMPERATURE AND HUMIDITY AS INDICATED.

UNIT START/STOP CONTROL: START/STOP UNIT BASED ON (1) USER-DEFINED "ON/OFF" SCHEDULE, (2) OPTIMAL START TIME COMPUTATION, (3) OPERATOR COMMAND, OR (4) ACTIVATION OF SCHEDULE OVERRIDE PUSHBUTTON ON SPACE TEMPERATURE SENSOR PROGRAMMED AMOUNT OF TIME.

EMERGENCY STOP INTERLOCKS SHALL DE-ENERGIZE UNIT(S):

SIGNAL FROM FIRE ALARM SYSTEM

FREEZE PROTECTION BY MONITORING LOW LIMIT TEMPERATURE SENSOR IN AHU'S MIXED AIR SECTION.

DURING "ON" PERIODS, COMMAND FANS "ON" UNLESS STOPPED BY THE DDC SYSTEM OR BY AN EMERGENCY STOP INTERLOCK. DURING "OFF" PERIODS, COMMAND FANS "OFF" UNLESS THERE IS A NEED FOR HEATING, COOLING, OR DEHUMIDIFICATION INDICATED BY SPACE TEMPERATURE OR HUMIDITY EXCEEDING "OFF" PERIOD SETPOINT.

CONSTANT AIR VOLUME UNIT CONTROL:

VENTILATION AIR CONTROL: OUTDOOR AIR DAMPER SHALL OPEN AND CLOSE BASED ON USER-DEFINED "OCCUPIED/ UNOCCUPIED SCHEDULE".

DURING "OCCUPIED" PERIODS, THE UNIT FAN IS ENERGIZED, COMMAND OUTDOOR AIR DAMPER 100% OPEN.

DURING "UNOCCUPIED" PERIODS, THE OUTDOOR AIR DAMPER SHALL BE COMMANDED CLOSED.

MONITOR OUTDOOR AIR DAMPER POSITION.

SINGLE SENSOR SPACE TEMPERATURE CONTROL: DURING "ON" PERIODS:

ON A RISE IN SPACE TEMPERATURE TO ABOVE THE MAXIMUM COMFORT ZONE TEMPERATURE SETPOINT, MODULATE THE CHILLED WATER VALVE TO MAINTAIN SPACE TEMPERATURE AT THE MAXIMUM COMFORT ZONE TEMPERATURE SETPOINT.

ON A FALL IN SPACE TEMPERATURE TO BELOW THE MINIMUM COMFORT ZONE TEMPERATURE SETPOINT, MODULATE THE HOT WATER VALVE TO MAINTAIN SPACE TEMPERATURE AT THE MINIMUM COMFORT ZONE TEMPERATURE SETPOINT.

WHEN THE SPACE TEMPERATURE IS WITHIN THE LIMITS OF THE MINIMUM AND MAXIMUM ZONE TEMPERATURE SETPOINTS, BOTH CONTROL VALVES SHALL BE CLOSED

HIGH LIMIT HUMIDITY CONTROL: DURING "ON" PERIODS, ON A RISE IN SPACE HUMIDITY TO ABOVE HIGH LIMIT HUMIDITY SETPOINT, MODULATE THE CHILLED WATER VALVE OPEN TO MAINTAIN 55°F COOLING COIL LEAVING AIR TEMPERATURE AND MODULATE THE HOT WATER VALVE TO MAINTAIN SPACE TEMPERATURE AT THE MAXIMUM COMFORT ZONE TEMPERATURE.

"OFF" PERIOD OPERATION: DURING "OFF" PERIODS, COMMAND ALL FANS "OFF;" MODULATE CONTROL VALVES CLOSED.

IF A NEED FOR HEATING, COOLING, OR DEHUMIDIFICATION IS DICTATED BY SPACE CONDITION(S):

COMMAND SUPPLY AIR FAN "ON" AS FOLLOWS:

IF SPACE TEMPERATURE EXCEEDS THE HIGH LIMIT TEMPERATURE SETPOINT, COMMAND THE CHILLED WATER SYSTEM "ON" AND MODULATE COOLING COIL CHILLED WATER VALVE 100% OPEN.

IF SPACE TEMPERATURE FALLS BELOW THE LOW LIMIT TEMPERATURE SETPOINT, COMMAND THE HOT WATER SYSTEM "ON" AND MODULATE HOT WATER CONTROL VALVE 100% OPEN.

