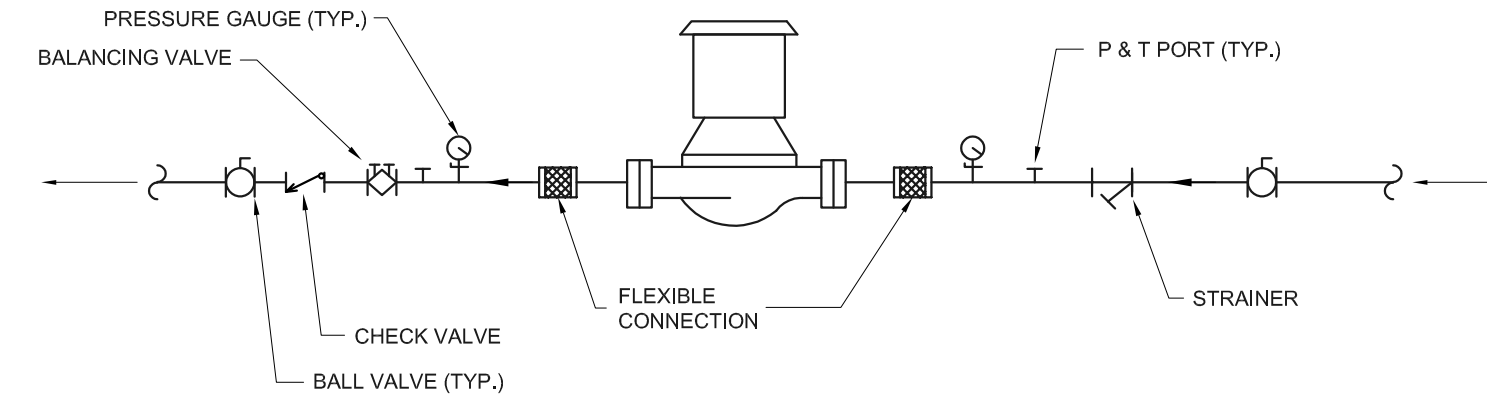


**MECHANICAL NOTES**

**I. GENERAL**

- A. ALL WORK SHALL BE IN ACCORDANCE WITH SMACNA STANDARDS AND SPECIFICATIONS, AND LOCAL AUTHORITY HAVING JURISDICTION.
  - B. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW ALL TRANSITIONS, OFFSETS, ETC. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND PROVIDE ALL NECESSARY FITTINGS TO COMPLETE THE INTENT OF THE DRAWINGS. ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS SHALL BE REPORTED TO THE ENGINEER FOR RESOLUTION. CONTRACTOR MAY LOCATE MECHANICAL EQUIPMENT DIFFERENTLY THAN SHOWN ON DRAWINGS DUE TO CONFLICTS, AS LONG AS FUNCTION AND/OR APPEARANCE ARE NOT AFFECTED.
  - C. COORDINATE SPACE REQUIREMENTS, SUPPORTS, AND INSTALLATION OF MECHANICAL WORK, WHICH ARE INDICATED DIAGRAMMATICALLY ON THE DRAWINGS. FOLLOW ROUTING SHOWN FOR PIPES AND DUCTS AS CLOSELY AS PRACTICABLE; PLACE RUNS PARALLEL WITH LINES OF BUILDING. UTILIZE SPACES EFFICIENTLY TO MAXIMIZE ACCESSIBILITY FOR OTHER INSTALLATIONS, FOR MAINTENANCE, AND FOR REPAIRS.
  - D. COMPLY WITH MANUFACTURER'S INSTRUCTIONS INCLUDING EACH STEP IN SEQUENCE. SHOULD MANUFACTURER'S INSTRUCTIONS CONFLICT WITH THE DRAWINGS, REQUEST CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING.
  - E. CONTRACTOR SHALL REVIEW THESE DOCUMENTS CAREFULLY. CONTRACTOR SHALL CONTACT THREE SIXTY (360) ENGINEERING, INC., (303-940-2050), FOR RESOLUTION OF ANY DISCREPANCIES, OMISSIONS, OR CLARIFICATIONS, BEFORE BID DATE. IN THE EVENT THAT AN INTERPRETATION OF BID DOCUMENTS IS NECESSARY AFTER THE BID DATE, THE DECISION OF 360 SHALL BE FINAL AND BINDING.
  - F. PRODUCT DELIVERY, STORAGE, AND HANDLING: PROVIDE EQUIPMENT AND PERSONNEL TO HANDLE PRODUCTS BY METHODS TO PREVENT DAMAGE. PROMPTLY INSPECT SHIPMENTS TO ENSURE THAT PRODUCTS ARE UNDAMAGED. STORE AND PROTECT PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
  - G. ALL REMOVED EQUIPMENT SHALL REMAIN THE PROPERTY OF THE BUILDING OWNER AND SHALL BE STORED PER THEIR DIRECTION.
  - H. THE CONTRACTOR IS RESPONSIBLE FOR THE COSTS OF ALL CHANGE ORDERS, WHICH THE OWNER AND ENGINEER HAVE NOT APPROVED IN WRITING PRIOR TO THE EXECUTION OF THE ASSOCIATED WORK.
  - I. IN THE CASE OF A CONFLICT, UNLESS OTHERWISE NOTED, KEYNOTES ON MECHANICAL PLANS SHALL SUPERCEDE ANY GENERAL NOTES ON THE PLANS.
- II. EQUIPMENT**
- A. CHILLED WATER PIPING SHALL BE SCHEDULE 40, GRADE B, TYPE 96 STEEL PIPE; CLASS 150, MALLEABLE IRON FITTINGS, CAST-IRON FLANGES AND FLANGE FITTINGS, AND THREADED JOINTS.
  - T. HYDRONIC PIPING INSULATION: MINERAL-FIBER, PREFORMED PIPE INSULATION: TYPE 1, 850° F., MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM A47, TYPE 1, GRADE A, WITH FACTORY APPLIED ASJ.
    - 1. CHILLED WATER = 1.0" THICK, CONDUCTIVITY ≤ 0.25 @ 75° F.
  - U. BRONZE BALL VALVES: TWO-PIECE, FULL-PORT, LEAD-FREE BRONZE BALL VALVES WITH STAINLESS-STEEL TRIM.
  - V. BUTTERFLY VALVE: KESTONE NBR LUG HIGH PERFORMANCE OR EQUAL WITH STAINLESS-STEEL DISC AND TRIM.



