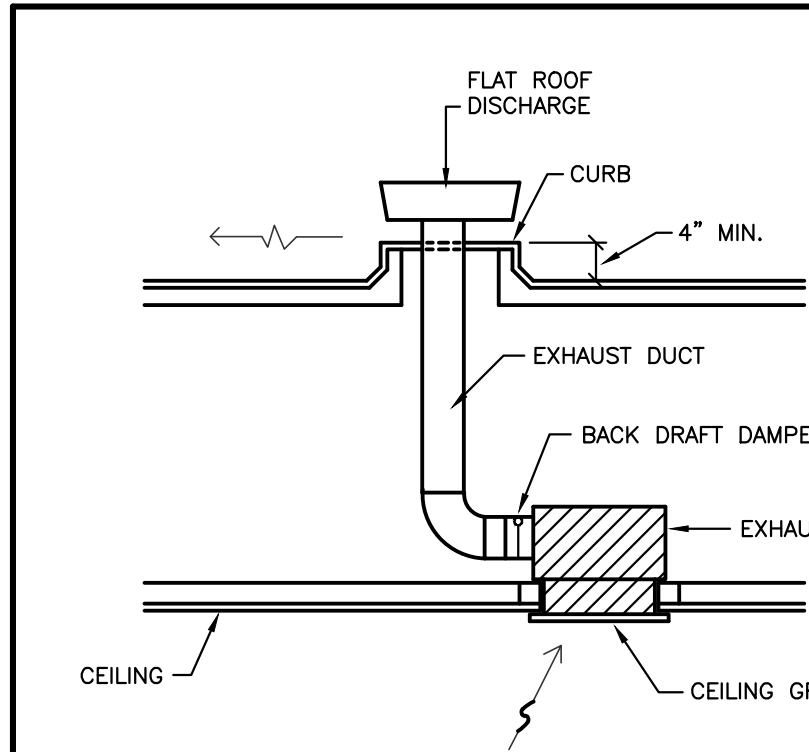
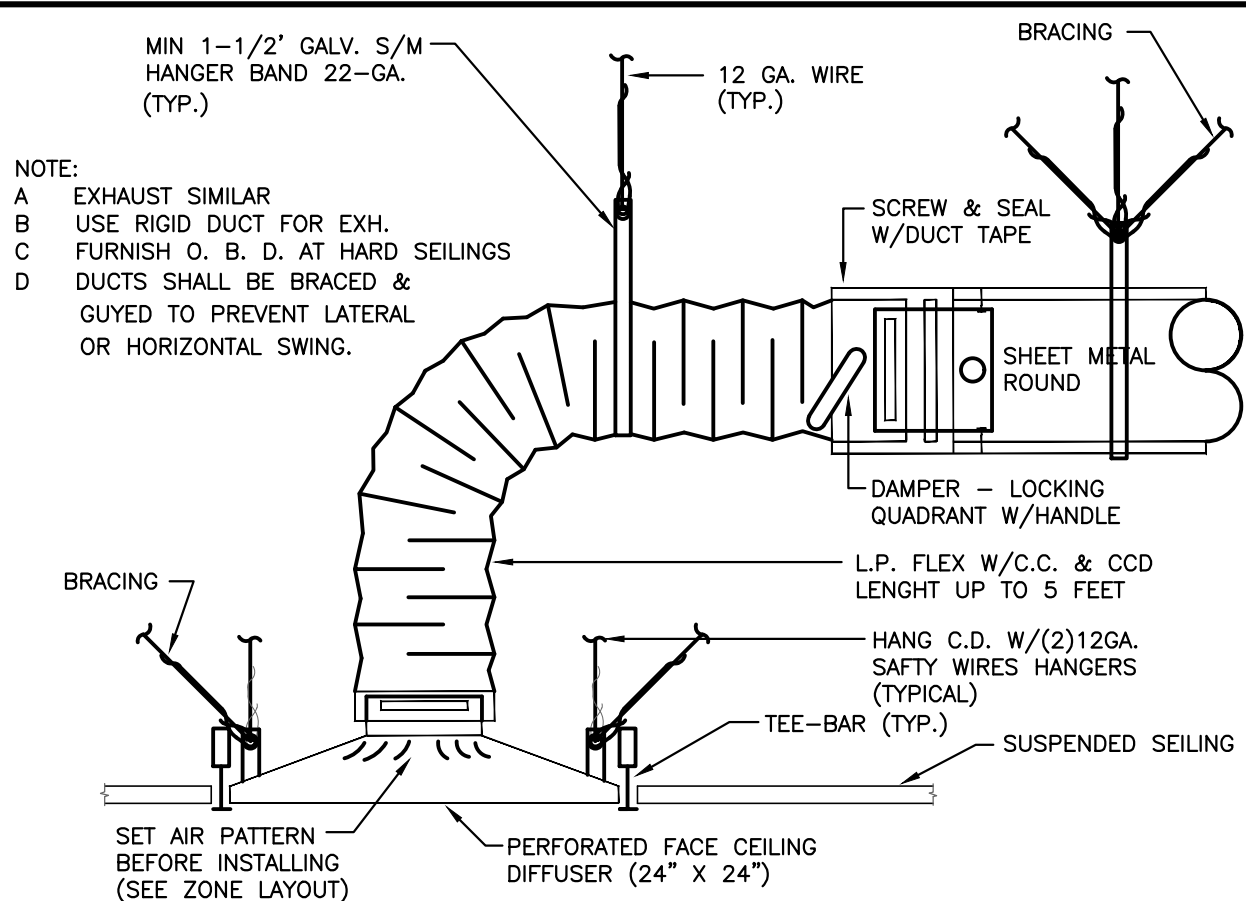
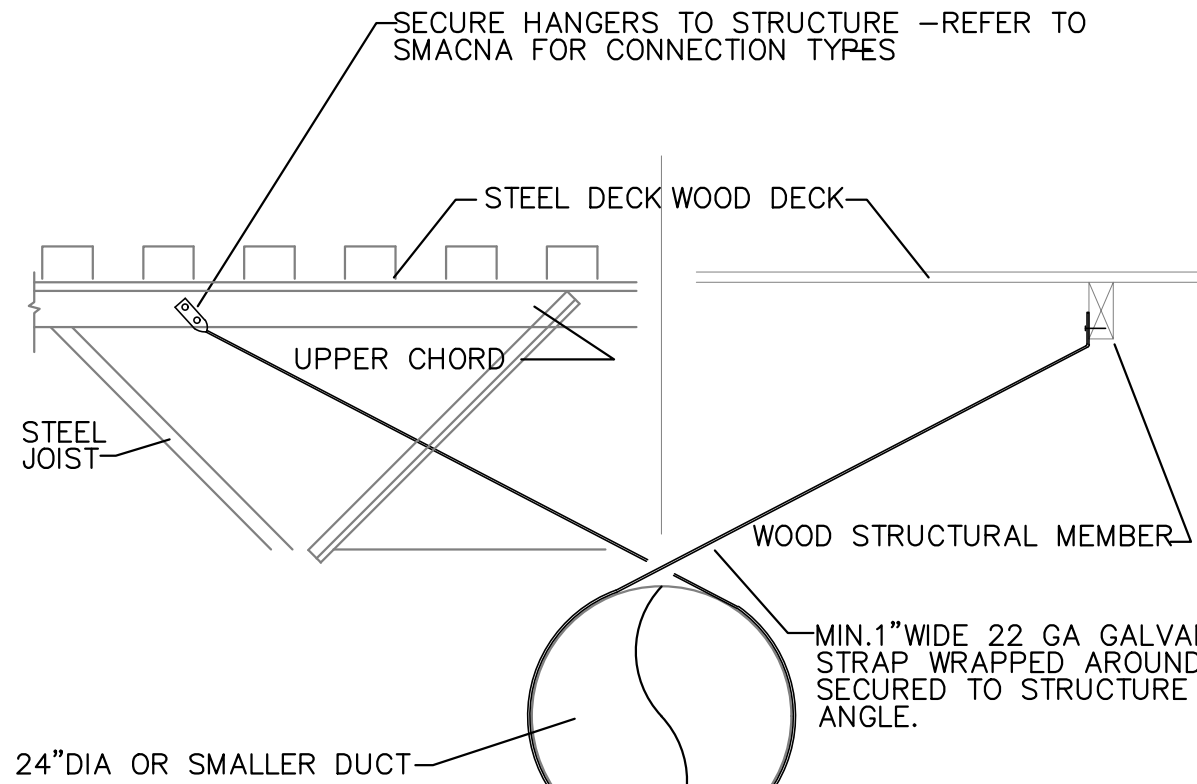




