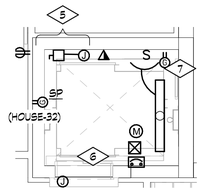



ELEVATOR POWER PLAN
1/4" = 1'-0"

## DETAIL NOTES

1. PROVIDE QUAD WITH COMBINATION DUPLEX RECEPTACLE WITH HALF SWITCHED PORT. TOP RECEPTACLE IS TO BE SWITCHED PORTION FOR GARBAGE DISPOSAL OPERATION. PROVIDE TOTAL OF 3 UNSWITCHED RECEPTACLES.
2. TYPICAL UNIT ELECTRICAL PANEL. COORDINATE PANEL MOUNTING HEIGHT WITH ADA REQUIREMENTS (IN ACCESSIBLE UNITS). MAINTAIN MINIMUM CLEARANCE TO FRONT OF PANEL AS REQUIRED PER NEC, NO PIPING, DUCTWORK OR OTHER TRADES WORK TO BE ROUTED OVER PANEL. ALL WORK IN THIS AREA TO BE COORDINATED WITH G.C. AND E.C. PROPOSED ELECTRICAL SERVICE/GEAR. FIELD VERIFY EXACT LOCATION, MAINTAIN REQUIRED CLERANCES PER NEC.
3. UNIT TELEPHONE/CABLE TERMINAL; FIELD VERIFY LOCATION AND MOUNTING HEIGHT ON WALL WITH TELECOM SERVICE PROVIDER. LOCATE DUPLEX RECEPTACLE BELOW TERMINAL FOR CONNECTION OF TELECOM EQUIPMENT. RE: TELEPHONE/CABLE DETAIL FOR ADDITIONAL INFORMATION.
4. HOISTING MOTOR LOCATED IN ELEVATOR SHAFT; PROVIDE NON-FUSED DISCONNECT. FIELD VERIFY AND COORDINATE THE LOCATION & CONNECTION REQUIREMENTS WITH THE ELEVATOR MFG'S INSTALLATION SPECIFICATIONS PRIOR TO ROUGH-IN.
5. PROVIDE TELEPHONE, POWER, CIRCUIT(S), WIRING, J-BOX(ES) AND CONNECTION FOR ELEVATOR CAR. PROVIDE OVER CURRENT PROTECTION AND A LOCKABLE DISCONNECTING MEANS FOR ELEVATOR CAR RECEPTACLES, LIGHTING AND VENTILATION. THE E.C. SHALL FIELD VERIFY AND COORDINATE EXACT LOCATION AND CONNECTION REQUIREMENTS WITH THE ELEVATOR VENDOR PRIOR TO ROUGH-IN. LABEL SWITCH '120V ELEVATOR CAR DISCONNECT'.
6. PROVIDE LOCKABLE SHUNT TRIP BREAKER FOR ELEVATOR MOTOR, LOCATED WITHIN 15' OF DOOR. PROVIDE CONTROL WIRING AS REQUIRED BY LOCAL INSPECTOR.
7. PROVIDE GFCI TYPE RECEPTACLE; DO NOT CONNECT LUMINAIRE TO LOAD SIDE OF GFCI.
8. PROVIDE COUNTERTOP POP-UP 15A GFCI-PROTECTED RECEPTACLE.
9. COORDINATE RADIANT FLOOR HEAT SIZE AND LOCATION WITH ARCHITECTURAL PLANS. FIELD VERIFY CONNECTION LOCATION.
10. BASIS OF DESIGN FOR STEAMER: AMEREC AK8. COORDINATE INSTALLATION AND VERIFY REQUIREMENTS WITH MANUFACTURER.
11. TOWEL WARMER ASSUMED TO BE 150W/UNIT. COORDINATE ACTUAL WATTAGE AND VERIFY REQUIREMENTS WITH MANUFACTURER. FIELD VERIFY CONNECTION LOCATION.
12. POWER FOR ELEVATOR SMOKE CURTAIN. COORDINATE CONNECTION TYPE AND INSTALLATION REQUIREMENTS WITH MANUFACTURER.
13. POWER FOR WINDOW SHADE. COORDINATE WITH MANUFACTURER/INSTALLER FOR POWER AND LOW VOLTAGE REQUIREMENTS.

## GENERAL NOTES

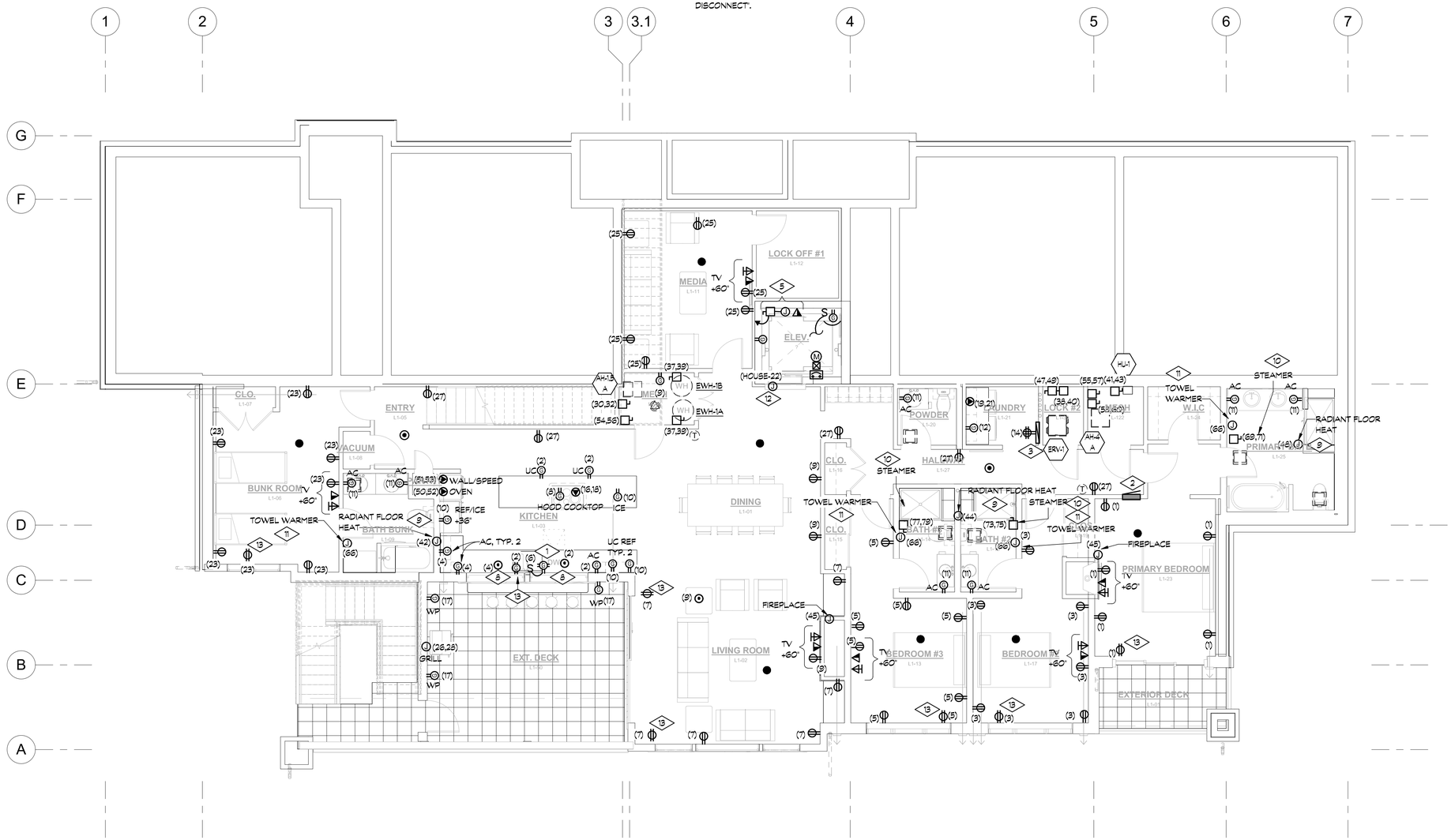
A. ELECTRICAL CONDUITS, WATER, SEWER AND GAS LINES MUST FIT WITHIN WALLS. CONFLICTS WITH OTHER TRADES MUST BE COORDINATED OR WORK WILL BE REDONE.

B. GFCI PROTECTION: BASIS OF DESIGN IS GFCI PROTECTION PROVIDED AT PANEL. EC MAY PROVIDE ALTERNATE PRICING WHERE PERMITTED BY CODE TO PROVIDE DOWNSTREAM GFCI PROTECTION OF DEVICES WITH A SINGLE GFCI RECEPTACLE. (DEDICATED NEUTRAL SHALL BE PROVIDED FOR GFCI BREAKERS)

C. COORDINATE ALL DEVICE AND FIXTURE LOCATIONS WITH FURNITURE, EQUIPMENT, MILLWORK AND MECHANICAL SYSTEM (DUCTWORK) LAYOUT PRIOR TO ROUGH-IN.

D. ALL EXTERIOR ELECTRICAL COMPONENTS SHALL MEET ALL NEC INSTALLATION AND LABELING REQUIREMENTS FOR WET LOCATIONS.

E. ALL RECEPTACLES TO BE LABELED WITH PANEL CIRCUIT ID ON BACKSIDE OF COVER PLATE.




LOWER LEVEL 1 POWER PLAN
3/16" = 1'-0"



**REVISIONS**

| No. | Description | Date |
|---|---|---|
| | | |

# ASTRID BUILDING 7

STEAMBOAT SPRINGS, COLORADO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|---|---|
| **Job Number:** | 23055-7 |
| **Date:** | 03/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | EM |

**Project Phase**
PERMIT

**Sheet Title**
LOWER LEVEL 1 POWER PLAN

**Sheet Number**
E1.1

3/21/2024 1:28:26 PM

## DETAIL NOTES THIS SHEET

1. STAIRS SHALL BE ON EM BACKUP. SEE MAIN LEVEL LIGHTING PLAN FOR REFERENCE.

## GENERAL LIGHTING NOTES

A. E.C. SHALL VERIFY THE EXACT LOCATION, MOUNTING HEIGHTS AND QUANTITY OF ALL FIXTURES AND DEVICES WITH THE ARCHITECTURAL DRAWINGS.

B. E.C. SHALL VERIFY FIXTURE LOCATION, DETAILS, AND QUANTITY OF ALL FIXTURES WITH THE LIGHTING DESIGNER DRAWINGS.

C. SOME LIGHTING FIXTURES AND DEVICES ARE SHOWN OFFSET ON THE PLAN FOR GRAPHIC PURPOSES. E.C. SHALL COORDINATE THE EXACT LOCATION AND ROUGH-IN HEIGHT OF ALL FIXTURES AND DEVICES.

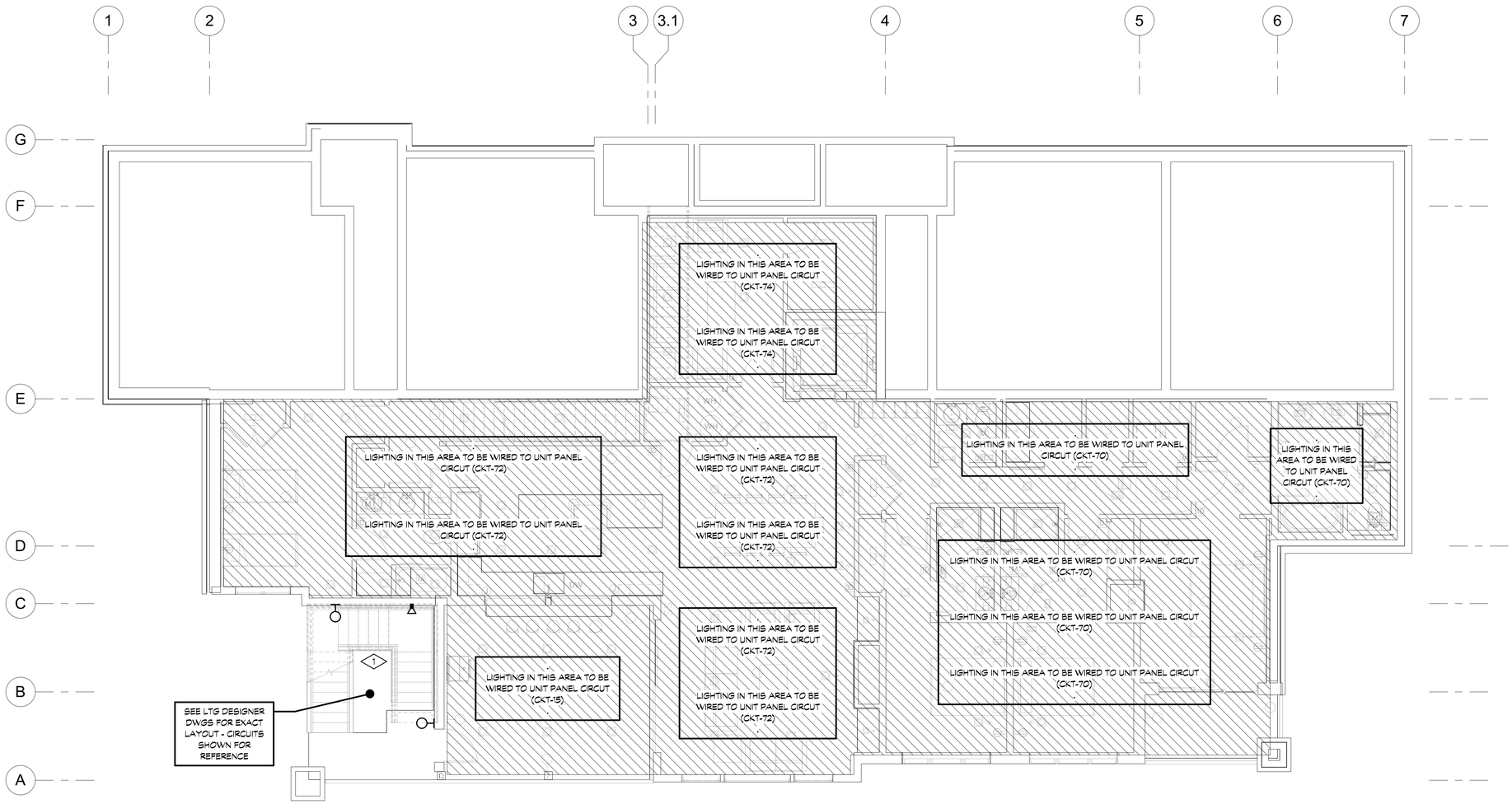
D. ALL EMERGENCY EGRESS LIGHTING SHALL COMPLY WITH 2021 - IBC 1008.2.1

E. ALL EXTERIOR LIGHTING FIXTURES SHALL BE INSTALLED, SHIELDED AND/OR CONTROLLED IN COMPLIANCE WITH LOCAL ORDINANCES.

F. ALL EXTERIOR ELECTRICAL COMPONENTS SHALL MEET ALL NEC INSTALLATION AND LABELING REQUIREMENTS FOR WET LOCATIONS.

G. COORDINATE REQUIRED BLOCKING FOR ADDED CEILING FANS WITH LANDLORD'S REPRESENTATIVE.

H. LIGHTING SYSTEM FUNCTIONALITY TESTING/COMMISSIONING SHALL BE PERFORMED IN ACCORDANCE WITH IECC 408.3, ADDITIONAL LOCAL JURISDICTIONAL REQUIREMENTS TO BE CONFIRMED WITH BUILDING OFFICIAL PRIOR TO COMPLETION OF PROJECT.




