YUMA COUNTY FOOTHILLS LIBRARY HVAC REPLACEMENT

13226 E. SOUTH FRONTAGE ROAD

YUMA, AZ 85367

SCOPE OF WORK

- NEW ROOFTOP HVAC UNITS
- NEW HVAC CONTROLS
- SEE PLANS FOR FULL REQUIREMENTS

CODE INFORMATION

APPLICABLE CODES

2018 IBC	2009 IECC
2018 IMC	2018 IPC
2020 NEC	2018 NFPA 1 FIRE CODE
YUMA COUNTY ORDINANCES AND REGULATIONS	2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

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013300	SUBMITTAL PROCEDURES
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015000	TEMPORARY FACILITIES AND CONTROLS
016000	PRODUCT REQUIREMENTS
017000	EXECUTION AND CLOSEOUT REQUIREMENTS

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230800	COMMISSIONING OF HVAC
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233000	HVAC AIR DISTRIBUTION
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STRUCTURAL

REFER TO INCLUDED STRUCTURAL CALCULATIONS.

1 AERIAL VIEW

G1.1 SCALE:NTS

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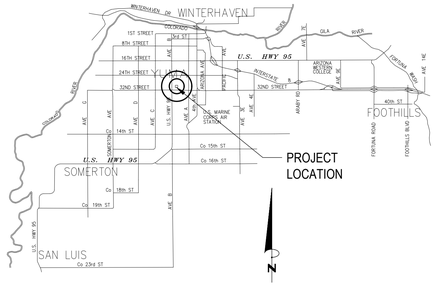
VICINITY MAP



DESIGN TEAM

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Registered Professional Engineer (Mechanical)
CERTIFICATE NO.
26380
JOHN R. STERNITZKE
4/24/2025
ARIZONA, U.S.A.

PROJECT INFO:
YUMA COUNTY FOOTHILLS LIBRARY
HVAC REPLACEMENT
13226 E. SOUTH FRONTAGE ROAD
YUMA, AZ 85367

REVISIONS:

ISSUED FOR:

PROJ. NO. 4204
DRAWN BY: STERNCO
DESIGN BY: STERNCO
CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: TITLE SHEET

SHEET NO: G1.1

Plot Date: 4/24/2025 9:07 AM | File Location: S:\Projects\4XX-4999\4204\4204 Yuma County Foothills Library HVAC Replacement\Sheets\G-General\4204 G1.1 Title Sheet
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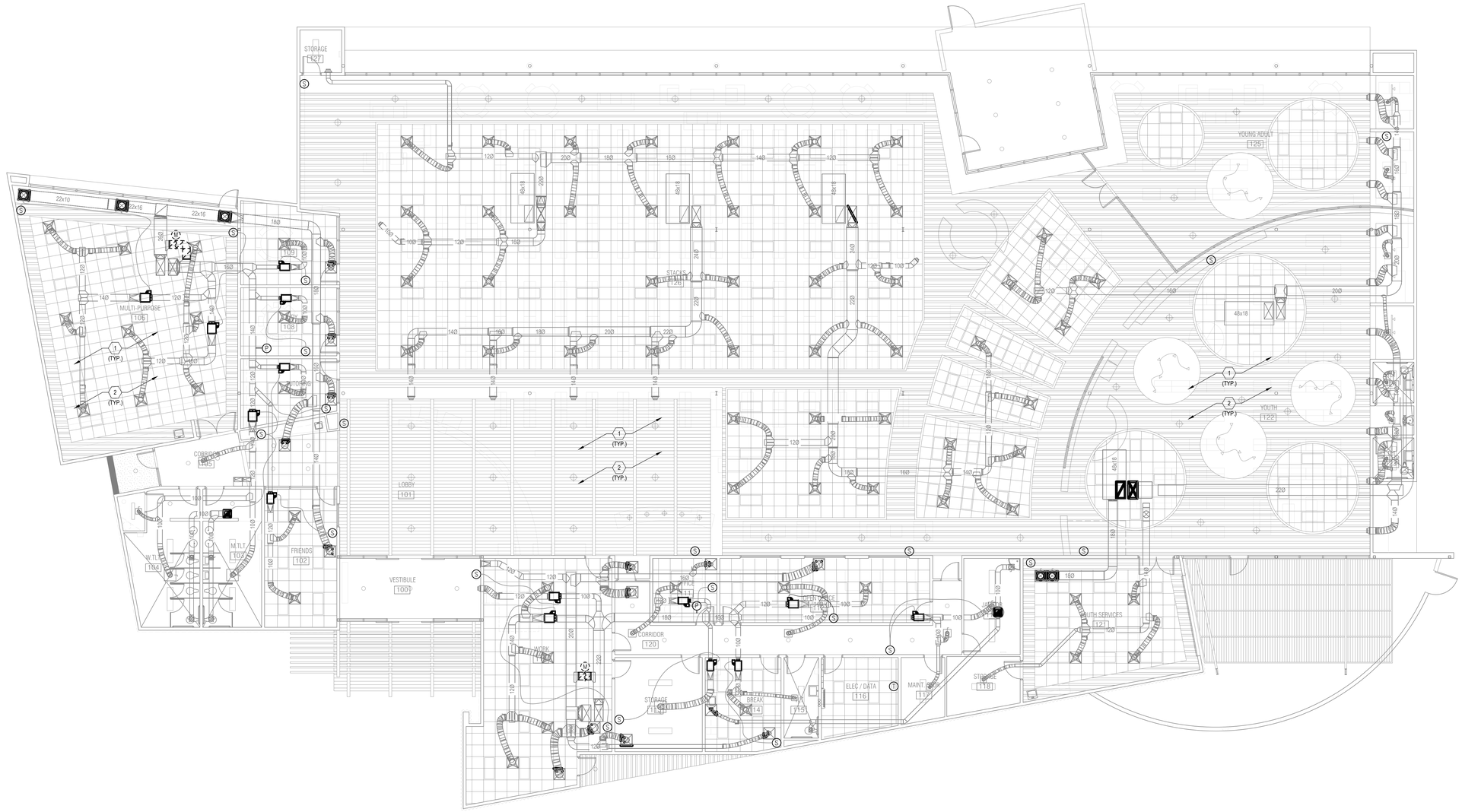
KEYNOTES

1. PATCH AND REPAIR ALL EXISTING FINISHES AS REQUIRED BASED ON ITEMS AFFECTED BY SCOPE OF WORK.
2. REMOVE ACT AS NEEDED BASED ON SCOPE OF WORK. SALVAGE TILE FOR REUSE IF POSSIBLE OR REPLACE WITH EQUAL WHERE DAMAGED. CONFIRM WITH OWNER. SEE MECHANICAL PLANS.

GENERAL NOTES

1. CONTRACTOR TO COORDINATE INSTALLATION OF ALL M, E, P, & FP DEVICES, ROUGH-INS, ETC. PROVIDE BACKING FOR ALL FF&E, INTERIORS, ETC AS REQUIRED.
2. SUPPORT EXISTING STRUCTURE AS REQUIRED FOR NEW WORK.
3. PRIOR TO DEMOLITION, SECURE AND UNDERSTAND ANY AND ALL POSSIBLE HAZARDOUS MATERIALS THAT MAY BE PRESENT, AND ANY ABATEMENT THAT MAY OR MAY NOT HAVE BEEN DONE BY OTHERS, SUCH AS LEAD PAINT, ASBESTOS, ETC. THOROUGHLY INSPECT ALL EXISTING CONDITION. ANY TESTING OR REMOVAL, IF REQUIRED, SHALL BE PROVIDED BY GC OR OWNER.
4. CONTRACTOR TO CONFIRM EXACT ROUTING OF ALL PIPING IN FIELD AND CONTACT OWNER & ARCHITECT OF ANY FAILURES DISCOVERED.
5. PATCH & REPAIR EXISTING FINISHES FROM DEMOLITION ACTIVITIES. PREP FOR NEW FINISH.
6. CONFIRM ALL OWNER PROVIDED FURNITURE, FIXTURES, AND EQUIPMENT FOR SIZE, LOCATION, AND ELECTRICAL/DATA REQUIREMENTS PRIOR TO WORK.
7. CONTRACTOR MUST FIELD VERIFY ALL CONDITIONS PRIOR TO WORK. NOTIFY ENGINEER AND OWNER IMMEDIATELY IF THERE ARE ANY POTENTIAL ISSUES.
8. ALL FASTENERS, SEAMS, PLATES, ADHESIVES, ETC. ARE TO BE PLACED PER MANUFACTURER INSTALLATION INSTRUCTIONS AND DETAILS.
9. REFER TO SMACNA AND NRCA MANUALS FOR APPLICABLE DETAILS AND DESIGN REQUIREMENTS.



1 FLOOR PLAN

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

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DESIGN BY: STERNCO
CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: FLOOR PLAN

SHEET NO:
G2.1

Plot Date: 4/24/2025 9:07 AM | File Location: S:\Projects\4XX\4999\4330\4204 Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheets\G-G-Ground\4204-G2.1 Floor Plan
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KEYNOTES

1. EXISTING ROOF SYSTEM - PROTECT, PATCH, AND REPAIR AS REQUIRED. ENSURE WEATHERTIGHTNESS. MAINTAIN EXISTING WARRANTY.
2. EXISTING MECHANICAL EQUIPMENT TO BE REPLACED WITH NEW. PATCH AND REPAIR ROOF SYSTEM AS NECESSARY.

GENERAL NOTES

1. CONTRACTOR TO COORDINATE INSTALLATION OF ALL M, E, P, & FP DEVICES, ROUGH-INS, ETC. PROVIDE BACKING FOR ALL FF&E, INTERIORS, ETC AS REQUIRED.
2. SUPPORT EXISTING STRUCTURE AS REQUIRED FOR NEW WORK.
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7. CONTRACTOR MUST FIELD VERIFY ALL CONDITIONS PRIOR TO WORK. NOTIFY ENGINEER AND OWNER IMMEDIATELY IF THERE ARE ANY POTENTIAL ISSUES.
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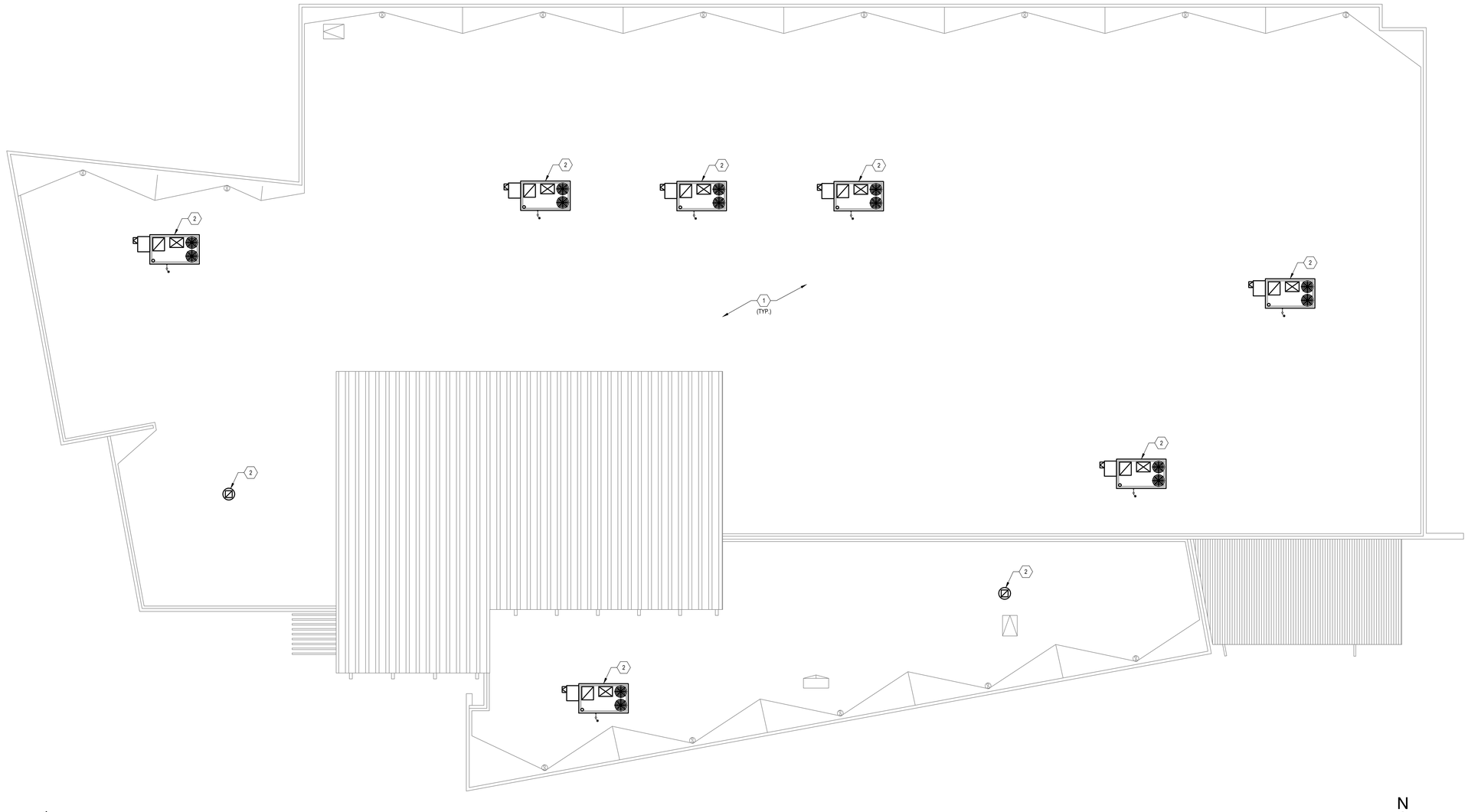

1 ROOF PLAN

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

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YUMA COUNTY FOOTHILLS LIBRARY
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PROJ. NO. 4204
DRAWN BY: STERNCO
DESIGN BY: STERNCO
CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: ROOF PLAN

SHEET NO:
G2.2

Plot Date: 4/24/2025 9:07 AM | File Location: S:\Projects\4XXX-4999\4204\4204 Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheets\G-General\4204 G2.2 Roof Plan
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COMcheck Software Version 4.1.5.5

Mechanical Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: Yuma County Foothills Library HVAC Replacement
Project Type: Alteration

Construction Site:	Owner/Agent:	Designer/Contractor:
13226 E. South Frontage Road Yuma, AZ 85367		Stemco Engineers, Inc.

Section 2: General Information

Building Location (for weather data): Yuma, Arizona
Climate Zone: 2b

Section 3: Mechanical Systems List

Quantity **System Type & Description**

1 HP-1 (Multiple-Zone) :
Heating: 1 each - Central Furnace, Electric, Capacity = 52 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Single Package DX Unit, Capacity = 150 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.00 EER, Required Efficiency: 11.00 EER
Fan System: None

1 HP-2 (Multiple-Zone) :
Heating: 1 each - Central Furnace, Electric, Capacity = 52 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Single Package DX Unit, Capacity = 120 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 12.20 EER, Required Efficiency: 11.20 EER
Fan System: None

4 HP-3,5,6,7 (Single Zone) :
Heating: 1 each - Central Furnace, Electric, Capacity = 52 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Single Package DX Unit, Capacity = 120 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 12.20 EER, Required Efficiency: 11.20 EER
Fan System: None

1 HP-4 (Single Zone) :
Heating: 1 each - Central Furnace, Electric, Capacity = 52 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Single Package DX Unit, Capacity = 150 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.00 EER, Required Efficiency: 11.00 EER
Fan System: None

Section 4: Requirements Checklist

Requirements Specific To: HP-1 :

☒ 1. Equipment minimum efficiency: Single Package Unit: 11.00 EER
☒ 2. Newly purchased equipment meets the efficiency requirements
☒ 3. Minimum one temperature control device per zone
☒ 4. Integrated economizer is required for this location and system.
☒ 5. Cooling system provides a means to relieve excess outdoor air during economizer operation.
☒ 6. Systems serving more than one zone must be VAV systems
☒ 7. Single-duct VAV terminals reduce primary air before reheating

N/A ☐ 3. Minimum one humidity control device per installed humidification/dehumidification system
☒ 4. Load calculations per ASHRAE/ACCA Standard 183.
☒ 5. Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup
Exception(s):
☐ Continuously operating zones
☒ 6. Outside-air source for ventilation; system capable of reducing OSA to required minimum
☒ 7. R-5 supply and return air duct insulation in unconditioned spaces
R-8 supply and return air duct insulation outside the building
R-8 insulation between ducts and the building exterior when ducts are part of a building assembly
Exception(s):
☐ Ducts located within equipment
☐ Ducts with interior and exterior temperature difference not exceeding 15°F.
☒ 8. Mechanical fasteners and sealants used to connect ducts and air distribution equipment
☒ 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics
N/A ☐ 10.Hot water pipe insulation: 1.5 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in.
Chilled water/refrigerant/brine pipe insulation: 1.5 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in.
Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.
Exception(s):
☐ Piping within HVAC equipment.
☐ Fluid temperatures between 55 and 105°F.
☐ Fluid not heated or cooled with renewable energy.
☐ Piping within room fan-coil (with AHRI440 rating) and unit ventilators (with AHRI840 rating).
☐ Runouts <4 ft in length.
☒ 11.Operation and maintenance manual provided to building owner
☒ 12.Thermostatic controls have 5°F deadband
Exception(s):
☐ Thermostats requiring manual changeover between heating and cooling
☐ Special occupancy or special applications where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction.
☒ 13.Balancing devices provided in accordance with IMC 603.17
☒ 14.Demand control ventilation (DCV) present for high design occupancy areas (>40 person/1000 ft2 in spaces >500 ft2) and served by systems with any one of 1) an air-side economizer, 2) automatic modulating control of the outdoor air damper, or 3) a design outdoor airflow greater than 3000 cfm.
Exception(s):
☐ Systems with heat recovery.
☐ Multiple-zone systems without DDC of individual zones communicating with a central control panel.
☒ Systems with a design outdoor airflow less than 1200 cfm.
☐ Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.
☒ 15.Motorized, automatic shutoff dampers required on exhaust and outdoor air supply openings
Exception(s):
☐ Gravity dampers acceptable in buildings <3 stories
☒ 16.Automatic controls for freeze protection systems present
N/A ☐ 17.Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted
Exception(s):
☐ Hazardous exhaust systems, commercial kitchen and clothes dryer exhaust systems that the International Mechanical Code prohibits the use of energy recovery systems.
☐ Systems serving spaces that are heated and not cooled to less than 60°F.
☐ Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site solar energy.
☐ Heating systems in climates with less than 3600 HDD.
☐ Cooling systems in climates with a 1 percent cooling design wet-bulb temperature less than 64°F.
☐ Systems requiring dehumidification that employ energy recovery in series with the cooling coil.
☐ Laboratory fume hood exhaust systems that have either a variable air volume system capable of reducing exhaust and makeup air volume to 50 percent or less of design values or, a separate make up air supply meeting the following makeup air requirements: a) at least 75 percent of exhaust flow rate, b) heated to no more than 2°F below room setpoint temperature, c) cooled to no lower than 3°F above room setpoint temperature, d) no humidification added, e) no simultaneous heating and cooling.