CEILING EXHAUST FAN



CEILING DIFFUSER INSTALLATION



SEISMIC DUCT SUPPORT DETAIL

## EXHAUST FAN SCHEDULE

| SYMBOL  | SERVICE          | LOCATION | MANUFACTURER<br>AND MODEL | FAN DATA |                 |        |        | MOTOR DATA |       |       |    | WEIGHT | REMARKS                                              |
|---------|------------------|----------|---------------------------|----------|-----------------|--------|--------|------------|-------|-------|----|--------|------------------------------------------------------|
|         |                  |          |                           | CFM      | S.P.<br>IN.W.G. | R.P.M. | DRIVE  | HP<br>WATT | VOLTS | PHASE | HZ | LBS    |                                                      |
| EF<br>1 | JANITOR          | CEILING  | GREENHECK<br>SP-A125      | 100      | 0.25            | -      | DIRECT | -<br>23.0  | 120   | 1     | 60 | 25     | PROVIDE BACKDRAFT DAMPER<br>RUN 24/7                 |
| EF<br>2 | UNISEX<br>TOILET | CEILING  | GREENHECK<br>SP-A125      | 100      | 0.25            | -      | DIRECT | -<br>23.0  | 120   | 1     | 60 | 25     | PROVIDE BACKDRAFT DAMPER<br>ACTIVATE W/ TIMER SWITCH |

## ANTI-CORROSION SPRAY

FOR PROJECTS LOCATED WITHIN 5-10 MILES OF THE OCEAN  
PROVIDE CORROSION SPRAY FOR ALL ROOFTOP MOUNTED EQUIPMENT  
CONFIRM WITH OWNER IF NECESSARY

