HVAC SPECIFICATIONS

1. A MAINTENANCE LABEL SHALL BE AFFIXED TO MECHANICAL EQUIPMENT AND A MAINTENANCE MANUAL SHALL BE PROVIDED TO THE OWNER PER STANDARDS.
2. CONCEALED SPACES, CIRCULATION AIR

   INSULATED WIRES, PLASTIC TUBING OR PIPING, PIPE INSULATION, CONDENSATE PAN INSULATION, WOOD, PVC, ABS AND OTHER PLASTICS) TO BE IN CONCEALED SPACES USED TO CONVEY CIRCULATING AIR SUPPLY. WHEN COMBUSTIBLE MATERIAL IS TO BE LOCATED IN THE ABOVE SPACES, IT SHALL BE APPROVED FOR SUCH INSULATION.

3. INSULATION OF DUCTS

   PORTIONS OF SUPPLY-AIR AND RETURN-AIR DUCTS CONVEYING HEATED OR COOLED AIR LOCATED IN ONE OR MORE OF THE FOLLOWING SPACES SHALL BE INSULATED TO A MINIMUM INSTALLED LEVEL OF R-8:

   1. OUTDOORS; OR
   2. IN A SPACE BETWEEN THE ROOF AND AN INSULATED CEILING; OR
   3. IN A SPACE DIRECTLY UNDER A ROOF WITH FIXED VENTS OR OPENINGS TO THE OUTSIDE OR UNCONDITIONED SPACES; OR
   4. IN AN UNCONDITIONED CRAWL SPACE; OR
   5. IN OTHER UNCONDITIONED SPACES.

   PORTIONS OF SUPPLY-AIR DUCTS THAT ARE NOT IN ONE OF THESE SPACES, INCLUDING DUCTS BURIED IN CONCRETE SLAB, SHALL BE INSULATED TO A MINIMUM INSTALLED LEVEL OF R-4.2 OR BE ENCLOSED IN DIRECTLY CONDITIONED SPACE.

4. SEALING

   TRANSVERSE SUPPLY DUCTS, TAPED OR SEALED WITH MASTIC EXCEPT FOR DUCTS EXPOSED TO CONDITIONED SPACE, WHERE DUCT STATIC PRESSURE EXCEEDS 3/4" WATER, LONGTITUDINAL JOINTS, TAPED OR SEALED WITH MASTIC.

5. INSPECTION

   INSPECTION TO BE MADE AND DUCTWORK APPROVED BEFORE COVERING WITH INSULATION.

6. PIPE INSULATION

   SPACE-CONDITIONING AND SERVICE WATER-HEATING SYSTEM SHALL BE INSULATED IN ACCORDANCE WITH THE FOLLOWING TABLE:

PIPE INSULATION THICKNESS

FLUID TEMP. RANGE (°F)	CONDUCTIVITY RANGE (BTU-"/HR PER SQFT/°F)	INSULATION MEAN RATING TEMP. (°F)	NOMINAL PIPE DIAMETER (") <1	1 TO <1.5	1.5 TO <4	4 TO <8	8 AND LARGER
			INSULATION THICKNESS REQUIRED (")				
SPACE HEATING, HOT WATER SYSTEMS AND SERVICE WATER HEATING SYSTEMS							
350<	0.32-0.34	250	4.5	5.0	5.0	5.0	5.0
251-350	0.29-0.31	200	3.0	4.0	4.5	4.5	4.5
201-250	0.27-0.30	150	2.5	2.5	2.5	3.0	3.0
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0
105-140	0.22-0.28	100	1.0	1.5	1.5	1.5	1.5
SPACE COOLING SYSTEMS (CHILLED WATER, REFRIGERANT AND BRINE)							
40-60	0.21-0.27	75	NONRES 0.5	RES 0.75	NONRES 0.5	RES 0.75	1.0 1.0
<40	0.20-0.26	50	1.0	1.5	1.5	1.5	1.5

EXCEPTIONS: THE FOLLOWING PIPING DOES NOT HAVE TO BE THERMALLY INSULATED: (1) FACTORY-INSTALLED PIPING WITHIN SPACE CONDITIONING EQUIPMENT; (2) PIPING THAT CONVEYS FLUIDS THAT HAVE A DESIGN OPERATING TEMPERATURE RANGE BETWEEN 55 DEGREES AND 105 DEGREES FAHRENHEIT; (3) GAS PIPING; (4) COLD DOMESTIC WATER PIPING; (5) DRAINS, VENTS, AND WASTE PIPING.

7. TEMPERATURE CONTROLS

   EACH HVAC SYSTEM SHALL BE PROVIDED WITH AT LEAST ONE AUTOMATIC TEMPERATURE CONTROL DEVICE FOR THE REGULATION OF TEMPERATURE THESE AUTOMATIC TEMPERATURE CONTROL DEVICES SHALL BE CAPABLE OF BEING SET TO MAINTAIN SPACE TEMPERATURE SET POINTS FROM 55 DEGREES F TO 85 DEGREES F, SHALL BE CAPABLE OF OPERATING THE SYSTEM HEATING AND/OR COOLING IN SEQUENCE.

   EXCEPT AS ALLOWED, THESE CONTROLS SHALL BE ADJUSTABLE TO PROVIDE A DEAD BAND OF 5 DEGREES F BETWEEN FULL HEATING AND FULL COOLING. CONTROLS SHALL HAVE THE CAPABILITY OF TERMINATING ALL HEATING AT A TEMPERATURE NO MORE THAN 70 DEGREES F AND OF TERMINATING ALL COOLING AT A TEMPERATURE NOT LESS THAN 78 DEGREES F.

SHEET INDEX

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SCOPE OF WORK

- OFFICE - WAREHOUSE EXPANSION.
- PROVIDE THREE(4) NEW ROOFTOP UNITS FOR EAST WING.
- PROVIDE GRAVITY VENTILATORS FOR WEST WING.
- PROVIDE DUCTWORKS AND AIR DEVICES THROUGHOUT THE EAST WING.

MECHANICAL CODE

- 2019 CMC
- 2019 BUILDING ENERGY EFFICIENCY STANDARDS

SYMBOLS AND ABBREVIATIONS

SA	⊠	SUPPLY AIR PLENUM CROSS-SECTION
RA	⧅	RETURN AIR PLENUM CROSS-SECTION
CD	⊠	SUPPLY DIFFUSER
RAG	⧅	RETURN AIR GRILLE
EAG	⊠	EXHAUST AIR GRILLE
SWS	⊣	SIDE WALL SUPPLY REGISTER
SWR	⊣	SIDE WALL RETURN GRILLE
	Ⓣ	ROOM THERMOSTAT
	Ⓢ	ROOM SENSOR
CFM		CUBIC FEET PER MINUTE
EA		EXHAUST AIR
EF	⊘	ROOF MOUNTED EXHAUST FAN
ESP		EXTERNAL STATIC PRESSURE
EXIST	(E)	EXISTING
FD	▽▽▽▽	FIRE DAMPER
FLA		FULL LOAD AMPERES
HZ		HERTZ
HP		HORSEPOWER
MVD	┼	MANUAL VOLUME DAMPER
NEW	(N)	NEW
OSA		OUTSIDE SUPPLY AIR
RLA		RATED LOAD AMPERES
RA		RETURN AIR
SA		SUPPLY AIR
⬡SD ⓈD	◆—	SMOKE DETECTOR
SP		STATIC PRESSURE
TYP		TYPICAL
U/C	D U	UNDERCUT DOOR
U.T.R.		UP THRU ROOF
V		VOLT
VTR		VENT THRU ROOF
	(CO2)	CO2 SENSOR
	RTU 1	MECHANICAL EQUIPMENT TAG
	⊕	POC
	━━━	NEW DUCT
	┅┅┅	EXISTING DUCT
CD	— CD —	CONDENSATE DRAIN

NOTE:

REFER TO PLAN SHEETS FOR ANY ADDITIONAL LEGEND, SYMBOLS AND RELATED ABBREVIATIONS.

DUCT GAUGE SELECTIONS

FOR GALVANIZED STEEL (SMACNA TABLE 1-4/E5)

MAXIMUM 1" W.G. STATIC POSITIVE AND NEGATIVE

DUCT DIAMETER (INCHES)	MINIMUM THICKNESS GALVANIZED IRON (U.S. GAUGE/INCHES)	MINIMUM THICKNESS ALUMINUM (INCHES)
LESS THAN 12	26/.022	.025
13-30	26/.022	.025
31-36	24/.023	.026

FOOTNOTES:

1. HEATING AND AIR CONDITIONING UNITS NOT EXCEEDING 2000 CFM OR ONE INCH WATER GAUGE (WG) POSITIVE OR NEGATIVE PRESSURE. DUCT FITTINGS SHALL BE CONSTRUCTED OF MATERIAL NOT LESS THAN THE GAUGE OF THE DUCT.
2. DUCTWORK AND FITTINGS LARGER THAN TWENTY INCHES SHALL BE CONSTRUCTED TO THE GAUGING REQUIREMENTS OF ANSI SMACNA 006-2006 HVAC DUCT CONSTRUCTION STANDARDS.

HVAC GENERAL NOTES

1. ALL WORK SHALL CONFORM TO MECHANICAL CODE, BUILDING CODE AND ALL OTHER APPLICABLE CITY CODES AND REGULATIONS.
2. THE CONTRACTOR SHALL PAY FOR ALL PERMITS AND FEES.
3. CONTROL LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR AND CONDUIT BY ELECTRICAL CONTRACTOR.
4. CONDENSATE DRAIN PIPING AND FINAL CONNECTION TO UNIT BY PLUMBING CONTRACTOR.
5. G.C. TO VERIFY CURRENT ELECTRICAL POWER CONDITION IN FIELD BEFORE PURCHASING ANY MECHANICAL EQUIPMENT.
6. CONTRACTOR TO VERIFY MECHANICAL HEATING EQUIPMENT TO BE CONFORM TO LOCAL EPA STANDARD BEFORE PURCHASING EQUIPMENT.
7. ACCURATE AS-BUILT DRAWINGS SHALL BE MADE DURING CONSTRUCTION AND SUBMITTED FOR APPROVAL UPON COMPLETION OF INSTALLATION.
8. THE CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR FOR SIZE AND LOCATION OF DUCTWORK ROOF OPENINGS AND WITH ELECTRICAL CONTRACTOR FOR ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT AND ARCHITECTURAL DRAWINGS FOR AIR DISTRIBUTION LOCATION.
9. THE CONTRACTOR SHALL SUBMIT BID BASED ON THE DRAWINGS AND ALTERNATE FOR COST SAVING. THESE DRAWINGS ARE FOR BIDDING PURPOSES.
10. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, EQUIPMENT, TRANSPORTATION AND SERVICES NECESSARY FOR COMPLETION OF THE WORK. ALL MATERIALS AND WORK SHALL COMPLY WITH APPLICABLE CODES AND GOVERNING REGULATIONS AND MEET THE APPROVAL OF THE LOCAL JURISDICTION.
11. TAKE ALL PRECAUTIONS NECESSARY TO PROTECT THE MATERIALS BEFORE, DURING AND AFTER INSTALLATION. IN THE EVENT OF DAMAGE, IMMEDIATELY REPAIR ALL DAMAGED AND DEFECTIVE WORK TO THE APPROVAL OF THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.
12. THESE DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH ALL OTHER TRADES. THIS INCLUDES COORDINATING THE LOCATION AND SIZE OF ALL OPENINGS, LOCATIONS OF EQUIPMENT PADS AND CHANGES OF ELEVATIONS OF DUCTWORK, PIPING AND OTHER EQUIPMENT.
13. ANY MATERIAL, ARTICLE OR PIECE OF EQUIPMENT OTHER THAN THAT INDICATED SHALL NOT BE USED UNLESS APPROVED IN WRITING BY THE ENGINEER AND ANY CHANGES IN MECHANICAL, ELECTRICAL AND/OR OTHER SYSTEMS REQUIRED DUE TO SUCH SUBSTITUTION SHALL BE THE RESPONSIBILITY OF THE HVAC CONTRACTOR; AND AT NO ADDITIONAL COST TO THE OWNER.
14. THE CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING TO VERIFY LOCATIONS AND SIZES OF ALL EXISTING EQUIPMENT AND INFORM THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES.
15. COORDINATE ENTIRE INSTALLATION OF THE H.V.A.C. SYSTEM WITH THE WORK OF ALL OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. PROVIDE ALL FITTINGS, OFFSETS, AND TRANSITIONS AS REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
16. CONTRACTOR SHALL SUBMIT A COMPLETE BALANCE REPORT FOR APPROVAL. SYSTEMS AIR BALANCE SHALL BE PERFORMED BY AN INDEPENDENT AIR BALANCE CONSULTANT. A CERTIFIED AABC OR NEBB. THE REPORT SHALL INCLUDE THE FOLLOWING:
    a. AIR QUANTITIES AT EACH REGISTER.
    b. STATIC PRESSURE READINGS AT INLET AND DISCHARGE OF EACH AIR HANDLING SYSTEM AND AT INLET OF EACH EXHAUST AIR SYSTEM.
    c. COOLING AND HEATING SUPPLY AND RETURN AIR TEMPERATURES AT EACH AIR CONDITIONING UNIT.
17. WARRANTIES; 1-YEAR WARRANTY FOR EQUIPMENT, 5-YEAR COMPRESSORS. REFER TO CONSTRUCTION CONTRACT FOR OTHER APPLICABLE WARRANTIES.
18. EQUIPMENT SPECIFICATION AND INTERLOCK DIAGRAM SHALL BE SUBMITTED FOR APPROVAL PRIOR TO PURCHASE OF EQUIPMENT FOR INSTALLATION.
19. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, DAMPERS, VALVES AND OTHER DEVICES REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
20. ALL HVAC AND FAN UNITS SHOWN ON THE PLAN IS RECOMMENDED. FINAL MAKE AND MODEL OF THE UNITS WILL BE DETERMINED BY THE OWNER/MECHANICAL CONTRACTOR WITH AN APPROVAL FROM THE MECHANICAL ENGINEER.
21. THE HVAC SYSTEM AND COMPONENTS SHALL BE TESTED, ADJUSTED AND BALANCED IN ACCORDANCE WITH AABC'S NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE (6TH EDITION).
22. PROVIDE FILTER FOR AIR CONDITIONING AND/OR AIR SIDE UNITS AS REQUIRED PER ASHRAE AND MECHANICAL CODE.
23. THERMOSTAT SHALL BE 24 VOLT, ONE STAGE HEATING AND ONE OR TWO STAGE COOLING WITH MATCHING SUBBASE AND TAMPER PROOF COVER.
24. CONDENSATE PIPING SHALL BE SIZED IN ACCORDANCE WITH MECHANICAL CODE.
25. CONDENSATE WASTE SHALL CONNECT INDIRECTLY TO THE DRAINAGE SYSTEM THROUGH AN AIR GAP OR AIR BREAK TO PROPERLY TRAPPED AND VENTED RECEPTORS, DRY WELLS, OR THE TAILPIECE OF A PLUMBING FIXTURE.
26. WHERE CONDENSATE WASTE FROM AIR CONDITIONING COILS DISCHARGES BY DIRECT CONNECTION TO A LAVATORY TAILPIECE OR TO AN APPROVED ACCESSIBLE INLET ON A BATHTUB OVERFLOW, THE CONNECTION SHALL BE LOCATED IN AN AREA CONTROLLED BY THE SAME PERSON CONTROLLING THE AIR-CONDITIONED SPACE.
27. THE REFRIGERATION EQUIPMENT REFRIGERANT SERVICE PORTS LOCATED OUTDOORS SHALL BE FITTED WITH LOCKING TYPE TAMPER RESISTANT CAPS OR SHALL BE PROTECTED FROM UNAUTHORIZED ACCESS BY A MEANS ACCEPTABLE TO THE ENFORCING AGENCY.
28. THE HEATING AND COOLING DUCT SYSTEM IS SIZED IN ACCORDANCE WITH ASHRAE.
29. G.C. TO VERIFY SUFFICIENCY OF DUCT SPACE BEFORE PURCHASING ANY MECHANICAL EQUIPMENT.
30. DUCTWORK SHALL BE INSULATED OR LINED AS NOTED ON DRAWINGS. ALL DUCTWORK EXPOSED ON ROOF SHALL BE INTERNALLY LINED UNLESS OTHERWISE INDICATED OR SPECIFIED. ALL DUCT SIZES ARE SHEET METAL SIZES. ALL DUCT JOINTS SHALL BE SEALED PER SPECIFICATIONS.
31. CONNECT MAIN DUCT TO AIR CONDITIONING UNIT WITH WEATHERPROOF FLEXIBLE CONNECTION. SUN SHIELD OVER ENTIRE FLEXIBLE CONNECTIONS REQUIRED IF FLEXIBLE CONNECTION IS EXPOSED TO WEATHER.
32. ALL LINED DUCT DIMENSIONS ARE NET CLEAR DIMENSION AFTER LINING HAS BEEN INSTALLED.
33. ALL DUCTWORK SIZE SHOWN ON PLAN ARE INTERIOR DIAMETER. CONTRACTOR SHALL ADD INSULATION THICKNESS INTO CONSIDERATION BEFORE INSTALLATION.
34. DUCTS SHALL BE SUPPORTED WITH 1" WIDE 16-GAUGE HANGER STRAPS AND SHALL BE SPACED AT NO MORE THAN 7'-0" ON CENTERS AND SHALL BE SECURED TO STRUCTURAL MEMBER. EXPOSED DUCTWORK ON ROOF SHALL BE SUPPORTED BY GALVANIZED STEEL ANGLE & SHALL BE PER LOCAL CODE.
36. ROUND AND RECTANGULAR DUCTWORK ARE INTERCHANGEABLE IF CROSS SECTION AREAS ARE EQUIVALENT. CONTRACTOR IS TO VERIFY THE EXACT CEILING SPACE AND INTERCHANGE THE DUCT SIZE TO FIT THE CEILING SPACE WITHOUT ADDITIONAL FEE CHARGE.
37. ALL FACTORY-FABRICATED DUCT SYSTEMS SHALL COMPLY WITH UL 181 FOR DUCTS AND CLOSURE SYSTEMS, INCLUDING COLLARS, CONNECTIONS, AND SPLICES, AND BE LABELED AS COMPLYING WITH UL 181.
38. INSTALL VOLUME CONTROL DAMPERS AT EACH SUPPLY DIFFUSER TO AFFORD COMPLETE CONTROL OF THE AIR FLOW IN THE VARIOUS DUCT SYSTEMS. INSTALL SPLITTER DAMPER AT DUCT TAKEOFFS AND DAMPER AS REQUIRED.
39. AUTOMATIC FIRE DAMPER REQUIREMENTS ARE AS FOLLOWS:
    a. PROVIDE AUTOMATIC FIRE DAMPERS AT ALL PENETRATIONS OF FIRE-RATED CEILINGS AND WALLS THROUGHOUT. CONTRACTOR SHALL COORDINATE WITH FIRE-RATED CEILING AREAS AND WALLS AS INDICATED ON ARCHITECTURAL DRAWINGS. THIS NOTE SHALL TAKE PRECEDENCE OVER ANY OMISSIONS ON THE DRAWINGS. SEE SPECIFICATIONS.
    b. LOCATION OF FIRE-RATED CEILINGS AND WALLS ARE AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
40. COORDINATE THE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS AND GRILLES WITH THE ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL LIGHTING LAYOUT AND ARCHITECTURAL ROOM ELEVATIONS.
41. ALL CEILING DIFFUSERS ARE 4-WAY UNLESS OTHERWISE NOTED.
42. PROVIDE BACK-DRAFT DAMPER FOR ALL EXHAUST AIR DUCT UNLESS OTHERWISE NOTED PER CODE.
43. EXHAUST TERMINATION SHALL BE MINIMUM 10'-0" AWAY OR 3'-0" ABOVE FROM ANY FRESH AIR INTAKE, OPERABLE WINDOWS, DOORS AND 10'-0" MINIMUM ABOVE GRADE.
44. PROVIDE ALL FRESH AIR INTAKES AND EXHAUST OUTLETS WITH HOOD, 1/2" GALVANIZED MESH SCREENS AND OUTSIDE AIR BACK-DRAFT DAMPERS.
45. ALL HVAC UNITS OR SYSTEMS SERVING A COMMON AIR SPACE MUST BE INTERCONNECTED TO SHUT DOWN IMMEDIATELY UPON ALARM CONDITION FROM DUCT DETECTORS (OR FIRE ALARM SYSTEM WHEN USING AREA SMOKE DETECTORS IN LIEU OF DUCT DETECTORS) WITHOUT INTERFERENCE FROM EMS OR ANY OTHER SYSTEMS. ALL CONTROL RELAYS USED FOR SHUT DOWN MUST BE APPROVED BY STATE OR LOCAL JURISDICTION FOR RELEASING SERVICE.
46. PURCHASING PARTY SHALL ENSURE THE MOTOR SPECS PRIOR TO ORDERING EXHAUST SYSTEM TO ENSURE THE PANEL IS BUILT CORRECTLY.
47. REDWOOD SLEEPER OR PLATFORM FOR ROOF MOUNTED UNIT, DUCT PENETRATION, CUTTING AND PATCHING BY GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED ON PLAN.
48. 42" MINIMUM GUARDS TO BE PROVIDED WHEN ROOF MOUNTED OR ROOF ACCESS EQUIPMENT THAT REQUIRE SERVICE ARE LOCATED WITHIN 10' OF A ROOF EDGE OR OPEN SIDE OF A WALKING SURFACE AND SUCH EDGE OR OPEN SIDE IS LOCATED MORE THAN 30" ABOVE THE ROOF SURFACE.