Section 5: Compliance Statement

☒ 8. Controls capable of resetting supply air temp (SAT) by 25% of SAT-room temp difference
Exception(s):
☐ Systems that prevent reheating, recooling or mixing of heated and cooled supply air
☐ Seventy five percent of the energy for reheating is from site-recovered or site solar energy sources.
☐ Zones with peak supply air quantities of 300 cfm (142 L/s) or less.
☒ 9. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
☒ 10.Hot gas bypass limited to 50% of total cooling capacity
☒ 11.VAV fans with static pressure sensors are placed in a position such that the controller setpoint is no greater than one-third the total design fan static pressure. If placement results in the sensor being located downstream of major duct splits, multiple sensors are installed in each major branch.
Exception(s):
☒ Systems with DDC of individual zone boxes reporting to the central control panel and reset of static pressure setpoint based on the zone requiring the most pressure.
☒ 12.Systems with DDC of individual zone boxes reporting to the central control panel has static pressure setpoint reset based on the zone requiring the most pressure.

Requirements Specific To: HP-2 :

☒ 1. Equipment minimum efficiency: Single Package Unit: 11.20 EER
☒ 2. Newly purchased equipment meets the efficiency requirements
☒ 3. Minimum one temperature control device per zone
☒ 4. Integrated economizer is required for this location and system.
☒ 5. Cooling system provides a means to relieve excess outdoor air during economizer operation.
☒ 6. Systems serving more than one zone must be VAV systems
☒ 7. Single-duct VAV terminals reduce primary air before reheating
☒ 8. Controls capable of resetting supply air temp (SAT) by 25% of SAT-room temp difference
Exception(s):
☐ Systems that prevent reheating, recooling or mixing of heated and cooled supply air
☐ Seventy five percent of the energy for reheating is from site-recovered or site solar energy sources.
☐ Zones with peak supply air quantities of 300 cfm (142 L/s) or less.
☒ 9. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
☒ 10.Hot gas bypass limited to 50% of total cooling capacity
☒ 11.VAV fans with static pressure sensors are placed in a position such that the controller setpoint is no greater than one-third the total design fan static pressure. If placement results in the sensor being located downstream of major duct splits, multiple sensors are installed in each major branch.
Exception(s):
☒ Systems with DDC of individual zone boxes reporting to the central control panel and reset of static pressure setpoint based on the zone requiring the most pressure.
☒ 12.Systems with DDC of individual zone boxes reporting to the central control panel has static pressure setpoint reset based on the zone requiring the most pressure.

Requirements Specific To: HP-3,5,6,7 :

☒ 1. Equipment minimum efficiency: Single Package Unit: 11.20 EER
☒ 2. Newly purchased equipment meets the efficiency requirements
☒ 3. Integrated economizer is required for this location and system.
☒ 4. Cooling system provides a means to relieve excess outdoor air during economizer operation.
☒ 5. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
☒ 6. Hot gas bypass limited to 50% of total cooling capacity

Requirements Specific To: HP-4 :

☒ 1. Equipment minimum efficiency: Single Package Unit: 11.00 EER
☒ 2. Newly purchased equipment meets the efficiency requirements
☒ 3. Integrated economizer is required for this location and system.
☒ 4. Cooling system provides a means to relieve excess outdoor air during economizer operation.
☒ 5. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
☒ 6. Hot gas bypass limited to 50% of total cooling capacity

Generic Requirements: Must be met by all systems to which the requirement is applicable:

N/A ☐ 1. Plant equipment and system capacity no greater than needed to meet loads
Exception(s):
☐ Standby equipment automatically off when primary system is operating
☐ Multiple units controlled to sequence operation as a function of load
☒ 2. Minimum one temperature control device per system

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical alteration project has been designed to meet the 2009 IECC, Chapter 8, requirements in COMcheck Version 4.1.5.5 and to comply with the mandatory requirements in the Requirements Checklist.

JOHN R. STERNITZKE, PE, FPE, CXA — Signature — 04/08/25
Name - Title — Date

Section 6: Post Construction Compliance Statement

☐ HVAC record drawings of the actual installation, system capacities, calibration information, and performance data for each equipment provided to the owner.
☐ HVAC O&M documents for all mechanical equipment and system provided to the owner by the mechanical contractor.
☐ Written HVAC balancing and operations report provided to the owner.

The above post construction requirements have been completed.

Principal Mechanical Designer-Name — Signature — Date

GENERAL NOTES

1. OSA INTAKES MUST BE AT LEAST 10' FROM EXHAUST OUTLETS AND PLUMBING VENTS.
2. DISCREPANCIES: IF THE CONTRACTOR FINDS DISCREPANCIES, OR OMISSIONS, OR IS IN DOUBT AS TO THE EXACT MEANING OF THE PLANS OR SPECIFICATIONS, THEY SHALL, BEFORE STARTING WORK, CONTACT THE OWNER AND ENGINEER FOR CLARIFICATION.
3. THESE DRAWINGS ARE IN GENERAL DIAGRAMMATIC, AND CANNOT SHOW ALL OFFSETS, BENDS, CLEARANCES, OR ISSUES OF GENERAL CONSTRUCTION. LOCATION AND FINISH OF ALL WORK SHALL BE VERIFIED IN THE FIELD AND SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR, THE ARCHITECT, AND ALL TRADES, PRIOR TO ANY CONSTRUCTION. IN THE EVENT THERE ARE DISCREPANCIES, OMISSIONS, OR DOUBT, AS TO THE INTENT OF THESE PLANS OR SPECIFICATIONS, BEFORE ANY WORK, ORDER OF ANY MATERIAL, OR SELECTION OF ANY METHODS OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE OWNER, ARCHITECT, AND ENGINEER IN WRITING FOR CLARIFICATION.
4. CONTRACTOR SHALL COORDINATE AND INCLUDE ANY AND ALL INCIDENTAL ELECTRICAL AND PLUMBING WORK AS REQUIRED. ALL EQUIPMENT SHALL BE PROVIDED WITH OVER-CURRENT PROTECTION PER THE MANUFACTURER'S RECOMMENDATIONS.
5. COMPLY WITH ALL APPLICABLE PROVISIONS OF THE 2018 INTERNATIONAL MECHANICAL CODE, 2009 INTERNATIONAL ENERGY CONSERVATION CODE, AND ALL APPLICABLE CODES AND AMENDMENTS. INSTALLING CONTRACTOR AND/OR GENERAL CONTRACTOR SHALL COMPLETE FORMS.
6. ALL MANUFACTURERS INSTALLATION INSTRUCTIONS RECEIVED ON-SITE OR THROUGH OTHER MEANS SHALL BE RETAINED IN A 3-RING BINDER FOR USE ON JOBSITE.
7. ALL DUCT DIMENSIONS SHOWN ARE NET FREE AREA.
8. PROVIDE CODE REQUIRED AND MANUFACTURER'S RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE ON ALL EQUIPMENT.

COMMISSIONING REQUIREMENTS

1. REFER TO SPECIFICATION SECTION 230800 FOR COMMISSIONING REQUIREMENTS. THE MECHANICAL AND CONTROLS CONTRACTOR SHALL INCLUDE CONFORMANCE TO THIS REQUIREMENT IN ALL WORK SHOWN. THE COMMISSIONING AUTHORITY SHALL WORK DIRECTLY FOR THE OWNER.

MECHANICAL SYMBOLS

SYMBOL	DESCRIPTION
	SUPPLY AIR DUCT
	RETURN AIR DUCT
	EXHAUST DUCT
	FLEXIBLE DUCT
C	CO_2 SENSOR
M	MOTORIZED DAMPER
S	SMOKE DETECTOR
T	THERMOSTAT / TEMP. SENSOR
H	HUMIDISTAT / HUMIDITY SENSOR
P	PRESSURE SENSOR
SP	STATIC PRESSURE SENSOR
S	SWITCH
POC	POINT OF CONNECTION
(MVD)	MANUAL VOLUME DAMPER
	UNDERCUT DOOR 1"
FSD	FIRE/SMOKE DAMPER (VERT.)
FSD	FIRE/SMOKE DAMPER (HORIZ.)
FD	FIRE DAMPER (VERT.)
FD	FIRE DAMPER (HORIZ.)
TS	TEMP. SENSOR / THERMISTOR
	SUPPLY AIR DIFFUSER
	RETURN AIR GRILLE
	EXHAUST AIR GRILLE
	DUCT TURNING VANES
RISE	DUCT OFFSET, RISING
DROP	DUCT OFFSET, DROPPING
	SEISMIC SWAY BRACING

NOTE: SOME SYMBOLS MAY NOT APPLY TO THIS PROJECT

AIR DEVICE CALL OUT

1 - LETTER MARK (SEE SCHEDULE)
2 - CFM

EQUIPMENT CALL OUT

1 - EQUIPMENT MARK (SEE SCHEDULE)
2 - EQUIPMENT NUMBER

MECHANICAL ABBREVIATIONS

AHU	AIR HANDLER UNIT
AP	ACCESS PANEL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CR	CEILING REGISTER
CU	CONDENSING UNIT
DG	DOOR GRILLE
DL	DRUM LOUVER
DN	DOWN
DTR	DOWN THROUGH ROOF
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EL	EXHAUST LOUVER
EXH	EXHAUST
FF	FILTER FRAME
FG	FILTER GRILLE
FLEX	FLEXIBLE
FB	BOTTOM OF DUCT FITTING IS FLAT
FT	TOP OF DUCT FITTING IS FLAT
GPM	GALLONS PER MINUTE
IL	INTAKE LOUVER
MUA	MAKE UP AIR
MVD	MANUAL VOLUME DAMPER
OSA	OUTSIDE AIR
R/A	RETURN AIR
RG	RETURN GRILLE
S/A	SUPPLY AIR
SD	SIDEWALL DIFFUSER
TG	TRANSFER GRILLE
TYP	TYPICAL
UTR	UP THROUGH ROOF
OBD	OPPOSED BLADE DAMPER

NOTE: SOME ABBREVIATIONS MAY NOT APPLY TO THIS PROJECT

MECHANICAL SHEET INDEX

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230800	COMMISSIONING OF HVAC
230923	DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC
233000	HVAC AIR DISTRIBUTION
238103	PACKAGED ROOFTOP AIR CONDITIONING UNITS

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PROJECT INFO:
YUMA COUNTY FOOTHILLS LIBRARY
HVAC REPLACEMENT
13226 E. SOUTH FRONTAGE ROAD
YUMA, AZ 85367

REVISIONS:

ISSUED FOR:

PROJ. NO. 4204 | DRAWN BY: STERNCO
DESIGN BY: STERNCO | CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: MECHANICAL GENERAL NOTES AND SYMBOLS

SHEET NO: M1.1

Plot Date: 4/24/2025 9:07 AM | File Location: S:\Projects\4000-4999\4200s\4204-Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheets\M-Mechanical\4204-M1.1
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KEYNOTES

1. REBALANCE ALL CONNECTED SUPPLY DIFFUSERS FOR UNIT HP-4, SHOWN WITH NEW AIRFLOWS.
2. EXISTING ZONE DAMPER WITH EXISTING MARK TO REMAIN. PROVIDE NEW ACTUATORS AND ACCESSORIES PER SCHEDULES. INSPECT UNITS AND PROVIDE MAINTENANCE AS INDICATED IN SCHEDULES. SET TO AIRFLOWS SHOWN ON PLANS.
3. EXISTING BYPASS DAMPER TO BE DEMOLISHED. CAP DUCTWORK TIGHTLY ON EACH SIDE OF BYPASS DAMPER.
4. REBALANCE VAV ZONE DAMPER AND ALL CONNECTED DIFFUSERS IN THIS AREA TO NEW DESIGN FLOWS SHOWN.
5. EXISTING TEMPERATURE SENSOR TO BE REPLACED WITH NEW BY CONTROLS CONTRACTOR. NEW SENSOR SHALL HAVE DIGITAL DISPLAY WITH OCCUPANCY OVERRIDE BUTTON.
6. EXISTING DDC CONTROLLER TO BE DEMOLISHED, AND NEW CONTROLS ENCLOSURE AND CONTROLS CARDS TO BE INSTALLED IN APPROXIMATE SAME LOCATION.
7. APPROXIMATE LOCATION FOR NEW SUPPLY DUCT STATIC PRESSURE SENSOR.

GENERAL NOTES

1. EXISTING DUCTWORK LOCATIONS AND SIZES ARE SHOWN BASED ON EXISTING DESIGN DRAWINGS. VERIFY IN FIELD EXACT LOCATIONS AND SIZES.
2. THE TAB CONTRACTOR SHALL BALANCE TOTAL SUPPLY, RETURN, AND OUTSIDE AIR TO EACH ROOFTOP HVAC UNIT; BALANCE INDIVIDUAL SUPPLY DIFFUSERS AND RETURN GRILLES WHERE FLOWS ARE SHOWN ON PLANS. CALIBRATE AND BALANCE ALL VAV TERMINAL UNITS PER TERMINAL UNIT AND CONTROLS SYSTEM MANUFACTURER'S INSTRUCTIONS.

PRE-TAB NOTE

1. THE TAB CONTRACTOR SHALL PERFORM A PRE-TAB EFFORT PRIOR TO ANY WORK BEING PERFORMED ON THIS PROJECT. THE PRE-TAB EFFORT SHALL INCLUDE DOCUMENTING EXISTING TOTAL SUPPLY, RETURN, OUTSIDE AIR, AND EXHAUST FLOWS, AS WELL AS DOCUMENTING EXISTING DIFFUSER AND GRILLE FLOWS BASED ON EXISTING DESIGN DRAWING FLOWS. DOCUMENT ANY DEFICIENCIES FOUND.

1 MECHANICAL PLAN

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

N

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YUMA, AZ 85367

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DESIGN BY: STERNCO
CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: MECHANICAL PLAN

SHEET NO:
M2.1

Plt Date: 4/24/2025 9:07 AM | Plt Location: S:\Projects\4000-4999\4204 Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheets\M-Mechanical\4204-M2.1 Mechanical Plan
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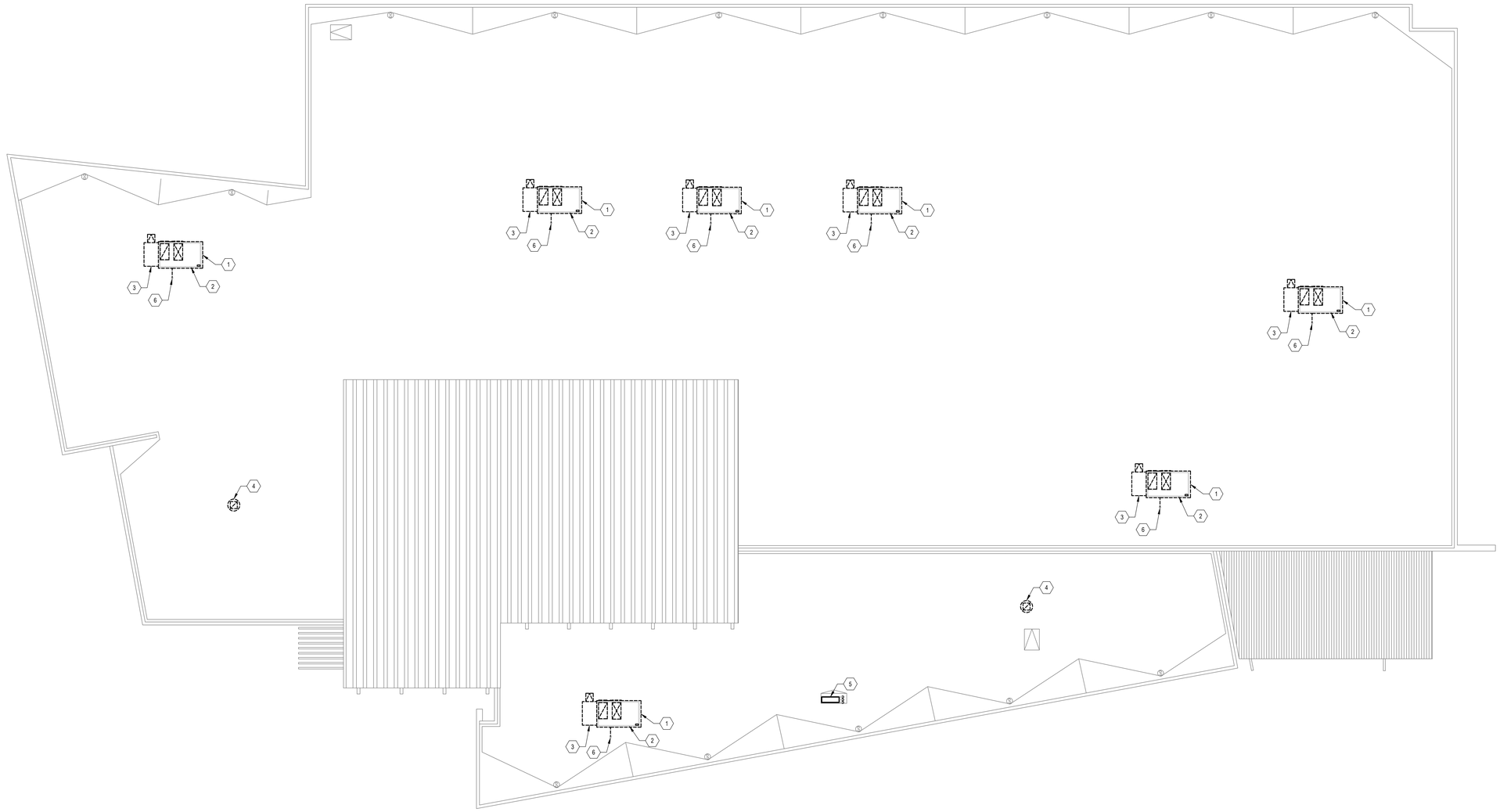
KEYNOTES

1. EXISTING PACKAGED ROOFTOP HEAT PUMP UNIT TO BE DEMOLISHED. EXISTING ROOF CURB TO REMAIN FOR NEW UNIT CURB ADAPTER.
2. EXISTING CURB SHOWN FOR REFERENCE TO REMAIN, FOR NEW UNIT CURB ADAPTER INSTALLATION.
3. EXISTING ECONOMIZER AND POWERED EXHAUST ACCESSORY TO BE DEMOLISHED.
4. EXISTING EXHAUST FAN TO BE DEMOLISHED AND REPLACED WITH NEW.
5. EXISTING MINI SPLIT CONDENSING UNIT TO REMAIN AND SHOWN FOR REFERENCE.
6. DEMOLISH EXISTING CONDENSATE DRAIN TRAP. PROVIDE NEW FOR NEW ROOFTOP UNIT AND CONNECT TO EXISTING CONDENSATE DRAIN LINE ABOVE ROOF.



