

7800 O' STREET SUITE 100
Lincoln, Nebraska 68510
Tel. (402) 489-7827
Project #31009

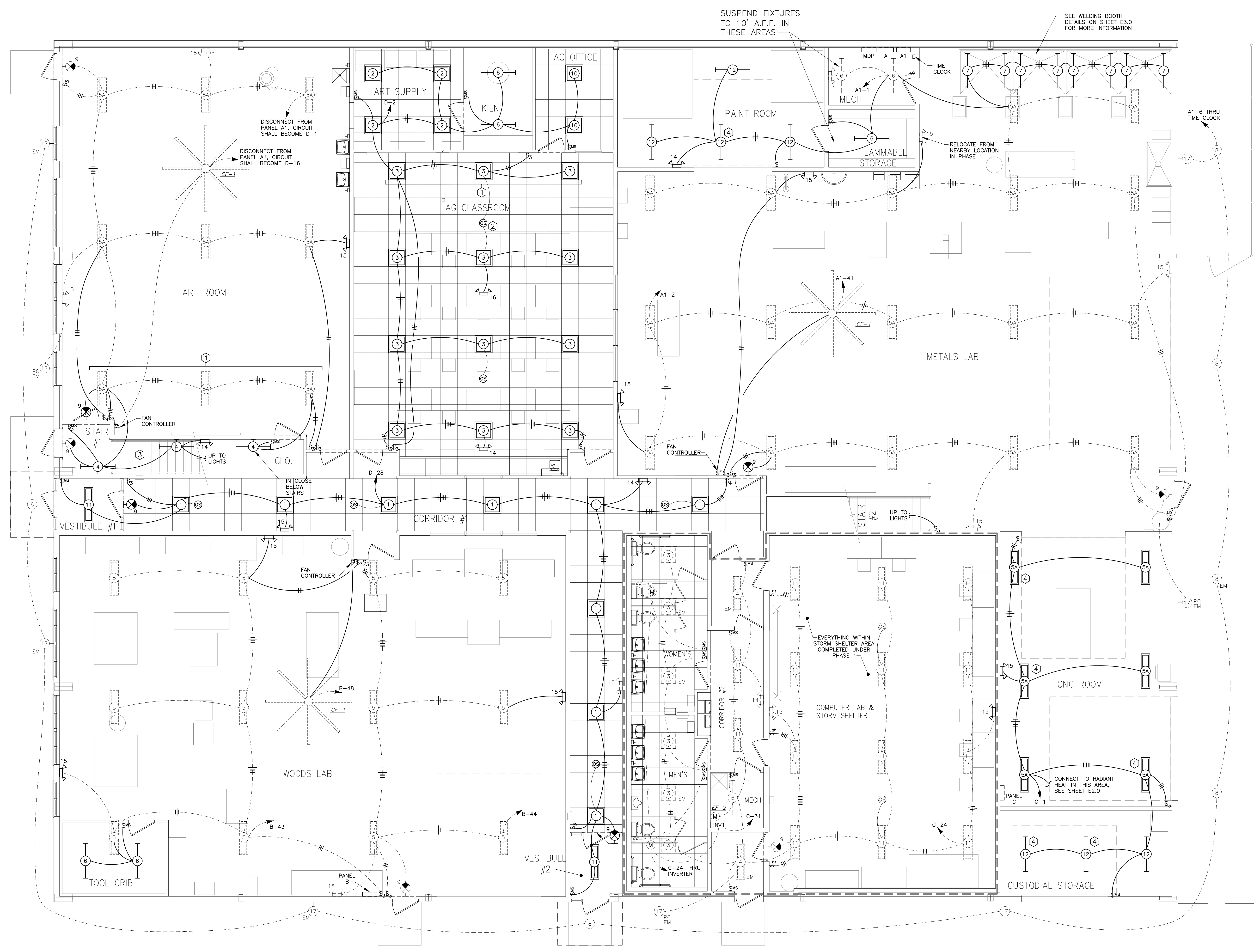


Randolph Public Schools
Vocational/Art Building Phase II
207 N. PIERCE ST., RANDOLPH, NEBRASKA 68771

ELECTRICAL PLAN - LIGHTING

REVISIONS
PRELIMINARY ISSUE
BID ISSUE
PERMIT ISSUE: 2/4/2022
CONST. ISSUE:

E-1.0
PROJECT #31009



GENERAL LIGHTING NOTES:

1. ALL EXIT SIGNS AND EMERGENCY LIGHTS SHALL BE CONNECTED AHEAD OF ANY LOCAL SWITCHES.
2. ALL ELECTRICAL FIXTURES AND BOXES RECESSED IN FIRE RATED WALLS SHALL BE INSTALLED IN SUCH A MANNER THAT THE REQUIRED FIRE RESISTANCE RATING IS NOT REDUCED PER THE 2018 INTERNATIONAL BUILDING CODE, SECTION 714.
3. MOTION/OCCUPANCY SENSORS IN CLASSROOMS ARE SHOWN AND OTHER AREAS NOT SPECIFICALLY MENTIONED IN GENERAL NOTE 4 BELOW SHALL BE SET UP FOR MANUAL ON, AUTOMATIC OFF OF CONTROLLED LIGHT FIXTURES AS REQUIRED PER 2018 IECC C405.2.1.1.
4. MOTION/OCCUPANCY SENSORS IN RESTROOMS AND CORRIDORS AND PRIMARY BUILDING ENTRANCES SHALL BE SET UP FOR FULL AUTOMATIC CONTROL OF CONTROLLED LIGHT FIXTURES AS ALLOWED PER THE EXCEPTION LISTED UNDER 2018 IECC SECTION C405.2.1.1(2).
5. CONDUIT IN THE FOLLOWING ROOMS IS TO BE INSTALLED INSIDE THE WALLS: ART ROOM, ART SUPPLY, KILN, AG OFFICE, AG CLASSROOM, VESTIBULE 1 & 2, CORRIDOR #1 & 2ND FLOOR STORAGE. ALL OF THE PRECEDING ROOMS THAT ARE ON THE EAST EXTERIOR ONE HOUR RATED WALL WILL HAVE CONDUITS AND BOXES INSTALLED IN THAT WALL AS PART OF PHASE 1 CONSTRUCTION. SUPPLY ONE HOUR FIRE RATED BOXES AS NECESSARY.

POWER PLAN KEYED NOTES:

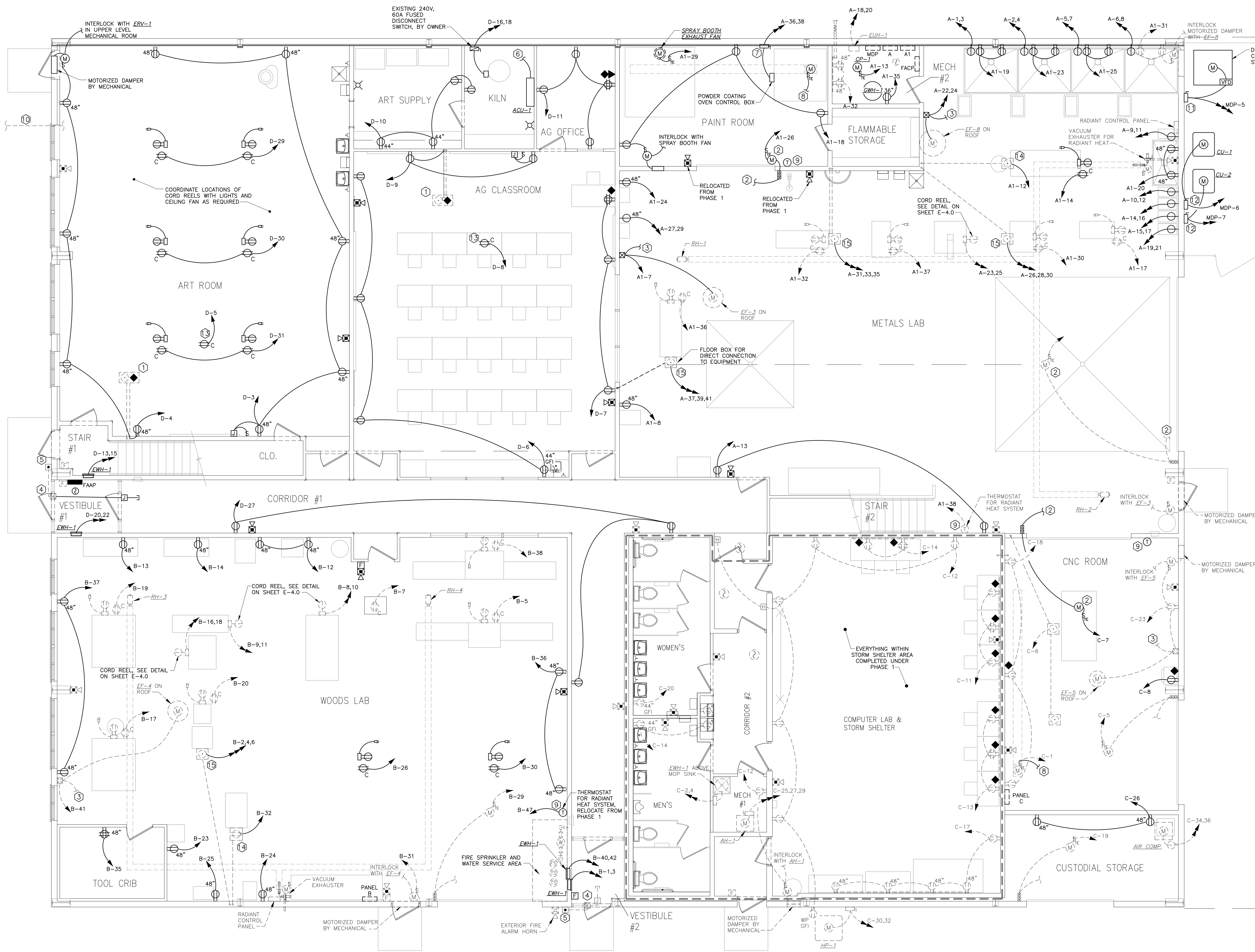
- 1 LIGHT FIXTURES NEAR THE MOTORIZED PROJECTOR SCREENS ARE TO BE CONTROLLED INDEPENDENTLY FROM THE GENERAL LIGHTING IN THE CLASSROOM AS SHOWN AND AS REQUIRED.
- 2 CEILING SENSORS THROUGHOUT THE ROOM SHALL ALSO AUTOMATICALLY SHUT OFF THE ROW OF FIXTURES SHOWN WITH SEPARATE MANUAL CONTROLS. ALSO SEE KEYNOTE 1.
- 3 WALL MOUNTED FIXTURES IN STAIRWELL SHALL BE INSTALLED A MINIMUM OF 7' ABOVE THE STAIR TREAD DIRECTLY BELOW THE CENTER OF THE FIXTURE. EMERGENCY LIGHT SHALL BE 7.5' ABOVE THE STAIR TREADS.
- 4 COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF LIGHT FIXTURE WITH OVERHEAD DOOR AS REQUIRED FOR PROPER OPERATION.

ELECTRICAL LEGEND

- ROUND CEILING DOWNLIGHT
- WALL MOUNTED DOWNLIGHT
- WALL MOUNTED LINEAR LED
- 2x2 RECESSED LED FIXTURE
- 1x4 LED WRAPAROUND
- 18 FOOT LINEAR LED FIXTURE
- ⚡ EMERGENCY LIGHTING FIXTURE
- ⚡ EXIT LIGHT
- ⚡ EXIT/EMERGENCY LIGHT COMBO
- ⚡ SWITCH
- ⚡ DIMMER SWITCH
- ⚡ 3-WAY SWITCH
- ⚡ 3-WAY MOTION SENSOR SWITCH
- ⚡ 4-WAY SWITCH
- ⚡ SWITCH WITH THERMAL ELEMENT
- ⚡ MOTION SENSOR SWITCH
- ⚡ OCCUPANCY SENSOR
- ⚡ FOUR PLEX RECEPTACLE
- ⚡ RECEPTACLE
- ⚡ FLOOR BOX, VERIFY DEVICE CONNECTIONS #0, NUMBER OF DATA PORTS
- ⚡ TELEPHONE OUTLET
- ⚡ COMPUTER DATA OUTLET
- ⚡ JUNCTION BOX
- BRANCH CIRCUIT
- HOME RUN, PANEL-CIRCUIT
- ① FLOOR PLAN NOTE
- GFI GROUND FAULT INTERRUPTER
- WP WEATHER PROOF
- ⚡ MANUAL PULL STATION
- ⚡ MAGNETIC HOLD OPEN
- ⚡ SMOKE DETECTOR
- ⚡ FLOW SWITCH
- ⚡ TAMPER SWITCH
- ⚡ FIRE ALARM SPEAKER & STROBE, 'C' DENOTES CEILING MOUNT
- ⚡ FIRE ALARM STROBE, 'C' DENOTES CEILING MOUNT
- ⚡ NONFUSED DISCONNECT
- ⚡ MOTOR, HP
- ⚡ THERMOSTAT
- C, CLG. CEILING MOUNTED

ELECTRICAL PLAN - LIGHTING

SCALE: 3/16" = 1'-0"

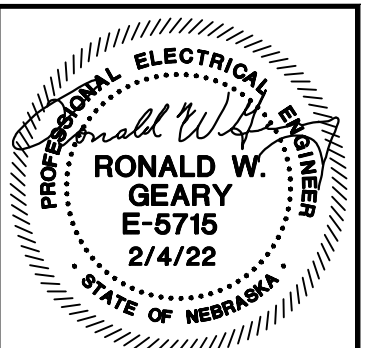


- POWER PLAN GENERAL NOTES:**
1. VERIFY EXACT LOCATIONS OF ALL CORD REELS WITH OWNER PRIOR TO INSTALLATION.
 2. VERIFY ELECTRICAL REQUIREMENTS AND NEMA PLUG CONFIGURATIONS FOR ALL SHOP EQUIPMENT WITH OWNER. ELECTRICAL CONTRACTOR SHALL SET UP A MEETING WITH THE OWNER TO REVIEW THE REQUIREMENTS FOR ALL NEW AND EXISTING EQUIPMENT AND TO CONFIRM LOCATIONS AND LAYOUT OF EQUIPMENT PRIOR TO ORDERING ELECTRICAL EQUIPMENT OR COMMENCING WORK.
 3. COORDINATE WITH LOCAL AHJ AS REQUIRED TO DETERMINE ANY AND ALL RECEPTACLE DEVICES REQUIRED TO BE TAMPER RESISTANT PER 2017 NEC 406.12(4).
 4. PROVIDE AND INSTALL ANY AND ALL JUNCTION BOXES AND NECESSARY CONDUIT FOR ANY LINE VOLTAGE THERMOSTATS INCLUDING THOSE REQUIRED BY THE RADIANT HEAT SYSTEMS. THERMOSTAT DEVICE TO BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR.
 5. SEE MECHANICAL FOR SPECIFICATIONS OF THE RADIANT HEAT SYSTEMS. COORDINATE WITH MECHANICAL CONTRACTOR FOR ANY AND ALL POWER SUPPLY REQUIREMENTS TO CONTROL PANELS(S), THERMOSTATS, VACUUM EXHAUSTERS AND BURNER ASSEMBLIES AS SHOWN AND AS REQUIRED.
 6. CONDUIT IN THE FOLLOWING ROOMS IS TO BE INSTALLED INSIDE THE WALLS: ART ROOM, ART SUPPLY, KILN, AG OFFICE, AG CLASSROOM, VESTIBULE #1 & #2, CORRIDOR #1 & #2ND FLOOR STORAGE. ALL OF THE PRECEDING ROOMS THAT ARE ON THE EAST EXTERIOR ONE HOUR RATED WALL WILL HAVE CONDUITS AND BOXES INSTALLED IN THAT WALL AS PART OF PHASE 1 CONSTRUCTION. SUPPLY ONE HOUR FIRE RATED BOXES AS NECESSARY.
 7. MAINTAIN ACCEPTABLE CLEARANCE OF EQUIPMENT AND LIGHT FIXTURES FROM OVERHEAD RADIANT HEAT AS REQUIRED.