LOWER LEVEL 1 LIGHTING PLAN
3/16" = 1'-0"

3/21/2024 1:28:27 PM

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38983
03/21/2024



**REVISIONS**

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# ASTRID BUILDING 7

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| **Job Number:** | 23035-7 |
| **Date:** | 03/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | EM |

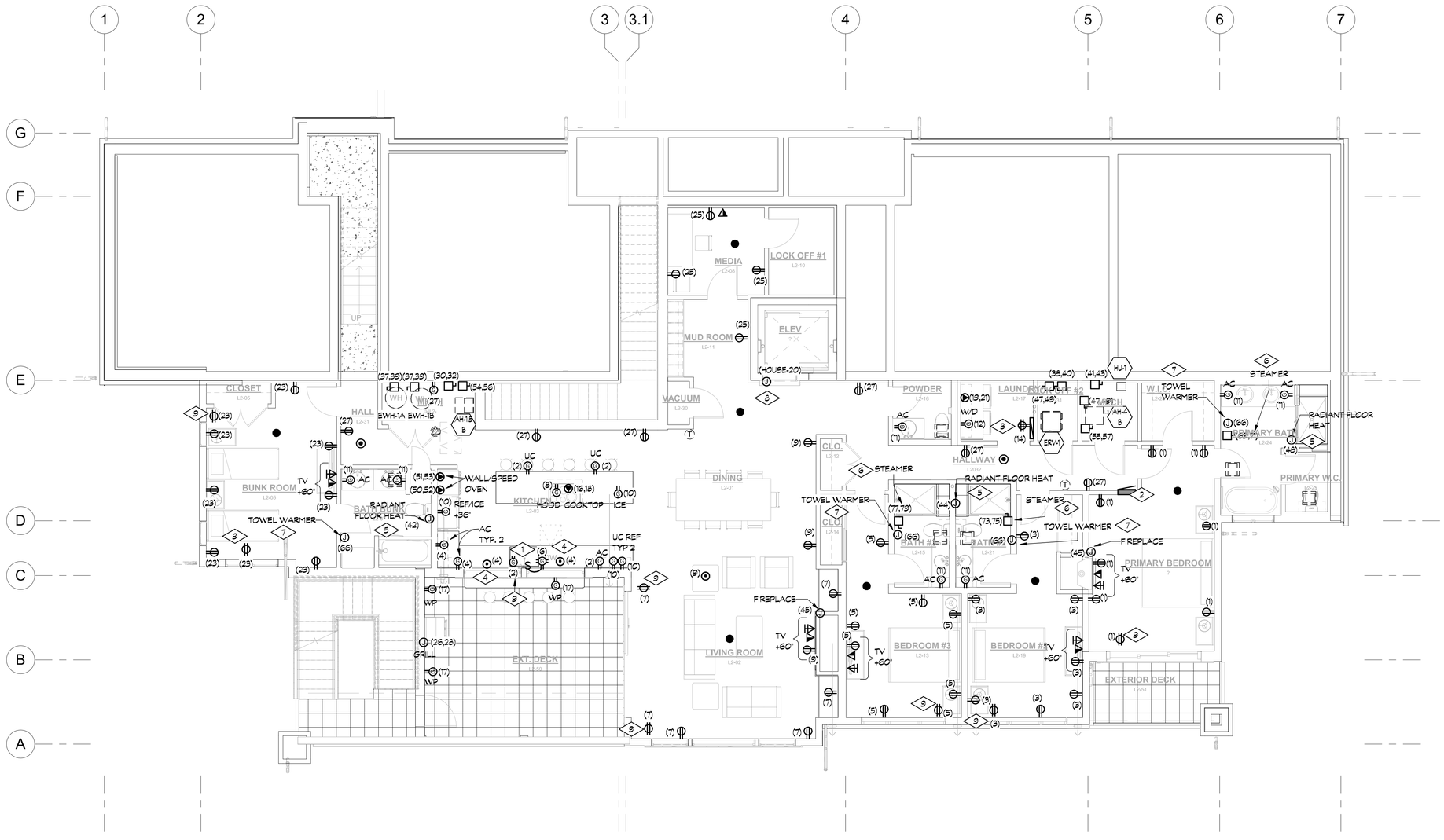
**Project Phase**
PERMIT

**Sheet Title**
LOWER LEVEL 1 LIGHTING PLAN

**Sheet Number**
E1.2

## DETAIL NOTES

1. PROVIDE QUAD WITH COMBINATION DUPLEX RECEPTACLE WITH HALF SWITCHED PORT. TOP RECEPTACLE IS TO BE SWITCHED PORTION FOR GARBAGE DISPOSAL OPERATION. PROVIDE TOTAL OF 3 UNSWITCHED RECEPTACLES.
2. TYPICAL UNIT ELECTRICAL PANEL, COORDINATE PANEL MOUNTING HEIGHT WITH ADA REQUIREMENTS (IN ACCESSIBLE UNITS). MAINTAIN MINIMUM CLEARANCE TO FRONT OF PANEL AS REQUIRED PER NEC, NO PIPING, DUCTWORK OR OTHER TRADES WORK TO BE ROUTED OVER PANEL. ALL WORK IN THIS AREA TO BE COORDINATED WITH G.C. AND E.C. PROPOSED ELECTRICAL SERVICE/GEAR. FIELD VERIFY EXACT LOCATION, MAINTAIN REQUIRED CLEARANCES PER NEC.
3. UNIT TELEPHONE/CABLE TERMINAL; FIELD VERIFY LOCATION AND MOUNTING HEIGHT ON WALL WITH TELECOM SERVICE PROVIDER. LOCATE DUPLEX RECEPTACLE BELOW TERMINAL FOR CONNECTION OF TELECOM EQUIPMENT. RE: TELEPHONE/CABLE DETAIL FOR ADDITIONAL INFORMATION.
4. PROVIDE COUNTERTOP POP-UP 15A GFCI-PROTECTED RECEPTACLE.
5. COORDINATE RADIANT FLOOR HEAT SIZE AND LOCATION WITH ARCHITECTURAL PLANS. FIELD VERIFY CONNECTION LOCATION.
6. BASIS OF DESIGN FOR STEAMER: AMEREC AK8. COORDINATE INSTALLATION AND VERIFY REQUIREMENTS WITH MANUFACTURER.
7. TOWEL WARMER ASSUMED TO BE 150W/UNIT. COORDINATE ACTUAL WATTAGE AND VERIFY CONNECTION REQUIREMENTS WITH MANUFACTURER. FIELD VERIFY CONNECTION LOCATION.
8. POWER FOR ELEVATOR SMOKE CURTAIN. COORDINATE CONNECTION TYPE AND INSTALLATION REQUIREMENTS WITH MANUFACTURER.
9. POWER FOR WINDOW SHADE. COORDINATE WITH MANUFACTURER/INSTALLER FOR POWER AND LOW VOLTAGE REQUIREMENTS.




LOWER LEVEL 2 POWER PLAN
3/16" = 1'-0"

3/21/2024 1:28:29 PM

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ERIC DEAN SMITH
38983
03/21/2024
PROFESSIONAL ENGINEER

**NOTICE: DUTY OF COOPERATION**

Release of these plans contemplates further cooperation among the owner, his contractor and the architect. Design and construction are complex. Although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is imperfect and every contingency cannot be anticipated. Any ambiguity or discrepancy discovered by the use of these plans shall be reported immediately to the architect. Failure to notify the architect compounds misunderstanding and increases construction costs. A failure to cooperate by a simple notice to the architect shall relieve the architect from responsibility for the consequences. Changes made from the plans without consent of the architect are unauthorized and shall relieve the architect of responsibility for all consequences arriving out of such changes.



**REVISIONS**

| No. | Description | Date |
|---|---|---|
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# ASTRID BUILDING 7

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|---|---|
| **Job Number:** | 23055-7 |
| **Date:** | 05/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | EM |

**Project Phase**
PERMIT

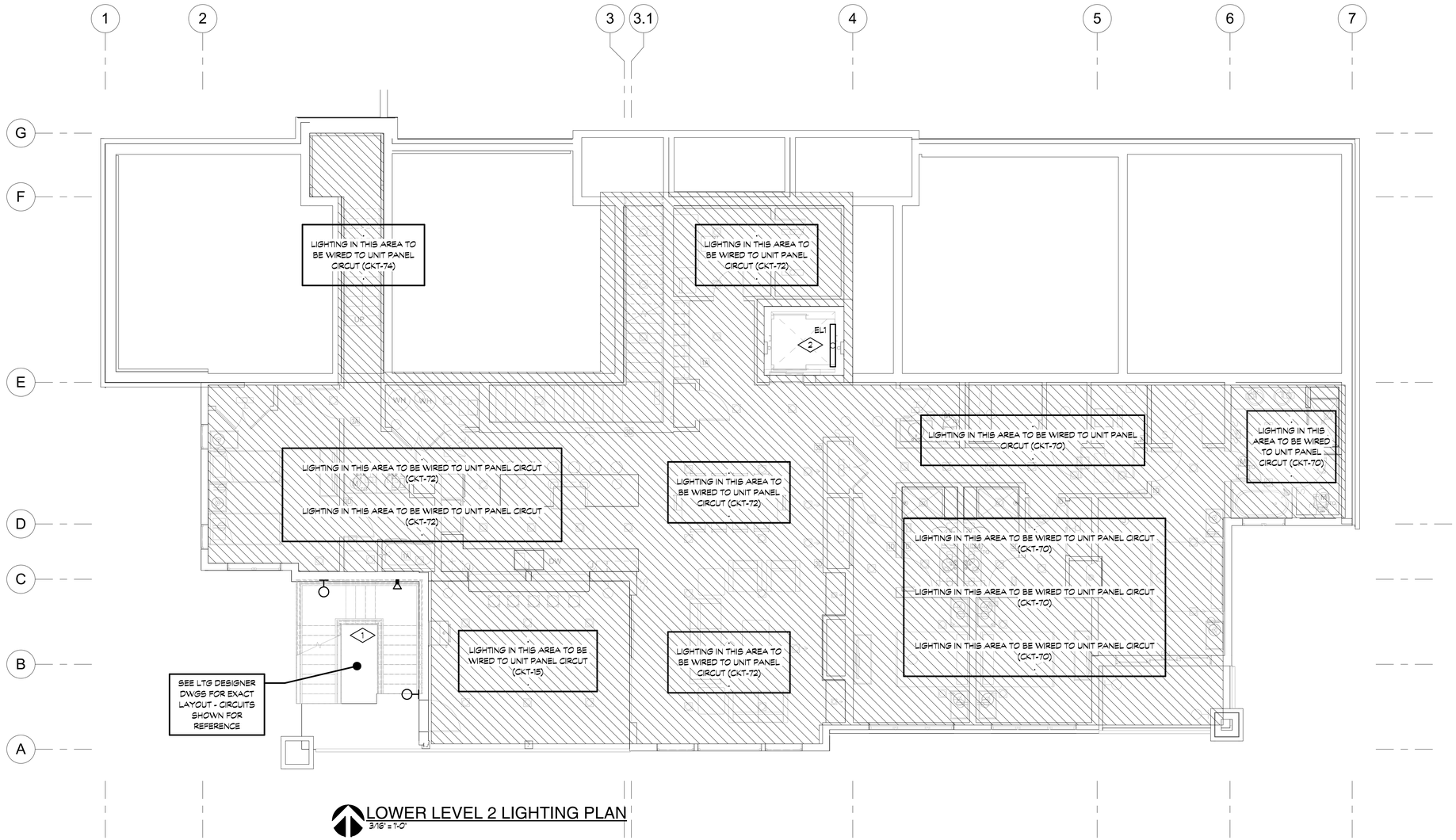
**Sheet Title**
LOWER LEVEL 2 POWER PLAN

**Sheet Number**
E2.1

## DETAIL NOTES THIS SHEET

1. STAIRS SHALL BE ON EM BACKUP. SEE MAIN LEVEL LIGHTING PLAN FOR REFERENCE.

2. WIRE TO ELEVATOR SHAFT 120V POWER. HOUSE PANEL CKT-2. SEE POWER PLAN FOR REFERENCE.




## LOWER LEVEL 2 LIGHTING PLAN
3/16" = 1'-0"

3/21/2024 1:28:31 PM

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03/21/2024



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# ASTRID BUILDING 7

STEAMBOAT SPRINGS, COLORADO


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| **Job Number:** | 23055-7 |
| **Date:** | 03/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | EM |

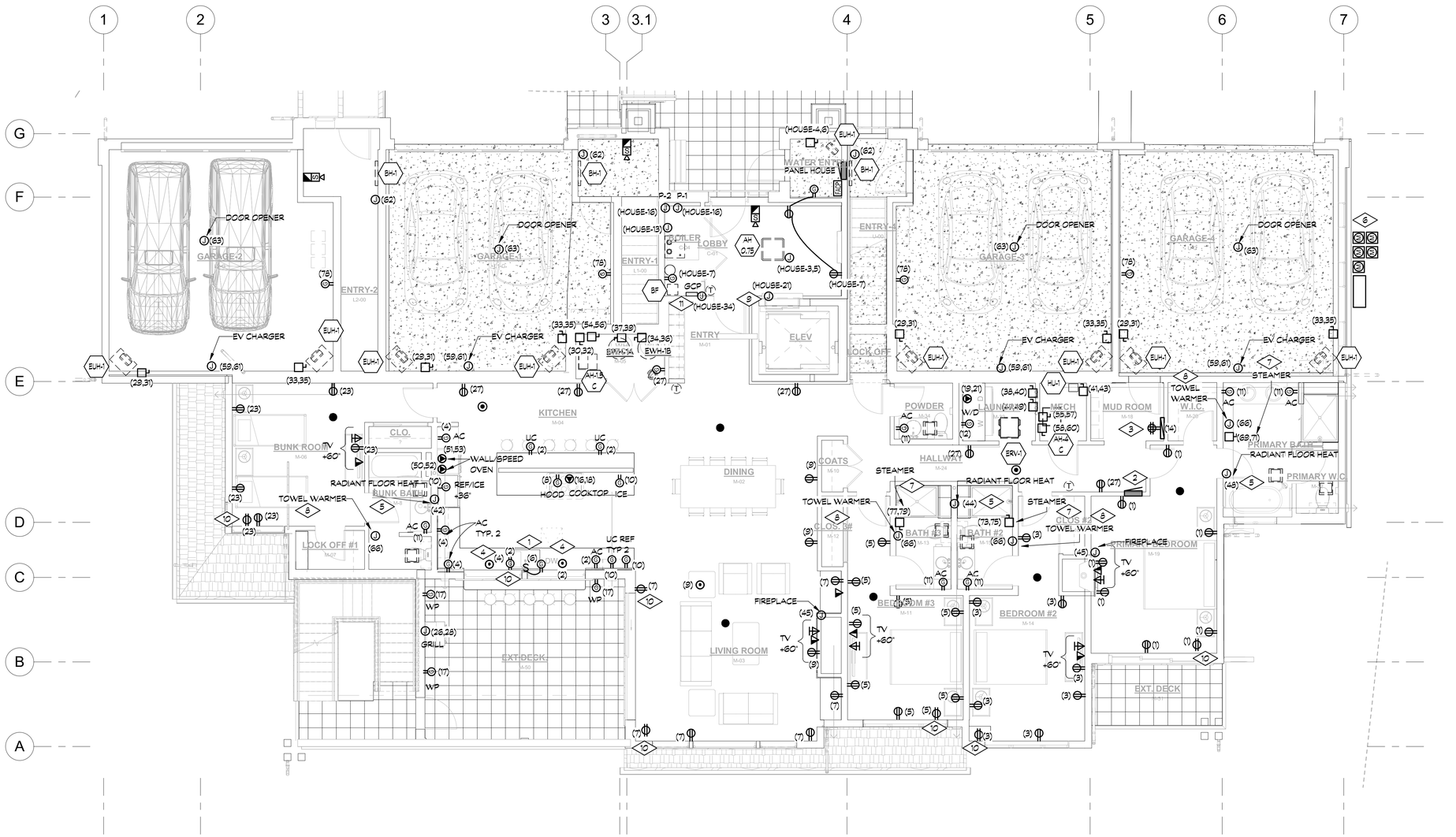
**Project Phase**
PERMIT

**Sheet Title**
LOWER LEVEL 2 LIGHTING PLAN

**Sheet Number**
E2.2

## DETAIL NOTES

1. PROVIDE QUAD WITH COMBINATION DUPLEX RECEPTACLE WITH HALF SWITCHED PORT. TOP RECEPTACLE IS TO BE SWITCHED PORTION FOR GARBAGE DISPOSAL OPERATION. PROVIDE TOTAL OF 3 UNSWITCHED RECEPTACLES.
2. TYPICAL UNIT ELECTRICAL PANEL. COORDINATE PANEL MOUNTING HEIGHT WITH ADA REQUIREMENTS (IN ACCESSIBLE UNITS). MAINTAIN MINIMUM CLEARANCE TO FRONT OF PANEL AS REQUIRED PER NEC, NO PIPING, DUCTWORK OR OTHER TRADES WORK TO BE ROUTED OVER PANEL. ALL WORK IN THIS AREA TO BE COORDINATED WITH G.C. AND E.C. PROPOSED ELECTRICAL SERVICE/GEAR. FIELD VERIFY EXACT LOCATION, MAINTAIN REQUIRED CLEARANCES PER NEC.
3. UNIT TELEPHONE/CABLE TERMINAL; FIELD VERIFY LOCATION AND MOUNTING HEIGHT ON WALL WITH TELECOM SERVICE PROVIDER. LOCATE DUPLEX RECEPTACLE BELOW TERMINAL FOR CONNECTION OF TELECOM EQUIPMENT. RE: TELEPHONE/CABLE DETAIL FOR ADDITIONAL INFORMATION.
4. PROVIDE COUNTERTOP POP-UP 15A GFCI-PROTECTED RECEPTACLE.
5. COORDINATE RADIANT FLOOR HEAT SIZE AND LOCATION WITH A163 AND ARCHITECT.
6. PROPOSED LOCATION FOR ELECTRICAL SERVICE. MAINTAIN NECESSARY CLEARANCES. FIELD VERIFY CONNECTION LOCATION.
7. BASIS OF DESIGN FOR STEAMER: AMEREC AK9. COORDINATE INSTALLATION AND VERIFY REQUIREMENTS WITH MANUFACTURER.
8. TOWEL WARMER ASSUMED TO BE 150W/UNIT. COORDINATE ACTUAL WATTAGE AND VERIFY REQUIREMENTS WITH MANUFACTURER. FIELD VERIFY CONNECTION LOCATION.
9. POWER FOR ELEVATOR SMOKE/FIRE CURTAIN. COORDINATE CONNECTION TYPE AND INSTALLATION REQUIREMENTS WITH MANUFACTURER.
10. POWER FOR WINDOW SHADE. COORDINATE WITH MANUFACTURER/INSTALLER FOR POWER AND LOW VOLTAGE REQUIREMENTS.
11. ELEVATOR SMOKE/FIRE CURTAIN GROUP CONTROL PANEL. COORDINATE CLEARANCES WITH MANUFACTURER AND MECHANICAL EQUIPMENT. PROVIDE J BOX FOR POWER.




MAIN LEVEL POWER PLAN
3/16" = 1'-0"



**REVISIONS**

| No. | Description | Date |
|---|---|---|

# ASTRID BUILDING 7

STEAMBOAT SPRINGS, COLORADO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|---|---|
| **Job Number:** | 23055-7 |
| **Date:** | 03/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | EM |

**Project Phase**
PERMIT

**Sheet Title**
MAIN LEVEL POWER PLAN

**Sheet Number**
E3.1

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## DETAIL NOTES THIS SHEET

1. STAIR LIGHTING SHALL BE ON EM INVERTER (LITEMINDER PWII OR SIMILAR) TO RUN FULL BRIGHT FOR 90 MIN UNDER POWER LOSS. FINAL WATTAGE SHALL BE COORDINATED WITH LIGHTING DESIGNER.