CA GREEN BUILDING NOTES

5.504.1 TEMPORARY VENTILATION. IF THE HVAC SYSTEM IS USED DURING CONSTRUCTION, USE RETURN AIR FILTERS WITH A MERV OF 8, BASED ON ASHRAE 52.2-1999, OR AN AVERAGE EFFICIENCY OF 30% BASED ON ASHRAE 52.1-1992. REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY. APPLIES TO ADDITIONS OR ALTERATIONS.

5.504.3 COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION. AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC,SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM.

5.504.5.3 IN MECHANICALLY VENTILATED BUILDINGS, PROVIDE REGULARLY OCCUPIED AREAS OF THE BUILDING WITH AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY THAT PROVIDES AT LEAST A MERV OF 13.

5.506.1 FOR MECHANICALLY OR NATURALLY VENTILATED SPACES IN BUILDINGS, MEET THE MINIMUM REQUIREMENTS OF SECTION 120.1 OF THE CALIFORNIA ENERGY CODE AND CHAPTER 4 OF CCR, TITLE 8, OR THE APPLICABLE LOCAL CODE, WHICHEVER IS MORE STRINGENT.

DEMAND CONTROL VENTILATION NOTES

2019 BUILDING ENERGY EFFICIENCY STANDARDS SECTION 120.1(D)4

A. For each system with demand control ventilation (DCV), CO2 sensors shall be installed in each room that meets the criteria of Section 120.1(d)3 with no less than one sensor per 10,000 ft² of floor space. When a zone or a space is served by more than one sensor, a signal from any sensor indicating that CO2 is near or at the setpoint within the zone or space shall trigger an increase in ventilation.

B. CO2 sensors shall be located in the room between 3 ft and 6 ft above the floor or at the anticipated height of the occupants' heads.

C. Demand ventilation controls shall maintain CO2 concentrations less than or equal to 600 ppm plus the outdoor air CO2 concentration in all rooms with CO2 sensors.

EXCEPTION to Section 120.1(d)4C: The outdoor air ventilation rate is not required to be larger than the design outdoor air ventilation rate required by Section 120.1(c)3 regardless of CO2 concentration.

D. Outdoor air CO2 concentration shall be determined by one of the following:
D.A. CO2 concentration shall be assumed to be 400 ppm without any direct measurement; or
D.B. CO2 concentration shall be dynamically measured using a CO2 sensor located within 4 ft of the outdoor air intake.

E. When the system is operating during hours of expected occupancy, the controls shall maintain system outdoor air ventilation rates no less than the rate listed in Table 120.1-A for DCV, times the conditioned floor area for spaces with CO2 sensors, plus the rate required by Section 120.1(c)3 for other spaces served by the system, or the exhaust air rate whichever is greater.

F. CO2 sensors shall be certified by the manufacturer to be accurate within plus or minus 75 ppm at a 600 and 1000 ppm concentration when measured at sea level and 25°C, factory calibrated, and certified by the manufacturer to require calibration no more frequently than once every 5 years. Upon detection of sensor failure, the system shall provide a signal which resets to supply the minimum quantity of outside air to levels required by Section 120.1(c)3 to the zone serviced by the sensor at all times that the zone is occupied.

G. The CO2 sensor(s) reading for each zone shall be displayed continuously, and shall be recorded on systems with DDC to the zone level.

CA TITLE 24 NOTES

ADIMINISTRATIVE REQUIREMENTS:

A. THE PERSON WITH OVERALL RESPONSIBILITY FOR CONSTRUCTION OR THE PERSON RESPONSIBLE FOR THE INSTALLATION OF REGULATED FEATURES, MATERIALS, COMPONENTS, OR MANUFACTURED DEVICES SHALL POST, OR MAKE AVAILABLE WITH THE BUILDING PERMIT(S) ISSUED FOR THE BUILDING, THE REQUIRED INSTALLATION CERTIFICATE(S) FOR FEATURES, MATERIALS, COMPONENTS, OR MANUFACTURED DEVICES REGULATED BY THE APPLIANCE EFFICIENCY REGULATIONS OR PART 6. SUCH INSTALLATION CERTIFICATE(S) SHALL BE MADE AVAILABLE TO THE ENFORCEMENT AGENCY FOR ALL APPROPRIATE INSPECTIONS. THESE CERTIFICATES SHALL:
   A.1. IDENTIFY FEATURES, MATERIALS, COMPONENTS, OR MANUFACTURED DEVICES REQUIRED TO VERIFY COMPLIANCE WITH THE APPLIANCE EFFICIENCY REGULATIONS AND PART 6.
   A.2. INCLUDE A STATEMENT INDICATING THAT THE FEATURES, MATERIALS, COMPONENTS, OR MANUFACTURED DEVISE CONFORM TO THE APPLIANCE EFFICIENCY REGULATIONS AND PART 6 AND THE REQUIREMENTS FOR SUCH FEATURES, MATERIALS, COMPONENTS, OR MANUFACTURED DEVICES GIVEN IN THE PLANS AND SPECIFICATIONS APPROVED BY THE LOCAL ENFORCEMENT AGENCY.
   A.3. STATE THE NUMBER OF THE BUILDING PERMIT UNDER WHICH THE CONSTRUCTION OR INSTALLATION WAS PERFORMED.

B. WITHIN 90 DAYS AFTER ISSUANCE OF CERTIFICATE OF OCCUPANCY RECORD DRAWINGS SHALL BE PROVIDED TO THE OWNER. IF A BUILDING DESIGN FEATURE, MATERIAL, COMPONENT OR MANUFACTURED DEVICE IS CHANGED BEFORE FINAL CONSTRUCTION AND INSTALLATION, SUCH THAT THE BUILDING MAY NO LONGER COMPLY WITH PART 6, THE BUILDING MUST BE BROUGHT INTO COMPLIANCE, AND SO INDICATED ON AMENDED PLANS AND CERTIFICATE OF COMPLIANCE(S) THAT SHALL BE SUBMITTED FOR APPROVAL.

C. THE BUILDER SHALL PROVIDE THE BUILDING OWNER OR THE PERSON(S) RESPONSIBLE FOR BUILDING MAINTENANCE (IN CASE OF MULTI-TENANT OR CENTRALLY OPERATED BUILDINGS) AT OCCUPANCY THE FOLLOWING:
   C.1. OPERATING INFORMATION: THE APPROPRIATE CERTIFICATE(S) OF COMPLIANCE AND A LIST OF THE FEATURES, MATERIALS, COMPONENTS, AND MECHANICAL DEVICES INSTALLED IN THE BUILDING AND INSTRUCTIONS ON HOW TO OPERATE THEM EFFICIENTLY.
   C.2. MAINTENANCE INFORMATION: REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY STATED AND INCORPORATED ON A READILY ACCESSIBLE LABEL. THE LABEL MAY BE LIMITED TO IDENTIFYING THE OPERATION AND MAINTENANCE MANUAL.
   C.3. VENTILATION INFORMATION: A DESCRIPTION OF THE QUANTITIES OF OUTDOOR AND RECIRCULATED AIR THAT THE VENTILATION SYSTEMS ARE DESIGNED TO PROVIDE TO EACH AREA.

CA TITLE 24 NOTES

MANDATORY MEASURES:

A. MANUFACTURED FENESTRATION AND EXTERIOR DOORS SHALL MEET ALL LISTED REQUIREMENTS IN SEC 10-111-(A) UNDER SECTION 110.6(A) OF PART 6. TEMPORARY LABELS FOR MANUFACTURED FENESTRATION SHALL HAVE A CLEARLY VISIBLE TEMPORARY LABEL AND SHALL COMPLY WITH LABELING REQUIREMENTS OF NFRC 700. NO OTHER VALUES FOR U-FACTOR, SHGC, VT AND AIR LEAKAGE ARE ALLOWED ON THE TEMPORARY LABEL ATTACHED TO THE MANUFACTURED FENESTRATION PRODUCT OR EXTERIOR DOOR.

B. RATED FENESTRATION SHALL HAVE A PERMANENT LABEL CONSISTENT WITH THEIR RATING AND CERTIFICATION THAT IS EITHER A STAND-ALONE LABEL, AN EXTENSION OR TAB OF AN EXISTING PERMANENT CERTIFICATION LABEL BEING USED BY THE MANUFACTURER/RESPONSIBLE PARTY, OR A SERIES OF MARKS OR ETCHINGS ON THE PRODUCT.

C. JOINTS, PENETRATIONS AND OTHER OPENINGS IN THE BUILDING ENVELOPE THAT ARE POTENTIAL SOURCES OF AIR LEAKAGE SHALL BE CAULKED, GASKETED, WEATHER STRIPPED, OR OTHERWISE SEALED TO LIMIT INFILTRATION AND EXFILTRATION.

D. ALL INSULATING MATERIAL SHALL BE INSTALLED IN COMPLIANCE WITH THE FLAME-SPREAD RATING AND SMOKE DENSITY REQUIREMENTS OF THE CBC.

E. NON-CENTRALIZED ENERGY MANAGEMENT SYSTEMS SHALL HAVE SETBACK THERMOSTATS; CAPABLE TO PROGRAM TEMPERATURE SETPOINTS FOR AT LEAST FOUR PERIODS WITHIN A 24-HR. PERIOD.

F. ALL RECIRCULATED AIR OR OUTDOOR AIR SUPPLIED TO OCCUPIABLE SPACES IS FILTERED (MINIMUM MERV 13) BEFORE PASSING THROUGH ANY AIR CONDITIONING COMPONENT; THE LESSER OF THE MINIMUM RATE OF OUTDOOR AIR REQUIRED BY SEC. 120.1 (C), OR THREE COMPLETE AIR CHANGES SHALL BE SUPPLIED TO THE ENTIRE BUILDING DURING THE ONE-HOUR PERIOD IMMEDIATELY BEFORE THE BUILDING IS NORMALLY OCCUPIED.

G. ALL MECHANICAL VENTILATION AND SPACE-CONDITIONING SYSTEMS SHALL BE DESIGNED WITH DUCTWORK, DAMPERS, AND CONTROLS WHICH ALLOWS OUTSIDE AIR RATES TO BE OPERATED AT THE LARGER OF (1) THE MINIMUM LEVELS SPECIFIED IN SECTION 120.1(C)3 OR (2) THE RATE REQUIRED FOR MAKE-UP OF EXHAUST SYSTEMS THAT ARE REQUIRED FOR AN EXEMPT OR COVERED PROCESS, FOR CONTROL OF ODORS, OR FOR THE REMOVAL OF CONTAMINANTS WITHIN THE SPACE. MEASURED OUTSIDE AIR RATES OF CONSTANT AND VARIABLE VOLUME MECHANICAL VENTILATION SYSTEMS SHALL BE WITHIN 10% OF OUTSIDE AIR RATE SHOWN ON TABLE 120.1-A.

H. THE THERMOSTATIC CONTROLS FOR HVAC SYSTEMS SHALL BE CAPABLE OF BEING SET LOCALLY OR REMOTELY BY TO CONTROL COMFORT HEATING DOWN TO 55 °F OR LOWER AND COOLING UP TO 85°F OR HIGHER. THE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A DEAD BAND RANGE OF AT LEAST 5 °F WITHIN WHICH HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCE TO A MINIMUM.

I. OUTDOOR AIR SUPPLY AND EXHAUST EQUIPMENT SHALL BE INSTALLED WITH DAMPERS THAT AUTOMATICALLY CLOSE UPON FAN SHUTDOWN.

J. AIR DISTRIBUTION SYSTEM DUCTS AND PLENUMS, INCLUDING, BUT NOT LIMITED TO, BUILDING CAVITIES, MECHANICAL CLOSETS, AIR-HANDLER BOXES AND SUPPORT PLATFORMS USED AS DUCTS OR PLENUMS, SHALL BE INSTALLED, SEALED AND INSULATED TO MEET THE REQUIREMENTS OF CHAPTER 6 CMC CODE AND ANSI/SMACNA -006-2006 HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE. SUPPLY-AIR DUCTS CONVEYING HEATED OR COOLED AIR SHALL BE INSULATED TO A MINIMUM INSTALLED LEVEL OF R-4.2 (R-8 IN UNCONDITIONED SPACE), UNLESS DUCTS ARE IN CONDITIONED SPACE.

K. MAXIMUM LENGTH OF FLEXIBLE DUCT AND CONNECTORS SHALL NOT BE MORE THAN 5 FEET. FLEXIBLE DUCTS SHALL NOT BE USED IN LIEU OF RIGID ELBOWS.

L. EACH SPACE-CONDITIONING SYSTEM SHALL BE INSTALLED WITH CONTROLS (1) CAPABLE OF AUTOMATICALLY SHUTTING OFF THE SYSTEM DURING PERIODS OF NON-USE AND SHALL HAVE (A) 4-HR TIMER OR; (B) OCCUPANCY SENSORS OR; (C) AUTO TIME SWITCH CONTROLS AND ACCESSIBLE MANUAL OVERRIDE FOR UP TO 4-HRS. (2) AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN SETBACK THERMOSTAT SETPOINTS FOR MECHANICAL HEATING AND COOLING. (3) MULTIPURPOSE, CLASSROOMS CONFERENCE, CONVENTION, AUDITORIUM AND MEETING CENTER ROOMS OF CERTAIN SIZE WHICH DO NOT HAVE PROCESSES OR OPERATIONS THAT GENERATE DUSTS, FUMES, VAPORS OR GASSES SHALL BE EQUIPPED WITH OCCUPANT SENSOR(S) TO ACCOMPLISH THE FOLLOWING DURING UNOCCUPIED PERIODS (A) AUTOMATICALLY SETUP THE OPERATING COOLING TEMPERATURE SET POINT BY 2°F OR MORE AND SETBACK THE OPERATING HEATING TEMPERATURE SET POINT BY 2˚F OR MORE AND; (B) AUTOMATICALLY RESET THE MINIMUM REQUIRED VENTILATION RATE WITH AN OCCUPANT SENSOR VENTILATION CONTROL DEVICE ACCORDING TO SECTION 120.1(C)5. (4) HOTEL AND MOTEL GUEST ROOMS SHALL HAVE CAPTIVE CARD KEY CONTROLS, OCCUPANCY SENSING CONTROLS, OR AUTOMATIC CONTROLS SUCH THAT, NO LONGER THAN 30 MINUTES AFTER THE GUEST ROOM HAS BEEN VACATED, SETPOINTS ARE SETUP AT LEAST +5°F (+3°C) IN COOLING MODE AND SET-DOWN AT LEAST -5°F (-3°C) IN HEATING MODE.

M. THE LESSER OF THE MINIMUM RATE OF OUTDOOR AIR REQUIRED BY SEC. 120.1 (C), OR THREE COMPLETE AIR CHANGES SHALL BE SUPPLIED TO THE ENTIRE BUILDING DURING THE ONE-HOUR PERIOD IMMEDIATELY BEFORE THE BUILDING IS NORMALLY OCCUPIED. SEC 120.1 (B)(C).