- POWER PLAN KEYED NOTES:**
- ① FLOOR BOX: OMNIBOX MODEL B8052, 2-GANG WITH DUPLEX RECEPTACLE AND DATA, PROVIDE BLACK NONMETALLIC COVER PLATE WITH DUPLEX COVER AND COMMUNICATIONS COVER PLATE WITH FLIP LIDS FOR CONCRETE FLOOR SURFACE. VERIFY EXACT LOCATIONS WITH OWNER PRIOR TO ROUGH-IN. PROVIDE 3/4" CONDUIT FOR POWER AND 1" CONDUIT FOR COMMUNICATIONS, UNDERFLOOR FROM WALL TO BOX LOCATION.
 - ② CONNECT AS REQUIRED TO OVERHEAD DOOR OPERATOR. SAFETY STRIP AND CONTROLLER PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. VERIFY FINAL DOOR OPERATOR LOCATION WITH OWNER PRIOR TO INSTALL.
 - ③ MOTOR STARTER PROVIDED BY MECHANICAL. CONNECT TO MOTORIZED DAMPERS AS SHOWN ON PLAN TO OPEN DAMPERS WHEN ENERGIZED. VERIFY FINAL LOCATION WITH OWNER.
 - ④ PROVIDE AND INSTALL POWER TO ELECTRIC STRIKE AS REQUIRED FOR ACCESS CONTROL. ELECTRIC STRIKE SHALL BE CONTROLLED VIA A RELEASE BUTTON AT ART AND AG CLASSROOM INSTRUCTOR DESKS. PROVIDE AND INSTALL PUSH BUTTON AS REQUIRED FOR ENTRY REQUEST TO NOTIFY STAFF. COORDINATE ALL REQUIREMENTS WITH THE OWNER.
 - ⑤ VANDAL AND WEATHER RESISTANT ENTRY DOOR SUB STATION FOR ACCESS CONTROL. SIMILAR OR EQUAL TO AIPHONE MODEL KB-3MR WITH MODEL KB-3MR STAINLESS STEEL HOUSING. SPEAKER SHALL ALLOW FOR DIRECT COMMUNICATION AND VIDEO WITH THE MASTER AND SUB STATION. RECESSED SINGLE-GANG BOX. MASTER STATION IN ART ROOM TO BE SIMILAR OR EQUAL TO AIPHONE MODEL KB-3MRD AND SUB STATION IN AG CLASSROOM TO BE MODEL KB-3HRD FOR CONTROL AND MONITORING OF UP TO (3) DOORS. PROVIDE AND INSTALL ALL NECESSARY COMPONENTS, POWER SUPPLY, ETC. FOR A COMPLETE SYSTEM.
 - ⑥ PROVIDE 240V POWER FROM AIR CONDITIONING UNIT AC-1 IN 2ND FLOOR STORAGE ROOM ON SHEET E3.0 AS REQUIRED TO INDOOR UNIT ACU-1 SHOWN.
 - ⑦ EXISTING POWDER COATING OVEN BY OWNER. PROVIDE AND INSTALL 60 AMP, 240 VOLT, NON-FUSED DISCONNECT, NEMA 3R ENCLOSURE. COORDINATE WITH EXISTING EQUIPMENT.
 - ⑧ CONNECT RADIANT HEAT TO LIGHTING CIRCUIT IN THIS AREA AS REQUIRED.
 - ⑨ PROVIDE SINGLE GANG ELECTRICAL BOX FOR RADIANT HEAT THERMOSTAT. VERIFY BOX ORIENTATION WITH MECHANICAL CONTRACTOR. RELOCATE FROM PHASE 1 LOCATION IF REQ'D.
 - ⑩ EXISTING UNDERGROUND CONDUIT(S) FOR DATA AND CLASS BELL SYSTEM TIE-IN. SEE PHASE 1 DRAWINGS FOR MORE INFORMATION.
 - ⑪ DUST COLLECTION SYSTEM BY OWNER. PROVIDE AND INSTALL 100 AMP, 240 VOLT, NON-FUSED DISCONNECT, NEMA 3R ENCLOSURE. COORDINATE WITH PROVIDED EQUIPMENT.
 - ⑫ PROVIDE AND INSTALL 30 AMP, 240 VOLT, NON-FUSED DISCONNECT, NEMA 3R ENCLOSURE.
 - ⑬ COORDINATE DATA REQUIREMENTS FOR PROJECTOR WITH OWNER AND PROVIDE ANY NECESSARY BOXES OR CONDUIT AS REQUIRED.
 - ⑭ PROVIDE AND INSTALL 2-GANG PEDESTAL MOUNT BOX NEAR THE FLOOR FOR POWER TO EQUIPMENT. INSTALL IN BOX SIMILAR OR EQUAL TO HUBBELL SA688. VERIFY 120V PLUG CONFIGURATION NEEDED, PROVIDE AND INSTALL AS REQUIRED.
 - ⑮ PROVIDE AND INSTALL 4-GANG PEDESTAL MOUNT BOX NEAR THE FLOOR FOR POWER TO EQUIPMENT. INSTALL IN BOX SIMILAR OR EQUAL TO HUBBELL SA688. VERIFY PLUG CONFIGURATION NEEDED, PROVIDE AND INSTALL PLUG AND/OR POWER CORD AS REQUIRED.

ELECTRICAL PLAN - POWER

SCALE: 3/16" = 1'-0"



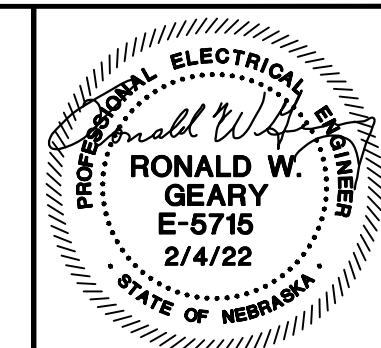
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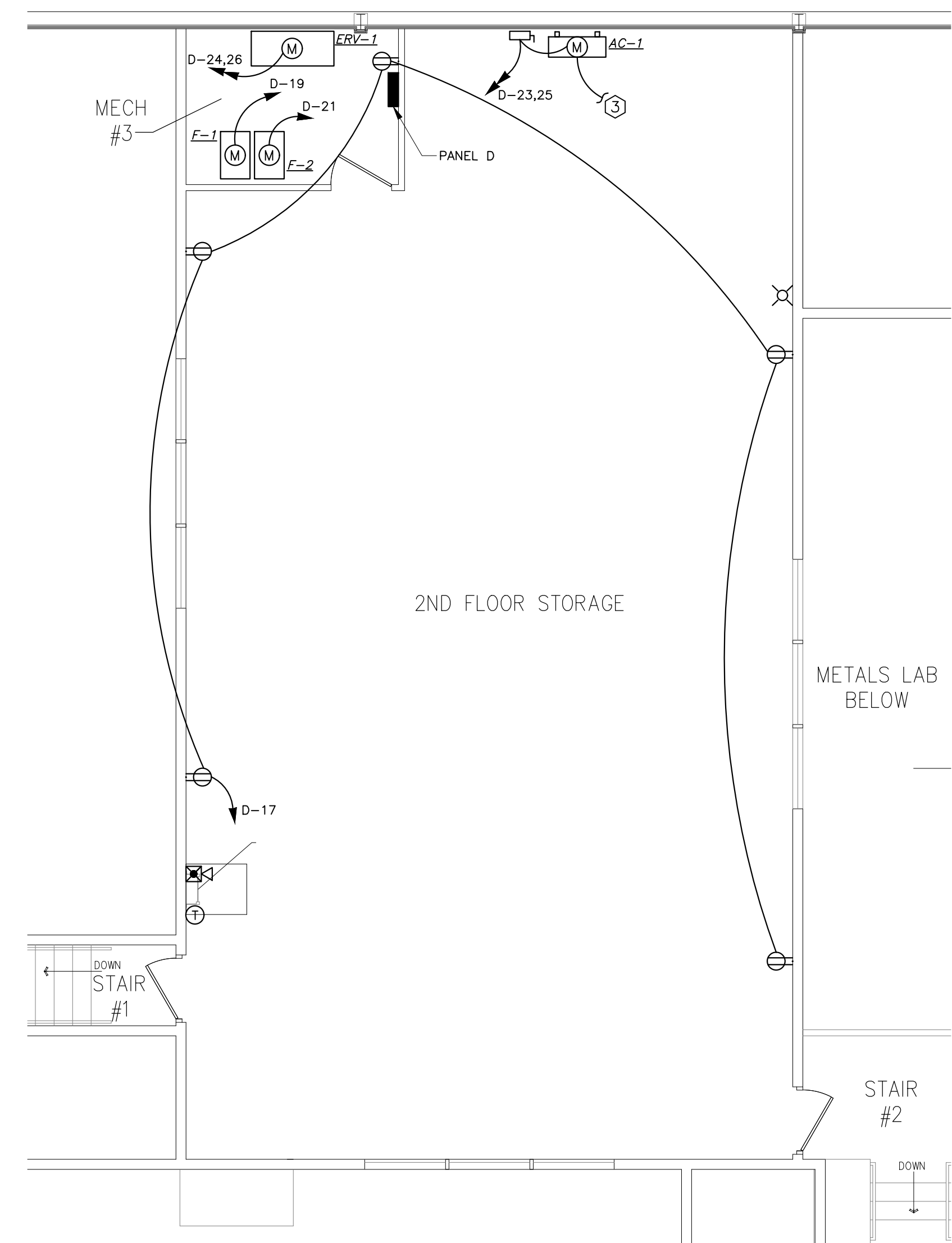


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MEZZANINE ELECTRICAL PLAN

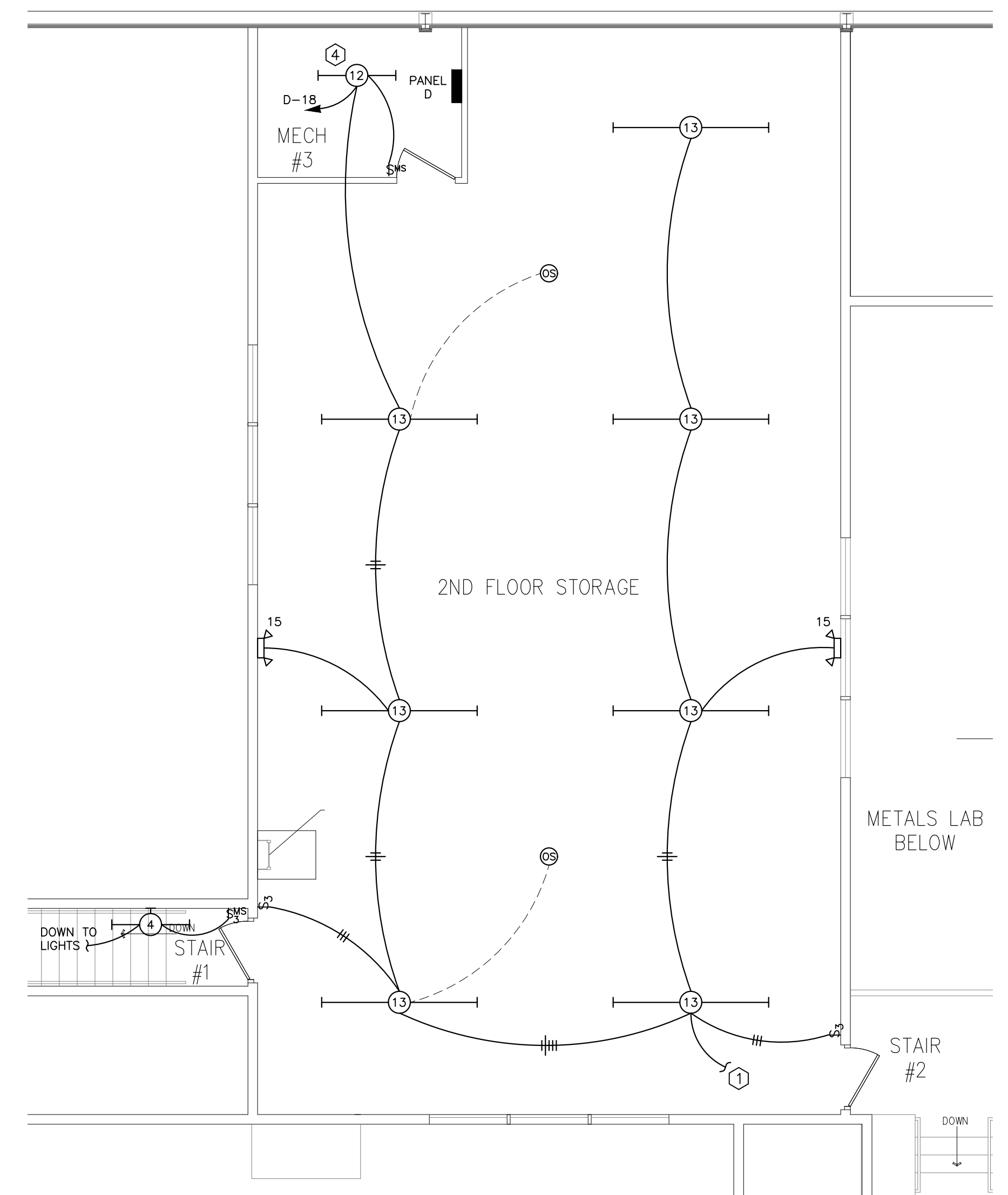
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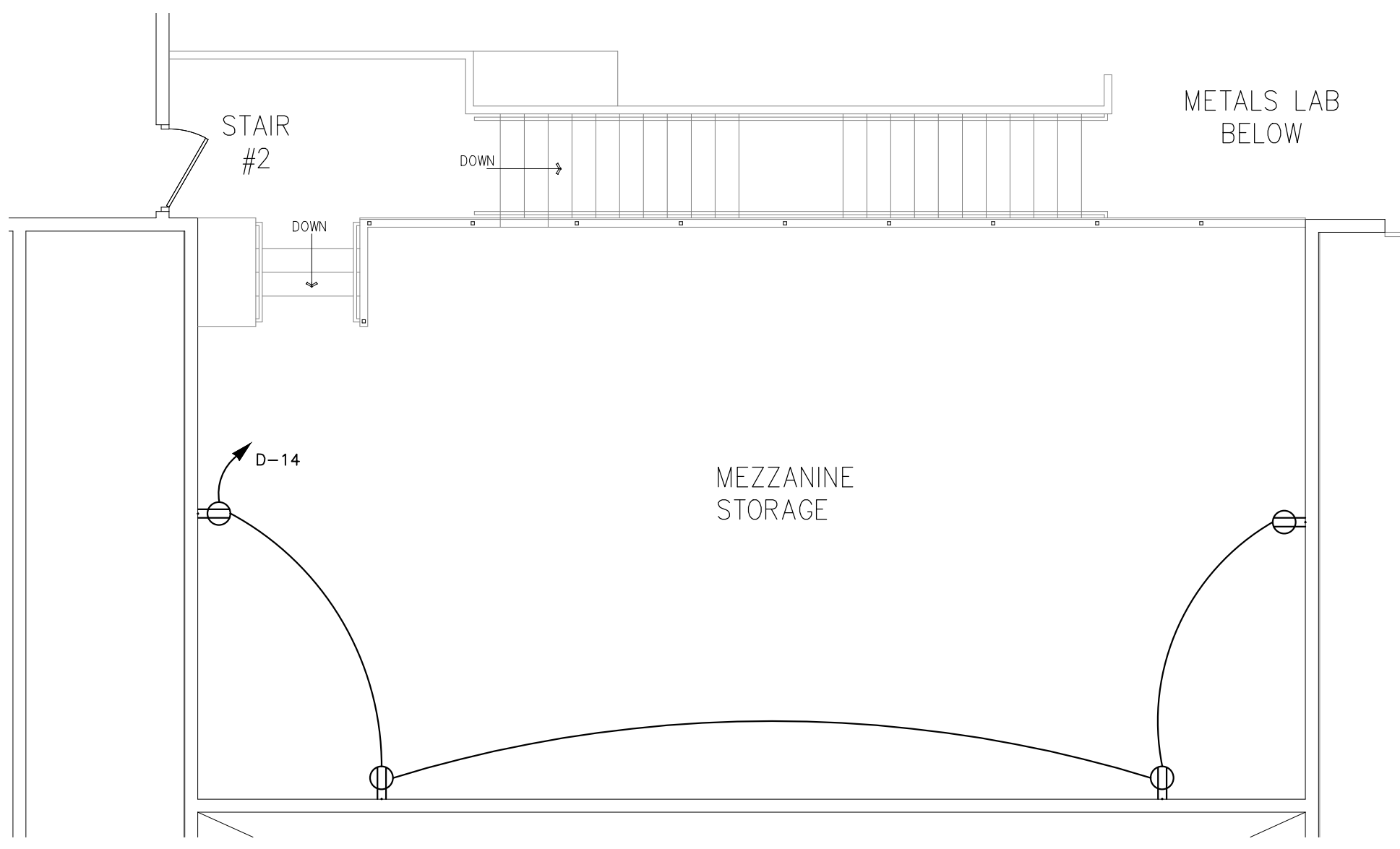
2ND FLOOR STORAGE PLAN - POWER

SCALE: 3/16" = 1'-0"



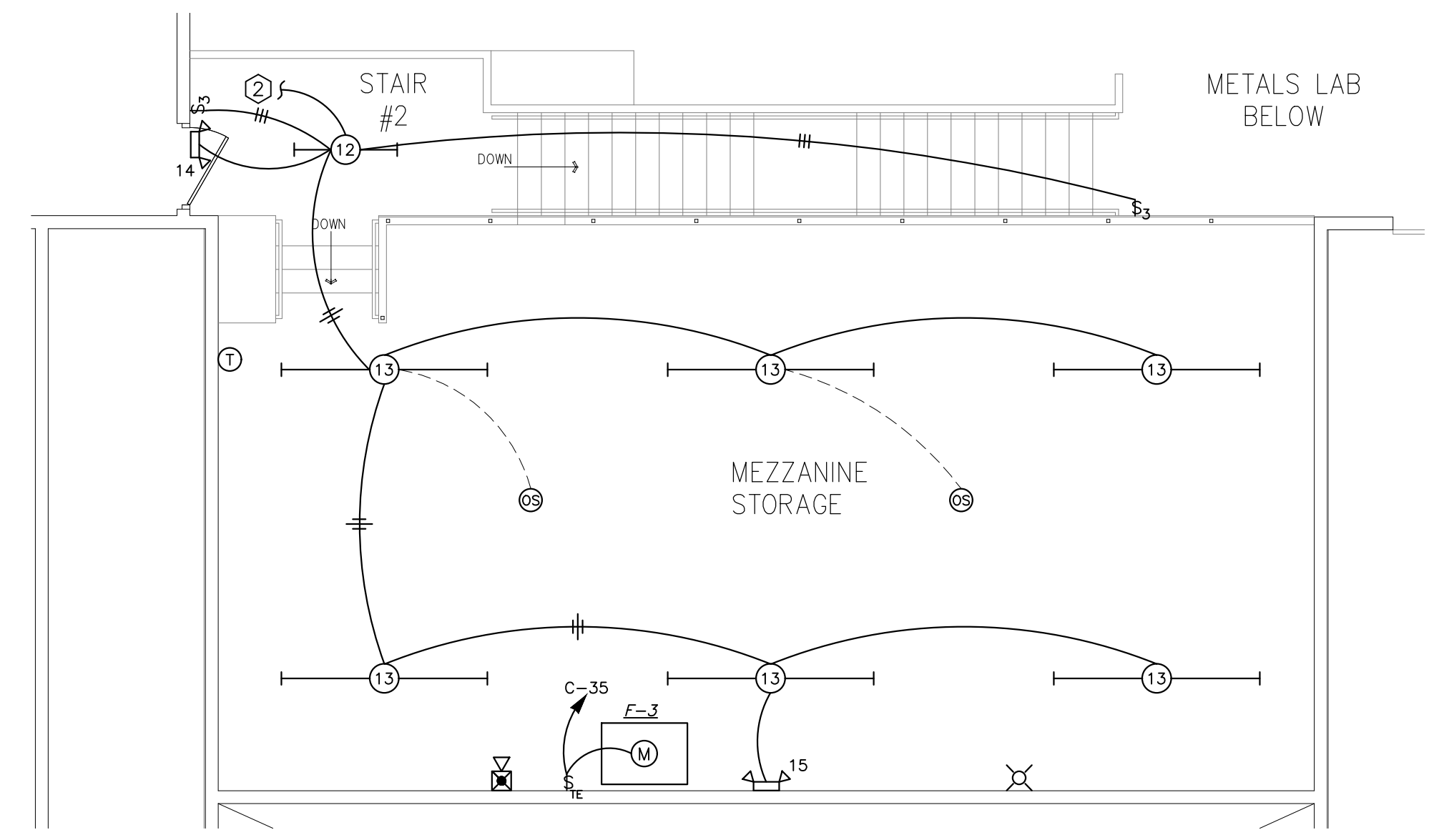
2ND FLOOR STORAGE PLAN - LIGHTING

SCALE: 3/16" = 1'-0"