2. SEE UPPER AND LOWER LEVEL LIGHTING SHEETS.




MAIN LEVEL LIGHTING PLAN
3/16" = 1'-0"

3/21/2024 1:28:35 PM

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# ASTRID BUILDING 7

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| **Job Number:** | 23035-7 |
| **Date:** | 03/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | EM |

**Project Phase**
PERMIT

**Sheet Title**
MAIN LEVEL LIGHTING PLAN

**Sheet Number**
E3.2

## DETAIL NOTES

1. PROVIDE QUAD WITH COMBINATION DUPLEX RECEPTACLE WITH HALF SWITCHED PORT. TOP RECEPTACLE IS TO BE SWITCHED PORTION FOR GARBAGE DISPOSAL OPERATION. PROVIDE TOTAL OF 3 UNSWITCHED RECEPTACLES.
2. TYPICAL UNIT ELECTRICAL PANEL, COORDINATE PANEL MOUNTING HEIGHT WITH ADA REQUIREMENTS (IN ACCESSIBLE UNITS). MAINTAIN MINIMUM CLEARANCE TO FRONT OF PANEL AS REQUIRED PER NEC, NO PIPING, DUCTWORK OR OTHER TRADES WORK TO BE ROUTED OVER PANEL. ALL WORK IN THIS AREA TO BE COORDINATED WITH G.C. AND E.C. PROPOSED ELECTRICAL SERVICE/GEAR. FIELD VERIFY EXACT LOCATION, MAINTAIN REQUIRED CLEARANCES PER NEC.
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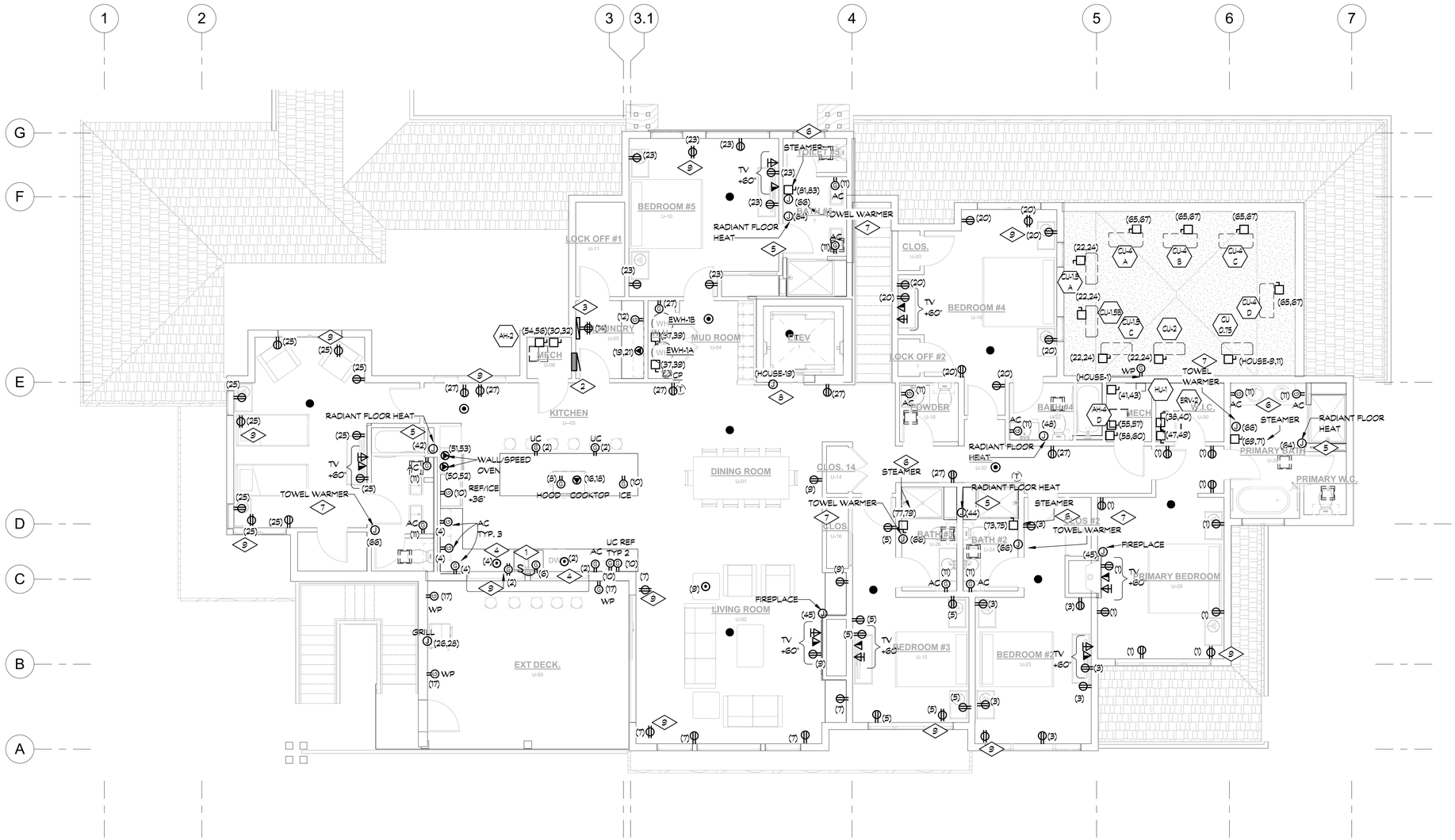
4. PROVIDE COUNTERTOP POP-UP 15A GFCI-PROTECTED RECEPTACLE.
5. COORDINATE RADIANT FLOOR HEAT SIZE AND LOCATION WITH ARCHITECTURAL PLANS.
6. BASIS OF DESIGN FOR STEAMER: AMEREC AK3. COORDINATE INSTALLATION AND VERIFY REQUIREMENTS WITH MANUFACTURER.
7. TOWEL WARMER ASSUMED TO BE 150W/UNIT. COORDINATE ACTUAL WATTAGE AND VERIFY REQUIREMENTS WITH MANUFACTURER.
8. POWER FOR ELEVATOR SMOKE CURTAIN. COORDINATE CONNECTION TYPE AND INSTALLATION REQUIREMENTS WITH MANUFACTURER.
9. POWER FOR WINDOW SHADE. COORDINATE WITH MANUFACTURER/INSTALLER FOR POWER AND LOW VOLTAGE REQUIREMENTS.




UPPER LEVEL POWER PLAN
3/16" = 1'-0"

3/21/2024 1:28:38 PM

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38983
03/21/2024

**NOTICE: DUTY OF COOPERATION**

Release of these plans contemplates further cooperation among the owner, his contractor and the architect. Design and construction are complex. Although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is imperfect and every contingency cannot be anticipated. Any ambiguity or discrepancy discovered by the use of these plans shall be reported immediately to the architect. Failure to notify the architect compounds misunderstanding and increases construction costs. A failure to cooperate by a simple notice to the architect shall relieve the architect from responsibility for the consequences. Changes made from the plans without consent of the architect are unauthorized and shall relieve the architect of responsibility for all consequences arriving out of such changes.



**REVISIONS**

| No. | Description | Date |
|---|---|---|
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# ASTRID BUILDING 7

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|---|---|
| **Job Number:** | 23035-7 |
| **Date:** | 05/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | EM |

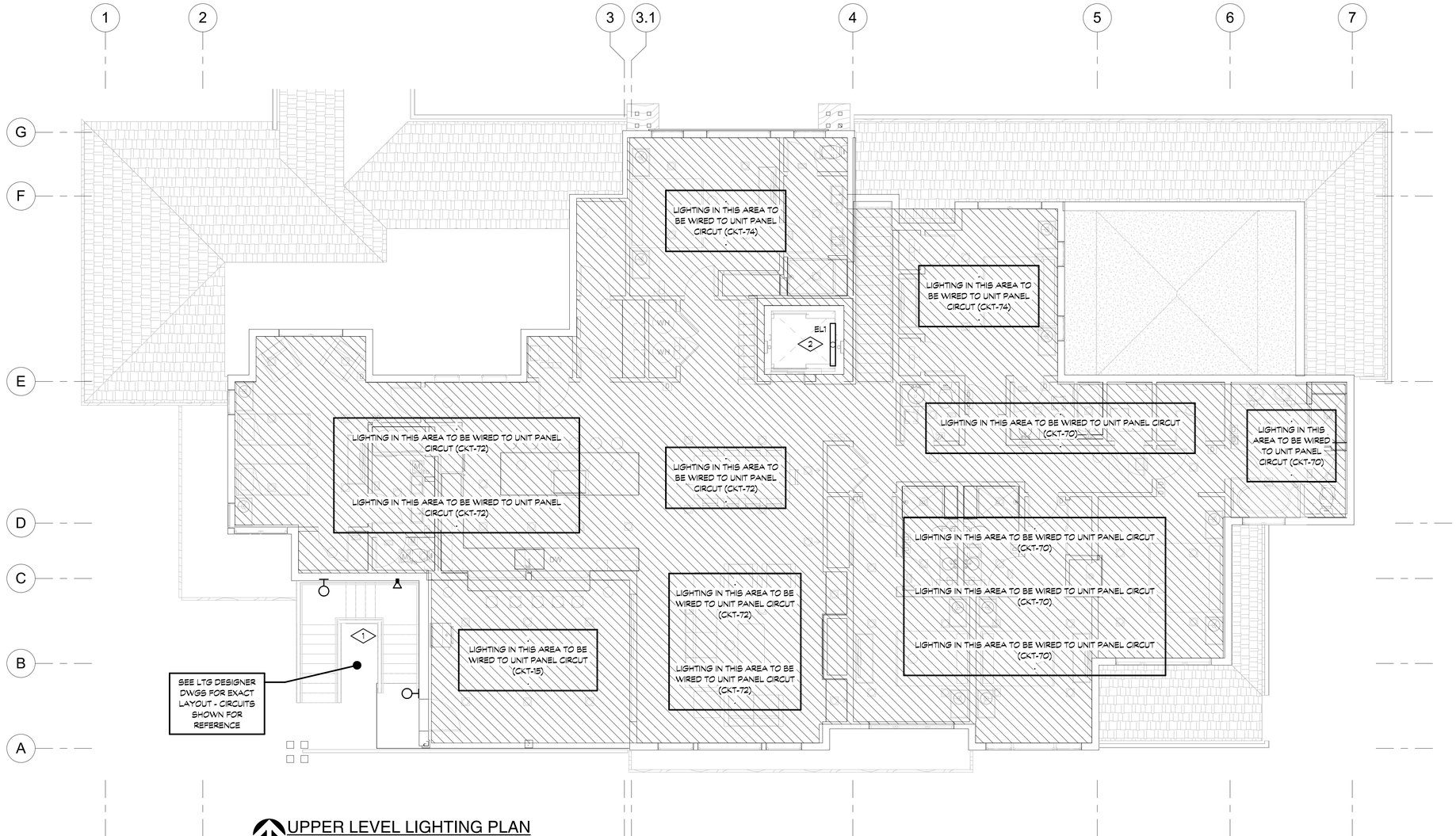
**Project Phase**
PERMIT

**Sheet Title**
UPPER LEVEL POWER PLAN

**Sheet Number**
E4.1

## DETAIL NOTES THIS SHEET

1. STAIRS SHALL BE ON EM BACKUP. SEE MAIN LEVEL LIGHTING PLAN FOR REFERENCE.
2. WIRE TO ELEVATOR SHAFT 120V POWER. HOUSE PANEL CKT-2. SEE POWER PLAN FOR REFERENCE.




UPPER LEVEL LIGHTING PLAN
3/16" = 1'-0"

3/21/2024 1:28:39 PM

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ERIC D. SMITH
38983
03/21/2024
PROFESSIONAL ENGINEER

**NOTICE: DUTY OF COOPERATION**

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**REVISIONS**

| No. | Description | Date |
|---|---|---|
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# ASTRID BUILDING 7

STEAMBOAT SPRINGS, COLORADO

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| **Job Number:** | 23035-7 |
| **Date:** | 05/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | E.M. |

**Project Phase**
PERMIT

**Sheet Title**
UPPER LEVEL LIGHTING PLAN

**Sheet Number**
E4.2

## DETAIL NOTES THIS SHEET

1. COORDINATE SOLAR ARRAY LOCATION AND SIZE IWTH ARCHITECT AND PV VENDOR. VERIFY AREA OF ROOF USED FOR FUTURE PV INSTALLATION.

## GENERAL NOTES - HEAT TRACE

A. BASIS OF DESIGN IS RAYCHEM ICESTOP SYSTEM (GM-2XT; 208V/1Ø). SYSTEM STARTUP TEMPERATURE TO BE SET AT 20ºF. MAXIMUM LENGTH OF CABLE PER CIRCUIT:
   1. 15A @208V = 180 L.F.
   2. 20A @208V = 235 L.F.

B. PROVIDE WITH APS SERIES MASTER SNOW CONTROLLER AND SC-20C SLAVE CONTROLLER AS REQUIRED.

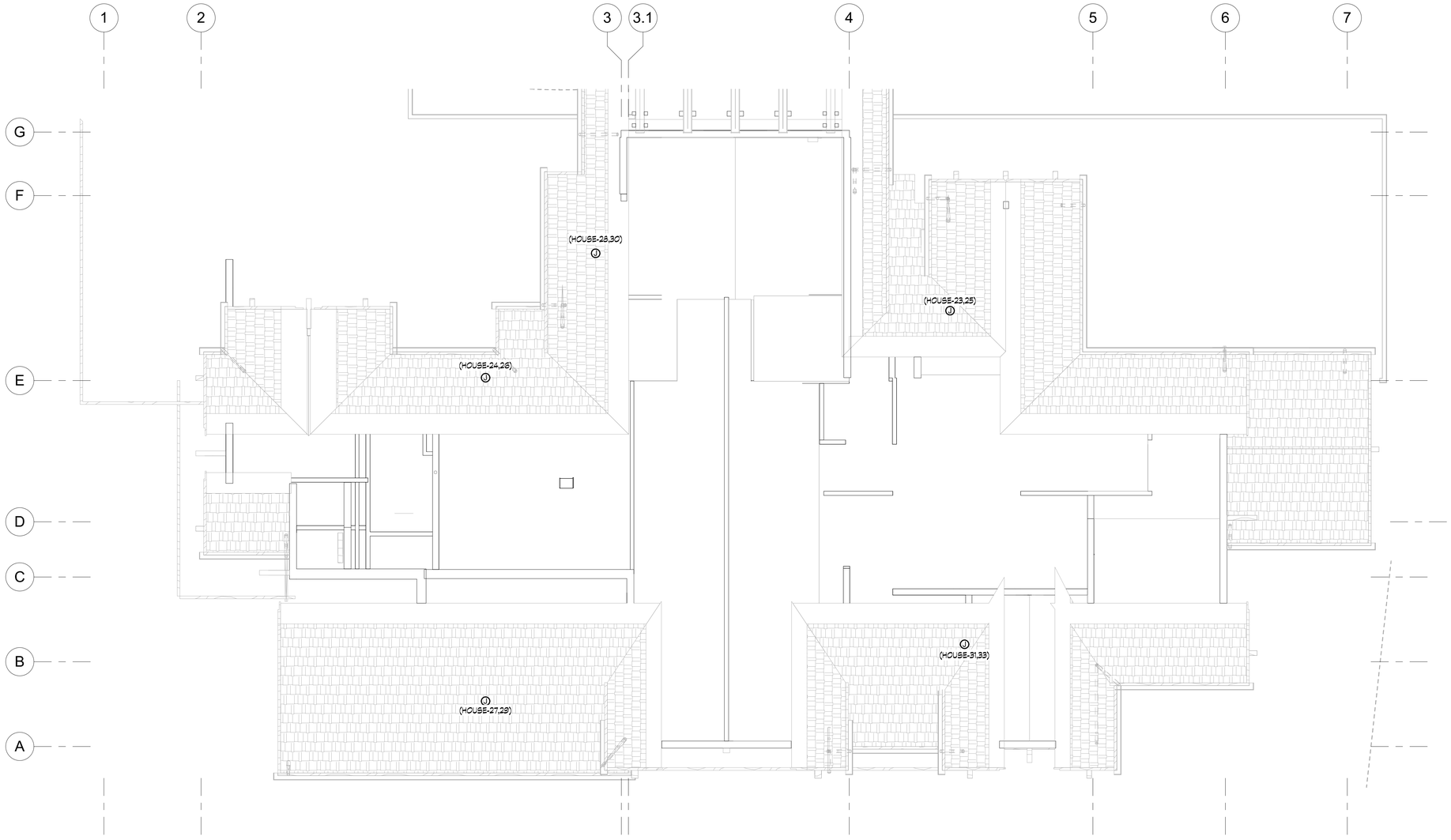
C. SYSTEM COMPONENTS TO INCLUDE AERIAL SNOW SENSOR (RAYCHEM SNOW OWL), GUTTER SENSOR (GIT-1), CABLE POWER CONNECTION KITS (FTC-P), SPLICE/TEE KITS (FTC-HST-PLUS),END SEAL KIT (RAYCLIC-E), ROOF CLIPS (GMK-RC) DOWNSPOUT HANGER (GM-RAKE) AND ANY ADDITIONAL ACCESSORIES REQUIRED TO INSTALL SYSTEM PER MANUFACTRURER'S INSTRUCTIONS.

D. GFCI PROTECTION TO BE PROVIDED AT SNOW MASTER/SLAVE CONTROLLERS.

E. TOTAL LENGTH OF HEAT TRACE ESTIMATED TO BE 1080 FT (FIVE 20A @208V CIRCUITS MINIMUM). COORDINATE CONNECTION ACCESSORIES AND INSTALLATION WITH MANUFACTURER. FIELD VERIFY INDIVIDUAL SEGMENT LENGTHS. J-BOXES SHOWN FOR COORDINATION AND LOAD ESTIMATION ONLY.