N. OUTDOOR AIR SUPPLY AND EXHAUST EQUIPMENT SHALL BE INSTALLED WITH DAMPERS THAT AUTOMATICALLY CLOSE UPON FAN SHUTDOWN. SEC. 120.2 (F).

O. SUPPLY-AIR DUCTS CONVEYING HEATED OR COOLED AIR SHALL BE INSULATED TO A MINIMUM INSTALLED LEVEL OF R-4.2 (R-8 IN UNCONDITIONED SPACE), UNLESS DUCTS ARE IN CONDITIONED SPACE. SEC. 120.4 (A).

P. DUCT SYSTEMS USED WITH BLOWER TYPE EQUIPMENT WHICH ARE PORTIONS OF A HEATING, COOLING, ABSORPTION, EVAPORATIVE COOLING OR OUTDOOR AIR VENTILATION SYSTEM SHALL BE SIZED IN ACCORDANCE WITH CHAPTER 17 OF THE CALIFORNIA MECHANICAL CODE.

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MECHANICAL NOTES

M000

PLOT DATE: 10/14/2022 4:39:15 PM

PACKAGED ROOFTOP HEAT PUMP UNIT SCHEDULE

EQ # MARK	MAKE & MODEL	NOMINAL TONS	COOLING CAPACITY (BTUH)		HEATING CAPACITY (BTUH)	HSPF/ COP	SUPPLY FAN		POWER SUPPLY				EER/ SEER/ IEER	WEIGHT (LBS.)	UNIT DIMENSIONS (IN.)		
	(EQUIV. ACCEPTABLE)		TH	SH			CFM	HP	VOLT	PH	HZ	MCA/ MOCP			H	W	D
RTU - 1	TRANE WSC048H4	4	49,000	34,300	47,500	8.2 / -	1,600	1	460	3	60	12 / 15	12.3 / 14.3 / -	768	40-7/8	69-7/8	44-1/4
RTU - 2	TRANE WSC102H4	8.5	100,000	70,000	92,000	- / 3.4	3,400	2	460	3	60	20 / 30	11 / - / 12.2	1143	46-7/8	88-5/8	53-1/4
RTU - 3	TRANE WSC048H4	4	49,000	34,300	47,500	8.2 / -	1,600	1	460	3	60	12 / 15	12.3 / 14.3 / -	768	40-7/8	69-7/8	44-1/4
RTU - 4	TRANE WSC120H4	10	115,000	80,500	106,000	- / 3.4	4,000	2.75	460	3	60	24 / 35	11 / - / 12.2	1164	46-7/8	88-5/8	53-1/4

NOTES:

1	INSTALL WITH DISCONNECT SWITCH AND ALL WEATHERPROOF GFCI.
2	THERMOSTATS INSTALLED AT 48"AFF W/ REMOTE SENSORS.
3	PROVIDE STANDARD THROWAWAY CONSTRUCTION FILTERS OF MERV 13. MECHANICAL CONTRACTOR SHALL FURNISH AND FIELD INSTALL NEW FILTER PRIOR TO BUILDING OCCUPANCY (INCLUDING FOR INTERNAL PRESSURE DROP.
4	EXTEND CONDENSATE DRAIN DIRECTLY TO A LOCAL CODE APPROVED RECEPTOR.
5	PROVIDE REMOTE ALARM INDICATORS FOR THE SUPPLY AIR SMOKE DETECTORS CLEARLY LABELED AS TO FUNCTION AND UNIT SERVED.
6	DUCT SMOKE DETECTORS SHALL BE PROVIDED FOR SYSTEMS HAVING A GREATER THAN 2,000 CFM CAPACITY ON SUPPLY PLENUM. KEYED REMOTE TEST SWITCHES WITH LED LIGHT INDICATOR ARE TO BE PROVIDED ON THE WALL AT NO GREATER THAN 6 FEET FOR ALL DUCT DETECTORS. DUCT DETECTOR ACTIVATION SHALL RESULT IN COMPLETE SHUT DOWN OF HVAC UNITS AND NOTIFICATION TO THE FIRE ALARM SYSTEM IN THE FORM OF A SUPERVISORY SIGNAL.
7	PROVIDE AN INTEGRATED ECONOMIZER WITH FAULT DETECTION DIAGNOSTICS (FDD) FOR EACH INDIVIDUAL COOLING SPACE CONDITIONING SYSTEM THAT HAS A TOTAL COOLING CAPACITY OVER 54,000 BTU/HR.

AIR DEVICE SCHEDULE

TYPE # MARK	FACE SIZE	TYPE	MOUNTING TYPE	DIRECTION	MANUF.	NOTES
S-1	24X24	SUPPLY	SURFACE/ LAY-IN	4-WAY	TITUS (OR EQUIV.)	1,2,3,4
R-1	24X24	RETURN	SURFACE/ LAY-IN	1-WAY	TITUS (OR EQUIV.)	1,2,3

NOTES:

1. PROVIDE NECESSARY MOUNTING HARDWARE AND ACCESSORIES AS REQUIRED.
2. ALL AIR DEVICES SHALL HAVE MANUFACTURER-APPLIED STANDARD WHITE FINISH UNLESS NOTED OTHERWISE. REFER TO ARCHITECTURAL DRAWINGS FOR RCP COORDINATION.
3. AIR DEVICE SHALL BE OF STEEL CONSTRUCTION.
4. AIR DEVICE SHALL BE INSTALLED COMPLETE WITH MANUFACTURER AVAILABLE MOLDED INSULATION BACKING. FIELD-FABRICATED INSULATION BACKING IS NOT ALLOWED UNLESS FIRST APPROVED BY THE OWNER'S CONSTRUCTION MANAGER.

VENTILATION SCHEDULE

Room	AREA	OSA REQUIRED		EXHAUST REQUIRED		
	AREA(S.F.)	RATE(CFM/SF)	REQUIRED CFM	RATE(CFM/SF)	REQUIRED CFM	PROVIDED CFM
BREAK ROOM	1120	0.5	560	0.00	0	0
WAREHOUSE	3205	0.15	480.75	0.00	0	0
DECK	3405	0.15	510.75	0.00	0	0
GYM	920	0.15	138	0.00	0	0
TOTAL REQUIRED:			1551.5			
TOTAL PROVIDED:			1900			

GRAVITY VENTILATOR SCHEDULE

EQ # MARK	EQUIP.	CFM	THROAT WIDTH X LENGTH	CURB CAP WIDTH X LENGTH	WT (LBS)	MANUFACTURER & MODEL NO.	REMARKS
GV - 1	GRAVITY INTAKE	11,721	24 X 66	30 X 72	174	GREENHECK FGI	1,2,3
GV - 2	GRAVITY RELIEF	13,871	24 X 84	30 X 90	178	GREENHECK FGR	1,2,3

REMARKS:

1	EQUIVALENT ACCEPTABLE.
2	INSTALL WITH BACKDRAFT DAMPER.
3	PROVIDE DUCT FROM GRAVITY VENTILATOR TO CEILING AIR DEVICES.

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M001

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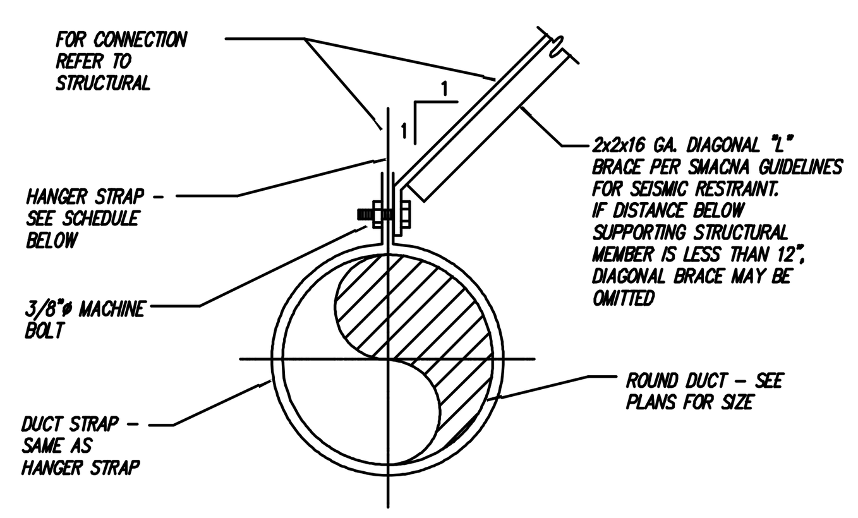
NOTE:
WHERE DUCT IS LARGER THAN 28"ø USE 2 1/2 X 2 1/2 X 16 GA. VERTICAL ANGLE IN PLACE OF HANGER STRAP AT EACH SEISMIC BRACE.

HANGER STRAP SCHEDULE

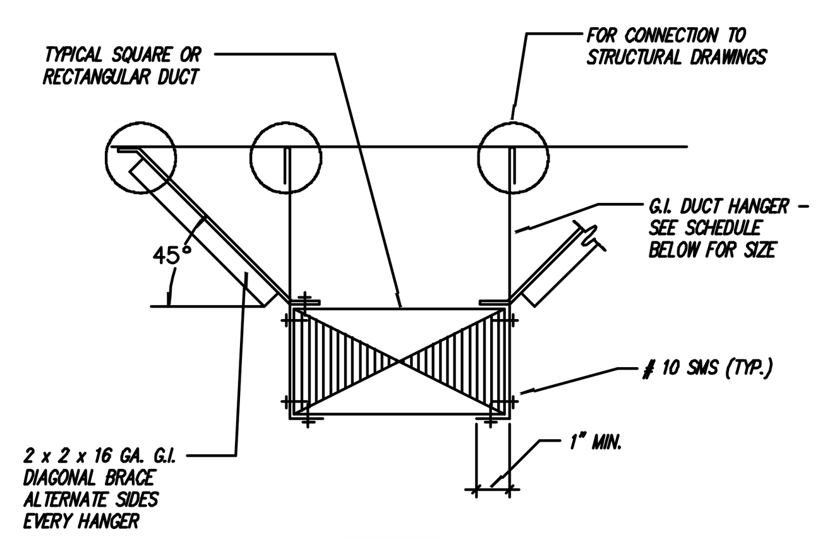
DUCT SIZE	STRAP SIZE	MAX. LOAD EA. HANGER	MAX. SPACING
UP THRU 10"	1" x 22 GA.	260 LBS	10'-0"
11" TO 18"	1" x 22 GA.	260 LBS	10'-0"
19" TO 24"	1" x 22 GA.	260 LBS	10'-0"
25" TO 36"	1" x 20 GA.	320 LBS	10'-0"



DETAIL 1

ROUND DUCT

RECTANGULAR DUCT

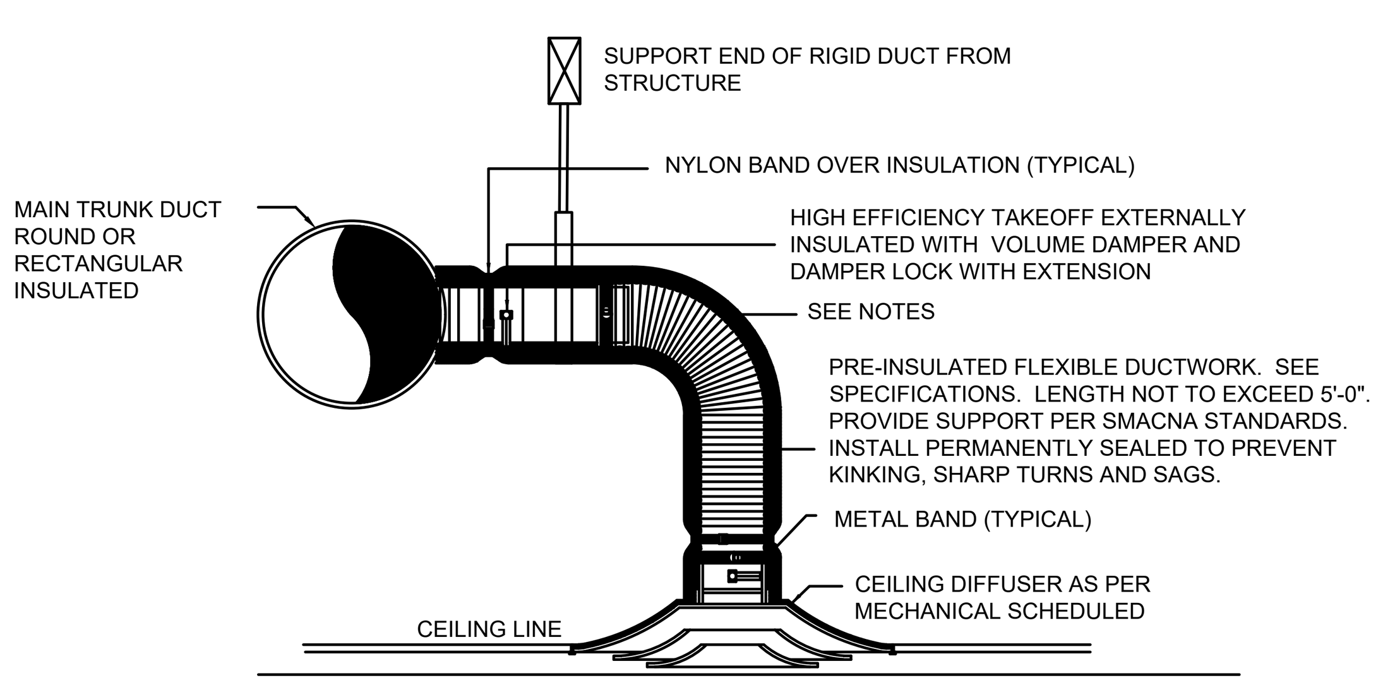


DETAIL 1

NOTE:
WHERE DUCT IS 6 SF. OR LARGER IN CROSS SECTIONAL AREA – USE 2 1/2 x 2 1/2 x 16 GA. VERTICAL ANGLE IN PLACE OF HANGER AT SEISMIC BRACE.

MAX. HALF OF DUCT PERIMETER	MAX. LOAD EACH HANGER	HANGER SIZE	HANGER SPACING
P/2 = 30"	260 LBS	1" x 22 GA.	10'-0" O/C
P/2 = 72"	420 LBS	1" x 18 GA.	10'-0" O/C
P/2 = 96"	700 LBS	1" x 16 GA.	10'-0" O/C
P/2 = 120"	1100 LBS	1 1/2" x 16 GA.	10'-0" O/C

DUCT MOUNTING DETAIL — SCALE: N.T.S. — 1



NOTE: EXTEND HARD METAL DUCT SO THAT MAXIMUM FLEXIBLE DUCT LENGTH DOES NOT EXCEED 5'-0". PROVIDE RIGID 90° ELBOW WHERE REQUIRED TO KEEP FLEXIBLE DUCT WITHIN 5'-0" LENGTH LIMITATION.

CEILING DIFFUSER DETAIL — SCALE: N.T.S. — 2

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M002

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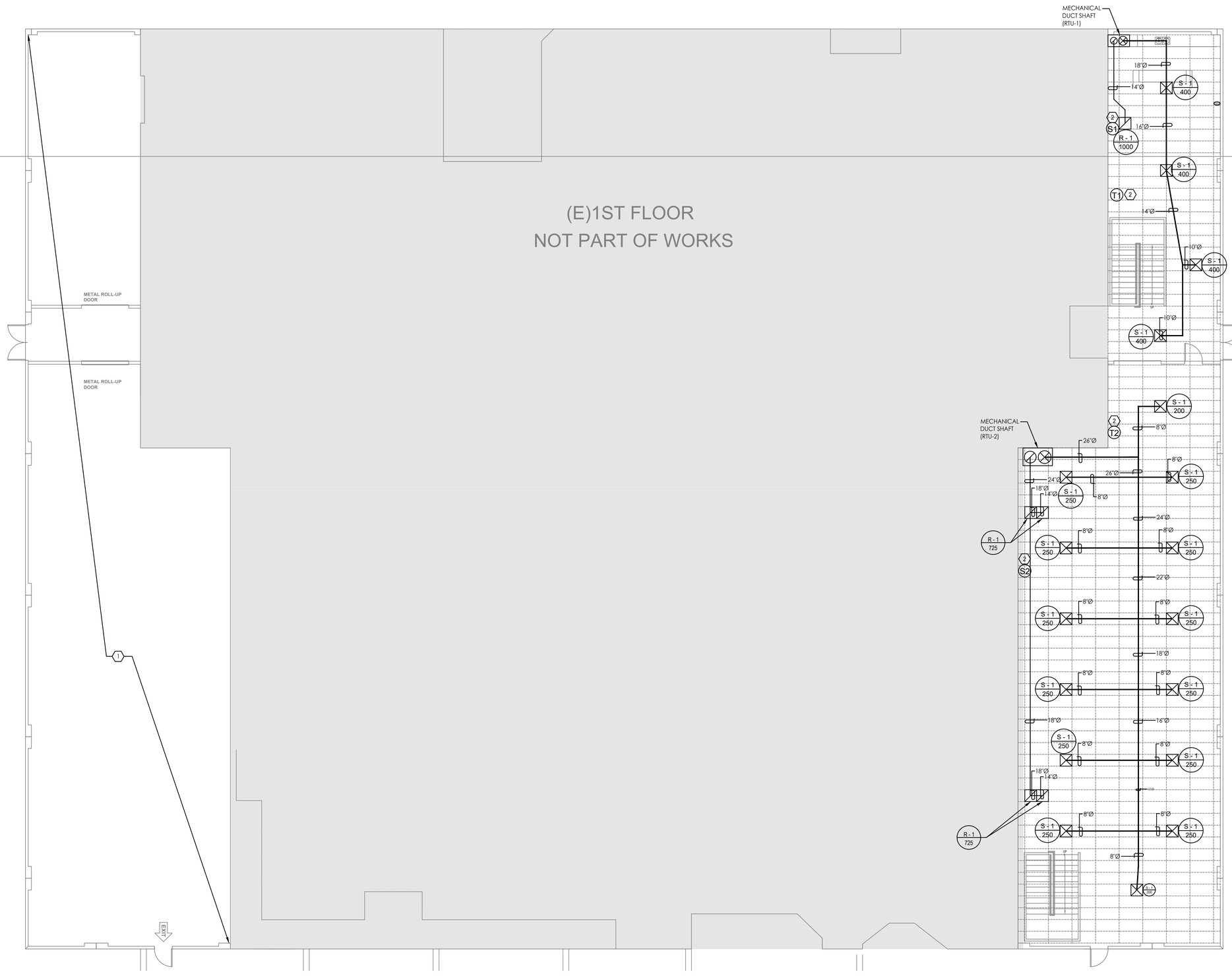

MECHANICAL PLAN - 1ST FLOOR

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KEYED PLAN NOTES:

1. OPEN TO ABOVE.
2. INSTALL PROGRAMMABLE THERMOSTAT 48"AFF AND MOUNT REMOTE SENSORS HIGH ON WALL.

GENERAL NOTES:

1. IF DRAWINGS ARE INCORRECT FROM THE ACTUAL SITE CONDITION, CONTRACTOR SHALL NOTIFY ENGINEER(S) AND PROVIDE INFORMATION REFLECTING ACTUAL CONDITIONS.