1 MECHANICAL DEMOLITION ROOF PLAN

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

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SHEET TITLE: MECHANICAL DEMOLITION ROOF PLAN

SHEET NO:
MD2.2

Plot Date: 4/24/2025 9:07 AM | File Location: S:\Projects\000-499\4204\4204 Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheets\M-Mechanical\4204-MD2.2
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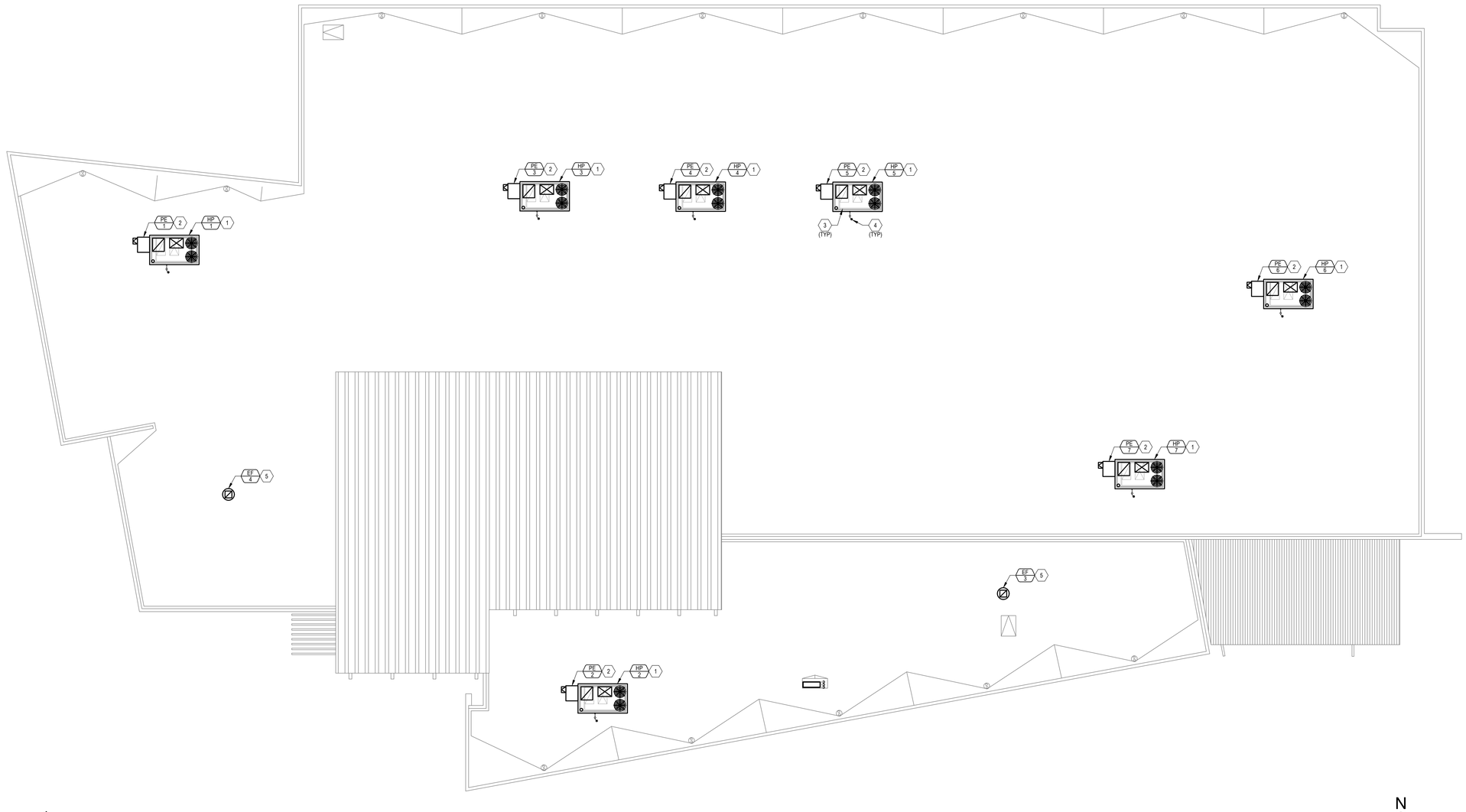
KEYNOTES

1. NEW PACKAGED ROOFTOP AIR CONDITIONING OR HEAT PUMP UNIT MOUNTED ON EXISTING CURB WITH NEW CURB ADAPTER. SECURE CURB ADAPTER TO CURB PER MANUFACTURER'S INSTRUCTIONS, PROVIDE AND INSTALL SEISMIC RESTRAINT CLIPS BETWEEN CURB ADAPTER AND NEW PACKAGED ROOFTOP UNIT.
2. NEW ECONOMIZER AND POWERED EXHAUST ACCESSORIES MOUNTED ON NEW PACKAGED ROOFTOP UNIT. PROVIDE SUPPORT PEDESTAL TO SUPPORT POWERED EXHAUST ACCESSORY FROM ROOF.
3. EXISTING TO REMAIN ROOF CURB FOOTPRINT SHOWN FOR REFERENCE.
4. PROVIDE NEW CONDENSATE TRAP AND CONNECT NEW CONDENSATE DRAIN TO EXISTING CONDENSATE DRAIN LINE AT LOCATION IT DROPS DOWN THRU ROOF.
5. NEW EXHAUST FAN TO REPLACE EXISTING EXHAUST FAN.



1 MECHANICAL ROOF PLAN

SCALE: 1/6" = 1'-0"

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SHEET TITLE: MECHANICAL ROOF PLAN

SHEET NO:
M2.2

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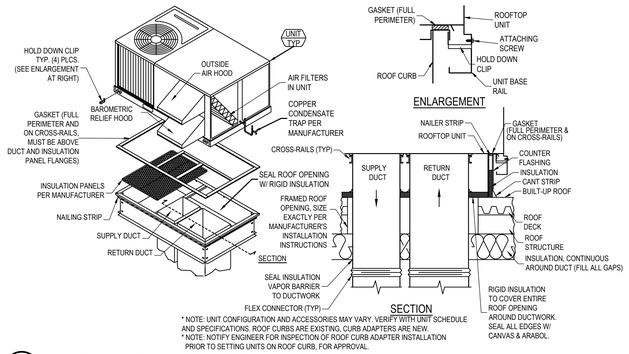
* NOTE: PROVIDE ROOF CURB ADAPTERS GASKETING BETWEEN RTU AND CURB ADAPTER, AS WELL AS FEATURES SHOWN BELOW. TIGHTLY SECURE CURB ADAPTER TO EXISTING ROOF CURB TO ELIMINATE ALL VIBRATION, AND PROVIDE GASKETING BETWEEN CURB ADAPTER AND EXISTING ROOF CURB WHERE RECOMMENDED BY CURB MANUFACTURER. INSTALL CURB ADAPTER IN STRICT CONFORMANCE WITH MANUFACTURER'S REQUIREMENTS AND STRUCTURAL CALCULATIONS. PROVIDE AND INSTALL SEISMIC HOLD DOWN CLIPS PER CURB ADAPTER MANUFACTURER'S STRUCTURAL CALCULATIONS.

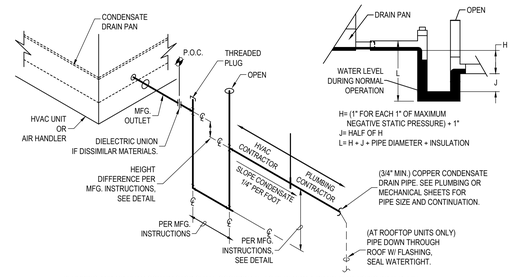


* NOTE: UNIT CONFIGURATION AND ACCESSORIES MAY VARY. VERIFY WITH UNIT SCHEDULE AND SPECIFICATIONS. ROOF CURBS ARE EXISTING, CURB ADAPTERS ARE NEW.
* NOTE: NOTIFY ENGINEER FOR INSPECTION OF ROOF CURB ADAPTER INSTALLATION PRIOR TO SETTING UNITS ON ROOF CURB, FOR APPROVAL.

A ROOFTOP UNIT MOUNTING DETAIL

SCALE: N.T.S.

RTU-SE.DWG



PLUMBING AND/OR HVAC CONTRACTOR SHALL COORDINATE TO PERFORM A DRAIN TEST USING WATER. FILL CONDENSATE COLLECTION PAN WITH WATER, ACCESS DRAIN PAN THROUGH OPEN CABINET DOOR OR REMOVED ACCESS PANEL. CHECK FOR PROPER DRAINAGE WITH UNIT RUNNING AFTER REPLACING UNIT ACCESS PANEL OR CLOSING DOOR. THIS TEST SHALL BE APPROVED BY THE ENGINEER PRIOR TO ACCEPTANCE. ALL CONDENSATE PIPING SHALL ALSO BE TESTED PER CODE "DRAINAGE AND VENT" TEST.

B CONDENSATE DRAIN & TEST DETAIL

SCALE: N.T.S.

COND-DR.DWG

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SHEET TITLE: MECHANICAL DETAILS

SHEET NO:
M3.1

PACKAGED ROOFTOP AIR CONDITIONING UNIT SCHEDULE

MARK	MANUF.	MODEL	MULTI-ZONE VAV OR SINGLE ZONE	SUPPLY	MINIMUM OSA	MAXIMUM DCV OSA	MOTOR	E.S.P.	NOMINAL	EER / SEER OR IEER	COIL ENTERING / LEAVING AIR TEMP.		COOLING CAPACITY		HEATING CAPACITY		VOLTAGE	MCA	MOCP	RTU WEIGHT	HEIGHT (UNIT ONLY)	REMARKS
											EAT DB / WB	LAT DB / WB	TOTAL	SENSIBLE	CAPACITY	TEMP. RISE						
				(CFM)	(CFM)	(CFM)	(HP)	(IN. W.C.)	(TONS)		(°F)	(°F)	(MBH)	(MBH)	(KW)	(°F)	(V/Ø/Hz)	(AMPS)	(AMPS)	(LBS)	(IN)	
1	LENNOX	LCM150U5P	MZVAV	4650	SEE OSA SUMMARY		3.75	1.1	12.5	11.0 / 19.5	80.0 / 67.0	62.2 / 58.8	117.8	87.0	15	7.7	208/3/60	56	70	1285	46-7/8	1 - 14, 15
2	LENNOX	LCM120U5P	MZVAV	4000	SEE OSA SUMMARY		3.75	2.0	10	12.2 / 20.7	80.0 / 67.0	63.7 / 59.4	90.4	65.1	15	9.4	208/3/60	50	60	1265	46-7/8	1 - 14, 15
3	LENNOX	LCM120U5E	SZ	3800	SEE OSA SUMMARY		3.75	1.0	10	12.2 / 20.7	80.0 / 67.0	63.7 / 59.4	90.4	65.1	15	9.4	208/3/60	50	60	1265	46-7/8	1 - 14
4	LENNOX	LCM150U5P	SZ	5000	SEE OSA SUMMARY		3.75	1.0	12.5	11.0 / 19.5	80.0 / 67.0	62.2 / 58.8	117.8	87.0	15	7.7	208/3/60	56	70	1285	46-7/8	1 - 14, 15
5	LENNOX	LCM120U5E	SZ	3800	SEE OSA SUMMARY		3.75	1.0	10	12.2 / 20.7	80.0 / 67.0	63.7 / 59.4	90.4	65.1	15	9.4	208/3/60	50	60	1265	46-7/8	1 - 14
6	LENNOX	LCM120U5E	SZ	3800	SEE OSA SUMMARY		3.75	1.0	10	12.2 / 20.7	80.0 / 67.0	63.7 / 59.4	90.4	65.1	15	9.4	208/3/60	50	60	1265	46-7/8	1 - 14, 15
7	LENNOX	LCM120U5E	SZ	3800	SEE OSA SUMMARY		3.75	1.0	10	12.2 / 20.7	80.0 / 67.0	63.7 / 59.4	90.4	65.1	15	9.4	208/3/60	50	60	1265	46-7/8	1 - 14, 15

REMARKS:

1. PACKAGED ROOFTOP UNIT WITH VERTICAL DISCHARGE AND RETURN CONFIGURATION, USING R-454B REFRIGERANT. PROVIDE WITH FACTORY COMBINATION COIL/HAIL GUARDS AND HINGED ACCESS DOORS.
2. COOLING CAPACITIES AT 115°F AMBIENT, ENTERING MIXED AIR CONDITIONS SHOWN IN SCHEDULE; HEATING CAPACITIES AT 42°F OUTDOOR DB & 70°F INDOOR DB.
3. 2" PLEATED FILTERS IN UNIT; MERV 8 MINIMUM EFFICIENCY.
4. FACTORY INSTALLED DIRTY FILTER SWITCH ACROSS FILTERS IN UNIT.
5. REFER TO CONTROLS DRAWINGS FOR CONTROLS REQUIREMENTS. PROVIDE WITH MANUFACTURER'S BACNET COMMUNICATIONS CARD.
6. CURB ADAPTER PER CURB ADAPTER SCHEDULE.
7. AIR TIGHT FLEXIBLE DUCT CONNECTION TO ROOFTOP UNIT / ROOF CURB.
8. ELECTRICAL DISCONNECT PROVIDED PER ELECTRICAL PLANS. COORDINATE ELECTRICAL DISCONNECT AND CONNECTIONS WITH ELECTRICAL DRAWINGS.
9. PROVIDE MANUFACTURER'S FULLY MODULATING HIGH PERFORMANCE ECONOMIZER ACCESSORY WITH DUAL ENTHALPY CONTROL, AND AFTERMARKET MODULATING POWERED EXHAUST ACCESSORY PER THE CORRESPONDING (PE) SCHEDULE.
10. PROVIDE WITH MANUFACTURER'S OUTDOOR AIR CFM CONTROL.
11. WEIGHT DOES NOT INCLUDE THE WEIGHT OF THE PE OR CURB ADAPTER ACCESSORIES.
12. MULTI-ZONE VAV (MZVAV) UNITS SHALL INCLUDE UNITS SET FOR DUCT STATIC PRESSURE CONTROL. SINGLE-ZONE (SZ) UNITS SHALL INCLUDE MULTI-SPEED FAN AND CONTROL BASED ON SPACE TEMPERATURE.
13. UNIT TO INCLUDE VARIABLE CAPACITY SCROLL COMPRESSOR ON A MINIMUM OF ONE STAGE.
14. PROVIDE FACTORY INSTALLED RETURN AIR SMOKE DETECTOR.
15. PROVIDE MANUFACTURER'S NON-POWERED, FIELD WIRED GFI SERVICE OUTLETS. REFER TO ELECTRICAL PLANS FOR POWER TO SERVICE OUTLETS.

POWERED EXHAUST UNIT SCHEDULE

MARK	MANUF.	MODEL	CORRESPONDING UNIT	OSA MIN AND PURGE	MOTOR	VOLTAGE	FLA	MCA	MOCP	WEIGHT	REMARKS
				(CFM)	(HP)	(V/Ø/Hz)	(AMPS)	(AMPS)	(AMPS)	(LBS)	
MAIN BUILDING											
1	MICROMETL	PCD-FLHB-2L	HP-1	SEE HP SCHEDULE	2.0	208/3/60	9.5	11.9	21.4	160	1 - 5
2	MICROMETL	PCD-FLHB-2L	HP-2	SEE HP SCHEDULE	2.0	208/3/60	9.5	11.9	21.4	160	1 - 5
3	MICROMETL	PCD-FLHB-2L	HP-3	SEE HP SCHEDULE	2.0	208/3/60	9.5	11.9	21.4	160	1 - 5
4	MICROMETL	PCD-FLHB-2L	HP-4	SEE HP SCHEDULE	2.0	208/3/60	9.5	11.9	21.4	160	1 - 5
5	MICROMETL	PCD-FLHB-2L	HP-5	SEE HP SCHEDULE	2.0	208/3/60	9.5	11.9	21.4	160	1 - 5
6	MICROMETL	PCD-FLHB-2L	HP-6	SEE HP SCHEDULE	2.0	208/3/60	9.5	11.9	21.4	160	1 - 5
7	MICROMETL	PCD-FLHB-2L	HP-7	SEE HP SCHEDULE	2.0	208/3/60	9.5	11.9	21.4	160	1 - 5

REMARKS:

1. POWERED EXHAUST ACCESSORY FOR DOWN/VERTICAL FLOW UNIT. UNIT SHALL BE MOUNTED TO AND COMPATIBLE WITH CORRESPONDING ROOFTOP HEAT PUMP UNIT, VERIFY EXACT MICROMETL MODEL NUMBER PER UNIT. UNIT SHALL BE PROVIDED BY 'HP' UNIT SALES REP.
2. POWERED EXHAUST ACCESSORY WITH VFD TO MAINTAIN BUILDING PRESSURE SLIGHTLY POSSITIVE WITH RESPECT TO OUTDOORS.
3. ECONOMIZER TO BE PROVIDED BY 'HP' UNIT MANUFACTURER, SEE 'HP' SCHEDULE.
4. COORDINATE ELECTRICAL DISCONNECT AND CONNECTIONS WITH ELECTRICAL DRAWINGS. UNIT TO HAVE SEPARATE POWER SOURCE THAN HEAT PUMP UNIT.
5. SEE SEQUENCE OF OPERATIONS ON CONTROLS SHEETS FOR FULL CONTROLS REQUIREMENTS.

EXISTING VAV ZONE DAMPERS SCHEDULE

MARK	MANUF.	MODEL	DAMPER SIZE	EXISTING MAX FLOW	EXISTING MIN FLOW	NEW MAX FLOW	NEW MIN FLOW	REMARKS
				(CFM)	(CFM)	(CFM)	(CFM)	
RTU-1 ZONE DAMPERS								
1.1	TRANE	VADA06B00P0	6	200	40	SAME, NO CHANGE		1 - 2
1.2	TRANE	VADA06B00P0	6	225	45	SAME, NO CHANGE		1 - 2
1.3	TRANE	VADA06B00P0	6	275	55	SAME, NO CHANGE		1 - 2
1.4	TRANE	VADA08B00P0	8	375	75	SAME, NO CHANGE		1 - 2
1.5	TRANE	VADA10B00P0	10	725	145	SAME, NO CHANGE		1 - 2
1.6	TRANE	VADA12B00P0	12	900	180	1425	285	1 - 2
1.7	TRANE	VADA12B00P0	12	1125	225	1425	285	1 - 2
RTU-2 ZONE DAMPERS								
2.1	TRANE	VADA08B00P0	8	325	65	SAME, NO CHANGE		1 - 2
2.2	TRANE	VADA08B00P0	8	325	65	SAME, NO CHANGE		1 - 2
2.3	TRANE	VADA08B00P0	8	350	70	SAME, NO CHANGE		1 - 2
2.4	TRANE	VADA08B00P0	8	375	75	SAME, NO CHANGE		1 - 2
2.5	TRANE	VADA08B00P0	8	500	100	SAME, NO CHANGE		1 - 2
2.6	TRANE	VADA10B00P0	10	725	145	SAME, NO CHANGE		1 - 2
2.7	TRANE	VADA12B00P0	12	1200	250	1400	250	1 - 2

REMARKS

1. EXISTING ZONE DAMPER TO REMAIN. CONTROLS CONTRACTOR SHALL PROVIDE NEW ACTUATOR, AS WELL AS AIRFLOW MEASUREMENT OR VELOCITY SENSOR TO ALLOW FOR PRESSURE INDEPENDENT CONTROL.
2. CONTRACTOR TO VERIFY PROPER OPERATION OF ZONE DAMPER. PROVIDE ANY NEW BEARINGS OR ACCESSORIES REQUIRED FOR PROPER OPERATION.