## GENERAL NOTES

- DUCTWORK:**
- ALL AIR CONDITIONING DUCTS TRANSVERSE JOINTS TO BE SUBSTANTIALLY AIRTIGHT WITH TAPE, MASTIC, GASKETING OR OTHER MEANS; ALL LOW PRESSURE DUCTWORK SIZED EQUAL TO OR LESS THAN 0.1" W.G./100 FT.
  - DUCT SUPPORTS AND ANCHORAGE SHALL COMPLY WITH CMC 603.0
  - ROUND DUCTWORK MAY BE USED INSTEAD OF RECTANGULAR DUCTWORK IF SPACE PERMITS.
  - IF FLEXIBLE DUCTWORK IS USED, IT MAY NOT BE BENT OR COMPRESSED IN ANY WAY.
  - MANUAL VOLUME DAMPERS TO BE INSTALLED IN ALL BRANCH TAKE-OFFS. ALL DAMPERS TO HAVE LOCKING QUADRANTS.
  - DUCT SIZES SHOWN ARE NET SIZES REQUIRED. LINED DUCTS SHALL BE INCREASED IN SIZE TO ACCOMMODATE LINING WITHOUT LOSS OF AREA.
- AIR DEVICES:**
- ARROWS AT CEILING DIFFUSERS INDICATE THE AIR THROW PATTERN. COORDINATE WITH ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL DIFFUSERS AND REGISTERS AND LOUVERS.
  - SUPPLY DIFFUSERS, RETURN AND EXHAUST REGISTERS TO BE PERFORATED MODULAR TYPE FOR T-BAR CEILING INSTALLATION WITH KEY OPERATED BLADE DAMPER UNIT.
  - Supply diffusers and registers to be PRICE INDUSTRIES (Modular type) or PRICE INDUSTRIES (Perforated Modular type) for ceiling installation and/or 900V for side-wall installation or approved equal with key operated opposed blade damper unit (Round diffusers by PRICE INDUSTRIES model selected by the owner).
  - Return and exhaust air registers to be PRICE INDUSTRIES for ceiling installation and/or 90V for side-wall installation or approved equal with key operated opposed blade damper unit.
- INSULATION:**
- MINERAL FIBER INSULATION SHALL BE INSTALLED IN JOINT SPACES WHENEVER A PLUMBING PIPE OR DUCT PENETRATES A FLOOR-CEILING ASSEMBLY OR WHERE SUCH PIPE OR DUCT PASSES THROUGH THE PLANE OF THE FLOOR-CEILING ASSEMBLY FROM A WALL. THE INSULATION SHALL BE INSTALLED TO A POINT 12" BEYOND THE PIPE OR DUCT.
  - CEILING CONCEALED SUPPLY AND RETURN DUCTS SHALL BE COVERED ALL SIDES WITH R-8 FIBERGLASS INSULATION, APPLIED WITH 2" LAPPED JOINTS SECURELY AND NEATLY WIRED AND FASTENED TO DUCT; THE INSULATION TO BE CERTIFIED BY CALIFORNIA ENERGY COMMISSION (JOHN MANSVILLE IS ACCEPTED). WHEN DUCTWORK PENETRATES INSULATED WALLS OR ROOF, THE HOLE MUST BE SEALED WITH AN APPROVED POLY SEAL MATERIAL.
  - ALL INSULATION MATERIALS SHALL BE CERTIFIED BY THE MANUFACTURE AS COMPLYING WITH THE CALIFORNIA QUALITY STANDARD FOR INSULATION MATERIAL.
  - ALL SUPPLY AND RETURN AIR DUCTWORK EXPOSED TO WEATHER (OR IN EQUIPMENT ROOM) TO BE LINED WITH 1-1/2" THICK 1.5 LB./CU. FT. DENSITY FIBERGLASS INSULATION. (EQUAL TO R-8)
- CODE:**
- MOUNT WALL MOUNTED THERMOSTATS 4'-0" ABOVE FINISHED FLOOR TO THE TOP OF THE T-STAT
  - EACH SINGLE SYSTEM WITH ONE OR MORE AIR CONDITIONING UNITS PROVIDING HEATING OR COOLING IN EXCESS OF 2000 CFM OR AIR SERVING MORE THAN ONE OCCUPANCY, SHALL HAVE SMOKE DETECTORS (PRODUCT OF COMBUSTION) AND SHALL BE INSTALLED IN THE SUPPLY DUCT DOWNSTREAM OF THE FILTERS. ACTIVATION OF THE SMOKE SHALL CAUSE THE UNIT TO SHUT DOWN AND ACTIVATE THE FIRE ALARM SYSTEM. IF THERE ARE A NUMBER OF AIR CONDITIONING UNITS SERVING ONE AREA THERE IS A COMMON RETURN AIR PLENUM OR A COMMON FRESH AIR INTAKE DUCT FOR A NUMBER OF AIR CONDITIONING UNITS. ALL SMOKE DETECTORS MUST BE INTERCONNECTED TO SHUT-OFF ALL EQUIPMENT EVEN WHEN SMOKE IS DETECTED BY ONLY ONE SMOKE DETECTOR. DUCT VELOCITY AND PRESSURE DIFFERENTIAL MAY HAVE TO BE VERIFIED FOR EACH DUCT SMOKE DETECTOR LOCATION IN ACCORDANCE WITH U.L. LISTING. AUTOMATIC SHUT-OFFS NEED NOT BE INSTALLED WHEN ALL ROOMS HAVE DIRECT EXIT TO THE EXTERIOR OF THE BUILDING.
  - ALL WORK SHALL COMPLY WITH REQUIREMENTS OF ALL APPLICABLE CODES, LAWS, ORDINANCES AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS. ADDITIONAL PLAN CHECK FEES, INSPECTIONS, ETC. AND FURNISH SIGNED, CERTIFIED AND ACCEPTABLE COPIES TO THE OWNER FOR HIS RECORDS.
- QUALITY CONTROL:**
- PROVIDE AS BUILT DRAWINGS AND SUBMIT COPIES TO THE OWNER.
  - IT IS THE SPECIFIC INTENT OF THIS DESIGN CONDITIONS THAT THE ENTIRE SYSTEM INCLUDING EQUIPMENT, DUCTWORK, AIR OUTLETS/ INLETS AND ALL OTHER PARTS BE NOISELESS AND FREE OF VIBRATION TRANSMISSION. PROVIDE AND INSTALL VIBRATION ISOLATORS OR DAMPERS, SOUND INSULATION PADS, FLEXIBLE CONNECTORS AND SIMILAR MATERIAL AS REQUIRED. INSTALL VOLUME DAMPERS ON ALL DUCTS AS FAR AS POSSIBLE FROM AIR INLET/ OUTLETS. MAKE THE NECESSARY NOISE OR VIBRATION CORRECTIONS BY INSTALLING THESE ITEMS AT NO COST TO THE OWNER.
  - PERFORM TEST OF EQUIPMENT BEFORE FINAL ACCEPTANCE AND UNDER THE SUPERVISION OF THE ARCHITECT AND/OR OWNER. FURNISH ALL LABOR AND INSTRUMENTS FOR TESTS.
  - UPON COMPLETION OF AND AFTER CLEANING OF SYSTEM AND EQUIPMENT, CAREFULLY ADJUST FOR NORMAL OPERATING OF THE AUTOMATIC PARTS OF HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS.
  - EQUIPMENT AND DUCTWORK EXPOSED TO WEATHER MUST BE WEATHERPROOFED.
  - WHEN MORE THAN ONE PIECE OF EQUIPMENT ARE INSTALLED ON ROOF OR A COMMON AREA, LABEL EACH PIECE EQUIPMENT TO IDENTIFY THE AREA IT SERVES. EACH HVAC UNIT MUST HAVE A HINGED SERVICE DOOR.
  - INDEPENDENT BALANCE COMPANY SHALL BALANCE AIR SYSTEM TO THE CFM CAPACITIES AS SHOWN ON FLOOR PLANS.
  - APPLIANCES DESIGNED TO BE FIXED IN POSITION SHALL BE SECURELY FASTENED IN PLACE.
  - REPLACE ALL AIR FILTERS ONE WEEK PRIOR TO TURNOVER TO OWNER.
- COORDINATION WITH OTHER TRADES:**
- THE DRAWINGS ARE IN PART DIAGRAMMATIC AND ARE INTENDED TO CONVEY THE SCOPE OF THE WORK; THE INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZES OF EQUIPMENT, DUCTWORK, PIPING, OUTLETS, ETC. FOLLOW THE DRAWINGS AS CLOSELY AS PRACTICAL IN LAYING OUT THE WORK. BE GUIDED BY THE CONDITIONS AT THE JOB AND CONSULT THE CONSTRUCTION DRAWINGS OF THE OTHER TRADES TO BECOME FAMILIAR WITH ALL CONDITIONS AFFECTING THE WORK.
  - ALL REQUIRED, INDICATED OR SHOWN HVAC DUCTWORK, PIPING, AND EQUIPMENT WHICH CONFLICT WITH THE WORK OF OTHER TRADES SUCH AS STRUCTURAL MEMBERS, ELECTRICAL, PLUMBING, FIRE SPRINKLER LINES AND EQUIPMENT, ROOF PLATFORMS/ CURBS, SKY LIGHTS, ATTIC VENTS, ETC. SHALL BE MOVED, OFFSET OR RE-REQUIRED BY THE CONTRACTOR. FREE OF CHARGE. MAJOR CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND OWNER BEFORE THE FINAL INSTALLATION.
  - VERIFY WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR EXACT LOCATION OF DUCT OPENINGS THROUGH ROOF AND WALLS.
  - CONTRACTOR SHOULD VISIT THE JOB SITE BEFORE THE CONSTRUCTION AND VERIFY ALL THE CONDITIONS, LOCATIONS AND DIMENSIONS BEFORE STARTING WORK, ORDERING EQUIPMENT AND DUCT/ PIPE FABRICATION.
  - FURNISHING AND INSTALLATION OF ALL LOW VOLTAGE WIRING FOR MECHANICAL SYSTEM SHALL BE BY THE MECHANICAL CONTRACTOR.
  - ALL NECESSARY EQUIPMENT CURBS, RUNNERS, PLATFORMS, ROOFING, PATCHING, CUTTING, RATING SHAFTS, FURRING, FLASHING AND PAINTING SHALL BE BY THE GENERAL CONTRACTOR.
  - ALL NECESSARY DRAINS, GAS, CONDENSATE DRAINS WITH TRAPS, INCLUDING FINAL CONNECTIONS SHALL BE BY THE PLUMBING CONTRACTOR.
  - FURNISHING AND INSTALLATION OF ALL LINE VOLTAGE WIRING VOLT CONDUIT AND AUXILIARIES FOR MECHANICAL SYSTEMS SHALL BE BY THE ELECTRICAL CONTRACTOR. THE CONDUIT FOR LOW VOLTAGE WIRING OF MECHANICAL SYSTEM EXPOSED TO THE WEATHER SHALL BE APPROVED FOR EXTERIOR USE AND BE BY THE ELECTRICAL CONTRACTOR.
  - REPORT DISCREPANCIES IN THE PLANS OR SPECIFICATIONS TO ARCHITECT AND OWNER BEFORE BIDDING THE PROJECT. DISCREPANCIES RESULTING IN CHANGE ORDERS AFTER THE AWARD CONTRACT SHALL BE AT THE CONTRACTOR'S EXPENSE.
  - INCLUDE ALL ROOF CURB FLASHINGS AND GASKETS (PER MANUFACTURER'S SPECS) AND PROVIDE FOR PROTECTION OF ROOF CURBS WITH GENERAL CONTRACTOR.
  - COORDINATE INSTALLATION OF GAS PIPING, CONDENSATE PIPING, AND ELECTRIC CONDUITS WITH OTHER TRADES.
  - LINE SUPPLY AND RETURN DUCT DROPS WITH MINIMUM 1 1/2" THICK, 2 LBS./CU.FT. DENSITY SEMI-RIGID FACED GLASS FIBER ACOUSTIC DUCT LINING.
- ENERGY:**
- BACK-DRAFT DAMPERS FOR ALL EXHAUST AND FAN SYSTEMS SHALL BE PROVIDED.
  - ALL WATER HEATING AND AIR CONDITIONING EQUIPMENT, SHOWER HEADS AND FAUCETS SHALL BE C.E.C. CERTIFIED.
  - AUTOMATIC TEMPERATURE CONTROL DEVICE FOR REGULATION OF SPACE TEMPERATURE SHALL BE EQUIPPED WITH NIGHT SET BACK AND HAVE THE ABILITY TO OPERATE THE HEATING AND/OR COOLING SYSTEMS IN SHAWDOW. THE CONTROL SHALL BE ADJUSTABLE TO PROVIDE A RANGE OF UP TO 10 DEGREES F BETWEEN FULL HEATING AND FULL COOLING AND HAVE A CAPABILITY OF TERMINATING ALL HEATING AT A TEMPERATURE NO MORE THAN 70 DEGREES F AND COOLING AT A TEMPERATURE NO LESS THAN 78 DEGREES F.
  - AT LEAST ONE AUTOMATIC SPACE TEMPERATURE CONTROL DEVICE (THERMOSTAT) SHALL BE EQUIPPED FOR EACH ZONE AND/ OR EACH SEPARATE HVAC SYSTEM (NOT MORE THAN ONE FLOOR OF BUILDING SHALL BE INCLUDED).
  - ALL AIR CONDITIONING UNITS TO BE FURNISHED WITH MAINTENANCE MANUALS, SCHEDULES AND TAGS.
  - ALL AIR CONDITIONING UNITS TO BE EQUIPPED WITH A READILY ACCESSIBLE MANUALLY ADJUSTABLE ANNUALLY MEANS OF REDUCING THE ENERGY USED FOR HVAC DURING THE PERIOD OF NON USE OR ALTERNATE USE THE OF THE BUILDING SPACE OR ZONES SERVED BY THE SYSTEM, SUCH AS A TIME CLOCK OR TIME SWITCH.
  - EACH MECHANICAL OR GRAVITY VENTILATION UNIT, EXCEPT ATTIC VENTILATORS SHALL BE EQUIPPED WITH AN AUTOMATIC TYPE NORMALLY CLOSED OUTSIDE AIR DAMPER TO SERVE AS A MEANS OF PROVING AIR VOLUME REDUCTION AND/ OR SHUT-OFF WHEN VENTILATION IS NOT REQUIRED. (DOES NOT APPLY TO COMBUSTION AIR OPENINGS).