**NOTES:**  
1. SUPPORT PUMP FROM PIPING ONLY. DO NOT SUPPORT PUMP FROM MOTOR.

**1 M00 HORIZONTAL IN-LINE CIRCULATION PUMP DETAIL**  
SCALE: N.T.S.

MECHANICAL LEGEND	
---	EXISTING DUCT
////	EXISTING TO BE REMOVED
---	NEW DUCT
⊠	SUPPLY DIFFUSER
⊡	RETURN AIR GRILLE
┌	MANUAL BALANCING DAMPER
~	FLEXIBLE DUCTWORK
Ⓣ	THERMOSTAT
(N)	NEW
(D)	DEMO
(R)	RELOCATED
(E)	EXISTING

**III. EXECUTION**

- A. BALANCING:
  - 1. CONTRACTOR SHALL ADJUST AND BALANCE PUMPS AND COILS TO THE QUANTITIES SHOWN ON THE DRAWING. BALANCING WORK SHALL BE PERFORMED IN ACCORDANCE WITH NEBB OR TABB STANDARDS BY A NEBB OR TABB CERTIFIED CONTRACTOR. SUBMIT BALANCING REPORT TO THE ENGINEER.
  - 2. ADJUST SYSTEMS TO PROVIDE SPECIFIED PRESSURE DROPS AND FLOWS THROUGH HEAT TRANSFER ELEMENTS PRIOR TO THERMAL TESTING. PERFORM BALANCING BY MEASUREMENT OF TEMPERATURE DIFFERENTIAL IN CONJUNCTION WITH AIR BALANCING.
- B. CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AND NOTIFY 360 ENGINEERING, INC. IF ANY CONFLICTS OCCUR.
- C. MECHANICAL CONTRACTOR TO CHECK OPERATION AND CONDITION OF ALL EXISTING MECHANICAL EQUIPMENT WITHIN THE CONFINES OF THIS SPACE AND PREPARE A WRITTEN LIST OF ANY DEFICIENCIES IN EQUIPMENT OPERATION OR CONDITION. LIST SHALL BE SUBMITTED TO PROPERTY MANAGER TWO WEEKS AFTER THE AWARD OF THE CONTRACT.
- D. ALL PIPE AND DUCT PENETRATIONS THROUGH RATED WALLS SHALL BE SEALED PER 2015 IBC.
- E. PROVIDE DIELECTRIC UNIONS AT CONNECTIONS BETWEEN DISSIMILAR METALS, I.E., IRON VALVES AND COPPER TUBING.
- F. PROVIDE PIPE HANGERS OF THE SAME MATERIAL AS THE PIPING SYSTEM OR USE COATED HANGERS.
- G. PROVIDE BALL VALVES AND UNIONS ON ALL LINES TO EQUIPMENT FOR ISOLATION AND REMOVAL.
- H. TREAT WATER PER CHILLER MANUFACTURER'S RECOMMENDATIONS AND PROVIDE 30% GLYCOL PRIOR TO RUNNING SYSTEM.
- I. PROVIDE ADHESIVE, MULTICOLOR PIPE LABELS FOR ALL SYSTEMS, PROVIDE EVERY 50 FEET, AND EVERY 25 FEET IN CONGESTED AREAS.

