USDA AGRICULATURAL RESEARCH SERVICE
NATIONAL CENTER FOR AGRICULTURAL UTILIZATION RESEARCH

1815 N. UNIVERSITY STREET, PEORIA, ILLINOIS 61604

CONSTRUCT NEW BSL-2P COMPLIANT HEADHOUSE AND GREENHOUSE

ABBREVIATIONS

A	
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
ANOD	ANODIZED
APPROX	APPROXIMATE
B	
B.O.D.	BASIS OF DESIGN
B/	BOTTOM OF
C	
C/C	CENTER TO CENTER
CFMF	COLD FORMED METAL FRAMING
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMM	COMMUNICATION
CONC	CONCRETE
CONST JT	CONSTRUCTION JOINT
CONT	CONTINUOUS
CPT	CARPET
CT	CERAMIC TILE
D	
DBL	DOUBLE
DEMO	DEMOLISH
DIA	DIAMETER
DIMS	DIMENSIONS
DN	DOWN
DTL	DETAIL
DWG	DRAWING
DX	DIRECT EXPANSION
E	
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR / ELEVATION
EPDM	ETHYLENE PROPYLENE DIENE ROOFING
EQ	EQUAL
EXIST	EXISTING
EXT	EXTERIOR
F	
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FFE	FINISHED FLOOR ELEVATION
FIN	FINISH
FLR	FLOOR
FND	FOUNDATION
FO	FACE OF
FSD	FIRE SEPARATION DESTANCE
FTG	FOOTING
G	
GA	GAUGE
GALV	GALVANIZED
GH	GREENHOUSE
GWB	GYPSUM WALL BOARD
H	
HC	HOLLOW CORE
HM	HOLLOW METAL
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
I	
INSUL	INSULATION / INSULATED
INT	INTERIOR

IRGWB	IMPACT RESISTANT GYPSUM WALLBOARD
IT	INFORMATION TECHNOLOGY
L	
LAV	LAVATORY
M	
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MO	MASONRY OPENING
MRGWB	MOISTURE-RESISTANT GYPSUM WALL BOARD
MTD	MOUNTED
MTL	METAL
N	
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
O	
OC	ON CENTER
OH	OPPOSITE HAND
OZ	OUNCE
P	
PCC	PRE-CAST CONCRETE
PJF	PRE-FORMED JOINT FILLER
PLUMB	PLUMBING
PNT	PAINT/PAINTED
PRV	PRESSURE DEDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
R	
R	RADIUS
RAD	RADIATION
RBR	RUBBER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REINF	REINFORCED
REQD	REQUIRED
RM	ROOM
S	
SF	SQUARE FOOT
SIM	SIMILIAR
SOG	SLAB ON GRADE
SPEC	SPECIFIED OR SPECIFICATION
SPK	SPRINKLER
SQ	SQUARE
SR	SUPPLY REGISTER
SSTL	STAINLESS STEEL
STC	SOUND TRANSMISSION COEFFICIENT
STL	STEEL
STRUCT	STRUCTURAL
T	
T&G	TONGUE & GROOVE
T/	TOP OF
T/D	TELEPHONE/DATA
TELE	TELEPHONE
TLT	TOILET
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL / STRUCTURE
TOW	TOP OF WALL
TPO	THERMOPLASTIC POLYOLEFIN ROOFING
TYP	TYPICAL
U	
UNO	UNLESS NOTED OTHERWISE
V	
VIF	VERIFY IN FIELD
VP	VISION PANEL
W	
W/	WITH
WD	WOOD
WWF	WELDED WIRE FABRIC

SYMBOLS LEGEND

DETAIL NUMBER
SHEET NUMBER
ROOM NAME
ROOM NUMBER
SQUARE FOOTAGE
INTERIOR ELEVATION TAG
NORTH ARROW
DIMENSION STRING
ELEVATION TAG
SECTION TAG
DETAIL TAG
DETAIL TAG
GRID LINE
ALIGN/FLUSH SURFACES
DOOR TAG
SIGNAGE TAG
ROOM HEIGHT
WINDOW TAG
WALL TAG
EQUIPMENT TAG
KEYNOTE

DRAWING INDEX

Sheet Number	Sheet Name	35% DESIGN	50% DESIGN	95% DESIGN	100% DESIGN
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G300	ASSEMBLY TYPES AND WALL SECTIONS		•	•	•
G500	CODE PLAN		•	•	•
CIVIL					
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C200	SITE PLAN	•	•	•	•
C300	GRADING PLAN	•	•	•	•
C301	EROSION CONTROL PLAN	•	•	•	•
C302	STORM DRAINAGE PLAN	•	•	•	•
C303	SANITARY SEWER PLAN	•	•	•	•
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Sheet Number	Sheet Name	35% DESIGN	50% DESIGN	95% DESIGN	100% DESIGN
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M302	MECHANICAL ENLARGED PLANS			•	•
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M401	MECHANICAL DETAILS		•	•	•
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M501	MECHANICAL DIAGRAMS		•	•	•
M502	MECHANICAL DIAGRAMS			•	•
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TECHNOLOGY					
T000	TECHNOLOGY COVERSHEET	•	•	•	•
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T500	TECHNOLOGY DIAGRAMS	•	•	•	•
T600	TECHNOLOGY SCHEDULES	•	•	•	•

PROJECT DESCRIPTION

BASE BID:
GENERAL / ARCHITECTURAL:
PROVIDE COMPLETE HEADHOUSE AND GREENHOUSE STRUCTURES, INCLUDING UTILITY CHASEWAY CONNECTING TO THE EXISTING BUILDING, AS INDICATED ON DRAWINGS. INTENT OF BASE BID IS TO PROVIDE NEW STRUCTURES ON THE EXISTING USDA ARS NCAUR SITE IN PEORIA, ILLINOIS.
ALL HEADHOUSE AND GREENHOUSE SPACES COMPLY WITH BSL-2P REQUIREMENTS AND WITH USDA APHIS CONTAINMENT FACILITY GUIDELINES FOR FUNGAL PLANT PATHOGENS.
THE GREENHOUSE STRUCTURE SHALL BE DELEGATED DESIGN.
THE GREENHOUSE STRUCTURE WILL CONSIST OF A CIRCULATION SPACE CONNECTING TO THE HEADHOUSE AND TWO GREENHOUSE BAYS.
A NEW UTILITY CHASEWAY WILL CONNECT THE GREENHOUSE TO AN ALTERED SPACE AT THE GROUND FLOOR LEVEL AT THE EXISTING LAB BUILDING SOUTH ADMIN WING. THE SPACE AT THE EXISTING BUILDING WILL BE ALTERED TO BE A MECHANICAL ROOM TO SERVE THE NEW HEADHOUSE AND GREENHOUSE.
CIVIL:
EXISTING SANITARY SEWER AND STORM SEWER LINES FROM THE SOUTH WING ARE BEING REROUTED WEST AND SOUTH AROUND THE NEW GREENHOUSE AND FUTURE GREENHOUSE FOOTPRINT. THERE IS A DRAINAGE SWALE IN-BETWEEN THESE TWO LINES FOR THE MAJORITY OF SURFACE FLOWS. THERE IS A STORM SEWER PIPE ENTERING AN EXISTING MANHOLE THAT HAS UNKNOWN ORIGIN AND IF ENCOUNTERED WITH INSTALLATION OF THE NEW LINE, IT NEEDS TO BE CONNECTED. SANITARY SERVICE FROM THE NEW GREENHOUSE CONNECTS ON THE SOUTH SIDE. EXISTING SIDEWALK AND SOME TREES ARE BEING REMOVED AND NEW SIDEWALK IS BEING REROUTED AROUND THE EAST AND SOUTH SIDES OF THE NEW GREENHOUSE WITH SIDEWALK LIGHTING. A 15 FOOT AGGREGATE LANDSCAPE BUFFER IS ENTIRELY AROUND THE NEW GREENHOUSE TO REDUCE VEGETATION INTERACTION POTENTIAL.
STRUCTURAL:
FOUNDATIONS FOR THE HEADHOUSE, GREENHOUSE, AND UTILITY CORRIDOR WILL BE CONCRETE GRADE WALLS SUPPORTED ON SHALLOW SPREAD FOOTINGS. THE HEADHOUSE STRUCTURE WILL CONSIST OF 8" CMU WALLS SUPPORTING STEEL ROOF JOISTS; THE GREENHOUSE WILL BE AN ENGINEERED STRUCTURAL SYSTEM CONSISTING OF STEEL FRAMES WITH GABLE ROOF TRUSSES AND BEAMS AND X-BRACED BAYS AROUND THE PERIMETER FOR LATERAL RESISTANCE; AND THE UTILITY CORRIDOR WILL BE COLD FORMED STEEL (CFS) METAL STUDS AND ROOF JOISTS FORMING A RIGID FRAME SYSTEM.
MECHANICAL:
THE EXISTING MEDIUM PRESSURE STEAM SYSTEM WILL BE EXTENDED FROM THE PENTHOUSE TO THE GROUND FLOOR MECHANICAL ROOM. A NEW PRV, CONDENSATE RETURN STATION, HEAT EXCHANGER, AND PUMPS WILL BE PROVIDED IN THE GROUND FLOOR MECHANICAL ROOM AND HEATING WATER WILL BE EXTENDED TO THE GREENHOUSE ADDITION. THE GREENHOUSES WILL BE SERVED BY SEVERAL HVAC SYSTEMS. EACH GREENHOUSE WILL HAVE A DEDICATED AIR HANDLING SYSTEM (DX COOLING AND ELECTRIC HEATING). THE GREENHOUSES WILL ALSO BE SERVED BY NEW HUMIDIFIERS. HOT WATER FIN-TUBE RADIATION AND HOT WATER UNIT HEATERS WILL ALSO BE PROVIDED AROUND THE PERIMETER OF THE GREENHOUSES. THE HEADHOUSE AND THE CIRCULATING CORRIDOR WILL ALSO BE SERVED BY DEDICATED AIR HANDLING SYSTEMS. EACH GREENHOUSE WILL HAVE A DEDICATED EXHAUST FAN. THE HEADHOUSE WILL HAVE TWO EXHAUST FANS, EACH WITH A DEDICATED FILTER. ALL OF THE NEW HVAC EQUIPMENT WILL BE CONNECTED TO THE EXISTING TEMPERATURE CONTROLS SYSTEM.
ELECTRICAL:
POWER FOR THE NEW GREENHOUSE & HEADHOUSE WILL BE FED FROM NEW PANELS LOCATED IN THE HEADHOUSE. NORMAL POWER WILL ORIGINATE FROM VAULT 5 VIA A NEW UNDERGROUND DUCTBANK. EMERGENCY POWER WILL BE FED FROM THE ELECTRICAL ROOM IN THE CENTRAL WING OF THE MAIN BUILDING. LIGHTING WILL BE PROVIDED WITH NEW LED GROW LIGHTS AND CONTROL SYSTEM TO MEET THE GROW REQUIREMENTS OF THE RESEARCHERS' EXPERIMENTS. THE EXISTING FIRE ALARM SYSTEM WILL BE EXTENDED TO COVER THE NEW GREENHOUSE AND HEADHOUSE.
PLUMBING:
A NEW 4" SANITARY CONNECTION WILL BE PROVIDED FOR THE GREENHOUSE ADDITION. HOLDING TANKS WILL BE PROVIDED IN EACH GREENHOUSE BELOW GRADE TO SERVE THE FLOOR DRAIN IN THE GREENHOUSE. THE EXISTING DOMESTIC WATER SYSTEM FOR THE BUILDING WILL BE EXTENDED TO THE GREENHOUSE ADDITION. A NEW 3" COLD WATER CONNECTION WILL BE MADE IN THE PENTHOUSE AND ROUTED DOWN THROUGH THE EXISTING BUILDING TO THE NEW ADDITION. A NEW 1 ½" DEIONIZED WATER CONNECTION WILL ALSO BE MADE IN THE PENTHOUSE AND ROUTED DOWN THROUGH THE BUILDING TO THE NEW ADDITION. A NEW ELECTRIC WATER HEATER WILL BE PROVIDED IN THE HEADHOUSE TO SERVE THE GREENHOUSE ADDITION. THE NEW DOMESTIC HOT WATER SYSTEM WILL BE RECIRCULATED. DOMESTIC HOT WATER AND COLD WATER WILL BE ROUTED THROUGH THE NEW SPACES TO SERVE THE NEW FIXTURES. PROVISIONS ARE INCLUDED IN THE PIPING SYSTEMS TO ALLOW FOR EXPANSION TO THE WEST FOR FUTURE GREENHOUSES.
IT:
EXISTING DATA NETWORK WILL BE EXTENDED TO THE GREEN HOUSE FROM FIRST LEVEL COMM ROOM 1314 WITH FIBER CONNECTIONS. EXISTING COPPER/PHONE LINES WILL BE EXTENDED TO THE GREEN HOUSE FROM 2ND LEVEL COMM ROOM 2100 FROM AN EXISTING WALL FIELD WITH A NEW COPPER BACKBONE CABLE. THE EXISTING ACCESS CONTROL SYSTEM WILL BE EXTENDED WITH A NEW CONTROL PANEL INSTALLED IN THE GREENHOUSE. EXISTING HOUSE PAGING SYSTEM WILL BE TAPPED TO EXTEND FROM THE MAIN BUILDING INTO THE GREEN HOUSE.

BID OPTION #1:
FACE BRICK EXTERIOR CLADDING TO MATCH BRICK AT EXISTING BUILDING 1 IN LIEU OF BASE BID FIBER CEMENT PANELS AS DESCRIBED IN EXTERIOR WALL ASSEMBLY EX-1 (KEYNOTE 07.02).
BID OPTION #2:
ADD SHADING SYSTEM AT GREENHOUSE ROOF: PROVIDE BOTH SUMMER SHADING AND WINTER/ENERGY SHADING SYSTEMS.
BID OPTION #3:
ADD DEIONIZED WATER SYSTEM, EXTENDED FROM EXISTING BUILDING 1 TO SERVE GREENHOUSE BAYS.
BID OPTION #4:
INCREASE GREENHOUSE HEIGHT BY 4'-0" AS NOTED ON EXTERIOR ELEVATIONS AND BUILDING SECTIONS.
BID OPTION #5:
ADD CONCRETE PAD, FENCING, BOLLARDS, AND CO2 TANK AS SHOWN ON 8/P400 AND LOCATED ON C200. EXTEND UNDERGROUND CO2 PIPE FROM THE CO2 TANK TO THE NEW BUILDING AS SHOWN ON C200. INCLUDE CO2 PIPING WITHIN THE NEW BUILDING AS SHOWN ON 1/P300.

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LOCATION MAP
N.T.S.

LOCATION FOR NEW HEADHOUSE / GREENHOUSE

3D SITE VIEW
N.T.S.

EXISTING SITE PHOTO LOOKING NORTHWEST

3D AXON VIEW

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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BAILEY EDWARD DESIGN	USDA	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:		COVER
DESIGNER: Designer	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY:	SAFETY & HEALTH:	TASK ORDER NO.:	DWG. NO.
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	NCAUR 1815 North University Street Peoria, Illinois 61604
			G100 SHEET 1 OF 74

Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/USDA ARS NEW GREENHOUSE_Central_R23_wzhaoGVEVR.rvt
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APPLICABLE CODES AND STANDARDS

- International Building Code: IBC 2024
- National Fire Protection Associaton Life Safety Code: NFPA 101
- International Existing Building Code: IEBC 2024
- Local Building Code and Zoning Requirements:
  - The project will comply with local building codes to the greatest extent possible; however, buildings built on Federal property are exempt from State and local building codes.
  - Special requirements directly related to local practices or circumstances which do not compromise the best interest of the Government shall be incorporated into project design.
  - State historic preservation regulations shall be followed.
- Fire, Fire Alarm, Fire Sprinklers: Requirements of the NFPA National Fire Codes and *USDA ARS Facilities Design Standards* Chapter 7 shall apply in lieu of other codes.
- Plumbing: Requirements of the National Standard Plumbing Code (NSPC) shall apply in lieu of other codes.
- Electrical: NFPA 70: National Electrical Code (NEC) 2023
- Mechanical: Requirements for all national codes shall apply. Refer to *USDA ARS Facilities Design Standards* Chapter 5 for a list of codes.
- Telecommunications Codes and Standards: Refer to requirements for FD PGM-06-001 and the ARS Telecommunications Distribution Design Guide.
- Security: 2010/Physical Security Criteria for Federal Facilities - For Official Use Only (FOUO)
- Accessibility: Architectural Barriers Act (ABA) Accessibility Standards
- Energy Conservation:
  - Illinois Energy Conservation Code / IECC 2021
  - ASHRAE Standard 90.1, Energy Efficient Standard for Buildings Except Low-Rise Residential Buildings.
  - ASHRAE Standard 100.2006 - Energy Conservation in Existing Buildings.
- Illinois Recommended Standards for Sewage Works
- ACI 318-19: Building Code Requirements for Structural Concrete
- AISC 360-16 Specification for Structural Steel Buildings
- AISI S100-16: North American Specification for the Design of Cold-Formed Steel Structural Members
- ASCE 7-16: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
- TMS 402/602-16: Building Code for Masonry Structures

SWITCH AT DOOR

1. MINIMUM 48" TO BOTTOM OF LOWER-MOST CHARACTERS
2. MAXIMUM 60" TO BOTTOM OF UPPER-MOST CHARACTERS
3. LOCATE BESIDE INACTIVE LEAF OF DOUBLE DOORS
4. 18" x 18" MINIMUM CLEAR FLOOR AREA BEYOND SWING REQUIRED FOR SIGN

SIGNAGE MOUNTING HEIGHT

FORWARD REACH IS SHOWN, U.N.O.

STANDARD MOUNTING HEIGHTS

THRESHOLD

Y = 48" MIN.
Y = 54" MIN. IF DOOR HAS BOTH A LATCH AND CLOSER
PULL SIDE

Y = 42" MIN.
Y = 48" MIN. IF DOOR HAS A CLOSER
PUSH SIDE

X = 36" MIN. IF Y = 60"
X = 42" MIN. IF Y = 54"
PULL SIDE

Y = 42" MIN.
Y = 48" MIN. IF DOOR HAS BOTH A LATCH AND A CLOSER
PUSH SIDE

PULL SIDE

W/ LATCH AND CLOSER
PUSH SIDE

MANUVERING CLEARANCES AT DOORS

SCALE: NTS

1 ACCESSIBILITY STANDARDS

1/4" = 1'-0"

NOMINAL MAX PENETRATING ITEM(S)

- 23" x 4 ½" OR 9" x 4 ½" COPPER OR ALUMINUM RACEWAY

12 ALUMINUM OR COPPER RACEWAY THRU CONC OR CMU WALL

SCALE: NTS
2 & 3 HR. FIRE RATING
U.L. SYSTEM CAJ 6001 FORMERLY 99

NOMINAL MAX PENETRATING ITEM(S)

- 12" STEEL, 12" CAST IRON, 4" COPPER, 2" GLASS FIBER, 9" STEEL SLEEVE

13 SINGLE INSUL. METAL PIPE THRU CONC. OR CMU WALL

SCALE: NTS
1 1/2", 2 AND 3 HR FIRE RATING
U.L. SYSTEM CAJ 5001 FORMERLY 91

NOMINAL MAX PENETRATING ITEM(S)

- 10" STEEL, 6" EMT, 4" COPPER

14 SINGLE METAL PIPE/CONDUIT THRU CONC OR CMU WALL

SCALE: NTS
3 HR FIRE RATING
U.L. SYSTEM CAJ 1017 FORMERLY 161

GENERAL NOTES:

1. FIRESTOPPING DETAILS ILLUSTRATED SHOW TYPICAL CONDITIONS OF PENETRATING ITEMS. IT IS NOT THE INTENT TO SHOW ACTUAL , SPECIFIC PROJECT CONDITIONS OR ALL POSSIBLE COMBINATIONS OF PENETRATING ITEMS WITH ALL TYPES OF PARTITIONS, FLOOR OR ROOF CONSTRUCTION.
2. ILLUSTRATIONS SHOWN ARE TO BE USED IN CONJUNCTION WITH THE SPECIFICATION "SECTION 07 84 13 - FIRESTOPPING". ILLUSTRATIONS DO NOT SHOW OR DESCRIBE ALL THE CRITERIA THAT IS IN THE U.L. SYSTEMS - FIRE RESISTANCE DIRECTORY, EACH FIRESTOPPING SYSTEM IS TO BE INSTALLED PER APPLICABLE U.L. SYSTEMS NUMBER AND ITS INSTALLATION REQUIREMENTS IN THE LATEST EDITION OF UNDERWRITERS LABORATORIES INC. "FIRE RESISTANCE DIRECTORY - VOLUME II".
3. FOR RENOVATION WORK WHERE OPENINGS AROUND PENETRATING ITEM(S) IN EXISTING WALLS, PARTITIONS, FLOORS AND ROOFS DO NOT MEET U.L. SYSTEM REQUIREMENTS, THEN THE OPENING SHALL BE INFILLED, BY THE GENERAL CONTRACTOR, WITH MATCHING WALL, PARTITION, FLOOR OR ROOF CONSTRUCTION MATERIALS TO COMPLY WITH THE ANNULAR OPENING SIZE REQUIREMENT OF THE U.L. SYSTEM. WHERE THE OPENING CANNOT BE CLOSED DUE TO EXISTING CONDITIONS OR QUANTITY AND TYPE OF PENETRATING ITEM(S), THEN THE FIRESTOPPING CONTRACTOR SHALL OBTAIN AN ENGINEERING JUDGMENT RECOMMENDATION OF THE U.L. SYSTEM TO BE USED FROM THE ENGINEERING DEPARTMENT OF THE MANUFACTURER OF THE FIRESTOPPING MATERIALS. THIS JUDGMENT SHALL BE VERIFIED BY UNDERWRITERS LABORATORIES. THE ENGINEERING JUDGMENT AND THE U.L. VERIFICATION SHALL BE SUBMITTED AS WRITTEN AND/OR GRAPHIC DOCUMENTATION.
4. FOR NEW CONSTRUCTION WHERE THE CONDITION DOES NOT MEET THE REQUIREMENTS OF A U.L. SYSTEM, THEN OBTAIN AN ENGINEERING JUDGMENT AS OUTLINED IN ITEM 3. ABOVE.
5. DETAILS ARE BASED ON MATERIALS/SYSTEMS TESTED BY U.L..
6. FIRESTOPPING IS REQUIRED AT:
   - A. ALL PENETRATIONS OF FIRE RESISTIVE FLOOR AND ROOF CONSTRUCTION, AND FIRE/SMOKE RESISTIVE WALLS AND PARTITIONS RESULTING FROM WORK OF ALL TRADES.
   - B. ALL VOIDS AND JOINTS AT TOP AND BOTTOM OF ALL FIRE/SMOKE RESISTIVE WALLS AND PARTITIONS.
   - C. ALL CONTROL/EXPANSION JOINTS IN ALL FIRE/SMOKE RESISTIVE WALLS AND PARTITIONS AND FIRE RESISTIVE FLOOR AND ROOF CONSTRUCTION.
   - D. ALL PENETRATIONS OF ALL NON-RATED FLOOR AND ROOF CONSTRUCTION, RESULTING FROM WORK OF ALL TRADES, USING THE SAME U.L. SYSTEM REQUIREMENTS FOR A ONE HOUR RATING.
   - E. ALL PENETRATIONS, AND VOIDS, RESULTING FROM WORK OF ALL TRADES, AND ALL VOIDS AND JOINTS AT TOP AND BOTTOM OF ALL NON-RATED PARTITIONS, WHERE PARTITIONS EXTEND FROM FLOOR TO UNDERSIDE OF FLOOR OR ROOF DECK, AND TOP OF PARTITION IS CONCEALED BY A CEILING.
   - F. ALL EXPANSION JOINTS OCCURRING IN NON-RATED FLOOR OR ROOF CONSTRUCTION USING THE SAME U.L. SYSTEM REQUIREMENTS FOR A ONE HOUR RATING.

NOMINAL MAX PENETRATING ITEM(S)

- 7/C NO. 12 AWG, 3/4" FIBER OPTIC 200 PAIR NO. 24 AWG, 350 KC MIL POWER CABLES

1 MULT. INSUL. METAL PIPES THRU CONC SLAB

SCALE: NTS
2 HR FIRE RATING
U.L. SYSTEM FA 5001 FORMERLY 152

NOMINAL MAX PENETRATING ITEM(S)

- 1 1/2" COPPER, 1" GLASS FIBER

8 MULT. INSUL. METAL PIPES THRU CONC OR CMU WALL

SCALE: NTS
2 HR FIRE RATING
U.L. SYSTEM FA 5001 FORMERLY 152

NOMINAL MAX PENETRATING ITEM(S)

- 6" STEEL, 4" EMT, 4" COPPER

9 MULT. METAL PIPE/CONDUIT THRU CONC OR CMU WALL

SCALE: NTS
2 HR FIRE RATING
U.L. SYSTEM FA 5001 FORMERLY 152

2 FIRESTOPPING DETAILS

1 1/2" = 1'-0"

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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001-016585
LICENSED ARCHITECT
Expiration Date of Seal: 11-30-2026

BAILEY EDWARD DESIGN	USDA	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:		ACCESSIBILITY STD, CODES & FIRE STOPPING DETAILS
DESIGNER: Designer	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: Checker	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	DWG. NO. G200 SHEET 2 OF 74

Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/USDA ARS NEW GREENHOUSE_Central_R23_wzhaoGVEVR.rvt
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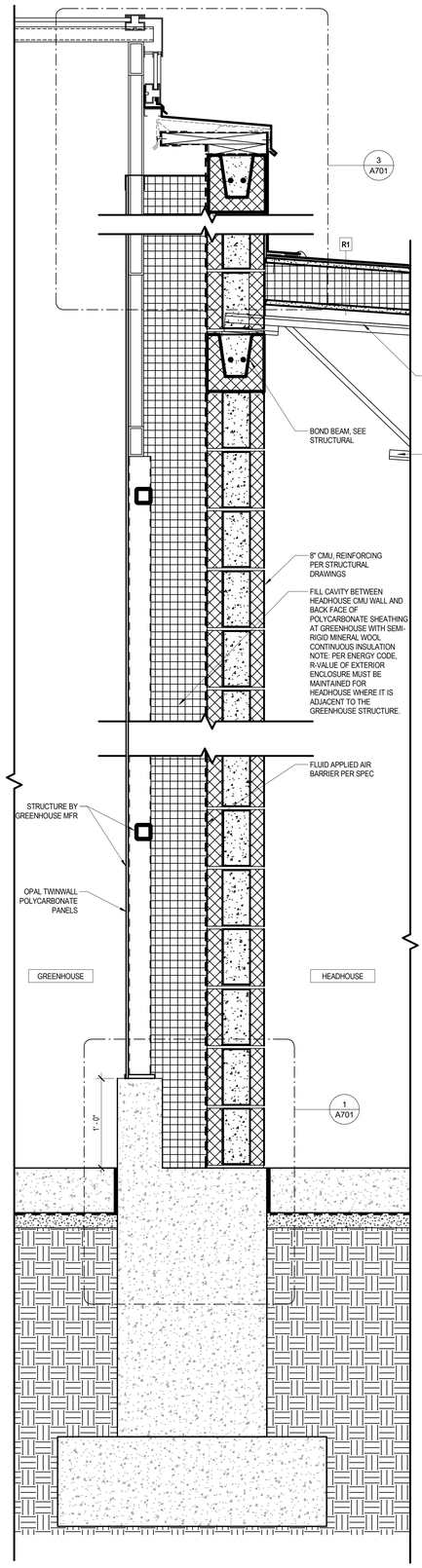
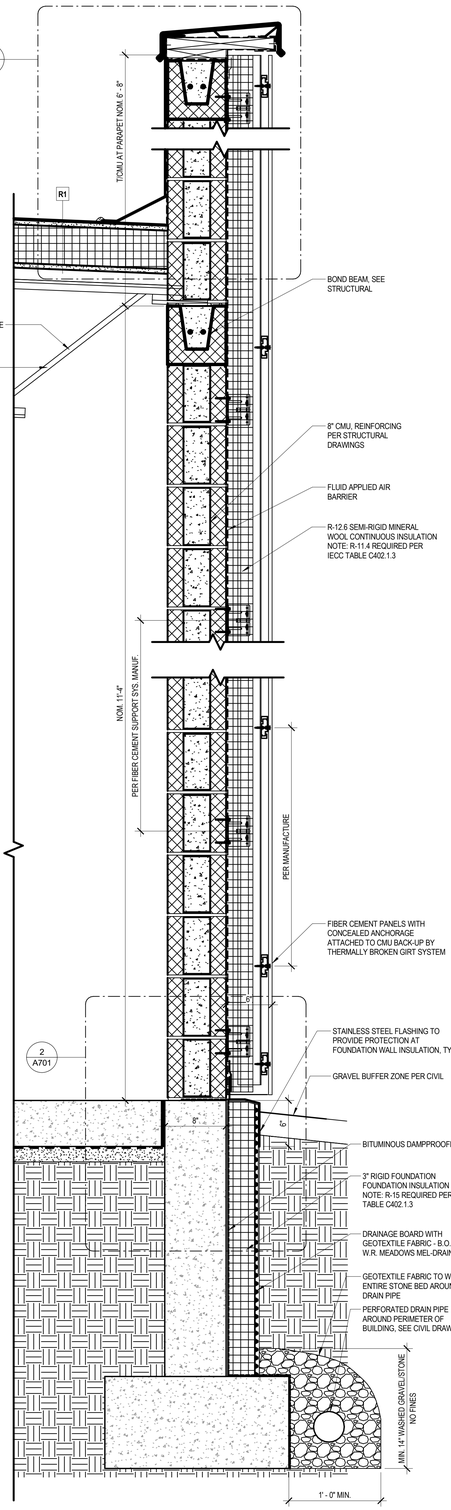


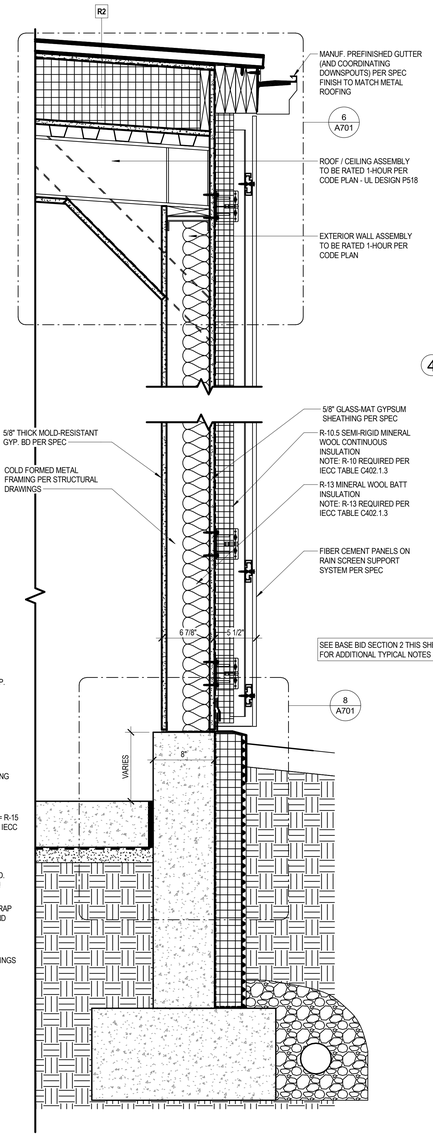
"BASE BID"
1 EX-1A HEADHOUSE & GREENHOUSE WALL SECT.
1 1/2" = 1'-0"



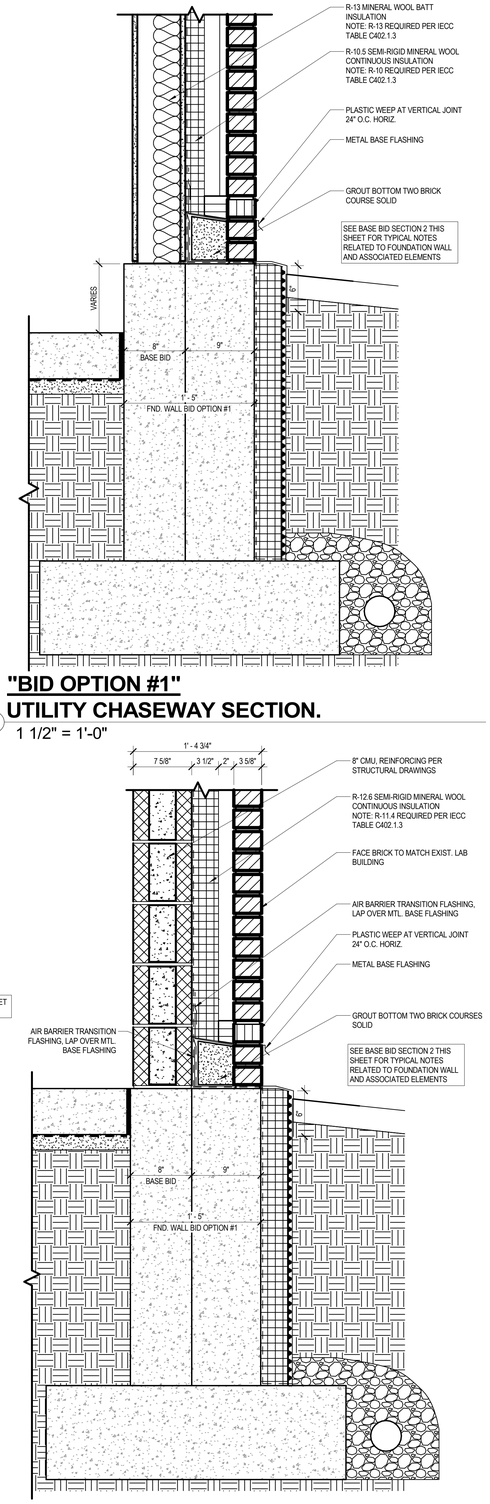
"BASE BID"
2 EX-1 HEADHOUSE WALL SECTION
1 1/2" = 1'-0"

EXTERIOR ENVELOPE NOTES

1. ALL EXTERIOR ENVELOPE COMPONENT R-VALUES AND ASSEMBLY U-VALUES SHALL COMPLY WITH 2024 IECC. SEE SHEET G300 FOR ENERGY CODE NOTES.
2. REFER TO SHEET G300 FOR ALL TYPICAL INFORMATION FOR EACH EXTERIOR WALL AND ROOF ASSEMBLY TYPE AS TAGGED ON THE PLANS AND DETAILS.
3. SEE KEYNOTE 07.10 AND DETAILS ON SHEET G300 AND A701 FOR PROTECTIVE FLASHING AT SLAB/FOUNDATION INSULATION.
   A. ALL FLASHING SHALL BE 16 GAUGE STAINLESS STEEL TYPE 304 WITH 2D FINISH. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL
   B. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INCLUDING PLAN LAYOUTS, ELEVATIONS, AND DETAILS TO ASSURE COORD. WITH GRADING AND LANDSCAPING.
   C. FLASHING SHALL COMPLY WITH REQUIREMENTS SIMILAR TO THOSE FOR PRE-MANUFACTURED METAL COPINGS:
      a. LENGTHS OF STAINLESS STEEL SHALL NOT EXCEED 12'.
      b. PROVIDE SPLICE PLATES AND CONCEALED ANCHORAGE.
      c. PROVIDE PREMAUF. CORNER UNITS AT ALL OUTSIDE AND INSIDE CORNERS.
      d. PROVIDE PREMANUF. UNITS WITH END CAPS AT EACH SIDE OF DOOR OPENINGS WHERE FLASHING IS INTERRUPTED.
4. FOR PREFINISHED PERFORATED CLOSURE PIECES AT FIBER CEMENT WALL ASSEMBLIES AT HEADHOUSE AND UTILITY CHASEWAY AS NOTED IN WALL SECTION DETAILS, PROVIDE THE FOLLOWING:
   A. 3105-TYPE ALUMINUM SHEET ALUMINUM SHEET WITH A MIN. TENSILE STRENGTH OF 29,000 PSI OR EQUIVALENT AS REFERENCED IN AAMA 1402-86 (PARAGRAPH 3.2.3).
   B. L-SHAPED PROFILE (WITH STIFFENERS AS REQUIRED) WITH ROUND PERFORATIONS.
   C. CLEAR ANODIZED FINISH.



"BASE BID"
3 EX-2 UTILITY CHASEWAY SECTION
1 1/2" = 1'-0"



"BID OPTION #1"
4 UTILITY CHASEWAY SECTION.
1 1/2" = 1'-0"

"BID OPTION #1"
7 HEADHOUSE WALL SECTION
1 1/2" = 1'-0"

ENERGY CODE INFORMATION

THE NEW HEADHOUSE, UTILITY CHASEWAY, AND GREENHOUSE COMPLIES WITH CHAPTER [CE]4 OF THE 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC).