'HP' UNIT NOTES:

- NOTE THAT MULTIPLE MANUFACTURER OPTIONS WERE REVIEWED DURING DESIGN, AND THE SCHEDULED UNIT WAS FOUND TO HAVE THE LEAST IMPACT IN TERMS OF DIMENSIONS, CURB ADAPTER SIZE, WEIGHTS, AND ELECTRICAL REVISIONS.
- ANY PROPOSED ALTERNATE 'HP' UNITS ARE REQUIRED TO MEET THE FOLLOWING REQUIREMENTS:
- 'HP' UNITS ALONG WITH ACCESSORIES SHALL NOT WEIGH MORE THAN THOSE SCHEDULED
- 'HP' UNITS SHALL NOT HAVE HIGHER ELECTRICAL MCA OR MOCP VALUES THAN THOSE SCHEDULED
- 'HP' UNITS SHALL NOT BE TALLER THAN THOSE SCHEDULED, INCLUDING CONSIDERATION OF THE CURB ADAPTER HEIGHT

EXISTING VS. NEW UNITS WEIGHTS

MARK	EXISTING UNIT INFORMATION			EXISTING UNIT WEIGHT W/ ACCESSORIES (LBS)	NEW UNIT WEIGHT W/ ACCESSORIES (LBS)				REMARKS
	MAKE	MODEL	SERIAL #		UNIT ONLY	PE ACCESSORY	CURB ADAPTER	TOTAL	
HP-1, 2	TRANE	WSC120A3R0A	820102570L (HP-1, TYP)	941 + 344 = 1285	1286	160	115	1561	1,2
HP-3,4,5,6,7	TRANE	WSC120A3R0A	820102588L (HP-3, TYP)	941 + 344 = 1285	1306	160	115	1581	1,2
REMARKS:									
1.	EXISTING UNITS INCLUDE CANFAB MODEL 6144-MPE ECONOMIZER AND POWERED EXHAUST ACCESSORIES.								
2.	ALL (7) UNITS SCHEDULED ARE THE SAME MODEL NUMBER AND A TYPICAL SERIAL NUMBER IS SHOWN.								

CURB ADAPTER SCHEDULE

UNIT SERVED	MAKE	MODEL	WEIGHT (LBS)	HEIGHT (IN)	PRESSURE DROP (IN. W.C.)	REMARKS
HP-1, 2	AES INDUSTRIES	AC / TR33 / LN11	115	9	0.216	1 - 4
HP-3,4,5,6,7	AES INDUSTRIES	AC / TR33 / LN11	115	9	0.114	1 - 4
REMARKS:						
1.	VERIFY EXACT MAKE AND MODEL AND REQUIRED SIZES BASED ON EXISTING CURB SIZE AND NEW UNIT REQUIRED CURB SIZE. PRESSURE DROP LISTED SHALL BE AT ROOFTOP UNIT DESIGN FLOW.					
2.	CURB ADAPTER SHALL BE SEISMICALLY RATED BASED ON LOCATION ON INSTALLATION, AND SHALL INCLUDE CALCULATIONS STAMPED BY A LICENSED STRUCTURAL ENGINEER.					
3.	INCLUDE SEISMIC/WIND RESTRAINT BRACKETS FOR ATTACHMENT OF ROOFTOP UNIT TO CURB ADAPTER.					
4.	CURB ADAPTER TO BE CONSTRUCTED OF HEAVY GAUGE GALVANIZED STEEL AND INCLUDE A MINIMUM OF 1" THICK DUCT LINER ON ALL SURFACES; PROVIDE WITH NEOPRENE GASKET, PRE-PUNCHED HOLES IN BASE FLANGE, LIFTING EYES/LUGS.					

EXHAUST FAN SCHEDULE

MARK	MANUF.	MODEL	CFM	HP	E.S.P.	VOLTAGE	OPERATING WEIGHT	HEIGHT	REMARKS
					(IN WG)	(V/ø/Hz)	(LBS)	(IN)	
3	GREENHECK	G-098-VG	500	1/4	0.375	115/1/60	41	23-3/4	1 - 4
4	GREENHECK	G-100-VG	700	1/4	0.375	115/1/60	41	23-3/4	1 - 4
REMARKS:									
1.	DOWNBLAST EXHAUST FAN WITH ECM MOTOR WITH VARIABLE SPEED ADJUSTMENT. UNIT TO MOUNT ON EXISTING ROOF CURB, THE SCHEDULED UNIT PER THE MANUFACTURER SHOULD FIT THE EXISTING CURB, VERIFY AND PROVIDE CURB ADAPTER AS NECESSARY.								
2.	BIRD/INSECT SCREEN.								
3.	BACKDRAFT DAMPER IN ROOF CURB FRAME.								
4.	GASKET OR CORK PAD ON ROOF CURB FOR VIBRATION ISOLATION.								

OUTSIDE AIR SUMMARY

UNIT	SPACE	OCCUPANCY CATEGORY	OCCUPANCY SUBCATEGORY	AREA (SF)	PEOPLE OSA RATE (RP), (CFM/PERSON)	AREA OSA RATE (RA), (CFM/SF)	OCCUPANT DENSITY (#/1000 SF)	DEFAULT OCCUPANCY (PZ)	ACTUAL OCCUPANCY (IF KNOWN)	PEOPLE USED IN CALC	PEOPLE OSA	AREA OSA	BREATHING ZONE OSA (VBZ)	ZONE AIR DISTRIBUTION EFFECTIVENESS (EZ) [T6-4]	ZONE OUTDOOR AIRFLOW (VOZ)	DESIGN PRIMARY AIRFLOW (VPZ)	ZONE PRIMARY OUTDOOR AIR FRACTION (ZP)	SYSTEM POPULATION (PS)	OCCUPANT DIVERSITY (D)	UNCORRECTED OSA INTAKE (VOU)	SYSTEM VENT. EFFICIENCY (EV)	OSA INTAKE FLOW RATE (VOT)	CALCULATED MIN DCV FLOW (AREA REQUIRED OSA WITH 1 PERSON)	SCHEDULED MINIMUM OSA	SCHEDULED MAX. DCV OSA
HP-1 (MULTI-PURPOSE/ STUDY/RR)	102 FRIENDS	GENERAL	Break Rooms	294	5	0.06	25	7		7	37	18	54	1	54	375	0.15	107	1	693	0.9	770	183	400	770
	105 CORRIDOR	GENERAL	Corridors	292	0	0.06	0	0		0	0	18	18	1	18	150	0.12								
	106 MULTI-PURPOSE	HOTELS MOTELS RESORTS DORMS	Multi-purpose assembly	1466	5	0.06	120	176	85	85	425	88	513	1	513	2850	0.18								
	107 TUTORING	GENERAL	Break Rooms	173	5	0.06	25	4		4	22	10	32	1	32	200	0.16								
	108 STUDY	GENERAL	Break Rooms	192	5	0.06	25	5		5	24	12	36	1	36	225	0.16								
	109 STUDY	GENERAL	Break Rooms	218	5	0.06	25	5		5	27	13	40	1	40	275	0.15								
HP-2 (OFFICE)	100 VESTIBULE	OFFICE BUILDINGS	Main entry lobbies	249	5	0.06	10	2		2	12	15	27	1	27	350	0.08	17	1	316	1	316	256	325	N/A
	110 WORK	MISCELLANEOUS	Sorting, packing, light assembly	884	7.5	0.12	7	6		6	46	106	152	1	152	1200	0.13								
	111 OFFICE	OFFICE BUILDINGS	Office space	121	5	0.06	5	1		1	3	7	10	1	10	150	0.07								
	112 OPEN OFFICE	OFFICE BUILDINGS	Office space	396	5	0.06	5	2		2	10	24	34	1	34	550	0.06								
	113 STORAGE	OFFICE BUILDINGS	Occupiable storage rooms for dry materials	242	5	0.06	2	0		0	2	15	17	1	17	325	0.05								
	114 BREAK	GENERAL	Break Rooms	208	5	0.06	25	5		5	26	12	38	1	38	275	0.14								
	117 MAINT. STOR.	OFFICE BUILDINGS	Occupiable storage rooms for dry materials	82	5	0.06	2	0		0	1	5	6	1	6	100	0.06								
	118 STORAGE	OFFICE BUILDINGS	Occupiable storage rooms for dry materials	115	5	0.06	2	0		0	1	7	8	1	8	100	0.08								
	120 CORRIDOR	GENERAL	Corridors	382	0	0.06	0	0		0	0	23	23	1	23	525	0.04								
HP-3,4,5 (STACKS/ LOBBY)	126 STACKS	PUBLIC ASSEMBLY SPACES	Libraries	8060	5	0.12	10	81		81	403	967	1370	1	1370	9200	0.15	98	1	1559	1	1559	1086	520 X 3 = 1560	N/A
	127 STORAGE	OFFICE BUILDINGS	Occupiable storage rooms for dry materials	53	5	0.06	2	0		0	1	3	4	1	4	100	0.04								
	101 LOBBY	OFFICE BUILDINGS	Main entry lobbies	1681	5	0.06	10	17		17	84	101	185	1	185	2500	0.07								
HP-6 YOUNG ADULT	122 YOUTH	PUBLIC ASSEMBLY SPACES	Libraries	512	5	0.12	10	5		5	26	61	87	1	87	800	0.11	28	1	469	1	469	178	470	N/A
	125 YOUNG ADULT	PUBLIC ASSEMBLY SPACES	Libraries	1364	5	0.12	10	14		14	68	164	232	1	232	1825	0.13								
	126 STACKS	PUBLIC ASSEMBLY SPACES	Libraries	885	5	0.12	10	9		9	44	106	150	1	150	1125	0.13								
HP-7 YOUTH	122 YOUTH	PUBLIC ASSEMBLY SPACES	Libraries	2162	5	0.12	10	22		22	108	259	368	1	368	2700	0.14	38	1	530	0.9	589	357	590	N/A
	121 YOUTH SERVICES	PUBLIC ASSEMBLY SPACES	Libraries	631	5	0.12	25	16		16	79	76	155	1	155	850	0.18								
	118 STORAGE	OFFICE BUILDINGS	Occupiable storage rooms for dry materials	115	5	0.06	2	0		0	1	7	8	1	8	100	0.08								

* LISTED MULTI-PURPOSE OCCUPANCY RATE IS MAXIMUM OCCUPANCY PER OWNER

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Registered Professional Engineer (Mechanical) CERTIFICATE NO. 26380 JOHN R. STERNITZKE 4/24/2025 ARIZONA, U.S.A.

PROJECT INFO:
YUMA COUNTY FOOTHILLS LIBRARY
HVAC REPLACEMENT
13226 E. SOUTH FRONTAGE ROAD
YUMA, AZ 85367

REVISIONS:

ISSUED FOR:

PROJ. NO. 4204 | DRAWN BY: STERNCO
DESIGN BY: STERNCO | CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: MECHANICAL SCHEDULES

SHEET NO: M4.1

Plot Date: 4/24/2025 9:07 AM | File Location: S:\Projects\4000-4999\4200s\4204 Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheets\M.Mechanical\4204.M4.1
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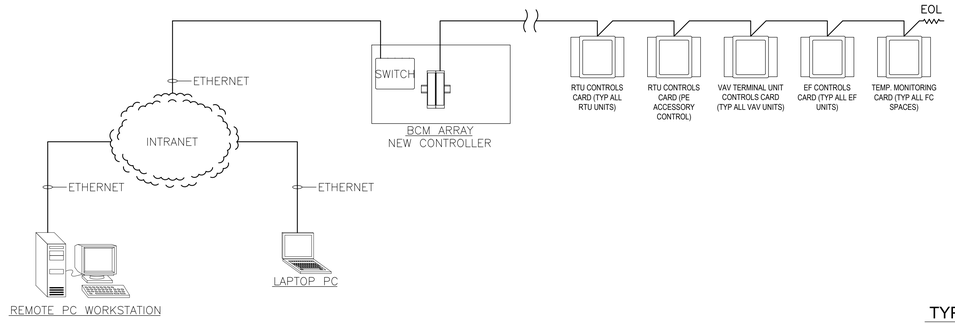
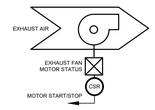


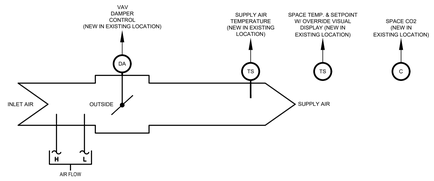
A NETWORK ARCHITECTURE DIAGRAM

SCALE: NONE



EXHAUST FAN CONTROL DIAGRAM

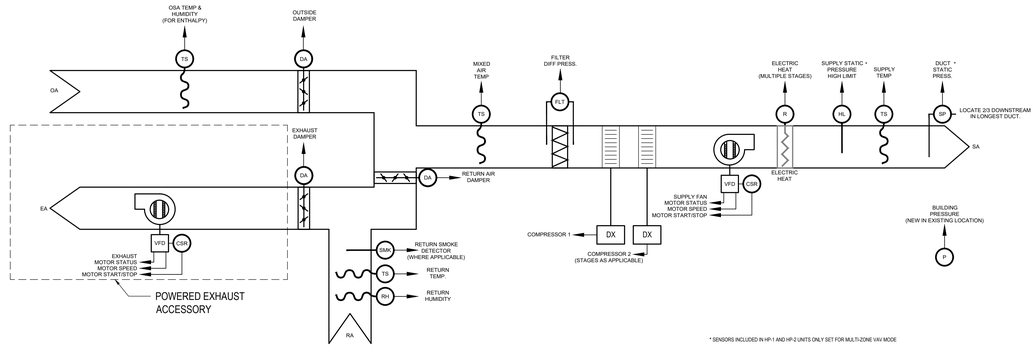
* ALL BUILDING EXHAUST FANS WITH EXISTING DDC CONTROLS



TYPICAL EXISTING VAV TERMINAL UNIT CONTROL DIAGRAM

B EQUIPMENT CONTROL DIAGRAMS

SCALE: NONE



* SENSORS INCLUDED IN HP-1 AND HP-2 UNITS ONLY SET FOR MULTI-ZONE VAV MODE

C PACKAGED ROOFTOP AIR CONDITIONING UNIT WITH ECONOMIZER AND POWERED EXHAUST ACCESSORIES CONTROL DIAGRAM

SCALE: NONE

SEQUENCE OF OPERATIONS

MULTI-ZONE VARIABLE AIR VOLUME AND SINGLE ZONE PACKAGED ROOFTOP COOLING UNITS (HP-1,2)

RETURN AIR SMOKE DETECTORS
SMOKE DETECTOR LOCATED IN THE RETURN AIR STREAM SHALL STOP THE FANS THROUGH THE FIRE ALARM SYSTEM IF AN ALARM CONDITION IS DETECTED. WHEN THE FANS ARE STOPPED, THE DDC SYSTEM SHALL POSITION THE OSA DAMPERS TO THEIR CLOSED STATE.

SUPPLY AIR TEMPERATURE SET POINT (HEATING AND COOLING MODES)
MULTI-ZONE VAV: THE DDC SYSTEM SHALL CONTROL THE ROOFTOP UNIT TO MAINTAIN AN ADJUSTABLE SUPPLY AIR TEMPERATURE (SAT) SET POINT. THE SAT SET POINT SHALL BE RESET BASED ON THE DEMAND OF THE TERMINAL UNITS SERVED BY THE RTU SUCH THAT AT LEAST ONE TERMINAL UNIT IS 90% OPEN AND MAINTAINING THE ROOM TEMPERATURE SET POINT. IF ALL TERMINAL UNITS ARE SATISFIED AND AT MINIMUM, THE SUPPLY AIR TEMPERATURE SET POINT WILL BE RESET HIGHER (COOLING MODE) OR LOWER (HEATING MODE) TO GET THE TOTAL OF THE BOXES BACK IN MIDRANGE, RESETTING AT MINIMUM 2 DEGREE (ADJUSTABLE) INCREMENTS.
SINGLE-ZONE UNITS: THE SUPPLY AIR TEMPERATURE SHALL FOLLOW MANUFACTURER'S SEQUENCE TO MAINTAIN SPACE TEMPERATURE.

SUPPLY FAN CONTROL
THE SUPPLY FAN SHALL BE SOFT-STARTED AND SOFT-STOPPED BY THE SUPPLY FAN VFD BASED ON AN OCCUPANCY SCHEDULE FOR THE BUILDING, AS PROGRAMMED INTO THE DDC SYSTEM. COORDINATE WITH OWNER FOR OCCUPANCY SCHEDULE.

SUPPLY FAN VFD CONTROL
THE VFD SHALL BE MODULATED TO MAINTAIN THE SUPPLY DUCT STATIC PRESSURE AT A SET POINT OF 0.75" W.G. (ADJUSTABLE) ON MZVAV UNITS, AND AT MANUFACTURER'S INTEGRAL SEQUENCE SPEED TO MAINTAIN SPACE TEMPERATURE FOR SINGLE ZONE UNITS. OPERATE PER MANUFACTURER'S SEQUENCE AND INCLUDE STATIC PRESSURE RESET SEQUENCE.

SUPPLY FAN MONITORING
THE VFD STATUS SHALL BE INDICATED TO THE DDC SYSTEM THROUGH A SET OF CONTACTS IN THE VFD. IF AN ALARM IS DETECTED FOR THE SUPPLY FAN OR THE SUPPLY FAN VFD, THE DDC SYSTEM SHALL INITIATE AN ALARM.

MIXED AIR DAMPER INTERLOCKS
CONTROL SIGNALS FROM THE DDC SYSTEM MODULATE THE RETURN AIR DAMPERS. UPON INITIAL START-UP, THE DDC CONTROLS SYSTEM WILL NOT BEGIN MODULATION OF THE MIXING DAMPERS FOR 5 MINUTES (ADJUSTABLE) TO ALLOW THE CONTROL LOOPS TO STABILIZE.