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MECHANICAL PLAN - 1ST FLOOR

M100

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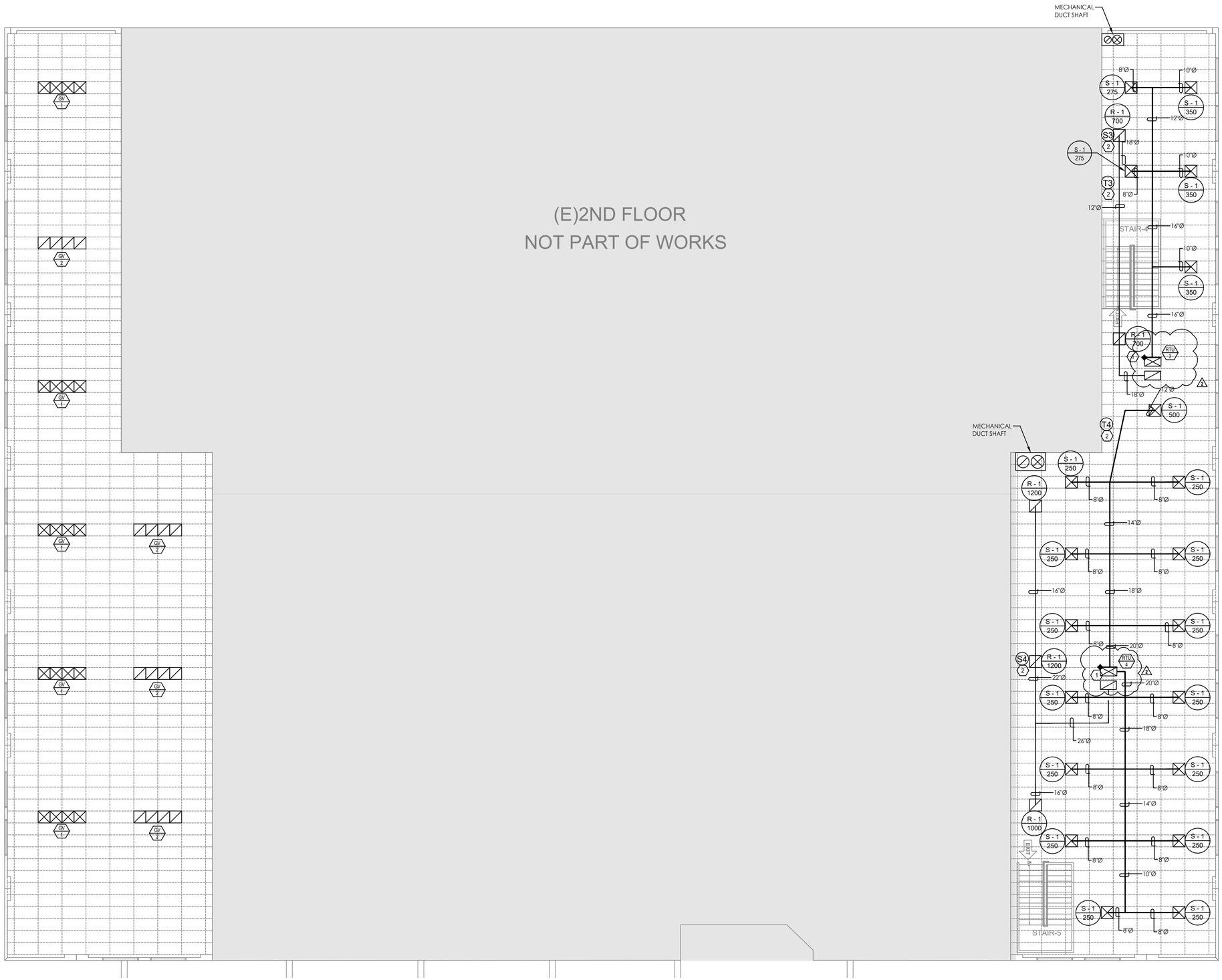

MECHANICAL PLAN - 2ND FLOOR

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KEYED PLAN NOTES:

1. INSTALL DUCT SMOKE DETECTOR ON SUPPLY SIDE PLENUM.
2. INSTALL PROGRAMMABLE THERMOSTAT 48"AFF AND MOUNT REMOTE SENSORS HIGH ON WALL.

GENERAL NOTES:

1. IF DRAWINGS ARE INCORRECT FROM THE ACTUAL SITE CONDITION, CONTRACTOR SHALL NOTIFY ENGINEER(S) AND PROVIDE INFORMATION REFLECTING ACTUAL CONDITIONS.

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MECHANICAL PLAN - 2ND FLOOR

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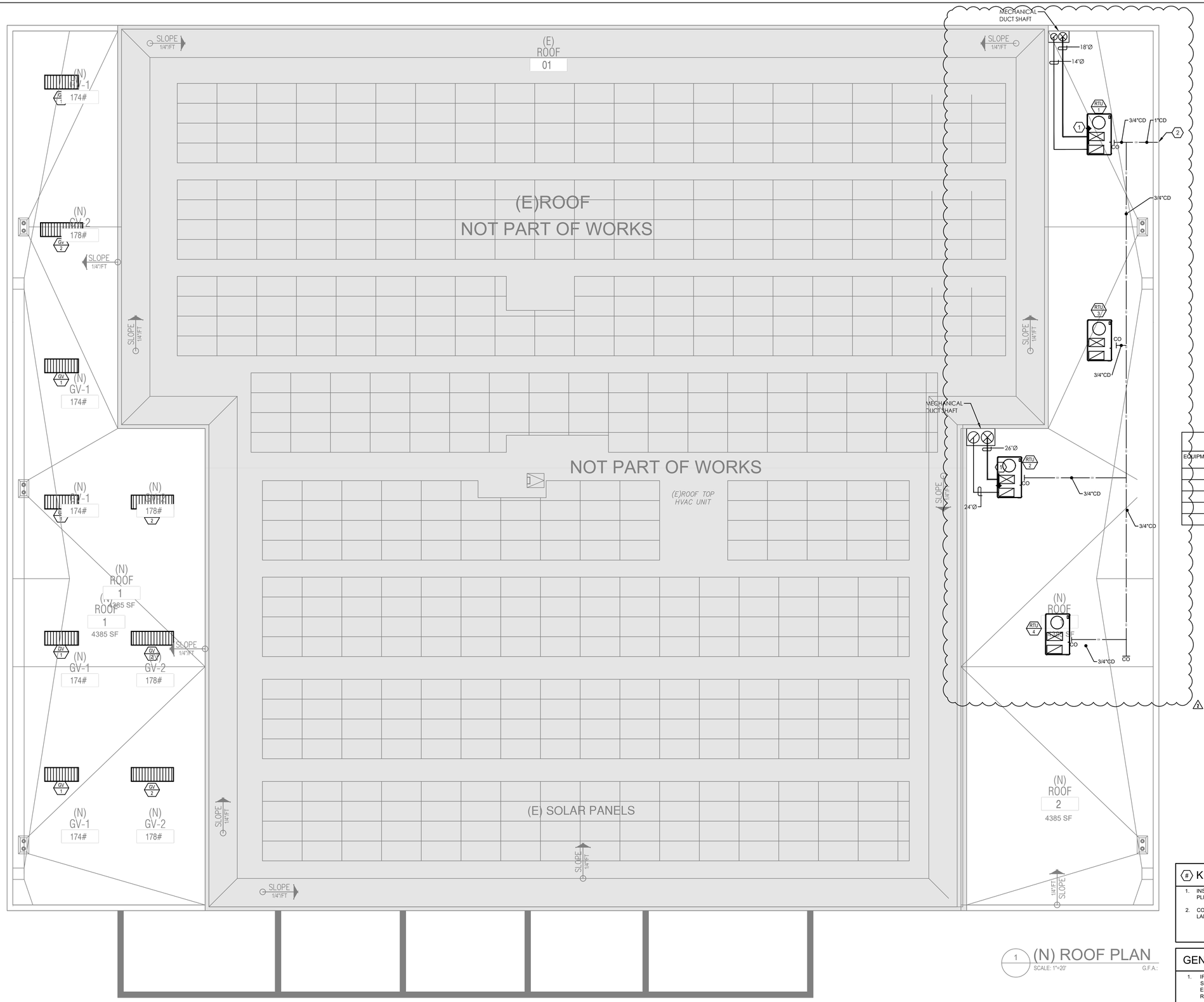

(N) ROOF PLAN

SCALE: 1"=20' G.F.A.:

MECHANICAL PLAN - ROOF

MINIMUM CONDENSATE PIPE SIZE	
EQUIPMENT CAPACITY IN TONS OF REFRIGERATOIN	MINIMUM CONDENSATE PIPE DIAMETER
UP TO 20	3 / 4
21-40	1
41-90	1-1/4
91-125	1-1/2
126-250	2

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KEYED PLAN NOTES:

1. INSTALL DUCT SMOKE DETECTOR ON SUPPLY SIDE PLENUM.
2. CONDENSATE PIPE RUN ALONG WALL AND SPILL TO LANDSCAPE AREA.

GENERAL NOTES:

1. IF DRAWINGS ARE INCORRECT FROM THE ACTUAL SITE CONDITION, CONTRACTOR SHALL NOTIFY ENGINEER(S) AND PROVIDE INFORMATION REFLECTING ACTUAL CONDITIONS.
2. CONDENSATE DRAIN SLOPE AT MIN. 1%.

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MECHANICAL PLAN - ROOF

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STATE OF CALIFORNIA
Envelope Component Approach
NRCC-ENV-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-ENV-E
Project Name:	GTS Office	Report Page:	(Page 1 of 11)
Project Address:	12881 166th Street	Date Prepared:	4/13/2022

This document is used to demonstrate compliance with mandatory requirements in §110.8(g) and §120.7(b) for newly constructed buildings, and §141.0(b)1 for alterations, related to roof, wall and floor assemblies. It is also used to demonstrate compliance with prescriptive requirements in §140.3 for newly constructed buildings, and §141.0 for additions and alterations, related to roof, wall, floor, door, fenestration and daylighting requirements.

A. GENERAL INFORMATION

01	Project Location (city)	Cerritos	05	# of Stories (Habitable Above Grade)	1
02	Zipcode	90703	06	Total Conditioned Floor Area (ft²)	8650
03	Climate Zone	8	07	Total Unconditioned Floor Area (ft²)	0
04	Occupancy Types Within Project: (select all that apply): If one occupancy constitutes >= 80% of the conditioned floor area, the entire building envelope may be designed to comply with the provisions of that occupancy per §100.0(f).		08	☐ Project includes unconditioned enclosed space(s) > 5,000 ft² under a roof with a ceiling height of at least 15 ft.[1]	
☒ All Nonresidential, including Relocatable Public School Building certified for use in one climate zone Occupancy: A / B / E / F / H / M / S / U		☐ Relocatable Public School Building for use in all climate zones Occupancy: E		☐ High-Rise Residential Occupancy: R-2 / R-3	☐ Hotel/Motel Guest Rooms Occupancy: R-1

[1] *FOOTNOTE: Enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15 ft in climate zones 2 through 15 are required to meet the minimum daylighting requirements defined in §140.3(c). Compliance with §140.3(c) is documented in Table L. This is the only prescriptive requirement which applies to unconditioned spaces.*

B. PROJECT SCOPE

This table specifies project envelope components within the permit application demonstrating compliance using the prescriptive paths outlined in §140.3, and §141.0(a)1 and §141.0(b)1 and 2 for additions and alterations.

My project consists of (check all that apply)		Component Types					
01		02					
☒ New Construction or Newly Conditioned Space		☒	Roof	☒	Walls	☒	Exterior Doors
☐ One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft		☐		☐	Floors	☒	Fenestration/ Glazed Doors[1]
☐ Addition of conditioned space		☐	Roof	☐	Walls	☐	Exterior Doors
☐ One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft		☐		☐	Floors	☐	Fenestration/ Glazed Doors[1]
☐ Alteration of conditioned space		☐	Roof Assembly	☐	Walls		Exterior Doors NA. for Alts.
☐ One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft and lighting system installed for the first time		☐	Roofing Material	☐	Floors	☐	Fenestration/ Glazed Doors

[1] *FOOTNOTE: Doors that are more than 25% glass in area are considered Glazed Doors and should be documented on table K with fenestration.*

H. WALL ASSEMBLY SCHEDULE

This table demonstrates compliance with prescriptive wall assembly requirements in §140.3(a)2 and §140.3(a)3 for new constructions or additions, or mandatory wall assembly requirements in §141.0(b)1B for alterations.

01	Indicate wall types included in the project:[1]	☒ Framed	☐ Mass (new only)	☐ Concrete Sandwich Panel (new only)	☐ SIPS	☐ ICF (new only)
		☐ Metal Panels	☐ Metal Building	☐ Spandrel/ Curtain Wall	☐ Straw Bale	☐ Log Home (new only)

[1] *FOOTNOTES: Wall types indicated above as "(new only)" do not have Title 24, Part 6 requirements for alterations. New construction and additions do have requirements and should be clicked above and compliance demonstrated within this table.*

Framed Walls

01	☐	Calculate Area-Weighted Average U-factor for Metal Framed Walls[1]
02	☒	Include Wood Framed Walls in Area-Weighted Average U-factor Calculation[1]

03 Tag/Plan Detail ID	04 Occupancy & Status	05 How Design U-factor was determined	06 Location	07 Frame Material, Spacing & Depth	08 Cavity Insulation per Design	09 Continuous Insulation per Design	10 Thermal Performance Unit	11 Required Thermal Performance	12 U-factor per Design		13 Net Area[3] ft²
North Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		214
									per Software/ Other	0.102	

G. RATED ROOFING MATERIAL (COOL ROOF)

This table demonstrates compliance with prescriptive roof material requirements in §140.3(a)1A for new construction or additions, or §141.0(b)2B for alterations.

01 Tag/Plan Detail ID	02 Name/Description	03 Status	04 Occupancy Type	05 Roof Slope	06 Roof Material	07 Compliance Method	08 Required Minimum Material Performance		09 Designed Material Performance		10 U-factor of Assembly
R-21 Roof Cathedral	Roof	New	Nonresidential/ Relocatable 1 CZ	<2:12 (Low)	To Be Determined	Solar Reflectance (Aged)/ Emittance	Reflectance	0.63	Reflectance	0.63	
							Emittance	0.75	Emittance	0.75	
							SRI		SRI		

J. EXTERIOR DOOR SCHEDULE

This table demonstrates compliance with prescriptive exterior door requirements in §140.3(a)7 for new construction or additions. Doors which are being replaced (alterations) do not need to be documented in this table because there are no Title 24, Part 6 requirements that apply. Exterior doors separate conditioned space from unconditioned space or from ambient air. Doors that are more than 25% glass in area are considered Glazed Doors and should be documented on Table K with fenestration per Table B.

01 Tag/Plan Detail ID	02 Name/Description	03 Occupancy Type	04 Door Type	05 Door Insulation	06 Maximum Allowed U-factor	07 U-factor per Design	
	Metal Door	Nonresidential/ Relocatable 1 CZ	Swinging	Any other wood door	0.7	per JA4	0.7

K. FENESTRATION AND GLAZED DOOR SCHEDULE

This table demonstrates compliance with prescriptive fenestration requirements in §140.3(a)5 for new constructions or additions, or §140.1(b)2A for alterations. Exterior doors that are more than one-half glass in area are considered Glazed Doors and should be documented on this table with fenestration.

01	Indicate fenestration types included in the project:[1]	☐ Vertical (alterations)	☒ Vertical (new)	☐ Skylights	☐ Glazed Doors (new only)

[1] *FOOTNOTES: Fenestration types indicated above as "(new only)" do not have Title 24, Part 6 requirements for alterations. New construction and additions do have requirements and should be clicked above and compliance demonstrated within this table.*

Vertical Fenestration and Glazed Doors- Total Building & West Facing Area (New Construction & Additions Only)

01 Elevation Item Tag/ Description	02 Orientation (Azimuth)[1]	03 Gross Exterior Wall Area[2]	04 Display Perimeter Length[3]	05 Vertical Fenestration Area per Design[1]
North	North Facing	428	0	0
East	East Facing	3444	0	732
South	South Facing	770	0	48
West	West Facing	0	0	0

06	Maximum Allowed Vertical Fenestration (ft²)- All Orientations	1845.6	07 Total Vertical Fenestration (ft²) per design- All Orientations	780
08	Maximum Allowed Vertical Fenestration (ft²)- West Facing	0	09 Total Vertical Fenestration (ft²) per design- West Facing	0

[1] *FOOTNOTES: Orientation between 226 deg and 315 deg are considered "West Facing". A diagram has been provided in the Nonresidential Compliance Manual for visual reference.*

[2] *Do not include demising walls per §140.3(a)5 .*

[3] *Includes glazed door fenestration area .*

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C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through L. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see the applicable table referenced below.