## ADDITIONAL MECHANICAL NOTES

- GENERAL REQUIREMENTS:**
- BY SUBMITTING A QUOTATION OR PROPOSAL, THE MECHANICAL CONTRACTOR EXPRESSLY STATES AND WARRANTS THAT: ALL DRAWINGS AND SPECIFICATIONS HAVE BEEN THOROUGHLY REVIEWED, CONTRACTOR HAS BECOME FAMILIARIZED WITH JOB SITE CONDITIONS, AND IS TOTALLY QUALIFIED TO PERFORM ALL OF THE WORK REQUIRED.
  - THE MECHANICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND LICENSES PERTAINING TO HIS WORK.
  - THE CONTRACTOR SHALL OBTAIN AND COMPLY WITH DETAILED REQUIREMENTS OF LEASE EXTRACTS FROM THE LANDLORD AND TENANT.
  - EQUIPMENT AND MATERIALS IN TRANSIT SHALL UTILIZE FREIGHT ELEVATOR OR STAIRS. SAID EQUIPMENT OR MATERIALS SHALL BE DISASSEMBLED AS REQUIRED TO MEET THE RESTRICTIONS IMPOSED BY THE BUILDING OR ITS COMPONENT CONSTRAINTS AND THEN REASSEMBLED IN THE NEW WORK AREA.
  - ALL WORK SHALL BE DONE WITH A MINIMUM OF NOISE AND DISTURBANCE TO BUSINESS ROUTINE.
  - SINCE THESE ARE SECURE FLOORS, ALL DELIVERIES, WORKERS, WORK OPERATORS, ETC., REQUIRED BY THE CONTRACTOR FOR WORK PERFORMED IN ANY AREA OR SITE BUILDING SHALL BE IN STRICT CONFORMANCE TO THE RULES AND REGULATIONS OF THE TENANT.
  - THE CONTRACTOR SHALL PROTECT HIS WORK AND EQUIPMENT FROM DAMAGE, VANDALS, ETC. ANY ITEM THAT IS DAMAGED, VANDALIZED OR STOLEN PRIOR TO ACCEPTANCE OF BUILDING BY TENANT SHALL BE REPLACED BY RESPECTIVE CONTRACTOR AT NO CHARGE TO TENANT.
  - THIS CONTRACTOR SHALL NOT INTERRUPT ANY OF THE SERVICES OF THE EXISTING BUILDING NOR INTERFERE WITH THE SERVICES IN ANY WAY WITHOUT THE EXPRESSED PERMISSION OF THE TENANT.
  - WHERE THE WORK MAKES TEMPORARY SHUTDOWN OF SERVICES UNAVOIDABLE, THEY SHALL BE MADE AT NIGHT OR AT SUCH TIMES AS WILL CAUSE THE LEAST INTERFERENCE WITH THE ESTABLISHED OPERATING ROUTINE.
  - THIS CONTRACTOR SHALL ARRANGE THE WORK SO AS TO ASSURE THAT SERVICES WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTION TO THE EXISTING WORK.
  - THIS CONTRACTOR SHALL GIVE WRITTEN NOTICE 2 WEEKS IN ADVANCE TO THE TENANT AND LANDLORD OF ANY REQUIRED SHUT DOWN.
  - ALL MOTORS, FANS, CONTROLS, FIXTURES, HVAC UNIT AND OTHER EQUIPMENT FOR USE IN THIS CONTRACT SHALL BE PROTECTED BY TARPAPULIN OR BY BOILING AS SOON AS DELIVERED TO THE SITE, AND SHALL BE KEPT CLEAN AND DRY. THE MOTORS, UNITS, FIXTURES, FANS, AND MOVING PARTS SHALL BE KEPT COVERED SO AS TO ELIMINATE DIRT, DUST AND OTHER MATERIALS ENTERING THE PARTS DURING ERECTION AND CONSTRUCTION WORK ON THE BUILDING. SHOULD IT BE FOUND THAT ANY PARTS ARE DAMAGED DUE TO CARELESSNESS ON THE PART OF THE CONTRACTOR IN NOT PROVIDING PROPER PROTECTION, SUCH PART OR PARTS SHALL BE REPLACED BY THE CONTRACTOR AT HIS OWN COST AND EXPENSE. ALL OPENINGS IN DUCTS, PIPING, CONDUITS, ETC., SHALL BE PROPERLY PROTECTED WITH TEMPORARY CAPS OR PLUGS AT ALL TIMES.
  - THE MECHANICAL CONTRACTOR SHALL VERIFY AND COORDINATE ALL METHODS OF HANGING, SUPPORTING, CUTTING AND PATCHING WITH THE ARCHITECT OR LANDLORD.
  - DURING THE CONSTRUCTION PHASE OF THE PROJECT, ANY DUCTWORK INSTALLED IS TO BE COMPLETELY SEALED UP OR AT ANY OPENINGS, EITHER AT THE BEGINNING OR END OF A DUCT RUN OR AT A BRANCH, COLLAR DIFFUSER OR REGISTER TO AVOID DIRT OR OTHER CONTAMINANTS FROM ENTERING THE SYSTEM.
  - ALL REGISTERS AND DIFFUSERS SHALL BE STEEL, FLUSH TO THE CEILING, AND SHALL HAVE MANUFACTURERS BAKED ENAMEL FINISH (COLOR TO MATCH CEILING TILES OR CEILING). DIFFUSERS SHALL BE OF THE ADJUSTABLE PATTERN TYPE WITH VOLUME CONTROL DAMPERS AND FLOW EQUALIZING.
  - FIBERGLASS DUCTWORK WILL NOT BE ALLOWED.