REQUIREMENTS FOR HEADHOUSE AND UTILITY CHASEWAY:

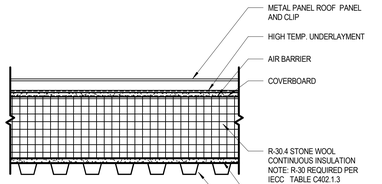
OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS PER IECC TABLE C402.1.3 FOR CLIMATE ZONE 5:
- INSULATION ENTIRELY ABOVE ROOF DECK: R-30 (CONT. INSUL.)
- MASS WALL (CMU WALL IS CONSIDERED ABOVE GRADE MASS WALL): R-11.4
- METAL FRAMED WALLS ABOVE GRADE: R-13 (CAVITY) + R-10 (CONT. INSUL.)
- SLAB-ON-GRADE (UNHEATED): R-15 (CONT. INSUL.) FOR 24" BELOW GRADE

BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SHGC REQUIREMENTS PER IECC TABLE C402.5 FOR CLIMATE ZONE 5:
- FIXED FENESTRATION: U-0.34
- ENTRANCE DOORS: U-0.63
- MAXIMUM SHGC (SOLAR HEAT GAIN COEFFICIENT)
  - PF (PROJECTION FACTOR) < 0.2: SHGC 0.38
  - PF (PROJECTION FACTOR) >= 0.2 AND < 0.5: SHGC 0.46
  - PF (PROJECTION FACTOR) >= 0.5: SHGC 0.61

REQUIREMENTS FOR GREENOUSE:

GREENHOUSE SHALL BE EXEMPT FROM BUILDING THERMAL ENVELOPE REQUIREMENTS PER SECTION C402.1.1.2.

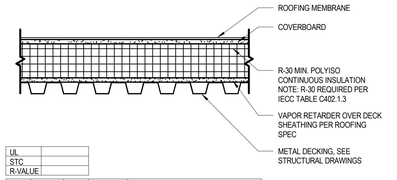
HEADHOUSE AND UTILITY CHASEWAY THERMAL ENVELOPE ASSEMBLIES THAT SEPARATE THE GREENHOUSE FROM CONDITIONED SPACE SHALL COMPLY WITH SECTIONS C402.2 (INSULATION), C402.5.3 (FENESTRATION), AND C402.5.5 (DOORS).



UL	
STC	
R-VALUE	

ROOF TYPE	CLASS MIN	STUD GAUGE	INSUL WIDTH	NOTES
R2			8"	HOUR RATED IN SHEET G500

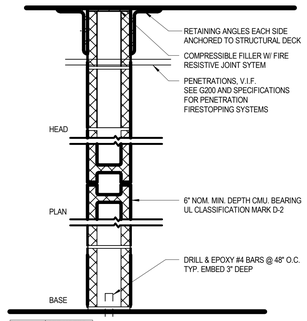
R2 UTILITY CHASEWAY ROOF ASSEMBLY
1 1/2" = 1'-0"



UL	
STC	
R-VALUE	

ROOF TYPE	CLASS MIN	STUD GAUGE	INSUL WIDTH	NOTES
R1			4 3/8"	

R1 HEADHOUSE ROOF ASSEMBLY
1 1/2" = 1'-0"



UL	SEE NOTES
STC	SEE NOTES
R-VALUE	-

WALL TYPE	STUD TYPE	STUD GAUGE	WALL WIDTH	NOTES
M1	-	-	7 5/8" CMU	UL U905_2 HR RATED - STC_50–52
M2	-	-	5 5/8" CMU	UL U906_2 HR RATED - STC_45–48
-	-	-	-	-

M1 CMU PARTITION
1 1/2" = 1'-0"

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STATE OF ILLINOIS — ROBIN E. BRITTINGHAM — 062-041555 — LICENSED ARCHITECT — Expiration Date of Seal: 11-30-2026

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PROJECT MANAGER:	AOE:
DESIGNER: Designer	EPM:
CHECKED BY: Checker	SAFETY & HEALTH:
BED PROJECT NO.: 023110	REAL PROPERTY:

USDA — Agricultural Research Service

ASSEMBLY TYPES AND WALL SECTIONS

USDA PEORIA - HEADHOUSE & GREENHOUSE

TASK ORDER NO.:	DWG. NO.
ORDER DATE:	G300
NCAUR 1815 North University Street Peoria, Illinois 61604	SHEET 3 OF 74

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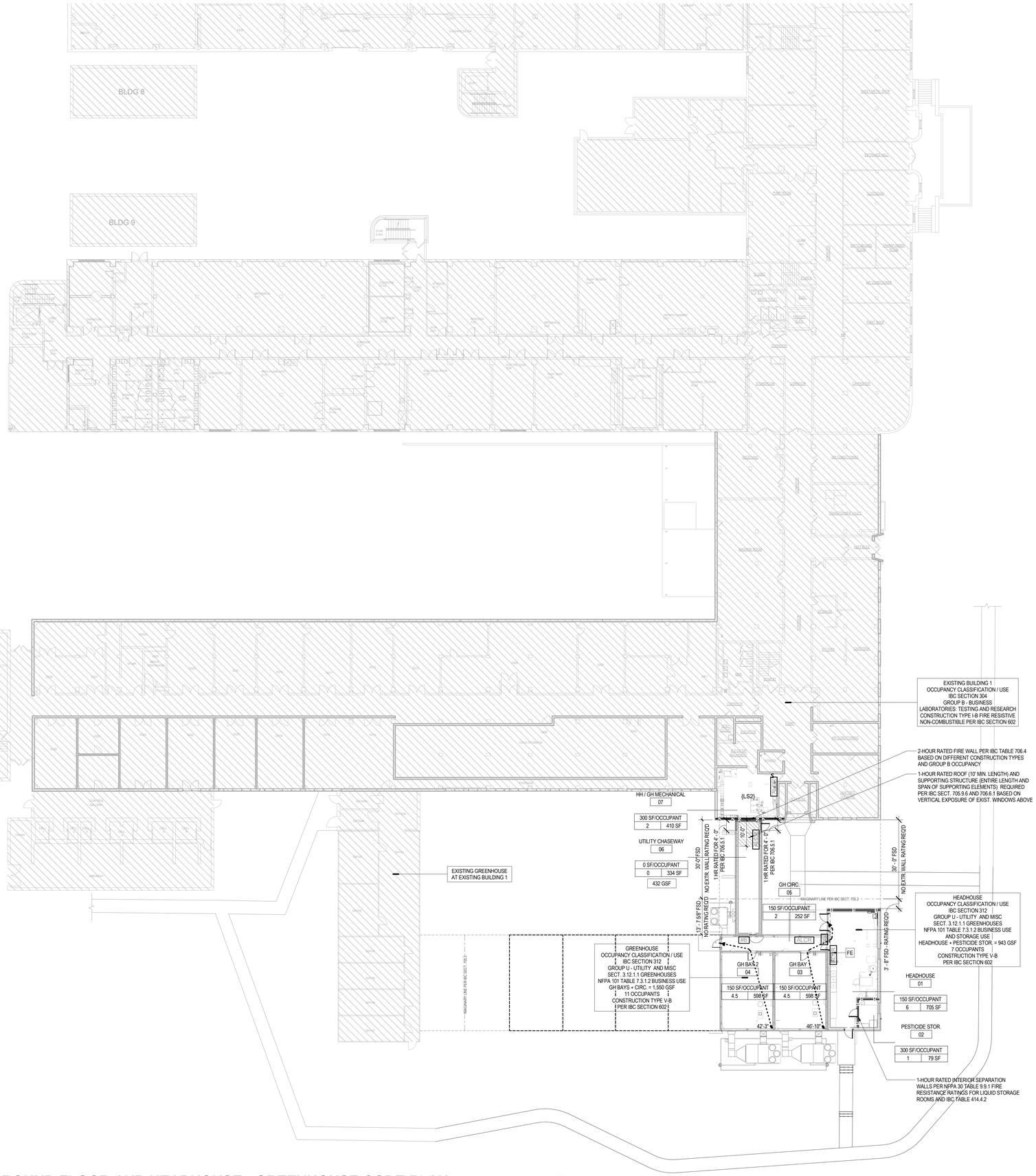
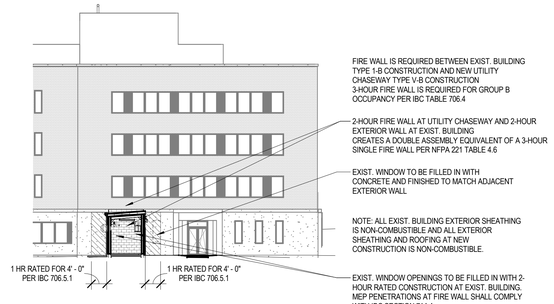


1 **EXISTING LAB GROUND FLOOR AND HEADHOUSE - GREENHOUSE CODE PLAN**
1/16" = 1'-0"

0 8' 16' 32'



2 **SECT. THRU UTILITY CHASEWAY LOOKING NORTH**
1/16" = 1'-0"

CODES, REGULATIONS, AND STANDARDS

Regulations and Standards:

- *USDA ARS Facilities Design Standards (ARS 242.1)*
- *Containment Facility Guidelines for Fungal Plant Pathogens from APHIS* (USDA Animal and Plant Health Inspection Service)
  - Chapter 9: Section 9.4.2 Biosafety BSL-2
  - *Some research work, involving transgenic materials, non-indigenous species, or other exotic organisms, may require that the standard BSL-2 facility be enhanced. These facilities may require design review and certification by APHIS.*
- *A Practical Guide to Containment / Plant Biosafety in Research Greenhouses*

Building Codes and Associated Standards:

- International Building Code: IBC 2024
- International Existing Building Code: IEBC 2024
- Local Building Code and Zoning Requirements
  - The project will comply with local building codes to the greatest extent possible; however, buildings built on Federal property are exempt from State and local building codes.
  - Special requirements directly related to local practices or circumstances which do not compromise the best interest of the Government shall be incorporated into project design.
  - State historic preservation regulations shall be followed.
- Fire, Fire Alarm, Fire Sprinklers: Requirements of the NFPA National Fire Codes and *USDA ARS Facilities Design Standards* Chapter 7 shall apply in lieu of other codes.
- Plumbing: Requirements of the National Standard Plumbing Code (NSPC) shall apply in lieu of other codes.
- Electrical: NFPA 70: National Electrical Code (NEC) 2023
- Mechanical: Requirements for all national codes shall apply. Refer to *USDA ARS Facilities Design Standards* Chapter 5 for a list of codes.
- Telecommunications Codes and Standards: Refer to requirements for FD PGM-06-001 and the ARS Telecommunications Distribution Design Guide.
- National Environmental Policy Act (NEPA): See *Environmental Assessment for USDA NCAUR Construction Headhouse / Greenhouse* dated 01/25/2023 prepared by BBJ Group, LLC.
- Security: 2010/Physical Security Criteria for Federal Facilities - For Official Use Only (FOUO)
  - *These baseline measures provide comprehensive solutions in all five areas of physical security, including: site, structural, facility entrance, interior, security systems, and security.*
- Accessibility: Architectural Barriers Act (ABA) Accessibility Standards
- Energy Conservation:
  - 10 CFR, Part 433, Energy Efficiency Standards for the Design and Construction of New Federal Commercial and Multi-Family High Rise Residential Buildings.
  - 10 CFR, Part 434. Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings.
  - ASHRAE Standard 90.1, Energy Efficient Standard for Buildings Except Low-Rise Residential Buildings.
  - ASHRAE Standard 100.2006 - Energy Conservation in Existing Buildings.
- Illinois Recommended Standards for Sewage Works
- ACI 318-19: Building Code Requirements for Structural Concrete
- AISC 360-16 Specification for Structural Steel Buildings
- AISI S100-16: North American Specification for the Design of Cold-Formed Steel Structural Members
- ASCE 7-16: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
- TMS 402/602-16: Building Code for Masonry Structures

OCCUPANCY CLASSIFICATIONS:

A - ASSEMBLY GROUP
- A1 - PERFORMING ARTS
- A2 - DINING/ RESTAURANTS
- A3 - GENERAL
- A4 - INDOOR SPORTS ARENAS
- A5 - OUTDOOR ASSEMBLY

B - BUSINESS GROUP
E - EDUCATIONAL GROUP
F - FACTORY GROUP
- F1 - MODERATE HAZARD
- F2 - LOW HAZARD

H - HIGH HAZARD GROUP
- H1 - DETONATIONAL HAZARD
- H2 - ACCELERATED BURNING
- H3 - COMBUSTIBLE MATERIALS
- H4 - HEALTH HAZARDS
- H5 - HAZARDOUS PRODUCTION MATERIALS

I - INSTITUTIONAL GROUP
- I1 - 16+ OCCUPANTS
- I2 - 5 + OCCUPANTS NEEDING ASSISTANCE
- I3 - 5 + OCCUPANTS W/ SECURITY MEASURES

M - MERCANTILE GROUP
R - RESIDENTIAL GROUP
- R1 - TRANSIENT OCCUPANTS
- R2 - SLEEPING UINTS
- R3 - 1 & 2 FAMILY DWELLING
- R4 - 6-15 OCCUPANTS NEEDING ASSISTANCE

S - STORAGE GROUP
- S1 - MODERATE HAZARD
- S2 - LOW HAZARD

U - UTILITY AND MISCELLANEOUS GROUP

CODE PLAN LEGEND

1 HR FIRE RATED WALL

2 HR FIRE RATED WALL

3 HR FIRE RATED WALL

SMOKE PARTITION

EGRESS PATH OF TRAVEL

CODE PLAN ABBREVIATIONS:

FE FIRE EXTINGUISHER CABINET

FSD FIRE SEPARATION DISTANCE

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
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STATE OF ILLINOIS
Expiration Date of Seal: 11-30-2026

BAILEY EDWARD DESIGN	USDA	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:		CODE PLAN
DESIGNER: Designer	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: Checker	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	DWG. NO. G500 SHEET 4 OF 74

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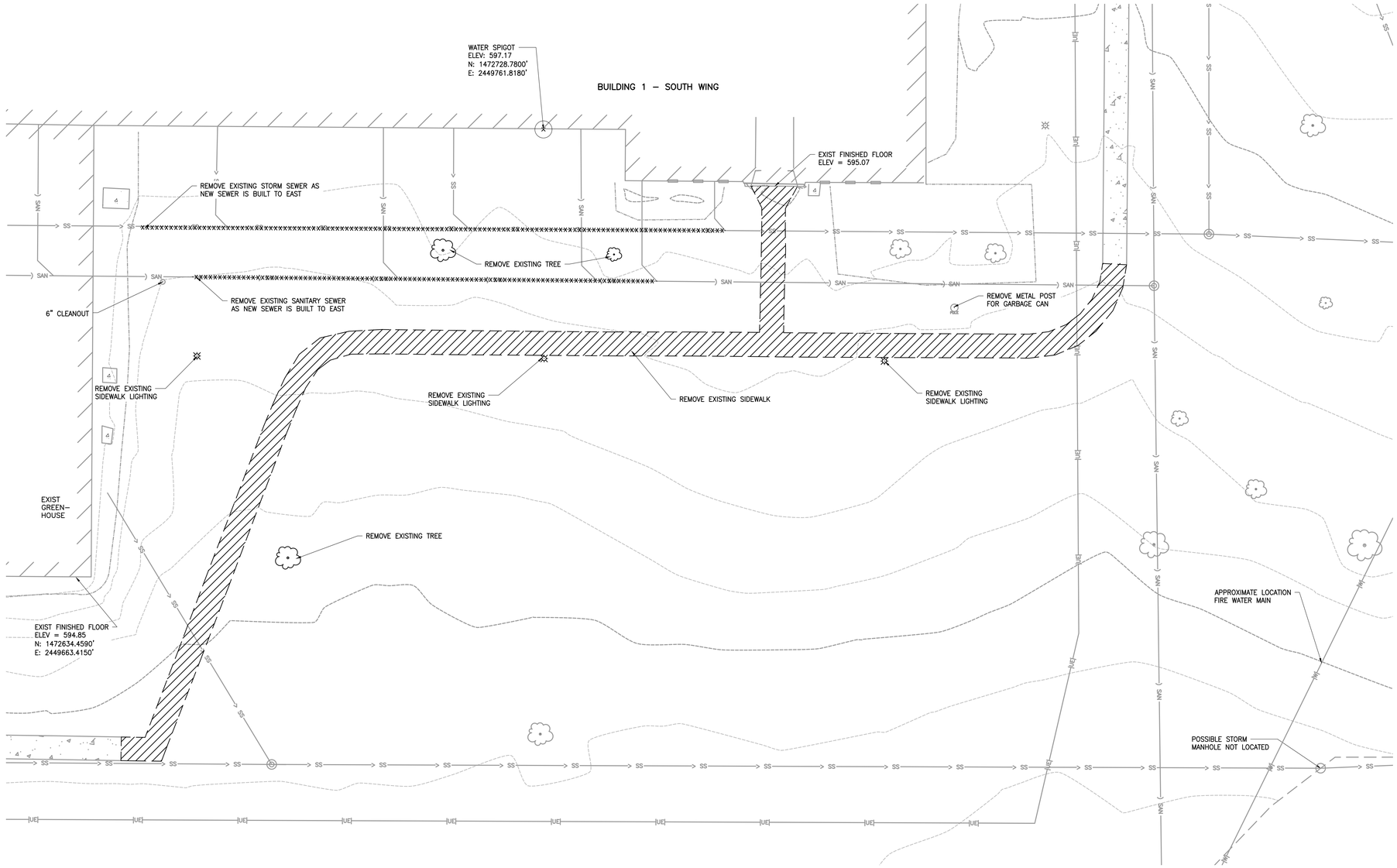

① REMOVAL PLAN
1:10

0 5' 10' 20'

GENERAL NOTES:

TOPOGRAPHIC FIELD WORK COMPLETED OCTOBER 23, 2023.

NO EXISTING EASEMENTS, IF ANY, ARE SHOWN.

UNDERGROUND UTILITIES ARE SHOWN AT APPROXIMATE LOCATIONS BASED ON DRAWINGS PROVIDED BY CLIENT. ADDITIONAL UNDERGROUND UTILITIES MAY EXIST. CONTACT J.U.L.I.E. (811 OR 1–800–892–0123) PRIOR TO ANY EXCAVATION ON SITE.

SCOTT R. HOBART
062–061015
LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

BY: Scott R. Hobart 1/20/2026

SCOTT R. HOBART DATE
ILLINOIS REGISTERED PROFESSIONAL ENGINEER
NO. 062–061015
LICENSE EXPIRES: 11/30/2027

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DESIGNER: SRH	EPM:
CHECKED BY: MKS	SAFETY & HEALTH:
BED PROJECT NO.:	REAL PROPERTY:
	TASK ORDER NO.:
	ORDER DATE:

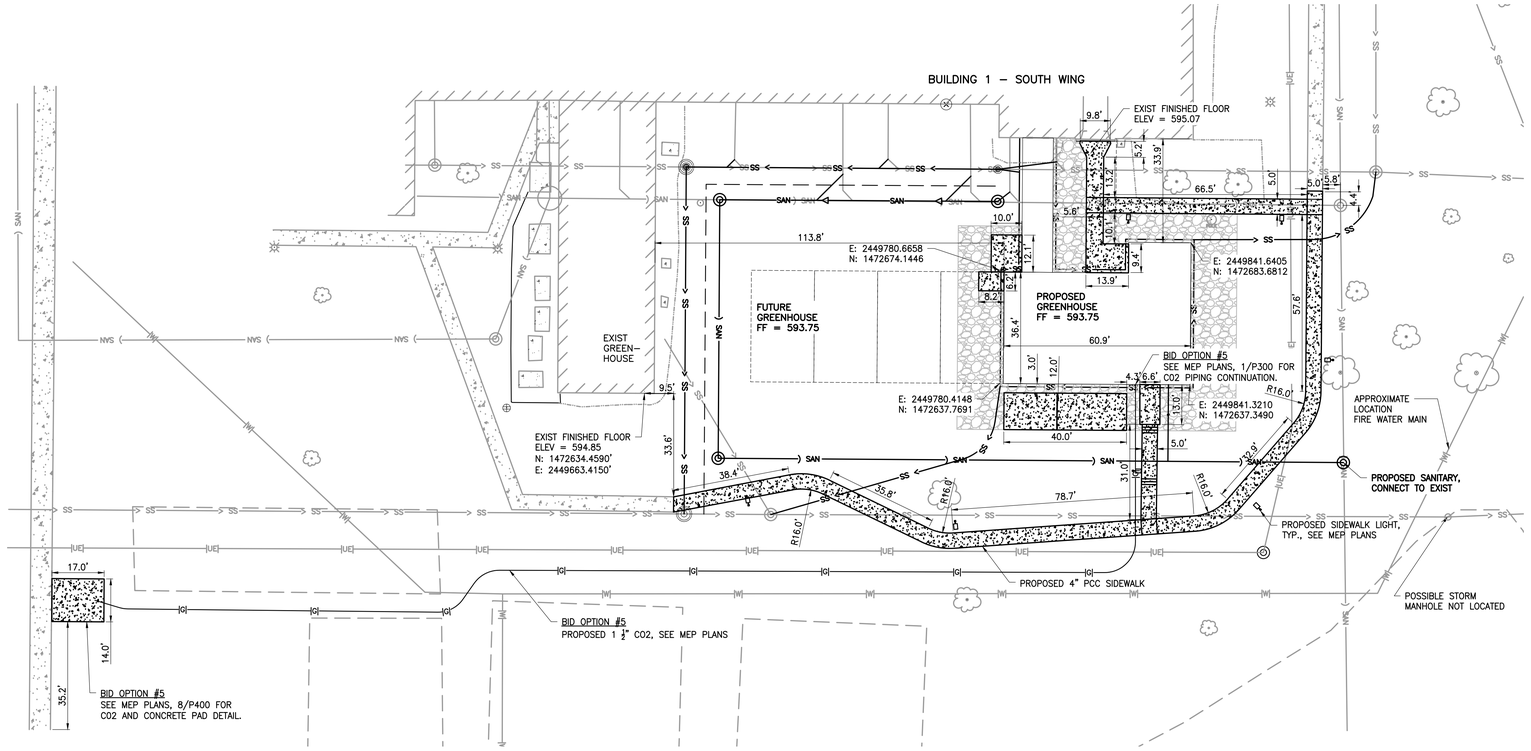
USDA Agricultural Research Service

REMOVAL PLAN

USDA PEORIA - HEADHOUSE & GREENHOUSE

NCAUR
1815 North University Street
Peoria, Illinois 61604

DWG. NO. C100



① **SITE PLAN**
1:20

0 10' 20' 40'

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BAILEY EDWARD DESIGN	USDA	
PROJECT MANAGER:	AOE:	
DESIGNER: SRH	EPM:	
CHECKED BY: MKS	SAFETY & HEALTH:	TASK ORDER NO.:
BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:

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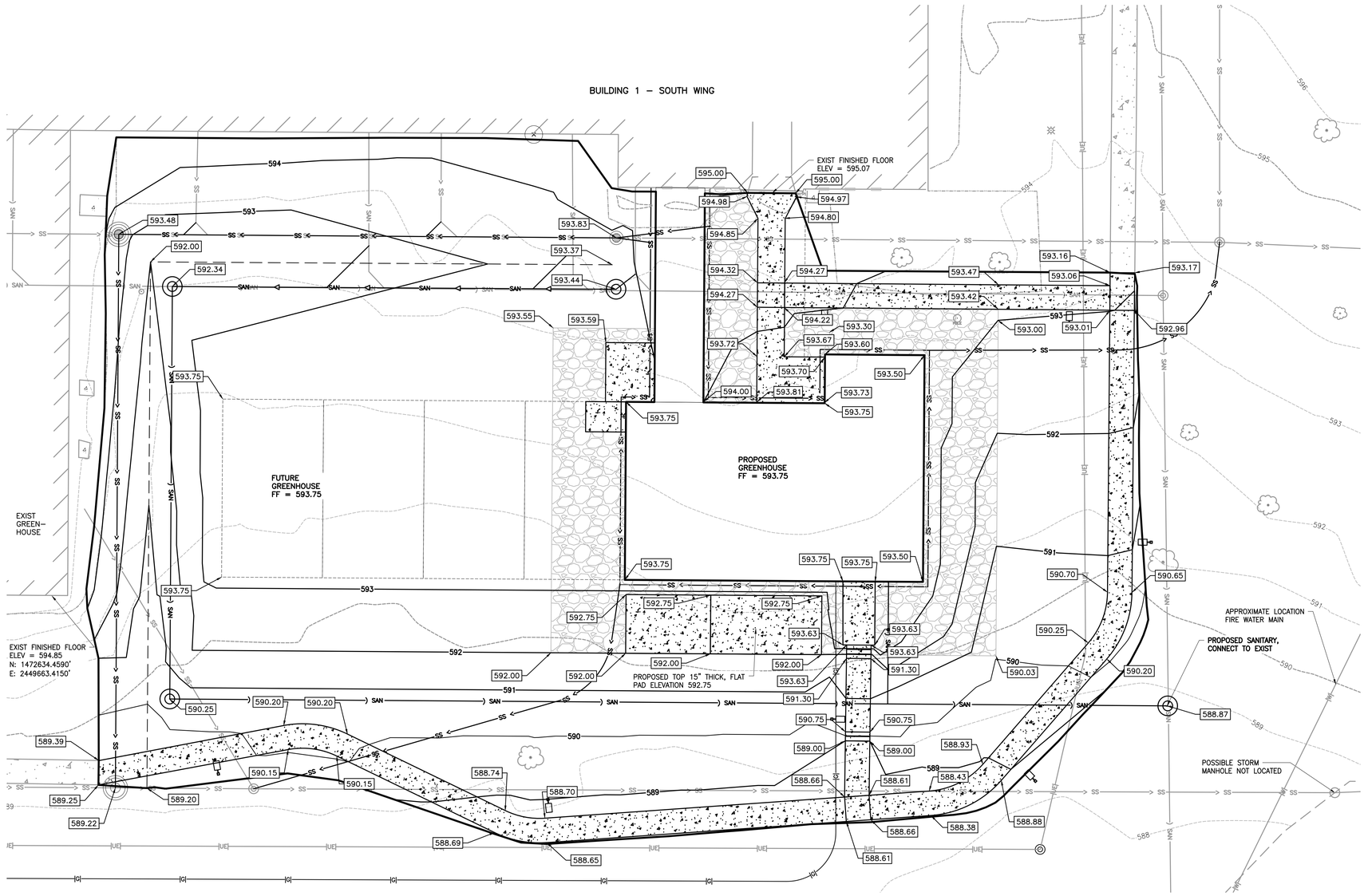
SITE PLAN

USDA PEORIA - HEADHOUSE & GREENHOUSE

DWG. NO. C200

SHEET 6 OF 74



1 GRADING PLAN
1:10

0 5' 10' 20'

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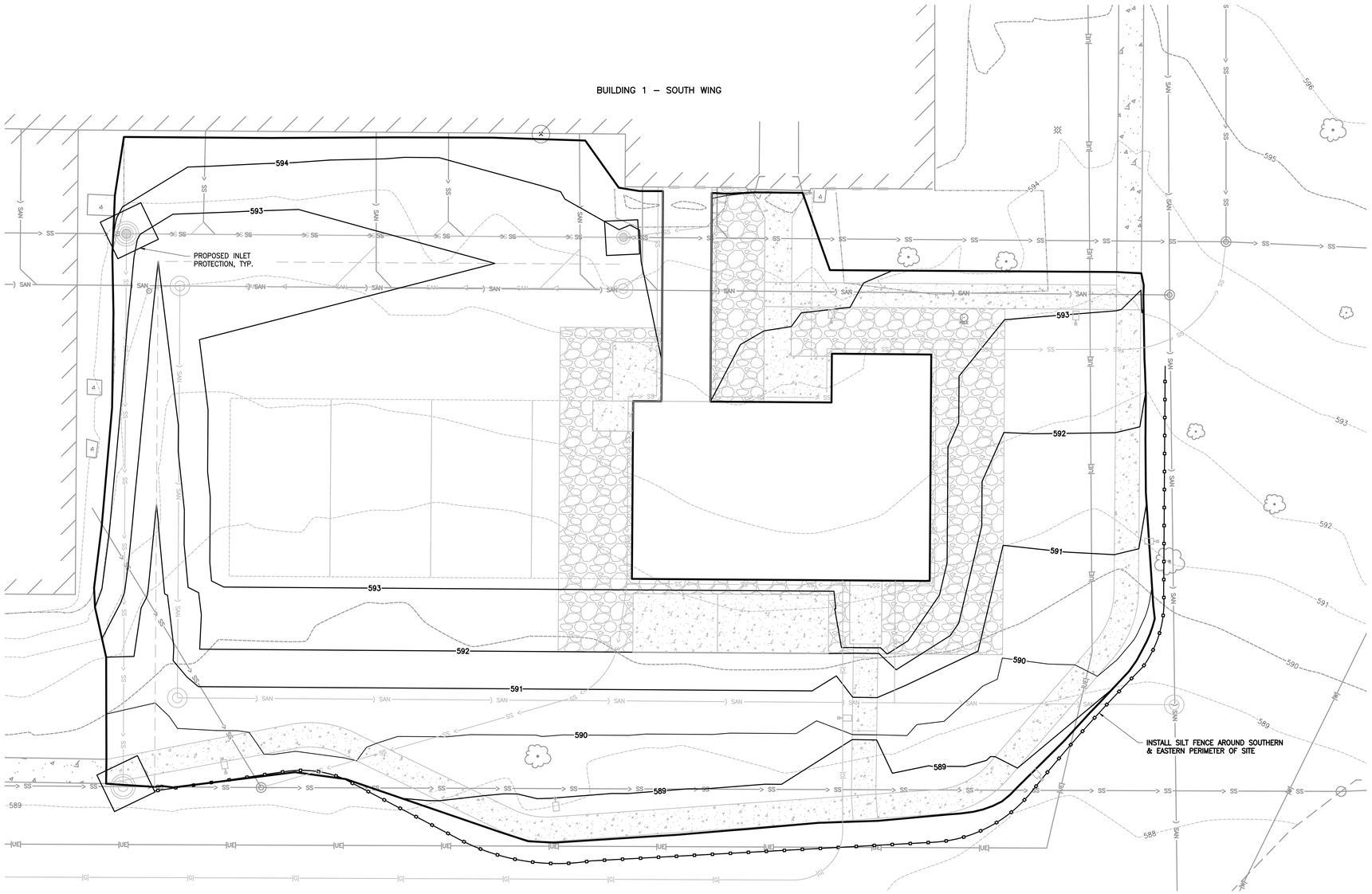
BY: Scott R. Hobart 1/20/2026
SCOTT R. HOBART DATE
ILLINOIS REGISTERED PROFESSIONAL ENGINEER
NO. 062-061015
LICENSE EXPIRES: 11/30/2027

BAILEY EDWARD DESIGN	USDA		
PROJECT MANAGER:	AOE:		
DESIGNER: SRH	EPM:		
CHECKED BY: MKS	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:	DWG. NO. C300

USDA Agricultural Research Service

GRADING PLAN

USDA PEORIA - HEADHOUSE & GREENHOUSE



1 EROSION CONTROL PLAN
1:10

0 5' 10' 20'

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NO. 062-061015
LICENSE EXPIRES: 11/30/2027

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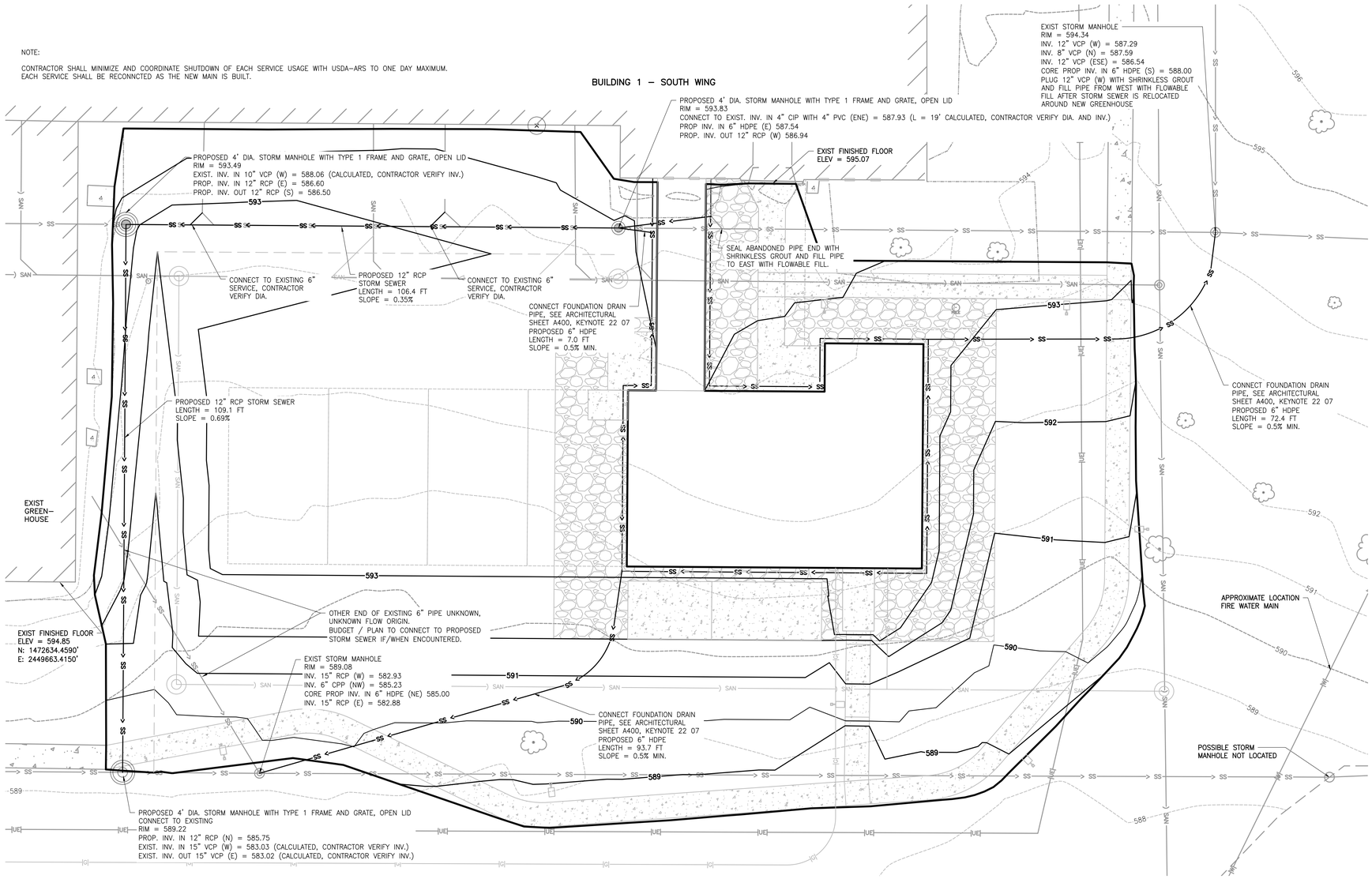
PROJECT MANAGER:	AOE:	EROSION CONTROL PLAN	
DESIGNER: SRH	EPM:	USDA PEORIA - HEADHOUSE & GREENHOUSE	
CHECKED BY: MKS	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:	DWG. NO. C301

NOTE:

CONTRACTOR SHALL MINIMIZE AND COORDINATE SHUTDOWN OF EACH SERVICE USAGE WITH USDA–ARS TO ONE DAY MAXIMUM. EACH SERVICE SHALL BE RECONNCTED AS THE NEW MAIN IS BUILT.