F. FOR VERTICAL DOWNSPOUTS: PROVIDE SINGLE RUN OF HEAT TRACE WITH 12" LOOP AT BOTTOM.

G. FOR GUTTERS: PROVIDE ONE RUN OF HEAT TRACE. CONTRACTOR TO PROVIDE A COMPLETE SYSTEM INCLUDING CONTROLS, TRANSFORMERS, PIPE STRAP, END SEAL KIT, GLASS TAPE, ECT. PROVIDE ONE CONTROLLER WITH TEMPERATURE SENSORS PER CIRCUIT. REFER TO DETAIL ON SHEET E300 FOR FURTHER INFORMATION.




ROOF ELECTRICAL PLAN
3/16" = 1'-0"

3/21/2024 1:28:40 PM

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ERIC SMITH
38983
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PROFESSIONAL ENGINEER



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# ASTRID BUILDING 7

STEAMBOAT SPRINGS, COLORADO


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| **Job Number:** | 23055-7 |
| **Date:** | 05/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | E.M. |

**Project Phase**
PERMIT

**Sheet Title**
ROOF ELECTRICAL PLAN

**Sheet Number**
E5.1

# LEGEND

- MAIN DISTRIBUTION CENTER
- PANELBOARD
- ELECTRIC SERVICE METER
- CT — CURRENT TRANSFORMER
- T — TRANSFORMER
- CONCEALED CIRCUIT
- UNDERFLOOR / UNDERGROUND CIRCUIT
- EXPOSED CIRCUIT
- WM — WIREMOLD (SURFACE WIREWAY)
- PM — PLUGMOLD
- P-3 — HOMERUN TO PANELBOARD (ONE ARROW / CKT, PNL & CKT #'S SHOWN)
- (44,46) — CIRCUIT NUMBER(S) FOR SPECIFIED PANEL
- CONDUIT TURNS UP
- CONDUIT TURNS DOWN
- J J — JUNCTION BOX / CARD READER
- K — PORCELAIN LAMP HOLDER (PC= PULL CHAIN)
- LIGHT FIXTURE: SURFACE MOUNTED
- RECESSED LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- EXIT LIGHT: DIRECTIONAL ARROW
- BATTERY PACK
- SURFACE FLUORESCENT FIXTURE
- RECESSED FLUORESCENT FIXTURE
- SINGLE OUTLET: C-CLOCK (+70')
- DUPLEX RECEPTACLE IG: ISOLATED GROUND
- CEILING DUPLEX RECEPTACLE
- GFCI — DUPLEX RECEPTACLE - GFCI
- GFCI — DUPLEX RECEPTACLE - GFCI BREAKER
- TR — DUPLEX RECEPTACLE - TAMPER RESIST
- SPLIT WIRE DUPLEX
- QUADRAPLEX (DOUBLE DUPLEX)
- COMB. SWITCH / RECEPTACLE
- FLOOR MOUNTED RECEPTACLE
- A — SPECIAL PURPOSE (AS NOTED)
- TELEVISION OUTLET
- M — MOTOR OUTLET; eto - switched thermal overload
- TELEPHONE TERMINAL
- TELEPHONE OUTLET
- FLOOR MTD. TELEPHONE OUTLET
- C — COMPUTER OUTLET
- COMB. TELE/COMPUTER OUTLET
- S — TOGGLE SWITCH; p-switching, p-pilot light, 2-2 pole, k-keyed, 3-3 way, to-thermal overload, 4-4 way, t-timer
- # — WALL MOUNTED LIGHTING CONTROL DEVICE RE: LIGHTING CONTROL DEVICE SCHEDULE
- # — CEILING MOUNTED LIGHTING CONTROL DEVICE RE: LIGHTING CONTROL DEVICE SCHEDULE
- T — THERMOSTAT
- TS — TIME SWITCH
- PE — PHOTOCELL
- PUSH-BUTTON STATION
- SAFETY SWITCH
- MOTOR STARTER / LIGHTING CONTACTOR
- COMBINATION MOTOR STARTER
- R — RELAY
- FACP — FIRE ALARM CONTROL PANEL
- ANNUNCIATOR
- PULL STATION
- HORN
- HL — HORN / LIGHT COMBINATION
- HS — HORN / STROBE
- S — STROBE
- BELL
- OS & Y VALVE
- F — FLOW SWITCH
- DETECTOR (SMOKE)
- $\bullet_T$ — ROOM DETECTOR (THERMAL)
- DUCT DETECTOR
- REMOTE INDICATING LIGHT / TEST SWITCH
- DOOR HOLDER
- CHIME
- FUSED SWITCH
- CIRCUIT BREAKER
- GROUND CONNECTOR
- MECHANICAL EQUIPMENT
- DETAIL NOTE
- KITCHEN / MEDICAL EQUIPMENT
- (E) — EXISTING TO REMAIN
- (ER) — EXISTING TO BE RELOCATED
- (ED) — EXISTING TO BE DEMOLISHED

## LUMINAIRE SCHEDULE

| KEY | LAMP | DESCRIPTION | CEIL'G (DEPTH) | | MANUFACTURER/# | VOLT |
|---|---|---|---|---|---|---|
| A1 | - | - | - | - | SPARE | 120 |
| B1 | 42W LED 3500K 5000 LUM | 4'-0" LED LINEAR, STANDARD EFF, FLAT DIFFUSE LENS (WHITE) | SURFACE | 0-10V 10% | LITHONIA CLX L48 5000LM SEF FDL MVOLT GZ10 35K 80CRI WH | 120 |
| C1 | - | - | - | - | TBD | 120 |
| C2 | 23W LED 3000K XXX LUM | 13" SURFACE MOUNTED LED - WET LOCATION | SURFACE | TRIAC | VERSA LITE / FMML 13 830 WL | 120 |
| D1 | 14W LED 3000K 1500 LUM | 4" ROUND COMERCIAL GRADE DOWNLIGHT WITH 65 DEG BEAM (CLEAR TRIM) | GRID (5-3/4") | 0-10V 10% | GOTHAM / EVO4 30/15 4AR WD 120 EZ10 | 120 |
| D1W | 14W LED 3000K 1500 LUM | 4" ROUND COMERCIAL GRADE DOWNLIGHT WITH 65 DEG BEAM (CLEAR TRIM) | GRID (5-3/4") | 0-10V 10% | GOTHAM / EVO4 30/15 4AR WD 120 EZ10 | 120 |
| P3 | 22W LED 2000 LUM 3000K 80 CRI | 4" ROUND CYLINDER (BLACK) | PENDANT (10'-0") | | LITHONIA LIGHTING / LDN4CYL 30/20 L04 BR LD MVOLT GZ10 | 120 |
| W1 | - | HALF DOME - INDOOR WALL SCONCE | - | - | TBD | 120 |
| W2 | SPARE | - | - | - | TBD | 120 |
| W3 | - | OUTDOOR WALL SCONCE | - | - | TBD | 120 |
| W4 | - | OUTDOOR WALL SCONCE | - | - | TBD | 120 |
| P3 | 22W LED 2000 LUM 3000K 80 CRI | 4" ROUND CYLINDER (BLACK) | PENDANT (10'-0") | | LITHONIA LIGHTING / LDN4CYL 30/20 L04 BR LD MVOLT GZ10 | 120 |
| V1 | 25W LED 3500K 3200 LUM | 37" VANITY (BRUSHED NICKEL) | WALL | | BROWNLEE LIGHTING 5174-37-BN-H25LED-35K | 120 |
| V2 | 14W LED 925 LUM 4000K | UNIT - CLOSET LIGHT W/ IR SENSOR | WALL | | LITHONIA - LED CLOSET LIGHT / FMMCL 13 840 PIR | 120 |
| EL 1 | LED, 61W, 12000 LUMENS, 4000K | ELEVATOR PIT LIGHT, 0-10V DIMMING, SURFACE MOUNT WITH 120° DIFFUSED LENS | WALL | | GE ABV3 0 12 T 47 1D Q V SM K Q W | 120 |
| X1 | FURN | EXIT SIGN, GREEN LED STENCIL FACE, UNIVERSAL MOUNTING, 90 MIN BATTERY PACK, FINISH BY ARCHITECT | UNIVERSAL | | LITHONIA LQM S * 3 G 120/277 ELN SD | 120 |
| X2 | FURN | EXIT SIGN W/ DOUBLE FROG EYE, GREEN LED STENCIL FACE, 90 MIN BATTERY PACK, FINISH BY ARCHITECT | UNIVERSAL | | LITHONIA LHQM LED * G (* = FINISH BY ARCH) | 120 |
| Z1 | FURN | DOUBLE FROG EYE EMERGENCY LIGHT, 90 MIN BATTERY PACK, +10' MNT 60' SPACING, FINISH BY ARCHITECT | WALL | | LITHONIA ELM4L * (* = FINISH BY ARCH) | 120 |
| Z2 | FURN | DIE CAST ARCHITECTURAL EMERGENCY LIGHT, WET LOCATION LISTED, 90 MINUTE COLD WEATHER (0°F TO 122°F) BATTERY PACK | WALL | | LITHONIA APN * EXT (* = FINISH BY ARCH) | 120 |

NOTES: 1. NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN MODEL NUMBERS AND DESCRIPTIONS PRIOR TO ORDERING
2. VERIFY CEILING INSULATION W/ GC AND NOTIFY ENGINEER OF ANY IC RATING CONFLICTS PRIOR TO ORDERING

## MECHANICAL EQUIPMENT

| KEY | DESCRIPTION | LOAD | VOLT | CIRCUIT | CONNECTION | REMARKS |
|---|---|---|---|---|---|---|
| AC-0.7 5 | VRF INDOOR HEAT PUMP, CASSETTE | 0.2 MCA | 208/1 | (2-#12,#12G) 1/2"C | J-BOX | |
| CU-0.7 5 | CONDENSING UNIT | 15 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 15 FRN | |
| AH-1.5 A-C | DUCTED HEAT PUMP FAN COIL UNIT | 2.5 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 4 FRN | |
| | | 5 kW | 208/1 | (2-#8,#10G) 3/4"C | 60/2; 35 FRN | |
| CU-1.5 A-C | HEAT PUMP CONDENSING UNIT | 16 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 20 FRN | |
| AH-2 | DUCTED HEAT PUMP FAN COIL UNIT | 4 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 4 FRN | |
| | | 5 kW | 208/1 | (2-#8,#10G) 3/4"C | 60/2; 35 FRN | |
| CU-2 | HEAT PUMP CONDENSING UNIT | 16 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 20 FRN | |
| AH-4 A-D | DUCTED HEAT PUMP FAN COIL UNIT | 9 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 10 FRN | |
| | | 8 kW | 208/1 | (2-#8,#10G) 3/4"C | 60/2; 50 FRN | |
| CU-4 A-D | HEAT PUMP CONDENSING UNIT | 16 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 20 FRN | |
| EF-1 | CEILING EXHAUST FAN | 20 W | 120/1 | (2-#12,#12G) 1/2"C | THERMAL O.L. | |
| HU-1 | HUMIDIFIER | 2.5 kW | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 20 FRN | |
| ERV-1 | ENERGY RECOVERY VENTILATOR | 10 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 10 FRN | |
| | | 3 kW | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 20 FRN | |
| ERV-2 | ENERGY RECOVERY VENTILATOR | 10 MCA | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 10 FRN | |
| | | 3 kW | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 20 FRN | |
| EUH-1 | ELECTRIC UNIT HEATER | 2.2 kW | 208/1 | (2-#12,#12G) 1/2"C | 30/2; 15 FRN | |
| CP | RECIRC PUMP | 25 W | 120/1 | (2-#12,#12G) 1/2"C | 5-20R | |
| EWH-1 A,B | ELECTRIC WATER HEATER | 5 kW | 208/1 | (2-#8,#10G) 3/4"C | 60/2; 35 FRN | |
| BH-1 | ELECTRIC BASEBOARD HEATER | 500 W | 120/1 | (2-#12,#12G) 1/2"C | J-BOX | |
| EL | ELEVATOR | 30 HP | 208/3 | (3-#2,#6G) 1-1/4"C | 200/3; 125 FRN | |
| BLR-1 | HYDRONIC BOILER | 12 A | 120/1 | (2-#12,#12G) 1/2"C | J-BOX | |
| P-1 | CIRCULATION PUMP | 395 W | 120/1 | (2-#12,#12G) 1/2"C | 5-20R | |
| P-2 | CIRCULATION PUMP | 187 W | 120/1 | (2-#12,#12G) 1/2"C | 5-20R | |
| BF | BOILER FEEDER | 50 W | 115/1 | (2-#12,#12G) 1/2"C | 5-20R | |

NOTES: *TEMPERATURE RATING OF ALL DEVICES COULD NOT BE VERIFIED, THEREFORE WIRE IS SIZED BASED ON 60C PER NEC 110.14(C)(1)(a)

## FIRE ALARM ZONE SCHEDULE

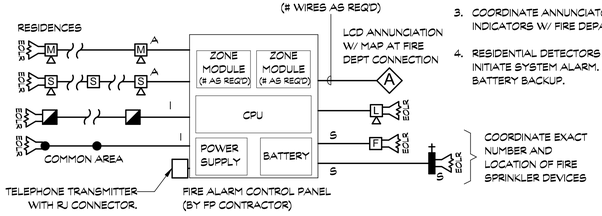
1. SPRINKLER
2. ROOFTOP UNITS
3. TAMPER SWITCH, TROUBLE ALARM
4. PULL STATIONS: FACP
5. SPARE

## FIRE ALARM WIRING LEGEND

I INITIATING CIRCUIT
A ALARM CIRCUIT
S SUPERVISORY CIRCUIT
M MECHANICAL INTERLOCK CIRCUIT

## FIRE ALARM NOTES

1. FIRE ALARM PANEL WITH AUTO DIALER, BATTERIES, ETC BY ELECTRICAL CONTRACTOR. WIRE UP ANCILLARY EQUIPMENT TO THIS PANEL AS REQUIRED BY LOCAL CODE.
2. THERE IS ONE FACP TO SERVE ENTIRE BUILDING. COORDINATE NUMBER AND LOCATION OF FLOW, TAMPER, ETC, W/ LOCAL FIRE DEPARTMENT.
3. COORDINATE ANNUNCIATORS, MAPS AND AREA INDICATORS W/ FIRE DEPARTMENT.
4. RESIDENTIAL DETECTORS ARE LOCAL ONLY AND DO NOT INITIATE SYSTEM ALARM. THEY SHALL BE PROVIDED W/ BATTERY BACKUP.

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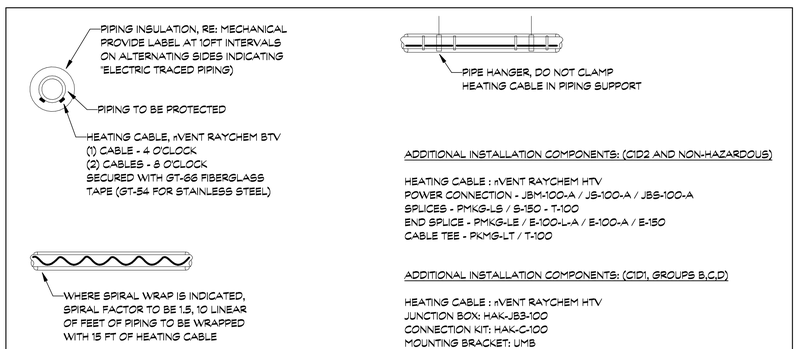
FIRE ALARM ONE LINE DIAGRAM | 3




ADDITIONAL INSTALLATION COMPONENTS: (C1D2 AND NON-HAZARDOUS)

HEATING CABLE : nVENT RAYCHEM HTV
POWER CONNECTION - JBM-100-A / JBS-100-A / JBS-100-A
SPLICES - PMKG-LS / S-150 - T-100
END SPLICE - PMKG-LE / E-100-L-A / E-100-A / E-150
CABLE TEE - PKMG-LT / T-100

ADDITIONAL INSTALLATION COMPONENTS: (C1D1, GROUPS B,C,D)

HEATING CABLE : nVENT RAYCHEM HTV
JUNCTION BOX: HAK-JBS-100
CONNECTION KIT: HAK-C-100
MOUNTING BRACKET: UMB

NTS

HEAT TRACE DIAGRAM | 2

## SHORT CIRCUIT CALCULATION

| LOCATION | | | SECONDARY VOLTAGE | | | | Ø | kVA | %Z* | Isc AVAIL. | | "M" | Isc FAULT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TRANS | I | sc | 208 | | | | 3 | 300 | 1.6 | 833 | | 62.5 | 52000 |
| LOCATION | | | VOLT. | Ø | WIRE TYPE | CONDUIT TYPE | WIRE SIZE | #OF RUNS | LENGTH | "C" VALUE | Isc AVAIL. | "F" | "M" | Isc FAULT |
| MDC | I | 1 | 208 | 3 | AL | NON | 500 | 4 | 30 | 21380 | 52000 | 0.152 | 0.868 | 45146 |
| PANEL HOUSE | I | 2 | 208 | 3 | CU | MET | 350 | 2 | 60 | 19703 | 45146 | 0.572 | 0.836 | 28712 |
| A | I | 3 | 208 | 1 | CU | MET | 3/0 | 2 | 70 | 12843 | 45146 | 1.183 | 0.458 | 20681 |
| B | I | 4 | 208 | 1 | CU | MET | 3/0 | 2 | 60 | 12843 | 45146 | 1.014 | 0.487 | 22416 |
| C | I | 5 | 208 | 1 | CU | MET | 3/0 | 2 | 30 | 12843 | 45146 | 0.507 | 0.684 | 29357 |
| D | I | 6 | 208 | 1 | CU | MET | 350 | 2 | 80 | 19703 | 45146 | 0.881 | 0.532 | 23937 |

NOTES: SWITCHBOARDS, PANELBOARDS AND LOAD CENTERS ARE TO BE FULLY RATED AS SHOWN. PROVIDE A DEDUCT PRICE TO USE SERIES RATED EQUIPMENT AND PROVIDE THE TESTED OCPD COMBINATION USED TO OBTAIN THE SERIES RATING. ALL EQUIPMENT TO HAVE PERMANENTLY ATTACHED LABELING PROVIDED BY THE EQUIPMENT MANUFACTURER AND INSTALLER PER NEC 110.22 AND 240.86 (B).
PROVIDE MARKING ON ALL SERVICE EQUIPMENT WITH MAXIMUM CALCULATED FAULT CURRENT PER NEC 110.24
*AVAILABLE FAULT CURRENT AT TRANSFORMER CALCULATED BASED ON %Z FROM UTILITY COMPANY DESIGN STANDARDS. IF TRANSFORMER SIZE IS OTHER THAN SHOWN, NOTIFY ENGINEER.