### GUARANTEE, WARRANTY

- THE MECHANICAL CONTRACTOR SHALL INCLUDE IN HIS PROPOSAL A ONE YEAR GUARANTEE, WARRANTY ON ALL EQUIPMENT AND MATERIAL HE INSTALLS OR REFURBISHES. THIS GUARANTEE, WARRANTY IS TO INCLUDE ALL LABOR, MATERIAL PARTS, ETC. NECESSARY TO MAINTAIN THE SYSTEM IN SATISFACTORY OPERATION FOR A PERIOD OF ONE YEAR STARTING FROM THE DATE OF ACCEPTANCE OF THE SYSTEM BY THE TENANT. IT SHALL ALSO INCLUDE A NEW SET OF FILTERS AT THE TIME OF STARTUP ONE SUMMER TO WINTER CHANGEOVER, ONE WINTER TO SUMMER CHANGEOVER, AND FOUR (4) FILTER CHANGES DURING THE FIRST YEAR. THE NORMAL PREVENTATIVE MAINTENANCE WORK SHALL BE PERFORMED AT THE TIME OF THE FILTER CHANGES.

### INSULATION

- DUCTWORK WITHIN 10' OF HVAC UNIT SHALL BE ACOUSTICALLY LINED. DUCT SIZES SHOWN ON THE DRAWING ARE INTERNAL FREE AREA SIZES. INTERNAL LINING SHALL BE 1" THICK DUCT LINER EQUAL TO SCHALLER "PERMACOTE LINA-COUSTIC 10" MIN. "K" VALUE = R-20) AND SHALL BE APPLIED TO THE DUCTWORK WITH FIRE RESISTIVE ADHESIVES, AND CADDIM OR COPPER PLATED MECHANICAL FASTENERS.
- LEADING EDGES OF DUCT INSULATION SHALL BE OVERLAPPED BY ADJOINING INSULATION FOR A MINIMUM AND THEN SEALED WITH FOIL VAPOR BARRIER ADHESIVE AND DUCT TAPE SO THAT NO FIBERGLASS INSULATION IS VISIBLE.
- ALL INSULATION ON EXISTING PIPING OR DUCTS THAT IS WETTED, DAMAGED, DISTURBED OR REMOVED SHALL BE REPLACED.

### FLEXIBLE CONNECTIONS

FINAL CONNECTIONS TO TOILET EXHAUST FAN SHALL BE WITH A HEAVY AIRTIGHT AC RESISTANT FIRE RETARDANT FIBER GLASSED NEOPRENE CONNECTOR. A MINIMUM OF SIX (6) INCHES IN LENGTH. THE CONNECTOR SHALL BE FASTENED TO EQUIPMENT AND DUCT WITH TWO FLEXIBLE REMOVABLE BRASS STRAPS, OR ALTERNATE APPROVED METHOD.

### FLEXIBLE DUCT

FLEXIBLE DUCT FOR CONNECTIONS SHALL BE A FACTORY FABRICATED ASSEMBLY CONSISTING OF AN INNER SLEEVE, INSULATION AND AN OUTER MOISTURE BARRIER. THE INNER SLEEVE SHALL BE CONSTRUCTED OF A CONTINUOUS VINYL COATED SPRING STEEL WIRE HELIX FUSED TO A CONTINUOUS LAYER OF FIBERGLASS IMPREGNATED AND COATED VINYL. A 1 1/4" THICK LAYER OF INSULATING BLANKET OF FIBERGLASS WOOL SHALL ENCASE THE INNER SLEEVE AND BE SHEATHED WITH AN OUTER MOISTURE BARRIER OF A REINFORCED WEAR NEOPRENE LAMINATE OF LOW PERMEABILITY. THE FLEXIBLE DUCT SHALL BE RATED FOR A MAXIMUM WORKING VELOCITY OF 6000 FPM AND SHALL BE LISTED BY THE UNDERWRITERS LABORATORIES UNDER THEIR UL-181 STANDARDS AS A CLASS 1 DUCT AND SHALL COMPLY WITH NFPA STANDARD - 90A.