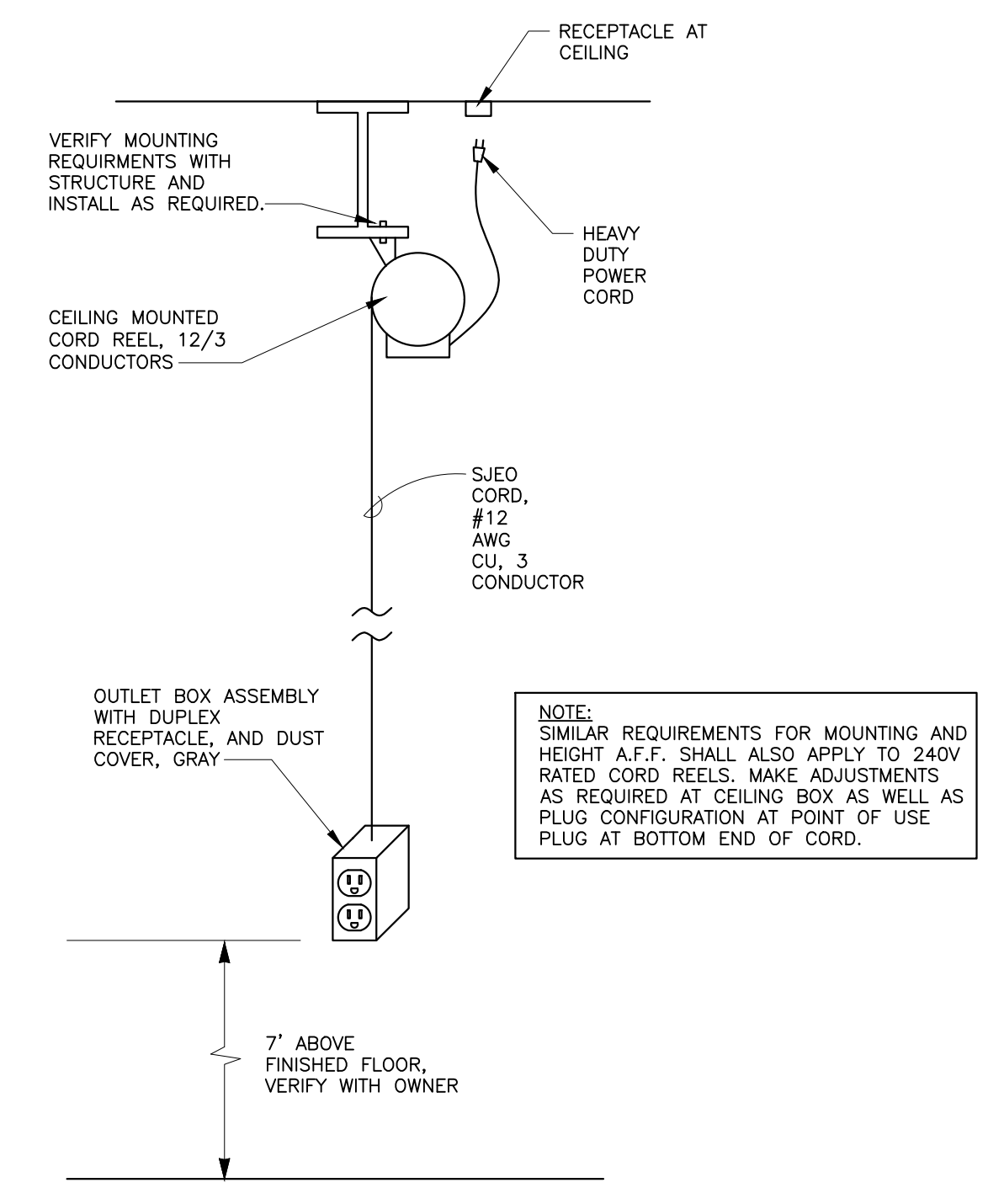
MEZZANINE STORAGE PLAN - POWER

SCALE: 3/16" = 1'-0"



MEZZANINE STORAGE PLAN - LIGHTING

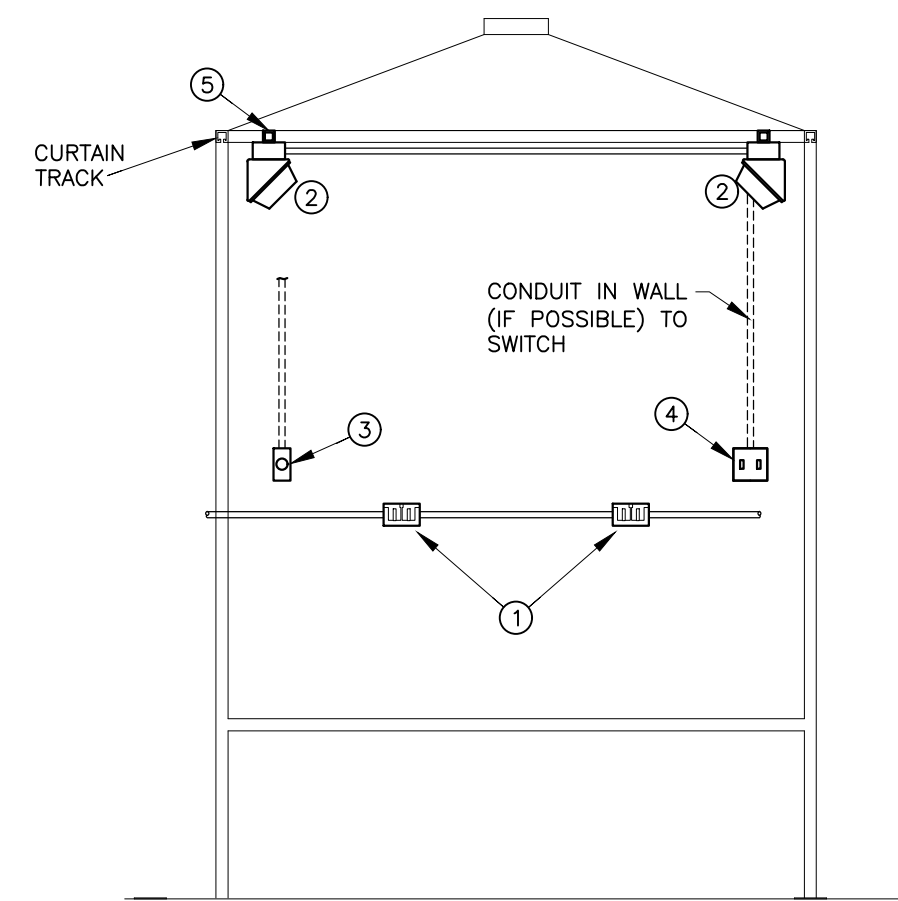
SCALE: 3/16" = 1'-0"



CORD REEL DETAIL

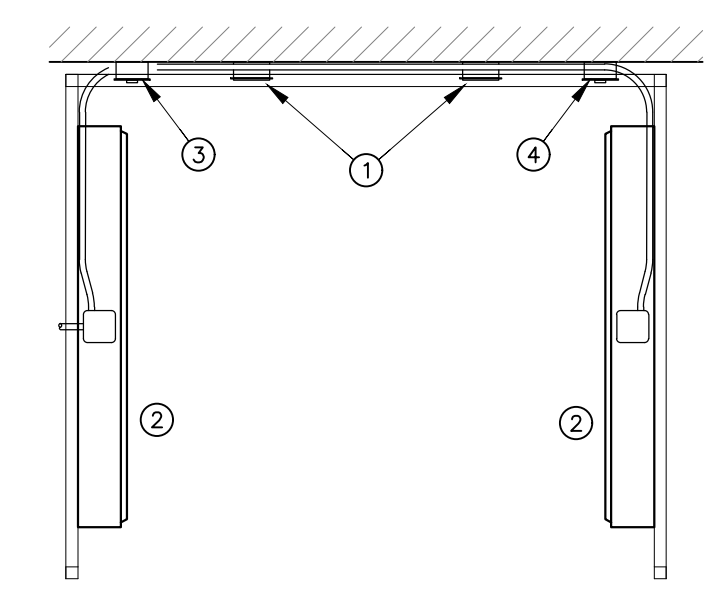
SCALE: NOT TO SCALE

NOTE:
SIMILAR REQUIREMENTS FOR MOUNTING AND HEIGHT A.F.F. SHALL ALSO APPLY TO 240V RATED CORD REELS. MAKE ADJUSTMENTS AS REQUIRED AT CEILING BOX AS WELL AS PLUG CONFIGURATION AT POINT OF USE PLUG AT BOTTOM END OF CORD.



FRONT ELEVATION

SCALE: 1/2" = 1'-0"



PLAN VIEW

SCALE: 1/2" = 1'-0"

TYPICAL WELDING BOOTH DETAILS

SCALE: NOT TO SCALE

KEYED NOTES:

- 1 20A DUPLEX RECEPTACLES MOUNTED AT 42" A.F.F. WITH DIE-CAST HORIZONTAL COVER WITH INDEPENDENT SELF-CLOSING LIDS AND SURFACE MOUNT JUNCTION BOX (RECESSED IF FEASIBLE).
- 2 TYPE 7 LIGHT, CORNER MOUNT. FASTEN TOP SIDE AS REQUIRED TO STEEL FRAME OF BOOTH.
- 3 4x4 JUNCTION BOX AT 46" A.F.F., HARD-WIRE CONNECTION OR RECEPTACLE FOR WELDING EQUIPMENT AS REQUIRED. MOUNT ON SAME SIDE AS WELDING EQUIPMENT AS SHOWN ON PLAN.
- 4 LIGHT SWITCHES AT 46" A.F.F. PROVIDE ONE SWITCH FOR EACH LIGHT FOR INDIVIDUAL CONTROL. MOUNT SWITCHES IN EXTERIOR WALL ON RIGHT SIDE OF BOOTH, TYPICAL.
- 5 ADDITIONAL SQUARE TUBING FOR ATTACHMENT OF LIGHT FIXTURES TO AVOID OBSTRUCTION WITH THE SURROUNDING CURTAIN, TYPICAL BOTH SIDES. COORDINATE MOUNTING OF LIGHT FIXTURES WITH ARCHITECTURAL DETAILS AS REQUIRED.

GENERAL NOTES:

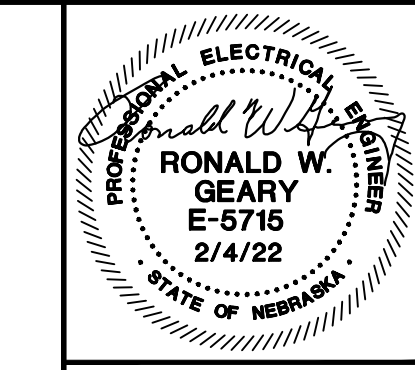
- 1. CONDUIT AS SHOWN DEPICTS GENERAL CONDUIT ROUTING. FIELD ADJUST TO SUIT ACTUAL CONDITIONS AND ARRANGEMENTS. COORDINATE FINAL CONDUIT LAYOUT WITH ARCHITECT/ENGINEER PRIOR TO ROUGH-IN. PROVIDE RECESSED CONDUIT AND DEVICES WERE FEASIBLE.
- 2. SIZE CONDUIT PER NEC FOR SIZE AND NUMBER OF CONDUCTORS, MINIMUM 1/2".
- 3. INSTALL EXPOSED CONDUIT IN A NEAT AND ORDERLY FASHION. CONDUIT SHALL BE RUN LEVEL, PARALLEL AND PERPENDICULAR TO WALLS.

MEZZANINE PLAN KEYED NOTES:

- 1 CONNECT TO LIGHTING IN MEZZANINE STORAGE ROOM.
- 2 CONNECT TO LIGHTING IN 2ND FLOOR STORAGE ROOM.
- 3 PROVIDE 208V POWER TO INDOOR AIR CONDITIONING UNIT ACU-1 IN KILN ROOM ON SHEET E-2.0 AS REQUIRED FROM OUTDOOR UNIT ACU-1 SHOWN.
- 4 COORDINATE INSTALLATION OF TYPE 12 FIXTURES IN MECHANICAL ROOM WITH DUCTWORK, PIPING AND ANY OTHER OBSTRUCTIONS AND INSTALL AS REQUIRED.

MEZZANINE PLAN GENERAL NOTES:

- 1. COORDINATE WITH LOCAL AHJ AS REQUIRED TO DETERMINE ANY AND ALL RECEPTACLE DEVICES REQUIRED TO BE TAMPER RESISTANT PER 2017 NEC 406.12(4).
- 2. PROVIDE AND INSTALL ANY AND ALL JUNCTION BOXES AND NECESSARY CONDUIT FOR ANY LINE VOLTAGE THERMOSTATS INCLUDING THOSE REQUIRED BY THE RADIANT HEAT SYSTEMS. THERMOSTAT DEVICE TO BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR.
- 3. CONDUIT IN THE FOLLOWING ROOMS IS TO BE INSTALLED INSIDE THE WALLS: ART ROOM, ART SUPPLY, KILN, AD OFFICE, AG CLASSROOM, VESTIBULE 1 & 2, CORRIDOR #1 & 2ND FLOOR STORAGE. ALL OF THE PRECEDING ROOMS THAT ARE ON THE EAST EXTERIOR ONE HOUR RATED WALL WILL HAVE CONDUITS AND BOXES INSTALLED IN THAT WALL AS PART OF PHASE 1 CONSTRUCTION. SUPPLY ONE HOUR FIRE RATED BOXES AS NECESSARY.



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ELECTRICAL SCHEDULES AND DETAILS

POWER PANEL SCHEDULE
PANEL DESIGNATION: MDP LOCATION: MECHANICAL ROOM #2
120/240 VOLTS CONNECTED LOAD 252.9 KVA 600 AMP MAIN BREAKER
3 PHASE 4 WIRE EST. MAX. DEMAND 196.0 KVA 42,000 R.M.S. AMPS NEMA 1

CKT NO.	SERVES	LOAD KVA	BKR SIZE	NO. OF POLES	CONDUCTORS NO. SIZE TYPE	CONDUIT NO. SIZE	REMARKS
1	PANEL A	73.4	400	3	8 3/0 THWN	2 2"	#6 GND
2	PANEL B	30.9	150	3	4 1/0 THWN	1 2"	#6 GND
3	PANEL C	41.7	150	3	4 1/0 THWN	1 2"	#6 GND
4	PANEL D	22.4	150	2	3 1/0 THWN	1 2"	#6 GND
5	DUST COLLECTOR	22.4	90	3	4 3 THWN	1 3/4"	#8 GND
6	CU-1	3.4	30	2	3 10 THWN	1 3/4"	#10 GND
7	CU-2	3.4	30	2	3 10 THWN	1 3/4"	#10 GND
8	KILN	11.5	60	2	3 6 THWN	1 3/4"	#10 GND
9	TVSS		60	3			
10	SPACE						

NOTES: PANEL MDP SHALL BE SERVICE ENTRANCE RATED LIGHTER TEXT REPRESENTS EXISTING LOADS/BREAKERS FROM PHASE 1.
* VERIFY ACTUAL BREAKER REQUIRED WITH FINAL SELECTED EQUIPMENT.

PANELBOARD SCHEDULE
PANEL DESIGNATION: A LOCATION: MECHANICAL ROOM #2

LOAD	WATTS	P	WIRE	CB	CKT.	PHASE	CKT.	CB	WIRE	P	WATTS	LOAD
WELDING BOOTH	10,900	2	8CU	50	1	A	2	50	8CU	2	5,450	WELDING BOOTH, MIG
WILD LEG					3	B	4					WILD LEG
WELDING BOOTH, MIG	8,300	2	8CU	50	5	C	6	50	8CU	2	2,740	WELDING BOOTH, TIG
PLASMA CUTTER	8,750	2	6CU	60	9	B	10	50	8CU	2	7,075	PLASMA CUTTER
GENERAL RECEPTS	1250	1	12CU	20	13	A	14	50	8CU	2	9,200	AC/DC WELDER
AC/DC WELDER	9,200	2	8CU	50	15	B	16					WILD LEG
WILD LEG					17	C	18					EH-1
AC/DC WELDER	9,200	2	8CU	50	19	A	20					WILD LEG
WILD LEG					21	B	22					EF-8
POWER HAMMER	1760	2	12CU	15	23	C	24					
PEDESTAL GRINDER	2200	2	10CU	30	27	B	28					IRON WORKER
WILD LEG					29	C	30					WILD LEG
PRESS BRAKE	5,000	3	12CU	20	31	A	32	20	12CU	1	720	PHONE BOARD
WILD LEG					33	B	34					WILD LEG
POWER BENDING ROLL	3,825	3	12CU	20	37	A	38					POWDER COATING OVEN
WILD LEG					39	B	40					WILD LEG
WILD LEG					41	C	42					SPARE

EXISTING 125A SUB-FEED BREAKER
120 / 240 VOLTS TOTAL CONNECTED LOAD 105.4 KVA ESTIMATED MAXIMUM DEMAND 73.4 KVA
3 PHASE, 4 WIRE, SOLID NEUTRAL MOUNTING: SURFACE NEMA 1 AMPS: 400 MAIN: BREAKER (EXISTING)

SEE GENERAL EQUIPMENT NOTES FOR SPECIFICS REGARDING THIS PANEL
NOTE: LIGHTER TEXT REPRESENTS EXISTING LOADS FROM PHASE 1.