AIR COOLED CHILLER SCHEDULE																			
GENERAL			EVAPORATOR PERFORMANCE @ 95°F AMBIENT							ELECTRICAL				PHYSICAL				NOTES	
TAG	MFG	MODEL	EWT [°F]	LWT [°F]	FLOW RATE [GPM]	MIN. FLOW RATE [GPM]	PRESSURE DROP [FT W.C.]	TOTAL CAPACITY [TONS]	COOLING CAPACITY [TONS]	VOLTAGE [V]	PHASE	FREQ [HZ]	MCA [A]	MOC [A]	LENGTH [IN]	WIDTH [IN]	HEIGHT [IN]		WEIGHT [LBS]
C-1	CARRIER	30RB210	55.0	45.0	460.2	279.7	14.2	210.0	184	460	3	60.0	422.9	450.00	283	89	90	12772	1,2,3,4,5,6,7

**NOTES:**

- (1) HERMETICALLY SEALED SCROLL COMPRESSORS
- FACTORY MOUNTED DISCONNECT
- MINIMUM TURNDOWN CAPACITY OF 6%. PROVIDE WITH MINIMUM LOAD CONTROL.
- 10 STEPS OF CAPACITY CONTROL.
- HIGH EFFICIENCY VARIABLE CONDENSER.
- PERFORMANCE BASED ON 30% PROPYLENE GLYCOL.
- PROVIDE FACTORY MOUNTED CONTROL WITH BACNET CAPABILITY.
- 5300' ALTITUDE

PUMP SCHEDULE														
GENERAL				PERFORMANCE			ELECTRICAL				WT. LBS. (DRY)	NOTES		
TAG	MANUFACTURER	MODEL#	SYSTEM	FLOW [GPM]	HEAD [FT.]	EFF. %	POWER [HP]	[BHP]	VOLTAGE [V]	PHASE			FREQUENCY [HZ]	SPEED [RPM]
P-1	GRUNDFOS	40957 VL	CHW	308.8	45	72.8	7.5	4.96	460	3	60	1775	320	1,2,3,4
P-2	GRUNDFOS	40957 VL	CHW	308.8	45	72.8	7.5	4.96	460	3	60	1775	320	1,2,3,4

**NOTES:**

- PROVIDE PUMP WITH VFD.
- PROVIDE WITH FLEXIBLE CONNECTION AND SUCTION DIFFUSER.
- PROVIDE FACTORY AUTHORIZED REP. START-UP
- PERFORMANCE BASED ON 30% GYLCOL @ 5300'.

MISCELLANEOUS HVAC EQUIPMENT SCHEDULE						
TAG	DESCRIPTION	LOOP SERVED	MANUFACTURER	MODEL#	OPERATING WEIGHT	NOTES
ET-1	EXPANSION TANK	CHILLED WATER	ARMSTRONG	AST-60	350	1,4
PF-1	CHEMICAL POT FEEDER	CHILLED WATER	GRISWOLD	FB-5	100	2,3