1 STORM SEWER PLAN
1:10

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062-061015
LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

BY: Scott R. Hobart 1/20/2026
DATE

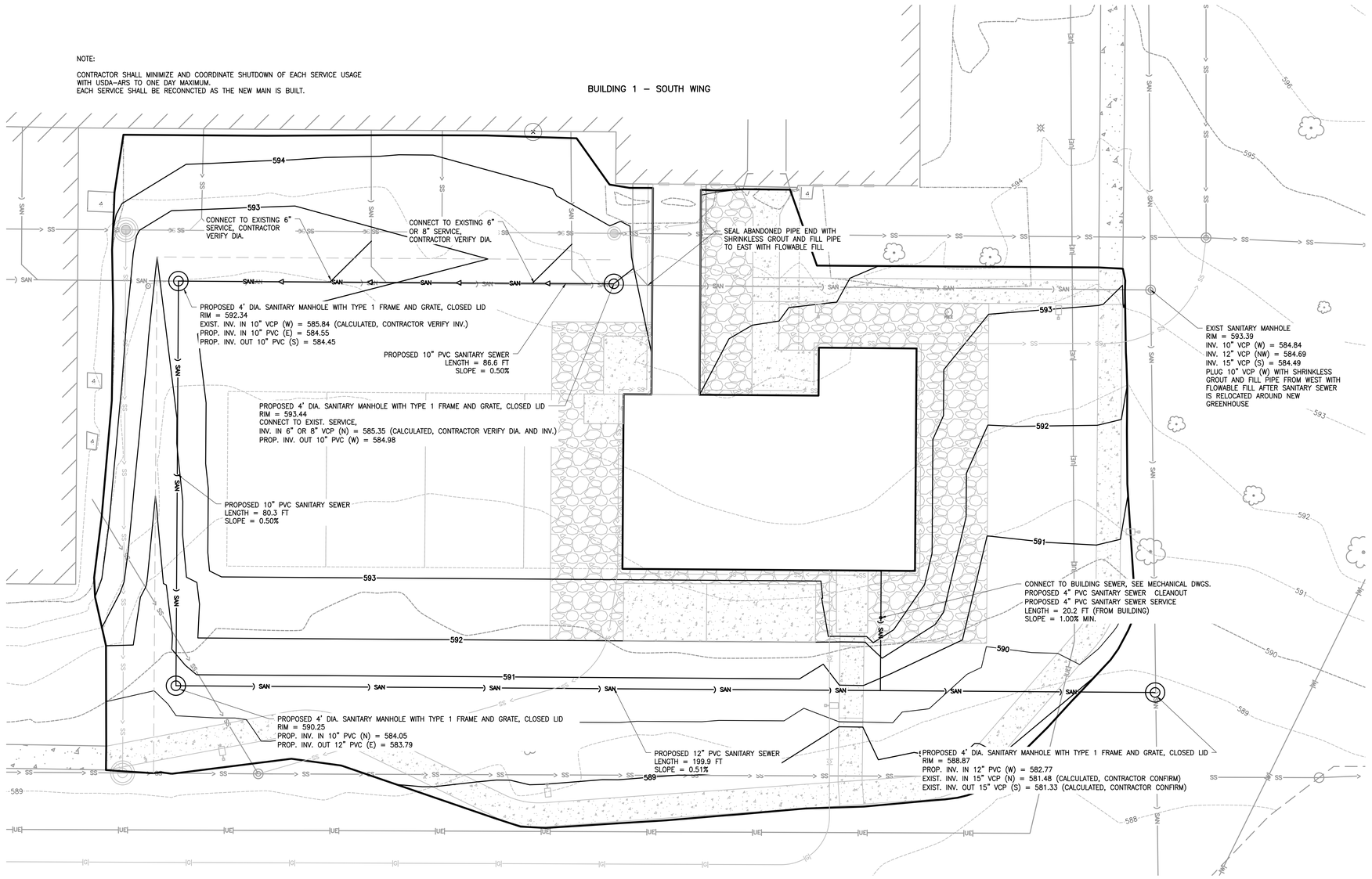
SCOTT R. HOBART
ILLINOIS REGISTERED PROFESSIONAL ENGINEER
NO. 062–061015
LICENSE EXPIRES: 11/30/2027

BAILEY EDWARD DESIGN	USDA	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:		STORM DRAINAGE PLAN
DESIGNER: SRH	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: MKS	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:	DWG. NO. C302
			SHEET 9 OF 74

NOTE:

CONTRACTOR SHALL MINIMIZE AND COORDINATE SHUTDOWN OF EACH SERVICE USAGE WITH USDA–ARS TO ONE DAY MAXIMUM.
EACH SERVICE SHALL BE RECONNCTED AS THE NEW MAIN IS BUILT.

BUILDING 1 – SOUTH WING



① SANITARY SEWER PLAN
1:10

0 5' 10' 20'

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
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PROJECT MANAGER:	AOE:	SANITARY SEWER PLAN	
DESIGNER: SRH	EPM:	USDA PEORIA - HEADHOUSE & GREENHOUSE	
CHECKED BY: MKS	SAFETY & HEALTH:	TASK ORDER NO.:	DWG. NO. C303
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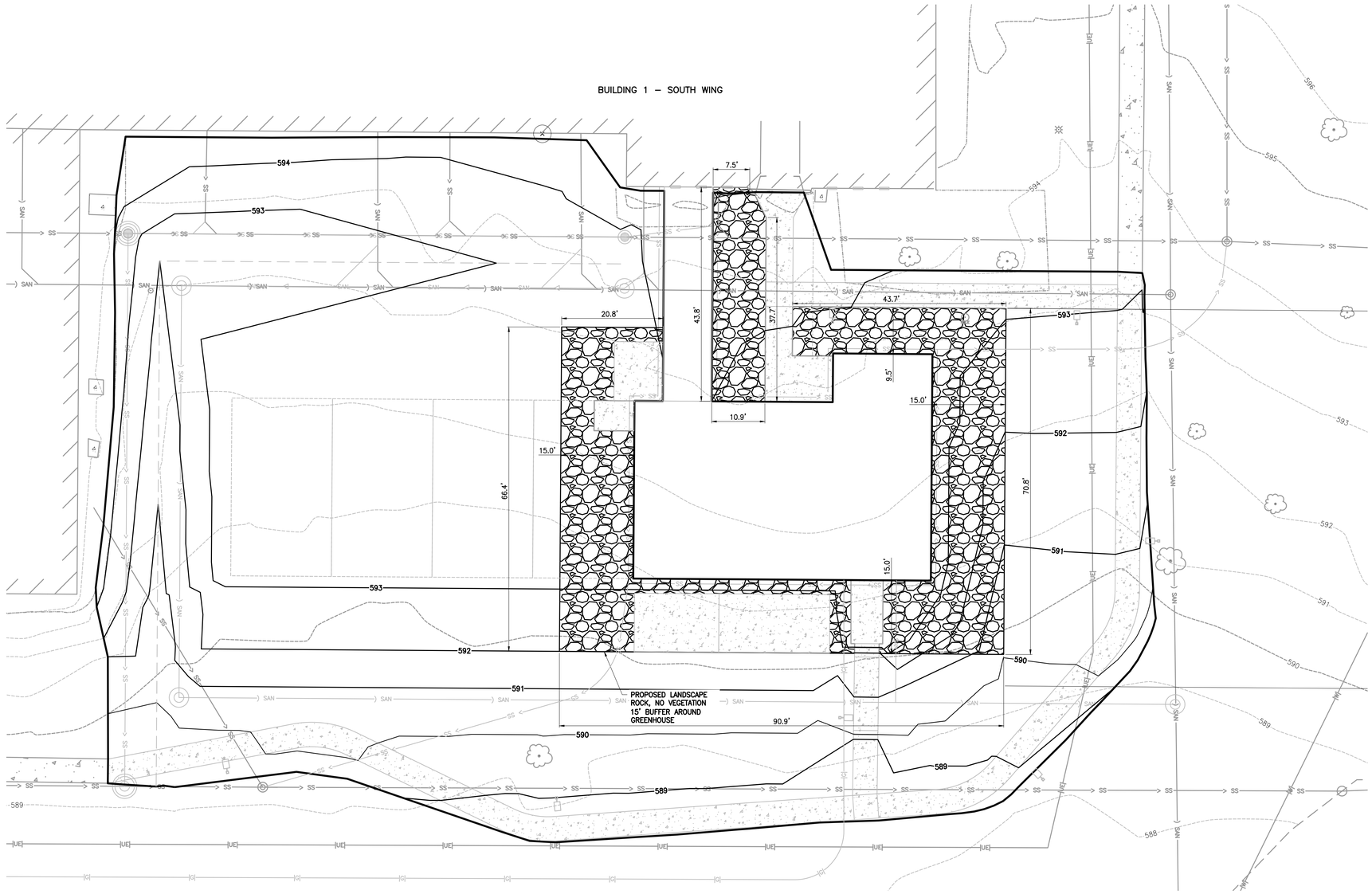

1 LANDSCAPE PLAN
1:10

0 5' 10' 20'

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NO. 062-061015
LICENSE EXPIRES: 11/30/2027

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PROJECT MANAGER:	AOE:		LANDSCAPE PLAN
DESIGNER: SRH	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
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BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:	DWG. NO. C304
			SHEET 11 OF 74

GENERAL STRUCTURAL NOTES

APPLICABLE CODES AND STANDARDS

1. INTERNATIONAL CODE COUNCIL (ICC)
   IBC 2024 INTERNATIONAL BUILDING CODE

2. AMERICAN CONCRETE INSTITUTE (ACI):
   ACI 318-19 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

3. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE):
   ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

4. AMERICAN IRON AND STEEL INSTITUTE (AISI):
   AISI S100-16 NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS

5. THE MASONRY SOCIETY (TMS):
   BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES

6. ASTM INTERNATIONAL (ASTM):
   ALL MATERIAL STANDARDS NOTED

DESIGN CRITERIA

1. DEAD LOAD

ALLOWANCE FOR ROOFING SYSTEM	7 psf
ALLOWANCE FOR COLLATERAL	8 psf

2. ROOF LIVE LOAD 20 psf

3. SNOW LOAD DATA

GROUND SNOW LOAD, Pg	20 psf
SNOW EXPOSURE FACTOR, Ce	1.0
SNOW LOAD IMPORTANCE FACTOR, Is	1.0
THERMAL FACTOR, Ct	1.0 (0.85 FOR GREENHOUSE)

4. WIND DESIGN DATA

RISK CATEGORY	II
ULTIMATE DESIGN WIND SPEED, Vult	108 mph
WIND IMPORTANCE FACTOR, Iw	1.0
WIND EXPOSURE CATEGORY	C
GROUND ELEVATION FACTOR, Ke	1.0
TOPOGRAPHIC FACTOR, Kzt	1.0
WIND DIRECTIONALITY FACTOR, Kd	0.85
GUST-EFFECT FACTOR	0.85
INTERNAL PRESSURE COEFFICIENT	±0.18

5. EARTHQUAKE DESIGN DATA

RISK CATEGORY	II
SEISMIC IMPORTANCE FACTOR, Ie	1.0
MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS:	
Ss	0.133 g
S1	0.076 g
SITE CLASS	D
DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS:	
Sds	0.142 g
Sd1	0.122 g
SEISMIC DESIGN CATEGORY	B

6. FOOTINGS HAVE BEEN DESIGNED FOR THE FOLLOWING NET ALLOWABLE SOIL BEARING CAPACITY:
   WALLS: 2,500 psf

GENERAL

1. PROJECT LOCATION: PEORIA COUNTY, IL

2. ALL SECTIONS, DETAILS, AND NOTES SHOWN ON THESE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO SIMILAR SITUATIONS ELSEWHERE UNLESS OTHERWISE SHOWN.

3. BUILDING ELEVATIONS REFERENCED IN THESE PLANS ARE SHOWN RELATIVE TO A FINISH FLOOR ELEVATION OF 0'-0" FOR THE ASSOCIATED BUILDING. SEE SITE GRADING PLAN FOR CORRESPONDING BUILDING FINISH FLOOR ELEVATION RELATIVE TO THE SITE BENCHMARKS OR CONTROL POINTS.

4. SEE WRITTEN PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR EARTHWORK AND CONCRETE NOT COVERED IN THESE PLANS.

5. DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWINGS. ANY DIMENSIONS NECESSARY FOR THE CONSTRUCTION OF THE STRUCTURE ARE INTENDED TO BE PROVIDED IN THE PLAN VIEWS OR DETAILS IN THESE DRAWINGS.

6. THE STRUCTURE HAS BEEN DESIGNED FOR THE IN-SERVICE LOADS ONLY. ANY MEANS, METHODS, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE WATER TIGHTNESS AND INTEGRITY OF THE STRUCTURE SHALL BE TAKEN BY THE CONTRACTOR AT ALL STAGES OF CONSTRUCTION.

FOUNDATION

1. THE FOUNDATION DESIGN IS BASED UPON THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT PREPARED BY TERRACON DATED 4/16/2025. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR REQUIRED PREPARATION AND TREATMENT OF SOILS BELOW FOOTINGS AND FLOOR SLABS.

2. ACTUAL SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION MAY REQUIRE ADJUSTMENTS TO THE FOOTING WIDTHS OR DEPTH PENDING THE SOILS TESTING RESULTS. CONTACT THE CONTRACTING OFFICER'S REPRESENTATIVE IF THE ASSUMED BEARING CAPACITY IS NOT MET.

3. ACTUAL LOCALIZED SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION MAY VARY FROM THOSE OBSERVED FROM THE SOIL TEST PITS. IF SOFT OR OTHERWISE QUESTIONABLE SOILS ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A QUALIFIED SOILS TESTING FIRM TO CONFIRM THE SUBGRADE AT EACH FOOTING IN THE QUESTIONABLE AREA SATISFIES THE STATED BEARING CAPACITY.

4. NO FOOTINGS OR SLABS SHALL BE PLACED ON OR AGAINST SUBGRADE CONTAINING STANDING WATER, ICE, OR FROST.

5. ALL BACKFILL MATERIAL BELOW SLABS, PAVEMENT, OR FOOTINGS SHALL BE GRANULAR MATERIAL PLACED IN LIFTS AND COMPACTED TO 98% OF STANDARD PROCTOR DENSITY. COMPACTION EFFORTS SHALL BE COMPLETED IN A MANNER THAT AVOIDS DAMAGING ADJACENT WALLS.

REINFORCED CONCRETE

1. ALL REINFORCED CONCRETE WORK SHALL BE DESIGNED, FABRICATED, AND CONSTRUCTED IN ACCORDANCE WITH ACI 318.

2. NO ALUMINUM OF ANY TYPE SHALL BE ALLOWED IN THE CONCRETE WORK UNLESS COATED TO PREVENT ALUMINUM-CONCRETE REACTION.

3. FOR FURTHER REQUIREMENTS OF THE CONCRETE PROPORTIONS AND ADMIXTURES, SEE THE PROJECT SPECIFICATIONS.

4. ALL REINFORCEMENT SHALL BE DETAILED, FABRICATED, AND PLACED IN ACCORDANCE WITH ACI 315.

5. UNLESS OTHERWISE SHOWN OR NOTED, ALL SPLICING OF REINFORCEMENT BARS SHALL BE CLASS B SPLICES CONFORMING TO THE REQUIREMENTS OF ACI 318.

6. HORIZONTAL BAR SPLICES ALONG THE LENGTH OF WALLS AND SLABS SHALL BE STAGGERED A MINIMUM OF THREE FEET SUCH THAT NO MORE THAN EVERY THIRD BAR IS SPLICED AT THE SAME LOCATION.

7. ALL FIELD BENDING OF REINFORCEMENT SHALL BE DONE COLD. HEATING OF BARS SHALL NOT BE PERMITTED.

8. WIRE TIES SHALL BE INSTALLED AT INTERSECTING REINFORCEMENT BARS AS NECESSARY TO SECURE AGAINST DISPLACEMENT DURING THE CONCRETE POUR.

9. PROVIDE WIRE TIES EVERY 12 INCHES ALONG THE LENGTH OF A LAP SPLICE.

10. INSTALLATION OF DOWEL BARS SHALL BE COMPLETED IN A MANNER THAT ENSURES COMPLETE CONSOLIDATION OF THE CONCRETE AROUND THE EMBEDDED PORTION OF THE DOWEL.

11. WELDING OF REINFORCEMENT BARS SHALL NOT BE PERMITTED UNLESS APPROVED BY THE CONTRACTING OFFICER'S REPRESENTATIVE.

12. SAWCUT CONTROL JOINTS SHALL BE LOCATED AND INSTALLED WITHIN SLABS ON GRADE AS SOON AS POSSIBLE, BUT NO LATER THAN TWENTY-FOUR (24) HOURS AFTER PLACING OF CONCRETE TO AVOID PREMATURE CRACKING IN THE SLAB.

MASONRY

1. CONCRETE MASONRY SHALL BE DESIGNED, FABRICATED, AND CONSTRUCTED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES, ACI 530.

2. MASONRY CONSTRUCTION SHALL BE IN CONFORMANCE WITH ACI 530.1, "SPECIFICATION FOR MASONRY STRUCTURES".

3. CONTINUOUS HORIZONTAL BED JOINT REINFORCEMENT (LADDER-TYPE OR TRUSS-TYPE) SHALL BE PROVIDED AT 16" ON CENTER VERTICALLY, CONSISTING OF AT LEAST TWO LONGITUDINAL WIRES OF W1.7 SIZE OR LARGER.

4. UNLESS OTHERWISE NOTED, ALL BOND BEAMS SHALL BE REINFORCED WITH (2)-#5 BARS CONTINUOUS IN THE LENGTH OF THE BOND BEAM.

5. ALL CAST-IN-PLACE AND POST-INSTALLED ANCHORS TO BE LOCATED IN CMU WALLS SHALL BE ANCHORED INTO FULLY-GROUTED CELLS. USE ANCHORS ACCEPTABLE FOR INSTALLATION INTO CONCRETE MASONRY UNITS, AND INSTALL PER THE MANUFACTURER'S RECOMMENDATIONS.

COLD-FORMED METAL FRAMING

1. STRUCTURAL COLD-FORMED METAL (LIGHT GAGE) FRAMING SHALL BE DESIGNED, FABRICATED, AND CONSTRUCTED IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE AISI "SPECIFICATION FOR COLD-FORMED STEEL STRUCTURAL MEMBERS".

2. ALL MEMBERS SHALL BE FORMED FROM CORROSION RESISTANT STEEL CORRESPONDING TO THE REQUIREMENT OF ASTM A1003 AND HAVE A MINIMUM YIELD STRENGTH AS FOLLOWS UNLESS NOTED OTHERWISE:

A.	16 GA. & THICKER:	50 ksi
B.	18 GA. & LIGHER:	33 ksi

3. ALL WELDING SHALL MEET THE REQUIREMENTS OF THE LATEST AMERICAN WELDING SOCIETY STANDARD "STRUCTURAL WELDING CODE - SHEET STEEL."

4. ALL FRAMING COMPONENTS SHALL BE CUT SQUARELY FOR ATTACHMENT TO PERPENDICULAR MEMBERS, OR AS REQUIRED FOR AN ANGULER FIT AGINST ABUTTING MEMBERS. MEMBERS SHALL BE HELD POSITIVELY IN PLACE UNTIL PROPERLY FASTENED.

5. ALL SELF-DRILLING SCREWS SHALL HAVE AN APPROPRIATELY SIZED DRILL POINT TO FASTEN CONNECTED MEMBERS.

6. THE MINIMUM CENTER-TOCENTER SPACING OF SCREWED CONNECTIONS SHALL BE 3 TIMES THE NOMINAL DIAMETER OF THE FASTENER.

ABBREVIATIONS

&	AND
@	AT
℄	CENTER LINE
∅	DIAMETER
ADD'L	ADDITIONAL
ALT.	ALTERNATE
BTWN.	BETWEEN
C.J.	CONTROL OR CONSTRUCTION JOINT
CL	CLEAR OR CLEARANCE
CONC.	CONCRETE
CONT.	CONTINUOUS
C.Y.	CUBIC YARD
D.	DEPTH
DIR.	DIRECTION
EA.	EACH
E.F.	EACH FACE
E.G.	FOR EXAMPLE
EL.	ELEVATION
EMBED.	EMBEDMENT
EXT.	EXTERIOR
E.W.	EACH WAY
EXIST.	EXISTING
F.F.	FINISH FLOOR
FTG.	FOOTING
G.L.	GRID LINE
H.	HEIGHT
HORIZ.	HORIZONTAL
I.D.	INSIDE DIMENSION
INT.	INTERIOR
JT.	JOINT
KSI	KIPS PER SQUARE INCH
LBS	POUNDS
LOCS.	LOCATIONS
LONG.	LONGITUDINAL
MAX.	MAXIMUM
MIN.	MINIMUM
O.C.	ON CENTER
O.D.	OUTSIDE DIMENSION
PCI	POUNDS PER CUBIC INCH
P.J.F	PREFORMED JOINT FILLER
PLF	POUNDS PER FOOT
PROJ.	PROJECTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
REINF.	REINFORCEMENT
R.O.	ROUGH OPENING
SIM.	SIMILAR
S.J.	SAWCUT JOINT
SPA.	SPACES
SQ.	SQUARE
S.S	STAINLESS STEEL
STD.	STANDARD
THRU.	THROUGH
TRANS.	TRANSVERSE
T/F	TOP OF FOOTING
T/S	TOP OF SLAB
T/W	TOP OF WALL
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD
W.	WIDTH
W.W.R.	WELDED WIRE REINFORCEMENT
w/	WITH

STATE OF ILLINOIS
BRYAN A. SWANSON
081-006716
PEORIA, IL
PROFESSIONAL STRUCTURAL ENGINEER

Bryan Swanson 1/21/2026

BRYAN A. SWANSON, PE, SE
SE NO. 081-006716
EXP. DATE: 11/30/2026
DATE

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DESIGNER: BAS	EPM:	USDA PEORIA - HEADHOUSE & GREENHOUSE
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BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:

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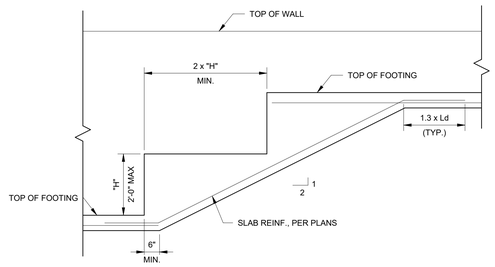
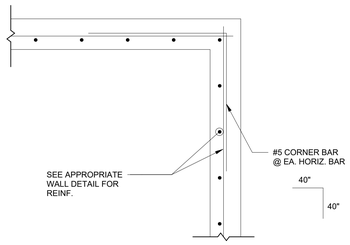


1 STEPPED FOOTING DETAIL
NTS



2 WALL CORNER DETAIL
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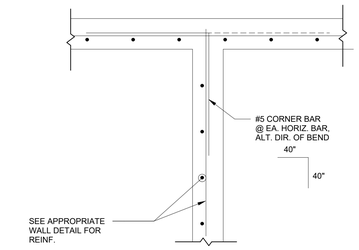

3 WALL INTERSECTION DETAIL
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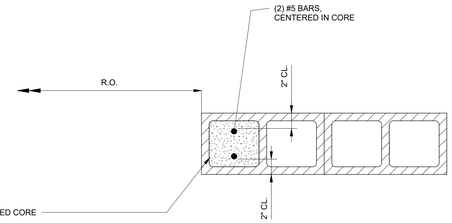

4 JAMB DETAIL
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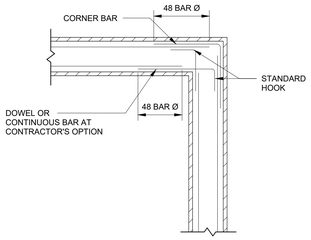
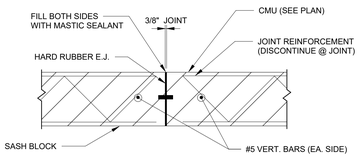
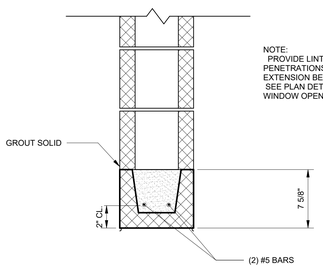


5 STD. BOND BEAM CORNER REINF.
NTS



6 TYPICAL MASONRY CONTROL JOINT
NTS



7 LINTEL DETAIL
NTS

Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/USDA ARS NEW GREENHOUSE_Structural_R23.rvt
1/21/2026 1:18:25 PM

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USDA Agricultural Research Service

GENERAL STRUCTURAL DETAILS

USDA PEORIA - HEADHOUSE & GREENHOUSE

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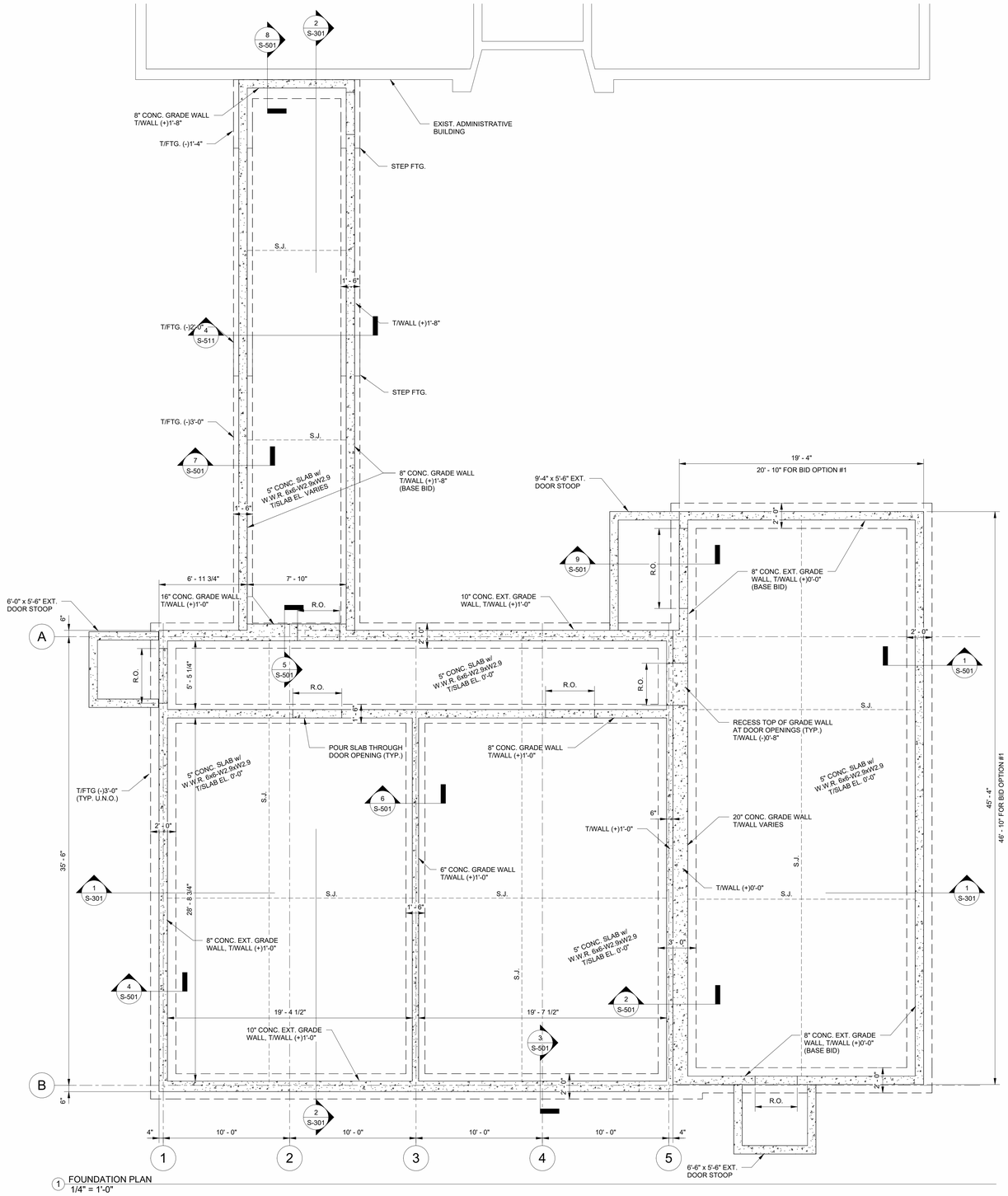
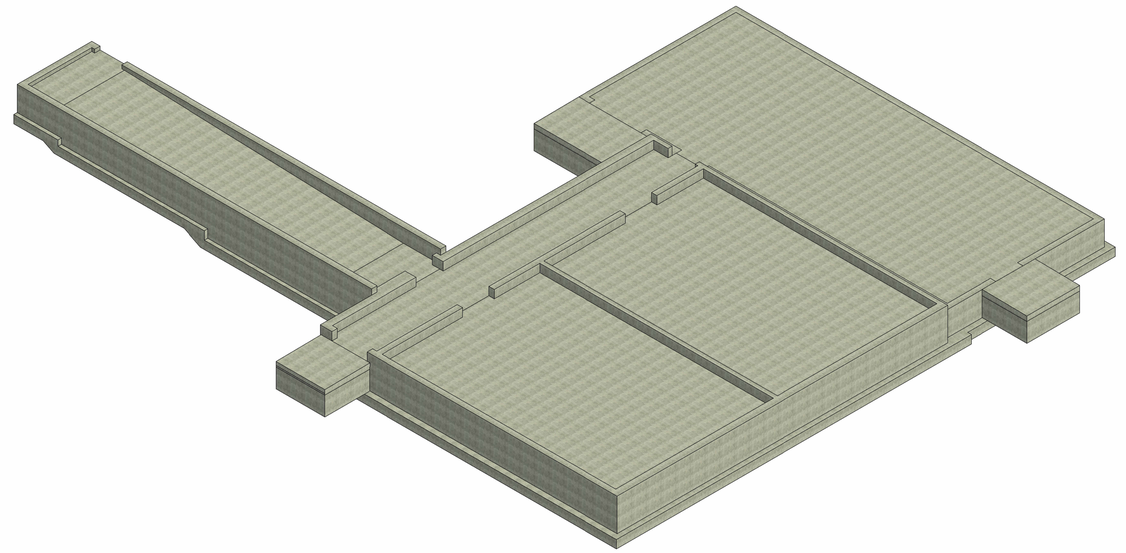
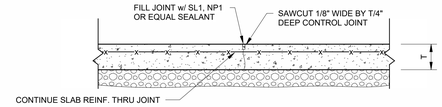
SHEET 13 OF 74



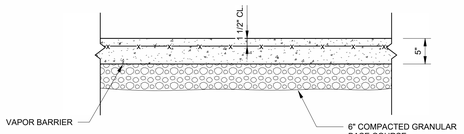
1 FOUNDATION PLAN
1/4" = 1'-0"



2 FOUNDATION ISOMETRIC



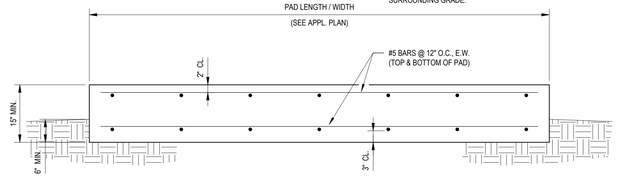
3 TYP. SAWCUT CONTROL JOINT DETAIL
1" = 1'-0"



4 TYP. SLAB DETAIL
1" = 1'-0"

APPLICABLE TO:
- AHU SUPPORT PADS

NOTE:
SET FOUNDATION PAD ON BASE OF 6" OF COMPACTED AGGREGATE BASE COURSE. INCREASE THICKNESS OF PAD AS NEEDED TO ACHIEVE SPECIFIED TOP OF PAD ELEVATION WHILE OBTAINING THE MINIMUM DEPTH OF EMBEDMENT BELOW SURROUNDING GRADE.



5 SITE FOUNDATION PAD DETAIL
3/4" = 1'-0"

PLAN NOTES:

1. ELEVATIONS ARE SHOWN RELATIVE TO THE FINISH FLOOR ELEVATION DEFINED AS THE TOP OF CONCRETE SLAB IN THE HEADHOUSE AND GREENHOUSE. NOTE THIS HEADHOUSE AND GREENHOUSE FLOOR ELEVATION IS 1'-3 7/8" BELOW THE EXISTING BUILDING GROUND FLOOR LEVEL.
2. FOUNDATIONS ARE SHOWN AND DIMENSIONED FOR THE BASE BID GEOMETRY. SEE SHEET S501 FOR BID OPTION #1 DETAILS SHOWING WIDER GRADE WALLS AND FOOTINGS AS NEEDED FOR A BRICK VENEER AROUND THE HEADHOUSE AND UTILITY CHASEWAY.
3. RECOMMENDED SAW CUT JOINT LOCATIONS IN THE BASE SLAB ARE NOTED ON THE PLAN VIEW BY "S.J." SEE THIS SHEET FOR TYP. DETAIL.
4. FOOTINGS SHALL BE CENTERED ON THE RESPECTIVE WALL, UNLESS NOTED OTHERWISE.
5. ROUGH OPENING LOCATIONS ARE TO BE COORDINATED WITH THE CONTRACTOR PRIOR TO POURING CONCRETE. THE GRADE WALLS ARE TO BE RECESSED 8" AT OPENING LOCATIONS FOR THE FLOOR SLAB TO POUR THROUGH.

STATE OF ILLINOIS
BRYAN A. SWANSON
081-006716
PROFESSIONAL ENGINEER
PEORIA, IL
STRUCTURAL

BRYAN A. SWANSON, PE, SE — 1/21/2026
SE NO. 081-006716 — DATE
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USDA Agricultural Research Service

FOUNDATION PLAN

USDA PEORIA - HEADHOUSE & GREENHOUSE

NCAUR
1815 North University Street
Peoria, Illinois 61604

DWG. NO. S-101

SHEET 14 OF 74

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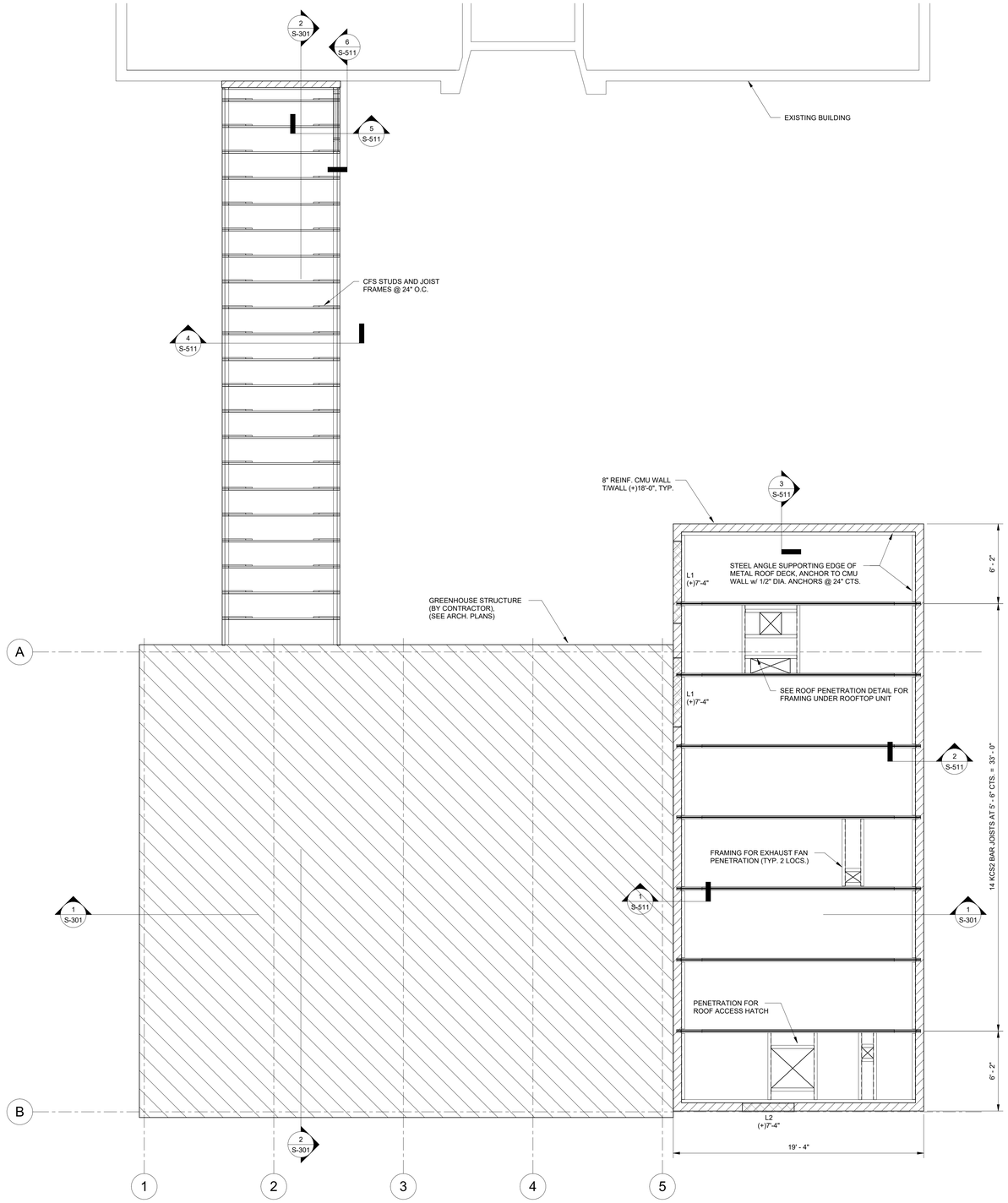
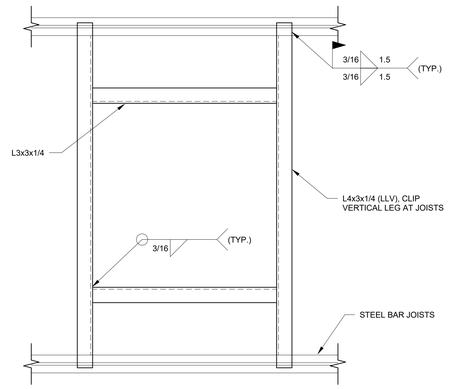


1 ROOF FRAMING PLAN
1/4" = 1'-0"

PLAN NOTES:

1. SEE ARCH. DRWGS. FOR BUILDING DIMENSIONS AND LOCATIONS RELATIVE TO EXISTING BUILDING.
2. FOR L1 AND L2 CALLOUTS SEE DETAIL 7 AND 8 ON SHEET S-511 FOR LINTEL DETAILS.



2 ROOF PENETRATION DETAIL
1" = 1'-0"

NOTES:

1. LOCATE L4x3x1/4 ANGLE BELOW ROOF CURB FOR ROOFTOP AIR HANDLING UNIT.
2. CONTRACTOR SHALL COORDINATE PENETRATION FRAMING WITH MECHANICAL EQUIPMENT AND ACCESS HATCH CUT SHEETS PRIOR TO FABRICATION.
3. METAL ROOF DECK SHALL BE FASTENED TO ANGLES AT 12" CTS.