PANELBOARD SCHEDULE
PANEL DESIGNATION: A1 LOCATION: MECHANICAL ROOM #2

LOAD	WATTS	P	WIRE	CB	CKT.	PHASE	CKT.	CB	WIRE	P	WATTS	LOAD
SHOP/GEN LIGHTING	1440	1	12CU	20	1	A	2	20	12CU	1	1120	SHOP LIGHTING
WILD LEG					3	B	4					WILD LEG
SPARE		1	20	5	C	6	20	12CU	1	120	EXTERIOR LIGHTING	
EF-3	1670	1	12CU	25	7	A	8	20	12CU	1	1015	DRILL PRESS
WILD LEG					9	B	10					WILD LEG
METAL SHOP GARAGE DOOR	1660	1	12CU	25	11	C	12	20	12CU	1	1000	WORK STATION FLOOR BOX
CP-1	200	1	12CU	20	13	A	14	20	12CU	1	1000	WORK STATION CORD REEL
WILD LEG					15	B	16					WILD LEG
BAND SAW CORD REEL	1000	1	12CU	20	17	C	18	20	12CU	1	540	PAINT ROOM RECEPIS
GENERAL WELDING REC.	1000	1	12CU	20	19	A	20	20	12CU	1	1000	CUTTING TABLE RECEPIS
WILD LEG					21	B	22					WILD LEG
GENERAL WELDING REC.	1000	1	12CU	20	23	C	24	20	12CU	1	670	PEDESTAL GRINDER
GENERAL WELDING REC.	1000	1	12CU	20	25	A	26	20	12CU	1	1180	PAINT ROOM GARAGE DOOR
WILD LEG					27	B	28					WILD LEG
SPRAY BOOTH	1660	1	12CU	25	29	C	30	20	12CU	1	1000	IRON WORKER CORD REEL
GENERAL WELDING REC.	1000	1	12CU	20	31	A	32	20	12CU	1	1000	PRESS BRAKE CORD REEL
WILD LEG					33	B	34					WILD LEG
GWH-1	600	1	12CU	20	35	C	36	20	12CU	1	1000	POWER BENDING ROLL CORD REEL
UNIVERSAL FAB. CORD DROP	1000	1	12CU	20	37	A	38	20	12CU	1	570	RADIANT HEAT SYSTEM
WILD LEG					39	B	40					WILD LEG
CP-1	750	1	12CU	15	41	C	42	20	12CU	1	500	FACP
WILD LEG					43	A	44					WILD LEG
WILD LEG					45	B	46					WILD LEG
WILD LEG					47	C	48					WILD LEG
SPARE		1	20	49	A	50	20					SPARE
WILD LEG					51	B	52					WILD LEG
SPARE		1	20	53	C	54	20					SPARE

120 / 240 VOLTS TOTAL CONNECTED LOAD 21.3 KVA ESTIMATED MAXIMUM DEMAND 21.9 KVA
3 PHASE, 4 WIRE, SOLID NEUTRAL MOUNTING: SURFACE NEMA 1 AMPS: 125 MAIN: LUGS

* VERIFY ACTUAL BREAKER REQUIRED WITH SELECTED OPERATOR MOTOR.
NOTE: LIGHTER TEXT REPRESENTS EXISTING LOADS FROM PHASE 1.

PANELBOARD SCHEDULE
PANEL DESIGNATION: B LOCATION: WOOD SHOP

LOAD	WATTS	P	WIRE	CB	CKT.	PHASE	CKT.	CB	WIRE	P	WATTS	LOAD
EHW-1	3000	2	12CU	20	1	A	2	35	8CU	3	5200	SHAPER
WILD LEG					3	B	4					WILD LEG
RADIAL ARM SAW	1320	1	12CU	20	5	C	6					WILD LEG
AIR PURIFIER	405	1	12CU	20	7	A	8	30	12CU	2	5280	TABLE SAW CORD DROP
WILD LEG					9	B	10					WILD LEG
JGINTER CORD DROP	2400	2	12CU	20	9	A	10	11				WILD LEG
WILD LEG					11	C	12	20	12CU	1	960	SPINDLE SAW/SANDER
SCROLL SAW	420	1	12CU	20	13	A	14	20	12CU	1	1175	LATHE
WILD LEG					15	B	16	20	12CU	2	3650	PLANER CORD DROP
WORK BENCH CORD DROP	1000	1	12CU	20	17	C	18					WILD LEG
WILD LEG					19	A	20	20	12CU	1	1610	DRUM SANDER
WILD LEG					21	B	22					WILD LEG
POCKET HOLE MACHINE	600	1	12CU	15	23	C	24	20	12CU	1	920	DELTA BAND SAW
DRILL PRESS	1670	1	12CU	25	25	A	26	20	12CU	1	1000	CORD REEL DROP
WILD LEG					27	B	28					WILD LEG
GARAGE DOOR	1660	1	12CU	25	29	C	30	20	12CU	1	1000	CORD REEL DROP
MOTORIZED DAMPER	200	1	12CU	20	31	A	32	20	12CU	1	1560	CNC ROUTER
WILD LEG					33	B	34					WILD LEG
TOOL CRIB RECEPIS	1000	1	12CU	20	35	C	36	20	12CU	1	500	SOUTH WOOD SHOP RECEPIS
NORTH WOOD SHOP RECEPIS	1000	1	12CU	20	37	A	38	20	12CU	1	1830	MITER SAW
WILD LEG					39	B	40	20	12CU	2	3000	EHW-1
EF-4	1660	1	12CU	25	41	C	42					
NORTH WOOD SHOP LTG	920	1	12CU	20	43	A	44	20	12CU	1	840	SOUTH WOOD SHOP LTG
WILD LEG					45	B	46					WILD LEG
RADIANT HEAT SYSTEM	570	1	12CU	20	47	C	48	15	12CU	1	750	CE-1
SPARE		1	20	49	A	50	20					SPARE
WILD LEG					51	B	52					WILD LEG
SPARE		1	20	53	C	54	20					SPARE

120 / 240 VOLTS TOTAL CONNECTED LOAD 38.0 KVA ESTIMATED MAXIMUM DEMAND 30.9 KVA
3 PHASE, 4 WIRE, SOLID NEUTRAL MOUNTING: SURFACE NEMA 1 AMPS: 150 MAIN: LUGS

* SEE GENERAL EQUIPMENT NOTES FOR SPECIFICS REGARDING THIS PANEL
* VERIFY ACTUAL BREAKER REQUIRED WITH SELECTED OPERATOR MOTOR.
NOTE: LIGHTER TEXT REPRESENTS EXISTING LOADS FROM PHASE 1.

PANELBOARD SCHEDULE
PANEL DESIGNATION: C LOCATION: CNC ROOM

LOAD	WATTS	P	WIRE	CB	CKT.	PHASE	CKT.	CB	WIRE	P	WATTS	LOAD
CNC ROOM LTG/HEAT	795	1	12CU	20	1	A	2	20	12CU	2	4,500	WATER HEATER
WILD LEG					3	B	4					WILD LEG
CNC ROOM GARAGE OPENER	1660	1	12CU	25	5	C	6	20	12CU	1	1000	CNC ROOM FLOOR BOXES
CNC ROOM GARAGE OPENER	1660	1	12CU	25	7	A	8	20	12CU	1	1500	CNC ROOM COMPUTER
WILD LEG					9	B	10					WILD LEG
COMPUTERS	1000	1	12CU	20	11	C	12	20	12CU	1	500	MECH ROOM RECEPIS
COMPUTERS	1000	1	12CU	20	13	A	14	20	12CU	1	1000	MEN'S RR & FOUNTAIN
WILD LEG					15	B	16					WILD LEG
COMPUTER ROOM RECEPIS	900	1	12CU	20	17	C	18	20	12CU	1	540	CNC ROOM RECEPIS
CUSTOMER GARAGE OPENER	1660	1	12CU	25	19	A	20	20	12CU	1	500	WOMEN'S RR RECEPIS
WILD LEG					21	B	22					WILD LEG
EF-5 & CNC RM PWR	550	1	12CU	20	23	C	24	20	12CU	1	990	COMPUTER ROOM LTG
AH-1	12,180	3	8CU	40	25	A	26	20	12CU	1	1000	CUSTODIAL RECEPIS
WILD LEG					27	B	28					WILD LEG
WILD LEG					29	C	30	30	10CU	2	4,140	HP-1
INV1	240	1	12CU	15	31	A	32					
WILD LEG					33	B	34	30	10CU	2	5,290	AIR COMPRESSOR
SPARE		1	20	37	A	38	20					SPARE
WILD LEG					39	B	40					WILD LEG
SPACE					41	C	42					SPACE

120 / 240 VOLTS TOTAL CONNECTED LOAD 41.2 KVA ESTIMATED MAXIMUM DEMAND 41.7 KVA
3 PHASE, 4 WIRE, SOLID NEUTRAL MOUNTING: SURFACE NEMA 1 AMPS: 150 MAIN: LUGS

* VERIFY ACTUAL BREAKER REQUIRED WITH SELECTED OPERATOR MOTOR.
NOTE: LIGHTER TEXT REPRESENTS EXISTING LOADS FROM PHASE 1.

LIGHTING FIXTURE SCHEDULE

FIX. NO.	DESCRIPTION	LAMPS	MOUNTING	COMMENTS
1	2x2 RECESSED LED LENSED TROFFER ACRYLIC PRISMATIC LENS, WHITE FINISH LITHONIA 20TL2 48L AT125S LP835	42W LED	RECESSED	
2	2x2 RECESSED LED LUMINAIRE ACRYLIC LENS, WHITE FINISH LITHONIA 2FSL2 20L MVOLT EZ1 LP835	16.4W LED	RECESSED	
3	2x2 RECESSED LED LUMINAIRE ACRYLIC LENS, WHITE FINISH LITHONIA 2FSL2 33L MVOLT EZ1 LP835	27.1W LED	RECESSED	
4	4 FT. SURFACE MOUNT LED WALL BRACKET LINEAR FACETED REFRACTOR, WHITE FINISH LITHONIA WL4 30L EZ1 LP835	28.2W LED	WALL MOUNT	
5	NO FIXTURES OF THIS TYPE INSTALLED IN PHASE 2			
5A	44" SUSPENDED LED BAY LIGHT LITHONIA IBHST 12000LM S0080 MD 120 OZ10 40K 80CRI LAOZU WH	112W LED	SUSPENDED CHAIN HANGERS	1
6	4 FT. SURFACE MOUNT LED WALL BRACKET STEEL HOUSING, ACRYLIC LENS LITHONIA ZL1D L48 3000LM FST MVOLT 40K 80CRI	30W LED	SURFACE OR SUSPENDED AS NOTED	
7	4" ROUGH SERVICE CORNER MOUNT LED LUMINAIRE ALUMINUM HOUSING, POLYCARBONATE LENS LITHONIA VCMB 4FT NODIM 50W 40K CLP BLK	50W LED	WALL	
8	NO FIXTURES OF THIS TYPE INSTALLED IN PHASE 2			
9	THERMOPLASTIC LED EXIT RED LETTERS, WHITE FINISH LITHONIA LQM S W 3 R MVOLT		WALL	2
10	2x2 RECESSED LED LUMINAIRE ACRYLIC LENS, WHITE FINISH LITHONIA 2FSL2 60L MVOLT EZ1 LP835	53.6W LED	RECESSED	
11	1x4 RECESSED LED LUMINAIRE ACRYLIC LENS, WHITE FINISH LITHONIA FML4W 48 AL06 SEF 835 MVOLT	49W LED	SURFACE	
12	4 FT. SURFACE MOUNT LED WALL BRACKET STEEL HOUSING, ACRYLIC LENS LITHONIA ZL1D L48 3000LM FST MVOLT 40K 80CRI	41W LED	SUSPENDED TO 10'-0" A.F.F.	
13	8 FT. LED STRIP LIGHT STEEL HOUSING, ACRYLIC LENS, WHITE FINISH LITHONIA CSS L96 AL04 MVOLT 35K 80CRI	71.7W LED	SUSPENDED TO 9'-0" A.F.F.	
14	WALL MOUNTED LED EMERGENCY LIGHT WHITE HOUSING, MINIMUM 90 MIN. OF OPERATION LITHONIA ELM2L LED	LED	WALL	
15	WALL MOUNTED LED EMERGENCY LIGHT WHITE HOUSING, MINIMUM 90 MIN. OF OPERATION LITHONIA ELM4L LED	LED	WALL	
16	CEILING MOUNTED LED EMERGENCY LIGHT WHITE HOUSING, MINIMUM 90 MIN. OF OPERATION EMERGI-LITE W RA SQ	LED	RECESSED	
17	NO FIXTURES OF THIS TYPE INSTALLED IN PHASE 2			

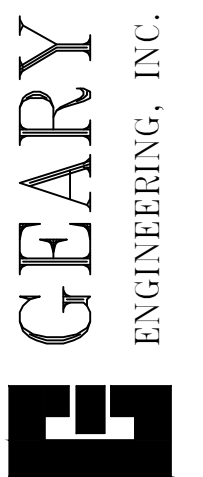
COMMENTS:
1. VERIFY MOUNTING REQUIREMENTS AND BEST OPTION FOR INSTALLATION AND PROVIDE ALL MOUNTING COMPONENTS AND HARDWARE AND INSTALL AS REQUIRED. MOUNT BOTTOM OF FIXTURE AT 15'-6" A.F.F. IN CNC ROOM.
2. CHEVRONS AND MOUNTING AS REQUIRED OR AS SHOWN ON PLANS.

PANELBOARD SCHEDULE
PANEL DESIGNATION: D LOCATION: MECHANICAL ROOM #3 (2ND FLOOR)

LOAD	WATTS	P	WIRE	CB	CKT.	PHASE	CKT.	CB	WIRE	P	WATTS	LOAD
ART ROOM LIGHTING	1150	1	12CU	20	1	A	2	20	12CU	1	820	CLASSROOM LIGHTING
S ART ROOM RECEPIS	900											



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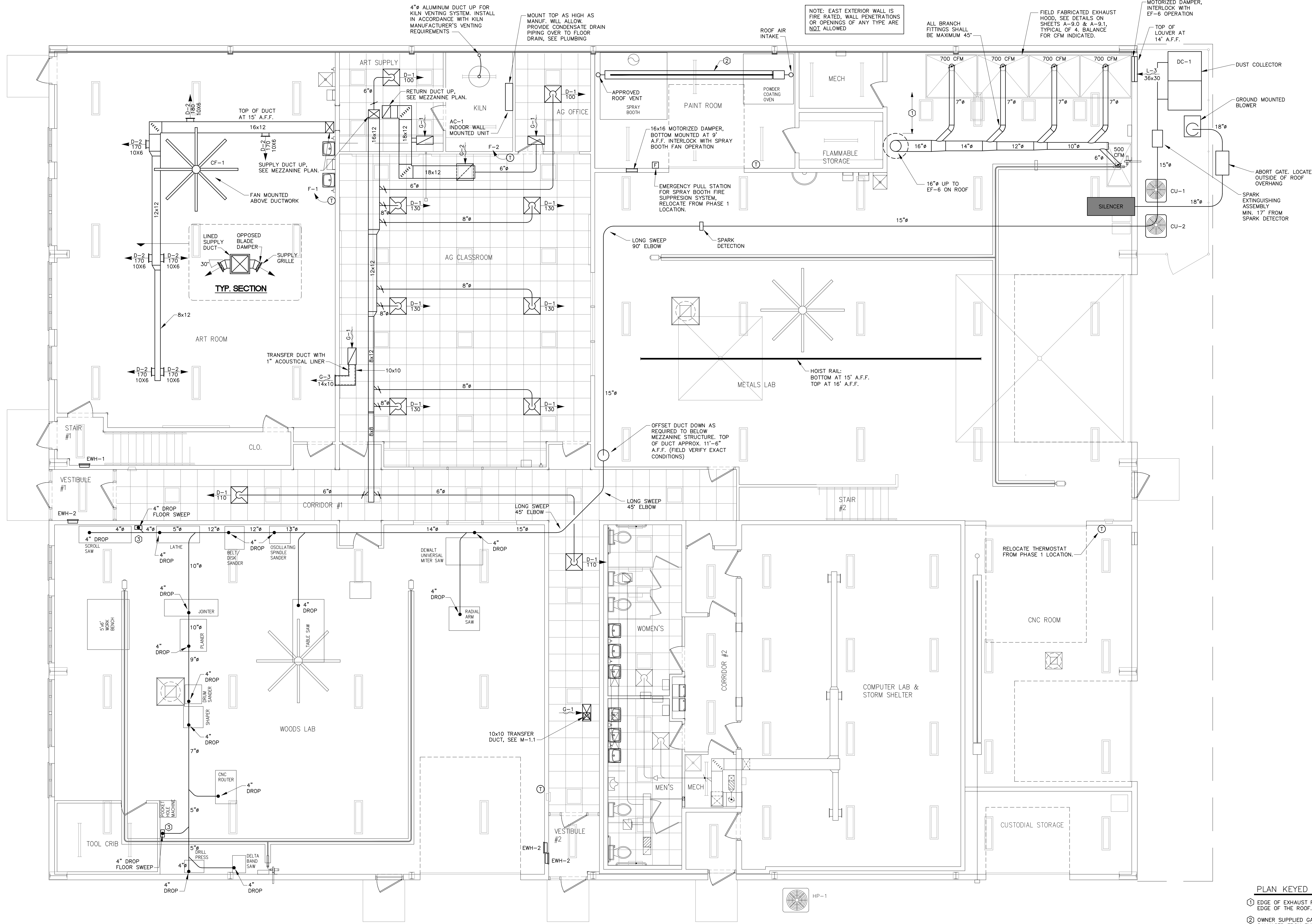
Randolph Public Schools
Vocational/Art Building Phase II
207 N. PIERCE ST., RANDOLPH, NEBRASKA 68771