Opaque Envelope Components					Fenestration	Daylighting Spaces > 5,000ft²	Compliance Results
Roof Assembly	Roofing Materials	Walls	Floors	Doors			
01	02	03	04	05	06	07	08
(See Table F)	(See Table G)	(See Table H)	(See Table I)	(See Table J)	(See Table K)	(See Table L)	COMPLIES
Yes	Yes	Yes		Yes	Yes		

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. ROOF ASSEMBLY SCHEDULE

This table demonstrates compliance for prescriptive roof assembly requirements in §140.3(a)1B for new construction or additions, or §141.0(b)2BIII for alterations,

01	Indicate roof types included in the project:	☒ Framed	☐ SIPS	☐ Span Deck & Concrete	☐ Metal Panels	☐ Metal Building

Framed Roof Assemblies

01	☒	Include Framed Roof Assemblies in Area-Weighted Average U-factor Calculation[1]			
02	03	04	05		06
Tag/Plan Detail ID	Name/Description	Status	Exception to Roof Insulation Requirements in §141.0(b)2BIII (Alts. Only)		Occupancy Type
R-21 Roof Cathedral	Roof	New			Nonresidential/ Relocatable 1 CZ
R-21 Roof Cathedral	Roof	New			Nonresidential/ Relocatable 1 CZ

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F. ROOF ASSEMBLY SCHEDULE

07 Tag/Plan Detail ID	08 How Design U-factor was determined	09 Roof Type & Frame Material	10 Frame Spacing Depth	11 Cavity Insulation per Design	12 Continuous Insulation per Design	13 Thermal Performance Unit	14 Required Thermal Performance	15 U-factor per Design		16 Net Area[3] ft²
Roof	JA4 Tables	Wood		21	0	U-factor	0.049	per JA4		3205
								per Software/ Other	0.048	
Roof	JA4 Tables	Wood		21	0	U-factor	0.049	per JA4		1120
								per Software/ Other	0.048	

[1] *FOOTNOTES: If any individual assembly is non-compliant, assemblies may show compliance using an area-weighted calculation. Metal building roofs may not be combined with other roof types. The area-weighted compliance option is not available for alterations demonstrating compliance with R-values in Table 141.0-C.*

[2] *If "R-value" is shown in cell 13 as the Thermal Performance Unit, the R-value shown here is for continuous insulation per Table 141.0-C.*

[3] *Roof area minus any fenestration/ skylight area*

Structural Insulated Panels (SIPS) Roof/Ceiling Assemblies

Span Deck And Concrete Roof Assemblies

Metal Panel Assemblies

Metal Building Roof Assemblies

Area-Weighted Average U-factor Compliance Calculation for Framed/ SIPs/ Span Deck & Concrete/ Metal Panel Roofs

01 Roof Type	02 Total Area of Roof Type (ft²)	03 Area-weighted U-factor for Roof Type: Required	04 Area-weighted U-factor for Roof Type: Designed	05 Compliance Results Using Area-Weighted Calculation Option
Framed	4325	0.049	0.048	
Total for all Roof Types:	**4325**	**0.049**	**0.048**	**COMPLIES**

Area-Weighted Average U-factor Compliance Calculation for Metal Building Roof

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H. WALL ASSEMBLY SCHEDULE

This table demonstrates compliance with prescriptive wall assembly requirements in §140.3(a)2 and §140.3(a)3 for new constructions or additions, or mandatory wall assembly requirements in §141.0(b)1B for alterations.

01	Indicate wall types included in the project:[1]	☒ Framed	☐ Mass (new only)	☐ Concrete Sandwich Panel (new only)	☐ SIPS	☐ ICF (new only)
		☐ Metal Panels	☐ Metal Building	☐ Spandrel/ Curtain Wall	☐ Straw Bale	☐ Log Home (new only)

[1] *FOOTNOTES: Wall types indicated above as "(new only)" do not have Title 24, Part 6 requirements for alterations. New construction and additions do have requirements and should be clicked above and compliance demonstrated within this table.*

Framed Walls

01	☐	Calculate Area-Weighted Average U-factor for Metal Framed Walls[1]
02	☒	Include Wood Framed Walls in Area-Weighted Average U-factor Calculation[1]

03 Tag/Plan Detail ID	04 Occupancy & Status	05 How Design U-factor was determined	06 Location	07 Frame Material, Spacing & Depth	08 Cavity Insulation per Design	09 Continuous Insulation per Design	10 Thermal Performance Unit	11 Required Thermal Performance	12 U-factor per Design		13 Net Area[3] ft²
North Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		214
									per Software/ Other	0.102	

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H. WALL ASSEMBLY SCHEDULE

03 Tag/Plan Detail ID	04 Occupancy & Status	05 How Design U-factor was determined	06 Location	07 Frame Material, Spacing & Depth	08 Cavity Insulation per Design	09 Continuous Insulation per Design	10 Thermal Performance Unit	11 Required Thermal Performance	12 U-factor per Design		13 Net Area[3] ft²
East Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		303
									per Software/ Other	0.102	
South Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		357
									per Software/ Other	0.102	
East Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		1095
									per Software/ Other	0.102	
South Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		337
									per Software/ Other	0.102	
East Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		831
									per Software/ Other	0.102	
North Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		214
									per Software/ Other	0.102	

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H. WALL ASSEMBLY SCHEDULE

03 Tag/Plan Detail ID	04 Occupancy & Status	05 How Design U-factor was determined	06 Location	07 Frame Material, Spacing & Depth	08 Cavity Insulation per Design	09 Continuous Insulation per Design	10 Thermal Performance Unit	11 Required Thermal Performance	12 U-factor per Design		13 Net Area[3] ft²
East Exterior Wall	Nonresidential/ Relocatable 1 CZ: New	JA4 Tables	Exterior wall	Wood 1/2" gyp 16" OC 2x4	13	0	U-factor	0.102	per JA4		483
									per Software/ Other	0.102	

[1] *FOOTNOTES: If any individual assembly is non-compliant, assemblies may show compliance using an area-weighted calculation. Metal framed walls may not be combined with other wall types. Wood framed walls are combined with SIPS, spandrel & curtain, metal panel and straw bale wall types. The area-weighted compliance option is not available for alterations demonstrating compliance with R-values in Table 141.0-C.*

[2] *If "R-value" is shown in cell 10 as the Thermal Performance Unit, the R-value shown here is for cavity insulation per §141.0(b)1B.*

[3] *Wall area minus any fenestration area*

Area-Weighted Average U-factor Compliance Calculation for Wood Framed/ SIPs/ Spandrel/ Curtain/ Metal Panel/ Straw Bale Wall Types

01 Wall Type	02 Total Area of Wall Type (ft²)	03 Area-weighted U-factor for Wall Type: Required	04 Area-weighted U-factor for Wall Type: Designed	05 Compliance Results Using Area-Weighted Calculation Option
Framed	3834	0.102	0.102	
Total for all Wall Types:	3834	0.102	0.102	COMPLIES

I. FLOOR ASSEMBLY SCHEDULE

This section does not apply to this project.

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J. EXTERIOR DOOR SCHEDULE

This table demonstrates compliance with prescriptive exterior door requirements in §140.3(a)7 for new construction or additions. Doors which are being replaced (alterations) do not need to be documented in this table because there are no Title 24, Part 6 requirements that apply. Exterior doors separate conditioned space from unconditioned space or from ambient air. Doors that are more than 25% glass in area are considered Glazed Doors and should be documented on Table K with fenestration per Table B.

01 Tag/Plan Detail ID	02 Name/Description	03 Occupancy Type	04 Door Type	05 Door Insulation	06 Maximum Allowed U-factor	07 U-factor per Design	
	Metal Door	Nonresidential/ Relocatable 1 CZ	Swinging	Any other wood door	0.7	per JA4	0.7

K. FENESTRATION AND GLAZED DOOR SCHEDULE

This table demonstrates compliance with prescriptive fenestration requirements in §140.3(a)5 for new constructions or additions, or §140.1(b)2A for alterations. Exterior doors that are more than one-half glass in area are considered Glazed Doors and should be documented on this table with fenestration.

01	Indicate fenestration types included in the project:[1]	☐ Vertical (alterations)	☒ Vertical (new)	☐ Skylights	☐ Glazed Doors (new only)

[1] *FOOTNOTES: Fenestration types indicated above as "(new only)" do not have Title 24, Part 6 requirements for alterations. New construction and additions do have requirements and should be clicked above and compliance demonstrated within this table.*

Vertical Fenestration and Glazed Doors- U-factor, Solar Heat Gain Coefficient (RSHGC/ SHGC), Visible Transmittance (VT)

01	☒	Calculate Area-Weighted Average U-factor for Vertical Fenestration and Glazed Doors[1]
02	☒	Calculate Area-Weighted Average (R)SHGC for Vertical Fenestration and Glazed Doors[1]
03	☒	Calculate Area-Weighted Average VT for Vertical Fenestration and Glazed Doors[1]

Vertical Fenestration And Glazed Doors- U-factor, Solar Heat Gain Coefficient (RSHGC/ SHGC), Visible Transmittance (VT)

04 Tag/Plan Detail ID	05 Fenestration Type	06 Occupancy & Status	07 (R)SHGC Compliance Method	08 VT Compliance Method	09 Calculation Method for Performance Values per Design[2]		10 Product Performance Unit	11 Required Product Performance	12 Product Performance per Design	13 Area ft²
Window	Fixed window	Nonresidential/ Relocatable 1 CZ : New			NFRC Certified		U-factor (max)	0.36	0.36	270
					☐ Overhang used for RSHGC		(R)SHGC (max)	0.25	0.25	
							VT (min)	0.42	0.42	
Door	Fixed window	Nonresidential/ Relocatable 1 CZ : New			NFRC Certified		U-factor (max)	0.36	0.36	54
					☐ Overhang used for RSHGC		(R)SHGC (max)	0.25	0.25	
							VT (min)	0.42	0.42	
Window	Fixed window	Nonresidential/ Relocatable 1 CZ : New			NFRC Certified		U-factor (max)	0.36	0.36	48
					☐ Overhang used for RSHGC		(R)SHGC (max)	0.25	0.25	
							VT (min)	0.42	0.42	
Window	Fixed window	Nonresidential/ Relocatable 1 CZ : New			NFRC Certified		U-factor (max)	0.36	0.36	264
					☐ Overhang used for RSHGC		(R)SHGC (max)	0.25	0.25	
							VT (min)	0.42	0.42	
Window	Fixed window	Nonresidential/ Relocatable 1 CZ : New			NFRC Certified		U-factor (max)	0.36	0.36	144
					☐ Overhang used for RSHGC		(R)SHGC (max)	0.25	0.25	
							VT (min)	0.42	0.42	

[1] *FOOTNOTES: If any individual fenestration product is non-compliant, products may show compliance using an area-weighted calculation. Chromogenic glazing is not included in area-weighted calculations. Area-weighted calculation shown in separate area-weighted table below.*

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K. FENESTRATION AND GLAZED DOOR SCHEDULE

[1] *The NA6 Default Calculation can only be used for buildings with less than 200ft² of site built glazing. If the project has greater than 200ft², the only options for determining fenestration values are NFRC Certification or the Default Tables in 110.6.*

[2] *Overhangs must extend past the left and right window the same distance as the depth of the overhang or greater to show an affect on the RSHGC. If an overhang does not meet this requirement, the affect of the overhang will be ignored.*

[3] *Projecting includes casement and awning windows.*

Area-Weighted Average U-factor, SHGC, VT Compliance Calculation for Vertical Fenestration And Glazed Doors

01 Product Performance Unit	02 Total Area of Fenestration (ft²)	03 Area-weighted Calculation for Fenestration: Required	04 Area-weighted Calculation for Fenestration: Designed	05 Compliance Results Using Area-Weighted Calculation Option
U-Factor	780	0.36	0.36	COMPLIES
(R)SHGC	780	0.25	0.25	COMPLIES
VT	780	0.42	0.42	COMPLIES

L. DAYLIGHT IN LARGE ENCLOSED SPACES

This section does not apply to this project.

M. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by the permit applicant, an explanation should be included in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2013standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Form/Title	Field Inspector: Pass	Fail
NRCI-ENV-01-E - Must be submitted for all buildings	☐	☐

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BUILDING AND SAFETY DIVISION
Department of Public Works
FINAL ENERGY APPROVED
UNDER CCR TITLE 24, PART 1, ARTICLE 1 & PART 6
ERETER
PUBLIC WORKS
11/02/2022 10:31:18 AM
The set of plans and specifications must be kept at the job site at all times, and it is unlawful to make any changes, modifications or alterations to these plans or specifications without the prior written permission of the Building Official. The stamping of this set of plans and specifications SHALL NOT, under any circumstances, be deemed to permit or to be an approval of any work or activity that violates any provisions of any County Ordinance or State Law.

CDI Circa Domini International, Inc.
Engineering - Consulting
16520 Bake Pkwy, Suite 100, Irvine, CA
Phone (949) 336-6636 | dkang@cdieng.com

LICENSED PROFESSIONAL ENGINEER — ROTH CHEN — No. M 40917 — EXP. 12/31/24 — MECHANICAL — STATE OF CALIFORNIA

GST OFFICE
12881 166TH STREET,
CERRITOS, CA 90703

REVISION
PLAN CHECK REV. 06/30/2022
REVISION 10-14-22

DATE: 03/22/2022 — SCALE:

SHEET TITLE: MECHANICAL TITLE 24

TM00

PLOT DATE: 10/14/2022 4:39:21 PM

STATE OF CALIFORNIA

Envelope Component Approach

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N. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, form user must provide an explanation in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/. Individuals who perform the field testing and verification work, and provide the information required for completion of the fenestration Certificate of Acceptance documentation are not required to be licensed professionals. However, the person who signs the Certificate of Acceptance document to certify compliance with the acceptance requirements shall be licensed as specified in Standards Section 10-103(a)4 and NA7.3.1

Form/Title	Systems/Spaces To Be Field Verified	Field Inspector	
		Pass	Fail
NRCA-ENV-02-F must be submitted for all new, added or altered fenestration.	☐	☐	

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: David Kang	Documentation Author Signature: [signature]
Company: CDI	Signature Date: 2022-04-13
Address: 16520 Bake Parkeway, Suite 100	CEA/ HERS Certification Identification (if applicable): M37036
City/State/Zip: Irvine CA 92618	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: David Kang	Responsible Designer Signature: [signature]
Company: CDI	Date Signed: 2022-04-13
Address: 16520 Bake Parkway, Suite 100	License: M37036
City/State/Zip: Irvine CA 92618	Phone:

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft
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STATE OF CALIFORNIA

Mechanical Systems

NRCC-MCH-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.			
Project Name:	GTS Office	Report Page:	(Page 1 of 15)
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A. GENERAL INFORMATION

01	Project Location (city)	Cerritos	04	Total Conditioned Floor Area	8650
02	Climate Zone	8	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1
☐	Office (B)	☐ Retail (M)	☒	Non-refrigerated Warehouse (S)	
☐	Hotel/ Motel Guest Rooms (R-1)	☐ School (E)	☐	Healthcare Facility (I)	
☐	High-Rise Residential (R-2/R-3)	☐ Relocatable Class Bldg (E)	☒	Other (write in)	See Table J

B. PROJECT SCOPE

This table Includes mechanical systems or components that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.

01		02		03	
Air System(s)		Wet System Components		Dry System Components	
☒	Heating Air System	☐	Water Economizer	☒	Air Economizer
☒	Cooling Air System	☐	Pumps	☐	Electric Resistance Heat
Mechanical Controls		☐	System Piping	☒	Fan Systems
☒	Mechanical Controls (existing to remain, altered or new)	☐	Cooling Towers	☒	Ductwork (existing to remain, altered or new)
		☐	Chillers	☒	Ventilation
		☐	Boilers	☐	Zonal Systems/ Terminal Boxes

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C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with mechanical requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D., or the table indicated as not compliant for guidance.

01		02		03		04		05		06		07		08	09
System Summary §110.1, §110.2, §140.4	AND	Pumps §140.4(k)	AND	Fans/ Economizers §140.4(c), §140.4(e)	AND	System Controls §110.2, §120.2, §140.4(f)	AND	Ventilation §120.1	AND	Terminal Box Controls §140.4(d)	AND	Distribution §120.3, §140.4(l)	AND	Cooling Towers §110.2(e)2	Compliance Results
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND		AND	Yes	AND	Yes	AND	Yes	AND		AND	Yes	AND		COMPLIES
Mandatory Measures Compliance (See Table Q for Details)										COMPLIES					

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

This table is used to demonstrate compliance for mechanical equipment with mandatory requirements found in §110.1 and §110.2(a) and prescriptive requirements found in §140.4(a), §140.4(b) and §140.4(k) or §141.0(b)2 for alterations.

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters)

01	02	03	04	05	06	07	08	09	10	11
Name or Item Tag	Equipment Category per Tables 110.2	Equipment Type per Tables 110.2 / Title 20	Smallest Size Available[1] §140.4(a)	Equipment Sizing per Mechanical Schedule (kBtu/h) §140.4 (a&b)						
				Heating Output[2,3]			Cooling Output[2,3]		Load Calculations[3,4]	
				Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
HVAC System 1	Unitary Heat Pumps	Air-cooled, pkg (3 phase)	NA: Load Controls	35.49	47.5	0	33.39	34.3	14.18	38.42
HVAC System 2	Unitary Heat Pumps	Air-cooled, pkg (3 phase)	NA: Load Controls	68.73	92	0	71.7	70	17.52	78.82
HVAC System 3	Unitary Heat Pumps	Air-cooled, pkg (3 phase)	NA: Load Controls	79.19	106	0	80.54	80.5	44.42	95.03
HVAC System 4	Unitary Heat Pumps	Air-cooled, pkg (3 phase)	NA: Load Controls	35.49	47.5	0	33.15	34.3	25.4	38.1

[1]FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per §140.4(a). Healthcare facilities are excepted.

[2]It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.

[3] If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.

[4] Authority Having Jurisdiction may ask for load calculations used for compliance per §140.4(b).

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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP))

01	02	03	04	05	06	07	08	09
		Heating Mode				Cooling Mode		
Name or Item Tag	Size Category (Btu/h)	Rating Condition (°F)	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency
HVAC System 1	<65,000		HSPF	7.7	8.2	SEER	13.0	14.3
HVAC System 2	>=65,000 and <135,000		COP	3.3	3.4	EER IEER	11 12.2	11 12.2
HVAC System 3	>=65,000 and <135,000		COP	3.3	3	EER IEER	11 12.2	11 12.2
HVAC System 4	<65,000		HSPF	7.7	8.2	SEER	13.0	14.3

G. PUMPS

This section does not apply to this project.