## MDC LOAD SUMMARY

**VOLTS:** 120/208 Wye **PHASE:** 3 **WIRES:** 4
NOTE: ALL EXISTING METER CALCULATED AT 125% PER NEC 220.87

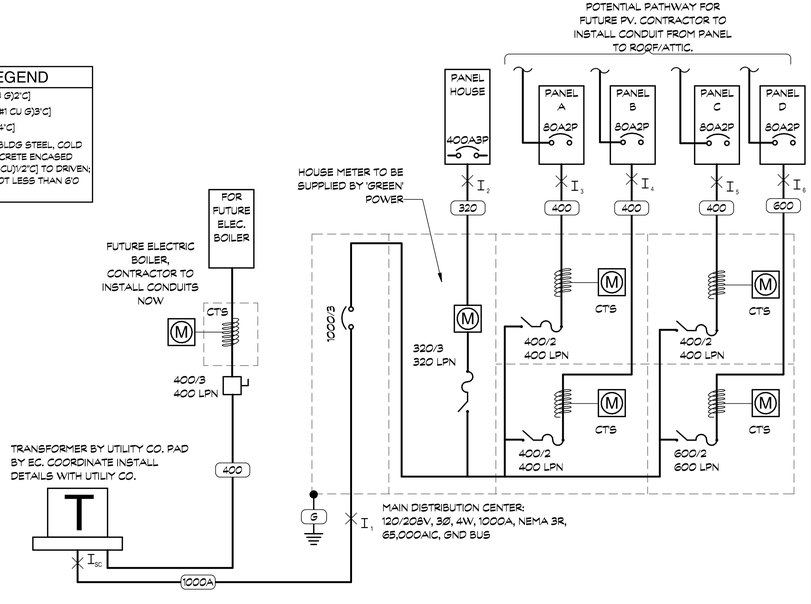
| CKT | CIRCUIT DESCRIPTION | LOAD | AMPS |
|---|---|---|---|
| 1 | 4-BED (UNIT 1) | 125.8 kVA | 604.6 A |
| 2 | 4-BED (UNIT 2) | 127.0 kVA | 610.7 A |
| 3 | 4-BED (UNIT 3) | 125.8 kVA | 604.6 A |
| 4 | 5-BED (UNIT 4) | 140.6 kVA | 675.9 A |
| 5 | HOUSE | 62.8 kVA | 174.7 A |
| 6 | | | |

**TOTAL CONNECTED:** 562.0 kVA

| LOAD TYPE | | CONN. LOAD | DEMAND FACT. | EST. DEMAND |
|---|---|---|---|---|
| LIGHTING / EV - | L | 1.82 kVA | 125% | 2.28 kVA |
| RECEPTACLE - | R | 1.08 kVA | 100% | 1.08 kVA |
| MOTOR - | M | 43.37 kVA | 117% | 50.87 kVA |
| KITCHEN - | K | 0 kVA | 0% | 0 kVA |
| OTHER - | O | 16.67 kVA | 100% | 16.67 kVA |
| EXISTING - | E | 0 kVA | 0% | 0 kVA |
| NEC-220.84- | NC | 513.1 kVA | 45% | 233.6 kVA |
| TOTAL DEMAND: | | | | 304.49 kVA/845 A |

## WIRING LEGEND

| | |
|---|---|
| 400 | 2[(3-3/0 CU, #3 CU G)2"C] |
| 600 | 2[(4-350MCM CU, #1 CU G)3"C] |
| 1200A | 4[(4-500MCM AL)4"C] |
| G | (3/0 CU)3/4"C TO BLDG STEEL, COLD WATER PIPE, CONCRETE ENCASED ELECTRODE; 2[(#8CU)1/2"C] TO DRIVEN GROUND RODS NOT LESS THAN 8'O APART |




NTS

ELECTRIC ONE-LINE DIAGRAM | 1



COLORADO LICENSED
ERIC DAVID SMITH
38983
03/21/2024
PROFESSIONAL ENGINEER



**REVISIONS**

| No. | Description | Date |
|---|---|---|

# ASTRID BUILDING 7

STEAMBOAT SPRINGS, COLORADO

ERIC SMITH ASSOCIATES, P.C.
1919 SEVENTH STREET
BOULDER, COLORADO, 80302
(303) 442-5456, (303) 442-4745 FAX

| | |
|---|---|
| **Job Number:** | 23055-7 |
| **Date:** | 05/21/24 |
| **Drawn By:** | Author |
| **Checked By:** | EM |

**Project Phase**
PERMIT

**Sheet Title**
ELECTRICAL DETAILS & SCHEDULES

**Sheet Number**
E6.1

# PANEL 4-BED

SUPPLY FROM: | VOLTS: 120/208 Single | A.I.C. RATING: 65,000
MOUNTING: RECESSED | PHASES: 1 | MAINS TYPE: MLO
ENCLOSURE: NEMA 1 | WIRES: 3 | MAINS RATINGS: 400 A

| CIRCUIT DESCRIPTION | LT | TRIP | P | BT | | A | | | B | | | BT | P | TRIP | LT | CIRCUIT DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEDROOM #1 RECEPTS | ND | 20 | 1 | A | 1 | ○ | ○ | | | | 2 | AG | 1 | 20 | ND | KITCHEN RECEPTS |
| BEDROOM #2 RECEPTS | ND | 20 | 1 | A | 3 | | | ○ | ○ | | 4 | AG | 1 | 20 | ND | KITCHEN RECEPTS |
| BEDROOM #3 RECEPTS | ND | 20 | 1 | A | 5 | ○ | ○ | | | | 6 | AG | 1 | 20 | L; ND | DISH / DISPOSAL |
| LIVING RM RECEPTS | ND | 15 | 1 | A | 7 | | | ○ | ○ | | 8 | A | 1 | 20 | ND | MICRO / HOOD |
| LIVING RM RECEPTS / SPARE | ND | 20 | 1 | A | 9 | ○ | ○ | | | | 10 | AG | 1 | 20 | ND | REFRIG / ISLAND RECEPTS |
| BATHROOM GFCI/RECIRC PUMP | ND | 20 | 1 | AG | 11 | | | ○ | ○ | | 12 | AG | 1 | 20 | ND | WASHER |
| LTG CKT - BATHROOM | ND | 15 | 1 | A | 13 | ○ | ○ | | | | 14 | A | 1 | 20 | ND | DATA / TELECOM |
| LTG CKT - EXT | ND | 15 | 1 | A | 15 | | | ○ | ○ | | 16 | S | 2 | 20 | ND | COOKTOP |
| EXTERIOR GFCI | ND | 20 | 1 | AG | 17 | ○ | ○ | | | | 18 | | | | | |
| DRYER | ND | 35 | 2 | S | 19 | | | ○ | ○ | | 20 | | 1 | 20 | -- | SPARE |
| | | | | | 21 | ○ | ○ | | | | 22 | S | 2 | 20 | ND | CU 1.5 |
| BED #4/BUNK RECEPTS | ND | 20 | 1 | A | 23 | | | ○ | ○ | | 24 | | | | | |
| OFFICE RECEPTS/BED... | ND | 20 | 1 | A | 25 | ○ | ○ | | | | 26 | S | 2 | 25 | ND | GRILL |
| HALLWAY RECEPTS | ND | 20 | 1 | A | 27 | | | ○ | ○ | | 28 | | | | | |
| EUH-1 | ND | 20 | 2 | S | 29 | ○ | ○ | | | | 30 | S | 2 | 20 | ND | AH 1.5 DUCT HEATER |
| | | | | | 31 | | | ○ | ○ | | 32 | | | | | |
| EUH-1 | ND | 20 | 2 | S | 33 | ○ | ○ | | | | 34 | S | 2 | 35 | ND | EWH |
| | | | | | 35 | | | ○ | ○ | | 36 | | | | | |
| EWH | ND | 35 | 2 | S | 37 | ○ | ○ | | | | 38 | S | 2 | 20 | ND | ERV |
| | | | | | 39 | | | ○ | ○ | | 40 | | | | | |
| HUMIDIFIER | ND | 20 | 2 | S | 41 | ○ | ○ | | | | 42 | AG | 1 | 20 | ND | RADIANT FLOOR KITCHEN/BUNK |
| | | | | | 43 | | | ○ | ○ | | 44 | AG | 1 | 20 | ND | RADIANT FLOOR BATH 1/2 |
| FIREPLACE | ND | 20 | 1 | A | 45 | ○ | ○ | | | | 46 | AG | 1 | 20 | ND | RADIANT FLOOR BATH 3 |
| ERV | ND | 20 | 2 | S | 47 | | | ○ | ○ | | 48 | AG | 1 | 20 | ND | RADIANT FLOOR PRIM BATH |
| | | | | | 49 | ○ | ○ | | | | 50 | S | 2 | 35 | ND | WALL OVEN 2 |
| WALL OVEN 1 | ND | 35 | 2 | S | 51 | | | ○ | ○ | | 52 | | | | | |
| | | | | | 53 | ○ | ○ | | | | 54 | S | 2 | 35 | ND | AH 1.5 |
| AH 4 | ND | 50 | 2 | S | 55 | | | ○ | ○ | | 56 | | | | | |
| | | | | | 57 | ○ | ○ | | | | 58 | S | 2 | 20 | ND | AH 4 DUCT HEATER |
| EV CHARGER | ND | 50 | 2 | S | 59 | | | ○ | ○ | | 60 | | | | | |
| | | | | | 61 | ○ | ○ | | | | 62 | S | 1 | 20 | ND | BH1 |
| GARAGE DOOR OPENER | ND | 20 | 1 | S | 63 | | | ○ | ○ | | 64 | | 1 | 20 | -- | SPARE |
| CU 4 | ND | 20 | 2 | S | 65 | ○ | ○ | | | | 66 | S | 1 | 20 | ND | TOWEL WARMER |
| | | | | | 67 | | | ○ | ○ | | 68 | A | 1 | 20 | -- | SPARE |
| STEAMER 1 | ND | 30 | 2 | S | 69 | ○ | ○ | | | | 70 | A | 1 | 20 | ND | LTG CKT - EAST |
| | | | | | 71 | | | ○ | ○ | | 72 | A | 1 | 20 | ND | LTG CKT - WEST |
| STEAMER 2 | ND | 30 | 2 | S | 73 | ○ | ○ | | | | 74 | A | 1 | 20 | ND | GARAGE |
| | | | | | 75 | | | ○ | ○ | | 76 | A | 1 | 20 | ND | FA (120V) |
| STEAMER 3 | ND | 30 | 2 | S | 77 | ○ | ○ | | | | 78 | ag | 1 | 20 | ND | GARAGE GFCI |
| | | | | | 79 | | | ○ | ○ | | 80 | | 1 | 20 | -- | SPARE |
| SPACE | -- | -- | 1 | | 81 | -- | ○ | | | | 82 | | | | | |
| SPACE | -- | -- | 1 | | 83 | | | -- | ○ | | 84 | S | 2 | 80 | -- | FOR FUTURE SOLAR ELECTRIC |
| | | | | | | TOTAL LOAD: | | 39.07 kVA | | 39.07 kVA | | | | | | |
| | | | | | | TOTAL AMPS: | | 376 A | | 376 A | | | | | | |

| LOAD TYPE | | CONN.LOAD | DEMAND FACT. | EST. DEMAND | BREAKER TYPE | | PANEL TOTALS |
|---|---|---|---|---|---|---|---|
| LIGHTING / EV - | L | 0 kVA | 0% | 0 kVA | SHUNT TRIP - | ST | TOTAL CONN. LOAD: 78.13 kVA |
| RECEPTACLE - | R | 0 kVA | 0% | 0 kVA | GFCI - | G | TOTAL EST. DEMAND: 78.13 kVA |
| MOTOR - | M | 0 kVA | 0% | 0 kVA | HANDLE BLOCK - | H | TOTAL CONN.: 376 A |
| KITCHEN - | K | 0 kVA | 0% | 0 kVA | HANDLE TIE - | T | TOTAL EST. DEMAND: 376 A |
| OTHER - | O | 0 kVA | 0% | 0 kVA | AFCI - | A | |
| EXISTING - | E | 0 kVA | 0% | 0 kVA | STANDARD - | S | |
| NEC-220.84- | | | | | LOCKOUT - | L | |

# PANEL 6-BED

SUPPLY FROM: | VOLTS: 120/208 Single | A.I.C. RATING: 65,000
MOUNTING: RECESSED | PHASES: 1 | MAINS TYPE: MLO
ENCLOSURE: NEMA 1 | WIRES: 3 | MAINS RATINGS: 400 A

| CIRCUIT DESCRIPTION | LT | TRIP | P | BT | | A | | | B | | | BT | P | TRIP | LT | CIRCUIT DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEDROOM #1 RECEPTS | -- | 20 | 1 | A | 1 | ○ | ○ | | | | 2 | AG | 1 | 20 | -- | KITCHEN RECEPTS |
| BEDROOM #2 RECEPTS | -- | 20 | 1 | A | 3 | | | ○ | ○ | | 4 | AG | 1 | 20 | -- | KITCHEN RECEPTS |
| BEDROOM #3 RECEPTS | -- | 20 | 1 | A | 5 | ○ | ○ | | | | 6 | AG | 1 | 20 | -- | DISH / DISPOSAL |
| LIVING RM RECEPTS | -- | 20 | 1 | A | 7 | | | ○ | ○ | | 8 | A | 1 | 20 | -- | MICRO / HOOD |
| LIVING RM RECEPTS / SPARE | -- | 20 | 1 | A | 9 | ○ | ○ | | | | 10 | AG | 1 | 20 | -- | REFRIG / ISLAND RECEPTS |
| BATHROOM GFCI/RECIRC PUMP | -- | 20 | 1 | AG | 11 | | | ○ | ○ | | 12 | AG | 1 | 20 | -- | WASHER |
| LTG CKT - BATHROOM | -- | 20 | 1 | | 13 | ○ | ○ | | | | 14 | A | 1 | 20 | -- | DATA / TELECOM |
| LTG CKT - EXT | -- | 20 | 1 | | 15 | | | ○ | ○ | | 16 | S | 2 | 20 | -- | COOKTOP |
| EXTERIOR GFCI | -- | 20 | 1 | AG | 17 | ○ | ○ | | | | 18 | | | | | |
| DRYER | -- | 20 | 2 | AG | 19 | | | ○ | ○ | | 20 | A | 1 | 20 | ND | BEDROOM/SPARE |
| | | | | | 21 | ○ | ○ | | | | 22 | S | 2 | 20 | -- | CU 2 |
| BED #4/BUNK RECEPTS | -- | 20 | 1 | A | 23 | | | ○ | ○ | | 24 | | | | | |
| BEDROOM #5 | -- | 20 | 1 | A | 25 | ○ | ○ | | | | 26 | S | 2 | 20 | -- | GRILL |
| HALLWAY RECEPTS | -- | 20 | 1 | A | 27 | | | ○ | ○ | | 28 | | | | | |
| EUH 1 | -- | 20 | 2 | S | 29 | ○ | ○ | | | | 30 | S | 2 | 20 | -- | AH 2 DUCT HEATER |
| | | | | | 31 | | | ○ | ○ | | 32 | | | | | |
| EUH 1 | -- | 20 | 2 | S | 33 | ○ | ○ | | | | 34 | S | 2 | 35 | -- | EWH |
| | | | | | 35 | | | ○ | ○ | | 36 | | | | | |
| EWH | -- | 35 | 2 | S | 37 | ○ | ○ | | | | 38 | S | 2 | 20 | -- | ERV |
| | | | | | 39 | | | ○ | ○ | | 40 | | | | | |
| HUMIDIFIER | -- | 20 | 2 | S | 41 | ○ | ○ | | | | 42 | AG | 1 | 20 | -- | RADIANT FLOOR KITCHEN/BUNK |
| | | | | | 43 | | | ○ | ○ | | 44 | AG | 1 | 20 | -- | RADIANT FLOOR BATH 1/2 |
| FIREPLACE | -- | 20 | 1 | A | 45 | ○ | ○ | | | | 46 | AG | 1 | 20 | -- | RADIANT FLOOR BATH 3 |
| ERV | -- | 20 | 2 | S | 47 | | | ○ | ○ | | 48 | AG | 1 | 20 | -- | RADIANT FLOOR PRIM BATH |
| | | | | | 49 | ○ | ○ | | | | 50 | S | 2 | 35 | -- | WALL OVEN 2 |
| WALL OVEN 1 | -- | 35 | 2 | S | 51 | | | ○ | ○ | | 52 | | | | | |
| | | | | | 53 | ○ | ○ | | | | 54 | S | 2 | 35 | -- | AH 2 |
| AH 4 | -- | 50 | 2 | S | 55 | | | ○ | ○ | | 56 | | | | | |
| | | | | | 57 | ○ | ○ | | | | 58 | S | 2 | 20 | -- | AH 4 DUCT HEATER |
| EV CHARGER | -- | 50 | 2 | S | 59 | | | ○ | ○ | | 60 | | | | | |
| | | | | | 61 | ○ | ○ | | | | 62 | S | 1 | 20 | -- | BH1 |
| GARAGE DOOR OPENER | -- | 20 | 1 | S | 63 | | | ○ | ○ | | 64 | AG | 1 | 20 | ND | RADIANT FLOOR BATH 5 |
| CU 4 | -- | 20 | 2 | S | 65 | ○ | ○ | | | | 66 | S | 1 | 20 | -- | TOWEL WARMER |
| | | | | | 67 | | | ○ | ○ | | 68 | A | 1 | 20 | -- | SPARE |
| STEAMER 1 | -- | 30 | 2 | S | 69 | ○ | ○ | | | | 70 | A | 1 | 20 | ND | LTG CKT - EAST |
| | | | | | 71 | | | ○ | ○ | | 72 | A | 1 | 20 | ND | LTG CKT - WEST |
| STEAMER 2 | -- | 30 | 2 | S | 73 | ○ | ○ | | | | 74 | A | 1 | 20 | ND | LTG CKT - NORTH |
| | | | | | 75 | | | ○ | ○ | | 76 | A | 1 | 20 | ND | LTG CKT - SOUTH |
| STEAMER 3 | -- | 30 | 2 | S | 77 | ○ | ○ | | | | 78 | AG | 1 | 20 | -- | GARAGE GFCI |
| | | | | | 79 | | | ○ | ○ | | 80 | | 1 | 20 | -- | SPARE |
| STEAMER 4 | ND | 30 | 2 | S | 81 | ○ | ○ | | | | 82 | | | | | |
| | | | | | 83 | | | ○ | ○ | | 84 | S | 2 | 80 | -- | FOR FUTURE SOLAR ELECTRIC |
| | | | | | | TOTAL LOAD: | | 42.77 kVA | | 42.77 kVA | | | | | | |
| | | | | | | TOTAL AMPS: | | 411 A | | 411 A | | | | | | |