MAIN FLOOR PLAN - MECHANICAL

REVISIONS

PRELIMINARY ISSUE	1/28/2022
BID ISSUE	
PERMIT ISSUE	2/4/2022
CONST. ISSUE	

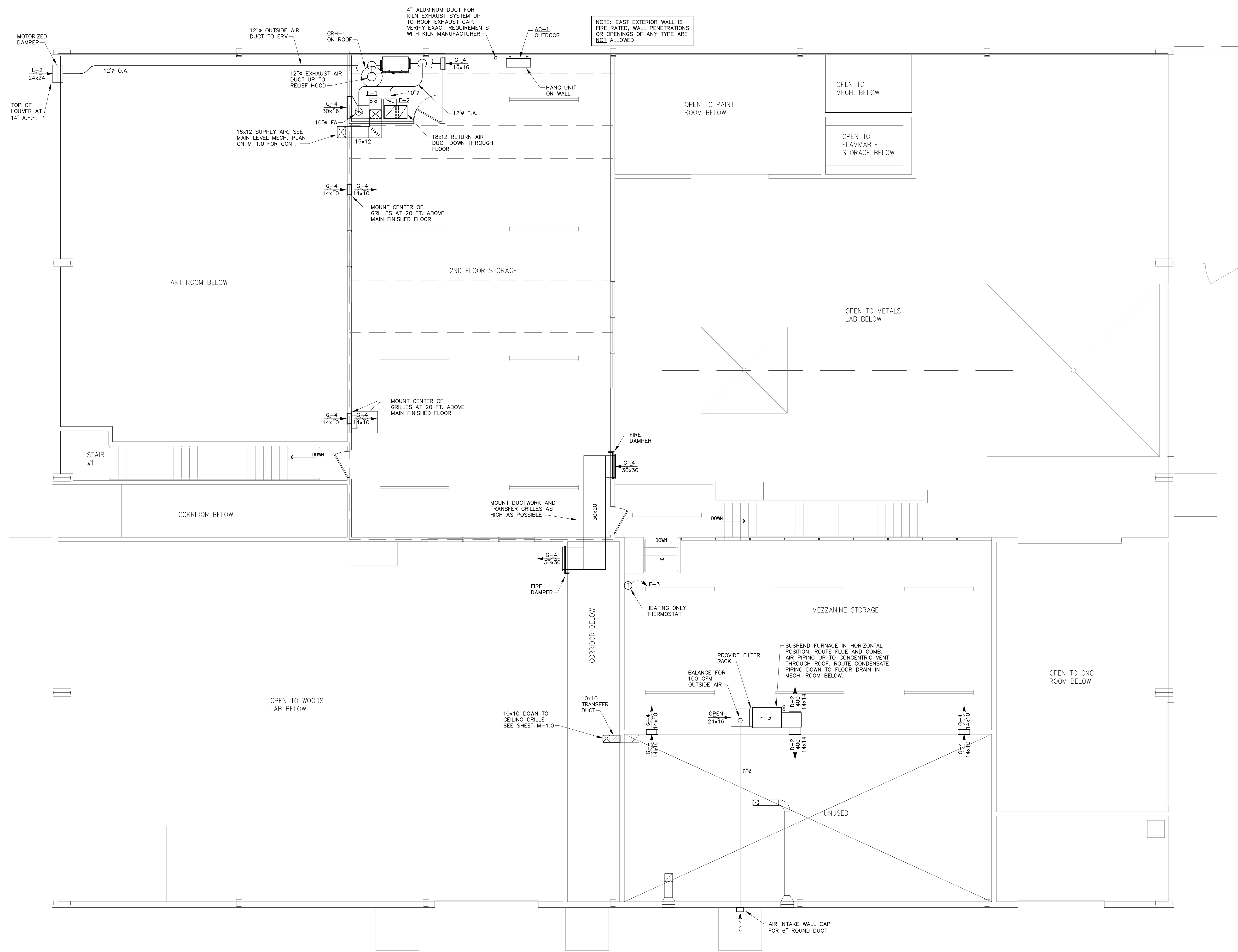
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- PLAN KEYED NOTES:**
- EDGE OF EXHAUST FAN TO BE MINIMUM 10'-0" FROM THE EDGE OF THE ROOF.
 - OWNER SUPPLIED GAS-FIRED RADIANT TUBE HEATER SALVAGED FROM EXISTING SHOP. INSTALLED BY MECH. CONTRACTOR; CALCANIA SR80, 80,000 BTUH INPUT. TILT HEATER AT A 45 DEGREE ANGLE TOWARDS ROOM. MAINTAIN MANUFACTURER'S CLEARANCE REQUIREMENTS. THERMOSTAT PROVIDED BY OWNER.
 - INSTALL FLOOR SWEEP AT FLOOR. FLOOR SWEEP SHALL BE 4" DIAMETER, 1/6 GAUGE WITH 12" X 2" OPENING AND FOOT OPERATED DAMPER DOOR, CAR-MON MODEL FS-44 OR APPROVED EQUAL.

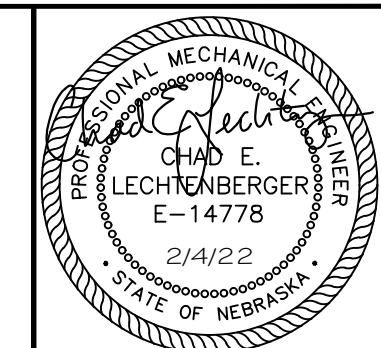
MAIN FLOOR PLAN - MECHANICAL

SCALE: 3/16" = 1'-0"

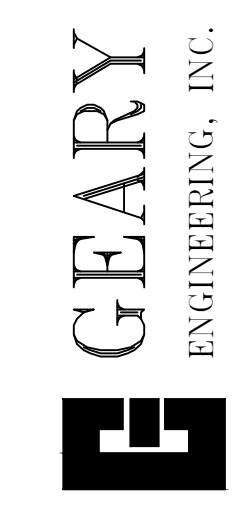


MEZZANINE PLAN - MECHANICAL

SCALE: 3/16" = 1'-0"



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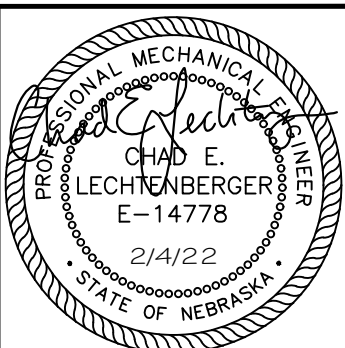
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MEZZANINE PLAN - MECHANICAL

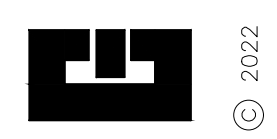
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ENGINEERING, INC.



Randolph Public Schools
Vocational/Art Building Phase II
207 N. PIERCE ST., RANDOLPH, NEBRASKA 68771

MECHANICAL SCHEDULES AND DETAILS

REVISIONS
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1/28/2022
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PERMIT ISSUE:
2/4/2022
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M-2.0
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MECHANICAL EQUIPMENT SCHEDULE								
IDENT.	DESCRIPTION	OPERATING CONDITIONS	MINIMUM CAPACITIES	ELECTRICAL			MANUFAC. AND MODEL NO.	REMARKS
				VOLTAGE	MCA	MAX. OCP		
F-1	UPFLOW FURNACE	WINTER 70° E.A.T. OUTSIDE AIR: -3°DB/-4°WB SUMMER 75°DB/66°WB	1200 CFM @ 0.6" S.P. 1ST STAGE: INPUT 39,000 BTUH OUTPUT 37,830 BTUH 2ND STAGE: INPUT 60,000 BTUH OUTPUT 58,200 BTUH	120 1 PH.	9.2	15	TRANE S9X2B060U4PSBA W/ DX COIL	1 BALANCE FOR 400 CFM O.A. FROM ERV
F-2	DOWNFLOW FURNACE	WINTER 70° E.A.T. OUTSIDE AIR: -3°DB/-4°WB SUMMER 75°DB/66°WB	1200 CFM @ 0.6" S.P. 1ST STAGE: INPUT 39,000 BTUH OUTPUT 37,830 BTUH 2ND STAGE: INPUT 60,000 BTUH OUTPUT 58,200 BTUH	120 1 PH.	9.2	15	TRANE S9X2B060U4PSBA W/ DX COIL	1 BALANCE FOR 350 CFM O.A. FROM ERV
F-3	DOWNFLOW FURNACE	WINTER 70° E.A.T. OUTSIDE AIR: -3°DB/-4°WB SUMMER 75°DB/66°WB	800 CFM @ 0.4" S.P. INPUT 40,000 BTUH OUTPUT 38,000 BTUH	120 1 PH.	9.2	15	TRANE TUH1B040A9241A	1 BALANCE FOR 100 CFM O.A.
CU-1	CONDENSING UNIT	67°F IN. W.B. 80°F ENT. D.B. 95°F AMB.	35.4 MBH TOTAL COOLING 26.2 MBH SENS. COOLING 15 SEER	208/230 1 PH.	18	30	TRANE 4TR4036L1000A	2
CU-2	CONDENSING UNIT	67°F IN. W.B. 80°F ENT. D.B. 95°F AMB.	35.4 MBH TOTAL COOLING 26.2 MBH SENS. COOLING 15 SEER	208/230 1 PH.	18	30	TRANE 4TR4036L1000A	2
AC-1	DUCTLESS SPLIT SYSTEM HEAT PUMP	67°F IN. W.B. 80°F ENT. D.B. 95°F AMB.	713 CFM HIGH SPEED 17,100 BTUH COOLING 18,000 BTUH HEATING	240 1 PH.	13.3	15	DAIKIN INDOOR: FTXM18NMVJU OUTDOOR: RXN18NMVJU	7
EF-6	EXHAUST FAN	STD. AIR	3,300 CFM @ 0.75" S.P., 1100 RPM, 1-1/2 HP	208 1 PH.	6.9	20	GREENHECK OUE-180-VG-2	4,5
GRH-1	GRAVITY RELIEF HOOD	STD. AIR	750 CFM @ 0.1" S.P.	-	-	-	GREENHECK GRSR12	8
L-1	NOT USED (PHASE 1)							
L-2	WALL INTAKE LOUVER	STD. AIR	24" WIDE BY 24" HIGH, 1.78 SQ. FT. FREE AREA, EXTRUDED ALUMINUM DRAINABLE BLADE	NA	NA	NA	GREENHECK ESD-403	6
L-3	WALL INTAKE LOUVER	STD. AIR	36" WIDE BY 30" HIGH, 3.48 SQ. FT. FREE AREA, EXTRUDED ALUMINUM DRAINABLE BLADE	NA	NA	NA	GREENHECK ESD-403	6
EW-1	ELECTRIC WALL HEATER	STD. AIR	2000 WATTS, 6.824 BTUH	240 1 PH.	9.6	NA	QMARK AWH4404F	
CF-1	CEILING FAN	STD. AIR	10" DIAMETER, 148 RPM, 1.0 HP, INDUSTRIAL GRADE MOTOR AND GEARBOX, ONBOARD NEMA 4X VFD, COLORS TO BE SELECTED BY ARCHITECT, STANDARD CONTROLLER	120V 1 PH.	15		BIG ASS FANS BASICS 6	

REMARKS
1. PROVIDE 7-DAY PROGRAMMABLE TOUCHSCREEN THERMOSTAT AND 2" FILTER RACK, 2" PLEATED MERV 13 FILTER.
2. PROVIDE CYCLE PROTECTOR, HIGH PRESSURE SWITCH, LOW AMBIENT COOLING TO 30°F.
3. NOT USED
4. PROVIDE WITH SINGLE PHASE MOTOR STARTER, MS-1P.
5. PROVIDE WITH GRAVITY BACKDRAFT DAMPER AND FIRE-FAB ROOF CURB, INTEGRAL BIRDSCREEN.
6. PROVIDE EXHAUST LOUVERS WITH GRAVITY BACKDRAFT DAMPER AND INTAKE LOUVERS WITH MOTORIZED DAMPER AS CALLED OUT ON PLANS. SAME SIZE AS LOUVER. MOTORIZED DAMPERS TO BE 120V, LOW LEAKAGE OPPOSED BLADE, INSECT SCREEN, JAM AND BLADE SEALS.
7. LOW AMBIENT COOLING TO 0°F.

ENERGY RECOVERY VENTILATOR SCHEDULE								
IDENT.	DESCRIPTION	SERVES	LOCATION	OPERATING CONDITIONS	MINIMUM CAPACITIES	MANUFAC. AND MODEL NO.	REMARKS	
								WEIGHT:
ERV-1	ENERGY RECOVERY UNIT	F-1 F-2	MEZZANINE	ROOM AIR: WINTER 70°F DB 35% RH SUMMER 75°F DB 66°F WB OUTSIDE AIR: WINTER -8°F DB -8°F WB SUMMER 94°F DB 75°F WB	750 CFM @ 0.375" ESP 750 CFM @ 0.375" ESP 240 VOLT, 1 PH, MCA=10.8, MOPP=15A	RENEWARE HEXNIX ECM OPTION	1,2,3 WEIGHT: 275 LBS.	
					SUPPLY AIR	WINTER	SUMMER	
					DRY BULB (°F)	49.7	80.7	
					WET BULB (°F)	40.6	70.0	
					MOISTURE RATIO (grains/lb dry air)	22.7	98.4	
					ENTHALPY (BTU/lb)	15.4	34.8	
					SENS. EFFECTIVENESS	70%	70%	
					TOTAL EFFECTIVENESS	70%	60%	

REMARKS
1. VARIABLE SPEED ECM DIRECT DRIVE MOTORS
2. TWO 2" MERV 8 PLEATED FILTERS.
3. INTERLOCK WITH F-1 SUPPLY FAN TO BE ON WHENEVER F-1 FAN IS ON

DIFFUSER AND GRILLE SCHEDULE					
IDENT.	DESCRIPTION	FINISH	FRAME TYPE	MANUFAC. AND MODEL NO.	REMARKS
D-1	24x24 STEEL LOUVERED FACE DIFFUSER, 4 CONES, NECK SIZE SAME AS DUCT RUNOUT SHOWN ON PLANS	WHITE	LAY-IN T-BAR FRAME STYLE 23	KRUEGER 1400	
D-2	DOUBLE DEFLECTION STEEL SUPPLY GRILLE, 3/4" BLADE SPACING	WHITE	SURFACE MOUNT	KRUEGER 880	PROVIDE WITH OPPOSED BLADE DAMPER
G-1	24x12 STEEL PERFORATED RETURN GRILLE 22x10 NECK	WHITE	LAY-IN T-BAR FRAME STYLE 23	KRUEGER 6490	
G-2	24x24 STEEL PERFORATED RETURN GRILLE 22x22 NECK	WHITE	LAY-IN T-BAR FRAME STYLE 23	KRUEGER 6490	
G-3	FIXED DEFLECTION HEAVY DUTY STEEL RETURN GRILLE WITH 3/8" BLADE SPACING, 38" BLADE DEFLECTION. SIZES AS CALLED OUT ON PLANS	WHITE	SURFACE MOUNT	KRUEGER S480	
G-4	FIXED DEFLECTION STEEL RETURN GRILLE WITH 1/2" BLADE SPACING, 0" BLADE DEFLECTION. SIZES AS CALLED OUT ON PLANS	WHITE	SURFACE MOUNT	KRUEGER S85	

DUST COLLECTOR SCHEDULE							
IDENT.	DESCRIPTION	SERVES	LOCATION	MAXIMUM AIR TO CLOTH RATIO	MINIMUM CAPACITIES	MANUFAC. AND MODEL NO.	REMARKS
DC-1	DUST COLLECTOR	WOOD SHOP	OUTSIDE	3.05:1	6,000 CFM @ 14" WC S.P. FAN: 20 HP MOTOR, 240 VOLT, 3 PH SPARK DETECTION SYSTEM: 120 VOLT	MICRO AIR MODEL RRP-2 WITH EXPLOSION VENT	1,2,3

REMARKS
1. PROVIDE UNIT WITH MINIMUM OF 1800 SQ. FT. OF FIRE RETARDANT, SPUNBOND POLYESTER FILTER MEDIA, MAX. OF 150 SQ. FT. OF FILTER MEDIA PER FILTER, ALL STANDARD OUTDOOR MOUNTING FEATURES INCLUDING GROUND MOUNT FAN WITH VIBRATION ISOLATORS, LEGS HOPPER, BARREL LID KITS WITH HARD DUCT CONNECTION TO HOPPERS, STEEL 55-GALLON BARRELS, TWO STAGE COMPRESSED AIR FILTER/REGULATOR AND REMOTE TYPING CONTROL PANEL WITH INTEGRAL VFD, ROTARY PULSE FILTER CLEANING SYSTEM, AND DUAL COLLECTOR EXPLOSION VENTS. DUST COLLECTOR AND ALL ACCESSORIES SHALL BE FURNISHED AS A COMPLETE SYSTEM.
2. FURNISH WITH NRV EXPLOSION ISOLATION DAMPER, RAPTOR SPARK DETECTION SYSTEM INCLUDING INFRARED SPARK DETECTOR, SPARK DETECTOR TEST LIGHT, EXTINGUISHING ASSEMBLY, HIGH SPEED ABORT GATE AND CONTROLS FOR NFPA 664 COMPLIANCE.
3. ALL DUCTWORK TO BE FACTORY MANUFACTURED, CLAMP TOGETHER TYPE WITH ROLLED LIP ON ALL FITTINGS, ALL STRAIGHT DUCT SHALL BE A NOMINAL 5" IN LENGTH AND LASER WELDED TO A COMPLETE SEAM. STANDARD DUCT GAUGES SHALL BE 24 GA. FOR 4"-6", 22 GA. FOR 7"-12" AND 20 GA. FOR SIZES 13"-22".