IF SPACE HUMIDITY EXCEEDS THE HIGH LIMIT TEMPERATURE SETPOINT, COMMAND BOTH CHILLED WATER SYSTEM AND HOT WATER SYSTEM "ON". MODULATE COOLING COIL CHILLED WATER CONTROL VALVE OPEN TO MAINTAIN 55°F COOLING COIL LEAVING AIR TEMPERATURE. MODULATE UNIT HOT WATER CONTROL VALVE TO MAINTAIN THE LOWEST SPACE TEMPERATURE AT LOW LIMIT SETPOINT CONDITION.

ONCE SPACE TEMPERATURE AND HUMIDITY CONDITIONS ARE WITHIN 5 % OF SETPOINT LIMITS FOR A PERIOD OF 15 MINUTES, COMMAND UNIT FANS "OFF", AND COMMAND CHILLED WATER SYSTEM AND/OR HOT WATER SYSTEM "OFF", AS APPLICABLE.

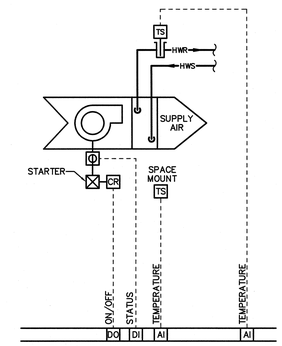
TREND LOG AND HISTORICAL DATA: LOG AND ARCHIVE THE FOLLOWING EVERY 15 MINUTES:

SPACE TEMPERATURE

SPACE HUMIDITY

UNIT FAN'S STATUS

OUTDOOR AIR DAMPER POSITION

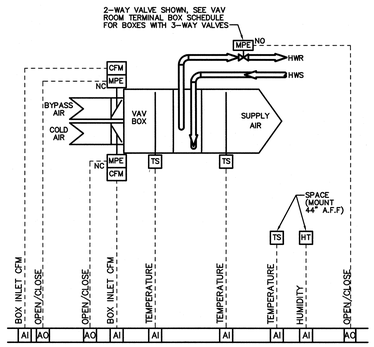


DOOR HEATERS & UNIT HEATERS

SEQUENCE OF OPERATION

BAGGAGE AREA DOOR HEATERS AND UNIT HEATERS

1. FOR OCCUPIED MODE OPERATION, SPACE TEMPERATURE SENSOR SHALL INPUT A SIGNAL TO THE DDC SYSTEM. THE DDC SYSTEM SHALL COMPARE THE SIGNAL TO THE HEATING SETPOINT (ADJUSTABLE). ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT THE HOT WATER SYSTEM SHALL BE ENERGIZED AND, WHEN HOT WATER IS AVAILABLE AT THE HEATERS, THE HEATER FANS SHALL BE ENERGIZED INDIVIDUALLY TO OPERATE. WHEN SETPOINT IS SATISFIED, FANS SHALL BE DE-ENERGIZED.
2. FOR UNOCCUPIED MODE OPERATION, THE DDC SYSTEM SHALL OPERATE THE HEATERS AS FOR OCCUPIED MODE USING A SET BACK TEMPERATURE SETPOINT.
3. CURRENT SENSOR SHALL INDICATE INDIVIDUAL FAN OPERATING STATUS TO DDC SYSTEM.

