ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AFF	- ABOVE FINISHED FLOOR
AHU	- AIR HANDLING UNIT
BHP	- BRAKE HORSE POWER
BTU	- BRITISH THERMAL UNIT
CFM	- CUBIC FEET PER MINUTE
CV	- CONSTANT VOLUME
CU	- CONDENSING UNIT
DB	- DRY BULB TEMPERATURE (°F)
DDC	- DIRECT DIGITAL CONTROLS
DOAS	- DEDICATED OUTSIDE AIR SYSTEM
DN	- DOWN
EAT	- ENTERING AIR TEMPERATURE
EF	- EXHAUST FAN
ESP	- EXTERNAL STATIC PRESSURE
EWT	- ENTERING WATER TEMPERATURE
FCU	- FAN COIL UNIT
FD	- FIRE DAMPER
FLA	- FULL LOAD AMPS
FPI	- FINS PER INCH
FPM	- FEET PER MINUTE
GPM	- GALLONS PER MINUTE
IV	- INTAKE VENTILATOR
KW	- KILOWATT
LAT	- LEAVING AIR TEMPERATURE
LRA	- LOCKED ROTOR AMPS
LWT	- LEAVING WATER TEMPERATURE
MBH	- THOUSAND BTUs PER HOUR
MCA	- MINIMUM CIRCUIT AMPS
MOCP	- MAXIMUM OVER CURRENT PROTECTION
NC	- NORMALLY CLOSED
NO	- NORMALLY OPENED
NTS	- NOT TO SCALE
OA	- OUTSIDE AIR
PSI	- POUNDS PER SQUARE INCH
PSIG	- PSI GAUGE
PVC	- POLYVINYL CHLORIDE PIPE
RA	- RETURN AIR
RH	- RELATIVE HUMIDITY
RHC	- REHEAT COIL
RLA	- RUNNING LOAD AMPS
RPM	- REVOLUTIONS PER MINUTE
RS/RL	- REFRIGERANT SUCTION & LIQUID LINES
RTU	- ROOFTOP AIR HANDLING UNIT
SA	- SUPPLY AIR
SF	- SUPPLY FAN
SP	- STATIC PRESSURE
TSP	- TOTAL STATIC PRESSURE
VAV	- VARIABLE AIR VOLUME
VRF	- VARIABLE REFRIGERANT FLOW
VFD	- VARIABLE FREQUENCY DRIVE
WB	- WET BULB TEMPERATURE (°F)

SYMBOL	DESCRIPTION
20/12	- RECTANGLE DUCT SIZE (WIDTH x HEIGHT)
20"Ø	- ROUND DUCT SIZE (DIAMETER)
20/14	- OVAL DUCT SIZE (WIDTH x HEIGHT)
1	- KEYED NOTE
	- THERMOSTAT / TEMPERATURE SENSOR
	- THERMOSTAT WITH LOCKING COVER
	- HUMIDISTAT / HUMIDITY SENSOR
M	- MOTORIZED ACTUATOR
	- DEMOLISH TO POINT INDICATED
	- CONNECT TO EXISTING POINT INDICATED
	- REVISION REFERENCE
NECK SIZE / CALL-OUT / A18 / 120 / CFM	- DIFFUSER / GRILLE TAG
OR	
NECK SIZE / CALL-OUT / B22/22 / 120 / CFM	- DIFFUSER / GRILLE TAG
AHU-1	- EQUIPMENT TAG
VAV 1-04	- VAV BOX TAG

DUCTWORK LEGEND

SYMBOL	DESCRIPTION
	SUPPLY UP
	RETURN UP
	EXHAUST UP
	SUPPLY DOWN
	RETURN DOWN
	EXHAUST DOWN
	ROUND UP
	ROUND DOWN
	ROUND DUCT BREAK
	RECTANGULAR DUCT BREAK
	OPPOSED BLADE DAMPER
	PARALLEL BLADE DAMPER
	MANUAL DAMPER
M	MOTORIZED, OPPOSED BLADE DAMPER
	FLEXIBLE CONNECTION
	LINED DUCT
	90° ELBOW W/ TURNING VANE
	FIRE DAMPER / SMOKE DAMPER
	COMBINATION FIRE/SMOKE DAMPER
TOP / SIDE / 30° OR LESS	RECTANGULAR TRANSITION
	90° BEND, ROUND DUCT
	45° BEND, ROUND DUCT
	45° RECTANGULAR DUCT