**NOTES:**

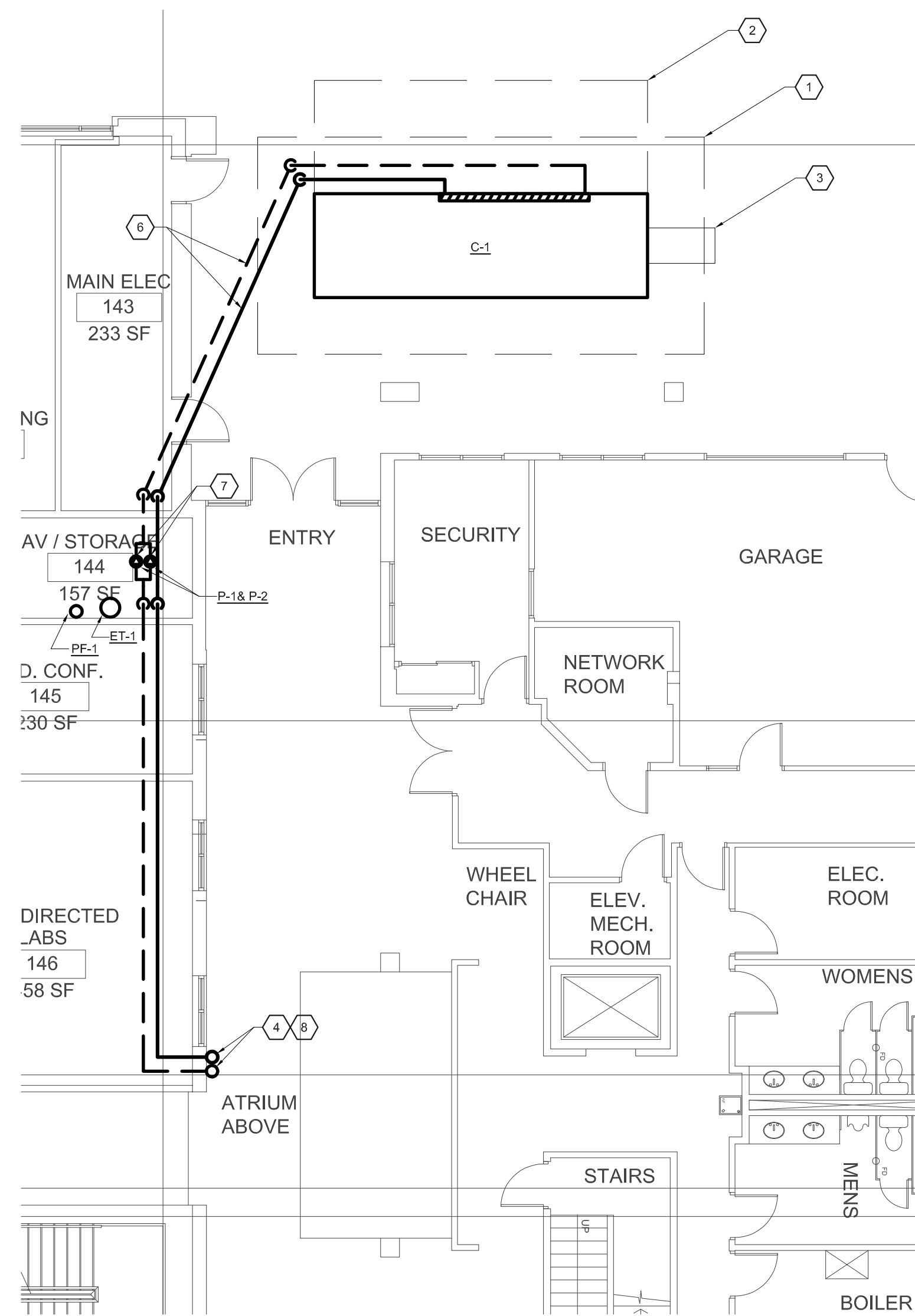
- ASME RATED.
- WITH STRAINER.
- 5 GALLON FUNNEL PACKAGE AND PEDESTAL.
- PROVIDE WITH CALIFORNIA CODE SIGHT GLASS