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Bryan Swanson 1/21/2026

BRYAN A. SWANSON, PE, SE
SE NO. 081-006716
EXP. DATE: 11/30/2026

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DESIGNER: BAS	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: LVM	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	DWG. NO. S-111 SHEET 15 OF 74

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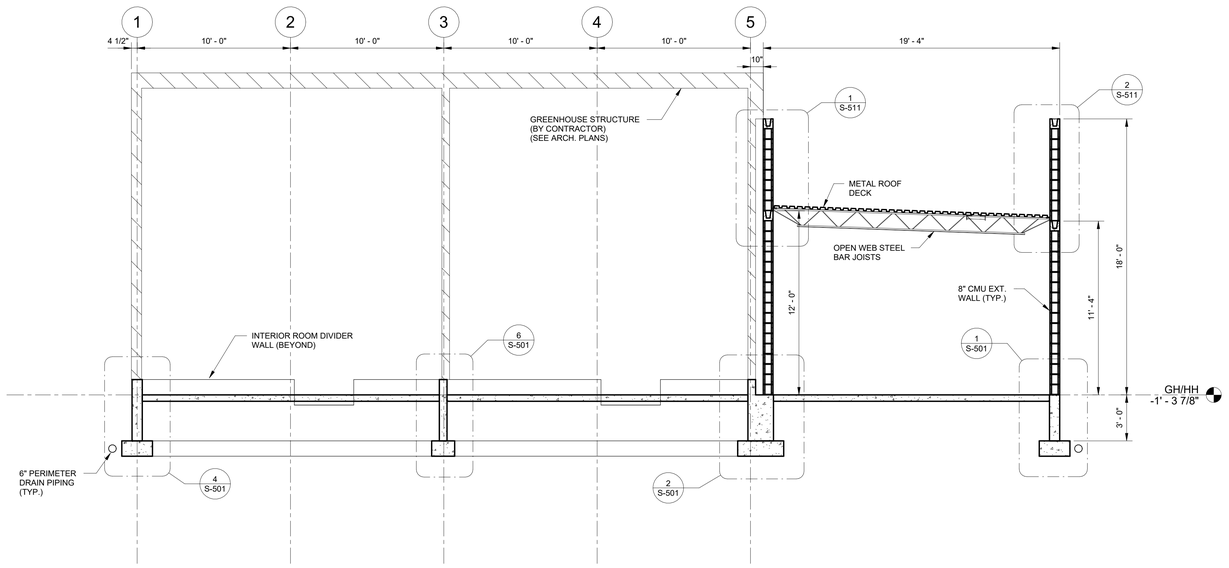
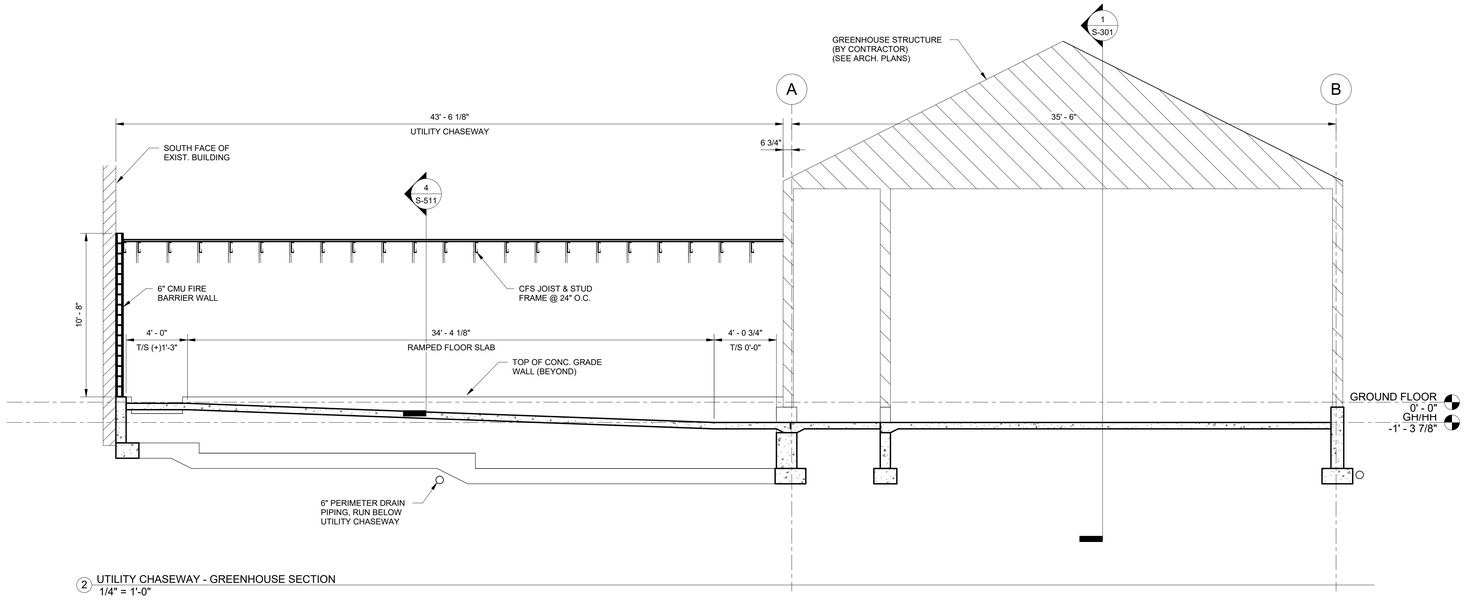


1 GREENHOUSE - HEADHOUSE SECTION
1/4" = 1'-0"



2 UTILITY CHASEWAY - GREENHOUSE SECTION
1/4" = 1'-0"

SHEET NOTE:

1. TOP OF SLAB ELEVATIONS ARE SHOWN RELATIVE TO THE GREENHOUSE AND HEADHOUSE FINISH FLOOR ELEVATION. NOTE THIS FLOOR ELEVATION IS 1'-3 7/8" BELOW THE EXISTING BUILDING GROUND FLOOR LEVEL.

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SE NO. 081-006716
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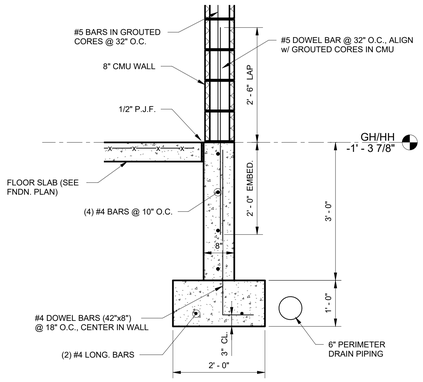
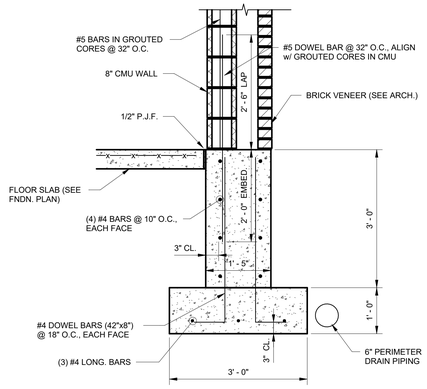
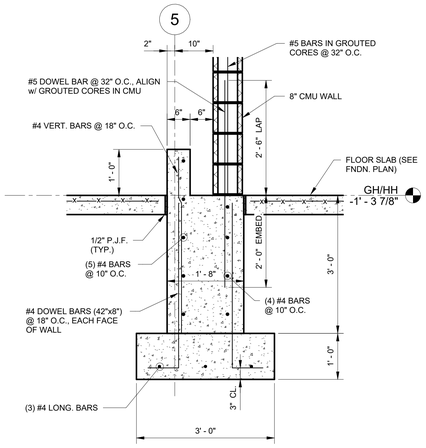


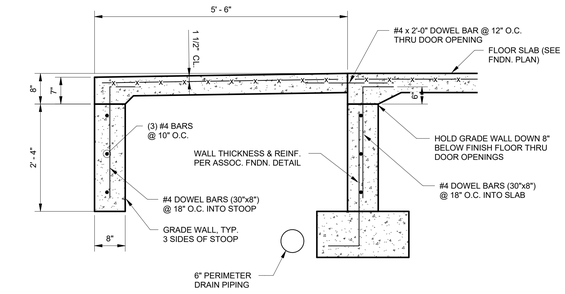
1 HEADHOUSE GRADE WALL - BASE BID
3/4" = 1'-0"



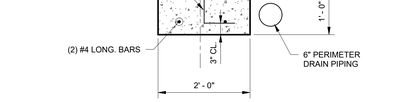
1A HEADHOUSE GRADE WALL - BID OPTION #1
3/4" = 1'-0"



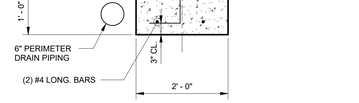
2 HEADHOUSE/GREENHOUSE GRADE WALL
3/4" = 1'-0"



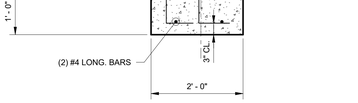
9 TYP. DOOR STOOP
3/4" = 1'-0"



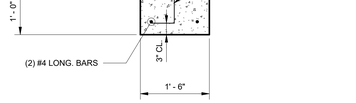
3 GREENHOUSE SIDE GRADE WALL (N & S)
3/4" = 1'-0"



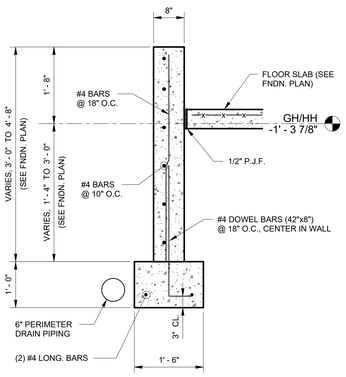
4 GREENHOUSE EAST GRADE WALL
3/4" = 1'-0"



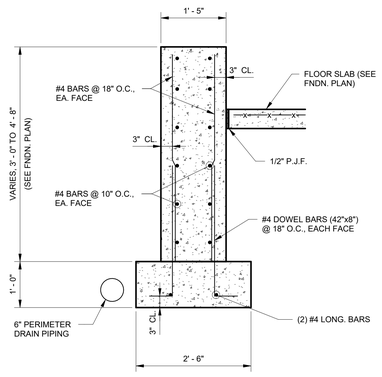
5 GRADE WALL BTWN. GREENHOUSE & UTILITY CORRIDOR
3/4" = 1'-0"



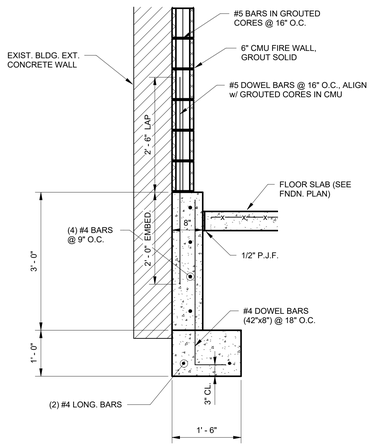
6 GREENHOUSE INT. GRADE WALL
3/4" = 1'-0"



7 UTILITY CORRIDOR GRADE WALL - BASE BID
3/4" = 1'-0"



7A UTILITY CORRIDOR GRADE WALL - BID OPTION #1
3/4" = 1'-0"



8 UTILITY CORRIDOR FIREWALL FOUNDATION
3/4" = 1'-0"

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STATE OF ILLINOIS

Bryan Swanson 1/21/2026

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USDA Agricultural Research Service

FOUNDATION DETAILS

USDA PEORIA - HEADHOUSE & GREENHOUSE

TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604	DWG. NO. S-501
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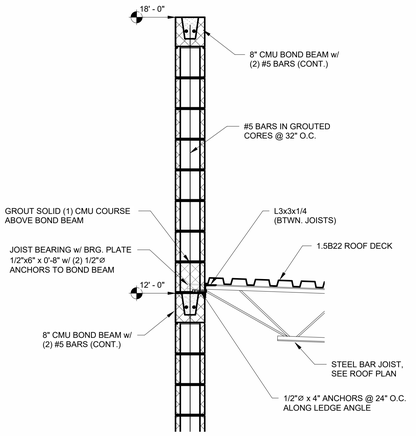
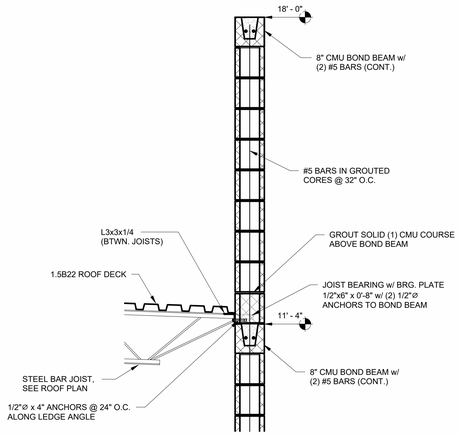
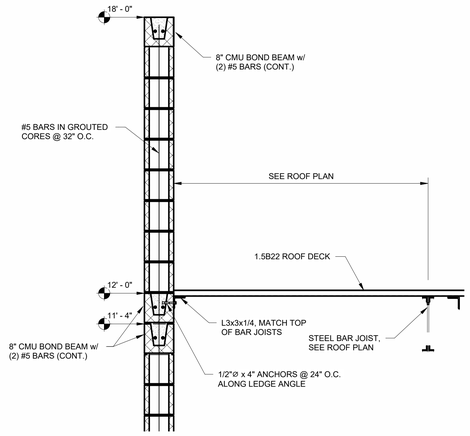


1 HEADHOUSE ROOF DETAIL - WEST WALL
3/4" = 1'-0"



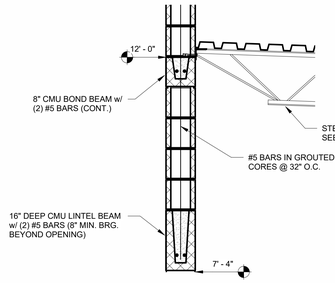
2 HEADHOUSE ROOF DETAIL - EAST WALL
3/4" = 1'-0"



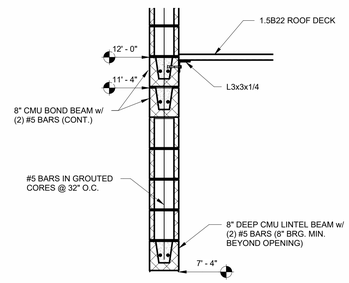
3 HEADHOUSE ROOF DETAIL - NORTH/SOUTH WALL
3/4" = 1'-0"

METAL ROOF DECK NOTES:

1. HEADHOUSE ROOF:
   - A. METAL ROOF DECK SHALL BE FASTENED TO SUPPORTING STRUCTURE TO OBTAIN AN ALLOWABLE DIAPHRAGM SHEAR OF AT LEAST 350 POUNDS PER LINEAL FOOT (plf). FOR EXAMPLE:
     - a. #12 TEK SCREWS TO EACH SUPPORT IN EACH RIB (36/7 PATTERN) + #10 TEK SCREWS IN SIDELAPS @ 12" O.C., OR
     - b. 5/8" PUDDLE WELDS TO EACH SUPPORT IN EVERY OTHER RIB (36/4 PATTERN) + #10 TEK SCREWS IN SIDE LAPS @ 12" O.C.
   - B. METAL ROOF DECK SHALL BE FASTENED TO SUPPORTING ANGLES AROUND THE PERIMETER OF THE ROOF DECK WITH #12 TEK SCREWS OR 5/8" PUDDLE WELDS @ 6" O.C.
2. UTILITY CHASEWAY ROOF:
   - A. METAL ROOF DECK SHALL BE FASTENED TO SUPPORTING STRUCTURE UTILIZING #12 TEK SCREWS TO EACH JOIST IN EVERY OTHER RIB (12" O.C.). NO SIDELAP FASTENERS SHALL BE REQUIRED.

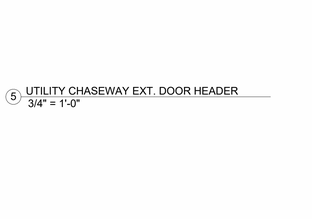


7 CMU WALL HEADER - 16" LINTEL (L1)
3/4" = 1'-0"

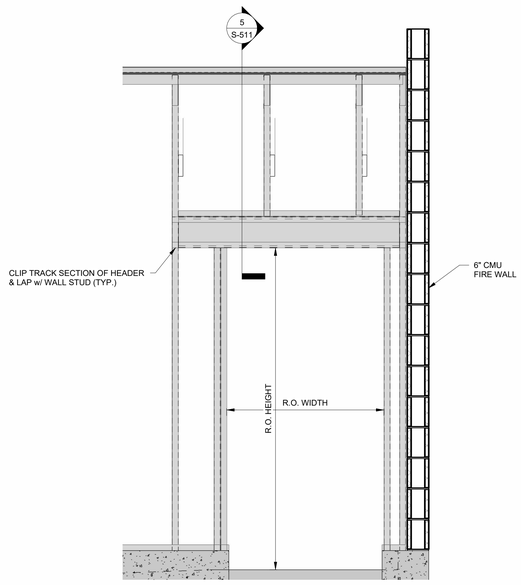


8 CMU WALL HEADER - 8" LINTEL (L2)
3/4" = 1'-0"

4 UTILITY CHASEWAY ROOF SECTION
3/4" = 1'-0"



5 UTILITY CHASEWAY EXT. DOOR HEADER
3/4" = 1'-0"



6 UTILITY CHASEWAY EXT. DOOR OPENING
3/4" = 1'-0"

STATE OF ILLINOIS
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LICENSED STRUCTURAL ENGINEER

1/21/2026

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SE NO. 081-006716
EXP. DATE: 11/30/2026

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DESIGNER: BAS	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: LVM	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
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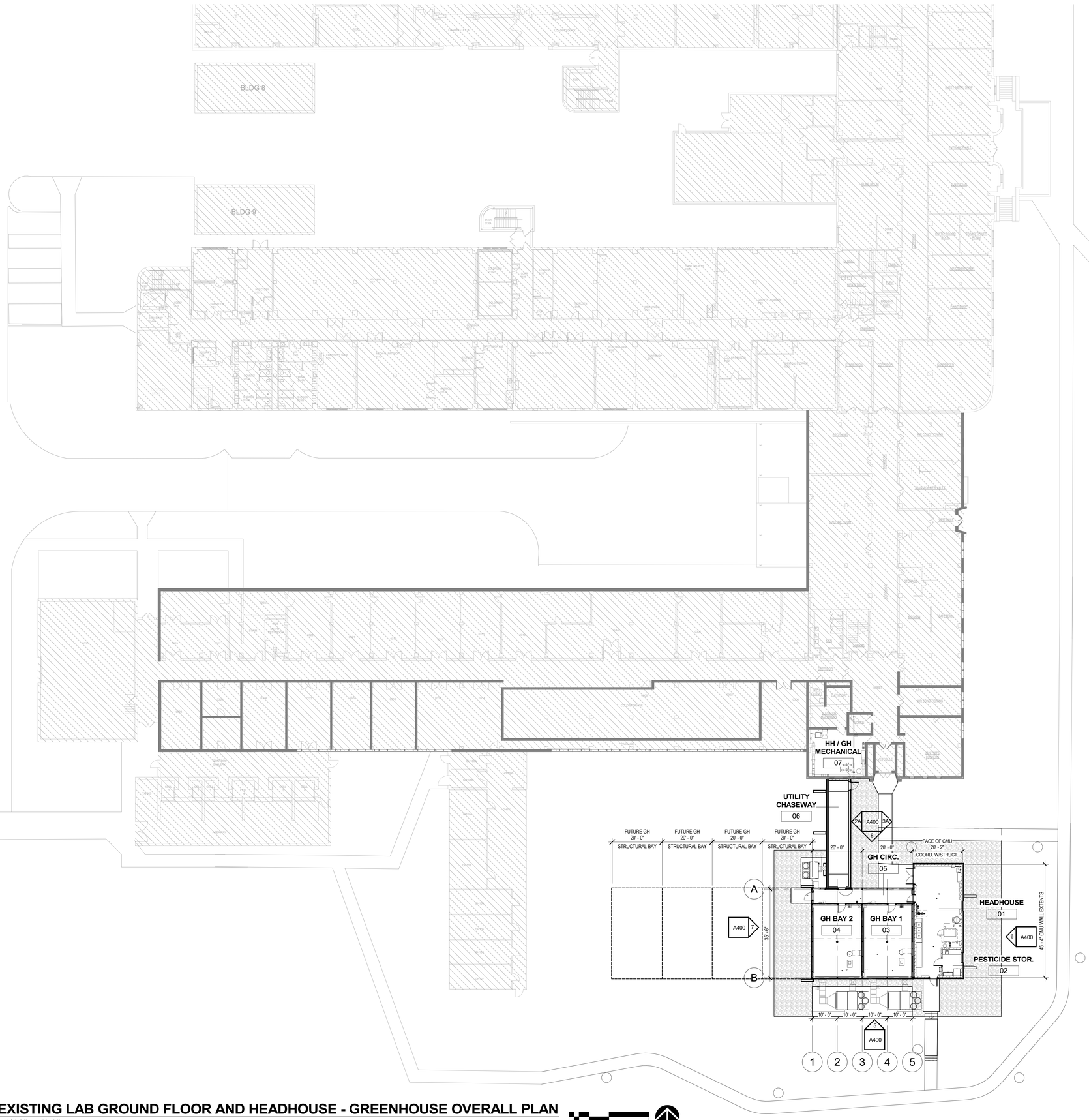

1 **EXISTING LAB GROUND FLOOR AND HEADHOUSE - GREENHOUSE OVERALL PLAN**
1/16" = 1'-0"

0 8' 16' 32'

100% DESIGN SUBMITTAL:

NEW CONSTRUCTION	2,580 NSF
ALTERED EXIST. SPACE	410 NSF

PROGRAM SPACES

HEADHOUSE / STOR.	787 NSF
GREENHOUSE BAYS	1,196 NSF
SUPPORT / CIRC.	253 NSF
UTILITY CHASEWAY	344 NSF
MECH / ELEC	410 NSF

GROUND FLOOR KEY PLAN

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ROBYN E. BOTTS-KRUSE
#001-019585
REGISTERED ARCHITECT
Expiration Date of Seal: 11-30-2026

BAILEY EDWARD DESIGN	USDA	Agricultural Research Service	
PROJECT MANAGER:	AOE:	OVERALL GROUND FLOOR PLAN	
DESIGNER: Designer	EPM:	USDA PEORIA - HEADHOUSE & GREENHOUSE	
CHECKED BY: Checker	SAFETY & HEALTH:	TASK ORDER NO.:	DWG. NO. A100
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	SHEET 19 OF 74

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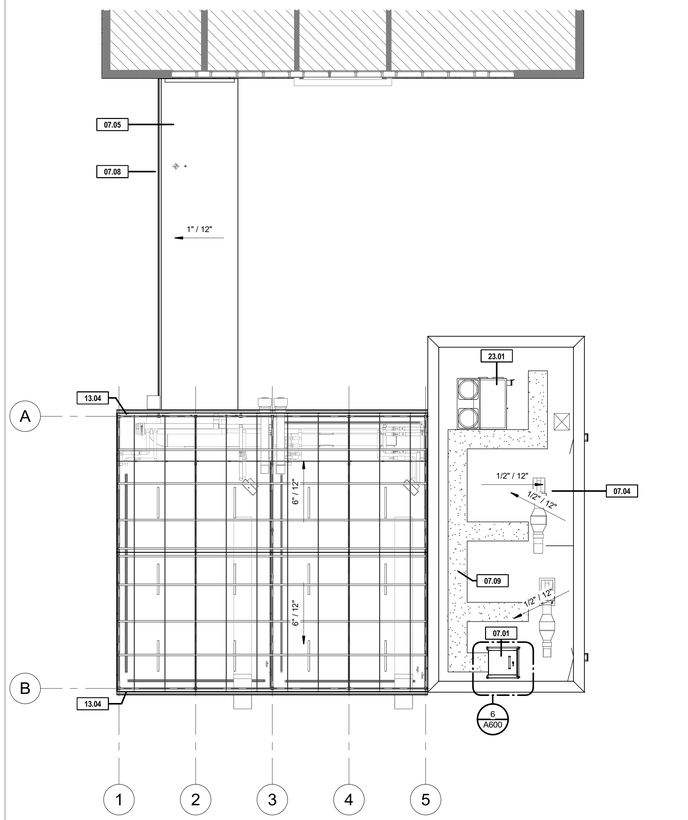
SHEET KEYNOTES

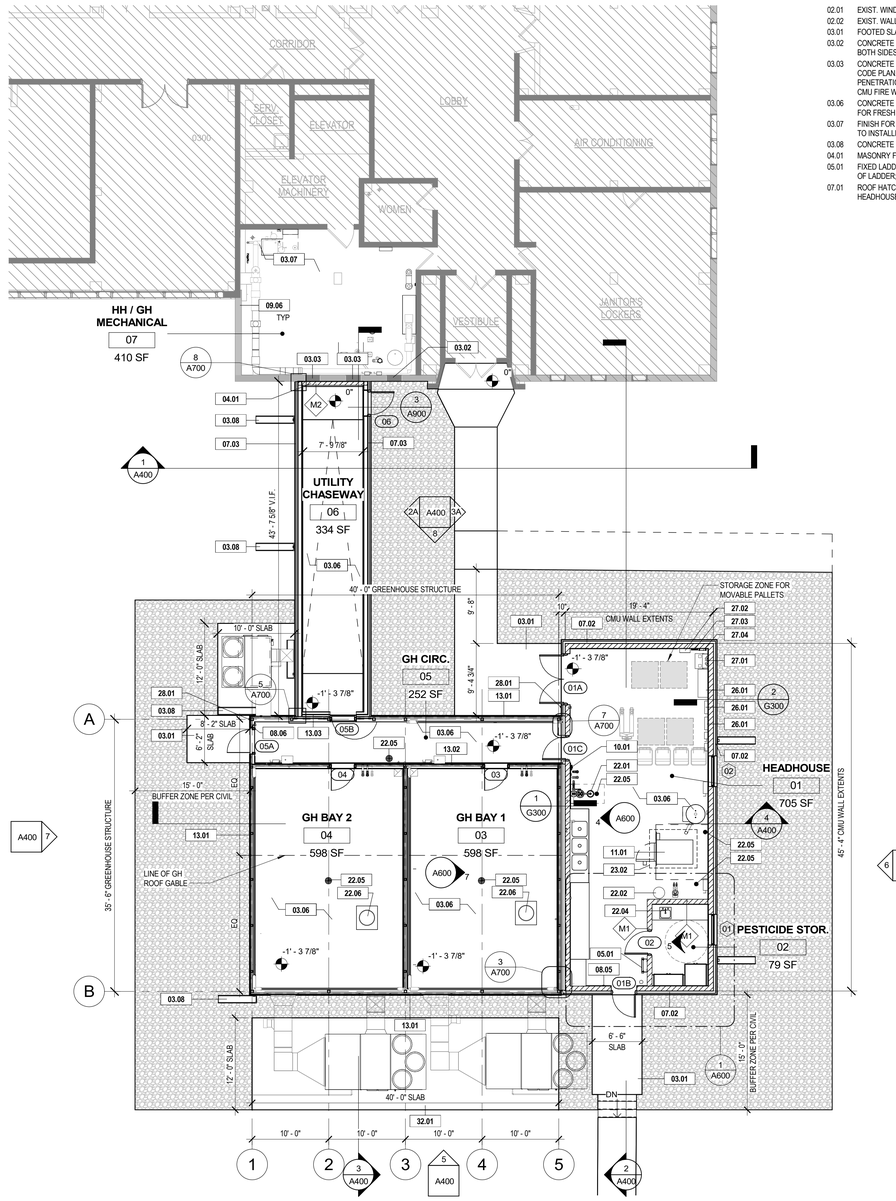
02.01 EXIST. WINDOW AT EXIST. BUILDING 1 TO BE REMOVED. COORD. WITH NEW WORK AND CODE PLAN PLANS FOR INFILL.
02.02 EXIST. WALLS AND DOORS AT EXIST. BUILDING 1 TO BE REMOVED. COORD. WITH NEW WORK AND CODE PLAN PLANS.
03.01 FOOTED SLAB AT EXTERIOR DOOR - COORDINATE WITH STRUCTURAL DRAWINGS.
03.02 CONCRETE INFILL AT DEMO'D WINDOW AT EXISTING BUILDING 1 EXTERIOR WALL TO PROVIDE 2-HOUR RATING. FINISH BOTH SIDES OF WALL TO MATCH EXISTING ADJACENT SURFACES.
03.03 CONCRETE INFILL AT DEMO'D WINDOW AT EXISTING BUILDING 1 EXTERIOR WALL TO PROVIDE 2-HOUR RATING PER CODE PLAN. PROVIDE SLEEVES FOR PIPING AND CONDUIT - COORDINATE WITH MEP AND STRUCTURAL FOR PENETRATIONS WHICH SHALL BE FIRE-STOPPED AS REQUIRED BY CODE. COORDINATE WITH PENETRATIONS AT NEW CMU FIRE WALL.
03.06 CONCRETE SLAB ON GRADE FLOOR FINISH: WATER-BASED, ACRYLIC, CONCRETE CURING AND SEALING COMPOUND FOR FRESH CONCRETE. B.O.D. W.R. MEADOWS VOCOMP-30.
03.07 FINISH FOR EXISTING SLAB ON GRADE: CONCRETE SEALER - CLEAN/PREP SURFACE AS REQUIRED BY MANUF. PRIOR TO INSTALLING.
03.08 CONCRETE SPLASH BLOCK - 60" LONG X 16" WIDE X 4" HIGH. 5,000 PSI CONCRETE WITH #3 GRADE 60 REINFORCING.
04.01 MASONRY FIRE WALL AS NOTED ON CODE PLAN.
05.01 FIXED LADDER: PRIMED STEEL, TO BE FIELD PAINTED; OSHA COMPLIANT; PROVIDE RETRACTABLE SAFETY POST AT TOP OF LADDER; COORDINATE WITH ROOF HATCH AND SAFETY RAILINGS.
07.01 ROOF HATCH: THERMALLY BROKEN WITH SAFETY RAILS. B.O.D. BILCO S-50-TB. COORDINATE WITH FIXED LADDER AT HEADHOUSE INTERIOR.

SHEET KEYNOTES

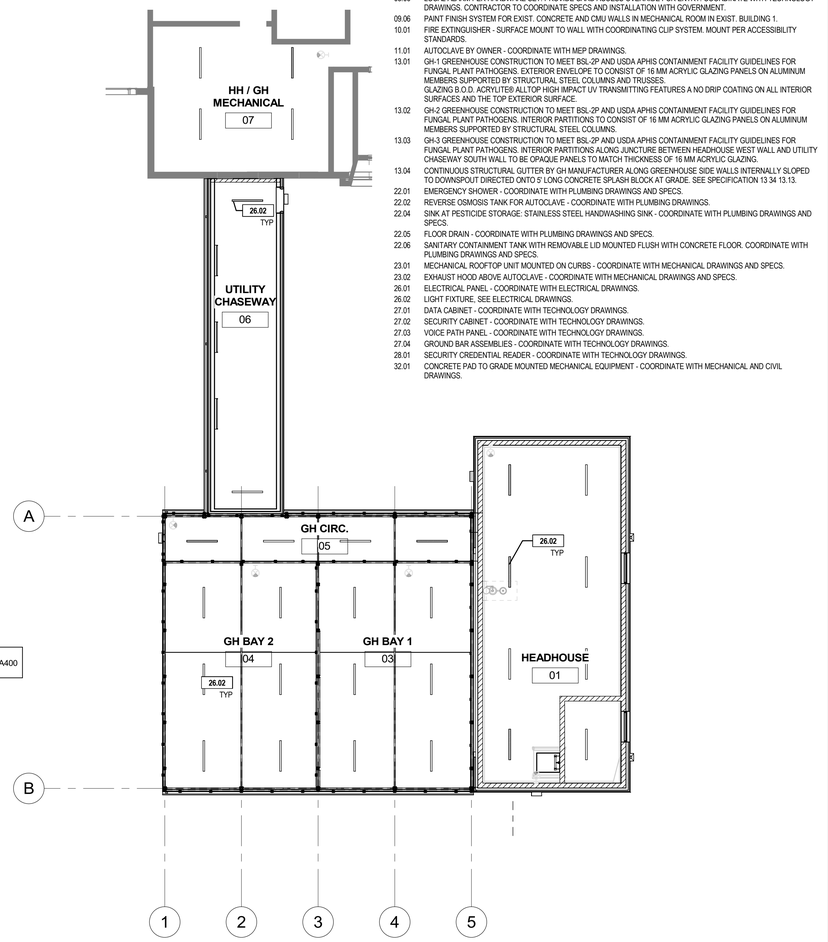
07.02 EX-1 EXTERIOR WALL ASSEMBLY: FIBER CEMENT PANELS (B.O.D. SWISSPEARL CARAT 12 MM THICKNESS) ON THERMALLY BROKEN Z-CLIP SYSTEM WITH INVISIBLE FASTENERS. RAINSCREEN ASSEMBLY INCLUDES CONTINUOUS AIR AND WATER-RESISTIVE BARRIER AND CONTINUOUS INSULATION ON CMU AT HEADHOUSE.
07.03 EX-2 EXTERIOR WALL ASSEMBLY: FIBER CEMENT PANELS (B.O.D. SWISSPEARL CARAT 12 MM THICKNESS) ON THERMALLY BROKEN Z-CLIP SYSTEM WITH INVISIBLE FASTENERS. PANEL THICKNESS 12 MM. CONTINUOUS AIR AND WATER-RESISTIVE BARRIER AND CONTINUOUS INSULATION ON COLD-FORMED METAL FRAMING AT UTILITY CHASEWAY.
07.04 RF-1 TPO MEMBRANE ROOF ASSEMBLY: B.O.D. CARLISLE ROOF TPO MEMBRANE. ASSEMBLY INCLUDES 1/2" THICK GLASS-MAT BOARD SUBSTRATE OVER METAL JOISTS, VAPOR BARRIER, R-30 CONT. POLYISO ROOF INSULATION, GLASS-MAT COVER BOARD. NOTE: ROOF INSULATION CAN HAVE INTEGRAL COVER BOARD IN LIEU OF PROVIDING SEPARATE COVER BOARD.
07.05 RF-2 METAL ROOF ASSEMBLY: STANDING SEAM WITH COORDINATING COPING, GUTTERS, AND DOWNSPOUTS. B.O.D. PAC CLAD PAC-150 IN 18" SMOOTH PANEL WIDTHS WITH 1-1/2" HIGH SEAMS MECHANICALLY SEAMED TOGETHER @ 180 DEGREES. ROOF ASSEMBLY INCLUDES 1/2" THICK GLASS-MAT BOARD SUBSTRATE OVER METAL JOISTS, VAPOR BARRIER, R-30 CONT. NON-COMBUSTIBLE STONE WOOL ROOF INSULATION, AND NON-COMBUSTIBLE GLAS-MAT GYPSUM SUBSTRATE BOARD.
07.06 METAL GUTTER AND DOWNSPOUTS SYSTEM TO MATCH METAL ROOFING SYSTEM.
07.09 ROOF PAVERS TO COORDINATE WITH ROOFING MEMBRANE.
08.05 LOCAL ALARM PER HARDWARE SET FOR EXIT ONLY DOOR. CONTRACTOR TO COORDINATE SPECS AND INSTALLATION WITH GOVERNMENT.
08.06 LOCAL ALARM PER HARDWARE SET. PROVIDE CARD ACCESS OVERRIDE FOR ENTRY. COORDINATE WITH TECHNOLOGY DRAWINGS. CONTRACTOR TO COORDINATE SPECS AND INSTALLATION WITH GOVERNMENT.
09.06 PAINT FINISH SYSTEM FOR EXIST. CONCRETE AND CMU WALLS IN MECHANICAL ROOM IN EXIST. BUILDING 1.
10.01 FIRE EXTINGUISHER - SURFACE MOUNT TO WALL WITH COORDINATING CLIP SYSTEM. MOUNT PER ACCESSIBILITY STANDARDS.
11.01 AUTOCLAVE BY OWNER - COORDINATE WITH MEP DRAWINGS.
13.01 GH-1 GREENHOUSE CONSTRUCTION TO MEET BSL-2P AND USDA APHIS CONTAINMENT FACILITY GUIDELINES FOR FUNGAL PLANT PATHOGENS. EXTERIOR ENVELOPE TO CONSIST OF 16 MM ACRYLIC GLAZING PANELS ON ALUMINUM MEMBERS SUPPORTED BY STRUCTURAL STEEL COLUMNS AND TRUSSES.
GLAZING B.O.D. ACRYLITE® ALLTOP HIGH IMPACT UV TRANSMITTING FEATURES A NO DRIP COATING ON ALL INTERIOR SURFACES AND THE TOP EXTERIOR SURFACE.
13.02 GH-2 GREENHOUSE CONSTRUCTION TO MEET BSL-2P AND USDA APHIS CONTAINMENT FACILITY GUIDELINES FOR FUNGAL PLANT PATHOGENS. INTERIOR PARTITIONS TO CONSIST OF 16 MM ACRYLIC GLAZING PANELS ON ALUMINUM MEMBERS SUPPORTED BY STRUCTURAL STEEL COLUMNS.
13.03 GH-3 GREENHOUSE CONSTRUCTION TO MEET BSL-2P AND USDA APHIS CONTAINMENT FACILITY GUIDELINES FOR FUNGAL PLANT PATHOGENS. INTERIOR PARTITIONS ALONG JUNCTURE BETWEEN HEADHOUSE WEST WALL AND UTILITY CHASEWAY SOUTH WALL TO BE OPAQUE PANELS TO MATCH THICKNESS OF 16 MM ACRYLIC GLAZING.
13.04 CONTINUOUS STRUCTURAL GUTTER BY GH MANUFACTURER ALONG GREENHOUSE SIDE WALLS INTERNALLY SLOPED TO DOWNSPOUT DIRECTED ONTO 5' LONG CONCRETE SPLASH BLOCK AT GRADE. SEE SPECIFICATION 13 34 13.13.
22.01 EMERGENCY SHOWER - COORDINATE WITH PLUMBING DRAWINGS AND SPECS.
22.02 REVERSE OSMOSIS TANK FOR AUTOCLAVE - COORDINATE WITH PLUMBING DRAWINGS.
22.04 SINK AT PESTICIDE STORAGE: STAINLESS STEEL HANDWASHING SINK - COORDINATE WITH PLUMBING DRAWINGS AND SPECS.
22.05 FLOOR DRAIN - COORDINATE WITH PLUMBING DRAWINGS AND SPECS.
22.06 SANITARY CONTAINMENT TANK WITH REMOVABLE LID MOUNTED FLUSH WITH CONCRETE FLOOR. COORDINATE WITH PLUMBING DRAWINGS AND SPECS.
23.01 MECHANICAL ROOFTOP UNIT MOUNTED ON CURBS - COORDINATE WITH MECHANICAL DRAWINGS AND SPECS.
23.02 EXHAUST HOOD ABOVE AUTOCLAVE - COORDINATE WITH MECHANICAL DRAWINGS AND SPECS.
26.01 ELECTRICAL PANEL - COORDINATE WITH ELECTRICAL DRAWINGS.
26.02 LIGHT FIXTURE, SEE ELECTRICAL DRAWINGS.
27.01 DATA CABINET - COORDINATE WITH TECHNOLOGY DRAWINGS.
27.02 SECURITY CABINET - COORDINATE WITH TECHNOLOGY DRAWINGS.
27.03 VOICE PATH PANEL - COORDINATE WITH TECHNOLOGY DRAWINGS.
27.04 GROUND BAR ASSEMBLIES - COORDINATE WITH TECHNOLOGY DRAWINGS.
28.01 SECURITY CREDENTIAL READER - COORDINATE WITH TECHNOLOGY DRAWINGS.
32.01 CONCRETE PAD TO GRADE MOUNTED MECHANICAL EQUIPMENT - COORDINATE WITH MECHANICAL AND CIVIL DRAWINGS.