H. FAN SYSTEMS & AIR ECONOMIZERS

This table is used to demonstrate compliance with prescriptive requirements found in §140.4(c), §140.4(e) and §140.4(m) for fan systems. Fan systems serving only process loads are exempt from these requirements and do not need to be included in Table H.

System Name:	HVAC System 1	**Economizer:**[1]	NA: <=54 kBtu/h cooling	**Economizer Controls:**	Designed per §140.4(e) and (m)	**System Fan Type:**	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
SF	Supply	1	1600	BHP	1	NA	NA
Total System Design Supply Airflow (CFM):			1600	Total System Design (B)HP:	1	**Maximum System Fan Power (B)HP:**	

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name:	HVAC System 2	**Economizer:**[1]	Fixed Temperature	**Economizer Controls:**	Designed per §140.4(e) and (m)	**System Fan Type:**	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
SF	Supply	1	3400	BHP	2	NA	NA
Total System Design Supply Airflow (CFM):			3400	Total System Design (B)HP:	2	**Maximum System Fan Power (B)HP:**	
System Name:	HVAC System 3	**Economizer:**[1]	Fixed Temperature	**Economizer Controls:**	Designed per §140.4(e) and (m)	**System Fan Type:**	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
SF	Supply	1	4000	BHP	2.75	NA	NA
Total System Design Supply Airflow (CFM):			4000	Total System Design (B)HP:	2.75	**Maximum System Fan Power (B)HP:**	
System Name:	HVAC System 4	**Economizer:**[1]	NA: <=54 kBtu/h cooling	**Economizer Controls:**	Designed per §140.4(e) and (m)	**System Fan Type:**	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
SF	Supply	1	1600	BHP	1	NA	NA
Total System Design Supply Airflow (CFM):			1600	Total System Design (B)HP:	1	**Maximum System Fan Power (B)HP:**	

[1] FOOTNOTES: Computer room economizers must meet requirements of §140.9(a) and will be documented on the NRCC-PRC-E document.

[2] The unit used for HP must be consistent for all fans within a system.

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I. SYSTEM CONTROLS

This table is used to demonstrate compliance with mandatory controls in §110.2 and §120.2 and prescriptive controls in §140.4(f) and (n) or requirements in §141.0(b)2E for altered space conditioning systems.

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft^2)	Thermostats §110.2(b) & (c)[1], §120.2(a)or §141.0(b)2E	Shut-Off Controls §120.2(e)	Isolation Zone Controls §120.2(g)	Demand Response §110.12 and §120.2(b)	Supply Air Temp. Reset §140.4(f)	Window Interlocks per §140.4(n)
HVAC System 1	Single zone	<= 25,000 ft^2	Setback	Auto Timer Switch	NA: Serves < 25k ft^2	NA: Serves temp. sensitive process	NA: Would increase energy use	NA: No operable windows
HVAC System 2	Single zone	<= 25,000 ft^2	Setback	Auto Timer Switch	NA: Serves < 25k ft^2	NA: Serves temp. sensitive process	NA: Would increase energy use	NA: No operable windows
HVAC System 3	Single zone	<= 25,000 ft^2	Setback	Auto Timer Switch	NA: Serves < 25k ft^2	NA: Serves temp. sensitive process	NA: Would increase energy use	NA: No operable windows
HVAC System 4	Single zone	<= 25,000 ft^2	Setback	Auto Timer Switch	NA: Serves < 25k ft^2	NA: Serves temp. sensitive process	NA: Would increase energy use	NA: No operable windows

[1]FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.

*Notes: Controls with a * require a note in the space below explaining how compliance is achieved. EX: system 1: SA Temp Reset: Exempt because zones compliant with §140.4(d) ; EXCEPTION 1 to §140.4(f)

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J. VENTILATION AND INDOOR AIR QUALITY

This table is used to demonstrate compliance with mandatory ventilation requirements in §120.1 and §120.2(e)3B for all nonresidential, high-rise residential and hotel/motel occupancies. For alterations, only ventialtion systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	☐	Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.
02	☒	Check this box if the project included Nonresidential or Hotel/Motel spaces
	☐	Check this box if the project included new or altered high-rise residential dwelling units.
03	☐	Check the box if the project is using natural ventilation in any nonresidential or hotel/motel spaces to meet required ventilation rates per §120.1(c)2.

Nonresidential and Hotel/ Motel Ventilation Systems

04		05			06			07	
System Name	HVAC System 1	System Design OA CFM Airflow[1]		168	System Design Transfer Air CFM		0	Air Filtration per §120.1(c) and §141.0(b)2 [2]	
								Provided per §120.1(c) (NR and Hotel/Motel))	
08	09	10	11	12	13	14	15	16	
Space Name ot item Tag	Mechanical Ventilation Required per §120.1(c)3 [3]					Exh. Vent per §120.1(c)4		DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 [6]	
	Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Break Room	Break room	1120			560	0	0	DCV	Provided per §120.1(d)4
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				560	18	Ventilation for this System Complies?		Yes
04		05			06			07	
System Name	HVAC System 2	System Design OA CFM Airflow[1]		300	System Design Transfer Air CFM		0	Air Filtration per §120.1(c) and §141.0(b)2 [2]	
								Provided per §120.1(c) (NR and Hotel/Motel))	
08	09	10	11	12	13	14	15	16	

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LICENSED PROFESSIONAL ENGINEER — RUTH CHEN — M 40915 — EXP. 06/30/24 — MECHANICAL — STATE OF CALIFORNIA

GST OFFICE

12881 166TH STREET,
CERRITOS, CA 90703

REVISION	
1	PLAN CHECK REV. 06/30/2022
2	REVISION 10-14-22
3	
4	
5	
6	
7	

DATE: 03/22/2022 | SCALE:

SHEET TITLE: MECHANICAL TITLE 24

TM01

PLOT DATE: 10/14/2022 4:39:28 PM

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J. VENTILATION AND INDOOR AIR QUALITY

Space Name ot item Tag	Mechanical Ventilation Required per §120.1(c)3 [3]: Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Exh. Vent per §120.1(c)4: Required Min CFM	Provided per Design CFM	DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 [6]	
Warehouse	Warehouse	3205			480.8	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				481	18	Ventilation for this System Complies?		Yes

04		05		06		07
System Name	HVAC System 3	System Design OA CFM Airflow[1]	638	System Design Transfer Air CFM	0	Air Filtration per §120.1(c) and §141.0(b)2 [2]: Provided per §120.1(c) (NR and Hotel/Motel))

08	09	10	11	12	13	14	15	16	
Space Name ot item Tag	Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM	DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 [6]	
Deck	All others	3405			510.8	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				511	18	Ventilation for this System Complies?		Yes

04		05		06		07
System Name	HVAC System 4	System Design OA CFM Airflow[1]	368	System Design Transfer Air CFM	0	Air Filtration per §120.1(c) and §141.0(b)2 [2]: Provided per §120.1(c) (NR and Hotel/Motel))
08	09	10 / 11	12	13 / 14	15	16

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J. VENTILATION AND INDOOR AIR QUALITY

Space Name ot item Tag	Mechanical Ventilation Required per §120.1(c)3 [3]: Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Exh. Vent per §120.1(c)4: Required Min CFM	Provided per Design CFM	DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 [6]	
Gym	Health club/aerobics	920			138	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				138	18	Ventilation for this System Complies?		Yes

[1] FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system

[2] Air filtration requirements apply to the following three system types per §120.1(c)1A : space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.

[3] Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.

[4] See Standards Tables 120.1-A and 120.1-B.

[5] For lecture halls with fixed seating, the expected number of occupants shall be shall be determined in accordance with the California Building Code.

[6] §120.2(e)3 requires systems serving rooms that are required by §130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250ft² or smaller, multipurpose rooms less than 1,000 ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by §130.1(c).

K. TERMINAL BOX CONTROLS
This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)
This table is used to show compliance with mandatory pipe insulation requirements found in §120.3 and prescriptive requirements found in §140.4(l) for duct leakage testing.

Duct Leakage Sealing

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L. DISTRIBUTION (DUCTWORK and PIPING)

The answers to the questions below apply to the following duct systems:	HVAC System 1	Duct leakage testing triggered for these systems?	Yes
11	No	The scope of the project includes only duct systems serving healthcare facilities	
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.	
13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.	
14	Yes	The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:	
		☐ Outdoors	
		☐ In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces	
		☐ In an unconditioned crawl space	
		☐ In other unconditioned spaces	
15		The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.	
16		The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.	
17	Yes	Duct system shall be sealed in acordance with the California Mechanical Code	
The answers to the questions below apply to the following duct systems:	HVAC System 2	Duct leakage testing triggered for these systems?	Yes
11	No	The scope of the project includes only duct systems serving healthcare facilities	
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.	
13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.	
14	Yes	The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:	
		☐ Outdoors	
		☐ In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces	
		☐ In an unconditioned crawl space	
		☐ In other unconditioned spaces	
15		The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.	
16		The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.	
17	Yes	Duct system shall be sealed in acordance with the California Mechanical Code	

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L. DISTRIBUTION (DUCTWORK and PIPING)

The answers to the questions below apply to the following duct systems:	HVAC System 3	Duct leakage testing triggered for these systems?	Yes
11	No	The scope of the project includes only duct systems serving healthcare facilities	
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.	
13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.	
14	Yes	The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:	
		☐ Outdoors	
		☐ In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces	
		☐ In an unconditioned crawl space	
		☐ In other unconditioned spaces	
15		The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.	
16		The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.	
17	Yes	Duct system shall be sealed in acordance with the California Mechanical Code	
The answers to the questions below apply to the following duct systems:	HVAC System 4	Duct leakage testing triggered for these systems?	Yes
11	No	The scope of the project includes only duct systems serving healthcare facilities	
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.	
13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.	
14	Yes	The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:	
		☐ Outdoors	
		☐ In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces	
		☐ In an unconditioned crawl space	
		☐ In other unconditioned spaces	
15		The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.	
16		The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.	
17	Yes	Duct system shall be sealed in acordance with the California Mechanical Code	

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	GTS Office	**Report Page:**	(Page 12 of 15)
Project Address:	12881 166th Street	**Date Prepared:**	4/13/2022

M. COOLING TOWERS
This section does not apply to this project.

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Form/Title	Field Inspector: Pass	Field Inspector: Fail
NRCI-MCH-01-E - Must be submitted for all buildings	☐	☐

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O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
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Form/Title	Systems/Spaces To Be Field Verified	Field Inspector: Pass	Field Inspector: Fail
NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.	Trane WSC048H4*(B,E,G)A; Trane WSC102H(3,4,W)*(G,K,N)A; Trane WSC120H(3,4,W)*(G,K,N,P)A; Trane WSC048H4*(B,E,G)A;	☐	☐
NRCA-MCH-03-A - Constant Volume Single Zone HVAC NOTE: This form does not automatically move to "Yes'. If Constant Volume Single Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes".	Trane WSC048H4*(B,E,G)A; Trane WSC102H(3,4,W)*(G,K,N)A; Trane WSC120H(3,4,W)*(G,K,N,P)A; Trane WSC048H4*(B,E,G)A;	☐	☐
NRCA-MCH-05-A - Air Economizer Controls	Trane WSC048H4*(B,E,G)A; Trane WSC102H(3,4,W)*(G,K,N)A; Trane WSC120H(3,4,W)*(G,K,N,P)A; Trane WSC048H4*(B,E,G)A;	☐	☐
NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to §120.1(c)3) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO_2) concentration setpoints.	Trane WSC048H4*(B,E,G)A;	☐	☐
NRCA-MCH-11-A Automatic Demand Shed Controls	Trane WSC048H4*(B,E,G)A; Trane WSC102H(3,4,W)*(G,K,N)A; Trane WSC120H(3,4,W)*(G,K,N,P)A; Trane WSC048H4*(B,E,G)A;	☐	☐

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O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
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Form/Title	Systems/Spaces To Be Field Verified	Field Inspector: Pass	Field Inspector: Fail
NRCA-MCH-12-A FDD for Packaged Direct Expansion Units	Trane WSC102H(3,4,W)*(G,K,N)A; Trane WSC120H(3,4,W)*(G,K,N,P)A;	☐	☐

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION
There are no NRCV forms required for this project.

Q. MANDATORY MEASURES DOCUMENTATION LOCATION
This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.

01		02
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block	Yes	M-Sheets

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: David Kang	Documentation Author Signature: [signature]
Company: CDI	Signature Date: 2022-04-13
Address: 16520 Bake Parkeway, Suite 100	CEA/ HERS Certification Identification (if applicable): M37036
City/State/Zip: Irvine CA 92618	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: David Kang	Responsible Designer Signature: [signature]
Company: CDI	Date Signed: 2022-04-13
Address: 16520 Bake Parkway, Suite 100	License: M37036
City/State/Zip: Irvine CA 92618	Phone:

CDI Circa Domini International, Inc.
Engineering - Consulting
16520 Bake Pkwy, Suite 100, Irvine, CA
Phone (949) 336-6636 | dkang@cdieng.com

LICENSED PROFESSIONAL ENGINEER RUTH CHEN MECHANICAL STATE OF CALIFORNIA

GST OFFICE
12881 166TH STREET, CERRITOS, CA 90703

REVISION
1 PLAN CHECK REV. 06/30/2022
2 REVISION 10-14-22
3
4
5
6
7

DATE: 03/22/2022
SCALE:

SHEET TITLE:
MECHANICAL TITLE 24

TM02

PLOT DATE: 10/14/2022 4:39:21 PM

DOOR GENERAL NOTES

1. EXIT DOORS SHALL BE CAPABLE OF OPENING WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. BUILDING CODE 1008.1.9.
2. DOOR HARDWARE: HAND-ACTIVATED DOOR OPENING HARDWARE SHALL BE CENTERED BETWEEN 34" & 44" ABOVE THE FLOOR.
3. ALL DOORS SHALL BE FULLY ACCESSIBLE INCLUDING LEVER HANDLES
4. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 POUNDS. WHEN FIRE DOORS ARE REQUIRED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED TO THE MINIMUM ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY, NOT EXCEED 15 POUNDS. (11B-402.2.9)
5. THE BOTTOM 10" OF ALL DOORS & GATES TO HAVE A SMOOTH UNTERRUPTED SURFACE TO ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION (11B-402.2.10)
6. DOOR THRESHOLD NOT TO EXCEED $\frac{1}{2}$" WITH BEVELED SLOPE NOT MORE THAN 2:1 FOR THE UPPER $\frac{1}{4}$". (11-B303.3) SEE DETAIL
7. ALL WOOD DOORS TO BE SOLID CORE.
8. ALL DOORS & FRAMES TO BE PAINTED.
9. C.C. TO PROVIDE SHOP DRAWINGS FOR HARDWARE GROUPS.
10. LOCK PREVENTING OPERATION OF DOOR SHALL NOT BE INSTALLED ON EXIT DOORS, U.N.O ON THE DOOR SCHEDULE
11. ALL EXIT DOORS SHALL COMPLY WITH SECTION 1008.1
   A. CLEAR WIDTH OF EACH DOOR OPENING SHALL BE MIN. 32" OR PER SECT. 1005.1 WHICHEVER IS GREATER.
   B. MINIMUM DOOR HEIGHT OF 6'-8" TYPICAL
   C. SHALL BE CAPABLE OF OPENING 90 DEGREES
   D. THE MAXIMUM WIDTH OF A SWINGING DOOR LEAF SHALL BE 48" NOMINAL.
   E. EXIT DOOR SHALL BE SIDE-HINGED SWINGING TYPE

DOOR HARDWARE NOTES

1. G.C. TO FURNISH & INSTALL FALCON CYLINDER IN ALL PERIMETER DOORS. ALL PERIMETER DOORS TO BE KEYED ALIKE. PROVIDE KEYWAY ON EXTERIOR FACE.
2. G.C. TO FURNISH & INSTALL FALCON CYNLINDER IN ALL INTERIOR H.M. DOORS. ALL INTERIOR DOORS TO BE KEYED ALIKE PROVIDE KEYWAY ON EXTERIOR FACE.
3. C.C. TO FURNISH & INSTALL PADLOCK WITH 4" SHANK FOR WALK-IN COOLER/FREEZER DOORS. PADLOCK TO BE KEYED ALIKE WITH INTERIOR DOORS. INTERIOR TENANT IMPROVEMENT UNDER SEPARATE PERMIT.
4. ALL HOLLOW METAL DOOR FRAMES ARE TO BE WELDED.
5. G.C. TO FURNISH & INSTALL PANIC HARDWARE PER ALL APPLICABLE REGULATIONS & CODES HAVING JURISDICTION.
6. DOOR STOPS & BUMPERS TO BE INSTALLED BEHIND ALL DOORS
7. ALL EXTERIOR HARDWARE TO MATCH STOREFRONT, USE US28 SATIN ALUMINUM FOR CLEAR ANODIZED FINISH & US10B DARK BRONZE FOR BRONZE STOREFRONT. USE U28 SATIN ALUMINUM FOR ALL INTERIOR HARDWARE.
8. NO THRESHOLD REQUIRED AT INTERIOR VESTIBULE DOORS.

TITLE-24 ADA REQUIREMENT

1. A FLOOR OR LANDING NOT MORE THAN $\frac{1}{4}$" BELOW THE THRESHOLD IS REQUIRED ON EACH SIDE OF AN EXIT DOOR
2. PROVIDE SIGN WITH 1" HIGH LETTERS ON CONTRASTING BACKGROUND AT DOOR TRANSOM TO READ: "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED"
3. EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIFIC KNOWLEDGE
4. ALARM LOCK & PANIC HARDWARE PER ELECTRICAL DRAWINGS
5. PROVIDE PILE WEATHERSTRIPPING AT HEAD, JAMB & SILL
6. FRAMES SHALL BE EITHER ALUMINUM OR HOLLOW METAL AS INDICATED
7. ALL DOORS SHALL BE 1 $\frac{3}{4}$" IN THICKNESS
8. EXTERIOR DOORS SHALL HAVE WEATHERSTRIPPING AT THE HEAD & JAMB, & A THRESHOLD AT THE SILL
9. ALLOW 2" FROM EDGE OF DOOR FRAME TO FINISH OF ADJACENT WALL FOR HARDWARE CLEARANCE
10. DOORS SHALL SWING TO A FULL OPEN POSITION, WHEN OPENING FORCE NOT TO EXCEED 5 POUNDS FOR EXTERIOR & INTERIOR DOORS & 15 POUNDS FOR FIRE DOORS IS APPLIED AT RIGHT ANGLES TO HINGED DOORS & AT THE CENTER PLANE OF SLIDING OR FOLDING DOORS. COMPENSATING DEVICES OR AUTOMATIC DOOR OPERATORS MAY BE UTILIZED TO MEET THE ABOVE STANDARDS. CBC SECTION 11B-404.2.9.
11. ALL DOOR HARDWARE SHALL BE LEVER TYPE, PUSH TYPE OR PANIC TYPE.