OUTSIDE AIR
OUTSIDE AIR RATES TO BE SET TO THOSE INDICATED IN THE PACKAGED ROOFTOP UNIT SCHEDULE. THE UNITS SHALL MAINTAIN A CONSTANT MINIMUM OUTSIDE AIR RATE WHILE IN OCCUPIED MODE, UNLESS IN DEMAND CONTROL VENTILATION (WHERE APPLICABLE) OR ECONOMIZER MODE, WHICH WOULD INCLUDE HIGHER OUTSIDE AIR FLOW .IF THE ROOFTOP AIR HANDLING UNIT IS STOPPED, THE DDC SYSTEM SHALL CLOSE THE OSA DAMPER. THE DDC SYSTEM SHALL TREND AND LOG THE OSA VOLUME BEING BROUGHT IN BY THE ROOFTOP UNIT.

ECONOMIZER 'FREE COOLING' MODE
WHEN CONDITIONS ARE SUITABLE FOR FREE COOLING, BASED ON DIFFERENTIAL ENTHALPY, AND DURING OCCUPIED MODE, THE ECONOMIZER AND POWERED EXHAUST ACCESSORY SHALL MODULATE TO MAINTAIN ADEQUATE SPACE COOLING. THE DDC SYSTEM SHALL NOT MODULATE THE MINIMUM OUTSIDE AIR (OSA) VOLUME BELOW THE MINIMUM OSA VOLUME SET POINT. THE MIXED AIR TEMPERATURE SHALL NOT BE LESS THAN 50 DEGREES F.

DEMAND CONTROL VENTILATION
SEE VAV TERMINAL UNIT DCV MODE. MODULATE RTU OUTSIDE AIR DAMPER AS REQUIRED PER SEQUENCE.

PURGE
UNIT SHALL PURGE THE BUILDING WITH FULL OUTSIDE AIR OVER A PERIOD OF 2 HOURS (ADJ.) WHEN AMBIENT CONDITIONS ARE AS FOLLOWS:
- DRY BULB TEMPERATURE BETWEEN 50°F AND 75°F
- RELATIVE HUMIDITY LESS THAN 50%

PURGE CYCLE SHALL RUN PRIOR TO THE MORNING OPTIMAL START AND WHEN MANUALLY INITIATED THROUGH THE DDC SYSTEM

FILTER MONITORING
THE DIFFERENTIAL PRESSURE ACROSS THE FILTERS SHALL BE MONITORED BY THE DDC SYSTEM THROUGH DIFFERENTIAL PRESSURE TRANSMITTERS. IF THE DIFFERENTIAL PRESSURE EXCEEDS THE SET POINT, THE DDC SYSTEM SHALL INITIATE AN ALARM.

DUCT PRESSURE SAFETY SWITCHES
SAFETY SWITCHES INSTALLED IN THE SUPPLY AIR DUCT FOR EACH UNIT SHALL ALARM THE DDC SYSTEM IF THE DUCT PRESSURE IS ABOVE THE HIGH ALARM SET POINT. THE HIGH ALARM SET POINT SHALL BE 150% OF THE NORMAL OPERATING STATIC PRESSURE OF THE SYSTEM. IF THE DDC SYSTEM SENSES AN ALARM CONDITION, THE DDC SYSTEM SHALL STOP THE SUPPLY FAN.

POWERED EXHAUST FAN CONTROL
WHILE IN ECONOMIZER MODE THE POWERED EXHAUST FAN SHALL OPERATE TO MAINTAIN A POSITIVE BUILDING PRESSURE OF 0.03" W.C. (ADJUSTABLE). NOTE: POWERED EXHAUST SHALL ONLY BE ENABLED DURING ECONOMIZER MODE AND WHEN BOTH COOLING STAGES ARE NOT ENABLED.

POWERED EXHAUST FAN MONITORING
THE VFD STATUS SHALL BE INDICATED TO THE DDC SYSTEM THROUGH A SET OF CONTACTS IN THE VFD. IF AN ALARM IS DETECTED FOR THE SUPPLY FAN OR THE SUPPLY FAN VFD, THE DDC SYSTEM SHALL INITIATE AN ALARM.

OCCUPIED / UNOCCUPIED
OCCUPIED MODE
- SUPPLY FAN SHALL RUN CONTINUOUSLY AND RESET PER THE "SUPPLY FAN VFD CONTROL" SEQUENCE
- SUPPLY AIR TEMPERATURE SHALL RESET PER THE "SUPPLY AIR TEMPERATURE SET POINT (HEATING AND COOLING MODES)" SEQUENCE
- OUTSIDE AIR SHALL BE PROVIDED PER THE "OUTSIDE AIR" SEQUENCE
- POWERED EXHAUST FAN SHALL OPERATE PER THE "POWERED EXHAUST FAN CONTROL" SEQUENCE

UNOCCUPIED MODE
- NORMAL OPERATION
  - SUPPLY FAN SHALL BE OFF
  - OSA DAMPERS SHALL BE CLOSED
  - POWERED EXHAUST FAN SHALL BE OFF
- WHEN 2 OR MORE OF THE VAV ZONES SERVED BY THE HP UNIT, OR SERVED ZONE ON SINGLE ZONE UNITS, ARE 2 DEG. F ABOVE (COOLING) OR BELOW (HEATING) THEIR UNOCCUPIED SPACE TEMPERATURE SET POINTS
  - SUPPLY FAN SHALL SOFT-START
  - SUPPLY AIR TEMPERATURE SHALL RESET PER THE "SUPPLY AIR TEMPERATURE SET POINT (HEATING AND COOLING MODES)" SEQUENCE
  - OSA DAMPERS SHALL BE CLOSED
  - POWERED EXHAUST FAN SHALL BE OFF
  - RTU SHALL RETURN TO NORMAL UNOCCUPIED OPERATION WHEN ALL ZONE UNOCCUPIED SPACE TEMPERATURE SET POINTS ARE MET
- ZONE OCCUPANCY OVERRIDE
  - THE DDC SYSTEM SHALL OPERATE THE RESPECTIVE RTU IN OCCUPIED MODE FOR A PERIOD OF TWO HOURS (ADJ.). AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE NORMAL SCHEDULE.

VARIABLE AIR VOLUME TERMINAL UNITS (VAV'S)

RUN CONDITIONS - SCHEDULED
EACH TERMINAL UNIT SHALL OPERATE ACCORDING TO A USER-DEFINABLE TIME SCHEDULE AND MAINTAIN THE FOLLOWING SPACE TEMPERATURE SET POINTS
- OCCUPIED MODE
  - 75°F (ADJ.) COOLING
  - 72°F (ADJ.) HEATING
- UNOCCUPIED MODE
  - 85°F (ADJ.) COOLING (NOTE: MINIMUM SET POINT PER IECC REQUIREMENTS)
  - 68°F (ADJ.) HEATING (NOTE: MAXIMUM SET POINT PER IECC REQUIREMENTS)

ZONE SETPOINT ADJUST
IN ZONES NOT ACCESSIBLE TO THE PUBLIC, THE OCCUPANTS SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SET POINT AT THE ZONE SENSOR BY +/- 2 DEGREES F (ADJ.).

ZONE OCCUPANCY OVERRIDE
DURING UNOCCUPIED MODE, AN OCCUPANCY OVERRIDE REQUEST SHALL PLACE THE RESPECTIVE TERMINAL UNIT IN OCCUPIED MODE FOR A PERIOD OF TWO HOURS (ADJ.). AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE NORMAL SCHEDULE.

DEMAND CONTROL VENTILATION (EACH ZONE WITH CO2 SENSOR)
IF ZONE CO2 LEVELS RISE OVER 1000 PPM (ADJ.), THE TERMINAL UNIT CONTROLLER SHALL MODULATE THE TERMINAL UNIT DAMPER OPEN UNTIL CO2 LEVELS ARE BELOW 1000 PPM. IF THE TERMINAL UNIT DAMPER IS FULLY OPEN AND CO2 LEVELS ARE OVER THE SET POINT, MODULATE OPEN THE RESPECTIVE RTU OUTSIDE AIR DAMPER UNTIL CO2 LEVELS ARE BELOW THE SET POINT.

VAV TERMINAL UNIT MODULATION
EACH TERMINAL UNIT SHALL MODULATE ITS DAMPER TO MAINTAIN THE SPACE TEMPERATURE SET POINT. IF THE ZONE CALLS FOR COOLING, THE TERMINAL UNIT DAMPER SHALL MODULATE BETWEEN THE MINIMUM AND MAXIMUM COOLING AIR FLOWS TO MEET THE SPACE TEMPERATURE COOLING SET POINT. IF A ZONE CALLS FOR HEATING, THE TERMINAL UNIT DAMPER SHALL MODULATE TO THE UNIT'S SCHEDULED MINIMUM HEATING AIRFLOW. THE DAMPER SHALL MODULATE OPEN, AS NEEDED, TO MEET THE SPACE TEMPERATURE HEATING SET POINT.

EXHAUST FANS

RUN CONDITIONS - SCHEDULED
ALL BUILDING EXHAUST FANS PREVIOUSLY CONTROLLED FOR ON/OFF CONTROL BY THE BUILDING CONTROLS SYSTEM SHALL BE CONTROLLED BY THE NEW CONTROLS SYSTEM. EXHAUST FANS SHALL RUN TO MATCH BUILDING OCCUPANCY SCHEDULE. PROVIDE STATUS MONITOR PER EXHAUST FAN WHERE EXHAUST FANS HAD ONE PREVIOUSLY.

CONTROLS SYSTEM REQUIREMENTS

SYSTEM TYPE AND CONNECTION
PROVIDE A NEW BACNET DDC CONTROLS SYSTEM FROM CARRIER I-VU. REPLACE VAV CONTROLLERS WITH NEW AND CONTROL CARDS WITH NEW CARRIER I-VU CONTROL CARDS. PROVIDE NEW CONTROL WIRE AND CONDUIT AS NECESSARY. THE NEW CONTROLS SYSTEM SHALL TIE INTO THE EXISTING YUMA COUNTY LIBRARY DISTRICT CARRIER I-VU FRONT END / WEB SERVER, AND THE BUILDING SHALL PULL UP WITH FULL READ/WRITE ACCESS TO CONTROLS SYSTEM, AS REQUIRED BY OWNER. PROVIDE NEW GRAPHICS PER OWNER REQUIREMENTS.

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JOHN R. STERNITZKE
4/24/2025
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PROJECT INFO:
YUMA COUNTY FOOTHILLS LIBRARY
HVAC REPLACEMENT
13226 E. SOUTH FRONTAGE ROAD
YUMA, AZ 85367

REVISIONS:

ISSUED FOR:

PROJ. NO. 4204
DRAWN BY: STERNCO
DESIGN BY: STERNCO
CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: MECHANICAL CONTROLS

SHEET NO: M5.1

Plot Date: 4/24/2025 9:07 AM | File Location: S:\Projects\4000-4999\4200s\4204 Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheets\M-Mechanical\4204-M5.1 Mechanical Controls.dwg
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ELECTRICAL SPECIFICATIONS