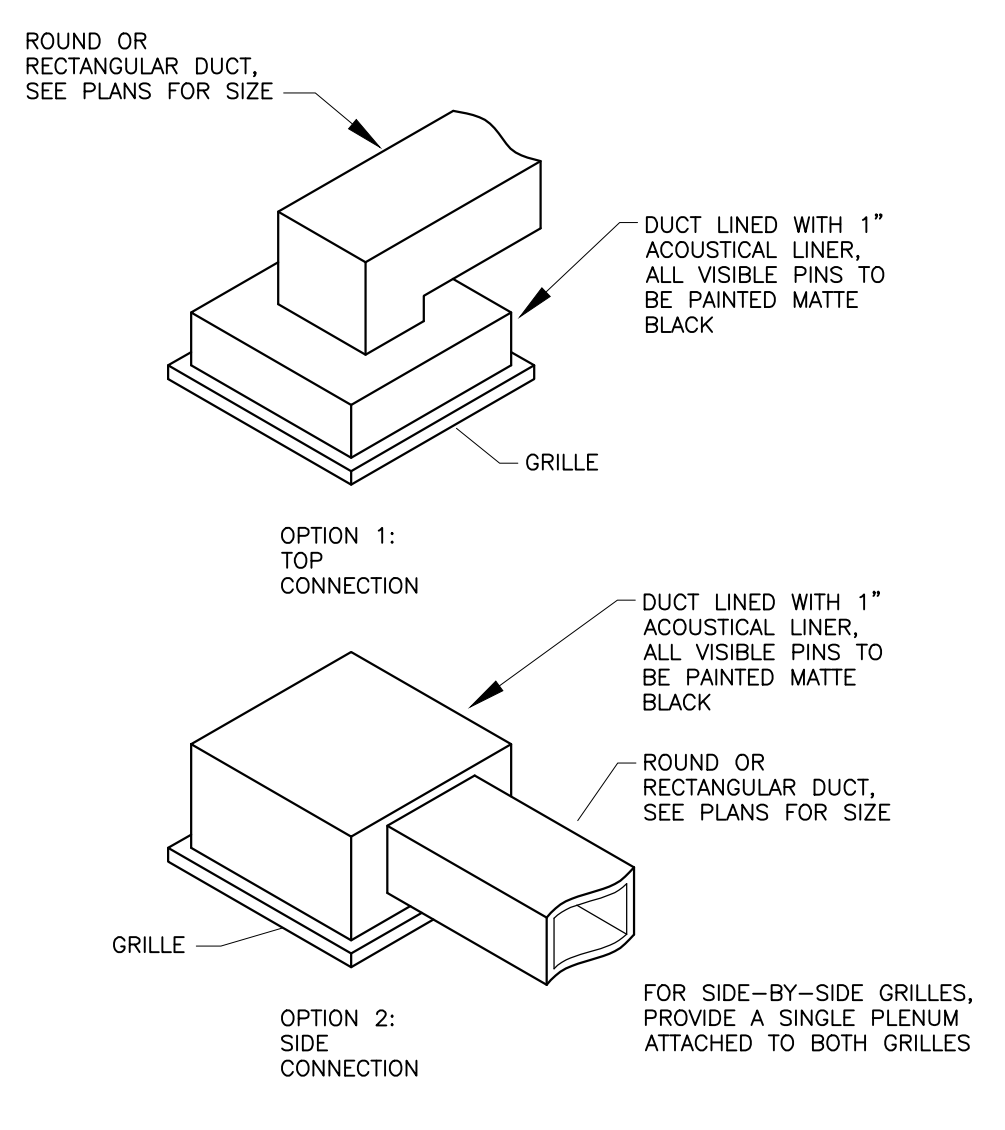
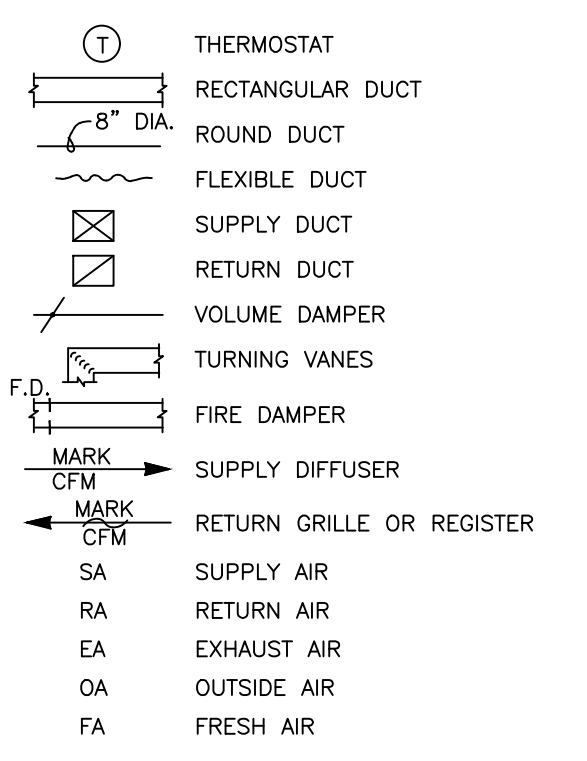
SAW DUST COLLECTION SYSTEMS
A. Ductwork and Duct Accessories
1.02 REFERENCES
A. ACGIH - Industrial Ventilation; A Manual of Recommended Practice
B. AMCA 99 - Standards Handbook
C. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes
D. AMCA 300 - Test Code for Sound Rating Air Moving Devices
E. AMCA 301 - Method of Calculating Fan Sound Ratings from Laboratory Test Data
F. ASTM A 86 - Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles
G. ASTM A 525 - General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
H. ASTM A 527 - Steel Sheet, Zinc Coated (Galvanized) by Hot-Dip Process, Lock Forming Quality
I. ASTM A 569 - Steel, Carbon (0.15 Maximum Percent), Hot-rolled Sheet and Strip, Commercial Quality
J. NBS 95 15 - Voluntary Product Standard for Custom Contact Molded Reinforced Polyester Chemical-Resistant Process Equipment
K. NFPA 81 - Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying
L. SMACNA - HVAC Duct Construction Standards - Metal and Flexible
M. SMACNA - Round Industrial Duct Construction Standard
N. SMACNA - Rectangular Industrial Duct Construction Standard
O. UL 181 - Factory-Made Air Ducts and Air Connectors
P. UL 214 - Test for Flame Propagation of Fabrics and Films
1.03 SUBMITTALS
A. Shop Drawings: Indicate dimensions, sizes, weights and point loadings, material thickness, and locations and sizes of field connections. Submit construction layout and details for list fittings.
B. Product Data: Provide manufacturer's literature and data indicating rated capacities, dimensions, weights and point loadings, accessories, electrical characteristics and connection requirements, wiring diagrams, and location and sizes of field connections.
C. Provide fan curves with specified operating point clearly marked.
D. Submit sound power levels for both fan inlet and outlet at rated capacity.
E. Manufacturer's Installation Instructions: Indicate assembly and installation instructions.
1.04 OPERATION AND MAINTENANCE DATA
A. Operation and Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list and wiring diagrams.
1.05 QUALITY ASSURANCE
A. Fans:
1. Performance Ratings: Conform to AMCA 210 and bear the AMCA Certified Rating Seal.
2. Sound Rating: AMCA 301, listed to AMCA 300 and bear AMCA Certified Sound Rating Seal.
3. Fabrication: Conform to AMCA 99.
PART 2 PRODUCTS
2.01 DUST COLLECTION SYSTEM
A. Manufacturers:
1. Micro Air Clean Air Systems
2. Engineer approved equal.
B. Performance: Refer to schedule on drawings.
C. Safety: The unit for use with sawdust shall be a gravity-flow, pulse jet dust collection system.
D. Construction: Construct the unit using a minimum of 1/4 gauge welded steel with industrial grade enamel paint inside and out. The dust collector shall be modular in design to allow for future expansion by the addition of additional filter modules if necessary. All central hook-ups shall be outside of the cabinet. The system shall be designed for ~20 inches of W.C. Provide unit with support legs with front access to the collection barrels.
E. Filters: Filter media shall be constructed of 100% high strength, spun bonded polyester fibers with fire retardant coating and rated for a maximum continuous temperature of 260° F. Each filter shall be equipped with maximum of 180 pleats no more than 8" of diameter. Filters shall provide an operating efficiency of 99.9% efficiency on 0.5 micron particles. The wide pleat design allows for superior particulate release during the cleaning cycle. The spunbond polyester cartridge filters are capable of being washed periodically. All filters shall be accessed from outside of the collector. Filters shall not be a proprietary design or size.
F. Filter Cleaning: The unit shall be equipped with a filter cleaning system consisting of an aluminum tube that incrementally rotates inside of each cartridge filter. Each aluminum tube shall be equipped with a series of pre-ridged openings specifically angled to pulse collected particulate from the filters without physically coming in contact with the cartridges. The filter cleaning system shall initiate automatically based upon field adjustable timer settings. An after-pulse mode shall be included to automatically clean the filters after the unit is shut OFF. This after-pulse mode shall be adjustable from 1 to 99 seconds. The filter cleaning system shall operate at 80 psi with noise levels not exceeding 78 dBA during cleaning cycle. The filter cleaning system shall include a triangular filter support for each filter to ensure proper installation and sealing of the filters.
G. VFD Control Panel: The system shall include a touch screen control panel with a built-in VFD capable of operating the dust collector in CFM mode, RPM mode or STATIC pressure mode. The filter cleaning system settings including pulse duration, frequency and after-pulse shall all be controlled from the control panel. The control panel shall include digital CFM readout, motor frequency, motor RPM, system and filter STATIC pressure, motor horsepower utilization, Acceleration / Deceleration tracking, and online troubleshooting. CFM line setting adjustments, RPM adjustments and STATIC pressure adjustments shall all be capable from the digital screen. An integrated photoelectric gauge with two soft keys that change according to the operator panel state and are designed with field upgradable firmware.
H. Explosion Relief: Dust collector shall be specifically designed and engineered. It shall also include a hard pipe connection between waste barrel and hopper(s).
I. Blower: Remote mount, Greenheck model USF-18 with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors.
1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

2.02 DUCTWORK AND DUCT ACCESSORIES
A. Manufacturers:
1. US Duct
2. Engineer approved equal.
B. Clamp Together Ductwork:
1. The wood dust collector system shall include clamp together ductwork manufactured by US Duct. The pipe and adjustable sleeves shall be manufactured with a longitudinal seam laser weld to allow for a tighter slip joint and reduce system pressure losses. Pipe lengths using laser welded seams will not exceed a nominal 60' length. All laser welded components shall be light inspected to ensure there are no voids or imperfections. Lap seam construction of ductwork shall not be acceptable due to potential leakage and dust harbors.
2. Clamps: The clamp together ductwork shall come in diameters of 3" to 24" pipe, adjustable sleeves and collars attached to other components will have one or both ends die formed-rolled to provide a uniform edge around the circumference of the rolled end. All connections shall have a gasket in the seal. The single lever clamps shall be manufactured of similar duct material.
3. Elbows: All standard elbows have a concentric design of 1.5 X diameter. Standard elbows 3" to 7" are pressed formed, and 8" and larger are gored construction with a lock form standing seam every 15'.
4. Branches: Branch fittings shall be produced with a concentric design, as they taper to a specific dimension. All branches shall be produced on a 45° angle. Joints shall be lapped, spot welded, cleaned and painted with industrial tough coat, acrylic enamel #1760 aluminum. Seams shall be sealed with sealant.
5. Gauges: Fitting gauges shall vary from 22 to 20 gauge, depending on the configuration or the branch or fitting.
6. Miscellaneous Components: All duct components, hoods, floor sweeps and adapters shall be available with rolled edges with diameters less than 24".

2.03 ANCILLARY SAFETY DEVICES
A. Manufacturers:
1. Boss Products, LLC / ECOMaxx
2. Engineer approved equal.
B. Explosion Isolation Damper / NRV: Dust collection system shall include one (1) ATEX Certified NRV (Explosion Isolation Damper) in accordance with NFPA regulations pertaining to wood dust collection. Under normal operation the flap will open to the downstream air moving device generates a flow in the ductwork. Should an explosion happen in the dust collection unit, a pressure front develops in the ductwork within milliseconds and, due to the design of the NRV, the internal damper will be forced closed and seal off the approaching flame front. This prevents glowing embers and burning material from entering into upstream equipment and spaces. The design of the NRV is critical as the damper must function in milliseconds and therefore must be of light construction but must be strong enough to withstand the explosion pressure. The NRV damper will include a microswitch designed to be wired to the Micro Air control panel. This will shut the dust collector down in the event of an explosion. NRV shall be rated for Class ST applications, Kit max 299 bar mvs, P_{max} 25 bar.
C. Spark Detection System:
1. Control panel shall be specifically designed to be used with spark detectors, test lamps, water extinguishing unit, and other devices such as thermal probes, dust probes, firebreak shutters, and high-speed abort gates. The control panel shall be equipped with LED lights and buttons connected to a mother board with power supply confined in a sealed (waterproof) plastic enclosure with a clear hinged protection door. The control unit shall have six (6) input lines that are absorption balanced through resistance that is able to self-check at wiring and devices connected to it. All inputs are individually protected with resettable fuses, resistors, semiconductors, and block inductors.
2. Infrared Spark Detector Kit: IRS-S002 Infrared Spark Detectors shall be FM Approved and ATEX certified and designed for installation on spark detection and extinguishing systems for the detection of sparks on dust extraction applications. The detector shall employ an advanced infrared light-sensitive technology and circuitry to detect sparks, flames and incandescent material that pass by the detector's optical element. The spark detector shall include a dust mounting kit designed to provide a dark environment to avoid false signals.
3. Packaged External Test Lamp Kit: IRS-TL-02 External Test Lamp shall be FM Approved and ATEX Certified and designed for external monitoring of the spark detectors (IRS-S002) to ensure that the detector performance is not compromised by an excessive amount of dust / material on the optical window. The Test Lamp shall work by emitting high infrared radiation from its optical window to simulate a spark flame.
4. Packaged Water Extinguishing Group Kit: IRS-EXT-02 Packaged Water Extinguishing Group Kit shall be FM Approved and ATEX Certified and be designed to work in conjunction with the Raptor™ (RS-PCUSP/L) control panel and Infrared Spark Detectors (IRS-S002). In the event of a spark detection, a water spray is initiated inside the dust system to extinguish sparks or glowing embers. The packaged water extinguishing group shall consist of: (1) 24 VDC solenoid valve, (1) 1" water filter, (1) pressure switch (14.5-174 PSI / 1-12 Bar), (1) ball valve with microswitch (1) electrical connection box, Two (2) flexible hoses with connectors and stainless-steel cone jet nozzles with dust mounts included. *Packaged Water Extinguishing Group requires 15.83 gallons per minute at a pressure of 72.5 psi.
D. High Speed Abort Gate: Dust collection system shall include one (1) high speed abort gate activated by over pressure without signal or by electronic signal from spark detection system. Abort gate shall include 24V control panel with status lights for connection to spark detection system, weather hood, manual rearm mechanism, epoxy coated finish inside and outside and NFPA compliant with spark detection control.