DIFFUSER / GRILLE LEGEND

SYMBOL	DESCRIPTION
	SUPPLY DIFFUSER / GRILLE
	RETURN DIFFUSER / GRILLE
	EXHAUST DIFFUSER / GRILLE

HVAC COLOR LEGEND

SYMBOL	DESCRIPTION
	SUPPLY DUCT SYSTEM
	RETURN DUCT SYSTEM
	EXHAUST DUCT SYSTEM
	HVAC EQUIPMENT
	EXISTING HVAC TO BE REMOVED
	EXISTING HVAC TO REMAIN

PIPING LEGEND

SYMBOL	DESCRIPTION
HWS	HOT WATER SUPPLY, HEATING
HWR	HOT WATER RETURN, HEATING
CHS	CHILLED WATER SUPPLY
CHR	CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
S100	STEAM (NO. INDICATES PRESSURE)
C100	CONDENSATE RETURN (NO. INDICATES PRESSURE OF SUPPLY)
RS	REFRIGERANT SUCTION
RL	REFRIGERANT LIQUID
CD	CONDENSATE DRAIN
	FLOW DIRECTION
	CONCENTRIC REDUCER
	90° ELBOW
	45° ELBOW
	BRANCH CONNECTION OUT OF SIDE
	BRANCH CONNECTION OUT OF TWO SIDES
	RISER DOWN (ELBOW)
	RISER UP (ELBOW)
	2-WAY MOTORIZED VALVE
	3-WAY MOTORIZED VALVE
	3-WAY VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GATE VALVE
	GLOBE VALVE
	NEEDLE VALVE
	PLUG VALVE
	PRESSURE REDUCING VALVE
	SOLENOID VALVE
	SWING CHECK VALVE
	UNION
	CAP ON END OF PIPE
	CLEAN OUT

DESIGN CONDITIONS

LOCATION: **LITTLE ROCK, AR**

OUTDOOR SUMMER (1.0% OCCURRENCE)	**95°F DB / 77°F WB**
OUTDOOR WINTER (99.6% OCCURRENCE)	**16°F DB**
INSIDE SETPOINT SUMMER	**72°F DB (50% MAX. RH)**
INSIDE SETPOINT WINTER	**72°F DB**

SEISMIC DESIGN CONDITIONS

1. SEISMIC DESIGN DATA:
   A. SEISMIC DESIGN CATERGORY: **D**
   B. MECHANICAL COMPONENTS IMPORTANCE FACTOR **Ip= 1.5**
2. SEISMIC RESTRAINTS **ARE** REQUIRED FOR THE MECHANICAL COMPONENTS AND SYSTEMS PER THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC) AS DEFINED IN ASCE-7 SECTION 13.1.14.
3. REFER TO THE PROJECT MANUAL FOR ALL REQUIREMENTS.

NOTE: ALL SYMBOLS MAY NOT BE USED.