1. GENERAL CONDITIONS
   1.1. THE GENERAL PROVISIONS OF THE CONTRACT, INCLUDING THE CONDITIONS OF THE CONTRACT (GENERAL, SUPPLEMENTARY AND OTHER CONDITIONS) AND DIVISION 1 - GENERAL REQUIREMENTS AS APPROPRIATE, APPLY TO THE WORK SPECIFIED IN THIS SECTION.
2. SCOPE OF WORK
   2.1. THE WORK INCLUDED UNDER THIS SECTION CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT, AND LABOR AND THE PERFORMING OF ALL FUNCTIONS, EXCEPT AS OTHERWISE SPECIFIED HEREIN OR SHOWN ON THE DRAWINGS TO BE PERFORMED BY OTHERS, FOR THE INSTALLATION AND PLACING INTO OPERATION OF A COMPLETE ELECTRICAL SYSTEM AS SPECIFIED AND SHOWN ON THE DRAWINGS.
3. GENERAL DESCRIPTION
   3.1. THE WORK IN GENERAL SHALL CONSIST OF, BUT IS NOT NECESSARILY LIMITED TO THE FOLLOWING.
      3.1.1. FURNISHING AND INSTALLING ALL FIXTURES WITH LAMPS AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN UNLESS NOTED.
      3.1.2. FURNISHING AND INSTALLING ALL ELECTRICAL WORK, PANELS, SERVICE, CONDUIT, WIRING, ETC., FOR ALL OUTLETS AND EQUIPMENT.
      3.1.3. FURNISHING AND INSTALLING ALL TELEPHONE OUTLETS, CONDUITS WITH PULL STRINGS AND TELEPHONE MOUNTING BOARDS INCLUDING CONDUIT FROM TELEPHONE MOUNTING BOARD TO THE BUILDING ENTRANCE AS INDICATED ON THE PLAN.
      3.1.4. FURNISHING AND INSTALLING A COMPLETE FIRE ALARM SYSTEM AS INDICATED ON PLANS.
      3.1.5. CONTRACTOR SHALL INCLUDE AN ALLOWANCE FOR POWER AND TELEPHONE COMPANY UTILITY SERVICE CHARGES. DIFFERENCE BETWEEN ACTUAL COST AND ALLOWANCE TO BE CREDITED OR BILLED TO THE OWNER.
      3.1.6. FURNISHING AND INSTALLING ALL MOTOR STARTERS AND CONTROL COMPONENTS, NOT SPECIFICALLY SPECIFIED TO BE FURNISHED IN ACCORDANCE WITH OTHER SECTIONS OF THE SPECIFICATIONS.
      3.1.7. FURNISHING AND INSTALLING ALL POWER AND WIRING EXCEPT THAT WHICH IS PRE-WIRED IN FACTORY ASSEMBLED EQUIPMENT.
      3.1.8. INSTALLING ALL LINE VOLTAGE MECHANICAL CONTROL WIRING AND ASSOCIATED CONTROLS WHICH ARE FURNISHED BY THE MECHANICAL CONTRACTOR (LOW VOLTAGE CONTROL WIRING AND CONTROLS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR).
      3.1.9. PAINTING WORK AS DESCRIBED UNDER OTHER SECTIONS OF THESE SPECIFICATIONS. CLEAN AND PREPARE ALL SURFACES READY FOR PAINTING.
      3.1.10. PROVIDE TEMPORARY CONSTRUCTION POWER AS OUTLINED BELOW. THIS SERVICE SHALL BE MAINTAINED THROUGHOUT THE ENTIRE JOB AS THE WORK PROGRESSES. PROVIDE OUTLETS AT CONVENIENT POINTS AND IN SUFFICIENT NUMBERS SO THAT NO EXTENSION CORD OVER 50 FEET IN LENGTH IS REQUIRED TO REACH ANY WORK POINT. MAINTAIN GENERAL LIGHTING IN CORRIDORS, STAIRS, BASEMENT AND OTHER AREAS NOT RECEIVING SUFFICIENT DAYLIGHT REQUIRED FOR SAFETY. REMOVE TEMPORARY WORK AS RAPIDLY AS REQUIRED FOR OR ALLOWED BY INSTALLATION OF PERMANENT WORK.
      3.1.11. CERTAIN ITEMS OF WORK BY OTHER TRADES WILL BE NECESSARY FOR THE COMPLETION OF WORK UNDER THIS DIVISION. COOPERATE WITH OTHER TRADES AND ARRANGE FOR THESE ITEMS TO BE PERFORMED IN ORDERLY COURSE.
      3.1.12. THIS CONTRACTOR SHALL REVIEW THE MECHANICAL CONTROL REQUIREMENTS AS SPECIFIED AND SHOWN ON THE DRAWINGS AND SHALL FURNISH AND INSTALL ALL NECESSARY CONDUIT, WIRING, BOXES, PROTECTIVE DEVICES, SWITCHES, ETC., FOR THE COMPLETION AND PROPER OPERATION OF THE SYSTEM.
      3.1.13. REVIEW ALL DRAWINGS AND ALL SPECIFICATIONS FOR EACH SECTION OF WORK. UNLESS SPECIFICALLY NOTED OTHERWISE, HEREIN OR ELSEWHERE, FURNISH AND INSTALL ITEMS OF ANY ELECTRICAL NATURE REQUIRED FOR COMPLETION OF WORK FOR OTHER TRADES, WHETHER OR NOT SAME IS SHOWN OR NOTED IN THIS OR OTHER SECTIONS.
4. REGULATIONS AND CODES
   4.1. THE CONTRACTOR MUST COMPLY WITH ALL STATE, MUNICIPAL AND FEDERAL SAFETY LAWS, CONSTRUCTION CODES, ORDINANCES AND REGULATIONS RELATING TO BUILDING AND PUBLIC HEALTH AND SAFETY. IN ADDITION, COMPLY WITH RULES AND REGULATIONS OF THE STATE FIRE PROTECTION CODE. FIRE PROTECTION MATERIAL MUST BEAR THE FIRE UNDERWRITERS LABORATORIES LABEL.
5. GENERAL REQUIREMENTS
   5.1. THE CONTRACTOR SHALL EXAMINE THE PREMISES AND SATISFY HIMSELF OF EXISTING CONDITIONS UNDER WHICH HE WILL BE OBLIGATED TO OPERATE IN PERFORMING HIS PART OF THE WORK OR THAT WILL IN ANY MANNER AFFECT THE WORK UNDER THE CONTRACT. THE CONTRACTOR SHALL COOPERATE WITH OTHER TRADES SO THAT THE INSTALLATIONS OF ALL EQUIPMENT MAY BE PROPERLY COORDINATED.
   5.2. ALL EQUIPMENT FURNISHED SHALL FIT THE SPACE AVAILABLE, WITH CONNECTION, ETC., IN THE REQUIRED LOCATIONS AND WITH ADEQUATE SPACE FOR OPERATING AND SERVICING. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATE THE MANNER AND METHOD OF THE INSTALLATION, WHILE THE SPECIFICATIONS AND FIXTURE LIST DENOTE THE TYPE AND QUALITY OF MATERIAL AND WORKMANSHIP TO BE USED. WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ARCHITECT/ENGINEER WHOSE DECISION SHALL BE FINAL. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY IN THIS CONNECTION IN BEHALF OF THE CONTRACTOR AFTER AWARD OF THE CONTRACT.
6. EQUIPMENT AND MATERIAL
   6.1. ALL MATERIALS FURNISHED UNDER THIS CONTRACT SHALL BE NEW (EXCEPT AS NOTED), FREE FROM DEFECTS OF ANY CHARACTER, SHALL CONFORM WITH THE STANDARDS OF THE UNDERWRITERS LABORATORIES, INC. (U.L.) (OR OTHER NATIONALLY RECOGNIZED LABORATORY), IN EVERY CASE WHERE SUCH A STANDARD HAS BEEN ESTABLISHED AND SHALL BE SO LABELED. IT IS THE INTENTION OF THESE SPECIFICATIONS TO INDICATE A STANDARD OF QUALITY FOR ALL MATERIALS INCORPORATED IN THIS WORK, AND WHERE MATERIALS ARE NOT SPECIFIED HEREIN AND ARE REQUIRED TO COMPLETE THE ELECTRICAL INSTALLATION, THESE MATERIALS SHALL BE OF FIRST QUALITY FOR USE INTENDED. MANUFACTURERS OF SIMILAR QUALITY PRODUCTS WILL BE CONSIDERED UNLESS THE SPECIFICATIONS OR DRAWINGS INDICATE OTHERWISE.
   6.2. MATERIALS SHALL BE SUITABLE FOR INTENDED USE AND LOCATION. UNLESS OTHERWISE SHOWN USE NEMA-1 FOR INTERIOR AREAS AND NEMA-3R FOR EXTERIOR AREAS.
   6.3. THE ARCHITECT/ENGINEER DECISION AS TO EQUAL IN GRADE AND QUALITY SHALL RULE AND BE FINAL FOR ALL ELECTRICAL MATERIALS INCORPORATED IN THIS WORK. WHERE TWO OR MORE SIMILAR TYPE ITEMS ARE FURNISHED, ALL SHALL BE OF THE SAME MANUFACTURER (E.G., ALL DISCONNECT SWITCHES SHALL BE OF THE SAME MANUFACTURER) UNLESS OTHERWISE NOTED HEREIN OR SHOWN ON THE DRAWINGS. ALL MATERIAL AND INSTALLATION METHODS USED SHALL BE IN ACCORDANCE WITH THE LATEST AND APPROVED ELECTRICAL AND MECHANICAL ENGINEERING PRACTICES.
7. SERVICE ENTRANCE EQUIPMENT
   7.1. SERVICE ENTRANCE EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MUNICIPAL GOVERNING BODY AND SERVING UTILITY. SHOP DRAWINGS SHALL BE SUBMITTED TO THE SERVING UTILITY FOR WRITTEN APPROVAL BEFORE ORDERING EQUIPMENT.
   7.2. LABEL EQUIPMENT AND EACH INDIVIDUAL OVERCURRENT DEVICE PER 2020 NEC.
      APPROVED MANUFACTURERS ARE: CUTLER-HAMMER, GENERAL ELECTRIC, SIEMENS/ITE, SQUARE D.
   7.3. THE CONTRACTOR SHALL PROVIDE A SYSTEM COORDINATION STUDY WHEN ADJUSTABLE BREAKERS ARE INSTALLED OR PART OF THE ELECTRICAL SYSTEM DISTRIBUTION. THE STUDY WILL BE PREPARED AND SEALED BY A LICENSED ELECTRICAL ENGINEER IN THE STATE THE PROJECT IS LOCATED. PROVIDE THE COORDINATION STUDY TO THE ELECTRICAL ENGINEER OF RECORD PRIOR TO THE CERTIFICATE OF OCCUPANCY. THE CONTRACTOR SHALL SET THE ADJUSTABLE BREAKERS IN ACCORDANCE WITH THE COORDINATION STUDY RESULTS. THIS INCLUDES SETTINGS FOR THE GFP DEVICES ON CIRCUIT BREAKERS.
8. PANELBOARDS
   8.1. EACH PANEL SHALL BE PROVIDED WITH DOOR LOCK AND TWO KEYS, ALL KEYED ALIKE. EACH PANEL SHALL BE PROVIDED WITH TYPEWRITTEN SHEET INSTALLED ON DOOR IDENTIFYING THE USE OF EACH BRANCH CIRCUIT. PANELS SHALL HAVE BUSSING AS INDICATED ON THE DRAWINGS.
   8.2. LABEL EQUIPMENT PER 2020 NEC.
9. APPROVED MANUFACTURERS ARE: CUTLER-HAMMER, GENERAL ELECTRIC, SIEMENS/ITE, SQUARE D.
10. STARTERS
   10.1. ALL MOTOR STARTERS SHALL BE FURNISHED UNDER THIS SECTION OF THE SPECIFICATIONS UNLESS AN INTEGRAL PART OF EQUIPMENT OR NOTED AS FURNISHED WITH EQUIPMENT SPECIFIED UNDER OTHER SECTIONS OF THESE SPECIFICATIONS.
   10.2. SEPARATELY MOUNTED MOTOR STARTERS SHALL BE ACROSS- THE-LINE COMBINATION MAGNETIC WITH 120V COILS, FUSED DISCONNECT CONTACTORS, ADDITIONAL AUXILIARY CONTACT FOR INTERLOCKING OF CONTROLS. PROVIDE PUSHBUTTON OR SELECTOR SWITCH IN COVER. SWITCHBOARD MOUNTED STARTERS SHALL BE MAGNETIC WITH 120V COILS AND ADDITIONAL AUXILIARY CONTACTS AS REQUIRED FOR INTERLOCKING OF CONTROLS. STARTERS SHALL HAVE AN INTEGRAL CONTROL CIRCUIT TRANSFORMER OR SEPARATE 120V CONTROL WITH CONTROL CIRCUIT DISCONNECT SWITCH IN COVER.
   10.3. MANUAL STARTERS SHALL BE HORSEPOWER, VOLTAGE AND PHASE RATED WITH OVERLOAD PROTECTION AND GREEN "ON" PILOT LIGHT. SURFACE MOUNTED UNLESS NOTED OTHERWISE.
   10.4. ALL STARTERS SHALL HAVE OVERLOAD PROTECTION IN ALL PHASE LINES. FURNISH AND INSTALL THE PROPER SIZE OVERLOAD HEATER ELEMENTS DETERMINED FROM FULL LOAD NAMEPLATE READINGS ON MOTORS AND COMPENSATION FOR AMBIENT TEMPERATURE IN ALL STARTERS WHETHER THEY BE FURNISHED UNDER THIS SECTION OR OTHER SECTIONS.
   10.5. LABEL PER 2020 NEC,APPROVED MANUFACTURERS ARE: SQUARE D.
11. TRANSFORMERS
   11.1. TRANSFORMERS SHALL BE DRY TYPE, WITH VOLTAGE RATINGS AS INDICATED ON PLANS. TRANSFORMERS SHALL BE RATED FOR FOR FULL LOAD OPERATION AT A MAXIMUM 150 DEGREE CENTIGRADE RISE ABOVE A 40 DEGREE CENTIGRADE AMBIENT OR AS OTHERWISE NOTED ON DRAWINGS. PROVIDE AT LEAST (4) 2 1/2 PERCENT TAPS, TWO ABOVE NORMAL AND TWO BELOW NORMAL AND HAVE A SOUND RATING NOT TO EXCEED NEMA STANDARDS. SPECIAL "K" FACTOR RATINGS AS NOTED.
   11.2. SUBMIT COMPLETE TRANSFORMER DATA WITH SHOP DRAWINGS FOR APPROVAL. THE DATA SHALL INCLUDE EFFICIENCIES, CORE AND COPPER LOSSES, IMPEDANCE, REGULATION AND SOUND LEVEL.
   11.3. INSTALLATION OF TRANSFORMERS SHALL BE ON VIBRATION ISOLATORS AND ALL WIRING CONNECTIONS WITH FLEXIBLE CONDUIT.
   11.4. LABEL PER 2020 NEC.
      APPROVED MANUFACTURERS ARE: CUTLER-HAMMER, GENERAL ELECTRIC, SIEMENS/ITE, SQUARE D, OR SAME MANUFACTURER AS DISTRIBUTION EQUIPMENT.
12. CONDUIT
   12.1. METALLIC CONDUITS SHALL BE HOT DIPPED GALVANIZED EQUAL TO LTV STEEL.
   12.2. ELECTRIC METALLIC TUBING (EMT) IS PERMITTED FOR EXPOSED WORK ABOVE 6'-0" A.F.F. OR CONCEALED WORK ONLY. EMT IS NOT PERMITTED IN THE FOLLOWING: (1) IN OR UNDER CONCRETE, (2) IN EARTH, (3) IN GROUTED WALLS, (4) EXTERIOR OF BUILDING, (5) WITH DISSIMILAR METALS, (6) WHERE IT WILL BE SUBJECT TO SEVERE PHYSICAL DAMAGE (EITHER DURING OR AFTER INSTALLATION), (7) IN ANY HAZARDOUS (CLASSIFIED LOCATION) EXCEPT AS PERMITTED BY 502.10, 503.10 AND 504.20, (8) WITHOUT AN EQUIPMENT GROUNDING CONDUCTOR. SIZE AND PROVIDE EQUIPMENT GROUNDING CONDUCTOR PER ARTICLE 250 AND INCREASE CONDUIT SIZE IF REQUIRED.
   12.3. RIGID PVC CONDUIT IS PERMITTED ONLY UNDERGROUND OR AS NOTED ON DRAWINGS. PROVIDE RIGID STEEL ELBOWS AND RISERS (NO MINIMUM SIZE). SIZE AND PROVIDE EQUIPMENT GROUNDING CONDUCTOR PER ARTICLE 250 AND INCREASE CONDUIT SIZE IF REQUIRED.
   12.4. RIGID GALVANIZED OR SHERADIZED STEEL SHALL BE USED FOR ALL EXPOSED CONDUIT BELOW 6'-0" A.F.F. OR AS NOTED ON DRAWINGS. WHERE USED IN OR UNDER CONCRETE OR IN EARTH, SHALL BE CODE APPROVED PVC COATED OR HALF LAP WRAPPED WITH POLYKEN #900 TAPE OR EQUAL.
   12.5. INSTALL EXPOSED RACEWAYS PARALLEL AND PERPENDICULAR TO NEARBY SURFACES OR STRUCTURAL MEMBERS AND FOLLOW THE SURFACE CONTOURS AS MUCH AS PRACTICAL.
   12.6. RUN EXPOSED, PARALLEL, OR BANKED RACEWAYS TOGETHER. MAKE BENDS IN PARALLEL OR BANKED RUNS FROM THE SAME CENTER LINE SO THAT THE BENDS ARE PARALLEL. FACTORY ELBOWS MAY BE USED IN BANKED RUNS ONLY WHERE THEY CAN BE INSTALLED PARALLEL. THIS REQUIRES THAT THERE BE A CHANGE IN THE PLANE OF THE RUN SUCH AS FROM WALL TO CEILING AND THAT THE RACEWAYS BE OF THE SAME SIZE. IN OTHER CASES PROVIDE FIELD BENDS FOR PARALLEL RACEWAYS.
   12.7. M.C. CABLE PERMITTED WITH WRITTEN OWNERS APPROVAL AND INSTALLED PER NEC 330
13. WIRE
   13.1. SOFT DRAWN ANNEALED COPPER (UNLESS OTHERWISE NOTED ON PLANS) HAVING CONDUCTIVITY OF NOT LESS THAN 98% OF THAT OF PURE COPPER, UNIFORM IN CROSS SECTION, FREE FROM FLAWS, SCALES, AND OTHER IMPERFECTIONS. ALL WIRE LARGER THAN #10 SHALL BE STRANDED.
   13.2. INSULATION: TYPE THHN/THWN, OR XHHW FOR ALL BRANCH CIRCUIT AND FEEDER WIRING.
   13.3. SIZES: NO WIRE SMALLER THAN #12 UNLESS OTHERWISE NOTED ON DRAWINGS.
   13.4. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER WITHOUT EXCEPTION.
14. MISCELLANEOUS MATERIALS:
   14.1. SAFETY SWITCHES: HEAVY DUTY, FUSED REJECTION TYPE. MINIMUM 200,000 A.I.C. RATED. "NF" INDICATES NOT FUSED.
      14.1.1. LABEL PER 2020 NEC, APPROVED MANUFACTURERS ARE: SQUARE D, CUTLER-HAMMER, WESTINGHOUSE, GENERAL ELECTRIC OR SAME MANUFACTURERS AS DISTRIBUTION EQUIPMENT.
   14.2. FUSES: "BUSSMANN" OR "GOULD SHAWMUT" MFG. NO SUBSTITUTIONS UNLESS BY PRIOR WRITTEN APPROVAL FROM ENGINEER, OR AS NOTED ON DRAWINGS.
   14.3. CONDUIT STRAP: HEAVY GAUGE STEEL SNAP-ON TYPE.
   14.4. ELECTRICAL METALLIC TUBING FITTINGS: EQUAL TO T&B COMPRESSION TYPE. CONNECTORS SHALL HAVE INSULATED BUSHINGS.
   14.5. RIGID CONDUIT LOCKNUTS AND BUSHINGS: EQUAL TO T&B.
   14.6. FLEXIBLE CONDUIT AND FITTINGS: EQUAL TO CALIFORNIA CONDUIT AND CABLE COMPANY, INC.
   14.7. LIQUID TIGHT CONDUIT AND FITTINGS FOR ALL EXTERIOR AND EQUIPMENT CONNECTIONS.
   14.8. OUTLET BOXES, PLASTER RINGS, PULL AND JUNCTION BOXES, ETC: EQUAL TO RACO. ZINC COATED OR CADMIUM PLATED SHEET STEEL FOR INDOOR LOCATIONS, CAST ALUMINUM FOR OUTDOOR LOCATIONS.
      14.8.1. FOR ALL LIGHT FIXTURES: OCTAGON OR 4" SQUARE BOXES.
      14.8.2. FOR SWITCHES AND RECEPTACLES: 4" OR 4-11/16" SQUARE BOXES.
      14.8.3. JUNCTION AND PULL BOXES: 4" SQUARE MINIMUM SIZE. PROVIDE WITH SCREWFASTENED COVERS LOCATED IN ACCESSIBLE LOCATIONS.
   14.9. CONDULETS: EQUAL TO CROUSE-HINDS.
   14.10. WIRE AND CABLE: EQUAL TO GENERAL CABLE AND/OR SIMPLEX.
   14.11. DEVICES: "HUBBELL", "LEVITON", OR APPROVED EQUAL. RECEPTACLES: DUPLEX-20 AMP #5362, ISOLATED GROUND - 20 AMP #IG-5362, GFCI-20 AMP #GF-5362. SWITCHES: 20 AMP #1221 SINGLE POLE, 1222 DOUBLE POLE, 1223 THREE WAY, 1224 FOUR WAY. COLORS TO BE SPECIFIED BY ARCHITECT/OWNER/TENANT.
   14.12. DEVICE PLATES: "HUBBELL", "LEVITON", OR EQUAL. COLORS TO BE SPECIFIED BY ARCHITECT/OWNER/TENANT.
   14.13. ZINC DIE CAST FLIP LID MOUNTED HORIZONTALLY FOR EXTERIOR OR WEATHERPROOF LOCATIONS.
   14.14. LIGHTING FIXTURES: EQUAL TO AS SHOWN ON FIXTURE SCHEDULE OR DESCRIBED ON DRAWINGS, COMPLETE WITH LAMPS IN ORIGINAL CARTONS AND ALL CANOPIES, STEMS, HANGERS AND ACCESSORIES INCLUDING ALL STRUCTURAL MEMBERS REQUIRED FOR PROPER MOUNTING. ALL FLUORESCENT FIXTURE BALLASTS SHALL BE ENERGY SAVING TYPE. SUBMIT SHOP DRAWINGS TO ARCHITECT/ENGINEER FOR APPROVAL BY THE SAME.
   14.15. LAMPS: G.E. OR EQUAL AND SHALL BE FOR THE MAXIMUM RATED WATTAGE OF FIXTURE UNLESS OTHERWISE SHOWN ON DRAWINGS.
15. SLEEVES, INSERTS, OPENINGS
   15.1. CONTRACTOR SHALL LAYOUT AND INSTALL HIS WORK IN ADVANCE OF POURING CONCRETE FLOORS OR WALLS. PROVIDE ALL SLEEVES AND/OR OPENINGS THROUGH FLOORS OR WALLS REQUIRED FOR ELECTRICAL CONDUITS OR DUCTS.
   15.2. SLEEVES SHALL BE OF RIGID CONDUIT OR GALVANIZED SHEET STEEL RIGIDLY SUPPORTED AND SUITABLY PACKED TO PREVENT ENTRANCE OF WET CONCRETE.
16. EXCAVATION/CUTTING/FITTING/REPAIRING/FINISHING
   16.1. THE CONTRACTOR SHALL INCLUDE IN HIS BID ALL EXCAVATION, COMPACTION, FILL, BACKFILL, CUTTING, FITTING, REPAIRING AND FINISHING OF ALL WORK NECESSARY FOR THE INSTALLATION OF ALL EQUIPMENT UNDER THIS SPECIFICATION BUT NO CUTTING OF THE WORK OF OTHER CONTRACTORS SHALL BE DONE WITHOUT THE CONSENT OF THE GENERAL CONTRACTOR.
   16.2. EARTHWORK SHALL BE DONE IN ACCORDANCE WITH LATEST INDUSTRY STANDARDS.
17. CLEANUP OF PREMISES
   17.1. CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES CLEAR OF WASTE MATERIALS AND DEBRIS CAUSED BY HIS EMPLOYEES AND OPERATION. EQUIPMENT NOT REQUIRED IN THE WORK SHALL BE REMOVED PRIOR TO THE TERMINATION OF THE CONTRACT.
18. TESTS AND INSPECTIONS
   18.1. CONTRACTOR SHALL TEST WIRING AND DEVICES AS SECTIONS ARE COMPLETED AND SHALL CORRECT ALL DEFECTS IMMEDIATELY AT HIS OWN EXPENSE, INCLUDING ANY DAMAGE TO WALLS, CEILINGS, FLOOR OR OTHER PORTIONS OF THE BUILDING WHICH MAY RESULT FROM REPLACING DEFECTIVE EQUIPMENT.
   18.2. FURNISH ALL METERS, CABLE, CONNECTIONS AND APPARATUS NECESSARY FOR MAKING TESTS.
   18.3. TEST SYSTEM FOR SHORTS AND GROUNDS. FAULTY WIRING SHALL BE REMOVED AND REPLACED. ANY DEVICE, APPARATUS OR FIXTURE INSTALLED SHOWING SUBSTANDARD PERFORMANCE SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ARCHITECT/ENGINEER.
   18.4. MEGGER ALL SYSTEMS NEUTRALS TO INSURE THE NEUTRAL IS NOT GROUNDED WITHIN THE SYSTEM.
   18.5. ALL EQUIPMENT RATED AT 1,000 AMPS OR MORE , OR 480 VOLTS SHALL BE TESTED FOR INSULATION BREAKDOWN PRIOR TO ITS BEING ENERGIZED. SUCH EQUIPMENT SHALL WITHSTAND FOR A PERIOD OF ONE MINUTE WITHOUT BREAKDOWN, THE APPLICATION OF A 60HZ ALTERNATING POTENTIAL OF 1,000V PLUS TWICE THE RATED VOLTAGE OF THE DEVICE.
   18.6. AFTER THE ELECTRICAL WIRING SYSTEM INSTALLATION IS COMPLETED AND AT SUCH TIME AS THE ARCHITECT/ENGINEER OR HIS AUTHORIZED REPRESENTATIVE MAY DIRECT, THE CONTRACTOR SHALL CONDUCT AN OPERATING TEST FOR APPROVAL. EQUIPMENT SHALL BE DEMONSTRATED TO OPERATE IN ACCORDANCE WITH REQUIREMENTS OF SPECIFICATIONS. TEST SHALL BE PERFORMED IN PRESENCE OF ARCHITECT/ENGINEER OR HIS REPRESENTATIVE.
19. SHOP DRAWINGS
   19.1. ALL DATA SHALL BE SUBMITTED AT ONE TIME, BOUND AND INDEXED IN AN ORDERLY MANNER. PRIOR TO STARTING THE WORK, SUBMIT TO THE ARCHITECT/ENGINEER FOR APPROVAL, SIX (6) SETS OF SHOP DRAWINGS OF SERVICE (S.E.S.), PANELS, DISTRIBUTION SECTIONS, LIGHT FIXTURES, MOTOR CONTROL CENTERS, FIRE ALARM SYSTEM, DIMMERS, SOUND SYSTEM, EMERGENCY GENERATOR, DEVICES, TRANSFORMERS, LABELS AS REQUIRED BY 2020 NEC, AND ALL OTHER EQUIPMENT TO BE FABRICATED.
   19.2. PROCURE SHOP DRAWINGS, WIRING DIAGRAMS, ETC., FROM OTHER TRADES INVOLVED WHERE SUCH DRAWINGS MAY FACILITATE AND EXPEDITE THE WORK. AIR CONDITIONING AND MECHANICAL EQUIPMENT SHALL BE WIRED COMPLETE AS PER MANUFACTURER'S WIRING DIAGRAMS FURNISHED BY THE AIR CONDITIONING AND MECHANICAL CONTRACTORS.
20. DRAWINGS OF RECORD (AS-BUILT)
   20.1. AS-BUILT DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE WITH AND IF REQUIRED BY DIVISION 1 - GENERAL REQUIREMENTS.
21. GUARANTEE
   21.1. THE CONTRACTOR SHALL GUARANTEE ALL MATERIAL AND EQUIPMENT TO BE FREE FROM DEFECT OF MATERIAL AND WORKMANSHIP AND SHALL REPLACE OR REPAIR WITHOUT COST TO THE OWNER ALL DEFECTIVE MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE.
22. INSTRUCTIONS
   22.1. CONTRACTOR SHALL INSTRUCT THE OWNER IN THE PROPER OPERATING AND MAINTENANCE OF THE EQUIPMENT.
   22.2. CONTRACTOR SHALL PROVIDE TWO (2) SETS OF OPERATING AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT PROVIDED BY THIS DISCIPLINE, ONLY WHEN SUCH MANUALS ARE AVAILABLE FROM THE MANUFACTURER.
   22.3. ALL MANUALS TO BE BOUND IN A 3-RING BINDER AND TABULATED IN AN ORDERLY MANNER.
23. LABELING
   23.1. LABELS SHALL BE ENGRAVED, BLACK ON WHITE MELAMINE PLASTIC LAMINATE, 1/16" MINIMUM THICKNESS FOR SIGNS UP TO 20 SQUARE INCHES OR 8 INCHES LONG; 1/8" THICK FOR LARGER SIZES. ENGRAVED LEGEND SHALL BE IN WHITE LETTERS ON BLACK FACE WITH MINIMUM 3/16" HIGH LETTERS. LABELS SHALL BE PUNCHED AND FASTENED TO EQUIPMENT WITH ALUMINUM RIVETS OR SELF TAPPING STAINLESS STEEL SCREWS OR NUMBER 10/32 STAINLESS STEEL MACHINE SCREWS WITH NUTS, FLAT AND LOCK WASHERS.
   23.2. LABEL EQUIPMENT WITH NAME, AMPERAGE, VOLTAGE, PHASE, AND WIRES (I.E. PANEL "A", 400A., 120/208V,30,4W). SUBMIT LIST OF ALL LABELS WITH WORDING FOR REVIEW AS PER 2020 NEC
   23.3. EQUIPMENT TO BE LABELED SHALL INCLUDE SERVICE (S.E.S.) AND ALL OVERCURRENT DEVICES, DISTRIBUTION SECTIONS AND ALL OVERCURRENT DEVICES, MOTOR CONTROL CENTERS (M.C.C.) AND ALL OVERCURRENT DEVICES, FUSIBLE PANELBOARDS AND ALL OVERCURRENT DEVICES, PANELS, STARTERS AND TRANSFORMERS. LABEL OTHER EQUIPMENT AS NOTED ON PLANS.