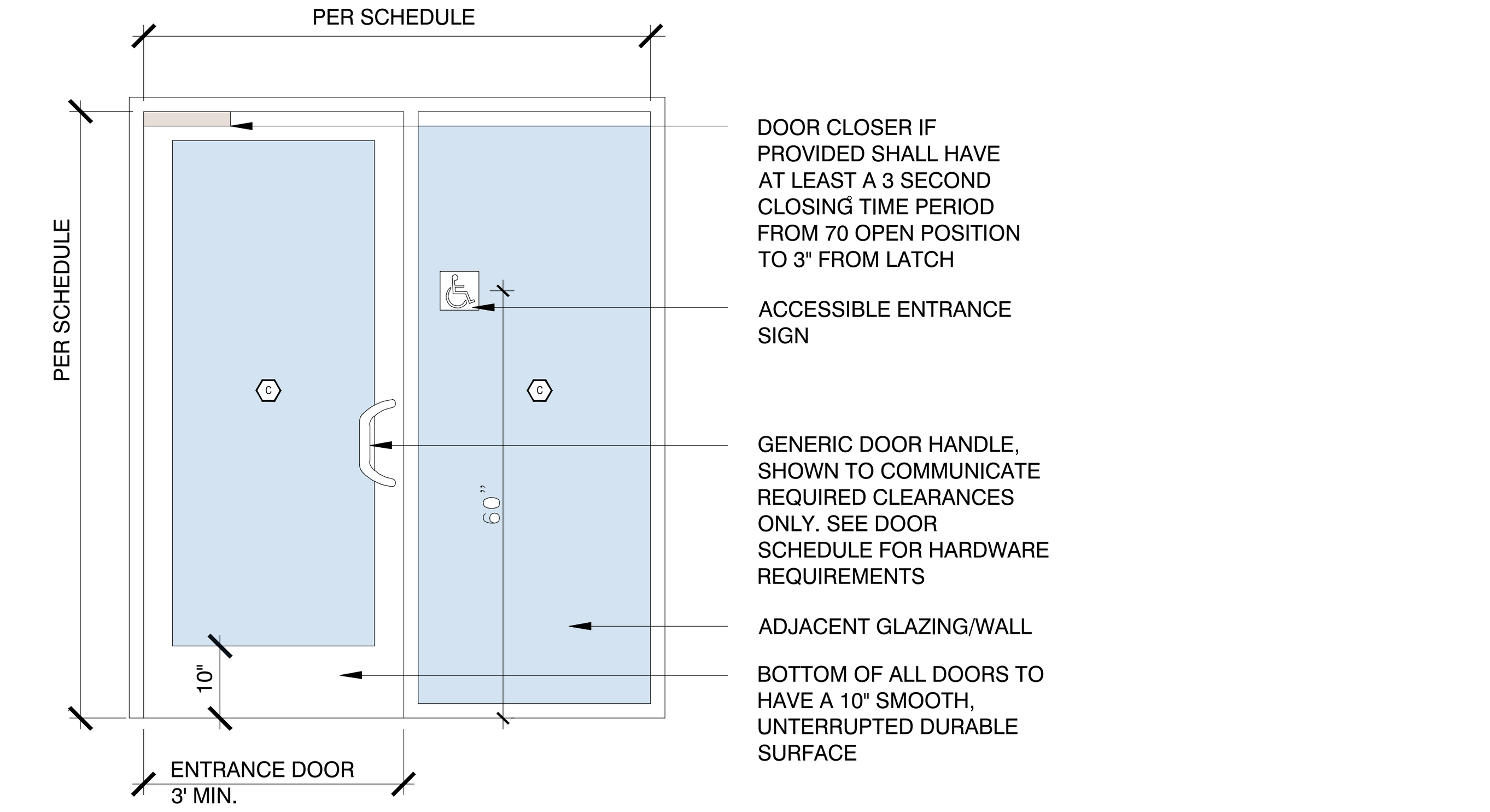
TITLE 24/ADA REQUIREMENTS
PER CBC CHAPTER 11B: HANDLES, PULLS LATCHES & OTHER OPERATING DEVICES ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND & DOES NOT RQUIRE TIGHT GRASPING, TIGHT PINCHING OR TWISTING OF THE WRIST TO OPERATE. LEVER-OPERATED MECHANISMS, PUSH-TYPE MECHANISMS, & U-SHAPED HANDLES ARE ACCEPTABLE DESIGNS, WHEN SLIDING DOORS ARE FULLY OPEN, OPERATING HARDWARE SHALL BE EXPOSED & USABLE FROM BOTH SIDES. HARDWARE REQUIRED FOR ACCESSIBLE DOOR PASSAGE SHALL BE MOUNTED NO LOWER THAN 34" & NO HIGHER THAN 44" ABOVE THE FINISH FLOOR.

ROOM FINISH SCHEDULE

ROOM	ROOM	BASE	FLOOR	CEILING	WALL	REMARKS
1	ENTRANCE					
2	DINING					
3	KITCHEN					
4	PATIO					

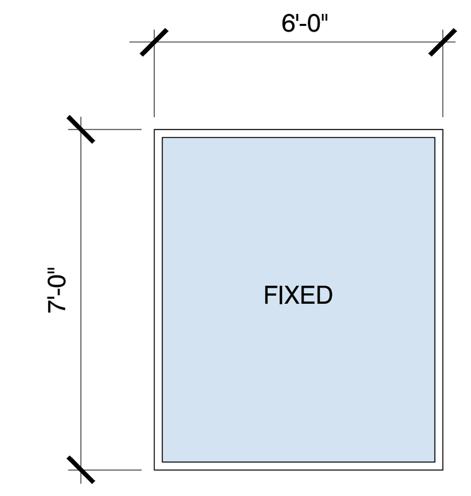
1 DOOR SCHEDULE

NO.	SIZE	QNT.	THICK	MATL.	TYPE	FRAME	HEAD	JAMB	SILL	PANIC	CLOSER	FIRE	
1	3'-"x8'-0" (PAIRS)	3	1 $\frac{3}{4}$"	ALUM.	A								
2	3'-0" x 7'-0"	3	1 $\frac{3}{4}$"	METAL	D								
3	8'-0"x10'-0"	1	1 $\frac{3}{4}$"	METAL	R								



A STOREFRONT & GLASS SCHEDULE

NO.	SIZE	QNT.	TYPE	MATL.	GLAZING	DECRIPTION
A	6'-0"x7'-0"	22	FIXED	ALUM.	1" INSULATED	(B) 1" INSULATED GLASS TEMPERED GLASS
						(C) 1/4" TEMPERED GLASS



NOTE:
1. ALL STOREFRONT GLAZING SHALL BE LOW "E" SOLAR GLASS.
2. SHADING COEFFICIENT SPECIFICATION PER LOCAL CODE REQUIREMENTS DAYTIME
3. VISIBILITY INTO DINING ROOMS SHALL BE MAINTAINED.

STOREFRONT SPECS.

1. ALUMINUM FRAME STOREFRONT DOOR MANUFACTURER SHALL BE "ARCADIA" OR APPROVED EQUAL: 1" INSULATED TEMPERED GLASS, CONCEALED OVERHEAD CLOSER, "LADDER" PUSH/PULL HARDWARE, SELF CLOSING. PANIC HARDWARE WHERE SPECIFIED.
2. EXTERIOR REAR SERVICE &/OR EXIT DOOR: PROVIDE WITH LEVER HARDWARE (ENTRY LOCKSET), KICKPLATE, SELF CLOSER, & PEEHOLE. PANIC HARDWARE PER SCHEDULE
3. STOREFRONT GLAZING SHALL BE DESIGNED TO RESIST WIND LOAD OF 20 PSF. SUBMIT SHOP DRAWINGS FOR APPROVAL.
4. STOREFRONT GLAZING SHALL CONFORM TO REQUIREMENTS OF CBC SECTIONS 2404 & 2406.
5. ALUMINUM FRAME SIZE SHALL BE 2"x4 $\frac{1}{2}$", UNLESS OTHERWISE SPECIFIED.

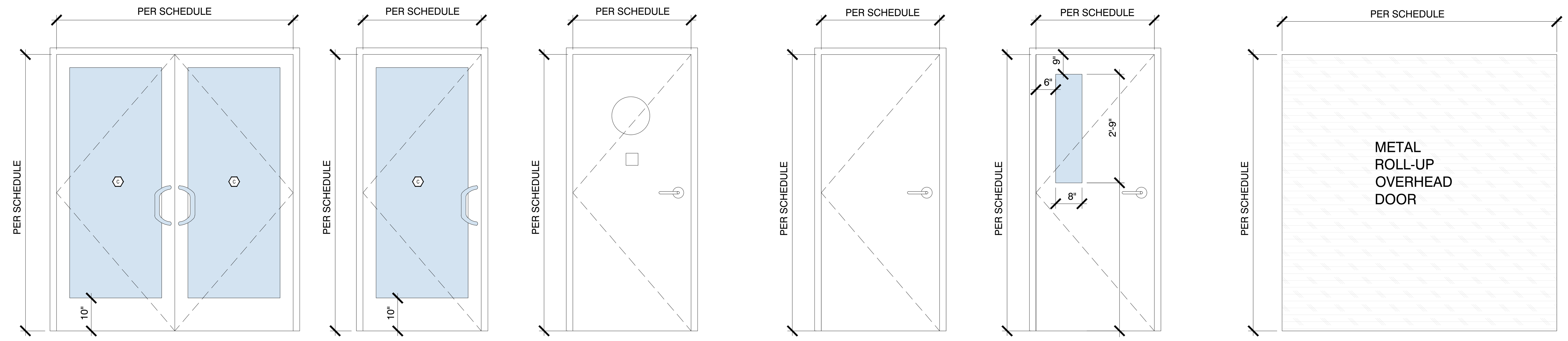
BUILDNG ENVELOPE COMPLIANCE:

	FRAME TYPE			
	WOOD	METAL	CONCRETE	CAVITY INSULATION
CEILING/ROOF	X			R-21
EXTERIOR WALL			X	NOT APPLICABLE

NOTE:
1. THE GLAZING U-FACTOR SHALL BE LESS THAN OR EQUAL TO THE U-FACTOR VALUE OF 0.36 USED ON COMPLIANCE FORMS, SEC. 110.6(a)2.
2. THE WINDOW'S SOLAR HEAT GAIN COEFFICIENT (SHGC). THE SHGC SHALL BE LESS THAN OR EQUAL TO THE SHCG VALUE OF 0.25 USED ON THE COMPLIANCE FORMS. SEC. 110.6 (a) 3.
3. THE WINDOW'S VISIBILE TRANSMITTANCE (VT) VALUE OF 0.42 USED ON THE COMPLIANCE FORMS. SEC. 110.6 (a) 4.

ABBREVIATIONS

ALUM	ALUMINUM
FF	FACTORY FINISH
FG	FROSTED SPANDREL GLASS
MTL	HOLLOW METAL
MATL	MATERIAL
PTD	PAINTED
SS	STAIN AND SEALER
STL	STEEL
TG	TEMPERED GLASS
TS	TEMPERED SINGLE-PANE
WD	WOOD