**BOULDER COUNTY ST. VRAIN HUB**  
**515 COFFMAN STREET**  
**LONGMONT, CO 80501**

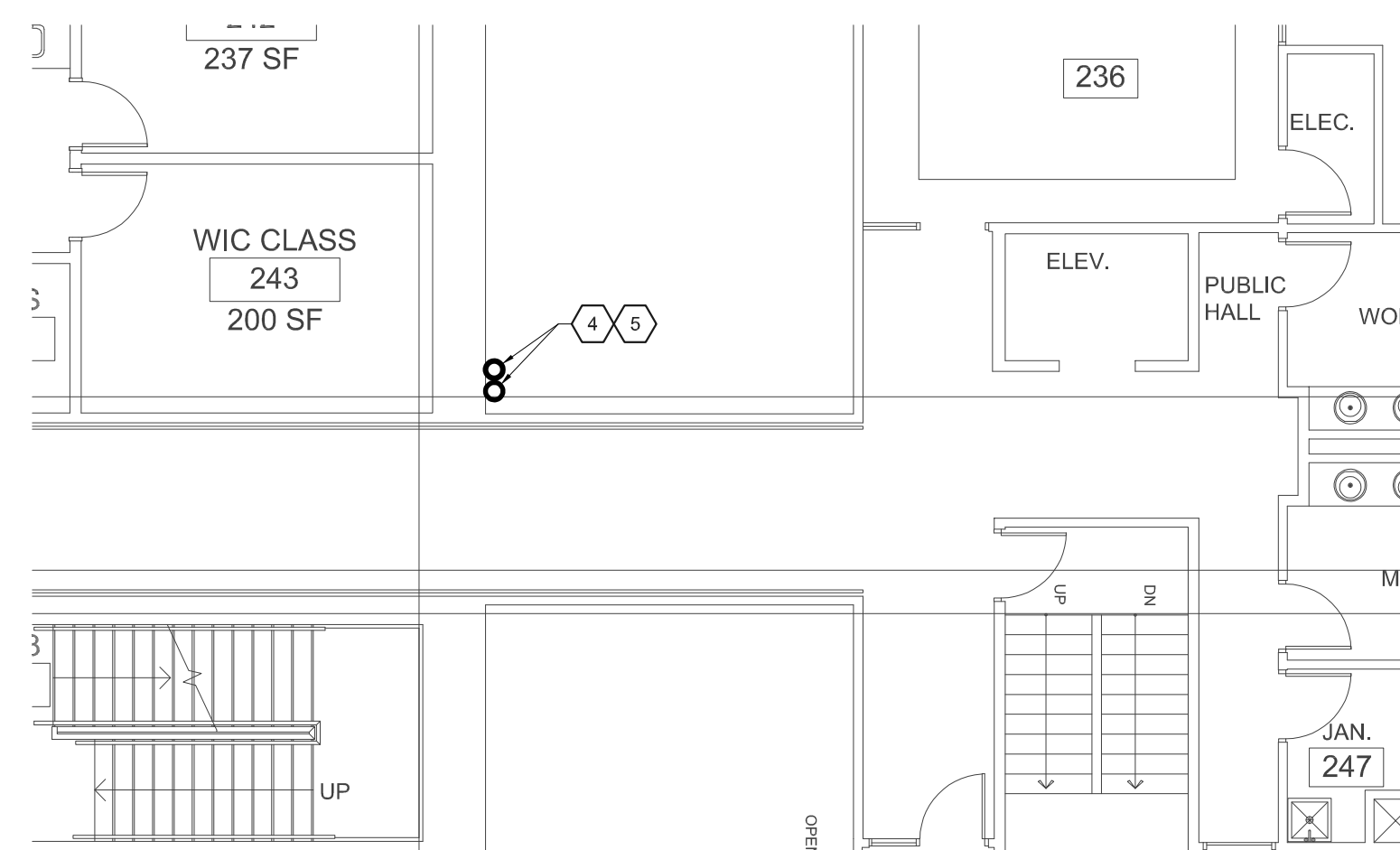


ISSUE	DATE
100% CD	10/22/19

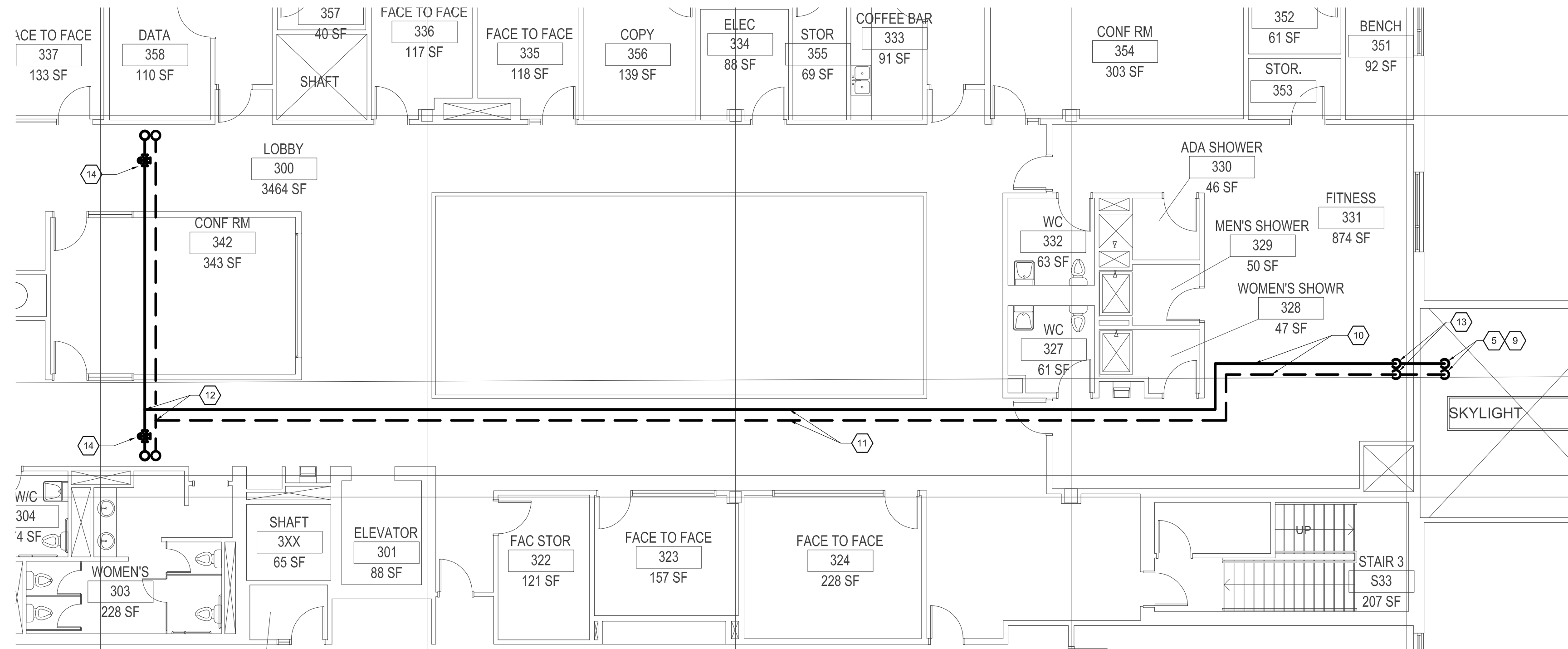
SHEET NUMBER  
**M0.1**  
SHEET:  
MECHANICAL  
SCHEDULES, LEGENDS,  
DETAILS, & NOTES



**1 FIRST FLOOR MECHANICAL FLOOR PLAN**  
 MLO SCALE: 1/8" = 1'-0"



**2 SECOND FLOOR MECHANICAL FLOOR PLAN**  
 MLO SCALE: 1/8" = 1'-0"



**3 THIRD FLOOR MECHANICAL FLOOR PLAN**  
 MLO SCALE: 1/8" = 1'-0"

- KEY NOTES:**
- 1 PROVIDE 4'-0" SERVICE CLEARANCE AROUND ENTIRE CHILLER.
  - 2 PROVIDE 8'-0" SERVICE CLEARANCE BY REMOVABLE SCREEN.
  - 3 PROVIDE 4'-8" SERVICE CLEARANCE BY REMOVABLE SCREEN.
  - 4 ROUTE CHWS & CHWR PIPE TO LEVEL ABOVE.
  - 5 ROUTE CHWS & CHWR PIPE TO LEVEL BELOW.
  - 6 6" CHWS & CHWR PIPES ENTER ELECTRICAL ROOM BELOW GRADE.