GENERAL NOTES

1. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH 2020 NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL CODES, ORDINANCES AND AMENDMENTS TO N.E.C.
2. ALL WIRING SHALL BE COPPER UNLESS OTHERWISE NOTED. INSULATION SHALL BE TYPE XHHW OR THHN/THWN.
3. ALL PENETRATIONS OF FIRE RESISTIVE FLOORS OR SHAFT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UNDERWRITERS LABORATORY LISTINGS FOR THROUGH PENETRATION FIRESTOP SYSTEMS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS WHICH SHOW COMPLETE CONFORMANCE TO THE U.L. LISTING TO THE INSPECTORS. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION WITH ALL VARIABLES DEFINED.
4. CONTRACTOR IS TO VERIFY CONDITION OF EXISTING INSTALLATIONS BY FIELD INSPECTION. CONTRACTOR IS TO PROVIDE NEW WIRE, CONDUIT, AND BOXES AS REQUIRED WITH NO ADDITIONAL COST.
5. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL UNITS PRIOR TO ROUGH-IN WITH NO ADDITIONAL COST.
6. ALL GENERAL USE RECEPTACLES MOUNTED WITHIN 6' OF A BASIN OR SINK SHALL BE G.F.C.I.
7. PROVIDE BOND WIRE IN ALL RACEWAYS, SIZED PER N.E.C. ART. #250.
8. CONTRACTOR IS TO VERIFY EXACT LOCATIONS, MOUNTING HEIGHTS AND ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT PROVIDED BY OTHER PRIOR TO ROUGH-IN.
9. CONTRACTOR IS TO PROVIDE DISCONNECT SWITCHES, TRANSFORMERS AS REQUIRED, AND FINAL CONNECTIONS TO EQUIPMENT PER OWNER.
10. PROVIDE AND INSTALL ADDITIONAL EXIT SIGNS, EMERGENCY LIGHTS AND NIGHT LIGHTS IF REQUIRED BY GOVERNING INSPECTOR.
11 WHEN ELECTRICAL CONTRACTOR REMOVES AN ITEM CAUSING CIRCUITRY TO OTHER ITEMS TO BE INTERRUPTED, ELECTRICAL CONTRACTOR SHALL PROVIDE NEW CONDUIT, WIRE, BOXES, ETC. AND SHALL RECONNECT ALL ITEMS SO THEY WILL NOT BE INTERRUPTED.
12 WHEN AN ITEM IS SHOWN TO BE RELOCATED, ELECTRICAL CONTRACTOR SHALL EXTEND WIRING AND CONDUIT TO THE APPROPRIATE NEW LOCATION AND PROVIDE ALL NECESSARY JUNCTION BOXES, SPLICES, COVER PLATES, ETC.
13 CONTRACTOR SHALL RELOCATE ALL ELECTRICAL EQUIPMENT IN AREAS BEING REMOVED, REMODELED, REPLACED OR CONSTRUCTED IF EQUIPMENT INTERFERES WITH OPERATION OF CONSTRUCTION, OCCUPANCY OR INTENDED USE OF SPACE.
14 CONTRACTOR SHALL COORDINATE ALL EQUIPMENT RELOCATION WITH OWNER'S REPRESENTATIVE. ALL ELECTRICAL CONNECTIONS REQUIRING AN OUTAGE SHAL BE COORDINATE WITH THE OWNER. CONTRACTOR SHALL PROVIDE NECESSARY TEMPORARY FEEDERS AND ANY ADDITIONAL ELECTRICAL EQUIPMENT REQUIRED TO MAINTAIN CONTINUOUS OPERATION OF EMERGENCY AND/OR FIRE ALARM SYSTEMS.
15 CONTRACTOR SHALL DISCONNECT AND REMOVE EXISTING ELECTRICAL EQUIPMENT ON WALLS BEING REMOVED.
16 ELECTRICAL CONTRACTOR SHALL PROPERLY SUPPORT ALL EXISTING AND NEW CONDUIT FROM NEW SUPPORTS PER NEC ART. 300-11.

ELECTRICAL SYMBOLS

LIGHTING SEE FIXTURE SCHEDULE

- LED RECESSED OR SEMI-RECESSED LED LUMINAIRE
- SURFACE MOUNTED LED LUMINAIRE
- PENDANT MOUNTED LED LUMINAIRE
- LED STRIP LUMINAIRE
- LED WALL MOUNTED LED LUMINAIRE
- LED RECESSED DOWN LIGHT
- LED ACCENT LIGHT
- LED TRACK LIGHTING - SEE PLANS FOR LENGTH AND NUMBER OF HEADS
- LED EXIT SIGN - SHADED PORTION INDICATES FACE; PROVIDE ARROWS AS SHOWN ON DRAWINGS
- LED EMERGENCY LIGHTING BATTERY PACK - SINGLE OR DOUBLE HEAD
- POLE MOUNTED LUMINAIRE WITH POLE AND BASE - NUMBER OF LUMINAIRES AND CONFIGURATIONS INDICATED ON DRAWINGS

SWITCHES & CONTROLS

- S — TOGGLE SWITCH - SINGLE POLE, 3-WAY, 4-WAY, ("P" INDICATES ILLUMINATED HANDLE OR PILOT LIGHT) AT +48" AFF U.N.O.
- S_2 — 2-POLE SINGLE THROW SWITCH AT +48" AFF U.N.O.
- PC — PHOTOCELL - ROOF MOUNTED FACING NORTH
- S_T — TIMESWITCH - NEMA 1, FLUSH MOUNTED, HINGED ENCLOSURE WITH LOCKABLE COVER
- S_{DM} — DIMMER SWITCH - MOUNT AT +48" AFF. TRACK LIGHTING SHALL HAVE "LUTRON" NP2000 DIMMER OR EQUAL.
- MS — LIGHTING MOTION SENSOR, CEILING MOUNTED.
- PC — LIGHTING MOTION SENSOR WITH PHOTOCELL, CEILING MOUNTED.

WIRING

- CIRCUIT IN C

Plot Date: 4/8/2025 8:43 AM | File Location: S:\Projects\4XXX-4999\4204\4204 Yuma County Foothills Library HVAC Replacement\Sheets\Electrical\4204-E1.2
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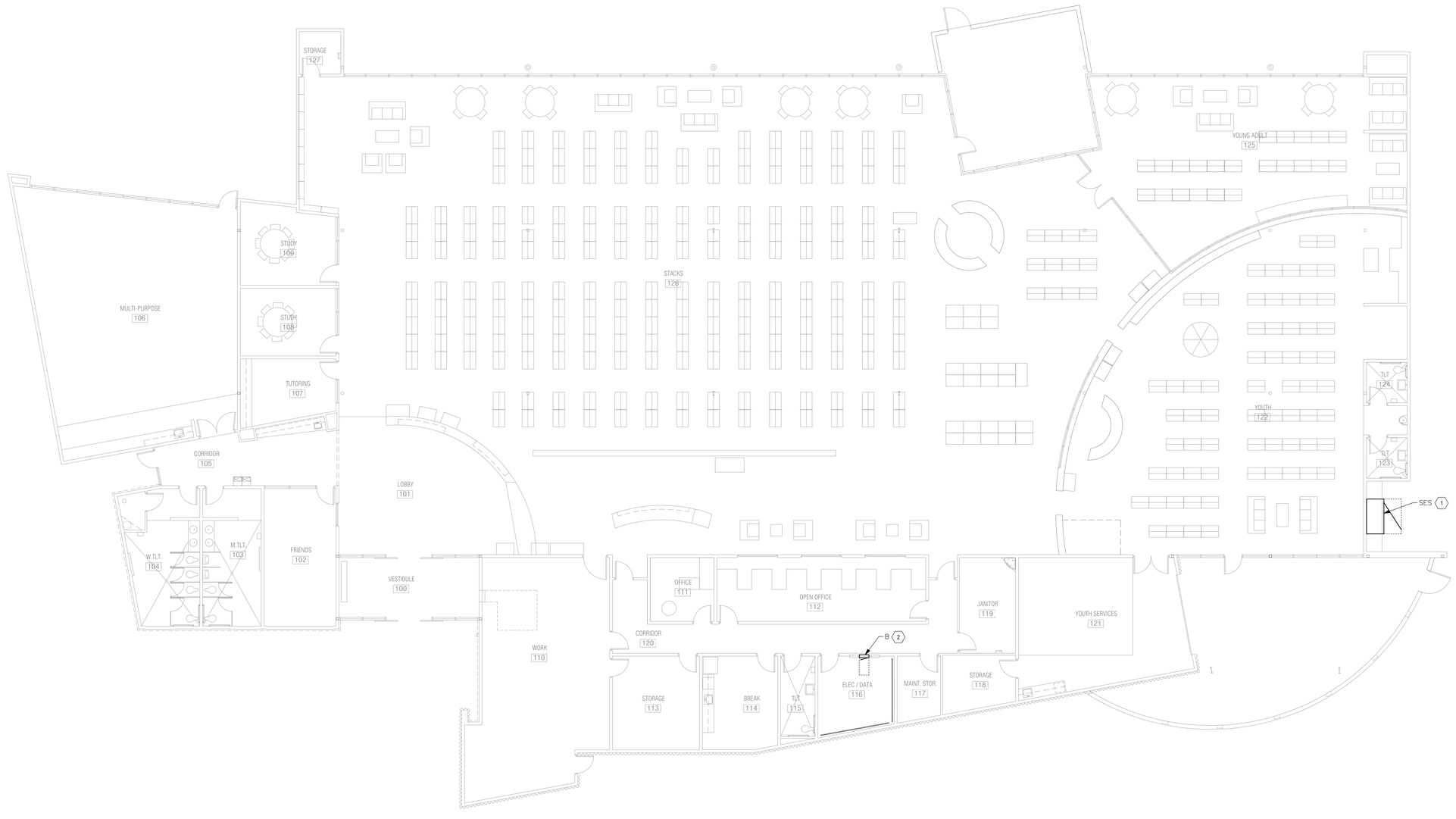
KEYNOTES

1. EXISTING "SES" SWITCHBOARD. NO NEW WORK, REVISED LOAD.
2. EXISTING PANEL BOARD "B". NEW WORK, REVISED LOAD.

GENERAL NOTES

1. NOT USED.



1 ELECTRICAL OVERALL FLOOR PLAN

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

N

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STERNCO

Registered International Engineer (Electrical)
CERTIFICATE NO.
31172
DAVID G.
WATSON
4/9/2025
REGISTERED
PROFESSIONAL
ENGINEER

PROJECT INFO:
YUMA COUNTY FOOTHILLS LIBRARY
HVAC REPLACEMENT
13226 E. SOUTH FRONTAGE ROAD
YUMA, AZ 85367

REVISIONS:

ISSUED FOR:

PROJ. NO. 4204
DRAWN BY: STERNCO
DESIGN BY: STERNCO
CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: ELECTRICAL OVERALL FLOOR PLAN

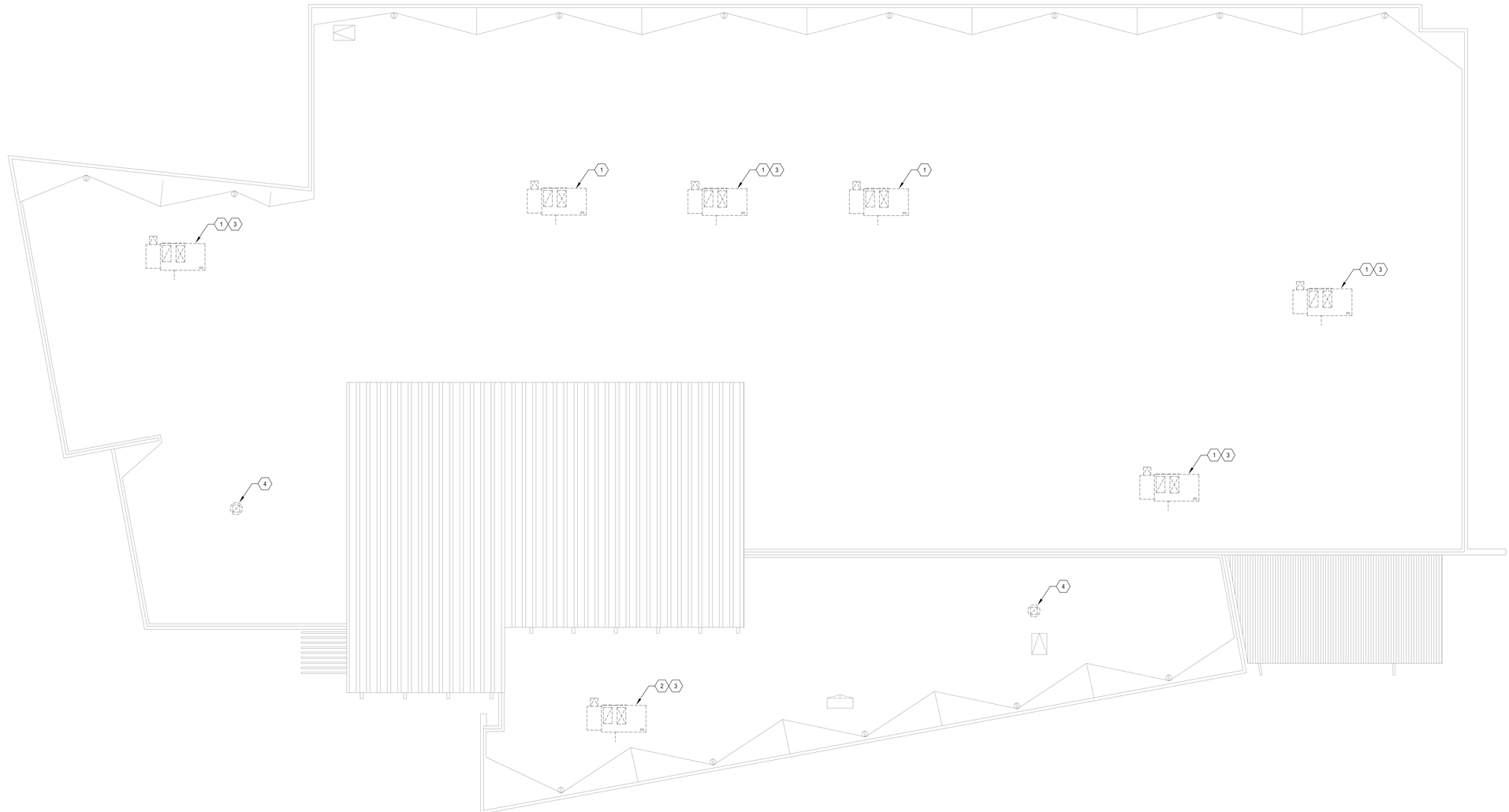
SHEET NO:
E1.2

KEYNOTES

1. EXISTING MECHANICAL UNIT TO BE DEMOLISHED. DISCONNECT EXISTING FEEDER CONDUIT AND CONDUCTORS AND MAKE SAFE FOR RECONNECTION TO NEW UNIT. SEE ELECTRICAL NEW WORK ROOF PLAN FOR RECONNECTION TO NEW UNIT.
2. EXISTING MECHANICAL UNIT TO BE DEMOLISHED. DEMOLISH EXISTING FEEDER CONDUCTORS BACK TO SERVING PANEL. EXISTING CONDUIT TO REMAIN. SEE ELECTRICAL NEW WORK ROOF PLAN FOR RECONNECTION TO NEW UNIT.
3. DISCONNECT EXISTING NEC REQUIRED WORK RECEPTACLE 120V BRANCH CIRCUIT CONDUIT AND CONDUCTORS AND MAKE SAFE AND PROTECT IN PLACE FOR RECONNECTION TO NEW NEC REQUIRED WORK RECEPTACLE. SEE ELECTRICAL NEW WORK ROOF PLAN FOR RECONNECTION TO NEW RECEPTACLE.
4. EXISTING EXHAUST FAN TO BE DEMOLISHED. DISCONNECT EXISTING BRANCH CIRCUIT CONDUCTORS AND MAKE SAFE FOR RECONNECTION TO NEW EXHAUST FAN. SEE ELECTRICAL NEW WORK ROOF PLAN FOR RECONNECTION TO NEW EXHAUST FAN.