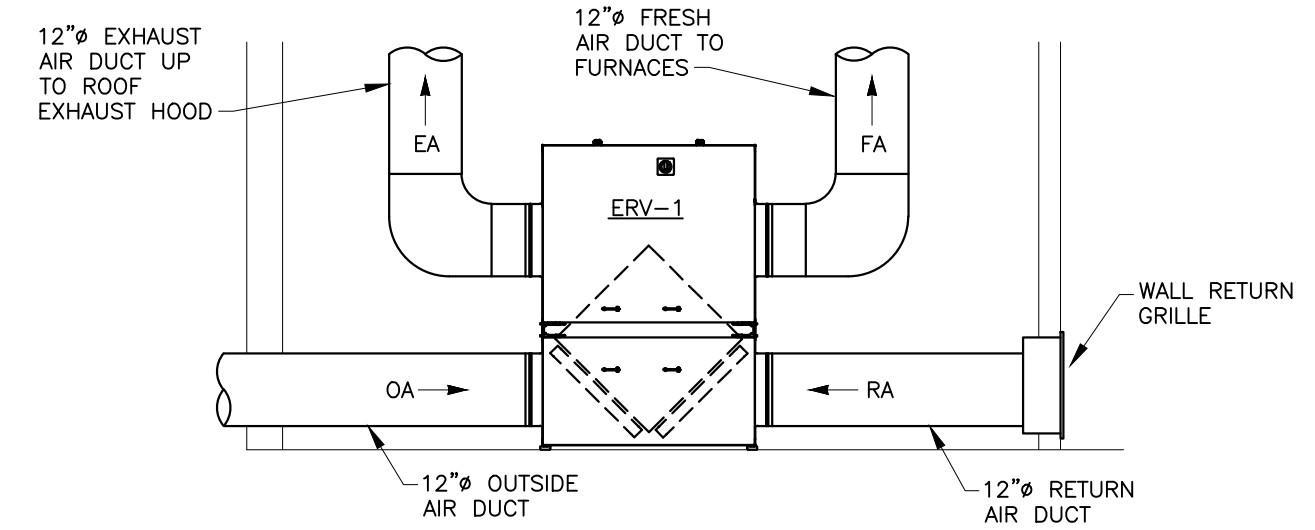
PART 3 EXECUTION
3.01 FIELD MEASUREMENTS
A. Verify that field measurements are as indicated on shop drawings.
3.02 INSTALLATION
A. Install equipment in accordance with manufacturer's instructions.
B. Install in accordance with NFPA 81, NFPA 654, NFPA 654, NFPA 652 and ACGIH Industrial Ventilation Manual except as indicated.
C. Do not operate fans for any purpose until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.
D. Install fans with resilient mountings and flexible electrical leads.
E. Provide Pilot tube openings where required for testing of systems, complete with metal cap with spring device or screw to ensure against air leakage.
F. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

SYMBOLS LEGEND



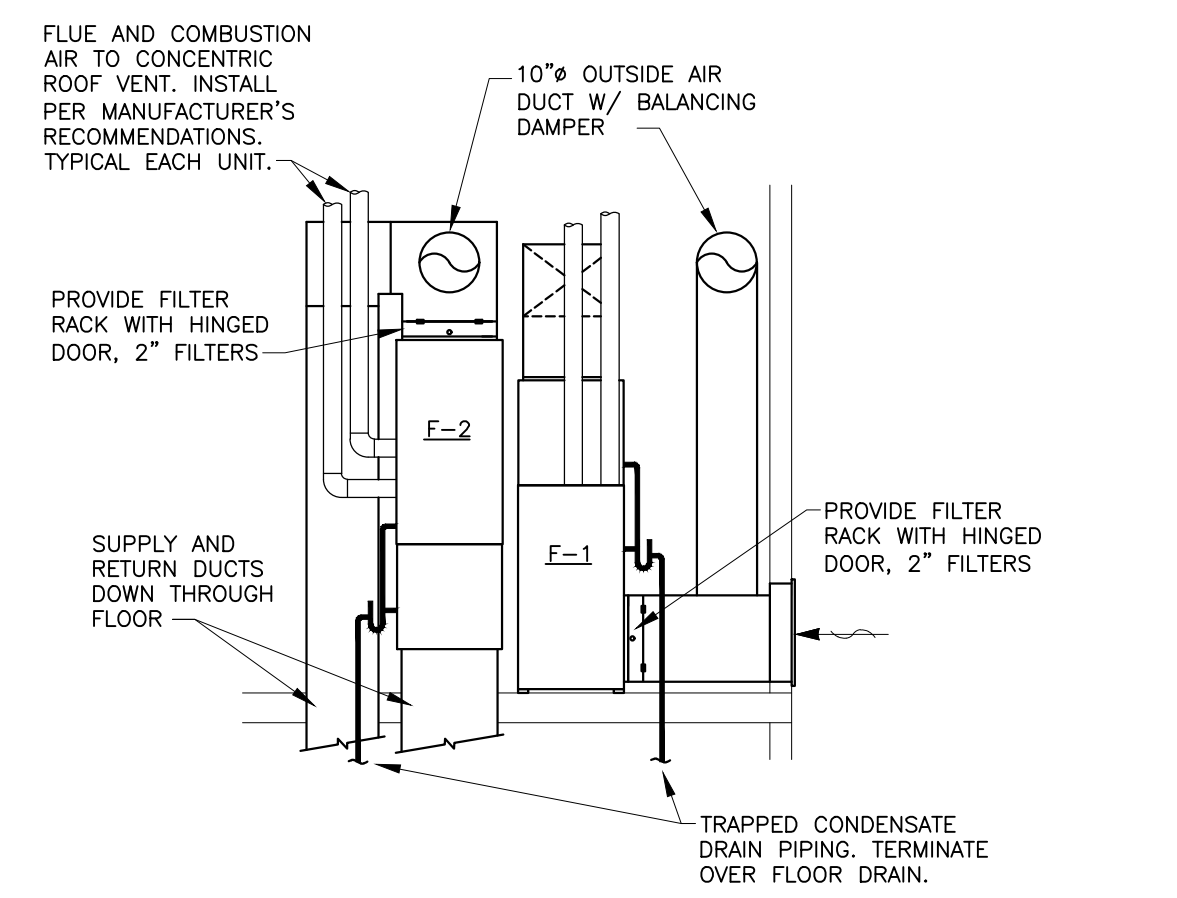
RETURN GRILLE DETAIL

SCALE: NONE



ELEVATION AT ERV-1

SCALE: NONE

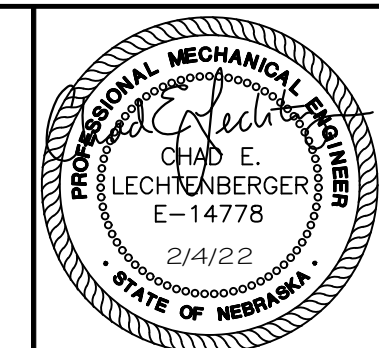


ELEVATION AT F-1 / F-2

SCALE: NONE

GENERAL FIRE PROTECTION NOTES:

1. PHASE II SHALL INCLUDE THE FURNISHING OF ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR PROVIDING ADDITIONAL PROTECTION FOR NEW PHASE II SPACES. ALL SPECIFICATIONS FOR PHASE I SHALL APPLY.

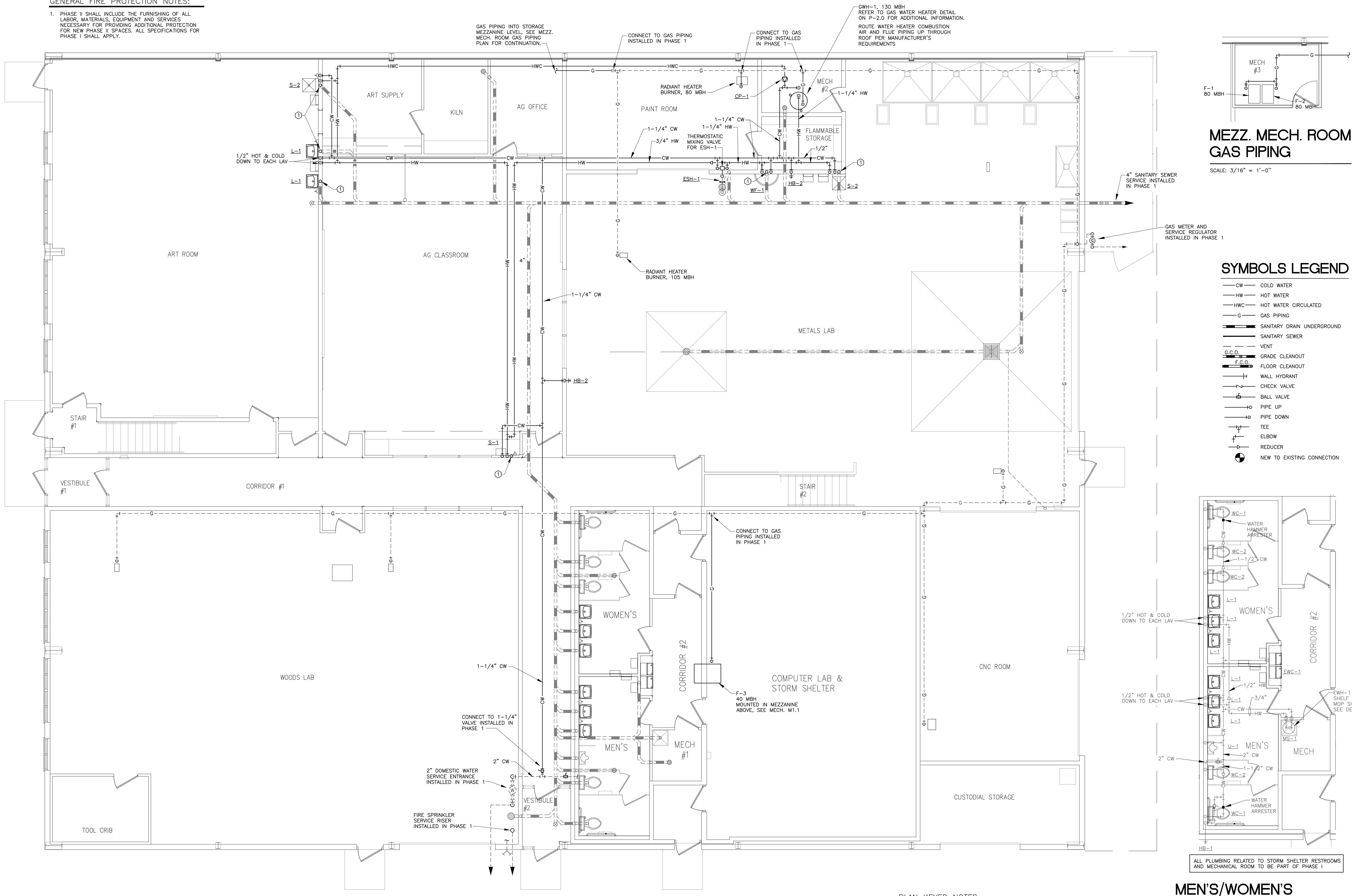


7800 'O' STREET SUITE 100
Lincoln, Nebraska 68510
Tel. (402) 489-7627
Project #31009



Randolph Public Schools
Vocational/Art Building Phase II
207 N. PIERCE ST., RANDOLPH, NEBRASKA 68771

PLUMBING PLANS
REVISIONS
PRELIMINARY ISSUE
BID ISSUE
PERMIT ISSUE:
2/4/2022
CONST. ISSUE:
P-1.0
PROJECT #31009

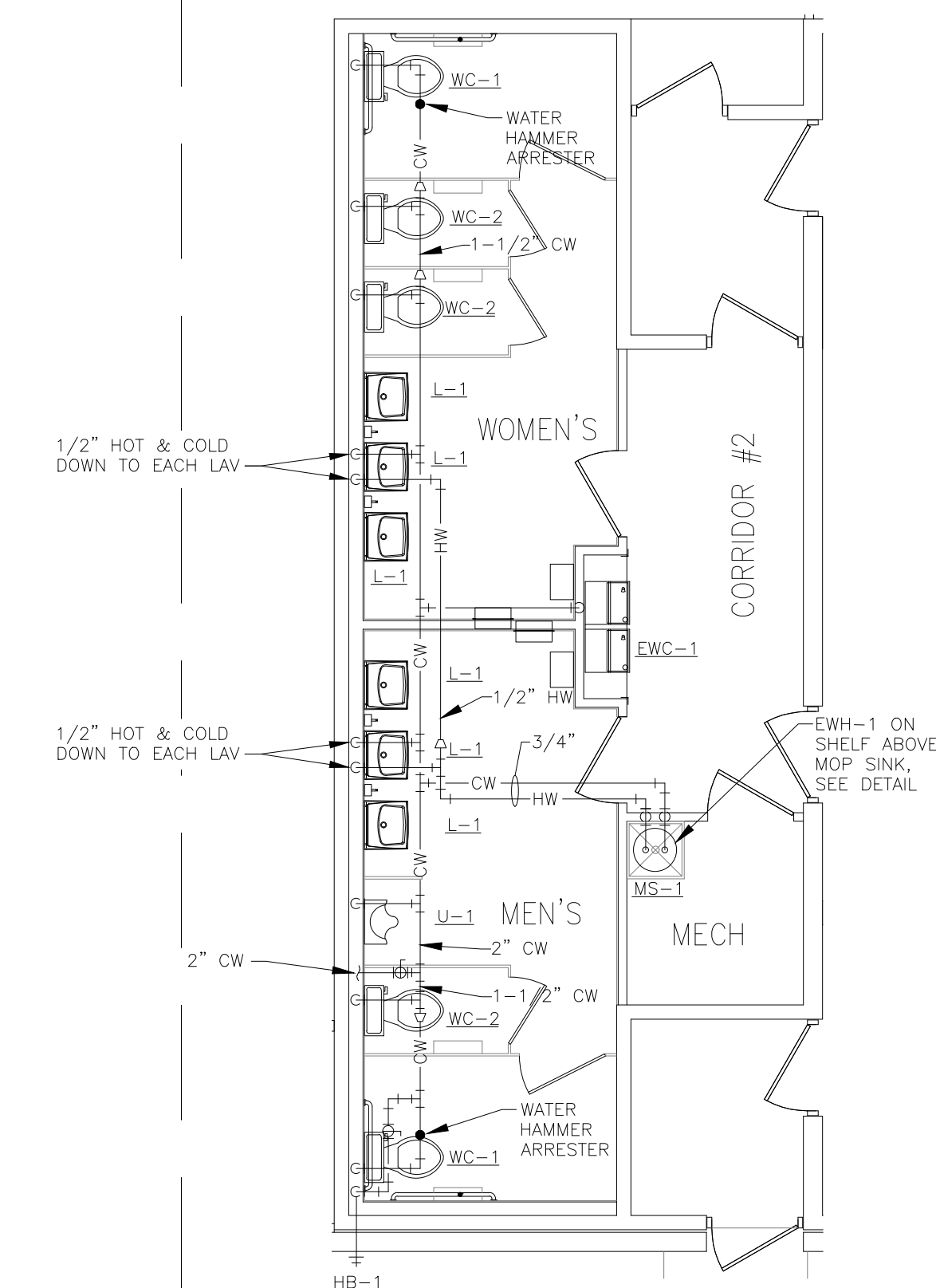


MEZZ. MECH. ROOM GAS PIPING

SCALE: 3/16" = 1'-0"

SYMBOLS LEGEND

- CW — COLD WATER
- HW — HOT WATER
- HWC — HOT WATER CIRCULATED
- G — GAS PIPING
- SD — SANITARY DRAIN UNDERGROUND
- SS — SANITARY SEWER
- V — VENT
- G.C.O. — GRADE CLEANOUT
- F.C.O. — FLOOR CLEANOUT
- WH — WALL HYDRANT
- CV — CHECK VALVE
- BV — BALL VALVE
- PU — PIPE UP
- PD — PIPE DOWN
- T — TEE
- E — ELBOW
- R — REDUCER
- N — NEW TO EXISTING CONNECTION



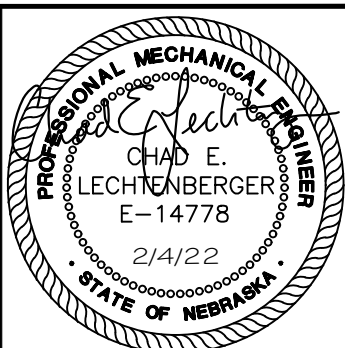
MEN'S/WOMEN'S DOMESTIC WATER PIPING

SCALE: 3/16" = 1'-0"

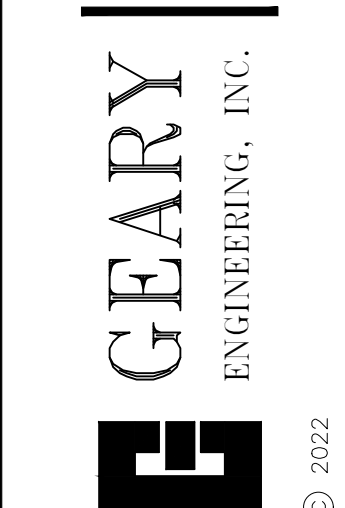
PLUMBING PLAN - SANITARY AND DOMESTIC WATER

SCALE: 3/16" = 1'-0"

PLAN KEYED NOTES:
 ① CONNECT TO SANITARY STUB-UP THROUGH SLAB INSTALLED IN PHASE I. SEE WASTE AND VENT RISER ON M-2.0 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