| SYMBOL | ABBR.    | DESCRIPTION                                         | ABBR.                           | DESCRIPTION                  |
|--------|----------|-----------------------------------------------------|---------------------------------|------------------------------|
|        | SD       | DUCT TYPE SMOKE DETECTOR                            | A/C                             | AIR CONDITIONING             |
|        | FD       | FIRE DAMPER                                         | BHP                             | BRAKE HORSEPOWER             |
|        | FSD      | COMBINATION FIRE SMOKE DAMPER                       | BD                              | BOTTOM OF DUCT-ELEVATION     |
|        | AP OR AD | ACCESS PANEL OR DOOR                                | 6 OR CFM                        | CUBIC FEET PER MINUTE        |
|        | FC       | FLEXIBLE DUCT CONNECTOR                             | COMB                            | COMBUSTION OR COMBINATION    |
|        | TH       | THROAT & SIZE                                       | COMP                            | COMPRESSOR                   |
|        | TV       | TURNING VANES                                       | COND                            | CONDENSER (ING)              |
|        | VO       | MANUAL VOLUME DAMPER W/ DUCT/SLIDE BLADE QUADRANTS  | MERV                            | MINIMUM EFF. REPORTING VALUE |
|        | 20X12    | DUCT SIZE NOTATION-FIRST DIMENSION IS FOR NEAR SIDE | EXT                             | EXTERNAL                     |
|        | MD       | MOTORIZED DAMPER                                    | EVAP                            | EVAPORATOR(NG) (ME)          |
|        | MD       | DUCT TRANSMISSION                                   | FT <sup>2</sup> IN <sup>3</sup> | SQUARE FEET CUBIC INCH       |
|        | LINED    | PLENUM OR DUCT LINER SHEET METAL SIZE (D)SHOWN      | FPM                             | FEET PER MINUTE              |
|        | FLEX     | FLEXIBLE DUCT                                       | HP                              | HORSEPOWER                   |
|        | EX       | EXHAUST AIR DUCT SECTION                            | INSUL                           | INSULATE, INSULATION         |
|        | RET      | RETURN AIR DUCT SECTION                             | MBH                             | THOUSAND BTU PER HOUR        |
|        | SUP      | SUPPLY AIR DUCT SECTION                             | NC                              | NOISE CRITERIA CURVE         |
|        | SL       | SINGLE LINE DUCT                                    | NOT                             | NOT IN THIS CONTRACT         |
|        | +        | AIR FLOW DIRECTION DESIGNATION                      | OPNG                            | OPENING                      |
|        | UC       | UNDERCUT DOOR W/SIZE                                | OUT                             | OUTLET VELOCITY (CFM)        |
|        | D LVR    | DOOR LOUVER W/GROSS FT                              | REQ'D                           | REQUIRED                     |
|        | RL       | REFRIGERANT LIQUID                                  | SP                              | STATIC PRESSURE              |
|        | RS       | REFRIGERANT SUCTION                                 | TS                              | TIP SPEED                    |
|        | UTR      | UP THRU ROOF                                        | TYP-                            | TYPICAL FOR-                 |
|        | HG       | HOT GAS REFRIGERANT                                 | WBT                             | WET BULB TEMPERATURE         |
|        | CO       | CONDENSATE DRAIN                                    | WB                              | WET BULB TEMPERATURE         |
|        | CR       | CONDENSER RETURN                                    | DBT                             | DRY BULB TEMPERATURE         |
|        | POC      | POINT OF CONNECTION                                 | WT                              | WATER GAGE                   |
|        | UNIT NO. | EQUIPMENT DESIGNATION                               | Ø                               | DIAMETER OR ROUND            |
|        | ND       | CEILING DIFFUSER                                    | Δ                               | BULLETIN                     |
|        | CG       | CEILING GRILLE                                      | Ⓐ                               | THERMOSTAT                   |
|        | CR       | CEILING REGISTER                                    | SW                              | ON/OFF SWITCH                |
|        | TR       | TOP REGISTER                                        | LS                              | LIGHT SWITCH                 |
|        | BR       | BOTTOM REGISTER                                     | AT                              | AUTOMATIC/TIMER SWITCH       |
|        | OSA      | OUTSIDE AIR FLOW                                    | RT                              | REMOTE TEMPERATURE SENSOR    |
|        | [CO2]    | CARBON DIOXIDE SENSOR                               | °                               | TEMPERATURE SENSOR           |
|        | [CO]     | CARBON MONOXIDE SENSOR                              | FLA                             | FULL LOAD AMPS               |
|        | COP      | COEFFICIENT OF PERFORMANCE                          | MCA                             | MINIMUM CIRCUIT AMPS         |
|        | TH       | TOTAL HEAT                                          | MDOP                            | MAX. OVERCURRENT PROTECTION  |
|        | SH       | SENSIBLE HEAT                                       | RPM                             | REVOLUTION PER MINUTE        |
|        | BTUH     | BRITISH THERMAL UNIT PER HOUR                       | IFM                             | INDOOR FAN MOTOR             |
|        | EER      | ENERGY EFFICIENCY RATIO                             | OFM                             | OUTDOOR FAN MOTOR            |
|        | SEER     | SEASONAL ENERGY EFF. RATIO                          | VOLT - PHASE - HERTZ            |                              |
|        | HSFP     | HEATING SEASONAL PERF. FACTOR                       |                                 |                              |

## DRAWING LIST

|     |                                         |
|-----|-----------------------------------------|
| M-1 | MECHANICAL NOTES, SCHEDULES AND DETAILS |
| M-2 | MECHANICAL FLOOR PLAN                   |
| M-3 | TITLE-24 ENERGY FORMS                   |

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A PROJECT FOR:

Options For Youth  
Public Charter Schools

6624-6628 CHERRY AVE.  
LONG BEACH, CA 90805

CLIENT:

LUPINE  
CONSTRUCTION & DEVELOPMENT

715 ARROW GRAND CIRCLE  
COVINA, CA 91722

REVISIONS

PROJECT DATA

DATE 03-01-2024

ARCHITECT EM

CHECKED BY EM

DRAWN BY AA

PROJECT NO. -

SCALE AS NOTED

SHEET TITLE

MECHANICAL NOTES  
SCHEDULES AND  
DETAILS

SHEET NO.

M-1

BRYAN GAVDIA - MECHANICAL PLAN CHECK  
CHERRY AVE 6624 BMEC310478 APPROVED

City of Long Beach  
Electronic Plan Check

APPROVED

This construction document MUST be at the job site during construction. It is unlawful to alter, change or deviate from this construction document without approval from the appropriate City agency or department. This approval is subject to field inspection for acceptance of the completed work or installation. The approval of this construction document SHALL NOT be held to permit or to be an approval of the violation of any provisions of the municipal code or other ordinances of the City or laws and statutes of the State.





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A PROJECT FOR:



6624-6628 CHERRY AVE.  
LONG BEACH, CA 90805

CLIENT:



715 ARROW GRAND CIRCLE  
COVINA, CA 91722

REVISIONS

PROJECT DATA

DATE 03-01-2024

ARCHITECT EM

CHECKED BY EM

DRAWN BY AA

PROJECT NO. -

SCALE AS NOTED

SHEET TITLE

MECHANICAL  
FLOOR PLAN

SHEET NO.