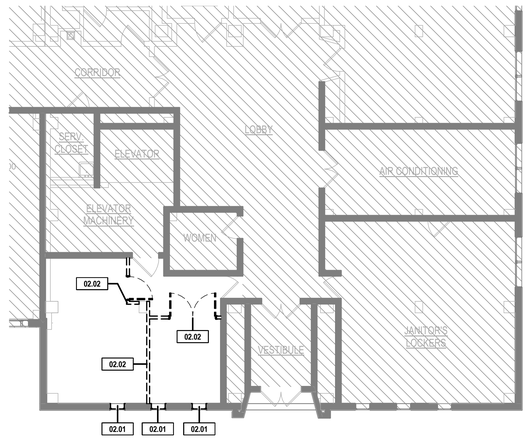
4 HEADHOUSE - GREENHOUSE ROOF PLAN
1/8" = 1'-0"



3 GROUND FLOOR AND HEADHOUSE - GREENHOUSE FLOOR PLAN
1/8" = 1'-0"



2 GROUND FLOOR AND HEADHOUSE - GREENHOUSE RCP
1/8" = 1'-0"



1 GROUND FLOOR DEMO PLAN
1/8" = 1'-0"

100% DESIGN SUBMITTAL:

NEW CONSTRUCTION	2,580 NSF
ALTERED EXIST. SPACE	410 NSF

PROGRAM SPACES

HEADHOUSE / STOR.	787 NSF
GREENHOUSE BAYS	1,196 NSF
SUPPORT / CIRC.	253 NSF
UTILITY CHASEWAY	344 NSF
MECH / ELEC	410 NSF

GROUND FLOOR KEY PLAN

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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STATE OF ILLINOIS — ROBIN E. WEITKAMP — 062-016525 — REGISTERED ARCHITECT — Expiration Date of Seal: 11-30-2026

BAILEY EDWARD DESIGN	**USDA**	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:		BUILDING PLANS
DESIGNER: WZ	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: MP	SAFETY & HEALTH:	TASK ORDER NO.:	DWG. NO. A101
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	NCAUR 1815 North University Street Peoria, Illinois 61604
			SHEET 20 OF 74

Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/USDA ARS NEW GREENHOUSE_Central_R23_wzhaoGVEVR.rvt
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EXTERIOR ENVELOPE NOTES

1. ALL EXTERIOR ENVELOPE COMPONENT R-VALUES AND ASSEMBLY U-VALUES SHALL COMPLY WITH 2024 IECC. SEE SHEET G300 FOR ENERGY CODE NOTES.
2. REFER TO SHEET G300 FOR ALL TYPICAL INFORMATION FOR EACH EXTERIOR WALL AND ROOF ASSEMBLY TYPE AS TAGGED ON THE PLANS AND DETAILS.
3. SEE KEYNOTE 07.10 AND DETAILS ON SHEET G300 AND A701 FOR PROTECTIVE FLASHING AT SLAB/FOUNDATION INSULATION.
   - A. ALL FLASHING SHALL BE 16 GAUGE STAINLESS STEEL TYPE 304 WITH 2D FINISH. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL.
   - B. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INCLUDING PLAN LAYOUTS, ELEVATIONS, AND DETAILS TO ASSURE COORD. WITH GRADING AND LANDSCAPING.
   - C. FLASHING SHALL COMPLY WITH REQUIREMENTS SIMILAR TO THOSE FOR PRE-MANUFACTURED METAL COPINGS:
     - a. LENGTHS OF STAINLESS STEEL SHALL NOT EXCEED 12'.
     - b. PROVIDE SPLICE PLATES AND CONCEALED ANCHORAGE.
     - c. PROVIDE PREMAUF. CORNER UNITS AT ALL OUTSIDE AND INSIDE CORNERS.
     - d. PROVIDE PREMANUF. UNITS WITH END CAPS AT EACH SIDE OF DOOR OPENINGS WHERE FLASHING IS INTERRUPTED.
4. FOR PREFINISHED PERFORATED CLOSURE PIECES AT FIBER CEMENT WALL ASSEMBLIES AT HEADHOUSE AND UTILITY CHASEWAY AS NOTED IN WALL SECTION DETAILS, PROVIDE THE FOLLOWING:
   - A. 3105-TYPE ALUMINUM SHEET ALUMINUM SHEET WITH A MIN. TENSILE STRENGTH OF 29,000 PSI OR EQUIVALENT AS REFERENCED IN AAMA 1482-86 (PARAGRAPH 3.2.3).
   - B. L-SHAPED PROFILE (WITH STIFFENERS AS REQUIRED) WITH ROUND PERFORATIONS.
   - C. CLEAR ANODIZED FINISH.

8 SOUTH ELEVATION AT GREENHOUSE / SECTION AT UTILITY CHASEWAY
1/8" = 1'-0"

4 SECTION THRU GREENHOUSE / HEADHOUSE LOOKING NORTH
1/8" = 1'-0"

7 WEST ELEVATION AT UTILITY CHASEWAY AND GREENHOUSE
1/8" = 1'-0"

3 SECTION THRU UTILITY CHASEWAY AND GREENHOUSE LOOKING EAST
1/8" = 1'-0"

3A WEST ELEVATION AT HEADHOUSE
1/8" = 1'-0"

SHEET KEYNOTES

03.03	CONCRETE INFILL AT DEMO'D WINDOW AT EXISTING BUILDING 1 EXTERIOR WALL TO PROVIDE 2-HOUR RATING PER CODE PLAN. PROVIDE SLEEVES FOR PIPING AND CONDUIT - COORDINATE WITH MEP AND STRUCTURAL FOR PENETRATIONS WHICH SHALL BE FIRE-STOPPED AS REQUIRED BY CODE. COORDINATE WITH PENETRATIONS AT NEW CMU FIRE WALL.
03.04	CONCRETE FOUNDATION WALL +1'-0" ABOVE SLAB ON GRADE AT GREENHOUSE, TYP. COORDINATE WITH STRUCTURAL DRAWINGS.
03.05	CONCRETE FOUNDATION WALL AT CONSTANT HEIGHT ABOVE SLOPING SLAB ON GRADE AT UTILITY CHASEWAY. COORDINATE WITH STRUCTURAL DRAWINGS.
03.06	CONCRETE SLAB ON GRADE FLOOR FINISH: WATER-BASED, ACRYLIC, CONCRETE CURING AND SEALING COMPOUND FOR FRESH CONCRETE. B.O.D. W.R. MEADOWS VOCOMP-30.
03.08	CONCRETE SPLASH BLOCK - 60" LONG X 16" WIDE X 4" HIGH. 5,000 PSI CONCRETE WITH #3 GRADE 60 REINFORCING.
04.01	MASONRY FIRE WALL AS NOTED ON CODE PLAN.
07.01	ROOF HATCH: THERMALLY BROKEN WITH SAFETY RAILS. B.O.D. BILCO S-50-TB. COORDINATE WITH FIXED LADDER AT HEADHOUSE INTERIOR.
07.02	EX-1 EXTERIOR WALL ASSEMBLY: FIBER CEMENT PANELS (B.O.D. SWISSPEARL CARAT 12 MM THICKNESS) ON THERMALLY BROKEN Z-CLIP SYSTEM WITH INVISIBLE FASTENERS. RAINSCREEN ASSEMBLY INCLUDES CONTINUOUS AIR AND WATER-RESISTIVE BARRIER AND CONTINUOUS INSULATION ON CMU AT HEADHOUSE.
07.03	EX-2 EXTERIOR WALL ASSEMBLY: FIBER CEMENT PANELS (B.O.D. SWISSPEARL CARAT 12 MM THICKNESS) ON THERMALLY BROKEN Z-CLIP SYSTEM WITH INVISIBLE FASTENERS. PANEL THICKNESS 12 MM. CONTINUOUS AIR AND WATER-RESISTIVE BARRIER AND CONTINUOUS INSULATION ON COLD-FORMED METAL FRAMING AT UTILITY CHASEWAY.
07.04	RF-1 TPO MEMBRANE ROOF ASSEMBLY: B.O.D. CARLISLE ROOF TPO MEMBRANE. ASSEMBLY INCLUDES 1/2" THICK GLASS-MAT BOARD SUBSTRATE OVER METAL JOISTS, VAPOR BARRIER, R-30 CONT. POLYISO ROOF INSULATION, GLASS-MAT COVER BOARD. NOTE: ROOF INSULATION CAN HAVE INTEGRAL COVER BOARD IN LIEU OF PROVIDING SEPARATE COVER BOARD.
07.05	RF-2 METAL ROOF ASSEMBLY: STANDING SEAM WITH COORDINATING COPING, GUTTERS, AND DOWNSPOUTS. B.O.D. PAC CLAD PAC-150 IN 18" SMOOTH PANEL WIDTHS WITH 1-1/2" HIGH SEAMS MECHANICALLY SEAMED TOGETHER @ 180 DEGREES. ROOF ASSEMBLY INCLUDES 1/2" THICK GLASS-MAT BOARD SUBSTRATE OVER METAL JOISTS, VAPOR BARRIER, R-30 CONT. NON-COMBUSTIBLE STONE WOOL ROOF INSULATION, AND NON-COMBUSTIBLE GLAS-MAT GYPSUM SUBSTRATE BOARD.
07.07	METAL SCUPPER/CONDUCTOR HEAD AND DOWNSPOUT - PREFINISHED ALUM. TO MATCH METAL COPING. COORD. OPENING FOR SCUPPER/CONDUCTOR HEAD WITH CMU AND FIBER CEMENT PANELS.
07.08	METAL GUTTER AND DOWNSPOUTS SYSTEM TO MATCH METAL ROOFING SYSTEM.
07.10	PROVIDE STAINLESS STEEL (SAE 304) PROTECTIVE FLASHING AT SLAB/FOUNDATION INSULATION AT HEADHOUSE AND UTILITY CHASEWAY AS DETAILED ON A7 SERIES DRAWINGS. PROVIDE FOUNDATION INSULATION PER CODE AROUND PERIMETER OF GREENHOUSE. INSULATION TO EXTEND UP TO TOP OF 1'-0" ABOVE GRADE FOUNDATION STEM WALL AND BE PROTECTED BY STAINLESS STEEL (SAE 304) PROTECTIVE FLASHING THAT WILL EXTEND BELOW GRADE, SIMILAR TO TYPICAL DETAIL AT HEADHOUSE AND UTILITY CHASEWAY FOUNDATION WALLS.
07.11	PROVIDE CONTINUOUS FLASHING SYSTEM AT ALL TRANSITION CONDITIONS BETWEEN GREENHOUSE EAST WALL AND HEADHOUSE WEST WALL/PARAPET.
08.01	EXTERIOR DOOR: INSULATED PAINTED HOLLOW METAL DOOR. EGRESS ONLY FROM UTILITY CHASEWAY.
08.02	EXTERIOR WINDOW: FIXED INSULATED LOW-E GLAZING UNIT IN PAINTED HOLLOW METAL FRAME.
08.03	EXTERIOR DOOR: INSULATED PAINTED HOLLOW METAL DOOR AT HEADHOUSE. PROVIDE WEATHER SEALS AS REQUIRED TO COMPLY WITH BSL-2P AND USDA APHIS CONTAINMENT REQUIREMENTS. SEE SCHEDULE AND SPECS.
09.01	DRYWALL AT INTERIOR OF UTILITY CHASE - B.O.D. USG ECOSMART MOLD TOUGH PANELS.
09.02	PAINT FINISH SYSTEM FOR DRYWALL AT UTILITY CHASEWAY.
09.03	PAINT FINISH SYSTEM FOR CMU AT HEADHOUSE AND FIREWALL AT UTILITY CHASEWAY.
09.04	PAINT FINISH SYSTEM FOR EXPOSED ROOF STRUCTURE AT HEADHOUSE.
09.05	PAINT FINISH SYSTEM FOR EXPOSED ROOF STRUCTURE AT UTILITY CHASEWAY.
09.07	3/8" FIBER CEMENT GAP AT NORTH AND SOUTH SIDE OF THE HEADHOUSE ONLY. SEE DETAIL 9/A700
10.01	FIRE EXTINGUISHER - SURFACE MOUNT TO WALL WITH COORDINATING CLIP SYSTEM. MOUNT PER ACCESSIBILITY STANDARDS.
13.01	GH-1 GREENHOUSE CONSTRUCTION TO MEET BSL-2P AND USDA APHIS CONTAINMENT FACILITY GUIDELINES FOR FUNGAL PLANT PATHOGENS. EXTERIOR ENVELOPE TO CONSIST OF 16 MM ACRYLIC GLAZING PANELS ON ALUMINUM MEMBERS SUPPORTED BY STRUCTURAL STEEL COLUMNS AND TRUSSES. GLAZING B.O.D. ACRYLITE® ALLTOP HIGH IMPACT UV TRANSMITTING FEATURES A NO DRIP COATING ON ALL INTERIOR SURFACES AND THE TOP EXTERIOR SURFACE.
13.02	GH-2 GREENHOUSE CONSTRUCTION TO MEET BSL-2P AND USDA APHIS CONTAINMENT FACILITY GUIDELINES FOR FUNGAL PLANT PATHOGENS. INTERIOR PARTITIONS TO CONSIST OF 16 MM ACRYLIC GLAZING PANELS ON ALUMINUM MEMBERS SUPPORTED BY STRUCTURAL STEEL COLUMNS.
13.03	GH-3 GREENHOUSE CONSTRUCTION TO MEET BSL-2P AND USDA APHIS CONTAINMENT FACILITY GUIDELINES FOR FUNGAL PLANT PATHOGENS. INTERIOR PARTITIONS ALONG JUNCTURE BETWEEN HEADHOUSE WEST WALL AND UTILITY CHASEWAY SOUTH WALL TO BE OPAQUE PANELS TO MATCH THICKNESS OF 16 MM ACRYLIC GLAZING.
22.01	EMERGENCY SHOWER - COORDINATE WITH PLUMBING DRAWINGS AND SPECS.
22.03	SINK AT HEADHOUSE: STAINLESS STEEL TRIPLE-BOWL SCULLERY SINK WITH INTEGRAL DRAINBOARDS - COORDINATE WITH PLUMBING DRAWINGS AND SPECS.
22.07	PERFORATED DRAIN PIPE AROUND PERIMETER OF BUILDING, STOOPS AND BELOW EXTERIOR SLABS AS RECOMMENDED BY GEOTECHNICAL ENGINEERING REPORT. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS. CONNECTED TO SITE DRAINAGE SYSTEM PER CIVIL DRAWINGS. SEE SECT. 2 ON G300 FOR TYPICAL REQUIREMENTS FOR CRUSHED GRAVEL/STONE AND FILTER FABRIC.
26.03	EXTERIOR WALL-MOUNTED LIGHT FIXTURE, SEE ELECTRICAL DRAWINGS. COORD. ANCHORAGE WITH GH MANUF. AS REQ'D.
28.01	SECURITY CREDENTIAL READER - COORDINATE WITH TECHNOLOGY DRAWINGS.

6 EAST ELEVATION AT HEADHOUSE AND UTILITY CHASEWAY
1/8" = 1'-0"

2 SECTION THRU HEADHOUSE LOOKING WEST
1/8" = 1'-0"

2A EAST ELEVATION AT UTILITY CHASEWAY
1/8" = 1'-0"

5 NORTH ELEVATION AT GREENHOUSE AND HEADHOUSE
1/8" = 1'-0"

1 SECTION THRU UTILITY CHASEWAY LOOKING NORTH
1/8" = 1'-0"

EXTERIOR FINISH PALETTE

SWISSPEARL FIBER CEMENT PANELS CARAT / IVORY 8090

KAWNEER 8400TL THERMAL WINDOWS

NOTE: PREFINISHED ALUM. STANDING SEAM METAL ROOF PANELS, COPINGS, GUTTERS, SCUPPERS AND DOWNSPOUTS AT NEW HEADHOUSE AND UTILITY CHASEWAY TO MATCH FIBER CEMENT COLOR

BID OPTION #1 FACE BRICK TO MATCH EXIST. BUILDING BRICK

FIBER CEMENT PANEL COLOR AT NEW HEADHOUSE TO COMPLIMENT PAINTED CAST-IN-PLACE CONCRETE WALL AT EXIST. BUILDING

MULLIONS AND SILLS AT NEW HEADHOUSE WINDOWS TO MATCH CLEAR ANODIZED FINISH AT EXIST. BUILDING

EXISTING BUILDING ENTRANCE

100% DESIGN SUBMITTAL:

NEW CONSTRUCTION	2,580 NSF
ALTERED EXIST. SPACE	410 NSF

PROGRAM SPACES

HEADHOUSE / STOR.	787 NSF
GREENHOUSE BAYS	1,196 NSF
SUPPORT / CIRC.	253 NSF
UTILITY CHASEWAY	344 NSF
MECH / ELEC	410 NSF

GROUND FLOOR KEY PLAN

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/27/26		100% DESIGN

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Expiration Date of Seal: 11-30-2026

BAILEY EDWARD DESIGN	USDA	USDA	Agricultural Research Service	
PROJECT MANAGER:	AOE:		EXTERIOR ELEVATIONS AND BUILDING SECTIONS	
DESIGNER: Designer	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE	
CHECKED BY: Checker	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604	DWG. NO. A400
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:		SHEET 21 OF 74

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ROOM FINISH SCHEDULE

Room Number	Room Name	Ceiling Finish	Wall Finish				Floor Finish	Base Finish	Comments
			North	South	East	West			
01	HEADHOUSE	EXPOSED PTD.	CMU PTD.	CMU PTD.	CMU PTD.	CMU PTD.	SEALED CONCRETE		EXPOSED STRUCTURAL CEILING ELEMENTS TO BE PAINTED.
02	PESTICIDE STOR.	EXPOSED PTD.	CMU PTD.	CMU PTD.	CMU PTD.	CMU PTD.	SEALED CONCRETE		
03	GH BAY 1	EXPOSED - BY GH MFG	BY GH MFG	CMU PTD.	CMU PTD.	CMU PTD.	SEALED CONCRETE		
04	GH BAY 2	EXPOSED - BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	SEALED CONCRETE		
05	GH CIRC.	EXPOSED - BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	SEALED CONCRETE		
06	UTILITY CHASEWAY	EXPOSED - PTD.	CMU PT.D	GYP. BD. PTD.	GYP. BD. PTD.	GYP. BD. PTD.	SEALED CONCRETE		
07	HH / GH MECHANICAL	EXISTING - PTD. AS REQ'D	EXIST. - PTD. AS REQ'D	EXIST. - PTD. AS REQ'D	EXIST. - PTD. AS REQ'D	EXIST. - PTD. AS REQ'D	EXIST. - SEAL AS REQ'D		

SHEET KEYNOTES

03.06 CONCRETE SLAB ON GRADE FLOOR FINISH: WATER-BASED, ACRYLIC, CONCRETE CURING AND SEALING COMPOUND FOR FRESH CONCRETE. B.O.D. W.R. MEADOWS VOCOMP-30.

05.01 FIXED LADDER: PRIMED STEEL TO BE FIELD PAINTED; OSHA COMPLIANT; PROVIDE RETRACTABLE SAFETY POST AT TOP OF LADDER; COORDINATE WITH ROOF HATCH AND SAFETY RAILINGS.

07.01 ROOF HATCH: THERMALLY BROKEN WITH SAFETY RAILS. B.O.D. BILCO S-50-TB. COORDINATE WITH FIXED LADDER AT HEADHOUSE INTERIOR.

07.11 PROVIDE CONTINUOUS FLASHING SYSTEM AT ALL TRANSITION CONDITIONS BETWEEN GREENHOUSE EAST WALL AND HEADHOUSE WEST WALL/PARAPET.

09.03 PAINT FINISH SYSTEM FOR CMU AT HEADHOUSE AND FIREWALL AT UTILITY CHASEWAY.

10.01 FIRE EXTINGUISHER - SURFACE MOUNT TO WALL WITH COORDINATING CLIP SYSTEM. MOUNT PER ACCESSIBILITY STANDARDS.

11.02 PESTICIDE STORAGE CABINET: B.O.D. JUSTRITE® 60 GAL. PESTICIDE STORAGE CABINET. CABINET COMPLIES WITH NFPA SPECIFICATIONS, OSHA REGULATIONS AND IS APPROVED BY THE FACTORY MUTUAL SYSTEM. DOUBLE WALL 18-GAUGE ALL-WELDED STEEL WITH 1-1/2" INSULATING AIR SPACE. INCLUDES A BUILT IN GROUNDING CONNECTOR. DUAL 2" VENTS CAN CONNECT TO AN EXHAUST SYSTEM. 2"D LEAK PROOF DOORSILL TO CONTAIN SPILLS. THE 350 LB GALVANIZED STEEL SHELVES ADJUST AT 3" INCREMENTS AND FEATURE A SPILLSLOPE DESIGN THAT DIRECTS SPILLS TO BACK AND BOTTOM OF SAFETY CABINET. DOORS HAVE FULL LENGTH PIANO HINGES. RECESSED PADDLE HANDLE WITH CYLINDER LOCK AND PADLOCKABLE LATCH FOR SECURITY. STAINLESS STEEL 3-POINT SELF-LATCHING SYSTEM PROVIDES POSITIVE DOOR LOCKING. INCLUDES ADJUSTABLE LEVELING FEET FOR UNEVEN FLOORS. DURABLE POWDER COAT FINISH WITH HAZ-ALERT TRILINGUAL REFLECTIVE WARNING LABEL PROVIDES HIGH VISIBILITY. 10 YEAR LIMITED WARRANTY.

12.01 BUILT-IN POWDER COATED METAL STORAGE CABINETS WITH ADJUSTABLE SHELVING.

12.02 STAINLESS STEEL COUNTER WITH INTEGRAL BACKSPLASH - PROVIDE S.S. WALL BRACKET SUPPORTS AND SUPPORT LEGS AS REQUIRED.

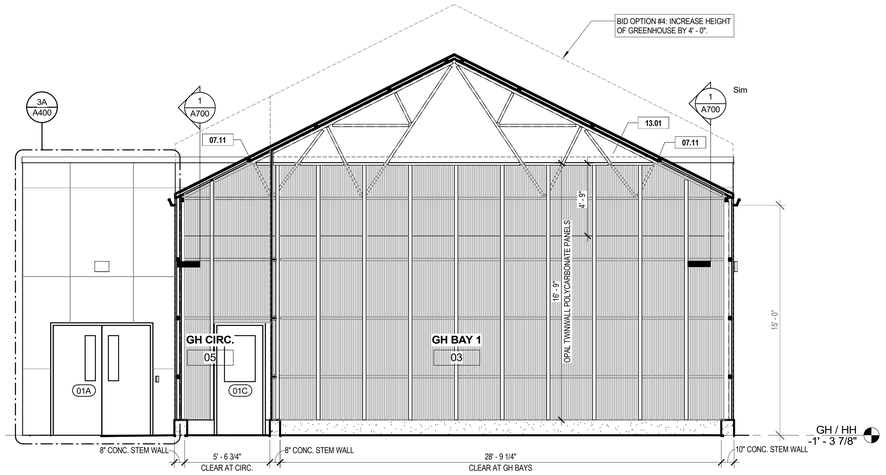
13.01 GH-1 GREENHOUSE CONSTRUCTION TO MEET BSL-2P AND USDA APHIS CONTAINMENT FACILITY GUIDELINES FOR FUNGAL PLANT PATHOGENS. EXTERIOR ENVELOPE TO CONSIST OF 16 MM ACRYLIC GLAZING PANELS ON ALUMINUM MEMBERS SUPPORTED BY STRUCTURAL STEEL COLUMNS AND TRUSSES.
GLAZING B.O.D. ACRYLITE® ALLTOP HIGH IMPACT UV TRANSMITTING FEATURES A NO DRIP COATING ON ALL INTERIOR SURFACES AND THE TOP EXTERIOR SURFACE.

22.01 EMERGENCY SHOWER - COORDINATE WITH PLUMBING DRAWINGS AND SPECS.

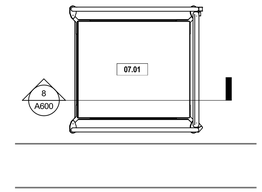
22.02 REVERSE OSMOSIS TANK FOR AUTOCLAVE - COORDINATE WITH PLUMBING DRAWINGS.

22.03 SINK AT HEADHOUSE: STAINLESS STEEL TRIPLE-BOWL SCULLERY SINK WITH INTEGRAL DRAINBOARDS - COORDINATE WITH PLUMBING DRAWINGS AND SPECS.

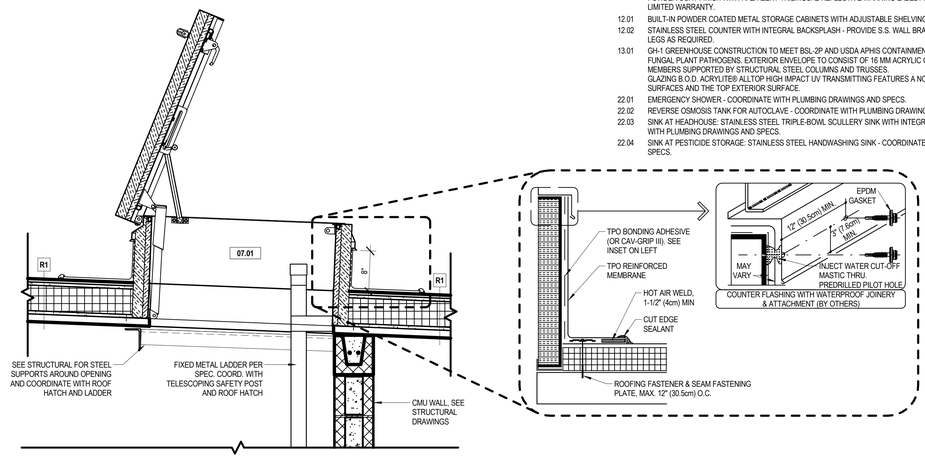
22.04 SINK AT PESTICIDE STORAGE: STAINLESS STEEL HANDWASHING SINK - COORDINATE WITH PLUMBING DRAWINGS AND SPECS.



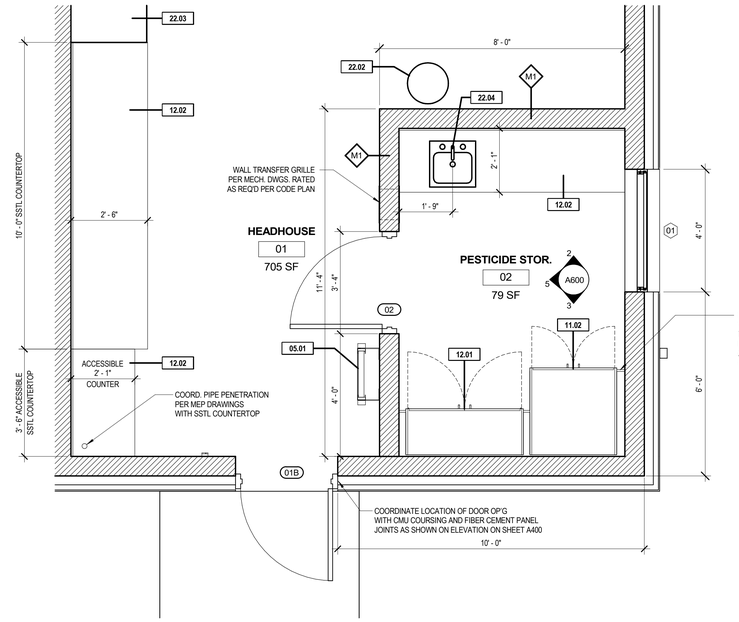
7 INTERIOR ELEV. BAY 1
1/4" = 1'-0"



6 ENLARGED PLAN - ROOF HATCH
1/2" = 1'-0"

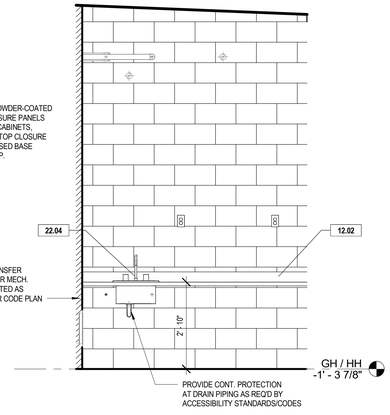


8 SECTION THROUGH ROOF HATCH
1" = 1'-0"

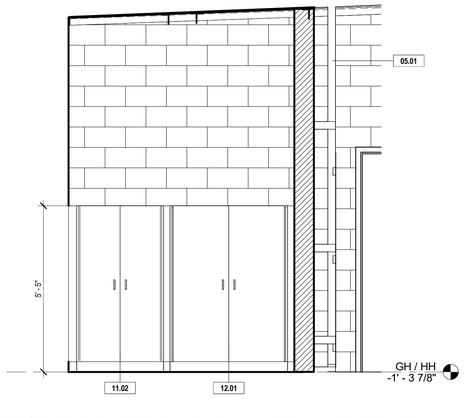


1 ENARGED PLAN - PESTICIDE STOR.
1/2" = 1'-0"

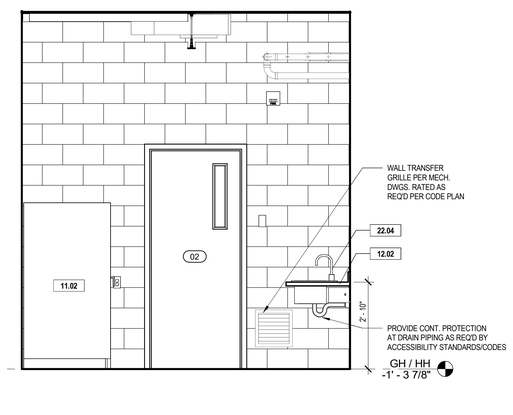
0 1' 2' 4'



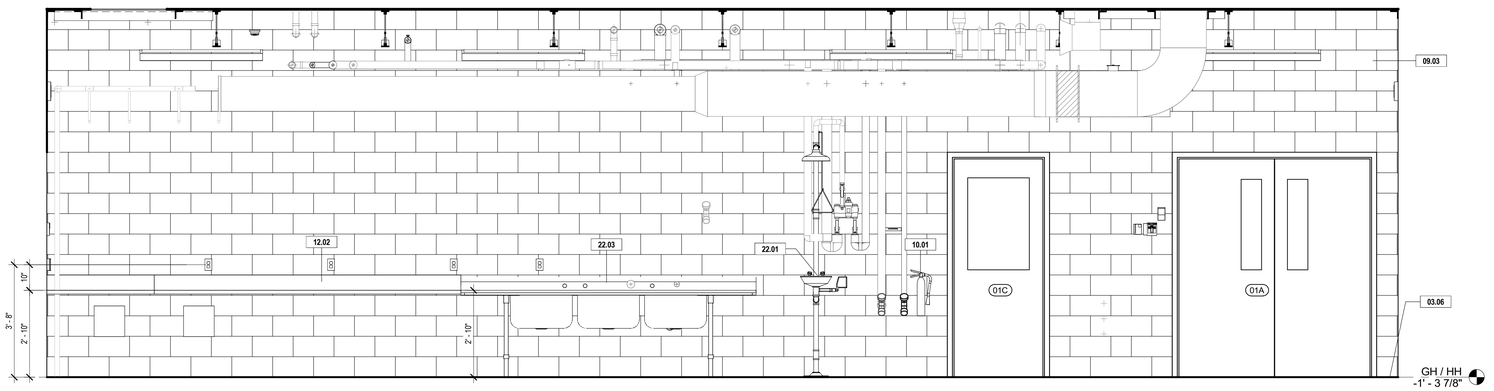
2 PESTICIDE STOR. ELEV. LOOKING NORTH
1/2" = 1'-0"



3 PESTICIDE STOR. ELEV. LOOKING SOUTH
1/2" = 1'-0"



5 PESTICIDE STOR. ELEV. LOOKING WEST
1/2" = 1'-0"



4 HEADHOUSE ELEVATION LOOKING WEST
1/2" = 1'-0"

100% DESIGN SUBMITTAL:

NEW CONSTRUCTION	2,580 NSF
ALTERED EXIST. SPACE	410 NSF

PROGRAM SPACES

HEADHOUSE / STOR.	787 NSF
GREENHOUSE BAYS	1,196 NSF
SUPPORT / CIRC.	253 NSF
UTILITY CHASEWAY	344 NSF
MECH / ELEC	410 NSF

GROUND FLOOR KEY PLAN

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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t 312.440.2300
f 312.440.2303
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35 East Wacker Dr
Suite 2800
Chicago, IL
60601-2308

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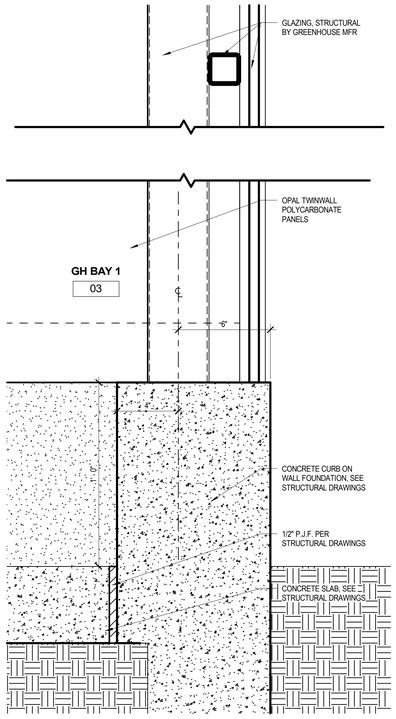
ROBIN E. WHITEHOUSE 401-016585 REGISTERED ARCHITECT
STATE OF ILLINOIS
Expiration Date of Seal: 11-30-2026

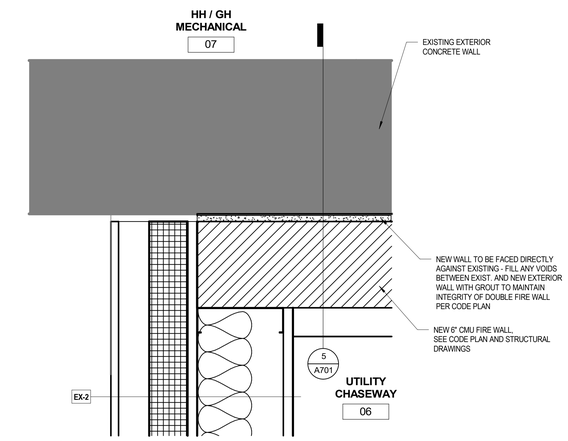
BAILEY EDWARD DESIGN	USDA	USDA Agricultural Research Service	
PROJECT MANAGER:	AOE:	PLANS, ELEVATIONS, AND ROOM FINISH SCHEDULE	
DESIGNER: Designer	EPM:	USDA PEORIA - HEADHOUSE & GREENHOUSE	
CHECKED BY: Checker	SAFETY & HEALTH:	TASK ORDER NO.:	DWG. NO. A600
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	SHEET 22 OF 74

NCAUR
1815 North University Street
Peoria, Illinois 61604

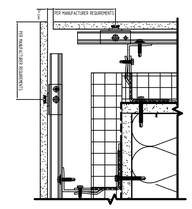
Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/USDA ARS NEW GREENHOUSE_Central_R23_wzhaoGVEVR.rvt
1/23/2026 8:26:57 PM



2 A700|A700 SECTION - GH CORNER
3" = 1'-0"



8 A101|A700 CHASEWAY PLAN DETAIL AT EXIST. BLDG.
3" = 1'-0"



NOTE:

3/8" FIBER CEMENT GAP AT NORTH AND SOUTH SIDE OF THE HEADHOUSE ONLY. SEE ELEVATION IN SHEET G400

9 FIBER CEMENT - OUTER CORNER
3" = 1'-0"

EXTERIOR ENVELOPE NOTES

1. ALL EXTERIOR ENVELOPE COMPONENT R-VALUES AND ASSEMBLY U-VALUES SHALL COMPLY WITH 2024 IECC. SEE SHEET G300 FOR ENERGY CODE NOTES.
2. REFER TO SHEET G300 FOR ALL TYPICAL INFORMATION FOR EACH EXTERIOR WALL AND ROOF ASSEMBLY TYPE AS TAGGED ON THE PLANS AND DETAILS.
3. SEE KEYNOTE 07.10 AND DETAILS ON SHEET G300 AND A701 FOR PROTECTIVE FLASHING AT SLAB/FOUNDATION INSULATION.
   A. ALL FLASHING SHALL BE 16 GAUGE STAINLESS STEEL TYPE 304 WITH 2D FINISH. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL.
   B. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INCLUDING PLAN LAYOUTS, ELEVATIONS, AND DETAILS TO ASSURE COORD. WITH GRADING AND LANDSCAPING.
   C. FLASHING SHALL COMPLY WITH REQUIREMENTS SIMILAR TO THOSE FOR PRE-MANUFACTURED METAL COPINGS:
      a. LENGTHS OF STAINLESS STEEL SHALL NOT EXCEED 12'.
      b. PROVIDE SPLICE PLATES AND CONCEALED ANCHORAGE.
      c. PROVIDE PREMAUF. CORNER UNITS AT ALL OUTSIDE AND INSIDE CORNERS.
      d. PROVIDE PREMANUF. UNITS WITH END CAPS AT EACH SIDE OF DOOR OPENINGS WHERE FLASHING IS INTERRUPTED.
4. FOR PREFINISHED PERFORATED CLOSURE PIECES AT FIBER CEMENT WALL ASSEMBLIES AT HEADHOUSE AND UTILITY CHASEWAY AS NOTED IN WALL SECTION DETAILS, PROVIDE THE FOLLOWING:
   A. 3105-TYPE ALUMINUM SHEET ALUMINUM SHEET WITH A MIN. TENSILE STRENGTH OF 29,000 PSI OR EQUIVALENT AS REFERENCED IN AAMA 1402-86 (PARAGRAPH 3.2.3).
   B. L-SHAPED PROFILE (WITH STIFFENERS AS REQUIRED) WITH ROUND PERFORATIONS.
   C. CLEAR ANODIZED FINISH.