GENERAL NOTES

1. ALL OF THE MECHANICAL EQUIPMENT DENOTED ON THIS SHEET IS SHOWN FOR REFERENCE ONLY. SEE MECHANICAL DRAWINGS FOR EQUIPMENT EXACT LOCATIONS PRIOR TO ROUGH IN.
2. EXISTING CONDITIONS ELECTRICAL INFORMATION AND DATA SHOWN ON THIS SHEET HAS BEEN DERIVED FROM RECORD DRAWINGS AND FIELD OBSERVATIONS. ALL EXISTING CONDITIONS, ELECTRICAL INFORMATION AND DATA SHALL BE FIELD VERIFIED BY THE ELECTRICAL CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK.



1 ELECTRICAL DEMOLITION ROOF PLAN

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

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10-9-2025
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REVISIONS:

ISSUED FOR:

PROJ. NO. 4204
DRAWN BY: STERNCO
DESIGN BY: STERNCO
CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE:
ELECTRICAL DEMOLITION ROOF PLAN

SHEET NO:
E2.1

Plot Date: 4/8/2025 8:43 AM | File Location: S:\Projects\0024\0004\0420-4204 Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheet\E-Electrical\4204-E2.1
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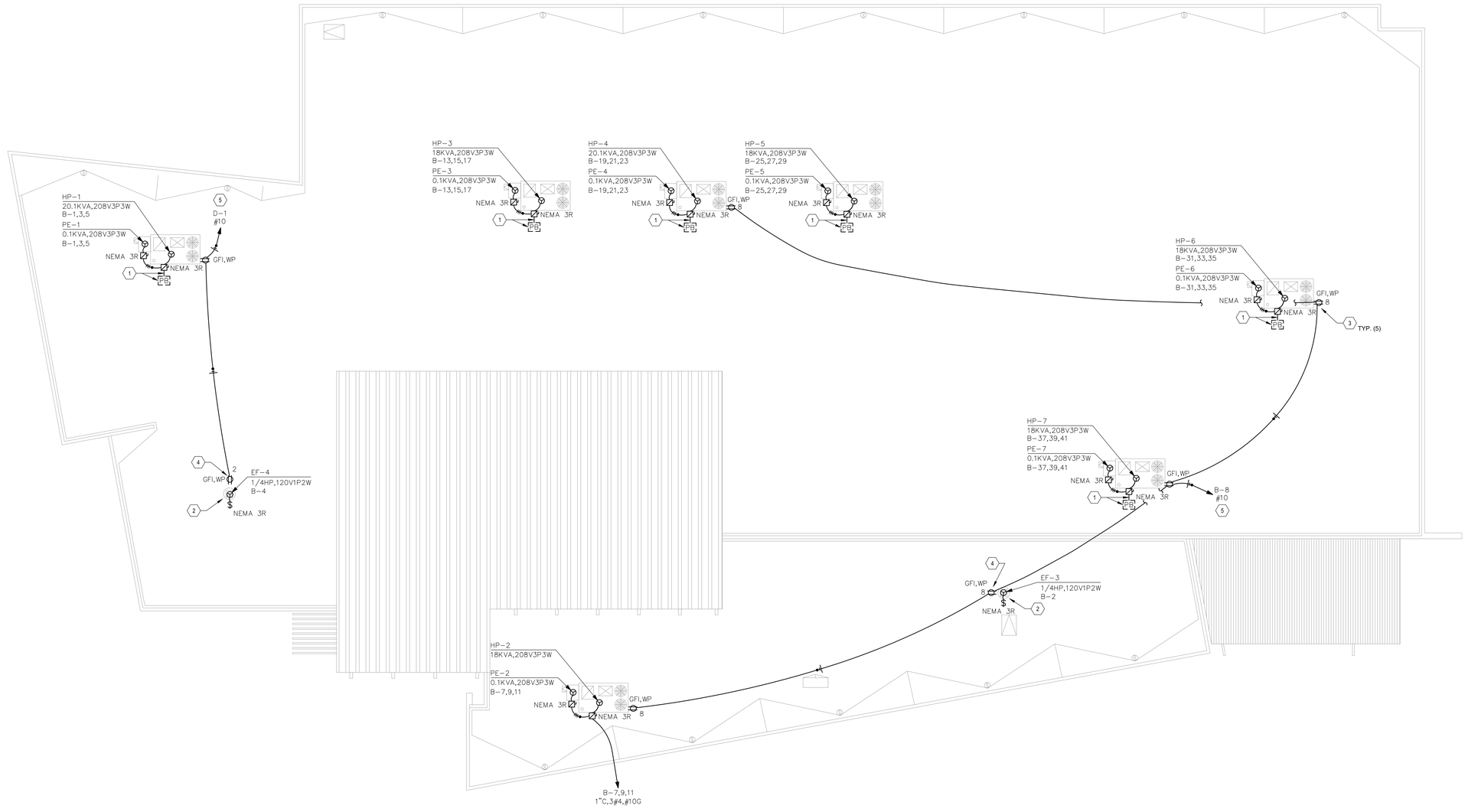
KEYNOTES

1. PROVIDE AND INSTALL BELOW-ROOF MOUNTED U.L. LISTED PULLBOX AND NEW DISCONNECT(S) AS SHOWN. EXTEND MADE SAFE FEEDER CONDUIT AND CONDUCTORS VIA PULLBOX AND RECONNECT TO NEW MECHANICAL UNIT AS SHOWN. FIELD VERIFY EXISTING CONDITIONS AND REQUIREMENTS PRIOR TO NEW WORK.
2. RECONNECT EXISTING CONDUIT AND CONDUCTOR TO NEW EXHAUST FAN AS SHOWN.
3. NEW NEC REQUIRED WORK RECEPTACLE PROVIDED AND INSTALLED WITH MECHANICAL UNIT. RECONNECT EXISTING MADE SAFE BRANCH CIRCUIT CONDUIT AND CONDUCTORS AS SHOWN.
4. PROVIDE AND INSTALL NEW NEC REQUIRED WORK RECEPTACLE AND EXTEND EXISTING BRANCH CIRCUIT AS SHOWN. ROUTE CONDUIT AND CONDUCTORS BELOW ROOF DECK. NO ROOF SURFACE MOUNTED CONDUIT SHALL BE PERMITTED.
5. EXISTING ROOFTOP WORK RECEPTACLE BRANCH CIRCUIT HOMERUN. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH IN.

GENERAL NOTES

1. ALL EQUIPMENT, CONDUIT, AND CONDUCTORS SHOWN ON THIS SHEET ARE NEW U.O.N.
2. ALL OF THE MECHANICAL EQUIPMENT DENOTED ON THIS SHEET IS SHOWN FOR REFERENCE ONLY. SEE MECHANICAL DRAWINGS FOR EQUIPMENT EXACT LOCATIONS PRIOR TO ROUGH IN.
3. EXISTING CONDITIONS ELECTRICAL INFORMATION AND DATA SHOWN ON THIS SHEET HAS BEEN DERIVED FROM RECORD DRAWINGS AND FIELD OBSERVATIONS. ALL EXISTING CONDITIONS, ELECTRICAL INFORMATION AND DATA SHALL BE FIELD VERIFIED BY THE ELECTRICAL CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK.
4. ROOF-SURFACE MOUNTED CONDUIT SHALL NOT BE PERMITTED ON THIS PROJECT. ALL CONDUIT SHALL BE ROUTED BELOW DECK.



1 ELECTRICAL NEW WORK ROOF PLAN

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

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YUMA, AZ 85367

REVISIONS:

ISSUED FOR:

PROJ. NO. 4204 | DRAWN BY: STERNCO
DESIGN BY: STERNCO | CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: ELECTRICAL NEW WORK ROOF PLAN

SHEET NO: E2.2

Plt Date: 4/8/2024 8:43 AM | File Location: S:\Projects\YUMA\4204\Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheet\E-Electrical\4204-E2.2
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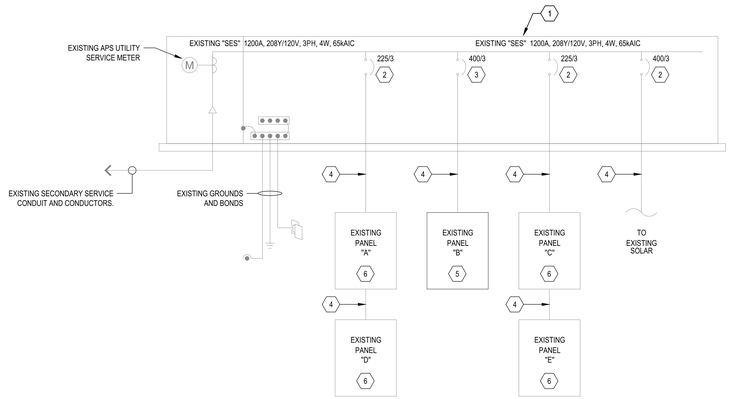

1 SINGLE LINE DIAGRAM

SCALE:NTS

B — 5

ROOM
MOUNTING FLUSH
FED FROM UTILITY
NOTE

VOLTS 208Y/120V 3P 4W
BUS AMPS 400
NEUTRAL 100%

AIC
MAIN BKR MLO
LUGS STANDARD

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	70/3	HP-1, PE-1	6.73			2	20/1	EF-3	0.696		
3	|			6.73		4	20/1	EF-4		0.696	
5	|				6.73	6	15/1	EXISTING STARLINK 1			0.1
7	60/3	HP-2, PE-2	6.03			8	20/1	ROOFTOP RECEPTACLE	0.9		
9	|			6.03		10	25/1	EXISTING HAND DRYER		1	
11	|				6.03	12	20/1	EXISTING STARLINK 2			0.1
13	60/3	HP-3, PE-3	6.03			14	15/1	EXISTING HVAC CONTROL	0.1		
15	|			6.03		16	15/1	EXISTING HVAC CONTROL		0.1	
17	|				6.03	18	15/1	EXISTING HVAC CONTROL			0.1
19	70/3	HP-4, PE-4	6.73			20	15/1	EXISTING HVAC CONTROL	0.1		
21	|			6.73		22	15/1	EXISTING HVAC CONTROL		0.1	
23	|				6.73	24	20/2	EXISTING CCU/CFC			0.8
25	60/3	HP-5, PE-5	6.03			26	|		0.8		
27	|			6.03		28	25/1	EXISTING LOAD		1	
29	|				6.03	30	20/1	EXISTING LOAD			1
31	60/3	HP-6, PE-6	6.03			32	20/2	EXISTING PARKING LIGHTS	0.25		
33	|			6.03		34	|			0.25	
35	|				6.03	36	20/1	EXISTING I.T. RECPT			0.5
37	60/3	HP-7, PE-7	4.84			38	20/1	EXISTING I.T. RECPT	0.5		
39	|			4.84		40	20/1	EXISTING I.T. RECPT		0.5	
41	|				4.84	42	20/1	EXISTING I.T. RECPT			0.5
								TOTAL CONNECTED KVA BY PHASE	45.8	46.1	45.5

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LARGEST MOTOR	20.1	5.03	(25%)	RECEPTACLES	0.9	0.9	(50%>10)
MOTORS	129	129	(100%)	NONCONTINUOUS	7.8	7.8	(100%)
				TOTAL LOAD		142	
				BALANCED 3-PHASE LOAD		395 A	

ELECTRICAL EQUIPMENT SCHEDULE

CALLOUT	SYMBOL	NEMA	VOLTS	AMPS	KVA	HP	DISCONNECT	DISCONNECT FUSE SIZE	DISCONNECT FUSE TYPE
EF-3		NEMA 3R	120V 1P 2W	5.8	0.7	1/4 HP	TOGGLE SWITCH		
EF-4		NEMA 3R	120V 1P 2W	5.8	0.7	1/4 HP	TOGGLE SWITCH		
HP-1		NEMA 3R	208V 3P 3W	55.79	20.1		FUSED	70	RK5
HP-2		NEMA 3R	208V 3P 3W	49.96	18		FUSED	60	RK5
HP-3		NEMA 3R	208V 3P 3W	49.96	18		FUSED	60	RK5
HP-4		NEMA 3R	208V 3P 3W	55.79	20.1		FUSED	70	RK5
HP-5		NEMA 3R	208V 3P 3W	49.96	18		FUSED	60	RK5
HP-6		NEMA 3R	208V 3P 3W	49.96	18		FUSED	60	RK5
HP-7		NEMA 3R	208V 3P 3W	49.96	18		FUSED	60	RK5
PE-1		NEMA 3R	208V 3P 3W	0.28	0.1		FUSED	20	RK5
PE-2		NEMA 3R	208V 3P 3W	0.28	0.1		FUSED	20	RK5
PE-3		NEMA 3R	208V 3P 3W	0.28	0.1		FUSED	20	RK5
PE-4		NEMA 3R	208V 3P 3W	0.28	0.1		FUSED	20	RK5
PE-5		NEMA 3R	208V 3P 3W	0.28	0.1		FUSED	20	RK5
PE-6		NEMA 3R	208V 3P 3W	0.28	0.1		FUSED	20	RK5
PE-7		NEMA 3R	208V 3P 3W	0.28	0.1		FUSED	20	RK5

KEYNOTES

1. EXISTING SERVICE ENTRANCE SWITCHBOARD, 1200A , 208Y/120V 3ϕ 4W 65kAIC. REVISED LOAD.
2. EXISTING CIRCUIT BREAKER OR BUSSED SPACE, NO NEW WORK, NO NEW LOAD.
3. EXISTING CIRCUIT BREAKER OR BUSSED SPACE, NO NEW WORK, REVISED LOAD.
4. EXISTING CONDUIT AND FEEDERS, NO NEW WORK.
5. EXISTING PANEL BOARD "B", NEW WORK, REVISED LOAD.
6. EXISTING PANEL BOARD, NO NEW WORK, NO NEW LOAD.
7. PROVIDE AND INSTALL NEW CIRCUIT BREAKER AS SHOWN TO MATCH EXISTING PANEL BOARD MANUFACTURER TYPE AND EXISTING PANEL BOARD A.I.C. RATING. NEW WORK, REVISED LOAD.

GENERAL NOTES

1. ALL CONDUCTORS FOR THIS PROJECT SHALL BE COPPER.
2. INSULATION FOR CONDUCTORS SHALL BE "THWN / THHN", 75C.
3. THE ELECTRICAL DISTRIBUTION SYSTEM SHOWN ON THIS SHEET IS A FULLY RATED SYSTEM. SERIES RATING OR DEVICE DE-RATING WILL NOT BE ACCEPTED.
4. EACH BRANCH CIRCUIT THAT SUPPLIES NON-LINEAR LOADS, TO INCLUDE COMPUTERS, COMMUNICATIONS RACKS, VFD'S, ETC. SHALL HAVE A DEDICATED NEUTRAL.
5. MULTI-WIRE BRANCH CIRCUITS FOR GENERAL LOADS CAN INCLUDE UP TO THREE PHASE CONDUCTORS WITH A SHARED NEUTRAL IF AN IDENTIFIED HANDLE TIE IS PROVIDED TO A SIMULTANEOUSLY DISCONNECT ALL SINGLE POLE CIRCUIT BREAKERS THAT SUPPLY INDIVIDUAL PHASE CONDUCTORS OF THE MULTI-WIRE CIRCUIT.

LOAD		TOTAL kVA / AMPS
EXISTING "SES" APS PEAK METER READING OF 95 kVA WITH NEC REQUIRED 125% DEMAND	=	119 kVA / 330.6 AMPS
EXISTING MECHANICAL LOAD REMOVED	=	133 kVA / 369.4 AMPS
NEW MECHANICAL LOAD ADDED	=	134 kVA / 372.2 AMPS
TOTAL 480V 3-PHASE LOAD	=	120 kVA / 333.4 AMPS

334 AMPS ON AN 1200 AMP SERVICE IS NEC COMPLIANT

2 EXISTING "SES" LOAD SUMMARY

SCALE:NONE

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International Engineering Certification
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31172
DAVID G. WATSON
11-9-2023
EXPIRATION DATE
ARIZONA U.S.A.

PROJECT INFO:
YUMA COUNTY FOOTHILLS LIBRARY
HVAC REPLACEMENT
13226 E. SOUTH FRONTAGE ROAD
YUMA, AZ 85367

REVISIONS:
ISSUED FOR:

PROJ. NO. 4204
DRAWN BY: STERNCO
DESIGN BY: STERNCO
CHECKED BY: JRS
DRAWING SCALE: AS NOTED

SHEET TITLE: ELECTRICAL SINGLE LINE DIAGRAM AND CALCULATIONS

SHEET NO:
E3.1

Plot Date: 4/8/2025 8:43 AM | File Location: S:\Projects\0XX-0999\4204\34\Yuma County Foothills Library HVAC Replacement\Yuma County Foothills Library HVAC Replacement\Sheets\E-Electrical\4204 E3.1
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