| LOAD TYPE | | CONN.LOAD | DEMAND FACT. | EST. DEMAND | BREAKER TYPE | | PANEL TOTALS |
|---|---|---|---|---|---|---|---|
| LIGHTING / EV - | L | 0 kVA | 0% | 0 kVA | SHUNT TRIP - | ST | TOTAL CONN. LOAD: 85.53 kVA |
| RECEPTACLE - | R | 0 kVA | 0% | 0 kVA | GFCI - | G | TOTAL EST. DEMAND: 85.53 kVA |
| MOTOR - | M | 0 kVA | 0% | 0 kVA | HANDLE BLOCK - | H | TOTAL CONN.: 411 A |
| KITCHEN - | K | 0 kVA | 0% | 0 kVA | HANDLE TIE - | T | TOTAL EST. DEMAND: 411 A |
| OTHER - | O | 0 kVA | 0% | 0 kVA | AFCI - | A | |
| EXISTING - | E | 0 kVA | 0% | 0 kVA | STANDARD - | S | |
| NEC-220.84- | | | | | LOCKOUT - | L | |

# PANEL HOUSE

SUPPLY FROM: MDC | VOLTS: 120/208 Wye | A.I.C. RATING: 65,000
MOUNTING: SURFACE | PHASES: 3 | MAINS TYPE: MLO
ENCLOSURE: NEMA 1 | WIRES: 4 | MAINS RATINGS: 320 A

| CIRCUIT DESCRIPTION | LT | TRIP | P | BT | | A | | | B | | | C | | | BT | P | TRIP | LT | CIRCUIT DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONVENIENCE RECEPT | R | 20 | 1 | G | 1 | 180 | 200 | | | | | | | 2 | S | 1 | 20 | L | ELEVATOR LTG |
| AC 0.75 | M | 20 | 2 | S | 3 | | | 17 | 1100 | | | | | 4 | S | 2 | 20 | M | EUH 1 WATER ENTRY |
| | | | | | 5 | | | | | 17 | 1100 | | | 6 | | | | | |
| COMMON AREA RECEPTS | R | 20 | 1 | S | 7 | 720 | 1440 | | | | | | | 8 | S | 1 | 20 | L | COMMON AREA LTG |
| CU 0.75 | M | 20 | 2 | S | 9 | | | 1248 | 10000 | | | | | 10 | S | 3 | 125 | M | EL - ELEVATOR |
| | | | | | 11 | | | | | 1248 | 10000 | | | 12 | | | | | |
| BLR-1 | M | 20 | 1 | S | 13 | 1440 | 10000 | | | | | | | 14 | | | | | |
| SPARE | -- | 20 | 1 | | 15 | | | ○ | 302 | | | | | 16 | S | 1 | 20 | O | BOILER CIRCULATION PUMPS |
| SPARE | -- | 20 | 1 | | 17 | | | | | ○ | 180 | | | 18 | S | 1 | 20 | L | INVERTER/STAIR LTG |
| UPPER LEVEL ELEV. SMOKE... | M | 20 | 1 | S | 19 | 1440 | 1440 | | | | | | | 20 | S | 1 | 20 | M | LL2 ELEV. SMOKE CURTAIN |
| MAIN LEVEL ELEV. SMOKE... | M | 20 | 1 | S | 21 | | | 1440 | 1440 | | | | | 22 | S | 1 | 20 | M | LL1 ELEV. SMOKE CURTAIN |
| HEAT TRACE | O | 20 | 2 | S | 23 | | | | | 1837 | 1837 | | | 24 | S | 2 | 20 | O | HEAT TRACE |
| | | | | | 25 | 1837 | 1837 | | | | | | | 26 | | | | | |
| HEAT TRACE | O | 20 | 2 | S | 27 | | | 1837 | 1837 | | | | | 28 | S | 2 | 20 | O | HEAT TRACE |
| | | | | | 29 | | | | | 1837 | 1837 | | | 30 | | | | | |
| HEAT TRACE | O | 20 | 2 | S | 31 | 1837 | 180 | | | | | | | 32 | S | 1 | 20 | R | ELEVATOR SUMP |
| | | | | | 33 | | | 1837 | 1440 | | | | | 34 | S | 1 | 20 | M | GCP |
| SPARE | -- | 20 | 1 | | 35 | | | | | ○ | ○ | | | 36 | | 1 | 20 | -- | SPARE |
| SPARE | -- | 20 | 1 | | 37 | ○ | ○ | | | | | | | 38 | | 1 | 20 | -- | SPARE |
| SPACE | -- | -- | 1 | | 39 | | | -- | -- | | | | | 40 | | 1 | -- | -- | SPACE |
| SPACE | -- | -- | 1 | | 41 | | | | | -- | -- | | | 42 | | 1 | -- | -- | SPACE |
| | | | | | | TOTAL LOAD: | | 21.95 kVA | | 21.9 kVA | | 19.09 kVA | | | | | | | |
| | | | | | | TOTAL AMPS: | | 187 A | | 186 A | | 159 A | | | | | | | |

| LOAD TYPE | | CONN.LOAD | DEMAND FACT. | EST. DEMAND | BREAKER TYPE | | PANEL TOTALS |
|---|---|---|---|---|---|---|---|
| LIGHTING / EV - | L | 1.82 kVA | 125% | 2.28 kVA | SHUNT TRIP - | ST | TOTAL CONN. LOAD: 62.94 kVA |
| RECEPTACLE - | R | 1.08 kVA | 100% | 1.08 kVA | GFCI - | G | TOTAL EST. DEMAND: 70.9 kVA |
| MOTOR - | M | 43.37 kVA | 117% | 50.87 kVA | HANDLE BLOCK - | H | TOTAL CONN.: 175 A |
| KITCHEN - | K | 0 kVA | 0% | 0 kVA | HANDLE TIE - | T | TOTAL EST. DEMAND: 197 A |
| OTHER - | O | 16.67 kVA | 100% | 16.67 kVA | AFCI - | A | |
| EXISTING - | E | 0 kVA | 0% | 0 kVA | STANDARD - | S | |
| NEC-220.84- | | | | | LOCKOUT - | L | |

LARGEST 4BED (A-C) UNIT RESIDENTIAL LOAD CALCS BASED UPON NEC 220.82

Total square footage 3,758

| | | | | | |
|---|---|---|---|---|---|
| (1) Appliance and Laundry Circuits | | | | | |
| 2 | Appliance Circuits | @ | 1,500 VA | = | 3,000 VA |
| 1 | Laundry Circuits | @ | 1,500 VA | = | 1,500 VA |
| SUB-TOTAL | | | | = | 4,500 VA |
| (2) Gen Lighting and Gen Use Receptacles | | | | | |
| 3758 | Sq Ft @ 3 Watts/sq ft | | | = | 11,274 VA |
| (3) Appliances | | | | | |
| 1 | Clothes Dryer | @ | 5,000 VA | = | 5,000 VA |
| 1 | Cooktop | @ | 3,000 VA | = | 3,000 VA |
| 1 | Dishwasher | @ | 1,200 VA | = | 1,200 VA |
| 1 | Disposer | @ | 1,150 VA | = | 1,150 VA |
| 1 | Humidifier | @ | 3,200 VA | = | 3,200 VA |
| 1 | Range Hood | @ | 600 VA | = | 600 VA |
| 1 | Refrigerator/Freezer | @ | 500 VA | = | 500 VA |
| 4 | TOWEL HEAT | @ | 150 VA | = | 600 VA |
| 2 | Wall Oven | @ | 5,000 VA | = | 10,000 VA |
| 3 | Steamer | @ | 9,000 VA | = | 27,000 VA |
| 2 | U. C. Refrigerator | @ | 500 VA | = | 1,000 VA |
| 1 | Ice Machine | @ | 180 VA | = | 180 VA |
| 2 | Electric Water Htr | @ | 5,000 VA | = | 10,000 VA |
| 2 | Fireplace | @ | 2,000 VA | = | 4,000 VA |
| 1 | Electric Grill | @ | 2,000 VA | = | 2,000 VA |
| SUB-TOTAL | | | | = | 69,480 VA |
| (4) Other Motor or Low P. F. Loads | | | | | |
| 6 | Bath Exhaust Fan | @ | 50 VA | = | 300 VA |
| 1 | Garage Door openers | @ | 1,000 VA | = | 1,000 VA |
| 1 | Humidifier | @ | 2,500 VA | = | 2,500 VA |
| SUB-TOTAL | | | | = | 3,800 VA |
| (5) Total of 'General' Loads [(1)+(2)+(3)+(4)] | | | | = | 89,034 VA |
| First | 10,000 | @ | 100% | = | 10,000 VA |
| Remainder | 79,034 | @ | 40% | = | 31,614 VA |
| SUB-TOTAL | | | | | 41,614 VA |
| (C) Plus 100% Larger of Heating/Cooling Load | | | | | |
| 2 | Furnace | @ | 1,200 VA | = | 2,400 VA |
| 0 | 1.5 Tons | @ | 2,496 VA | = | 2,496 VA |
| 1 | BH1 | @ | 500 VA | = | 500 VA |
| 0 | 2 Tons | @ | 4,160 VA | = | - |
| 2 | EUH | @ | 2,200 VA | = | 4,400 VA |
| 437 | Radiant Floors (sq ft) | @ | 13 VA | = | 5,550 VA |
| 1 | ERV | @ | 6,200 VA | = | 6,200 VA |
| 1 | EV | @ | 8,000 VA | = | 8,000 VA |
| 1 | 4TON | @ | 5,990 VA | | 5,990 VA |
| SUB-TOTAL | | | | = | 35,536 VA |
| TOTAL OF ALL LOADS | | | | | |
| "Other" Loads | | | | = | 41,614 VA |
| Heating / Cooling Load | | | | = | 35,536 VA |
| GRAND TOTAL LOAD | | | | = | 77,150 VA |
| | | | | (@208/1) | 370.9 A |

LARGEST 5BED (D) UNIT RESIDENTIAL LOAD CALCS BASED UPON NEC 220.82

Total square footage 3,758

| | | | | | |
|---|---|---|---|---|---|
| (1) Appliance and Laundry Circuits | | | | | |
| 2 | Appliance Circuits | @ | 1,500 VA | = | 3,000 VA |
| 1 | Laundry Circuits | @ | 1,500 VA | = | 1,500 VA |
| SUB-TOTAL | | | | = | 4,500 VA |
| (2) Gen Lighting and Gen Use Receptacles | | | | | |
| 3758 | Sq Ft @ 3 Watts/sq ft | | | = | 11,274 VA |
| (3) Appliances | | | | | |
| 1 | Clothes Dryer | @ | 5,000 VA | = | 5,000 VA |
| 1 | Cooktop | @ | 3,000 VA | = | 3,000 VA |
| 1 | Dishwasher | @ | 1,200 VA | = | 1,200 VA |
| 1 | Disposer | @ | 1,150 VA | = | 1,150 VA |
| 1 | Humidifier | @ | 3,200 VA | = | 3,200 VA |
| 1 | Range Hood | @ | 600 VA | = | 600 VA |
| 1 | Refrigerator/Freezer | @ | 500 VA | = | 500 VA |
| 5 | TOWEL HEAT | @ | 150 VA | = | 750 VA |
| 2 | Wall Oven | @ | 5,000 VA | = | 10,000 VA |
| 4 | Steamer | @ | 9,000 VA | = | 36,000 VA |
| 2 | U. C. Refrigerator | @ | 500 VA | = | 1,000 VA |
| 1 | Ice Machine | @ | 180 VA | = | 180 VA |
| 2 | Electric Water Htr | @ | 5,000 VA | = | 10,000 VA |
| 2 | Fireplace | @ | 2,000 VA | = | 4,000 VA |
| 1 | Electric Grill | @ | 2,000 VA | = | 2,000 VA |
| SUB-TOTAL | | | | = | 78,610 VA |
| (4) Other Motor or Low P. F. Loads | | | | | |
| 8 | Bath Exhaust Fan | @ | 50 VA | = | 400 VA |
| 1 | Garage Door openers | @ | 1,000 VA | = | 1,000 VA |
| 1 | Humidifier | @ | 2,500 VA | = | 2,500 VA |
| SUB-TOTAL | | | | = | 3,900 VA |
| (5) Total of 'General' Loads [(1)+(2)+(3)+(4)] | | | | = | 98,284 VA |
| First | 10,000 | @ | 100% | = | 10,000 VA |
| Remainder | 88,284 | @ | 40% | = | 35,314 VA |
| SUB-TOTAL | | | | | 45,314 VA |
| (C) Plus 100% Larger of Heating/Cooling Load | | | | | |
| 2 | Furnace | @ | 1,200 VA | = | 2,400 VA |
| 1 | 1.5 Tons | @ | 2,496 VA | = | - |
| 1 | BH1 | @ | 500 VA | = | 500 VA |
| 1 | 2 Tons | @ | 4,160 VA | = | 4,160 VA |
| 2 | EUH | @ | 2,200 VA | = | 4,400 VA |
| 565 | Radiant Floors (sq ft) | @ | 13 VA | = | 7,176 VA |
| 1 | ERV | @ | 6,200 VA | = | 6,200 VA |
| 1 | EV | @ | 8,000 VA | = | 8,000 VA |
| 1 | 4TON | @ | 5,990 VA | = | 5,990 VA |
| SUB-TOTAL | | | | = | 38,826 VA |
| TOTAL OF ALL LOADS | | | | | |
| "Other" Loads | | | | = | 45,314 VA |
| Heating / Cooling Load | | | | = | 38,826 VA |
| GRAND TOTAL LOAD | | | | = | 84,139 VA |
| | | | | (@208/1) | 404.5 A |

BUILDING RESIDENTIAL LOAD CALCS BASED UPON NEC 220.84

Number of Units 4
Total square footage 12,950

| | | | | | |
|---|---|---|---|---|---|
| (1) Appliance and Laundry Circuits | | | | | |
| 8 | Appliance Circuits | @ | 1,500 VA | = | 12,000 VA |
| 4 | Laundry Circuits | @ | 1,500 VA | = | 6,000 VA |
| SUB-TOTAL | | | | = | 18,000 VA |
| (2) Gen Lighting and Gen Use Receptacles | | | | | |
| 12950 | Sq Ft @ 3 Watts/sq ft | | | = | 38,850 VA |
| (3) Appliances | | | | | |
| 4 | Clothes Dryer | @ | 5,000 VA | = | 20,000 VA |
| 4 | Cooktop | @ | 3,000 VA | = | 12,000 VA |
| 4 | Dishwasher | @ | 1,200 VA | = | 4,800 VA |
| 4 | Disposer | @ | 1,180 VA | = | 4,720 VA |
| 8 | Humidifier | @ | 3,200 VA | = | 25,600 VA |
| 4 | Range Hood | @ | 600 VA | = | 2,400 VA |
| 4 | Refrigerator/Freezer | @ | 500 VA | = | 2,000 VA |
| 17 | TOWEL HEAT | @ | 150 VA | = | 2,550 VA |
| 8 | Wall Oven | @ | 5,000 VA | = | 40,000 VA |
| 13 | Steamer | @ | 9,000 VA | = | 117,000 VA |
| 8 | U. C. Refrigerator | @ | 500 VA | = | 4,000 VA |
| 4 | Ice Machine | @ | 180 VA | = | 720 VA |
| 8 | Electric Water Htr | @ | 5,000 VA | = | 40,000 VA |
| 8 | Fireplace | @ | 2,000 VA | = | 16,000 VA |
| 4 | Electric Grill | @ | 2,000 VA | = | 8,000 VA |
| SUB-TOTAL | | | | = | 299,790 VA |
| (4) Other Motor or Low P. F. Loads | | | | | |
| 25 | Bath Exhaust Fan | @ | 50 VA | = | 1,250 VA |
| 4 | Garage Door openers | @ | 1,000 VA | = | 4,000 VA |
| 4 | Humidifier | @ | 2,500 VA | = | 10,000 VA |
| SUB-TOTAL | | | | = | 15,250 VA |
| (5) Plus 100% Larger of Heating/Cooling Load | | | | | |
| 8 | Furnace | @ | 1,200 VA | = | 9,600 VA |
| 3 | 1.5 Tons | @ | 2,496 VA | = | 7,488 VA |
| 3 | BH1 | @ | 500 VA | = | 1,500 VA |
| 1 | 2 Tons | @ | 4,160 VA | = | 4,160 VA |
| 8 | EUH | @ | 2,200 VA | = | 17,600 VA |
| 1856 | Radiant Floors (sq ft) | @ | 13 VA | = | 23,571 VA |
| 4 | ERV | @ | 6,200 VA | = | 24,800 VA |
| 4 | EV | @ | 8,000 VA | = | 32,000 VA |
| 4 | Furnace | | 5990 | | 23,960 VA |
| SUB-TOTAL | | | | = | 144,679 VA |
| TOTAL OF ALL LOADS | | | | | |
| Total Load | | | | = | 516,569 VA |
| Multy Family Demand Factor (220-84) | | | | | 0.45 |
| GRAND TOTAL LOAD | | | | = | 232,456 VA |
| | | | | (@208/3) | 646.0 A |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COLORADO LICENSED
ERIC SMITH
38983
03/21/2024
PROFESSIONAL ENGINEER