ENERGY CODE INFORMATION

THE NEW HEADHOUSE, UTILITY CHASEWAY, AND GREENHOUSE COMPLIES WITH CHAPTER [CE]4 OF THE 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC).

REQUIREMENTS FOR HEADHOUSE AND UTILITY CHASEWAY:

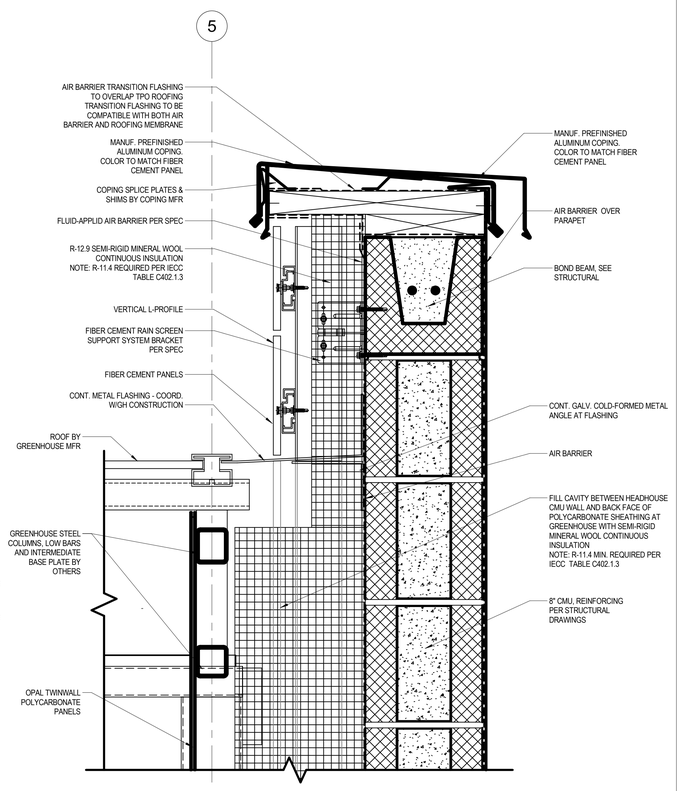
OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS PER IECC TABLE C402.1.3 FOR CLIMATE ZONE 5:
- INSULATION ENTIRELY ABOVE ROOF DECK: R-30 (CONT. INSUL.)
- MASS WALL (CMU WALL IS CONSIDERED ABOVE GRADE MASS WALL): R-11.4
- METAL FRAMED WALLS ABOVE GRADE: R-13 (CAVITY) + R-10 (CONT. INSUL.)
- SLAB-ON-GRADE (UNHEATED): R-15 (CONT. INSUL.) FOR 24" BELOW GRADE

BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SHGC REQUIREMENTS PER IECC TABLE C402.5 FOR CLIMATE ZONE 5:
- FIXED FENESTRATION: U-0.34
- ENTRANCE DOORS: U-0.63
- MAXIMUM SHGC (SOLAR HEAT GAIN COEFFICIENT)
  - PF (PROJECTION FACTOR) < 0.2: SHGC 0.38
  - PF (PROJECTION FACTOR) >= 0.2 AND < 0.5: SHGC 0.46
  - PF (PROJECTION FACTOR) >= 0.5: SHGC 0.61

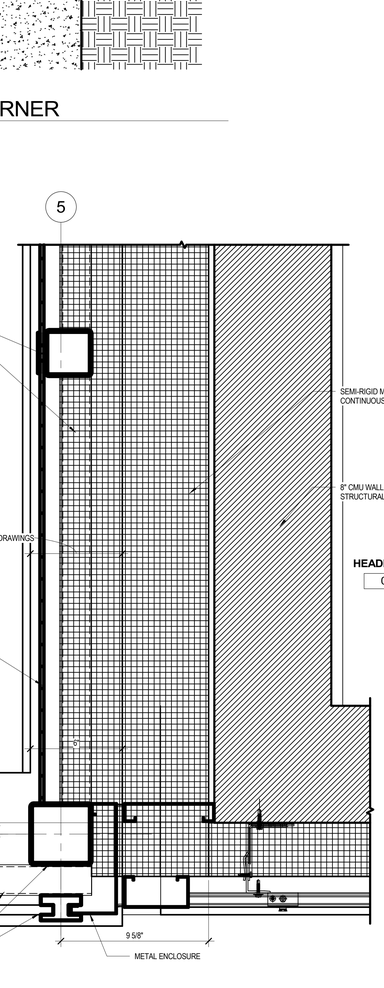
REQUIREMENTS FOR GREENOUSE:

GREENHOUSE SHALL BE EXEMPT FROM BUILDING THERMAL ENVELOPE REQUIREMENTS PER SECTION C402.1.1.2.

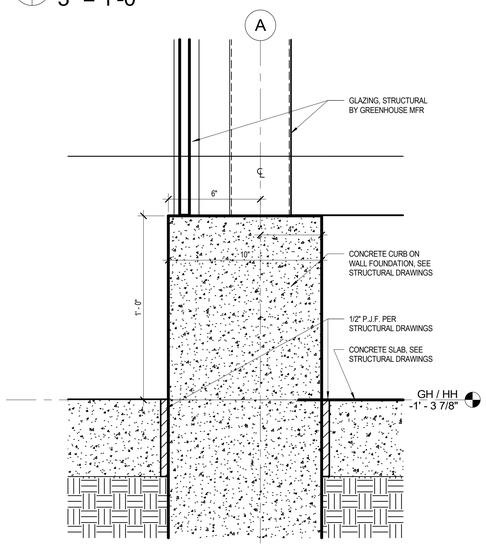
HEADHOUSE AND UTILITY CHASEWAY THERMAL ENVELOPE ASSEMBLIES THAT SEPARATE THE GREENHOUSE FROM CONDITIONED SPACE SHALL COMPLY WITH SECTIONS C402.2 (INSULATION), C402.5.3 (FENESTRATION), AND C402.5.5 (DOORS).



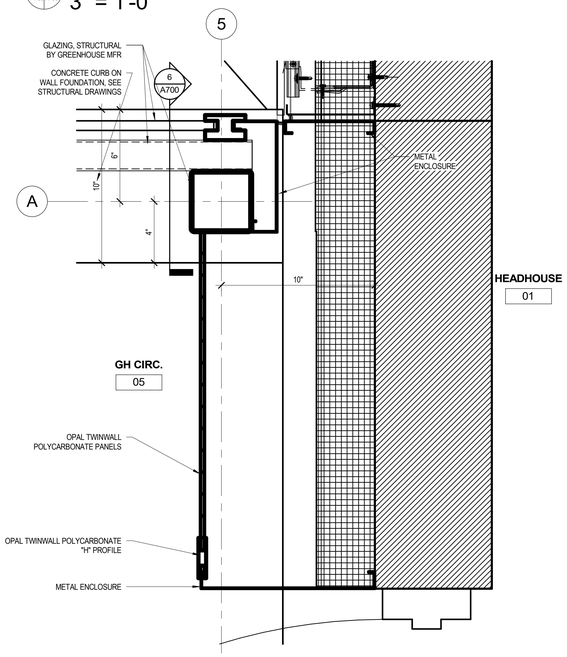
1 A600|A700 GH CIRCULATION AND EXTERIOR SECTION
3" = 1'-0"



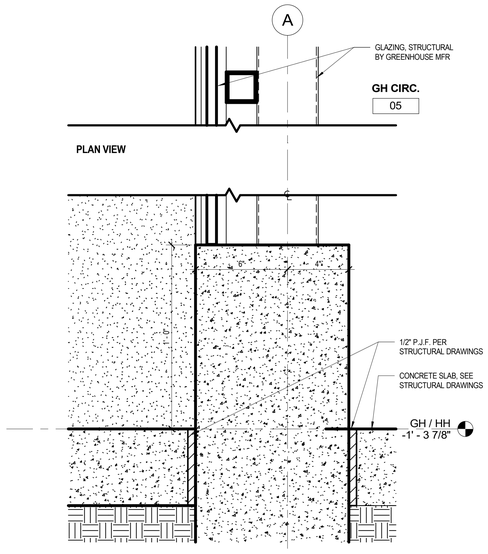
3 A101|A700 GH / HH JUNCTURE PLAN DETAIL
3" = 1'-0"



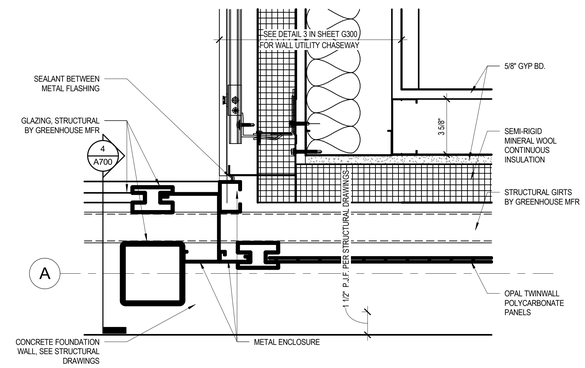
6 A700|A700 GH CIRCULATION SECTION DETAIL JOINT
3" = 1'-0"



7 A101|A700 GH CIRCULATION / HEADHOUSE PLAN DETAIL
3" = 1'-0"



4 A700|A700 GH / CHASEWAY SECTION DETAIL
3" = 1'-0"



5 A101|A700 GH CIRCULATION /CHASEWAY PLAN DETAIL
3" = 1'-0"

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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www.baileyedward.com
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ROBIN E. MARTIN
REGISTERED
#001-016585
LICENSED ARCHITECT
Expiration Date of Seal: 11-30-2026

BAILEY EDWARD DESIGN	USDA	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:		SECTION AND PLAN DETAILS
DESIGNER: Designer	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: Checker	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	DWG. NO. A700
			SHEET 23 OF 74

Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/USDA ARS NEW GREENHOUSE_Central_R23_wzhaoGVEVR.rvt
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ENERGY CODE INFORMATION

THE NEW HEADHOUSE, UTILITY CHASEWAY, AND GREENHOUSE COMPLIES WITH CHAPTER [CE]4 OF THE 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC).

REQUIREMENTS FOR HEADHOUSE AND UTILITY CHASEWAY:

OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS PER IECC TABLE C402.1.3 FOR CLIMATE ZONE 5:

- INSULATION ENTIRELY ABOVE ROOF DECK: R-30 (CONT. INSUL.)
- MASS WALL (CMU WALL IS CONSIDERED ABOVE GRADE MASS WALL): R-11.4
- METAL FRAMED WALLS ABOVE GRADE: R-13 (CAVITY) + R-10 (CONT. INSUL.)
- SLAB-ON-GRADE (UNHEATED): R-15 (CONT. INSUL.) FOR 24" BELOW GRADE

BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SHGC REQUIREMENTS PER IECC TABLE C402.5 FOR CLIMATE ZONE 5:

- FIXED FENESTRATION: U-0.34
- ENTRANCE DOORS: U-0.63
- MAXIMUM SHGC (SOLAR HEAT GAIN COEFFICIENT)
  - PF (PROJECTION FACTOR) < 0.2: SHGC 0.38
  - PF (PROJECTION FACTOR) >= 0.2 AND < 0.5: SHGC 0.46
  - PF (PROJECTION FACTOR) >= 0.5: SHGC 0.61

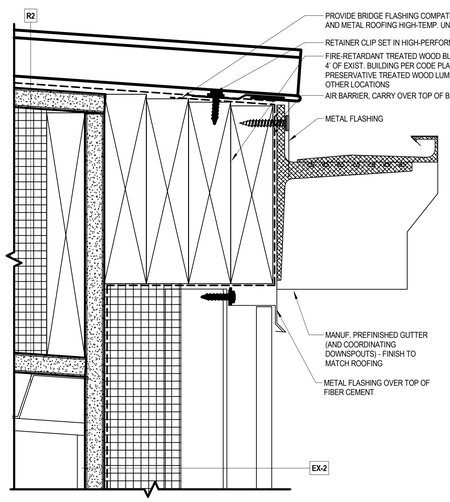
REQUIREMENTS FOR GREENOUSE:

GREENHOUSE SHALL BE EXEMPT FROM BUILDING THERMAL ENVELOPE REQUIREMENTS PER SECTION C402.1.1.2.

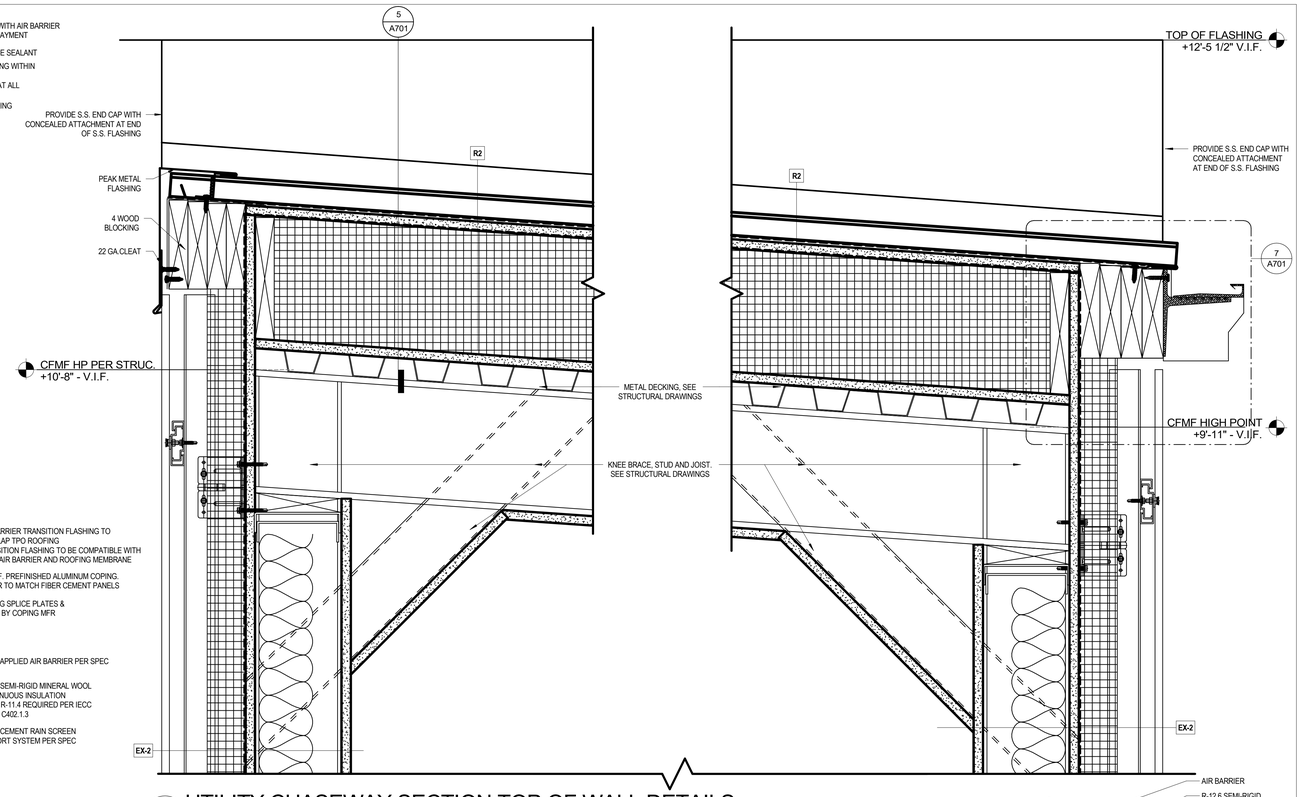
HEADHOUSE AND UTILITY CHASEWAY THERMAL ENVELOPE ASSEMBLIES THAT SEPARATE THE GREENHOUSE FROM CONDITIONED SPACE SHALL COMPLY WITH SECTIONS C402.2 (INSULATION), C402.5.3 (FENESTRATION), AND C402.5.5 (DOORS).

EXTERIOR ENVELOPE NOTES

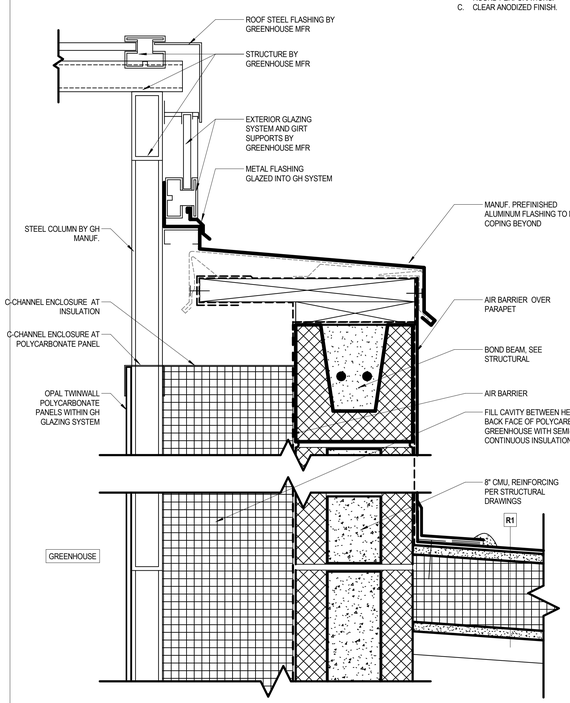
1. ALL EXTERIOR ENVELOPE COMPONENT R-VALUES AND ASSEMBLY U-VALUES SHALL COMPLY WITH 2024 IECC. SEE SHEET G300 FOR ENERGY CODE NOTES.
2. REFER TO SHEET G300 FOR ALL TYPICAL INFORMATION FOR EACH EXTERIOR WALL AND ROOF ASSEMBLY TYPE AS TAGGED ON THE PLANS AND DETAILS.
3. SEE KEYNOTE 07 10 AND DETAILS ON SHEET G300 AND A701 FOR PROTECTIVE FLASHING AT SLAB/FOUNDATION INSULATION.
   A. ALL FLASHING SHALL BE 16 GAUGE STAINLESS STEEL TYPE 304 WITH 2D FINISH. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL.
   B. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INCLUDING PLAN LAYOUTS, ELEVATIONS, AND DETAILS TO ASSURE COORD. WITH GRADING AND LANDSCAPING.
   C. FLASHING SHALL COMPLY WITH REQUIREMENTS SIMILAR TO THOSE FOR PRE-MANUFACTURED METAL COPINGS:
      a. LENGTHS OF STAINLESS STEEL SHALL NOT EXCEED 12'.
      b. PROVIDE SPLICE PLATES AND CONCEALED ANCHORAGE.
      c. PROVIDE PREMAUF. CORNER UNITS AT ALL OUTSIDE AND INSIDE CORNERS.
      d. PROVIDE PREMANUF. UNITS WITH END CAPS AT EACH SIDE OF DOOR OPENINGS WHERE FLASHING IS INTERRUPTED.
4. FOR PREFINISHED PERFORATED CLOSURE PIECES AT FIBER CEMENT WALL ASSEMBLIES AT HEADHOUSE AND UTILITY CHASEWAY AS NOTED IN WALL SECTION DETAILS, PROVIDE THE FOLLOWING:
   A. 3105-TYPE ALUMINUM SHEET ALUMINUM SHEET WITH A MIN. TENSILE STRENGTH OF 29,000 PSI OR EQUIVALENT AS REFERENCED IN AAMA 1482-86 (PARAGRAPH 3.2.3).
   B. L-SHAPED PROFILE (WITH STIFFENERS AS REQUIRED) WITH ROUND PERFORATIONS.
   C. CLEAR ANODIZED FINISH.



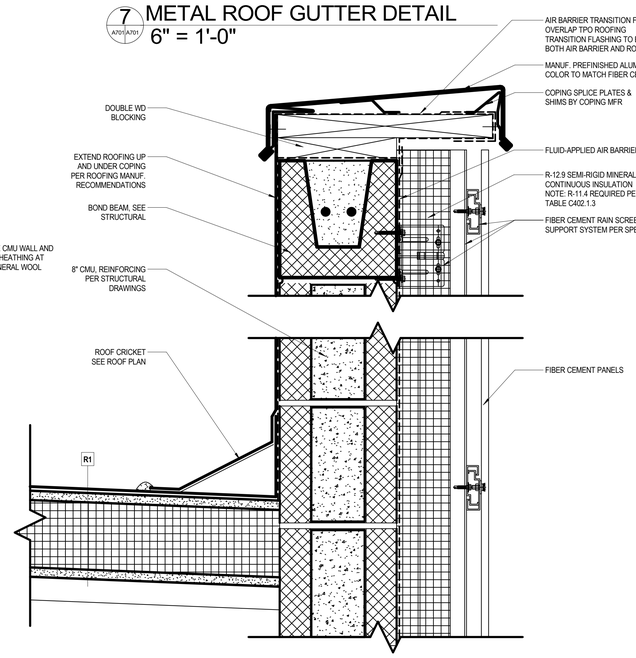
7 A701 A701 — METAL ROOF GUTTER DETAIL
6" = 1'-0"



6 A701 — UTILITY CHASEWAY SECTION TOP OF WALL DETAILS
3" = 1'-0"



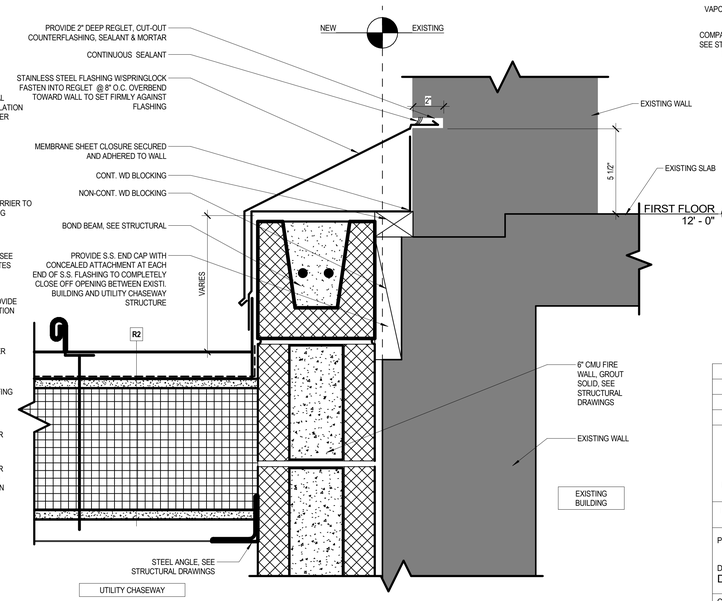
3 G300 A701 — GH / HH TOP OF WALL TRANSITION DETAIL
3" = 1'-0"



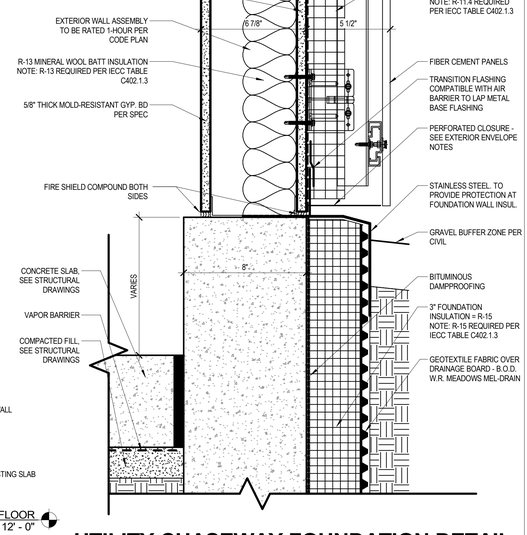
4 G300 A701 — EX-1 HEADHOUSE TOP OF WALL DETAIL
3" = 1'-0"

1 G300 A701 — GH / HH FOUNDATION TRANSITION DETAIL
3" = 1'-0"

2 G300 A701 — EX-1 HEADHOUSE FOUNDATION DETAIL
3" = 1'-0"



5 A705 A701 — UTILITY CHASEWAY SECTION THROUGH NEW AND EX. WALL
3" = 1'-0"



8 — UTILITY CHASEWAY FOUNDATION DETAIL
3" = 1'-0"

NO.	DATE	BY	DESCRIPTION
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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f 312.440.2303
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60601-2306

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BAILEY EDWARD DESIGN	USDA		
PROJECT MANAGER:	AOE:		
DESIGNER: Designer	EPM:		
CHECKED BY: Checker	SAFETY & HEALTH:	TASK ORDER NO.:	
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	

USDA — Agricultural Research Service

WALL SECTION DETAILS

USDA PEORIA - HEADHOUSE & GREENHOUSE

NCAUR
1815 North University Street
Peoria, Illinois 61604

DWG. NO. A701

SHEET 24 OF 74

Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/USDA ARS NEW GREENHOUSE_Central_R23_wzhaoGVEVR.rvt
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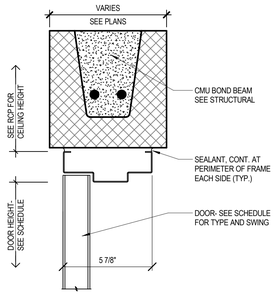
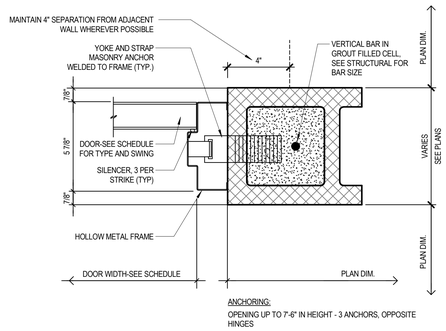


10 INT HM DOOR HEAD AT HEADHOUSE
3" = 1'-0"



11 INT HM DOOR JAMB AT HEADHOUSE
3" = 1'-0"

EXTERIOR ENVELOPE NOTES

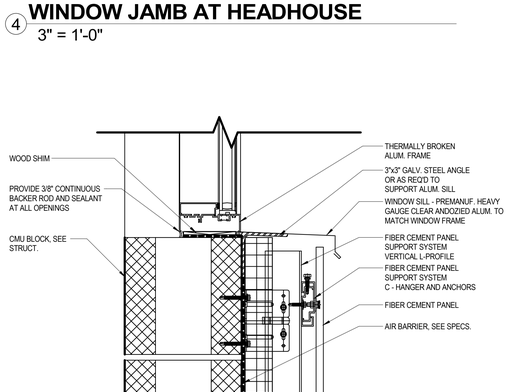
1. ALL EXTERIOR ENVELOPE COMPONENT R-VALUES AND ASSEMBLY U-VALUES SHALL COMPLY WITH 2024 IECC. SEE SHEET G300 FOR ENERGY CODE NOTES.
2. REFER TO SHEET G300 FOR ALL TYPICAL INFORMATION FOR EACH EXTERIOR WALL AND ROOF ASSEMBLY TYPE AS TAGGED ON THE PLANS AND DETAILS.
3. SEE KEYNOTE 07 10 AND DETAILS ON SHEET G300 AND A701 FOR PROTECTIVE FLASHING AT SLAB/FOUNDATION INSULATION.
   - A. ALL FLASHING SHALL BE 16 GAUGE STAINLESS STEEL TYPE 304 WITH 2D FINISH. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL.
   - B. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INCLUDING PLAN LAYOUTS, ELEVATIONS, AND DETAILS TO ASSURE COORD. WITH GRADING AND LANDSCAPING.
   - C. FLASHING SHALL COMPLY WITH REQUIREMENTS SIMILAR TO THOSE FOR PRE-MANUFACTURED METAL COPINGS:
     a. LENGTHS OF STAINLESS STEEL SHALL NOT EXCEED 12'.
     b. PROVIDE SPLICE PLATES AND CONCEALED ANCHORAGE.
     c. PROVIDE PREMAUF. CORNER UNITS AT ALL OUTSIDE AND INSIDE CORNERS.
     d. PROVIDE PREMANUF. UNITS WITH END CAPS AT EACH SIDE OF DOOR OPENINGS WHERE FLASHING IS INTERRUPTED.
4. FOR PREFINISHED PERFORATED CLOSURE PIECES AT FIBER CEMENT WALL ASSEMBLIES AT HEADHOUSE AND UTILITY CHASEWAY AS NOTED IN WALL SECTION DETAILS, PROVIDE THE FOLLOWING:
   - A. 3105-TYPE ALUMINUM SHEET ALUMINUM SHEET WITH A MIN. TENSILE STRENGTH OF 29,000 PSI OR EQUIVALENT AS REFERENCED IN AAMA 1482-86 (PARAGRAPH 3.2.3).
   - B. L-SHAPED PROFILE (WITH STIFFENERS AS REQUIRED) WITH ROUND PERFORATIONS.
   - C. CLEAR ANODIZED FINISH.

DOOR SCHEDULE

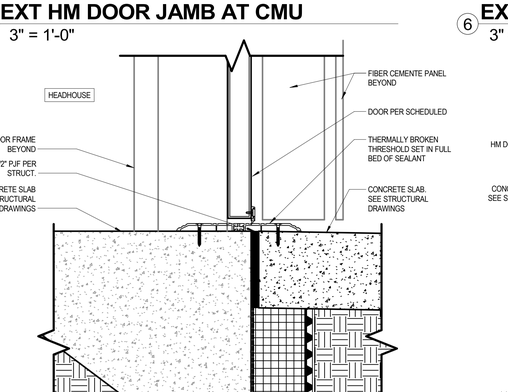
Room Number	Room Name	Door Number	Door Width	Door Height	Door Thickness	Door Type	Door Material	Door Finish	Frame Type	Frame Material	Frame Finish	Details Head	Details Jamb	Hardware Set	Fire Rating	Comments
01	HEADHOUSE	01A	6' - 4"	7' - 2"	1 3/4"	D	HM	PT	1	HM	PT	8	5	1		SEE NOTE 4; SEE NOTE 5; COORD. ACCESS CONTROL WITH TECH. DRAWINGS
01	HEADHOUSE	01B	3' - 0"	7' - 2"	1 3/4"	C	HM	PT	1	HM	PT	8	5	2		SEE NOTE 4; EXIT ONLY WITH LOCAL ALARM
01	HEADHOUSE	01C	3' - 0"	7' - 2"	1 3/4"	E	HM	PT	1	HM	PT	8 (SIM)	5 (SIM)	3		SEE NOTE 4
01	HEADHOUSE	02	3' - 0"	7' - 2"	1 3/4"	C	HM	PT	1	HM	PT	10	11	4	45 MIN.	
03	GH BAY 1	03	3' - 0"	7' - 0"	1 3/4"	B	AL	CLEAR ANOD.	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	5 - BY GH MFG		SEE NOTE 1
04	GH BAY 2	04	3' - 0"	7' - 0"	1 3/4"	B	AL	CLEAR ANOD.	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	6 - BY GH MFG		SEE NOTE 1
05	GH CIRC.	05A	3' - 0"	7' - 0"	1 3/4"	B	AL	CLEAR ANOD.	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	7 - BY GH MFG		SEE NOTE 1; COORD. ACCESS CONTROL WITH TECH. DRAWINGS; LOCAL ALARM WITH CARD ACCESS OVERRIDE
05	GH CIRC.	05B	3' - 0"	7' - 0"	1 3/4"	B	AL	CLEAR ANOD.	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	BY GH MFG	8 - BY GH MFG		SEE NOTE 1; PROVIDE PLACARD/SIGNAGE ON DOOR STILE ABOVE LEVER HANDLE. "FOR MAINTENANCE STAFF ONLY"
06	UTILITY CHASEWAY	06	3' - 0"	7' - 0"	1 3/4"	A	HM	PT	1	HM	PT	9	6	9	45 MIN.	SEE NOTE 3

WINDOW SCHEDULE

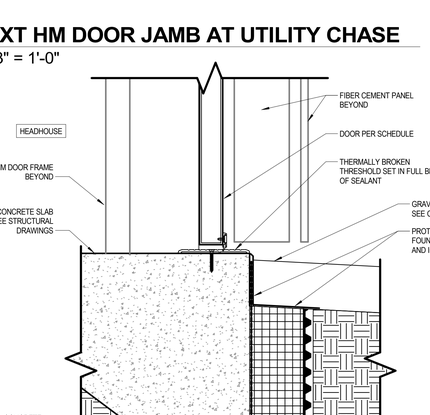
Mark	R.O. Width	R.O. Height	Operation	Type	Material	Finish	Head	Jamb	Sill	Glazing Thickness	Glazing Type	Head Height	Comments
01	4' - 0"	6' - 0"	Window-Fixed_Kawneer_8410TL-01_21020	8400TL ISOLOCK® Window	ALUM.	CLEAR ANODIZED	7	4	1	1"	IGU	9' - 0"	Kawneer window is Basis of Design
02	4' - 0"	6' - 0"	Window-Fixed_Kawneer_8410TL-01_21020	8400TL ISOLOCK® Window	ALUM.	CLEAR ANODIZED	7	4	1	1"	IGU	9' - 0"	Kawneer window is Basis of Design



7 WINDOW HEAD AT HEADHOUSE
3" = 1'-0"



8 EXT HM DOOR HEAD AT HEADHOUSE
3" = 1'-0"



9 EXT HM DOOR HEAD AT UTILITY CHASE
3" = 1'-0"

DOOR ABBREVIATIONS

AL - ALUMINUM
HM - HOLLOW METAL
AN - ANODIZED
PT - PAINT
EX - EXISTING

BY MFG - BY MANUFACTURER

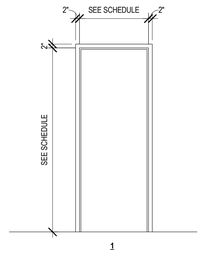
DOOR SCHEDULE NOTES

1. FOR DOORS BY GREENHOUSE MANUFACTURER:
   - A. PROVIDE GASKETING ALL AROUND TO COMPLY WITH BSL-2P (ALSO REFERRED TO AS BLS-P WHCIH IS BIO-SAFETY LEVEL 2 FOR PLANTS) AND PROJECT CONTAINMENT REQUIREMENTS.
   - B. HARDWARE SHALL INCLUDE:
     a. STAINLESS STEEL HINGES AND NON REMOVABLE PINS.
     b. LEVER HANDLE LOCKSET WITH KEY UNLOCKING OUTSIDE AND PUSH BUTTON LOCKING INSIDE.
     c. THERMALLY BROKEN ALUMINUM THRESHOLD AND DOOR SWEEPS.
2. NOT USED.
3. DOOR 06 AT NORTH END OF UTILITY CHASEWAY FOR EMERGENCY EGRESS ONLY. NO HARDWARE AT EXTERIOR SIDE OF DOOR.
4. ALL DOORS AT HEADHOUSE SHALL HAVE THERMALLY BROKEN THRESHOLDS, DOOR SWEEPS, WEATHER SEALS/GASKETS AROUND PERIMETER, AND 34" HIGH STAINLESS STEEL KICK PLATES ON THE PUSH SIDE OF THE DOORS.
5. DOUBLE DOORS AT HEADHOUSE TO HAVE ONE FIXED LEAF WITH MANUAL FLUSHBOLTS. PROVIDE ASTRAGALS WITH SILICONE GASKETS.
6. PRIOR TO PROJECT ACCEPTANCE, ENSURE ALL DOOR HARDWARE IS FUNCTIONING WITH FULLY BALANCED VENTILATION SYSTEM. FOR DOOR CLOSERS, ADJUST SWEEP PERIOD TO COMPLY WITH ACCESSIBILITY REQUIREMENTS AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.