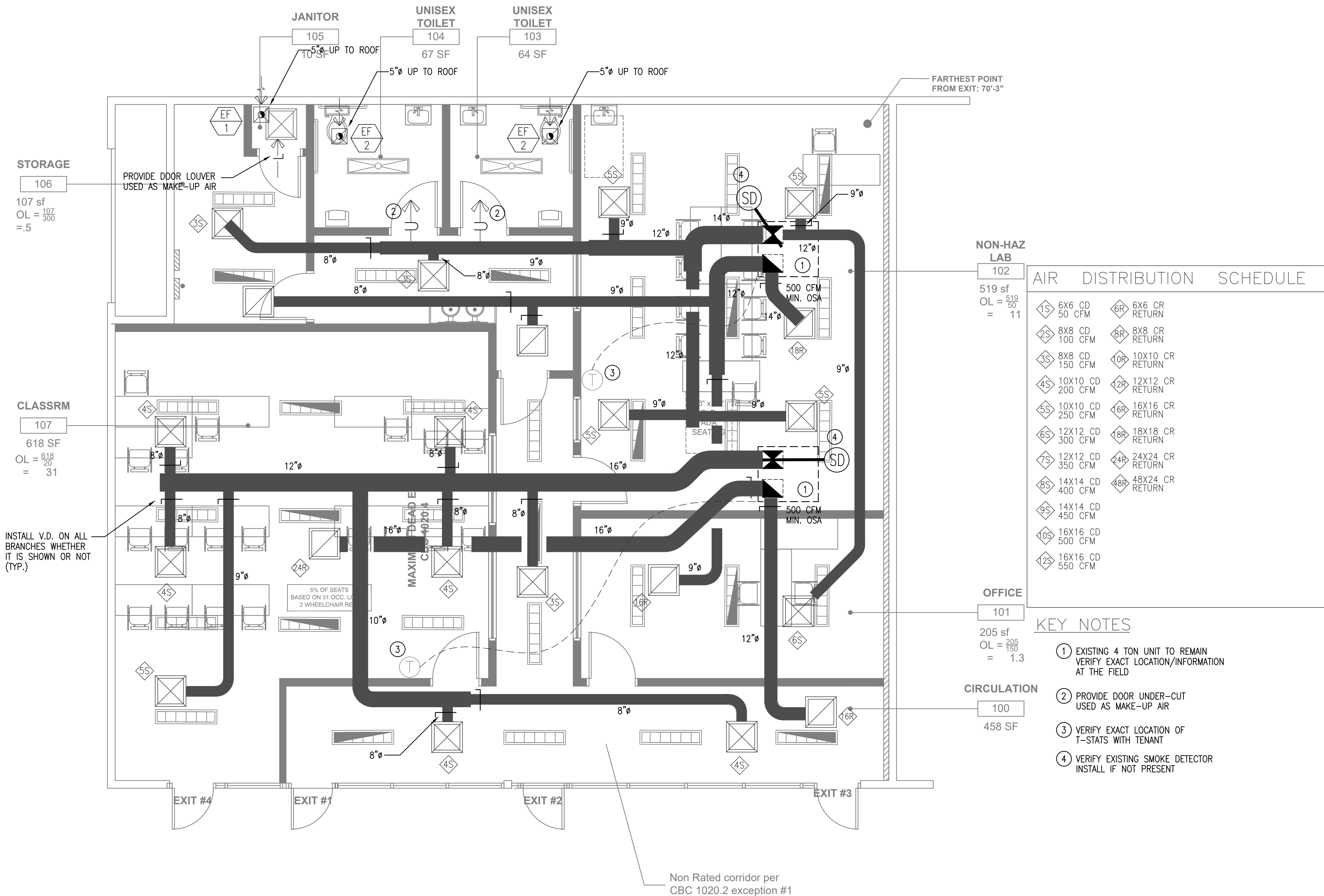
M-2

BRYAN GAVIDIA - MECHANICAL PLAN CHECK  
CHERRY AVE 6624 BMEC310478 APPROVED

City of Long Beach  
Electronic Plan Check

APPROVED

This construction document MUST be at the job site during construction. It is unlawful to alter, change or deviate from this construction document without approval from the appropriate City agency or department. This approval is subject to field inspection for acceptance of the completed work or installation. The approval of this construction document SHALL NOT be held to permit or to be an approval of the violation of any provisions of the municipal code or other ordinances of the City or laws and statutes of the State.



MECHANICAL FLOOR PLAN

SCALE  
1/4"=1'-0"

1



BRYAN GAVIDIA - MECHANICAL PLAN CHECK  
CHERRY AVE 6624 BMCC310478 APPROVED

City of Long Beach  
Electronic Plan Check

APPROVED

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STATE OF CALIFORNIA

MECHANICAL SYSTEMS

CALIFORNIA ENERGY COMMISSION

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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<br>110.1,<br>110.2,<br>140.4,<br>170.2(c)<br>(See Table F) | AND | Pumps<br>140.4(c),<br>170.2(c)(4)<br>(See Table G) | AND | Fans/<br>Economizers<br>140.4(c),<br>140.4(e),<br>170.2(c)<br>(See Table H) | AND | System Controls<br>110.2, 120.2,<br>140.4(f),<br>170.2(c)<br>(See Table I) | AND | Terminal Box Controls<br>140.4(d),<br>170.2(c)(4B)<br>(See Table K) | AND | Distribution<br>120.3,<br>140.4(f),<br>160.2, 160.3<br>(See Table L) | AND | Cooling Towers<br>110.2(e)2<br>(See Table M) | COMPLIANCE RESULTS |
|                                                                           | AND |                                                    | AND |                                                                             | AND | Yes                                                                        | AND | Yes                                                                 | AND |                                                                      | 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.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

This section does not apply to this project.

G. PUMPS

This section does not apply to this project.

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H. FAN SYSTEMS & AIR ECONOMIZERS

This section does not apply to this project.

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), 170.2(c)(4D) 170.2(c)(4L) or requirements in 141.0(b)2E 180.2(b)2 for altered space conditioning systems.

| 01          | 02            | 03                                        | 04                                                                                 | 05                                           | 06                                                 | 07                                                | 08                                                | 09                                            |
|-------------|---------------|-------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------------------|---------------------------------------------------|---------------------------------------------------|-----------------------------------------------|
| System Name | System Zoning | Conditioned Floor Area Being Served (ft²) | Thermostats<br>110.2(b) & (c)¹, 120.2(g)<br>160.3(a)(2A) or 141.0(b)2E & 180.2(b)2 | Shut-Off Controls<br>120.2(e) & 160.3(a)(2D) | Isolation Zone Controls<br>120.2(g) & 160.3(a)(2F) | Demand Response<br>110.12 120.2(b) & 160.3(a)(2B) | Supply Air Temp. Reset<br>140.4(f) & 170.2(c)(4D) | Window Interlocks per 140.4(n) & 170.2(c)(4D) |

¹FOOTNOTES: 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.