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE CURRENT EDITION OF THE "ARKANSAS MECHANICAL CODE", THE "ARKANSAS ENERGY CODE", THE "NATIONAL ELECTRICAL CODE", THE "ASME BOILER AND PRESSURE VESSEL CODE", "ASME CSD-1" REQUIREMENTS, "UL COMPLIANCE" REQUIREMENTS, AND ALL CITY, STATE, AND LOCAL REQUIREMENTS.
2. ARKANSAS DEPT OF LABOR REQUIRES "PERIODIC ATTENDANCE" (EVERY 4 HOURS) FOR HIGH-PRESSURE BOILERS (>15PSIG) WITH REMOTELY ACTUATED ALARMS AS INDICATED ON THE BOILER EQUIPMENT SCHEDULE.
3. REFER TO THE PROJECT MANUAL FOR ALL REQUIREMENTS, INCLUDING EQUIPMENT AND UTILITY MATERIALS AND CONSTRUCTION FEATURES.
4. REFER TO MECHANICAL SECTIONS AND ISOMETRIC VIEWS FOR CLARIFICATION OF EQUIPMENT AND PIPING ARRANGEMENTS NOT CLEAR ON PLAN VIEWS.
5. COORDINATE ALL UTILITIES (PIPING, CONDUIT, WIRING, ETC) WITH EXISTING STRUCTURAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION, COMPONENTS AND SYSTEMS TO AVOID ADDITIONAL DEMOLITION AND REPLACEMENT. WHERE REQUIRED, OFFSET NEW PIPING TO AVOID CONFLICTS WITH EXISTING SYSTEMS.
6. ONLY RELEVANT EXISTING PIPING AND SYSTEMS IMPACTED BY THIS SCOPE OF WORK ARE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING NEW WORK.
7. CLOSELY COORDINATE LOCATIONS OF INSTALLED EQUIPMENT TO ACHIEVE THE GREATEST ACCESSIBILITY. MINIMUM SERVICE CLEARANCE AS INDICATED ON PLANS SHALL BE MAINTAINED. MAXIMIZE SERVICE CLEARANCES WHERE POSSIBLE.
8. WHERE STEAM PIPE REDUCERS ARE REQUIRED, PROVIDE ECCENTRIC TYPE TO MAINTAIN BOTTOM OF PIPE LEVEL TO PREVENT CONDENSATE ACCUMULATION.
9. PITCH NEW STEAM PIPING AWAY FROM BOILER IN THE DIRECTION OF FLOW TO ENSURE POSITIVE CONDENSATE DRAINAGE AND COLLECTION AND REMOVAL IN EXISTING STEAM HEADER DRIP LEG AND STEAM TRAP.
10. PROVIDE CHAIN OPERATOR FOR ALL GATE VALVES INSTALLED 8'-0" ABOVE FINISHED FLOOR OR HIGHER.
11. REFER TO EQUIPMENT MANUFACTURER'S INSTALLATION MANUAL FOR COMPLETE LIST OF REQUIRED UTILITY CONNECTIONS AND SIZES.
12. SECURE NEW EQUIPMENT TO EXISTING CONCRETE HOUSEKEEPING PAD WITH ANCHOR BOLTS AS DETAILED. COMPLY WITH ANY ADDITIONAL MOUNTING REQUIREMENTS PER EQUIPMENT MANUFACTURER'S INSTALLATION MANUAL.
13. COORDINATE WORK CLOSELY WITH CONTROLS CONTRACTOR TO PROVIDE ALL NECESSARY PIPE TAPS, TEES, WELLS, CONTROL VALVES, AND OTHER ACCESSORIES AS REQUIRED BY CONTROL SYSTEM.
14. CONTROL DEVICES NOT FACTORY INSTALLED (I.E. FLOW METER DISPLAY, CONTROL PANELS, ETC), SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR. MAINTAIN REQUIRED SERVICE CLEARANCES.
15. INTERLOCK NEW BOILER WATER LEVEL CONTROLS WITH EXISTING DEAERATOR TANK FEEDWATER TRANSFER PUMPS AND BOILER FEEDWATER CONTROL VALVE TO MAINTAIN BOILER WATER LEVEL.
16. CHEMICAL TREATMENT FOR NEW AND EXISTING BOILERS IS PROVIDED FROM EXISTING BOILER FEEDWATER SUPPLY AND CHEMICAL TREATMENT DOSING STATION AT EXISTING DEAERATOR TANK. EXISTING FEEDWATER CHEMISTRY LEVELS HAVE BEEN VERIFIED TO MEET THE FOLLOWING (BASIS OF DESIGN) BOILER FEEDWATER MINIMUM QUALITY REQUIREMENTS:
    - pH: 8.3-10.5
    - IRON: 0.1 PPM
    - ALKALINITY: <600 PPM
    - CHLORIDES: 30 MG/LITER
    - OXYGEN: 0.1 MG/LITER
    - SPECIFIC DONDUCTIVITY: 4500 MMHO/CM
    - TOTAL HARDNESS: <3 PPM