REVISIONS

| No. | Description | Date |
|---|---|---|
| | | |

# ASTRID BUILDING 7

STEAMBOAT SPRINGS, COLORADO

| | |
|---|---|
| Job Number: | 23055-7 |
| Date: | 03/21/24 |
| Drawn By: | Author |
| Checked By: | EM |

Project Phase: PERMIT

Sheet Title: ELECTRICAL SCHEDULE

Sheet Number: E6.2

3/21/2024 1:28:46 PM

**DIVISION 26 - ELECTRICAL**

**SECTION 26 01 00 - GENERAL PROVISIONS**

1.01 WORK INCLUDED:

A. The work included by this division of the specifications includes furnishing all labor, materials, equipment, and services, including minor items omitted but necessary to construct and install the complete systems described by the Contract Documents and specified below. "Contractor" refers to the Electrical Contractor. The general conditions of the specifications apply and are included in this part of this section.
   1. Power Distribution System
   2. Interior and Exterior Lighting System
   3. Telephone Raceway System
   4. Data Raceway System
   5. Fire Alarm System
   6. Emergency Lighting System
   7. Electric Heating System

1.02 CODES AND REGULATIONS:

A. Comply with state and local codes, and utility company regulations. Final interpretations will be made by the local inspection authority. The Contractor to verify the governance of the following Codes, including any local amendments and supplementary codes such as the Codes of the National Fire Protection Association:
   1. Building Code: 2021 International Building Code
   2. Plumbing Code: 2021 International Plumbing Code
   3. Mechanical Code: 2021 International Mechanical Code
   4. Fire Code: 2021 International Fire Code
   5. Gas Code: 2021 International Fuel Gas Code
   6. Energy Code: 2021 International Energy Conservation Code
   7. Electrical Code 2023 National Electrical Code

1.03 EQUIPMENT AND MATERIALS STANDARDS:

A. Equipment and materials shall be new, UL-listed for the use intended, and free from damage or defect. They shall comply with the latest industry standards.

1.04 CONTRACT DRAWINGS:

A. Illustrate the general design and extent of performance required. All dimensions and locations shall be taken from the Architectural drawings. Consult with Architectural plans and locate all ceiling equipment where indicated on reflected ceiling plans.

1.05 SHOP DRAWINGS

A. Submit products data and/or shop drawings as required by the Architect for the following:
   1. Switches, dimmers, receptacles and coverplates
   2. Switchboards, Panelboards/Loadcenters
   3. Disconnect switches
   4. Fuses
   5. Light fixtures
   6. Fire alarm system and equipment

B. Quality of specific equipment is established by manufacturer's catalog number. Alterations caused by any Substitution shall be accomplished at no additional expense to the Owner

C. Manufacturers not listed may submit for acceptance as an "approved equivalent." Requests for an "equivalent" means "approved equivalent". Four copies of such submittal must be received by the Engineer seven (7) working days prior to bid date.

1.06 WARRANTY:

A. The contractor shall be responsible for the successful operation of electrical systems, equipment, and materials installed under this Contract for a period of one year from the date of final acceptance. Defective equipment or materials shall be repaired or replaced at no expense to the Owner.

1.07 PRODUCT HANDLING AND CLEAN UP:

A. Equipment shall be left clean and undamaged, to the satisfaction of the Owner. The General Conditions take precedence.

1.08 CUTTING AND REPAIRING:

A. The contractor shall be responsible for all cutting, drilling, welding, and repair required for his portion of the work. Coordinate with the Architect. The General Conditions take precedence.

1.09 OPERATING AND MAINTENANCE DATA:

A. Provide the Owner with operating and maintenance instructions(four copies) required for operation of all electrical systems. Bind the written instructions in a notebook. The General Conditions take precedence.

1.10 PERMITS:

A. The contractor shall pay for all fees, taxes, secure permits, licenses, and inspections required for the project.

1.11 TEMPORARY SERVICES:

A. Provide temporary power and lighting as required by the General Contractor, in accordance with OSHA and N.E.C. standards.

1.12 COORDINATION

A. Coordinate outlet device and equipment locations with the Architectural Plans and work of other trades. Locate on horizontal and vertical lines to avoid interference and to provide functional use of all equipment. Verify electrical power characteristics before ordering fixtures, equipment, etc.

B. Mechanical work performed by this contractor will conform to the standards of Division 21-23. Mechanical equipment motors and controls shall be furnished, set in place, and wired according with the following schedule unless otherwise noted or specified. MC = Division 21-23 EC = Division 26-28

| Item | Furn By | Set By | Power Wiring | Control Wiring |
|---|---|---|---|---|
| Combination starters | MC | EC | EC | MC |
| Equipment motors | MC | MC | EC | -- |
| Motor starters & O.L. relays | MC | EC | EC | MC |
| Disconnect switches | EC | EC | EC | MC |
| Thermal overload heaters (1) | EC | EC | EC | -- |
| Variable Speed Drives | MC | EC | EC | MC |
| Control relays/transformers | MC | MC | EC | MC |
| Temperature control panels | MC | MC | EC | MC |
| Temp. Controls conduit/wiring | MC | MC | -- | MC |
| Actuator and solenoid wiring | MC | MC | -- | MC |
| Pushbuttons & pilot lights | MC | MC | -- | MC |
| Room thermostats | MC | MC | -- | MC |
| Thermostats: line voltage | EC | EC | EC | -- |

C. The general guideline for the division between control(by MC) wiring and power wiring(by EC) is that power wiring carries the current which energizes a motor, control wiring does not. Control wiring may be 120V, which would be the responsibility of the MC. Control motors are wired by the MC.

D. Examine the site and become aware of existing conditions, utilities, and other issues affecting the satisfactory completion of the project.

1.13 DELIVERY, STORAGE, HANDLING:

A. Provide necessary hauling and hoisting equipment. Protect the materials of this Division before, during, and after installation.

1.14 AS-BUILT DRAWINGS:

A. Keep a current set of "as-built" drawings on site. Upon completion of the work, furnish engineer with a reproducible prints showing the "as-built" installation.

1.15 PROJECT/SITE CONDITIONS:

A. Visit the site to become familiar with location and the various conditions affecting the work, including existing utilities.

2.01 ACCESS PANELS:

A. The electrical Contractor shall furnish and General Contractor shall install access panels where required for access to equipment. The electrical Contractor shall include the cost of installation in his bid. Access panels shall be adequately sized, of a type approved by the Architect and shall be fire or smoke-rated as required.

3.01 EXCAVATION AND BACKFILLING:

A. Verify the location of underground utilities before excavation; the contractor is responsible for any damage to underground utilities. Provide excavating and backfilling for electrical work. Backfill in 12" layers, mechanically tamp to 95% proctor standards. Protect according to OSHA standards. The General Conditions take precedence.

B. Provide marker tape 12" above exterior underground service conduits(power, telephone, television).

3.02 START-UP PROCEDURES:

A. Follow manufacturer's recommended procedures in starting up the equipment; damage caused during start-up shall be replaced at no expense to the owner.

3.03 HANGERS AND SUPPORTS:

A. Support conduit and equipment from the structure to prevent sagging, pocketing, swaying, and vibrations, and arranged to provide for expansion and contraction. Brackets, clamps, and hangers shall be steel or copper of a type, acceptable to the Engineer. Chain, perforated iron or wire hangers are not permitted.

B. Conduit on the roof will be supported above the roof on roof pads. The pads shall be approximately 6"Wide by 6" high by the length as required. They shall be made of recycled rubber, rated for 500lbs/ft loading each. The pads will have galvanized steel "C" channel attached to the top, which can accommodate pipe clamps to secure the conduit. This configuration of individual piping pads may be expanded to include two pads supporting a trapeze style support where multiple conduits are racked together. The pads are C-series manufactured by Cooper B-line or approved equivalent.

3.04 SLEEVES AND PLATES

A. Provide sleeves and inserts for all conduit. The contractor shall be responsible for the cost of cutting and patching required for piping where sleeves and inserts were not installed or where incorrectly located. Sheetrock joint compound may be used to seal openings in non-rated walls(insulation to be continuous through walls.

B. Drill holes as required for the installation of hangers required for the mechanical work.

C. Where sleeves are placed in exterior walls below grade, the space between the pipe or conduit and the sleeves shall be made completely water-tight.

D. Seal all piping passing through fire-rated construction with approved material to maintain air-tight, fire-rated integrity, with a U.L. listed assembly compatible with the wall or floor assembly being penetrated.

**SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL**

1.01 GENERAL:

A. Provide complete systems of conductors and raceways using conduit and/or cable assemblies appropriate to the function and location, and specifically approved in chapter three of the N.E.C..

2.01 CONDUIT:

A. The following raceways are approved for use on this project, where approved by the N.E.C.:
   1. EMT: Electrical metallic tubing, galvanized
   2. GRC: Rigid steel conduit, galvanized
   3. PVC: Polyvinyl chloride conduit, schedule 40
   4. IMC: Intermediate metal conduit, galvanized

2.02 CABLE ASSEMBLIES:

A. The following cable assemblies may be used in the power distribution system in concealed locations, where approved by the N.E.C.:
   1. MC: Metal clad cable
   2. NM/NMC: Non-metallic sheathed cable
   3. SE/SER: Service entrance cable (From MDC to residences)

2.03 BOXES:

A. Provide galvanized steel outlet and junction boxes, except where otherwise indicated. Boxes shall be a minimum 4" square or octagonal, depth as required. Provide weather-proof type cast boxes with gasket and cast coverplate for exterior outlets or wet locations. Outlet boxes shall be of the proper type and design for the fixture or device to be installed. Through the wall boxes are not permitted. Provide plaster or tile rings for all flush outlets installed where required. Boxes shall be manufactured by Raco, Steel City, National or equivalent.

B. Interior floor boxes shall be non-metallic or cast steel in concrete or slab on grade installations, and shall be rated for the use. Floor boxes above grade shall be non-metallic or stamped steel, rated for the use. Multi-gang boxes shall be used where specified. Coverplates shall be polished brass with 'flip lids' for receptacles and connectors. Provide carpet flanges where appropriate.

2.04 CONDUCTORS:

A. Provide a complete set of power conductors, rated 600 volts, of the quantity, size and type required for the function.
   1. Conductors shall be copper, except where specifically noted. Conductors shall be solid for wire sizes No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
   2. Aluminum conductors will be accepted only where specifically indicated by the Contract Documents. Aluminum conductors must be terminated according to the manufacturers instructions, including use of proper joint compound, use with aluminum rated lugs, and proper torqueing of the lugs.

2.05 INSULATION:

A. Provide wire with the following minimum insulation standards:
   1. Branch circuits, panelboard feeders, service entrance conductors: THWN-2, XHHW(90C). The conductors shall be applied using the 75C rating.
   2. Connections to fixture ballasts, and wiring runs in or through fixture wiring channels: Insulations listed in table 402.5 of the N.E.C., except for wiring made with asbestos.
   3. Cord connections: Cords listed in table 400.4 of the N.E.C., except for wiring made with asbestos.

2.06 LUGS:

A. Lugs for all equipment will be rated for the use. Lugs will be suitable for copper or aluminum conductors, rated for 75C.

2.07 SWITCHES AND RECEPTACLES:

A. Provide specification grade devices throughout. Switches and duplex receptacles may be commercial grade. Devices shall be manufactured by Hubbell, Leviton, General Electric, Bryant, Slater, Pass & Seymour, Inc., Sierra, or Arrow-Hart.

B. Except where noted, plates shall be plastic, color to match the devices with matching screws for receptacles, switches, telephone, and TV outlets. Provide blank coverplates for unused outlets. Coverplates for multi-gang boxes shall be sized for the box it covers.

C. Devices and their coverplates colors shall be coordinated with Architect and Owner. In mechanical rooms, etc, the coverplates may be galvanized steel

2.08 DIMMERS:

A. Incandescent dimmers shall be the linear slide-type with aluminum fins. Dimmers shall be Lutron Nova series or equivalent.

B. Fluorescent dimmers shall be the linear slide-type with aluminum fins. The dimmers shall be closely coordinated with the ballast type of the specific fixture being controlled and must be field coordinated before ordering. Dimmers shall be Lutron Nova series or equivalent.

C. LED dimmers must be selected by, or specifically approved by, the specific fixture manufacturer or supplier. Slide type dimmers are preferred where available.

D. When switches and dimmers are located side by side, switches shall have identical appearance as dimmers. Dimmers shall in no case have heat fins removed or modified.

E. Dimmers shall be manufactured by Lutron, Hunt, Prescolite, or equivalent

3.01 WIRING:

A. The drawings are schematic in nature; alternative wiring paths, different conduit fill, etc, installed in conformance with the N.E.C. are allowed. Conductors must be derated per code.

B. Branch circuits shall use minimum No. 12 AWG wiring for branch circuits, protected by 20 ampere circuit breakers. Control wiring may be No. 14 minimum. If distance from panel to first outlet is 75 feet or greater (for 120-volt circuits) or 150 feet or greater (for 277-volt circuits), provide No. 10 AWG.

C. Use PVC in earth or in slabs in contact with earth. Outside the building, install a minimum of 30" below finished grade.

D. Where mechanical damage occur, use galvanized rigid steel or intermediate metal conduit.

E. Electric metallic tubing may be used in all applications, except where prohibited by code or otherwise noted.

F. Do not install exposed conduit in areas open to the public. Exposed conduit may be installed at surface-mounted equipment and other locations acceptable to the Architect. Run exposed conduit parallel to, and at right angles with, the building lines.

G. Direct burial wiring shall not be used.

H. Use flexible metallic conduit for connections to motors, fixtures, or other equipment where vibration is encountered. Provide sealtite flexible metallic conduit in wet areas such as kitchens, equipment rooms, on roofs, etc.

I. Provide a ground wire in non-metallic conduit and flexible conduit. Ground wires shall be increased in size where circuit wiring is increased for voltage drop.

J. Circuits fed through AFCI breakers shall have separate neutrals with no cross or ground connections; wiring shall be installed per the breaker manufacturers instructions.

K. Multi-wire branch circuits shall utilize handle ties on breakers, or other grouped disconnecting means per NEC 210.4(B).

3.02 OUTLET BOXES, DEVICES AND FITTINGS:

A. Install receptacle and telephone outlets 18" to center-line above floor in general locations; install at switch height where shown in combination; install 46"to center-line in mechanical equipment rooms.

B. Install receptacles vertically, ground pole down.

C. Install switch outlets 46" to center-line above floor on latch side of door. Verify door swing prior to installation. Use gang boxes for multiple-device installation as required.

D. Install outlets shown on the drawings "back-to-back" with a minimum of 6" lateral separation between them.

**SECTION 26 20 00 - SERVICE AND DISTRIBUTION**

1.01 SERVICE ENTRANCE:

A. Power will be available from the secondary side of transformer(s) provided by the utility company. This service shall be 120/208 volt, 3 phase, 4 wire, 60 hertz A.C. for normal power and lighting requirements. General arrangement of the service equipment is shown on the drawings. Load balance the entire system to within 15% per phase.

1.02 GROUNDING:

A. Provide a complete grounding system in accordance with Section 250 of the N.E.C.

B. Supplemental electrode to be installed unless resistance of 25 ohms to earth can be documented.

2.01 PANELBOARDS:

A. Provide circuit breaker-type panelboards as detailed on the drawings. Provide separate ground bus. Provide fronts with door and latch with locks keyed alike. Install panels 6'6" above finished floor to top of trim. Where panels are mounted side by side, align tops of panels. Mount a typed directory, identifying each circuit, in a directory frame. Provide typed source label identifying source of power for each panel. Install trims and doors with primer coats in finished areas. Provide one spare 3/4" conduit for each 3 unused poles in flush-mounted panelboards; extend from to an accessible point above a hung ceiling; cap and identify.

B. Breakers shall be full width, thermal magnetic, bolt-on type. Provide multi-pole breakers with common trip and single operating handle; handle ties are acceptable for multi-wire branch circuits.
   1. Breakers serving restaurant kitchens and bars, or where required by code, shall be GFCI breakers. GFCI receptacles may be used only where the receptacles are not located behind equipment.
   2. HACR breakers shall be used for HVAC equipment in accordance with the equipment manufacturer.

C. Lugs on mains and branch breakers shall be rated for 75C or 60C, copper or aluminum wiring.

D. Panelboards(240VAC) shall be Square D type NQOD or equivalent by I.T.E., G.E., or Cutler Hammer.

2.02 FUSIBLE DISTRIBUTION SWITCHGEAR:

A. Provide free-standing, floor-mounted, fusible type switchboard as shown on the plans.

B. Switchboard shall be 90" high, depth as indicated, constructed so rear sections align, with internal components removable from the front.