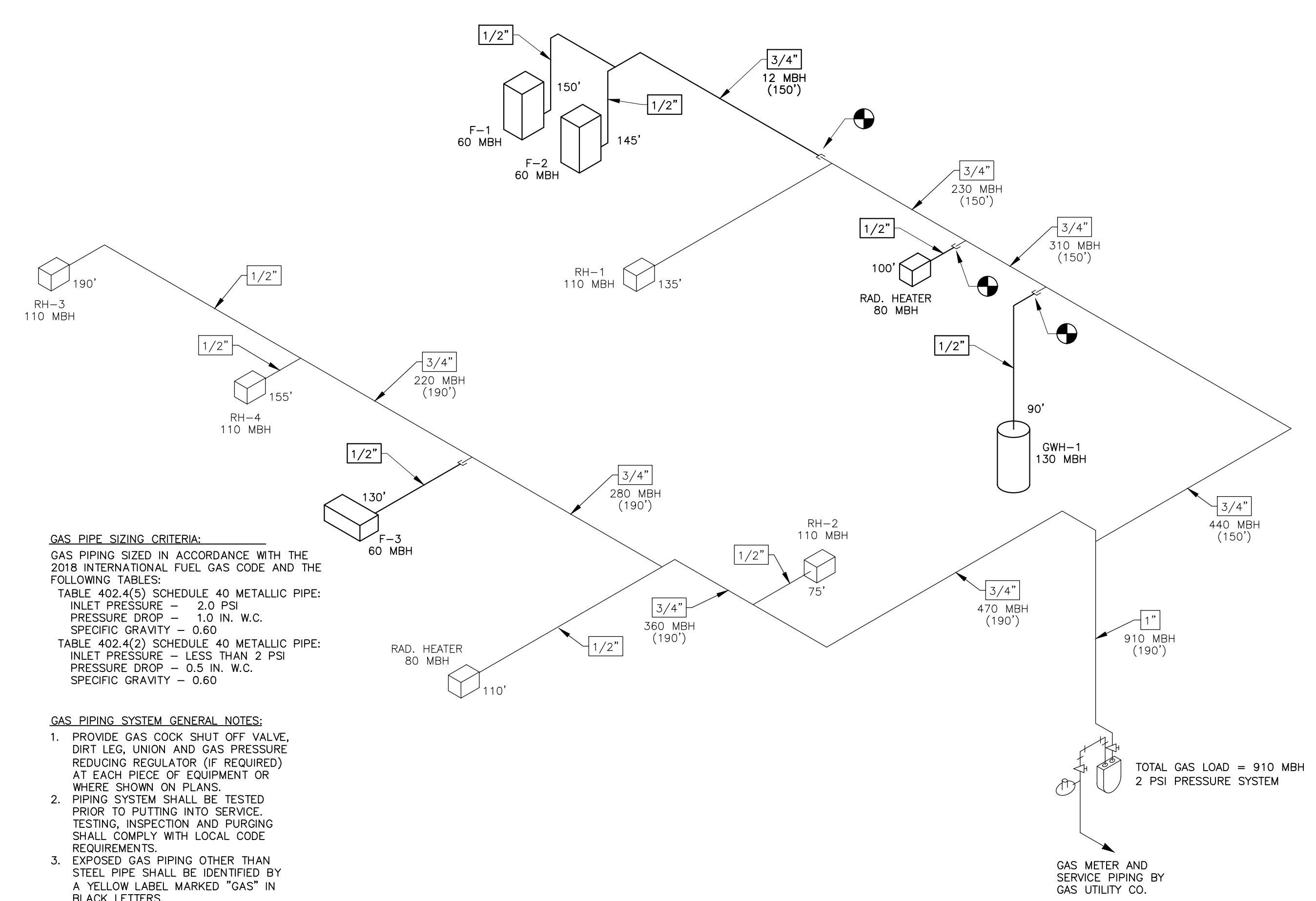


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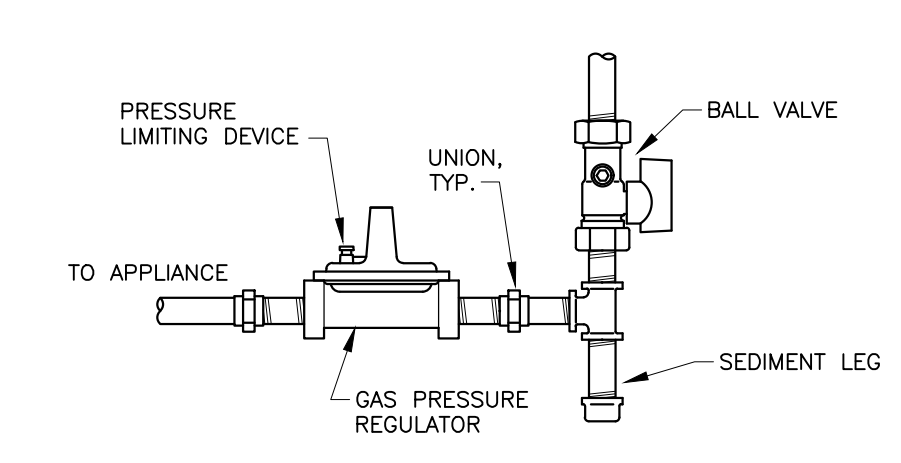
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GAS RISER DIAGRAM

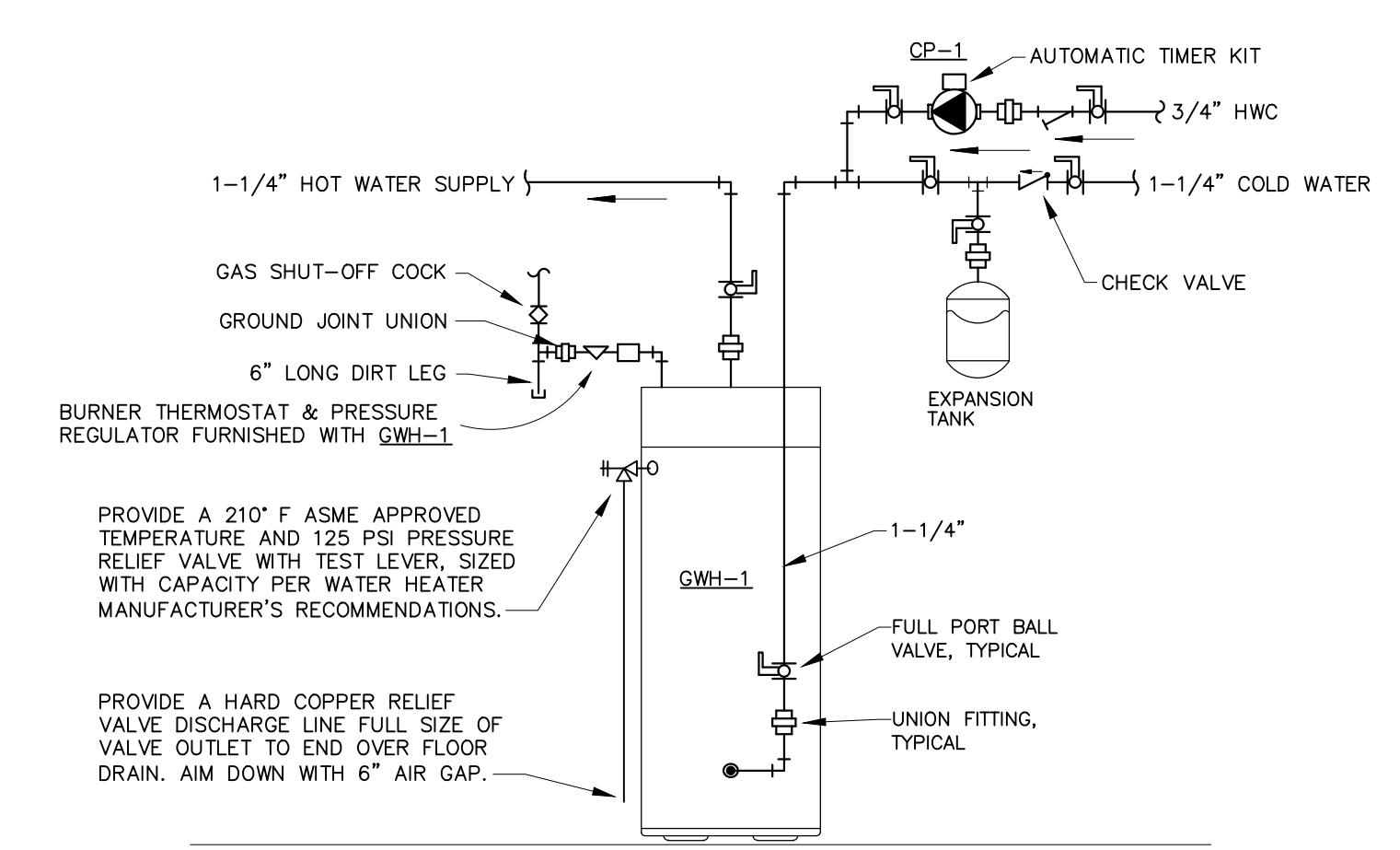
GAS PIPE SIZING CRITERIA:
GAS PIPING SIZED IN ACCORDANCE WITH THE 2018 INTERNATIONAL FUEL GAS CODE AND THE FOLLOWING TABLES:
TABLE 402.4(5) SCHEDULE 40 METALLIC PIPE:
INLET PRESSURE - 2.0 PSI
PRESSURE DROP - 1.0 IN. W.C.
SPECIFIC GRAVITY - 0.60
TABLE 402.4(2) SCHEDULE 40 METALLIC PIPE:
INLET PRESSURE - LESS THAN 2 PSI
PRESSURE DROP - 0.5 IN. W.C.
SPECIFIC GRAVITY - 0.60

- GAS PIPING SYSTEM GENERAL NOTES:**
1. PROVIDE GAS COCK SHUT OFF VALVE, DIRT LEG, UNION AND GAS PRESSURE REDUCING REGULATOR (IF REQUIRED) AT EACH PIECE OF EQUIPMENT OR WHERE SHOWN ON PLANS.
 2. PIPING SYSTEM SHALL BE TESTED PRIOR TO PUTTING INTO SERVICE. TESTING, INSPECTION AND PURGING SHALL COMPLY WITH LOCAL CODE REQUIREMENTS.
 3. EXPOSED GAS PIPING OTHER THAN STEEL PIPE SHALL BE IDENTIFIED BY A YELLOW LABEL MARKED "GAS" IN BLACK LETTERS.



TYPICAL GAS APPLIANCE PIPING CONNECTION DETAIL

SCALE: NONE

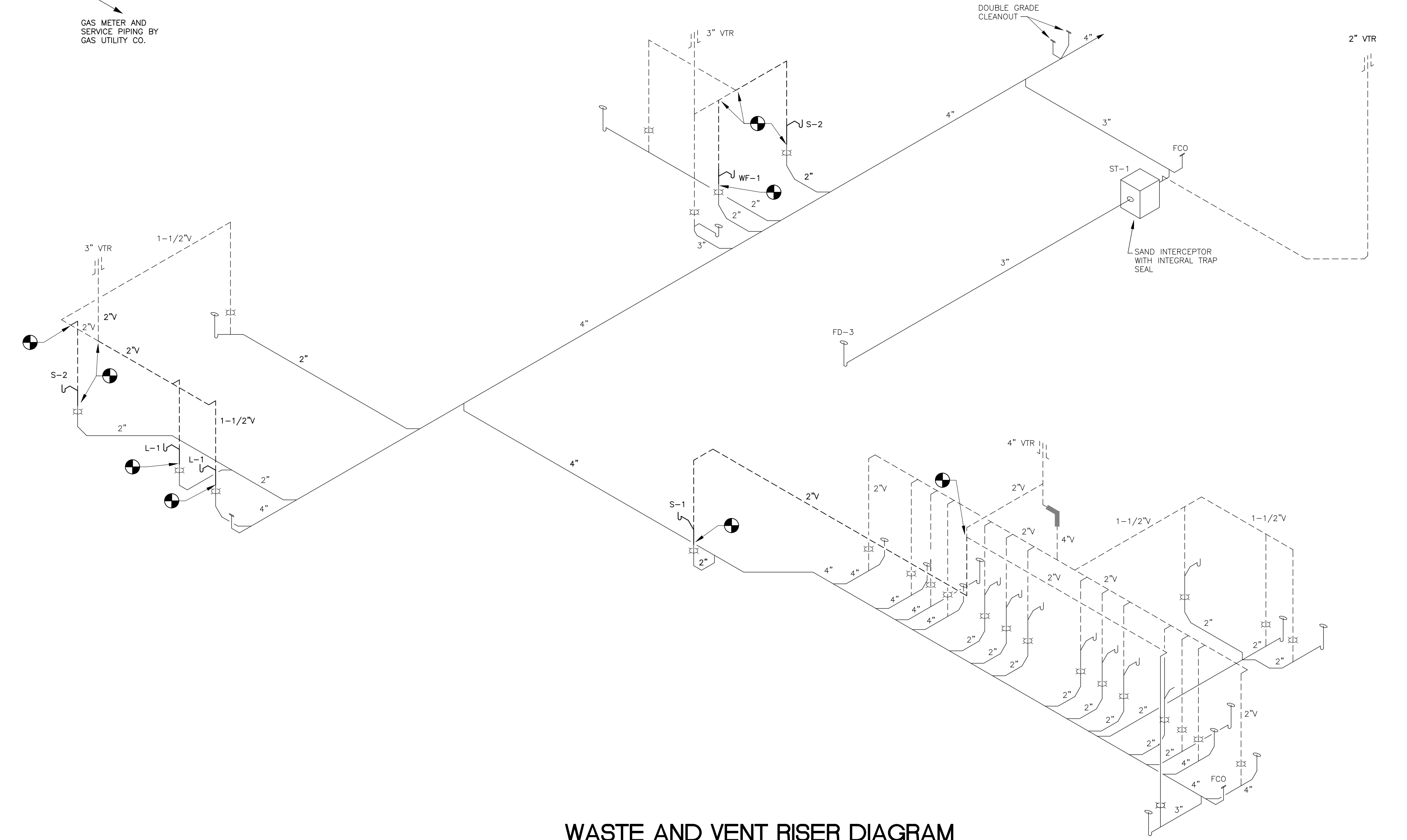


GAS WATER HEATER DETAIL

SCALE: NONE

PIPING ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS. REFER TO FLOOR PLANS FOR PIPE SIZES NOT SHOWN. PROVIDE CLEARANCES RECOMMENDED BY MANUFACTURER. PROVIDE ACCESSIBILITY TO, & REMOVABILITY OF, HEATER. PROVIDE VACUUM RELIEF VALVE IF REQUIRED BY LOCAL CODE.

PLUMBING FIXTURE SCHEDULE		WASTE	VENT	COLD	HOT
PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL FIXTURES IN THIS SCHEDULE THEIR APPROVED EQUIVALENT:					
S-1	SINK: ELKAY "LUSTERTONE" MODEL LRAD172065, TOP MOUNT SINGLE BOWL SINK, STAINLESS STEEL, 6.5" BOWL DEPTH, ADA COMPLIANT, THREE HOLES ON 4" CENTERS, 17"x20" NOM. OVERALL DIMENSIONS, 14"x14" INSIDE BOWL, LK99 DRAIN FITTING. PROVIDE WITH FAUCET, MOEN MODEL 8799 WITH 4" WRISTBLADE HANDLES, 1.5 GPM.	2"	1-1/2"	1/2"	1/2"
S-2	SINK: FIAT MODEL SF-1-F, SINGLE BOWL TUB WITH LEGS, HEAVY DUTY STRUCTURAL PLASTIC POLYMER, 19.25"x19.25", 13" DEEP INSIDE TUB DIMENSIONS. FAUCET: MOEN 8277 WITH LEVER HANDLES AND HOSE END.	2"	1-1/2"	1/2"	1/2"
FD-1	FLOOR DRAIN: J.R. SMITH #2005-A05 CAST IRON DRAIN WITH 3" DIAMETER NICKEL BRONZE STRAINER, MEMBRANE FLASHING CLAMP, 2" OUTLET WITH P-TRAP. PROVIDE BARRIER-TYPE TRAP SEAL PROTECTION DEVICE CONFORMING TO ASSE 1072, J.R. SMITH QUAD CLOSE TRAP SEAL OR EQUIVALENT. CLEAN AND POLISH STRAIN TOP AFTER INSTALLATION.	2"	2"	--	--
FD-2	FLOOR DRAIN: J.R. SMITH #2005-A10 CAST IRON DRAIN WITH 10" DIAMETER NICKEL BRONZE STRAINER, MEMBRANE FLASHING CLAMP, 3" OUTLET WITH P-TRAP. PROVIDE BARRIER-TYPE TRAP SEAL PROTECTION DEVICE CONFORMING TO ASSE 1072, J.R. SMITH QUAD CLOSE TRAP SEAL OR EQUIVALENT. CLEAN AND POLISH STRAIN TOP AFTER INSTALLATION.	3"	2"	--	--
GWH-1	GAS WATER HEATER: RHEEM MODEL GHE100SU-130(A) SPIDERFIRE, 100 GALLON STORAGE, 130 MBH GAS INPUT, 170 GPH RECOVERY AT 90°F RISE, 97% THERMAL EFFICIENCY. SET SUPPLY TEMPERATURE AT 110°F.	--	--	1-1/4"	1-1/4"
ESH-1	COMBINATION EYE/FACE WASH AND SHOWER: GUARDIAN G1931 LESS BOWL, EMERGENCY THERMOSTATIC MIXING VALVE MODEL G6040 SET TO 75°F. SHOWER HEAD 10" DIAMETER ABS PLASTIC. STANDARD SPRAYHEAD ASSEMBLY. TWIN SPRAY HEADS WITH FLIP TOP DUST COVERS, INTERNAL FLOW CONTROL AND FILTER, OPERATED BY A LARGE, HIGHLY VISIBLE PUSH HANDLE. SHOWER VALVE CHROME-PLATED BRASS 1" NPT STAY-OPEN BALL VALVE. OPERATED BY A STAINLESS STEEL PULL ROD WITH TRIANGULAR HANDLE. EYE/FACE WASH VALVE CHROME-PLATED BRASS 3/4" NPT STAY-OPEN BALL VALVE. PIPE & FITTINGS SCH. 40 GALVANIZED STEEL.	--	--	1-1/4"	--
WF-1	WASHFOUNTAIN: BRADLEY TDB3103, 36" SEMI-CIRCULAR, 7-1/2" DEEP BOWL, ADA COMPLIANT BARRIER FREE, STANDARD PEDESTAL, 3 USERS AT A TIME, TOUCH TIME HAND CONTROL, TYPE A DRAIN WITH SUPPLIES FROM ABOVE, TERREON MATERIAL, STANDARD COLOR SELECTED BY ARCHITECT. PROVIDE WITH THERMOSTATIC MIXING VALVE AND METAL CLAD LIQUID SOAP DISPENSER.	2"	1-1/2"	1/2"	1/2"
HB-2	HOSE BIBB: WOODFORD MODEL 26, BACKFLOW PROTECTED, NON-FREEZELESS. WALL MOUNTED, 1/2" INLET.	--	--	1/2"	--
CP-1	CIRCULATING PUMP: BELL & GOSSETT NBF-25, CAPACITY OF 3 GPM @ 17 FEET HEAD, 120 VOLTS, LEAD-FREE BRONZE BODY. PROVIDE WITH CHECK-TROL ISOLATION FLOW CONTROL, FLANGE, AND TC-1 TIMER KIT AND AGS-3/4 AQUASTAT COMBINATION.	--	--	--	3/4" CIRC.



WASTE AND VENT RISER DIAGRAM

SCALE: NONE