HVAC DEMOLITION / RENOVATION NOTES

1. CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO:
   * PIPE SIZES AND ROUTING.
   * DUCT SIZES AND ROUTING.
   * EQUIPMENT CONNECTIONS AND LOCATIONS.
   * CONTROLS.
2. PROVIDE NECESSARY MODIFICATIONS TO NEW AND EXISTING SYSTEMS TO FACILITATE THE INSTALLATION OF NEW SYSTEMS AND INTERFACE WITH EXISTING SYSTEMS.
3. EXISTING SYSTEMS AND INFORMATION SHOWN ON THESE PLANS WERE DEVELOPED USING EXISTING BUILDING DRAWINGS AND NON-DESTRUCTIVE SITE SURVEY INFORMATION. FIELD VERIFY ALL EXISTING SYSTEMS AT PROJECT SITE. REMOVE ALL PORTIONS OF DUCTWORK AND PIPING SYSTEMS INDICATED FOR DEMOLISHION. DO NOT ABANDON SYSTEMS IN PLACE UNLESS OTHERWISE INDICATED. TERMINATE EXISTING SYSTEMS IN A MANNER THAT WILL NOT CONFLICT WITH NEW WORK. CLOSELY COORDINATE NEW WORK WITH EXISTING SYSTEMS. PROVIDE OFFSETS IN EXISTING AND NEW SYSTEMS AS REQUIRED TO AVOID CONFLICTS.
4. COORDINATE AND SCHEDULE ALL CONNECTIONS TO EXISTING SYSTEMS AND SYSTEM SHUT-DOWNS WITH MAINTENANCE PERSONNEL.
5. MAINTAIN EXISTING BUILDING SYSTEMS WITH PHASED DEMOLITION AND INSTALLATION OF NEW WORK, PROVIDING TEMPORARY SERVICES AS REQUIRED.
6. USE EXISTING PIPING SYSTEM VALVES WHERE POSSIBLE TO ISOLATE SYSTEMS AND TO CAP EXISTING PIPING. REPLACE EXISTING VALVES WHERE NECESSARY WHEN EXISTING VALVES WILL NOT HOLD. ALL DECOMMISSIONED PIPING SHALL BE REMOVED BACK TO POINT OF ORIGIN AND CAPPED. NO PIPING SHALL BE ABANDONED IN PLACE UNLESS OTHERWISE INDICATED.
7. EXISTING EQUIPMENT BEING REMOVED AND DESIGNATED TO REMAIN THE PROPERTY OF THE OWNER SHALL BE DELIVERED UPON REMOVAL TO A LOCATION DESIGNATED BY OWNER. ALL OTHER SYSTEM COMPONENTS REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
8. REMOVE AND RELOCATE SMALL CONDUIT, CABLE, PIPE AND DUCT, PIPE AND CEILING HANGERS ETC. AS NECESSARY TO ACHIEVE A COMPLETE INSTALLED MECHANICAL SYSTEM AS INDICATED.
9. PATCH ALL WALLS, FLOORS, ROOFS AND CEILINGS TO MATCH EXISTING CONDITIONS FOR ALL OPENINGS CREATED BY DEMOLITION WORK.
10. REPAIR TO MATCH AND/OR REPLACE ANY EXISTING PIPE OR DUCT INSULATION THAT IS INDICATED TO REMAIN THAT IS DAMAGED OR REMOVED DURING DEMOLITION OR NEW CONSTRUCTION.
11. REFER TO ELECTRICAL PLANS FOR EXTENT OF DEMOLITION WORK RELATED TO ELECTRICAL WIRING OF MECHANICAL EQUIPMENT TO BE DEMOLISHED.

CROMWELL
1300 East 6th Street Little Rock, AR 72202
501.372.2900 cromwell.com

Project

L'Oreal USA Products
NLR - BOILER REPLACEMENT
11500 Maybelline Rd
North Little Rock, AR 72117

Design Phase

CONSTRUCTION DOCUMENTS

Revisions

No.	Date	Description

Stamp

CROMWELL ARCHITECTS/ ENGINEERS #5 ARKANSAS ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9395 CHRISTOPHER A. ROBY

04-11-2025

Notes

1. CROMWELL ARCHITECTS ENGINEERS, INC. ALL RIGHTS RESERVED

2. THIS SHEET DESIGNED FOR COLOR PRINTING. CRITICAL INFORMATION MAY BE LOST WITH BLACK AND WHITE PRINTING.

Project Number **2025-024**

Issue Date **04-11-2025**

Sheet Title

MECHANICAL LEGEND AND SYMBOLS

Sheet Number

M-001