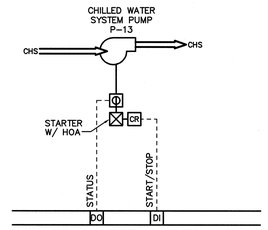


DUAL DUCT VAV TERMINAL BOXES

SEQUENCE OF OPERATION

DUAL DUCT VAV TERMINAL BOXES

1. INLET AIRFLOW CONTROL REGULATING VALVES SHALL BE INDEPENDENTLY CONTROLLED BY INDIVIDUAL ACTUATORS TO MAINTAIN CONSTANT SUPPLY AIRFLOW TO THE SPACE. ON A RISE IN TEMPERATURE ABOVE SETPOINT, THE COLD AIR VALVE SHALL MODULATE OPEN AND THE BYPASS AIR VALVE SHALL MODULATE CLOSED. ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT, THE COLD AIR VALVE SHALL MODULATE CLOSED AND THE BYPASS AIR VALVE SHALL MODULATE OPEN. WHEN THE COLD AIR VALVE IS 100% CLOSED AND BYPASS AIR VALVE IS 100% OPEN, AND ON A FURTHER FALL IN SPACE TEMPERATURE BELOW SETPOINT, THEN THE MIXING BOX HOT WATER CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT.
2. FOR HUMIDITY CONTROL, ON A RISE IN SPACE HUMIDITY ABOVE SETPOINT, COLD AIR VALVE SHALL GO TO FULL AIR FLOW POSITION, BYPASS AIR VALVE SHALL GO TO 100% CLOSED POSITION, AND MIXING BOX HOT WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE COOLING SETPOINT. IF SPACE TEMPERATURE SETPOINT CANNOT BE MAINTAINED WITH HOT WATER CONTROL VALVE FULLY OPEN, THEN COLD AIR VALVE SHALL MODULATE CLOSED TO REDUCE BOX AIRFLOW. WHEN HUMIDITY SETPOINT IS SATISFIED, HUMIDITY CONTROL SEQUENCE SHALL BE DISABLED AND MIXING BOXES SHALL REVERT TO NORMAL SPACE TEMPERATURE CONTROL SEQUENCE.
3. DUAL DUCT BOX MIXED AIR TEMPERATURE SENSOR AND HOT WATER COIL DISCHARGE AIR TEMPERATURE SENSOR SHALL REPORT TEMPERATURES TO THE DDC SYSTEM.



CHILLED WATER SYSTEM PUMP

SEQUENCE OF OPERATION

DESCRIPTION: CONSTANT VOLUME PUMP TO PROVIDE CHILLED WATER TO THE NEW BLOWER COIL AIR HANDLING UNITS.

SYSTEM START/STOP CONTROL: START/STOP PUMP BASED ON (1) USER-DEFINED "ON/OFF" SCHEDULE, (2) DEMAND FOR COOLING BY BCAHU'S, OR (3) OPERATOR COMMEND. START SEQUENCE SHALL BE:

COMMAND PUMP "ON".

CURRENT SENSOR SHALL INDICATE PUMP OPERATING STATUS TO DDC SYSTEM.

CONTROL SYMBOL LEGEND

TS	TEMPERATURE SENSOR
HT	HUMIDITY SENSOR
VFD	VARIABLE FREQUENCY DRIVE
CR	CONTROL RELAY
M2E	MOTOR OPERATED TWO POSITION ELECTRIC
MPE	MOTOR OPERATED PROPORTIONAL ELECTRIC
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
FAR	FIRE ALARM RELAY
CLS	CONDENSATE LEVEL SENSOR
SA	SUPPLY AIR
RA	RETURN AIR
OA	OUTSIDE AIR
	CONTROL VALVE
	CURRENT SENSOR
	STARTER

ILM

TERMINAL IMPROVEMENTS CONTRACT 2

WILMINGTON INTERNATIONAL AIRPORT
1740 AIRPORT BOULEVARD, SUITE 12
WILMINGTON, NC 28405

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA
(910) 452-4210
FAX (910) 452-4211
OFFICE@CHEATHAMPA.COM
WWW.CHEATHAMPA.COM
NC LICENSE # C-1073

JOB # 17.86

NORTH CAROLINA PROFESSIONAL SEAL 17655 ENGINEER KENNETH L. LYNCH

ARCHITECT

THE WILSON GROUP
P O BOX 5510
CHARLOTTE, NC 28299
(704) 331-9747

PROJECT MANAGER & CIVIL ENGINEER

TALBERT & BRIGHT
4810 SHELLEY DRIVE
WILMINGTON, NC 28405
(910) 763-5350 FIRM NO.: C-0713

CONSULTING ARCHITECT

LS3P
101 NORTH THIRD STREET, SUITE 500
WILMINGTON, NC 28401
(910) 790-9901

STRUCTURAL ENGINEER

STEWART
101 N. TRYON ST., SUITE 1400
CHARLOTTE, NC 28202
(704) 909-3523 FIRM NO.: C-1051

P, M & E ENGINEER

CHEATHAM & ASSOC.
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
(910) 452-4210

BAGGAGE HANDLING CONSULTANTS

BNP ASSOCIATES
1981 POST ROAD
FAIRFIELD, CT 06824
(203) 792-3000

SPECIALTY LIGHTING CONSULTANT

HARTRANFT LIGHTING DESIGN
401 HAWTHORNE LANE, SUITE 110-269
CHARLOTTE, NC 28204
(240) 731-1058

REVISIONS

. .
. .
. .
. .
. .

DATE: NOVEMBER 30, 2018
PROJECT NO.: 9202-000
SHEET TITLE:

MECHANICAL CONTROL DIAGRAMS

SHEET NUMBER:

M-701