A ENTRANCE STOREFRONT

B STOREFRONT

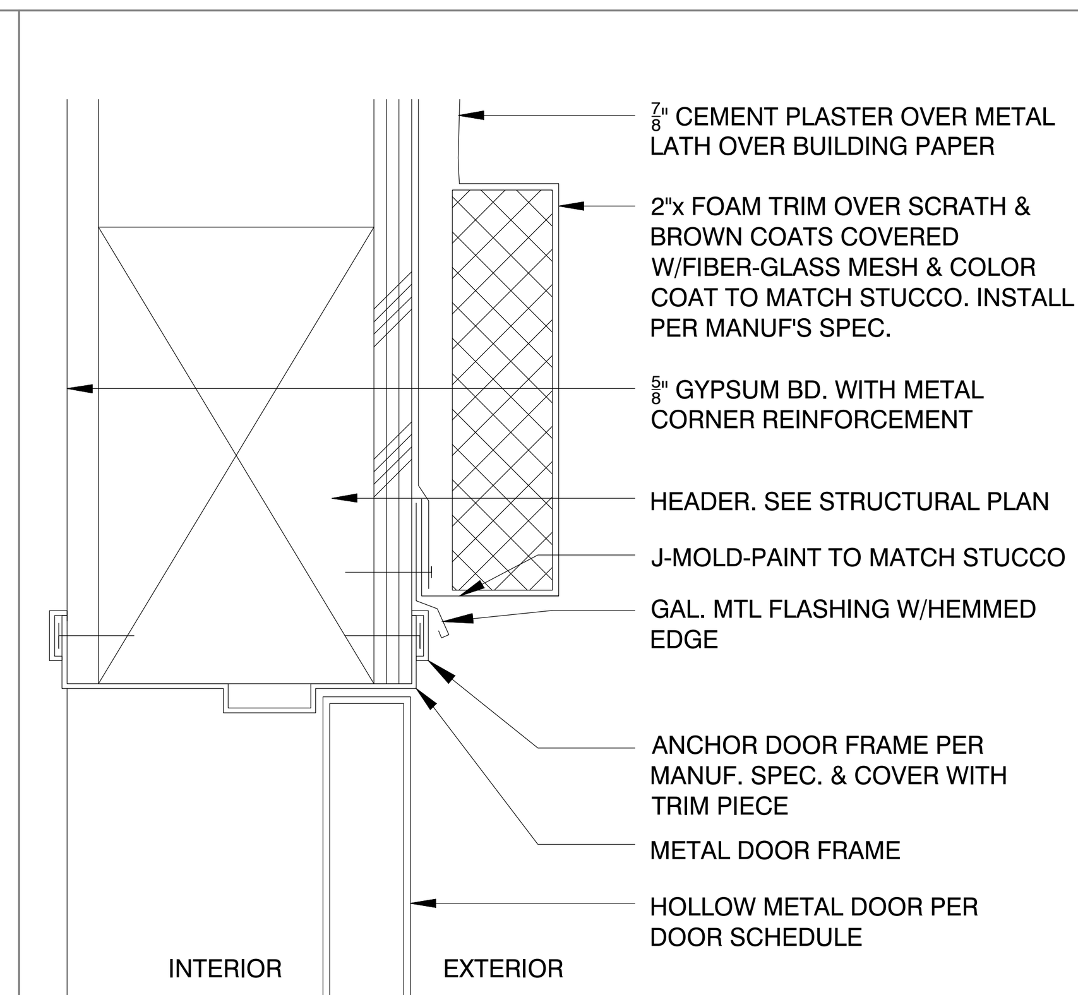
C HOLLOW METAL

D SOLID STEEL/WOOD

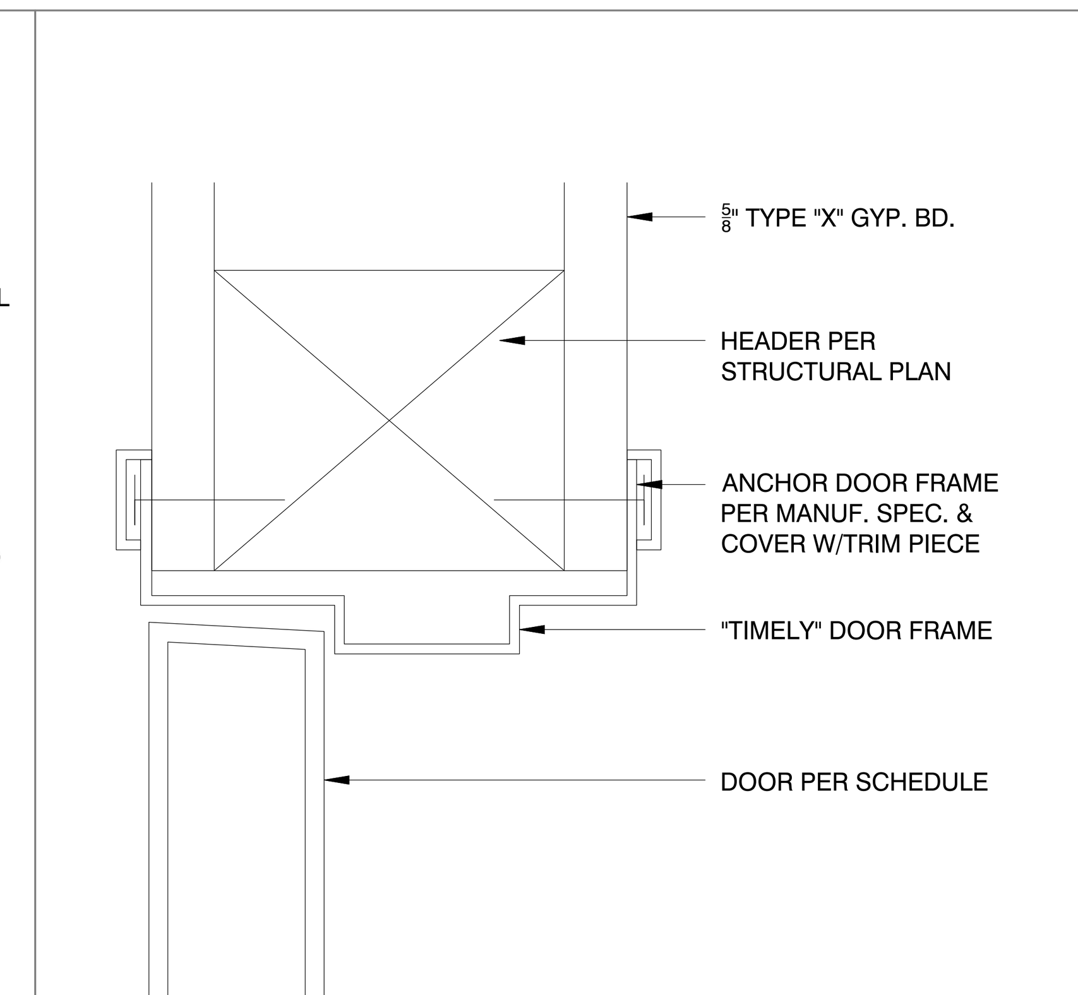
E DOOR

R METAL ROLL-UP DOOR

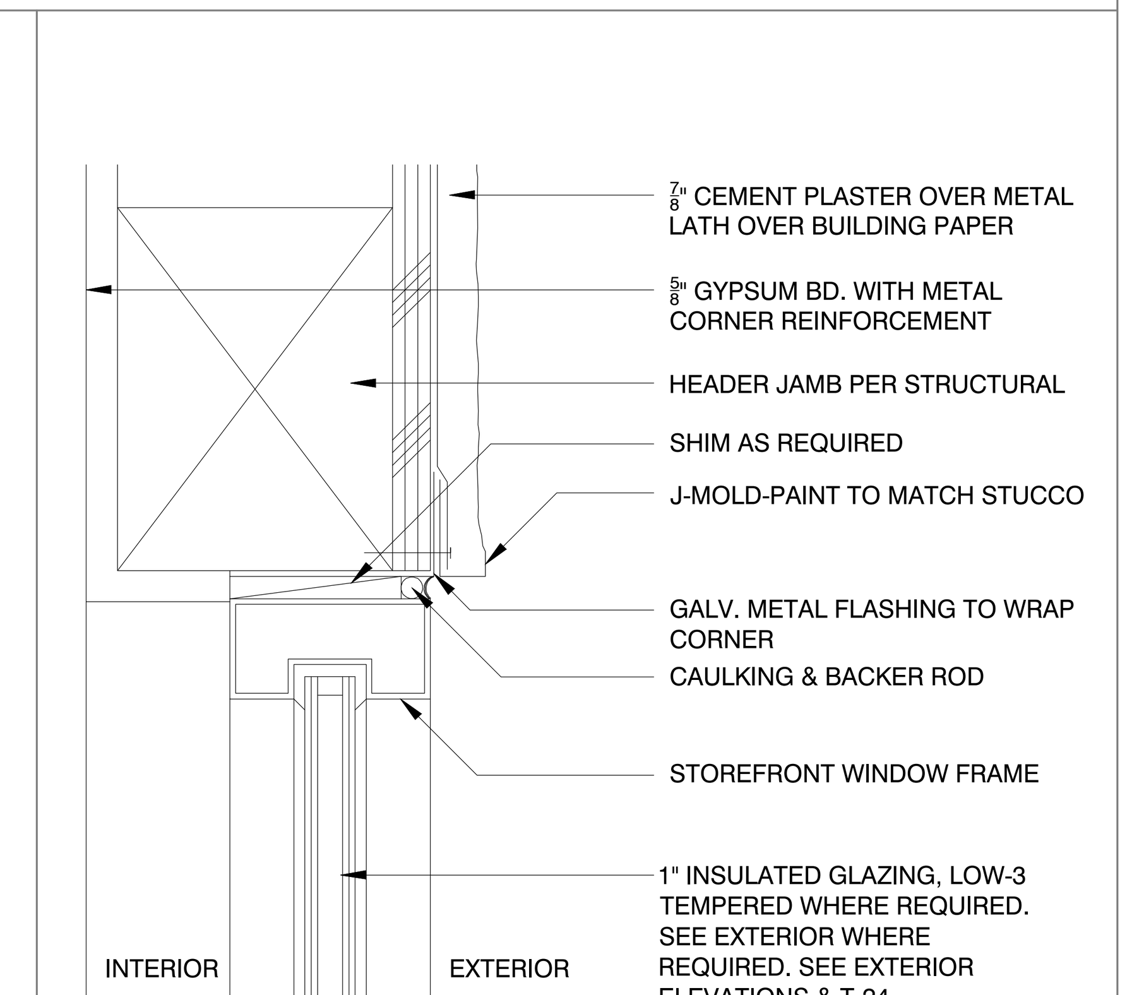
4



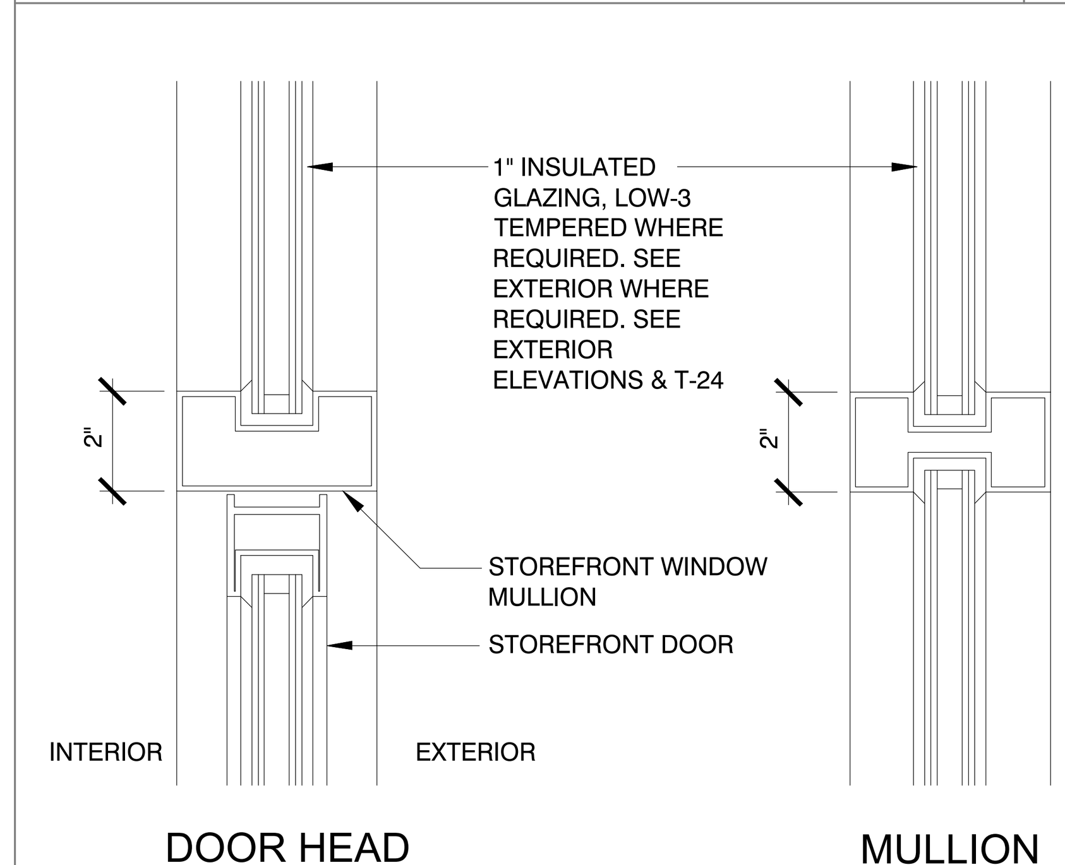
EXTERIOR METAL DOOR HEAD 3



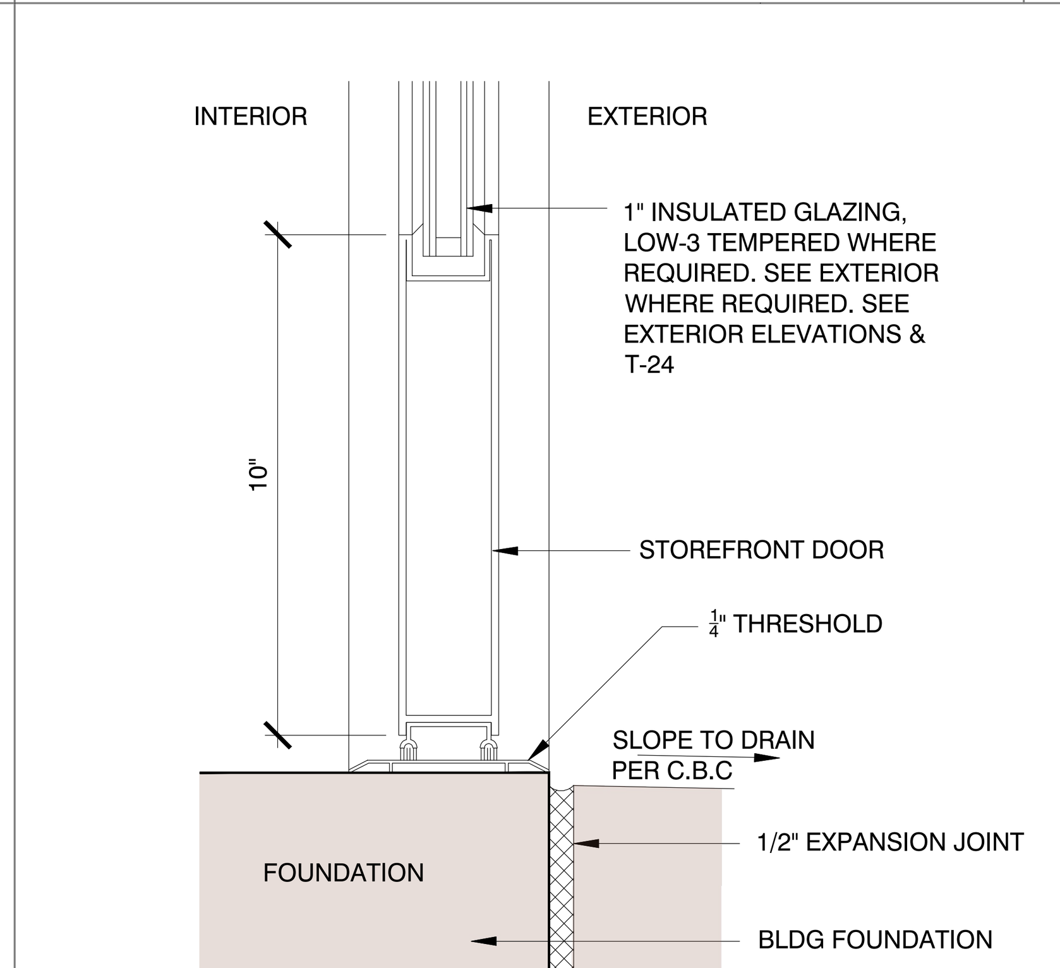
INTERIOR DOOR JAMB 2



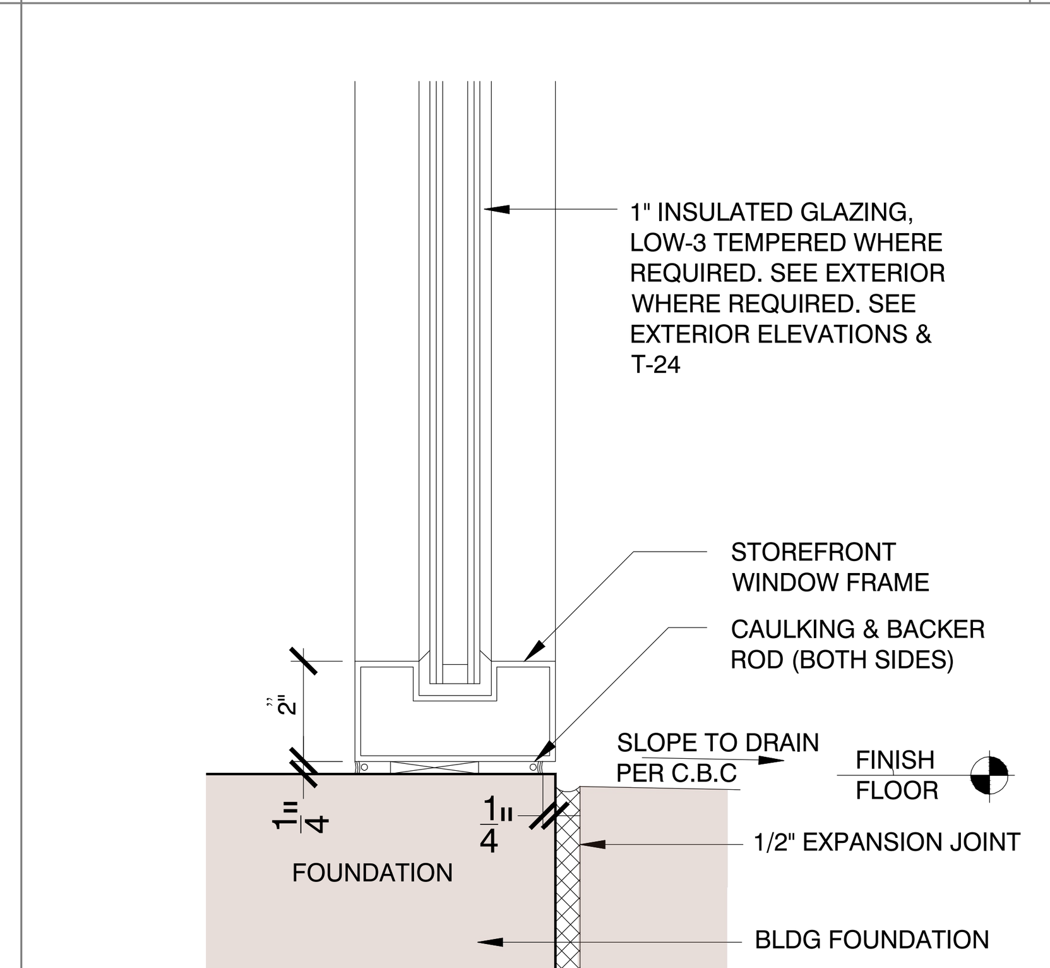
STOREFRONT HEAD 1



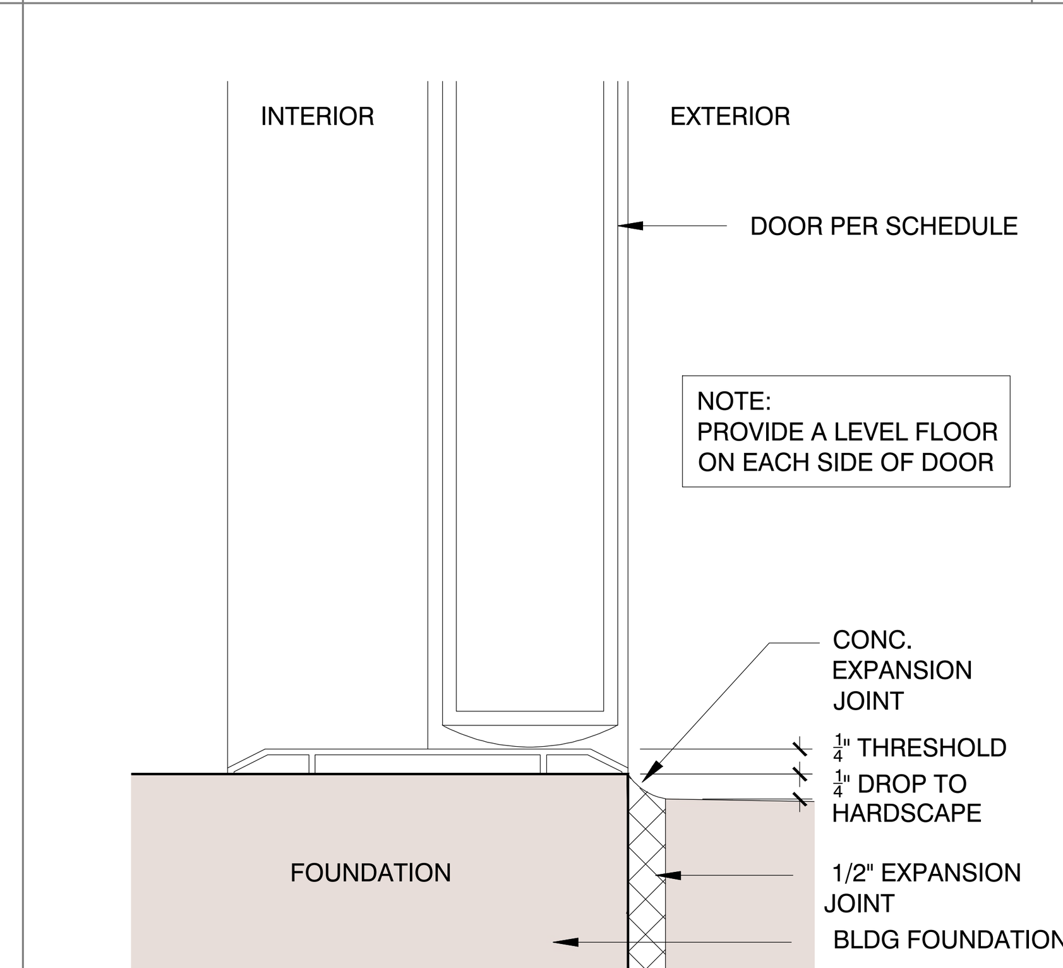
DOOR HEAD & MULLION 5



DOOR SILL 6



STOREFRONT SILL 7



EXTERIOR DOOR THRESHOLD 8

BUILDING AND SAFETY DIVISION
Department of Public Works
FINAL ENERGY APPROVED
UNDER CCR TITLE 24, PART 1, ARTICLE 1 & PART 6
EREITER
PUBLIC WORKS
11/02/2022 10:31:12 AM
This set of plans and specifications must be kept at the job site at all times, and it is unlawful to make any changes, modifications or alterations to these plans or specifications without the prior written permission of the Building Official. The stamping of this set of plans and specifications SHALL NOT, under any circumstances, be deemed to permit or to be an approval of any work or activity that violates any provisions of any County Ordinance or State Law

GST

LICENSED ARCHITECT FRANCIS P. ONG No. C 18585 Ren. 3-31-23 STATE OF CALIFORNIA

SUB-2
12881 166TH
7/11/22

REVISION:
SUB-1: 6/4/22

ZBT GROUP
LAND DEVELOPMENT CONSULTANTS

A6.0