C. Busses shall be copper or tin-plated aluminum, braced for short- circuit currents of 100,000 RMS symmetrical amperes. Horizontal bars shall be tape-wrapped and insulated. Maximum temperature rise shall be 55C over 25C ambient. Provide full length and sized horizontal busses, including neutral and ground. Vertical sections shall be fully bussed. All lugs shall be rated for 75C or 60C copper or aluminum wiring.

D. Manufacturers shall be General Electric "AV line" with QMR construction or equivalent by Square D, I.T.E., or Westinghouse.

2.03 CURRENT TRANSFORMER CABINETS:

A. Provide current transformer cabinets, including interior lugs and bussing, as required to accommodate the requirements of the utility company. The cabinets shall be U.L. listed, weatherproof as required. All lugs shall be rated for 75C or 60C wiring.

2.04 METER STACK:

A. Provide wall mounted modular meter stacks where shown on the plans. The unit shall be NEMA 3(NEMA 1), made of galvanized steel. The incoming section shall use a fused switch.

B. The busses shall be copper or tin-plated aluminum, braced for short-circuit currents of 65,000AIC symmetrical amperes. Vertical sections shall be fully bussed top to bottom. Provide full length and sized horizontal busses, including neutral and ground. All lugs shall be rated for 75C or 60C copper or aluminum wiring.

C. Meter stack shall accommodate both single phase and three phase, 100Amp and 200Amp meters and breakers. Additional sections shall be capable of simple connection.

D. The meter stack shall be manufactured by American Midwest Power (AMP), Square D, G.E., Westinghouse ITE or equivalent.

2.05 SAFETY SWITCHES:

A. Provide normal duty, enclosed, fusible and non-fusible safety switches as indicated on the plans. All lugs shall be rated for 75C or 60C copper or aluminum wiring. Provide enclosures suitable for the surrounding area and conditions. Label switches for feeder or motor supplied. The switches shall be manufactured by Square D, I.T.E., G.E., Cutler Hammer, or equivalent.

2.06 FUSES:

A. Provide power fuses of the time-delay type unless otherwise indicated. Fuses shall be manufactured by Bussman, Gould Shawmut, or equivalent. Provide one (1) complete set of fuses for fuse-holding devices, sized according to the motor and/or conductor to be protected. Provide a hinged cover cabinet for storage of spare fuses: three spare fuses of each fuse size.

3.01 WIRING FOR EQUIPMENT:

A. Provide branch circuits, feeders, junction boxes, disconnect switches, etc as required for a complete system; make power connections to motors and controls for heating, ventilating, air conditioning, plumbing, owner furnished and fire protection equipment as required.

B. Kitchen equipment. Refer to the Kitchen Equipment Contractor's drawings for final sizing, locations, and rough-in heights. The Electrical Contractor shall provide final circuits and connections to kitchen electrical equipment. Sealtite conduit and fittings shall be used on runs inside refrigerated bases and at dish tables.

C. Provide connections to hood fire suppression system(s). The electrical contractor is responsible for wiring the interlock controls for hood related air handling equipment, including low voltage interlocks, and interlocks within building HVAC equipment where required.

**SECTION 26 50 00 - LIGHTING**

1.01 RECESSED LED:

A. Recessed LED luminaires shall be pre-wired. Openings shall be neatly made so they are completely concealed after the trim is installed. Luminaires installed in a grid ceiling shall be supported by the framing system, not by ceiling panels. Install metal plaster frames in plaster ceilings. Fixtures shall have thermal protection where required by the N.E.C. and local codes.

1.02 EXTERIOR LIGHTING FIXTURES:

A. Provide weather-proof luminaires for mounting as shown. Provide lamps of size and wattage as indicated on the drawings. Provide underground wiring to exterior lighting as shown on the drawings.

2.01 INTERIOR LIGHTING FIXTURES:

A. Securely support and anchor fixtures and outlet boxes. Where lighting fixtures are installed in a lay-in grid ceiling system, secure fixtures to tees by installing earthquake clips at each corner of the fixture. Provide supports required, including structural members if needed. Provide separate junction boxes and wire to recessed fixtures in flexible conduit with Type AF wire, unless acceptable pre-wired fixtures are used. Conceal openings cut in ceilings for recessed fixtures with fixture trim installed. Coordinate installation of recessed fixtures with ceiling installer.

2.02 EXTERIOR LIGHTING FIXTURES:

A. Exterior lighting fixtures, raceways, equipment, etc. shall be weather-proof and suitable for temperatures down to -20F.

B. Ballast type, lamp wattage, and rated voltage shall be as indicated on the plans. Each ballast shall be of the separate- component type, capable of reliable lamp starting down to -20F, and shall have a minimum power factor of .90.

2.03 LAMPS:

A. Incandescent and LED replacement lamps shall be rated at 130V. H.I.D. and fluorescent lamps shall be as specified on plans with ballasts as specified in the following specifications. Lamp codes listed are ANSI. All lamps shall be Sylvania, General Electric, or approved equivalent.

B. In porcelain keyless fixtures, provide medium base, self ballasted, A-line shape, fluorescent lamps, GE FLE15/2/A21 or equivalent.

2.04 DRIVERS:

A. LED drivers shall be electronic-type, labeled as compliant with radio frequency interference (RFI) requirements of FCC Title 47 Part 15, and comply with NEMA SSL 1 "Electronic Drivers for LED Devices, Arrays, or Systems". LED drivers shall have a sound rating of "A", have a minimum efficiency of 85%, and be rated for a THD of less than 20 percent at all input voltages.

B. Dimmable LED drivers shall be 0-10V type. Dimmable LED drivers shall be capable of dimming without LED strobing or flicker across their full dimming range.

C. Ballasts and drivers shall be rated for the ambient temperatures in which they are located. Outdoor fixtures shall be equipped with ballasts or drivers rated for reliable starting to -20 degrees F. Indoor fixtures located in areas with direct sunlight or above normal ambient temperatures shall have ballasts or drivers rated at 65 degrees C minimum.

2.05 OUTDOOR LIGHTING CONTROLS:

A. Provide astronomical time switch, lighting control system as shown on drawings. Include contactors, time switches, transformers, selector switches, relays, wiring, etc. as required.

B. Set time clock(s) to operate contacts as scheduled hours by Owner.

C. Time clock shall be astronomical seven-day programable type. Provide contacts as shown on plans. Time clock shall be readily adjustable.

**DIVISION 27 - COMMUNICATIONS**

**SECTION 27 20 00 - COMPUTER SYSTEM**

3.01 DESCRIPTION:

A. Provide a complete system of raceways, pull boxes, outlet boxes, and terminals. Raceways shall form a complete path up walls and across inaccessible ceilings. Computer wiring may be run wild above accessible ceiling.

4.01 CONDUIT:

A. Conduit in the building shall be galvanized EMT, with plastic bushings on ends which are not terminated in a box.

4.02 WALL OUTLETS:

A. Wall outlets shall be 4" square pressed steel boxes, with single gang plaster ring. Connectors and coverplates are to be provided by the computer system installer.

B. Provide an alternate price for plaster rings at outlet location, and pullstrings in wall up to accessible ceiling, in lieu of conduit and boxes.

4.03 WIRING:

A. Wiring shall be provided by the computer system installer. Wiring run wild in air plenums shall be teflon coated or similarly rated for the application.

4.04 EXECUTION:

A. Provide pull strings in all conduit.

B. Field verify all computer outlet locations. Final locations and heights shall be as designated by the Architect or Owner's representative.

**SECTION 27 30 00 - TELEPHONE SYSTEM**

1.01 DESCRIPTION:

A. Provide a complete system of raceways, pull boxes, outlet boxes, and terminals. Raceways shall form a complete path up walls and across inaccessible ceilings. Telephone wiring may be run wild above accessible ceiling.

B. System will include exterior underground conduit routed to a point of connection(usually a pedestal or a power pole) as directed by the telephone company. Exterior conduit shall be sized and installed as directed by the telephone company.

2.01 CONDUIT:

A. Conduit in the building shall be galvanized EMT, with plastic bushings on ends which are not terminated in a box. Exterior underground conduit shall be schedule 40 PVC with solvent joints.

B. Wall outlets shall be 4" square pressed steel boxes, with single gang plaster ring. Connectors and coverplates are to be provided by the telephone system installer.

C. Provide an alternate price for plaster rings at outlet location, and pullstrings in wall up to accessible ceiling, in lieu of conduit and boxes.

2.02 TERMINALS:

A. Telephone terminals shall be constructed of 1/2" thick, fire resistant, interior finish plywood, painted white, sized as shown or required. Provide power and ground connection as required or shown on the plans.

2.03 WIRING:

A. Wiring shall be provided by the telephone system installer. Wiring run in air plenums shall be teflon coated or similarly rated for the application.

3.01 EXECUTION:

A. Provide pull strings in all conduit.

B. Exterior underground conduit shall use long radius, sweep ells. These elbows shall be schedule 80 PVC, or PVC coated GRC conduit.

C. Field verify all telephone outlet locations. Final locations and heights shall be as designated by the Architect or Owner's representative.

**SECTION 27 40 00 - VIDEO SYSTEM**

1.01 DESCRIPTION:

A. Provide a complete system of raceways, pull boxes, outlet boxes, and terminals. Raceways shall form a complete path up walls and across inaccessible ceilings. Video wiring may be run wild above accessible ceiling.

2.01 CONDUIT:

A. Conduit in the building shall be galvanized EMT, with plastic bushings on ends which are not terminated in a box. Exterior underground conduit shall be schedule 40 PVC (schedule 80 PVC radius elbows) with solvent joints.

2.02 WALL OUTLETS:

A. Wall outlets shall be 4" square pressed steel boxes, with single gang plaster ring. Connectors and coverplates are to be provided by the video system installer. Provide an alternate price for plaster rings at outlet location, and pullstrings in wall up to accessible ceiling, in lieu of conduit and boxes.

B. Terminal shall contain one type F connector mounted on a brushed aluminum plate. "CATV" will be engraved on plate above each connector in 1/"4 high black letters.

2.03 WIRING:

A. Wiring shall be provided by the video system installer. Wiring run in air plenums shall be teflon coated or similarly rated for the application.

3.01 EXECUTION:

A. Provide pull strings in all conduit.

B. Exterior underground conduit shall use long radius, sweep ells. These elbows shall be schedule 80 PVC conduit.

C. Field verify all television outlet locations. Final locations and heights shall be as designated by the Architect or Owner's representative.

**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**

**SECTION 28 10 00 - SECURITY ALARM SYSTEM**

1.01 DESCRIPTION:

A. Provide a complete door security alarm system to audibly and visually annunciate door entry/exit at a master control panel. The door alarms may be individually reset at the master control panel as well as by-passed during certain hours of the day.

2.01 ANNUNCIATOR PANEL:

A. The annunciator panel shall be comprised of (3) 4 door modules each with individual door reset/bypass pushbuttons with associated LED's. The annunciator shall contain a common call placed LED, and alarm tone speaker, momentary action tone silencing push button. The tone silencing circuitry shall automatically reset after the alarm is reset. Each button cap shall be marked with the door identity. The panel shall be constructed of anodized aluminum, supplied with a recessed mounting frame.

2.02 CONTROL UNIT:

A. The control unit shall include a volume control and be configured for pulsating alarm signal. A power supply shall be provided in conjuction with the control unit.

2.03 DOOR CONTACTS:

A. Door contacts shall be normally closed mechanical door contacts.

2.04 WIRING:

A. Wiring shall be low voltage 18 AWG, run per the manufacturers instructions. Wiring may be run wild above accessible ceilings, in raceways in inaccessible locations.

2.05 MANUFACTURER:

A. The equipment shall be manufactured by Auth-Florence, Dukane or approved equivalent.

3.01 EXECUTION:

A. Install the security alarm system in accordance with the manufacturers instructions.

**SECTION 28 30 00 - FIRE ALARM SYSTEM**

1.01 GENERAL:

A. Provide an electronically-operated, double-supervised, closed-circuit, addressable type fire alarm system consisting of a control unit, manual-pull stations, alarm signals, automatic smoke and heat detectors, sprinkler monitor modules, and control relays as required, located as shown on the drawings and wired in accordance with the manufacturer's instructions to make a complete and workable system as hereinafter described.

B. Provide equipment manufactured by Simplex Time Recorder Company (System 4000), or equivalent by Fire Lite, Notifier, or Silent Knight.

1.02 CODES AND REGULATIONS:

A. Fire Alarm system shall comply with NFPA 72(2013 edition).

2.01 CONTROL PANEL:

A. The control panel shall be modular with solid state, microprocessor based electronics. Panel shall contain an 80-character LCD display to indicate panel status. The panel shall include initiation device circuits, alarm indicating appliance circuit, supervised annunciator circuits, automatic battery charger and standby batteries.

B. The fire alarm control panel shall be Simplex Series 4010 or equivalent.

2.02 ANNUNCIATOR:

A. The annunciator shall be flush mounted and back lit using LED lights for power on, trouble and alarm indication. Remote annunciator shall have an 80-character LCD display. Units may be stacked within one enclosure to accommodate the proper number of zones. The annunciator shall include trouble silence, alarm silence, and system reset switches. The remote annunciator shall be electrically supervised from the control panel.

B. The annunciator shall be Simplex 4602 Series or equivalent.

2.03 MANUAL PULL STATIONS:

A. Manual pull stations shall be double action type made of red lexan with raised white letter; activation shall require two separate and distinct actions. Reset shall require a key common to the control panel.

B. Pull stations shall be Simplex 4099-series or equivalent.

2.04 SMOKE DETECTORS:

A. Smoke Detectors shall be a dual-chamber, photoelectric type detectors, complete with flashing status-indicating LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady and at full brilliance. The detector may be reset by actuating the control panel reset switch.

B. The detectors shall be Simplex 4098 Series or equivalent.

2.05 AUTOMATIC HEAT DETECTORS:

A. Automatic heat detectors shall be combination rate-of-rise and fixed-temperature type. When the fixed temperature portion is activated, the units shall be non-restorable and give visual evidence of the operation.

B. The detectors shall be Simplex 4098 Series or equivalent.

2.06 DUCT SMOKE DETECTORS:

A. Duct smoke detectors shall be solid-state photoelectric type and shall operate on the light scattering principle. Detector construction shall be of the split type, a mounting base with twist-lock detecting head. Removal of the detector head shall interrupt the supervisory circuit. Detector shall be compatible with normally open fire alarm detection devices. Detector shall have an alarm LED visible through a transparent front cover.

B. The detectors shall be Simplex 4098 Series or equivalent.

2.07 ALARM HORN/ STROBE:

A. Alarm horn/ strobe shall be combination devices. They shall be polarized and operated by 24VDC. Each horn shall include separate wire lead for in/out wiring. The strobe shall be a xenon flashtube. The lexan lens shall be pyramidal in shape. The units shall have panel module and wiring installed to operate strobes independently when horns are turned off.

B. The alarms shall be Simplex 4903 Series or equivalent.

2.08 ALARM STROBE:

A. Alarm strobe shall be a xenon flashtube. The lexan lens shall be pyramidal in shape.

B. The alarms shall be Simplex 4904 Series or equivalent.

2.09 DOOR HOLDERS:

A. Door Holders shall be low voltage magnetic type with a minimum holding force of 25 lbs. The holders will be flush mounted wherever possible. Coordinate the exact location, voltage, etc with the door supplier to assure compatibility if the holders are provided by others.

B. The holders shall be Simplex 2088 Series or equivalent.

2.10 REMOTE ALARM INDICATORS:

A. Remote alarm indicators shall be provided for detectors, which are concealed above ceilings or in locked rooms. The indicators shall include test station switch for detectors above ceilings or in areas difficult to access. The remote alarm or remote alarm/test stations shall be Simplex series 2098 or equivalent.

2.11 AUTODIALER:

A. Install and wire an auto dialer unit for communication to a central station over leased phone wires. Field coordinate exact details with the Owner or Owner's representative.

2.12 MONITOR MODULE:

A. Provide an addressable monitor module for supervision of waterflow and tamper switches.

B. Simplex IAM or equivalent.

2.13 WIRING:

A. Provide a complete system of raceways, pull boxes, and outlet boxes. Raceways shall form a complete path up walls and across inaccessible ceilings. Wiring may be run wild above accessible ceilings.

3.01 INITIATION:

A. Upon the operation of any manual pull station or automatic initiating device (smoke detector, sprinkler flow switch, etc.):
   1. Sound a continuous, audible and visible alarm in the entire building
   2. Provide description of alarm condition via LCD display at FACP and remote annunciator.
   3. In addition, provide controls and wiring required for the following functions:
      a. Shut down all air handling units, except exhaust fans.
      b. Send a signal to a remote monitoring station.

3.02 SYSTEM REPRESENTATIVE:

A. All system representative shall be an authorized engineered systems distributor located within a 50 mile radius of the project.

3.03 REMOTE INDICATING LIGHTS:

A. Remote indicating lights shall be provided for existing detectors obscured from view in locked rooms.

3.04 COMPONENT PROTECTION:

A. Provide a wire guard over any detector or horn in an area susceptible to physical damage.

3.05 FLOW AND TAMPER SWITCHES:

A. Wire all flow switches and tamper switches installed by the fire sprinkler contractor to monitor modules. Determine exact quantity and location before bidding and include the costs of any wiring and conduit.

3.06 HORN LIGHT:

A. Wire the exterior fire protection horn light where shown on the plans or as required by the Fire Department.



COLORADO LICENSED
MICHAEL DEAN
38983
03/21/2024
PROFESSIONAL ENGINEER



**REVISIONS**

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# ASTRID BUILDING 7

STEAMBOAT SPRINGS, COLORADO

ERIC SMITH ASSOCIATES, P.C.
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| | |
|---|---|
| **Job Number:** | 23055-7 |
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**Project Phase**

PERMIT

**Sheet Title**

ELECTRICAL SPECIFICATIONS

**Sheet Number**

E7.1