  - 7 INLINE CHW CIRCULATION PUMPS.
  - 8 6" CHWS & CHWR ENTER ATRIUM AT RM 146 CEILING AND ROUTE UP ALONG ATRIUM WALL TO ATRIUM CEILING.
  - 9 4" CHWS & CHWR TEES UP, ISOLATION VALVES, PENETRATES WALL AND CAPPED FOR FUTURE CONNECTION TO NORTH BUILDING AHU.
  - 10 6" CHWS & CHWR CONTINUE HIGH ALONG EXPOSED STRUCTURE IN FITNESS ROOM, OVER DUCTS AS NECESSARY.
  - 11 6" CHWS & CHWR CONTINUE ABOVE CORRIDOR CEILING.
  - 12 6" CHWS & CHWR TEES TO 4" CHWS & CHWR WITH ISOLATION VALVES ROUTES UP THROUGH CURB TO EACH AHU.
  - 13 6" CHWS & CHWR ELBOW UP TO HIGH ALONG CEILING.
  - 14 3-WAY VALVE.

**BOULDER COUNTY ST. VRAIN HUB**  
**515 COFFMAN STREET**  
**LONGMONT, CO 80501**



ISSUE	DATE
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SHEET NUMBER  
**M1.0**  
 SHEET:  
 MECHANICAL FLOOR  
 PLANS