J. VENTILATION AND INDOOR AIR QUALITY

This table is used to demonstrate compliance with mandatory ventilation requirements in 120.1 120.2(e)(3B 140.4(p) and 140.4(a) for all nonresidential and hotel/motel and d:t424refnolink/160.2, 160.3(a)(3D, 170.2(a)(4N, 170.2(a)(4O for high-rise residential occupancies. For alterations, only ventilation 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 airflow may be shown on the plans or the calculations can be presented in a spreadsheet.

| 01 | 02                                  | 03                                                                                                                                                      | 04 | 05 | 06 | 07 | 08 | 09 |
|----|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|
| 01 | <input type="checkbox"/>            | Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.          |    |    |    |    |    |    |
| 02 | <input checked="" type="checkbox"/> | Check this box if the project included Nonresidential, Hotel/Motel Spaces or Multifamily Common Use Spaces                                              |    |    |    |    |    |    |
| 03 | <input type="checkbox"/>            | 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 Multifamily Common Use Ventilation Systems

| 04          | 05                  | 06                            | 07  |                                |    |                                                        |          |    |
|-------------|---------------------|-------------------------------|-----|--------------------------------|----|--------------------------------------------------------|----------|----|
| System Name | Existing 4 ton unit | System Design OA CFM Airflow¹ | 500 | System Design Transfer Air CFM | 0  | Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)(2)² | Provided |    |
| 08          | 09                  | 10                            | 11  | 12                             | 13 | 14                                                     | 15       | 16 |

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A. GENERAL INFORMATION

|    |                                 |            |    |                                      |      |
|----|---------------------------------|------------|----|--------------------------------------|------|
| 01 | Project Location (city)         | Long Beach | 04 | Total Conditioned Floor Area         | 2236 |
| 02 | Climate Zone                    | 8          | 05 | Total Unconditioned Floor Area       | 0    |
| 03 | Occupancy Types Within Project: |            | 06 | # of Stories (Habitable Above Grade) | 1    |

• Classroom

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, 170.2(b) or 141.0(b)2 and 180.2(b)2 for alterations.

| 01                                                                                           | 02                                        | 03                                                                     |
|----------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------|
| Air System(s)                                                                                | Wet System Components                     | Dry System Components                                                  |
| <input type="checkbox"/> Heating Air System                                                  | <input type="checkbox"/> Water Economizer | <input type="checkbox"/> Air Economizer                                |
| <input type="checkbox"/> Cooling Air System                                                  | <input type="checkbox"/> Pumps            | <input type="checkbox"/> Electric Resistance Heat                      |
| Mechanical Controls                                                                          | <input type="checkbox"/> System Piping    | <input type="checkbox"/> Fan Systems                                   |
| <input checked="" type="checkbox"/> Mechanical Controls (existing to remain, altered or new) | <input type="checkbox"/> Cooling Towers   | <input type="checkbox"/> Ductwork (existing to remain, altered or new) |
|                                                                                              | <input type="checkbox"/> Chillers         | <input checked="" type="checkbox"/> Ventilation                        |
|                                                                                              | <input type="checkbox"/> Boilers          | <input type="checkbox"/> Zonal Systems/ Terminal Boxes                 |

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J. VENTILATION AND INDOOR AIR QUALITY

| Space Name or Item Tag | Mechanical Ventilation Required per 120.1(c)3³ & 160.2(c)3 | Exh. Vent per 120.1(c)4 & 160.2(c)4 | DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3⁴ 160.2(c)5D 160.2(c)5E 160.2(c)5D |                                       |                  |                         |            |                                 |
|------------------------|------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------|------------------|-------------------------|------------|---------------------------------|
| Occupancy Type⁴        | Conditioned Floor Area (ft²)                               | # of Shower heads/ toilets          | # of people⁵                                                                                     | Required Min OA CFM                   | Required Min CFM | Provided per Design CFM | DCV        | NA: Not required per §120.1(d)3 |
| Classroom (ages 5-18)  | 1118                                                       |                                     |                                                                                                  | 424.8                                 | 0                | 500                     | Occ Sensor | NA: Not required space type     |
| 17                     | Total System Required Min OA CFM                           | 425                                 | 18                                                                                               | Ventilation for this System Complies? | Yes              |                         |            |                                 |

| 04          | 05                  | 06                            | 07  |                                |    |                                                        |          |    |
|-------------|---------------------|-------------------------------|-----|--------------------------------|----|--------------------------------------------------------|----------|----|
| System Name | Existing 4 ton unit | System Design OA CFM Airflow¹ | 500 | System Design Transfer Air CFM | 0  | Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)(2)¹ | Provided |    |
| 08          | 09                  | 10                            | 11  | 12                             | 13 | 14                                                     | 15       | 16 |

| Space Name or Item Tag | Mechanical Ventilation Required per 120.1(c)3³ & 160.2(c)3 | Exh. Vent per 120.1(c)4 & 160.2(c)4 | DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3⁴ 160.2(c)5D 160.2(c)5E 160.2(c)5D |                                       |                  |                         |            |                                 |
|------------------------|------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------|------------------|-------------------------|------------|---------------------------------|
| Occupancy Type⁴        | Conditioned Floor Area (ft²)                               | # of Shower heads/ toilets          | # of people⁵                                                                                     | Required Min OA CFM                   | Required Min CFM | Provided per Design CFM | DCV        | NA: Not required per §120.1(d)3 |
| Classroom (ages 5-18)  | 1118                                                       |                                     |                                                                                                  | 424.8                                 | 0                | 500                     | Occ Sensor | NA: Not required space type     |
| 17                     | Total System Required Min OA CFM                           | 425                                 | 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.

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J. VENTILATION AND INDOOR AIR QUALITY

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 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 section does not apply to this project.

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

NRCI-MCH-01-E - Must be submitted for all buildings

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no NRCA forms required for this project.

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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 | Yes | Plan sheet or construction document location |
| Mandatory Measures Note Block                             |     | M-Sheets                                     |

Generated Date/Time:

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Abi Nabipur

Signature Date: 04-23-2024

Address: 232 North Lake Ave STE 217

City/State/Zip: Pasadena CA 91101

Phone: 626-449-2490

CEAH HERB Certification Identification (if applicable): M-22298

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 5 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 building owner at occupancy.

Responsible Designer Name: JaycoCal Engineering, Inc.

Date Signed: 2024-04-23

Address: 232 N Lake Ave., Suite 217

City/State/Zip: Pasadena CA 91101

Phone: 626-449-2490

License: M-22298

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EDWIN MOHABIR  
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JaycoCal  
Engineering  
JCE NO: 24012  
232 N. Lake Ave., Suite 217  
Pasadena, California 91101  
Tel: (626) 449 2490  
email: info@jaycoocal.com

A PROJECT FOR:

Options For Youth  
Public Charter Schools

6624-6628 CHERRY AVE.  
LONG BEACH, CA 90805

CLIENT:



715 ARROW GRAND CIRCLE  
COVINA, CA 91722

REVISIONS

PROJECT DATA

DATE 03-01-2024

ARCHITECT EM

CHECKED BY EM

DRAWN BY AA

PROJECT NO. -

SCALE AS NOTED

SHEET TITLE

TITLE-24  
ENERGY FORMS

SHEET NO.

M-3