CODE NOTES:

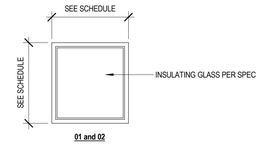
1. ICC / ANSI A117.1 SECTION 404.2.2 CLEAR WIDTH: DOORWAYS SHALL HAVE A CLEAR OPENING OF 32 INCHES MINIMUM. CLEAR OPENING WIDTH OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF DOOR AND STOP, WITH THE DOOR OPEN 90 DEGREES.
2. IAC 404.2.9 DOOR AND GATE OPENING FORCE: INTERIOR HINGED DOORS AND GATES – 5 POUNDS (22.2 N) MAXIMUM.
3. IAC 404.2.10 DOOR AND GATE SURFACES: SWINGING DOOR AND GATE SURFACES WITHIN 10 INCHES OF THE FINISH FLOOR OR GROUND MEASURED VERTICALLY SHALL HAVE A SMOOTH SURFACE ON THE PUSHSIDE EXTENDING THE FULL WIDTH OF THE DOOR OR GATE.
4. ALL GLAZING IN FIRE-RATED DOORS SHALL COMPLY WITH IBC SECTION 716 OPENING PROTECTIVES.
5. ALL TEMPERED SAFETY GLAZING SHALL COMPLY WITH IBC CHAPTER 24.
6. COORDINATE ALL RATED DOORS WITH G500 CODE PLAN.

DOOR TYPES



FRAME TYPES

DOOR & FRAME TYPES



WINDOW TYPES

4 WINDOW JAMB AT HEADHOUSE
3" = 1'-0"

5 EXT HM DOOR JAMB AT CMU
3" = 1'-0"

6 EXT HM DOOR JAMB AT UTILITY CHASE
3" = 1'-0"

1 WINDOW SILL AT HEADHOUSE
3" = 1'-0"

2 DOOR SILL AT HEADHOUSE
3" = 1'-0"

3 EXT HM DOOR SILL UTILITY CHASEWAY
3" = 1'-0"

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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Expiration Date of Seal: 11-30-2026

BAILEY EDWARD DESIGN	USDA
PROJECT MANAGER:	AOE:
DESIGNER: Designer	EPM:
CHECKED BY: Checker	SAFETY & HEALTH:
BED PROJECT NO.: 023110	REAL PROPERTY:
TASK ORDER NO.:	
ORDER DATE:	

Agricultural Research Service

USDA

DOOR AND WINDOW SCHEDULES AND DETAILS

USDA PEORIA - HEADHOUSE & GREENHOUSE

NCAUR
1815 North University Street
Peoria, Illinois 61604

DWG. NO. A900

SHEET 25 OF 74

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1 3D VIEW

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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Expiration Date of Seal: 11-30-2026

BAILEY EDWARD DESIGN	**USDA**	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:		3D VIEW
DESIGNER: Designer	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: Checker	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.: 023110	REAL PROPERTY:	ORDER DATE:	DWG. NO. A960
			SHEET 26 OF 74

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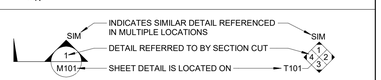
VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL



LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
——— NEW
- - - - - - - - EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
— — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
——————— EXISTING
- - - - - - - - EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
— — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

SYMBOL & ABBREVIATION LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
CS	CONDENSER WATER SUPPLY
CR	CONDENSER WATER RETURN
CD	CONDENSATE DRAIN
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DPP	DRAIN
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
S50	STEAM / PSIG
LPC	LOW PRESSURE CONDENSATE (0 TO 15 PSIG)
MPC	MEDIUM PRESSURE CONDENSATE (50 PSIG SYSTEM)
PC	PUMPED CONDENSATE
NCWPP	NON-POTABLE COLD WATER BY M.C.
SV	SAFETY RELIEF VENT
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	DIELECTRIC CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	BALANCING VALVE (NUMBER INDICATES GPM)
	CONTROL VALVE (THREE-WAY)
	CONTROL VALVE (TWO-WAY)
	SOLENOID VALVE
	CHECK VALVE
	BACKFLOW PREVENTER
	SAFETY/RELIEF VALVE
	SAFETY RELIEF VALVE W/ DRIP PAN ELBOW
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	PRESSURE REDUCING VALVE (STEAM)
	TRIPLE DUTY VALVE (IN-LINE TYPE)
	PUMP
	VACUUM BREAKER
	"WYE" - STRAINER W/SHUTOFF VALVE AND HOSE CONNECTION WITH CAP
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	SUCTION DIFFUSER WITH SUPPORT FOOT
	AUTOMATIC AIR VENT
	TEMPERATURE SENSOR WITH WELL
	MANUAL AIR VENT
	DRAIN VALVE WITH HOSE CONNECTION AND CAP
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
	DIFFERENTIAL PRESSURE SENSOR
SP	STATIC SWITCH
T	THERMOSTAT
H	HUMIDISTAT SENSOR
M	METER
	THERMOMETER WITH WELL (FILLED TYPE)
T	STEAM TRAP (REFER TO SCHEDULE)
	F&T STEAM TRAP (REFER TO SCHEDULE)
	INVERTED BUCKET STEAM TRAP (REFER TO SCHEDULE)
	ALIGNMENT GUIDE
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
C	COMMON
CO	CLEANOUT
DN	DOWN
DPG (0-2")	DIFFERENTIAL PRESSURE GAUGE (RANGE)
DPS	DIFFERENTIAL PRESSURE SWITCH
EP	ELECTRICAL TO PNEUMATIC VALVE
MV	MIXING VALVE
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
PS	PRESSURE SWITCH
RAD	RADIATION
SCCR	SHORT CIRCUIT CURRENT RATING
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UH	UNIT HEATER
SR	SUPPLY REGISTER
RG	RETURN GRILLE
EF	EXHAUST FAN
EA	EXHAUST AIR
RA	RETURN AIR
SA	SUPPLY AIR

PIPING NOTES:

1. THE SIZE OF BRANCH PIPING TO TERMINAL HEATING DEVICES AND COILS SHALL BE 3/4" UNLESS NOTED OTHERWISE.
2. PIPE DRAIN LINES FROM EQUIPMENT TO NEAREST FLOOR DRAIN.

RENOVATION NOTES:

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY GOVERNMENT REPRESENTATIVE OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. FIELD VERIFY ACCESSIBILITY TO THE AREA OF THEIR WORK AND SHALL NOTIFY THE GOVERNMENT RESPRESENTATIVE PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO THEIR AREA OF WORK.
5. CONTRACTOR SHALL CUT AND PATCH ROOFS, WALLS, AND FLOORS ASSOCIATED WITH THEIR WORK. ALL PROPOSED OPENING SIZES AND LOCATIONS IN STRUCTURAL WALLS (INCLUDING EXISTING BUILDING EXTERIOR WALL), FLOORS, AND ROOFS AND OTHER STRUCTURAL RELATED ITEMS SHALL BE REVIEWED AND APPROVED BY THE GOVERNMENT REPRESENTATIVE BEFORE BEGINNING WORK.
6. REMOVE AND REPLACE CEILINGS, CEILING TILES, AND CEILING GRIDS AS REQUIRED TO ACCOMMODATE PROJECT WORK.
7. WHERE EXISTING DUCTWORK OR PIPING SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
8. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. PROVIDE SHUTOFF VALVES AT ALL NEW TIE-IN POINTS. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
9. OBTAIN PERMISSION FROM GOVERNMENT REPRESENTATIVE BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
10. MAINTAIN EXISTING SYSTEMS IN SERVICE UNTIL NEW SYSTEMS ARE COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEMS ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM CONTRACTING OFFICER'S REPRESENTATIVE BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
11. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.
12. PROPERLY RECLAIM AND DISPOSE OF ALL REFRIGERANT IN REMOVED EQUIPMENT/ REFRIGERANT PIPING. RECLAIMED REFRIGERANT SHALL HAVE DOCUMENTATION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ).

GENERAL NOTES:

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE GOVERENMENT REPRESENTATIVE BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES.
10. CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
12. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. (PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
13. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
14. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
15. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
16. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
17. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
18. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
19. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT EXCEPT WHERE PAD EXTENSION WOULD INTERFERE WITH WORKING SPACE AT EQUIPMENT CONTROL PANELS AND ELECTRICAL PANELS.
20. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'-0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

HVAC SHEET INDEX

M099	GROUND FLOOR DEMOLITION PLAN - MECHANICAL
M000	MECHANICAL COVERSHEET
M101	GROUND FLOOR PLAN - MECHANICAL
M102	LEVEL 01 PLAN - MECHANICAL
M103	LEVEL 02 PLAN - MECHANICAL
M104	LEVEL 03 PLAN - MECHANICAL
M105	PENTHOUSE PLAN - MECHANICAL
M300	MECHANICAL ENLARGED PLANS
M301	MECHANICAL ENLARGED PLANS
M302	MECHANICAL ENLARGED PLANS
M400	MECHANICAL DETAILS
M401	MECHANICAL DETAILS
M500	MECHANICAL DIAGRAMS
M501	MECHANICAL DIAGRAMS
M502	MECHANICAL DIAGRAMS
M503	MECHANICAL DIAGRAMS
M600	MECHANICAL SCHEDULES
M601	MECHANICAL SCHEDULES
GRAND TOTAL: 18	

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1 GROUND FLOOR PLAN - MECHANICAL

1/8" = 1'-0"

2 UTILITY CHASEWAY SECTION

1/4" = 1'-0"

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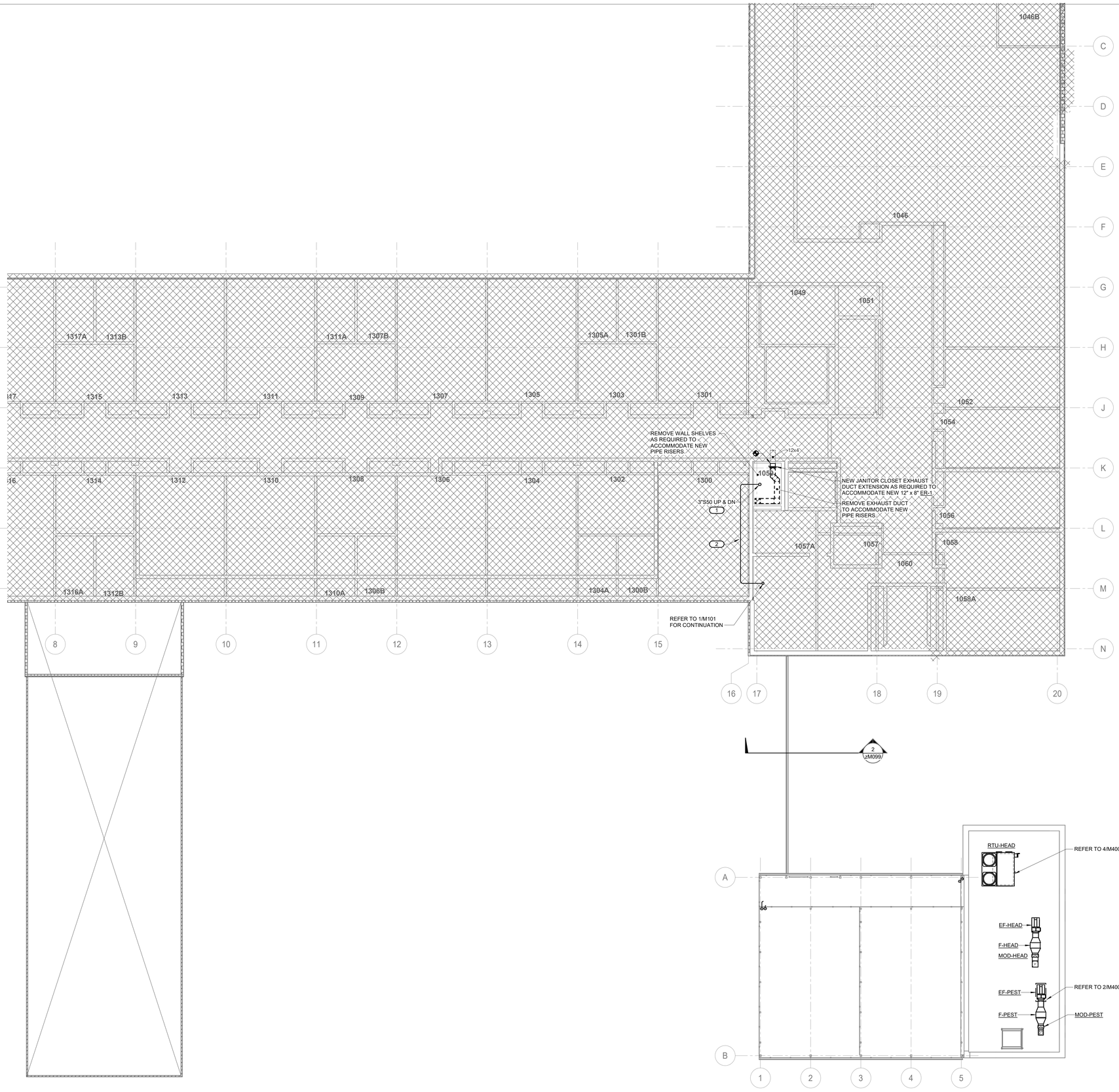

NOTES:

1. PROVIDE PIPE SLEEVE AND FIRESTOPPING AT ALL WALL AND FLOOR PENETRATIONS.

KEYNOTES:

1. COORDINATE EXACT FLOOR PENETRATION LOCATION WITH GOVERNMENT REPRESENTATIVE BEFORE MAKING OPENING. DO NOT PENETRATE STRUCTURAL BEAMS. COORDINATE WITH PLUMBING PIPING RISERS SHOWN ON P102.
2. FIELD ROUTE STEAM LINE TO MAINTAIN PIPE SLOPE IN THE DIRECTION OF FLOW. ROUTE PIPE AS HIGH AS POSSIBLE AND SUCH THAT IT WILL NOT HINDER ACCESS TO EXISTING EQUIPMENT. REMOVE AND RELOCATE EXISTING PIPING AND CONDUIT AS REQUIRED TO ACCOMMODATE THE STEAM LINE INSTALLATION.

1 LEVEL 01 PLAN - MECHANICAL

1/8" = 1'-0"

NORTH

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LEVEL 01 PLAN - MECHANICAL

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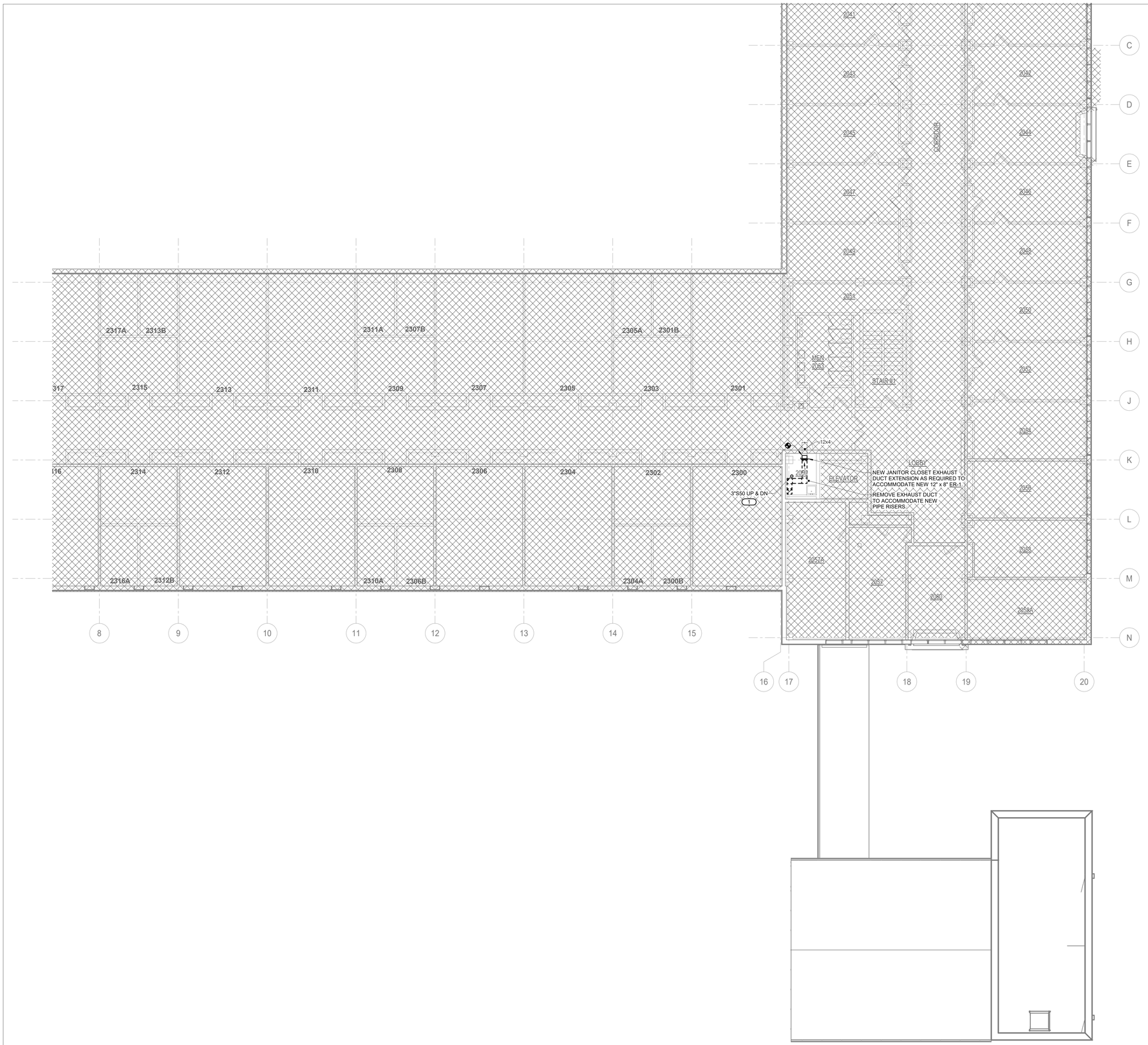

NOTES:

1. PROVIDE PIPE SLEEVE AND FIRESTOPPING AT ALL WALL AND FLOOR PENETRATIONS.

KEYNOTES:

1. COORDINATE EXACT FLOOR PENETRATION LOCATION WITH GOVERNMENT REPRESENTATIVE BEFORE MAKING OPENING. DO NOT PENETRATE STRUCTURAL BEAMS. COORDINATE WITH PLUMBING PIPING RISERS SHOWN ON P103.

NORTH

1 LEVEL 02 PLAN - MECHANICAL

1/8" = 1'-0"

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LEVEL 02 PLAN - MECHANICAL

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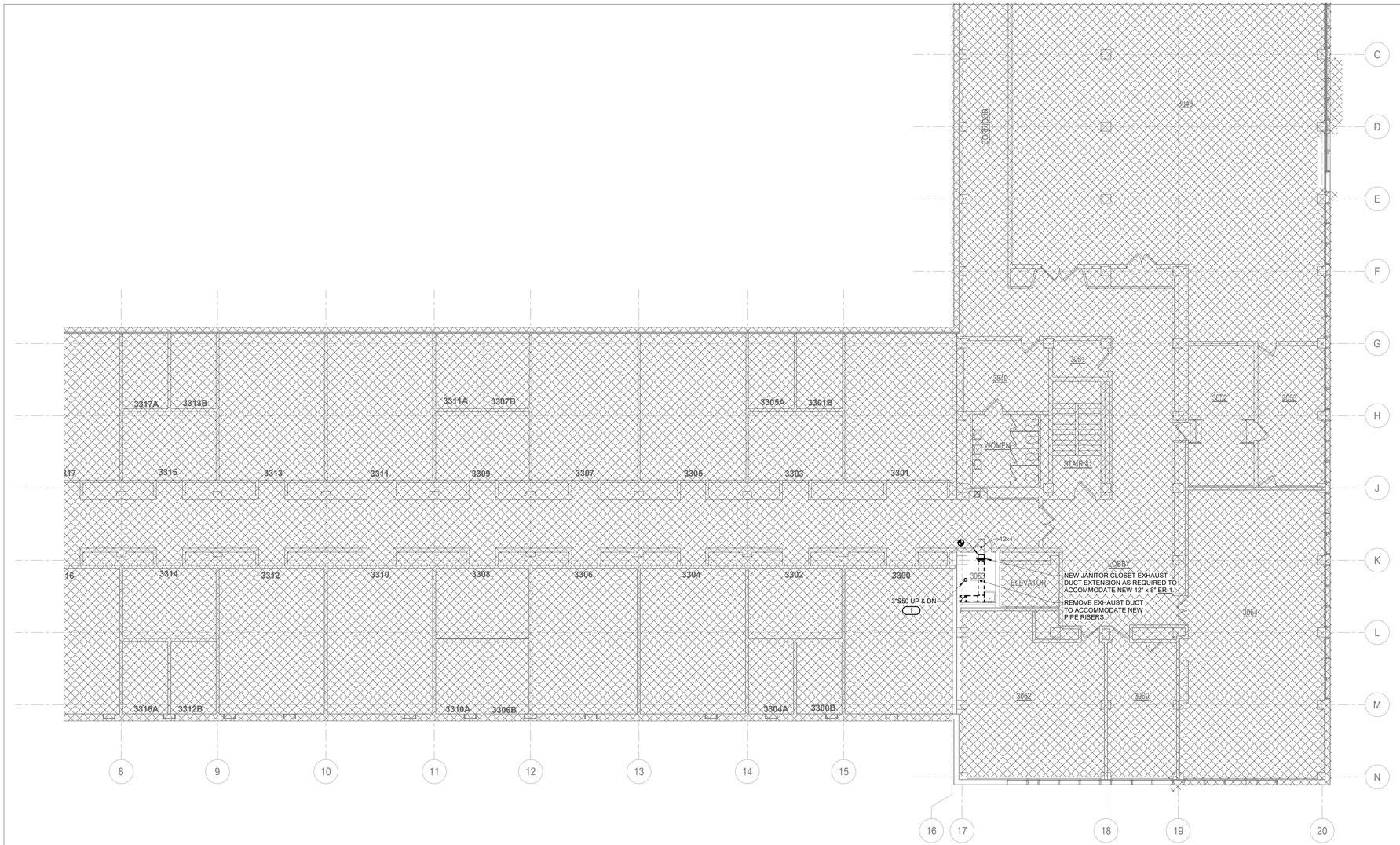

NOTES:

1. PROVIDE PIPE SLEEVE AND FIRESTOPPING AT ALL WALL AND FLOOR PENETRATIONS.

KEYNOTES:

1. COORDINATE EXACT FLOOR PENETRATION LOCATION WITH GOVERNMENT REPRESENTATIVE BEFORE MAKING OPENING. DO NOT PENETRATE STRUCTURAL BEAMS. COORDINATE WITH PLUMBING PIPING RISERS SHOWN ON P104.

1 LEVEL 03 PLAN - MECHANICAL

1/8" = 1'-0"

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LEVEL 03 PLAN - MECHANICAL

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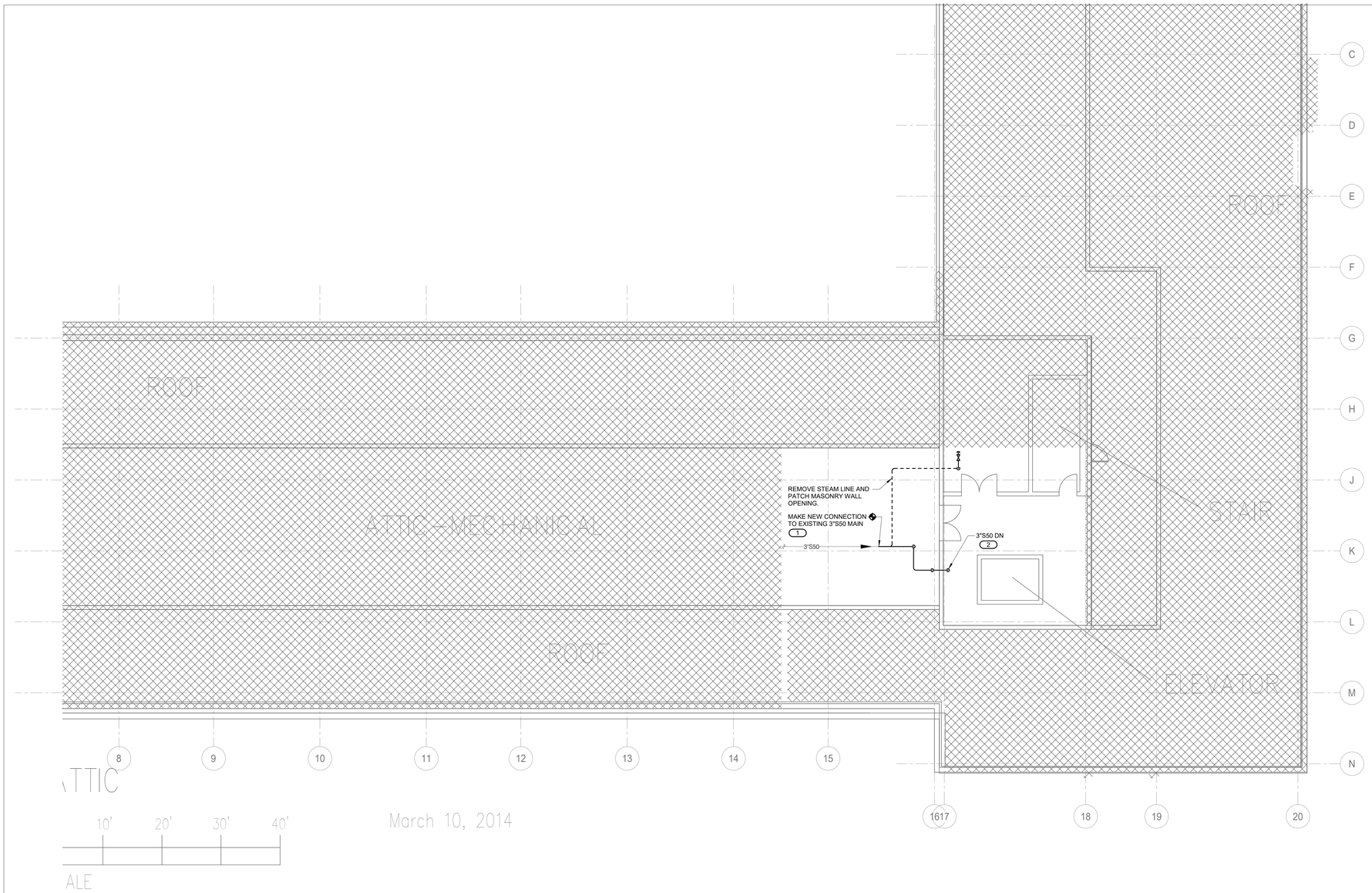

NOTES:

1. PROVIDE PIPE SLEEVE AND FIRESTOPPING AT ALL WALL AND FLOOR PENETRATIONS.

KEYNOTES:

1. EXTEND STEAM LINE WITH SLOPE TO THE NEW DROP LOCATION WHILE MAINTAINING HEAD ROOM AND MAINTENANCE CLEARANCE TO EXISTING PENTHOUSE EQUIPMENT. COORDINATE THE EXACT ROUTING OF STEAM LINE AND RISER WITH THE GOVERNMENT REPRESENTATIVE BEFORE INSTALLATION.
2. COORDINATE EXACT FLOOR PENETRATION LOCATION WITH GOVERNMENT REPRESENTATIVE BEFORE MAKING OPENING. DO NOT PENETRATE STRUCTURAL BEAMS. COORDINATE WITH PLUMBING PIPING RISERS SHOWN ON P105.

NORTH

1 PENTHOUSE PLAN - MECHANICAL

1/8" = 1'-0"

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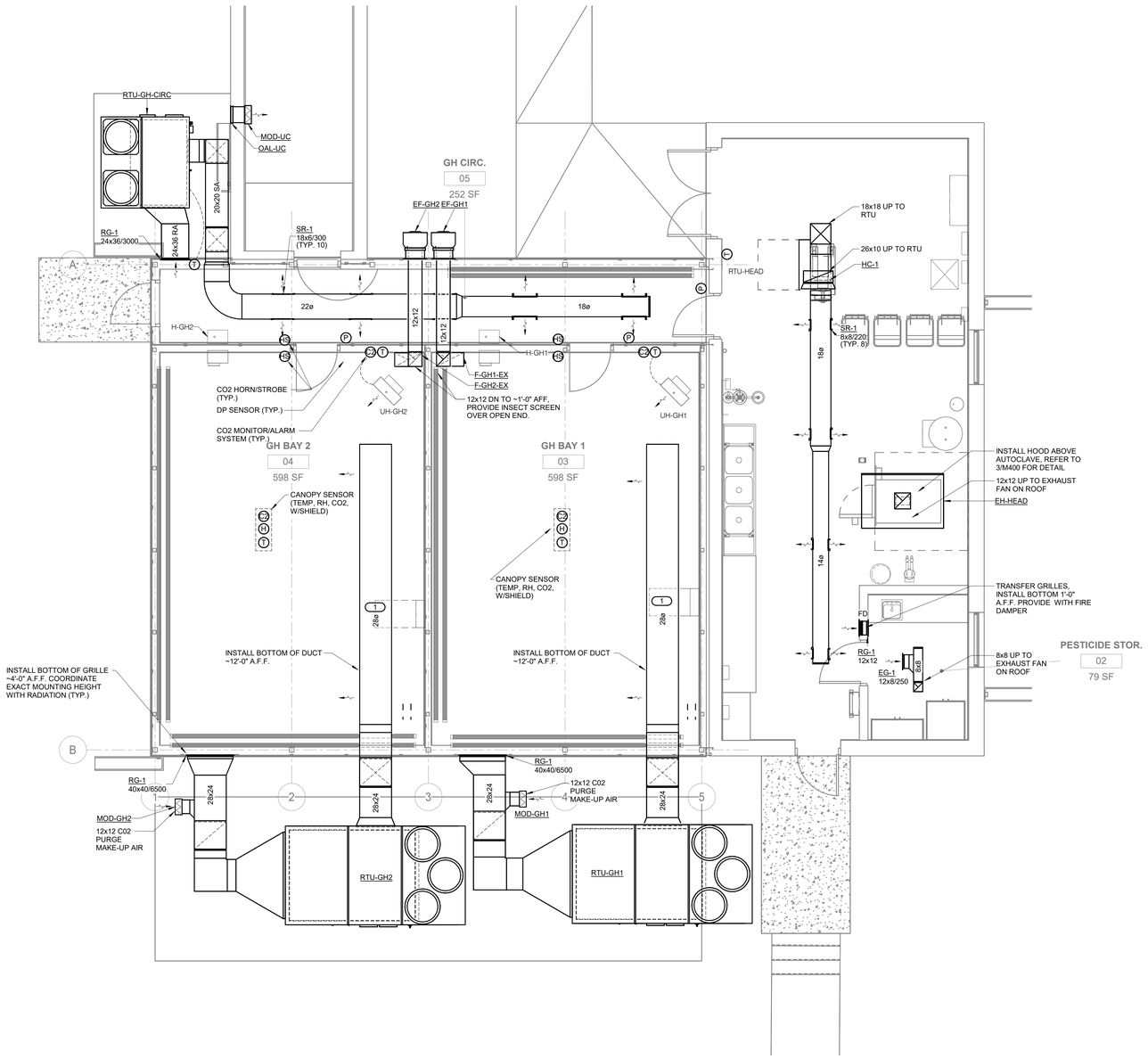
KEYNOTES:

1. FABRIC DUCTWORK:
   - AIR POROUS FABRIC
   - ANTI-MICROBIC
   - ANTI-STATIC
   - 29 CFM/FT2 @ 0.5" W.G.
   - NFPA 90A: UL 2518
   - LINEAR VENTS @ 3:00, 4:00. 5:00, 6:00, 7:00
   - 150 FPM @ 7'-0" THROW



1 MECHANICAL ENLARGED PLAN - NEW GREENHOUSE / HEADHOUSE - MECHANICAL

1/4" = 1'-0"

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SHEET 33 OF 74

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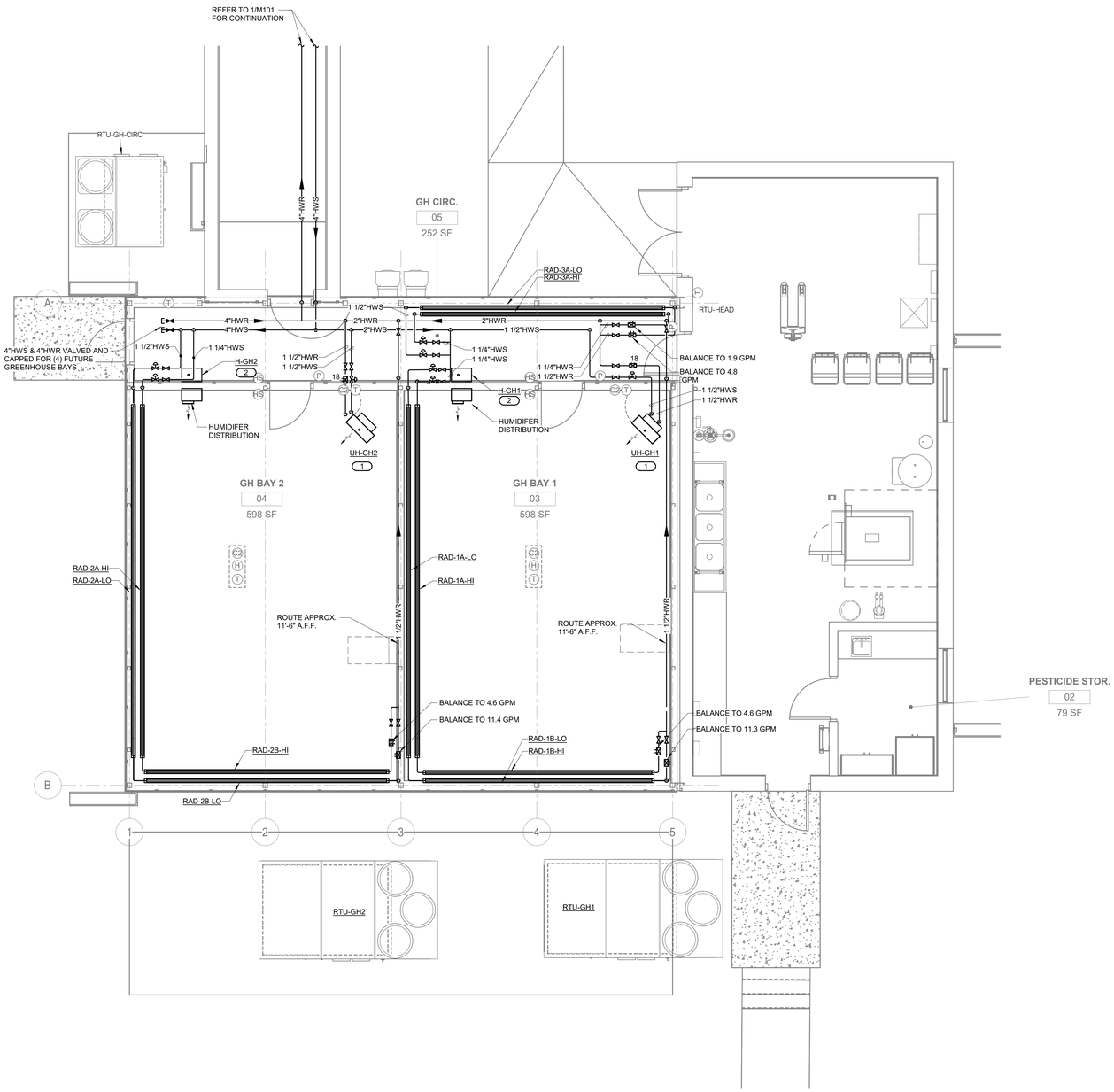
SHEET NOTES:

1. REFER TO SHEET M401 FOR RADIATION DETAILS

KEYNOTES:

1. MOUNT UNIT HEATER BOTTOM 12' A.F.F. REFER TO 1/M500 FOR UNIT HEATER PIPING DIAGRAM.
2. MOUNT HUMIDIFER ON WELDED STEEL FRAME SUPPORTED OFF FLOOR. COORDINATE HUMIDIFIER MOUNTING HEIGHT WITH GOV'T REP. PRIME AND PROVIDE TWO FINISH COATS OF PAINT TO STEEL SUPPORT. REFER 6/M400 FOR PIPING DETAIL



1 MECHANICAL ENLARGED PLAN - NEW GREENHOUSE / HEADHOUSE - PIPING

1/4" = 1'-0"

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MECHANICAL ENLARGED PLANS

USDA PEORIA - HEADHOUSE & GREENHOUSE

DWG. NO. M301

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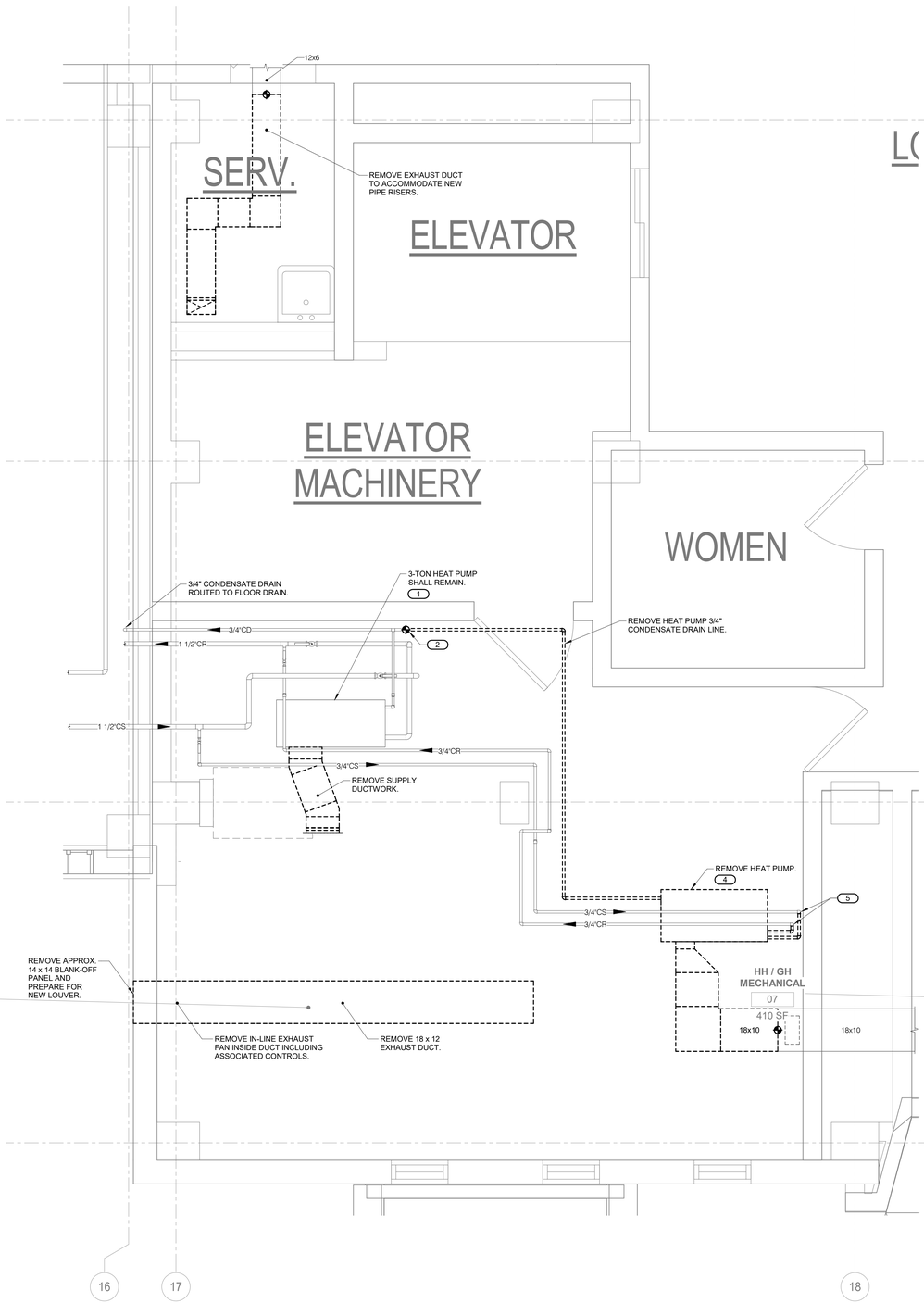
SHEET NOTES:

1. REFER TO 1/M500 FOR STEAM AND HEATING WATER FLOW DIAGRAM.

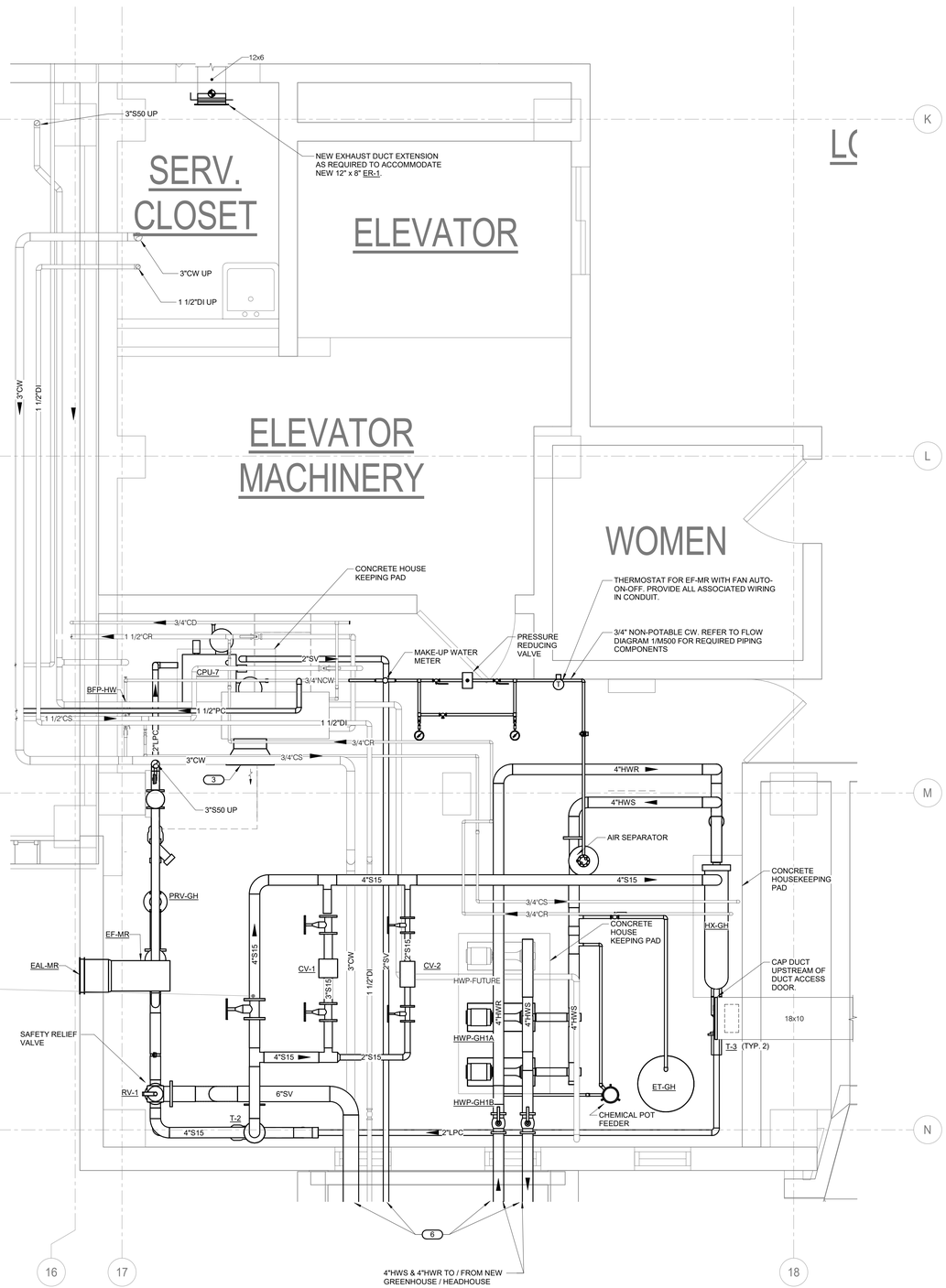
KEYNOTES: (#)

1. EXISTING 3-TON HEAT PUMP AND ALL ASSOCIATED PIPING SHALL REMAIN. BOTTOM OF HEAT PUMP IS APPROX. 7'-1" A.F.F. MAINTAIN SERVICE ACCESS AROUND THE HEAT PUMP.
2. REMOVE PIPING BACK TO THIS POINT AND INSTALL CLEANOUT PLUG.
3. PROVIDE NEW 14" x 10" DUCT CONNECTION TO UNIT WITH FLARED CONNECTION TO A 18" x 12" SR-1 (WITHOUT DAMPER).
4. REMOVE HEAT PUMP INCLUDING ALL ASSOCIATED SUPPORTS, CONNECTING DUCTWORK AND PIPING, AND CONTROLS.
5. CAP 3/4" CS AND 3/4" CR LINES BELOW THE EXISTING BALL VALVES IN THE DROPS AT THIS LOCATION SO THE LINES CAN BE EXTENDED IN THE FUTURE.
6. ROUTE PIPING THROUGH EXISTING WINDOW OPENING AS HIGH AS POSSIBLE. DO NOT PENETRATE EXISTING EXTERIOR WALL. REFER TO ARCHITECTURAL PLANS FOR 2-HOUR BLANK-OFF IN EXISTING WINDOW OPENINGS. PROVIDE PIPE SLEEVES AND FIRESTOPPING AT PIPE PENETRATIONS THROUGH WINDOW BLANK-OFF.



1 MECHANICAL ENLARGED PLAN - DEMO MECHANICAL ROOM

1/2" = 1'-0"



2 MECHANICAL ENLARGED PLAN - NEW MECHANICAL ROOM

1/2" = 1'-0"

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MECHANICAL ENLARGED PLANS

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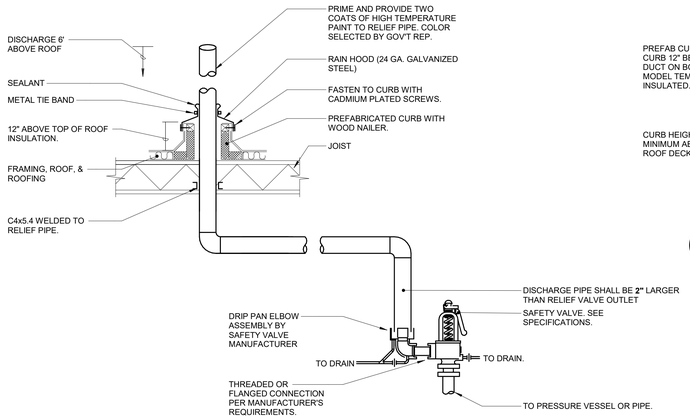
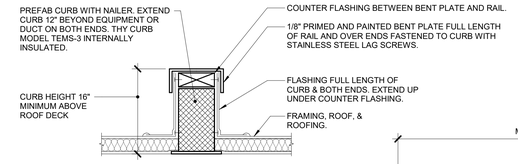
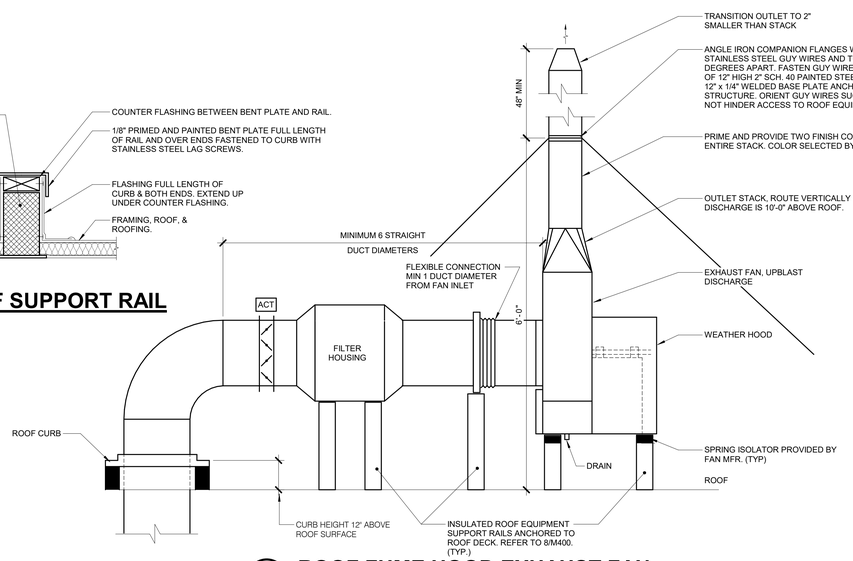


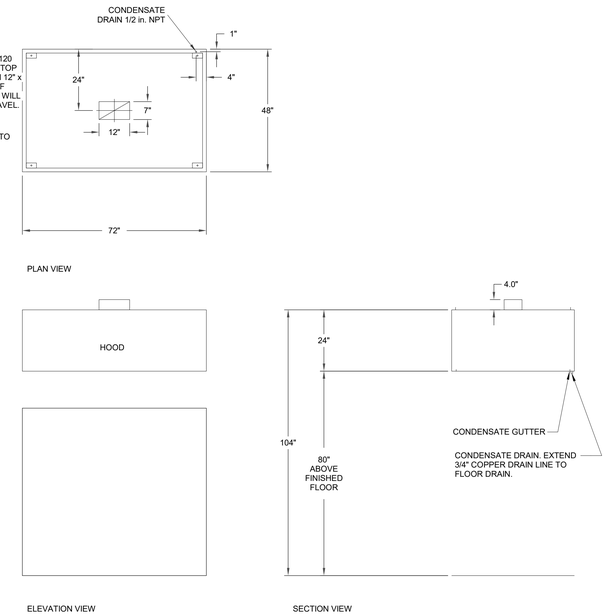
1 STEAM - SAFETY RELIEF VALVE DISCHARGE PIPING
NO SCALE

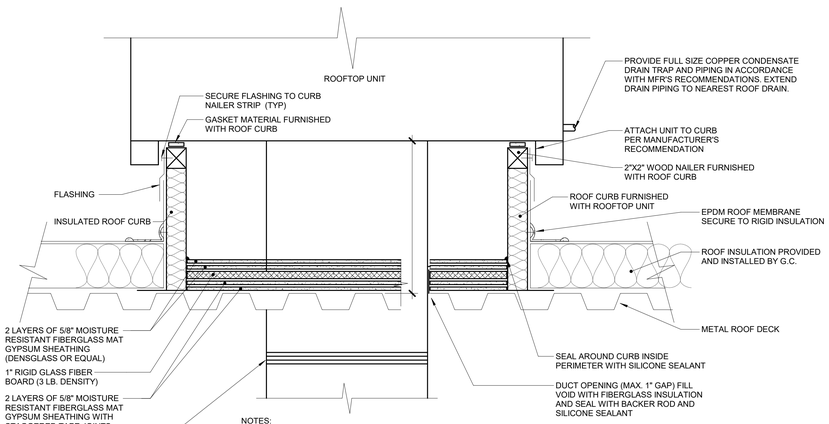


8 ROOF SUPPORT RAIL
NO SCALE



2 ROOF FUME HOOD EXHAUST FAN
NO SCALE

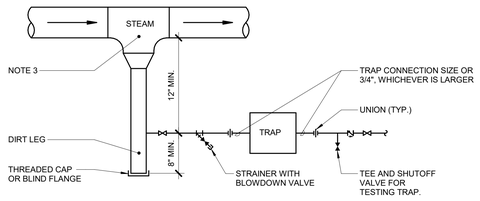




NOTES:

1. INSTALL, SECURE, AND FLASH ROOF CURB IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. CURB SHALL EXTEND 12" ABOVE ROOF SURFACE (NOT ROOF DECK) AND SHALL MATCH ROOF SLOPE SO THE TOP OF THE CURB IS LEVEL.
3. PROVIDE AT LEAST SIX DIGITAL PHOTOS (NEAR AND FAR AND FROM DIFFERENT ANGLES) OF SHEATHING AND FIBERGLASS INSIDE CURB AND ASSOCIATED SEALING AROUND DUCT PENETRATIONS AND PERIMETER OF CURB. SUBMIT PHOTOS WITH RTU DESIGNATION TO GOV'T REP TO CONFIRM PROPER INSTALLATION BEFORE INSTALLING RTU.

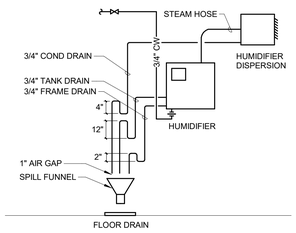
4 ROOF TOP UNIT CURB
NO SCALE



NOTES:

1. DRIP AND DIRT LEGS SHALL BE AT LEAST TWICE THE DIAMETER OF THE TRAP INLET.
2. INSTALL LEGS OF STRAINERS IN HORIZONTAL POSITION TO MINIMIZE CONDENSATE HOLDING.
3. TEE SHALL BE FULL SIZE FOR 4" AND SMALLER MAINS. 4" FOR 5" AND 6" MAINS AND 1/2 OF MAIN DIAMETER FOR LARGER MAINS.
4. LOCATE DRIP TRAPS AT 300 FOOT MAXIMUM INTERVALS AND UPSTREAM OF ALL EXPANSION DEVICES, BRANCH CONNECTIONS OR CONTROL VALVES.

5 STEAM - MAIN DRIP LEG AND TRAP
NO SCALE



6 HUMIDIFER PIPING DETAIL
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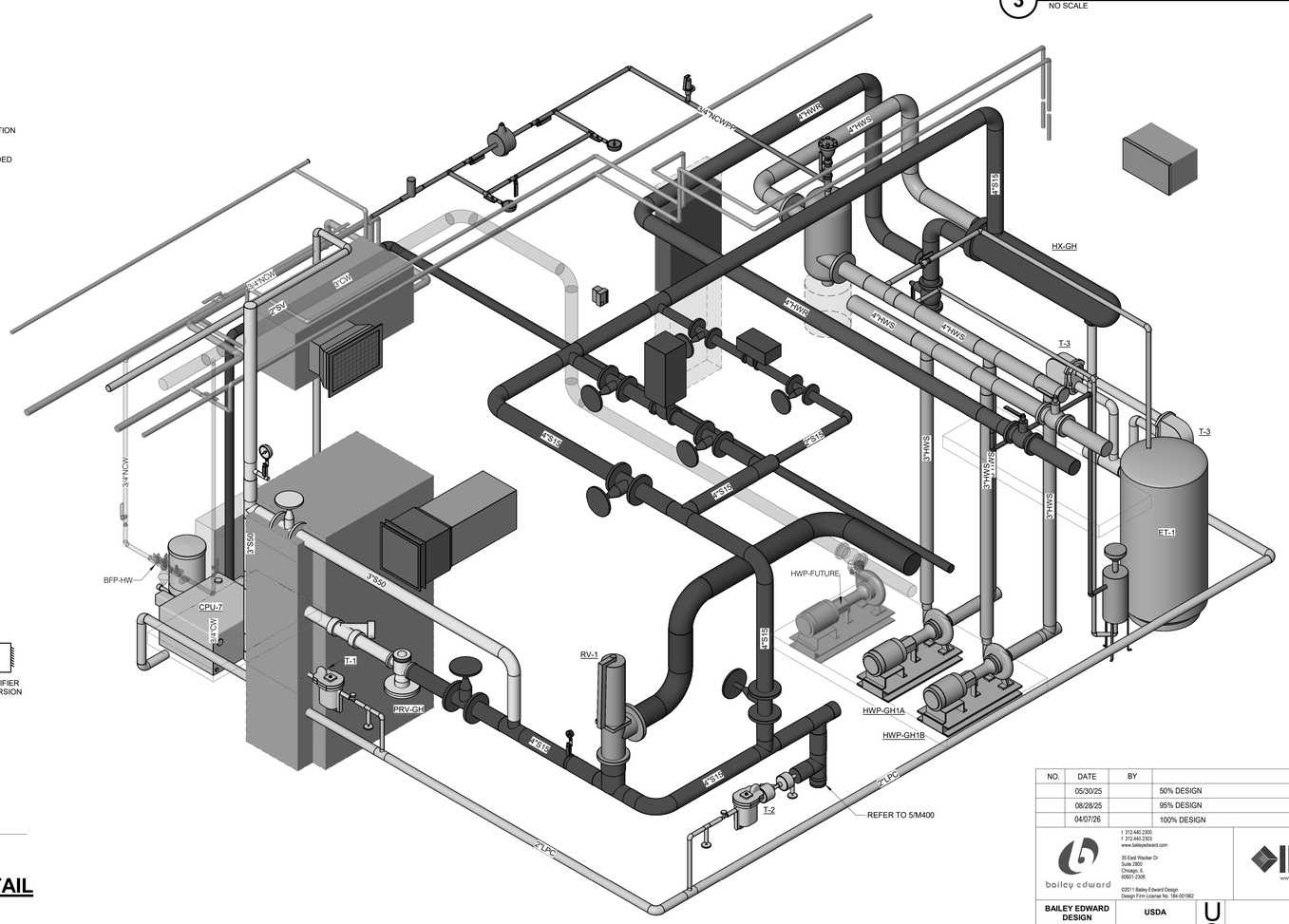
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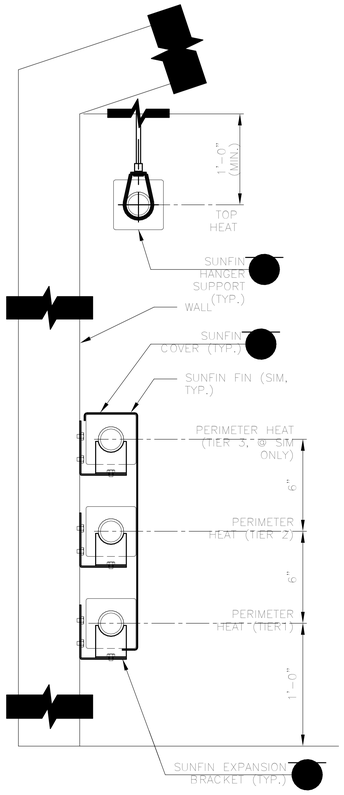
4"HWS
4"HWR
4"HWS
4"HWS
4"HWS



1 FINTUBE SECTION DETAIL
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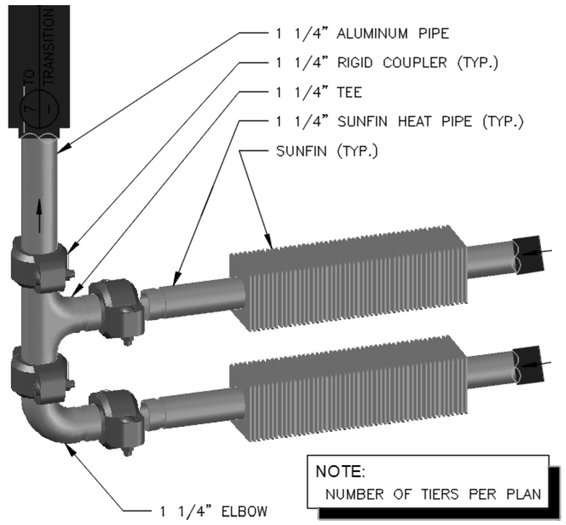
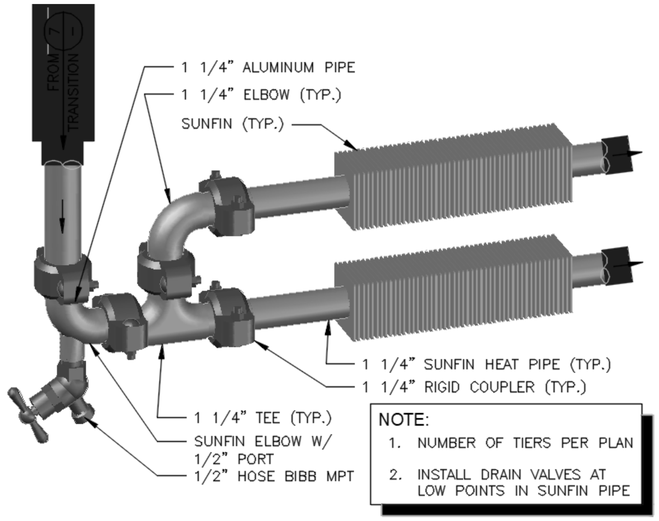


2 FINTUBE SPLIT - UPWARD DETAIL
NO SCALE



3 FINTUBE SPLIT - DOWNWARD DETAIL
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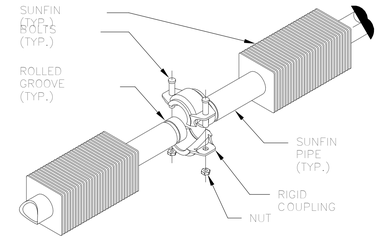

4 FINTUBE CONNECTION DETAIL
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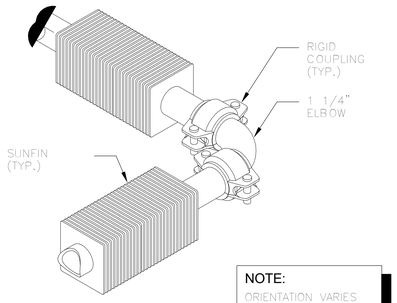

5 FINTUBE ELBOW DETAIL
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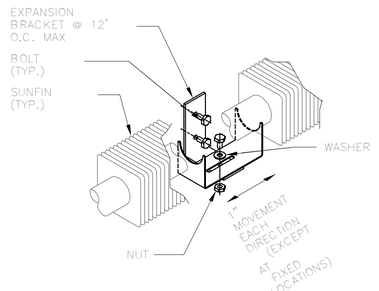

6 FINTUBE EXPANSION BRACKET DETAIL
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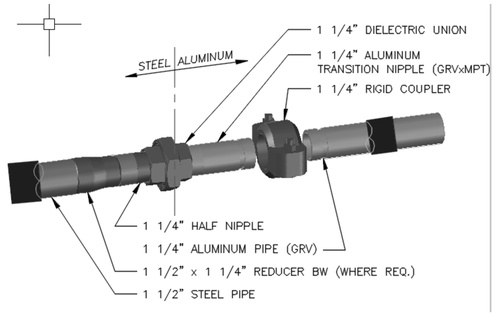

7 STEEL TO ALUMINUM TRANSITION DETAIL
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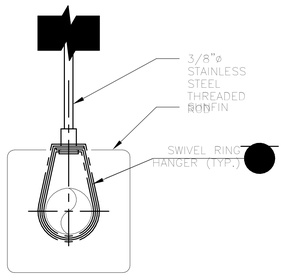

8 FINTUBE HANGER SUPPORT SECTION DETAIL
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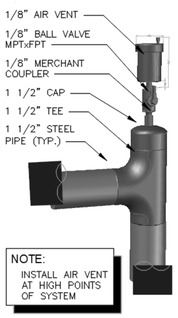

9 AIR VENT DETAIL
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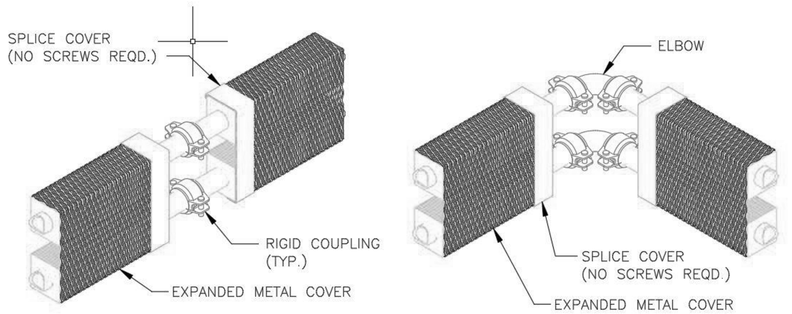
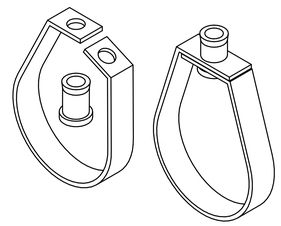


10 FINTUBE COVER DETAIL
NO SCALE



11 SWIVEL RING HANGER DETAIL
NO SCALE

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BED PROJECT NO.:	REAL PROPERTY:	TASK ORDER NO.:
		ORDER DATE:

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Peoria, Illinois 61604

DWG. NO. M401

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LICENSED PROFESSIONAL ENGINEER
ERIC J. HENDERSON
20825
IOWA

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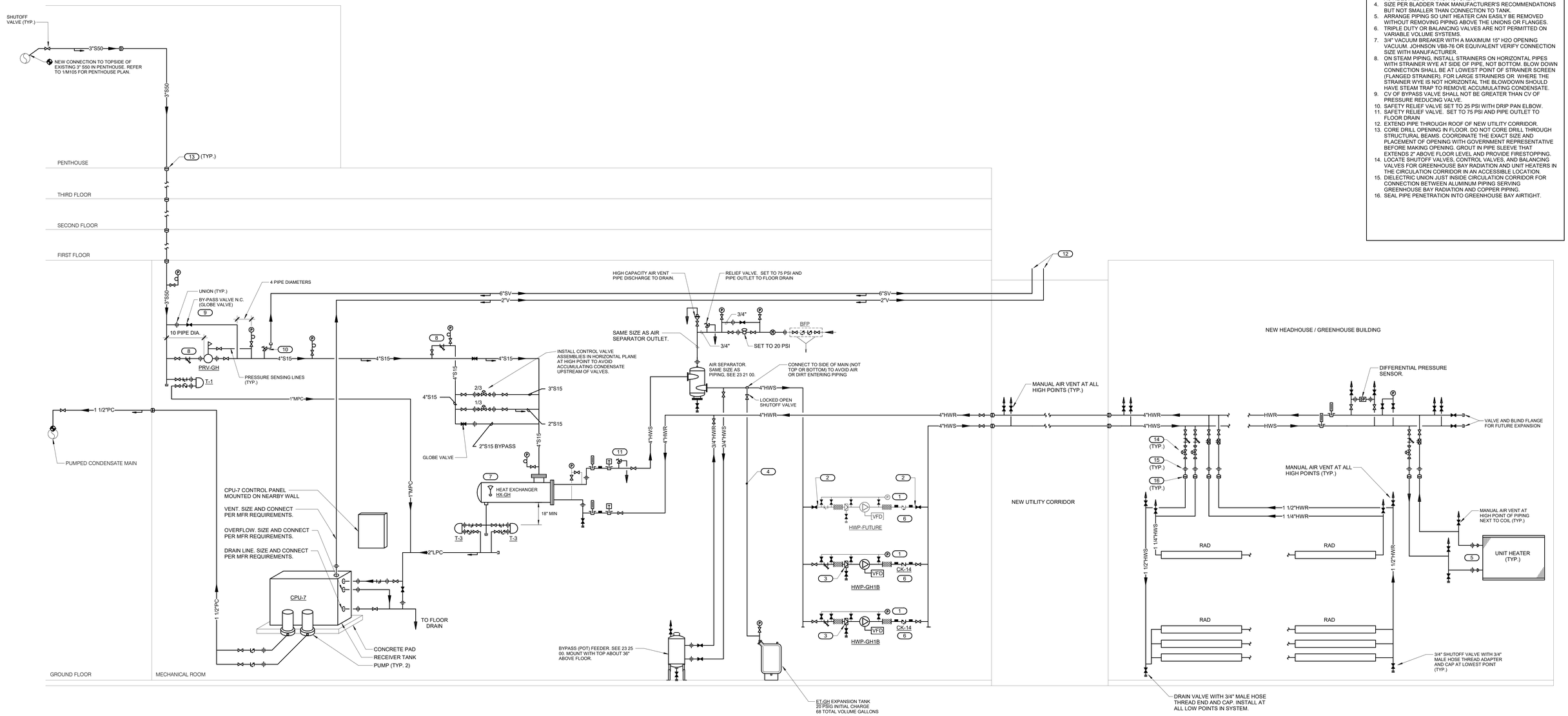
NOTES

1. ROUTE HYDRONIC PIPING AS HIGH AS POSSIBLE WHILE MINIMIZING RISES AND DROPS AND AVOIDING TRAPPING SECTIONS OF PIPING.
2. REFER TO SECTION 23 05 00 FOR COORDINATION DRAWING REQUIREMENTS. ALL PIPING ROUTING AND CONFIGURATIONS SHALL BE REVIEWED AND APPROVED BY THE GOVERNMENT REPRESENTATIVE.
3. ROUTE PIPING IN THE GREENHOUSE BAYS SUCH THAT IT WILL NOT HINDER DAYLIGHT.

KEYNOTES (#)

1. PRESSURE GAUGE WITH SNUBBER PER SECTION 23 09 13. INSTALL WITH MOUNTING ON WALL, STAND, OR VIBRATION-FREE PIPE ABOVE PUMP FLEXIBLE CONNECTOR. INSTALL FLEXIBLE COPPER TUBING TO PIPING CONNECTIONS TO AVOID VIBRATION DAMAGE TO THE GAUGE. PREFERRED CONNECTION LOCATIONS ARE: (a) JUST UPSTREAM OF STRAINER, (b) GAUGE PORT ON SUCTION DIFFUSER OR BETWEEN STRAINER AND PUMP INLET (c) GAUGE TAPPING ON PUMP INLET FLANGE. (d) GAUGE TAPPING ON PUMP OUTLET FLANGE.
2. INSTALL BLIND FLANGE FOR FUTURE CONNECTION.
3. REMOVE & RETAIN TEMPORARY STRAINER FROM SUCTION DIFFUSER AT END OF CONSTRUCTION. PROVIDE SUPPORT LEG AS REQUIRED BY MANUFACTURER.
4. SIZE PER BLADDER TANK MANUFACTURER'S RECOMMENDATIONS BUT NOT SMALLER THAN CONNECTION TO TANK.
5. ARRANGE PIPING SO UNIT HEATER CAN EASILY BE REMOVED WITHOUT REMOVING PIPING ABOVE THE UNIONS OR FLANGES.
6. TRIPLE DUTY OR BALANCING VALVES ARE NOT PERMITTED ON VARIABLE VOLUME SYSTEMS.
7. 3/4" VACUUM BREAKER WITH A MAXIMUM 15" H2O OPENING VACUUM. JOHNSON VB8-76 OR EQUIVALENT VERIFY CONNECTION SIZE WITH MANUFACTURER.
8. ON STEAM PIPING, INSTALL STRAINERS ON HORIZONTAL PIPES WITH STRAINER WYE AT SIDE OF PIPE, NOT BOTTOM. BLOW DOWN CONNECTION SHALL BE AT LOWEST POINT OF STRAINER SCREEN (FLANGED STRAINER). FOR LARGE STRAINERS OR WHERE THE STRAINER WYE IS NOT HORIZONTAL THE BLOWDOWN SHOULD HAVE STEAM TRAP TO REMOVE ACCUMULATING CONDENSATE.
9. CV OF BYPASS VALVE SHALL NOT BE GREATER THAN CV OF PRESSURE REDUCING VALVE.
10. SAFETY RELIEF VALVE SET TO 25 PSI WITH DRIP PAN ELBOW.
11. SAFETY RELIEF VALVE. SET TO 75 PSI AND PIPE OUTLET TO FLOOR DRAIN
12. EXTEND PIPE THROUGH ROOF OF NEW UTILITY CORRIDOR.
13. CORE DRILL OPENING IN FLOOR. DO NOT CORE DRILL THROUGH STRUCTURAL BEAMS. COORDINATE THE EXACT SIZE AND PLACEMENT OF OPENING WITH GOVERNMENT REPRESENTATIVE BEFORE MAKING OPENING. GROUT IN PIPE SLEEVE THAT EXTENDS 2" ABOVE FLOOR LEVEL AND PROVIDE FIRESTOPPING.
14. LOCATE SHUTOFF VALVES, CONTROL VALVES, AND BALANCING VALVES FOR GREENHOUSE BAY RADIATION AND UNIT HEATERS IN THE CIRCULATION CORRIDOR IN AN ACCESSIBLE LOCATION.
15. DIELECTRIC UNION JUST INSIDE CIRCULATION CORRIDOR FOR CONNECTION BETWEEN ALUMINUM PIPING SERVING GREENHOUSE BAY RADIATION AND COPPER PIPING.
16. SEAL PIPE PENETRATION INTO GREENHOUSE BAY AIRTIGHT.



1 STEAM AND HEATING WATER FLOW DIAGRAM

NO SCALE

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MECHANICAL DIAGRAMS

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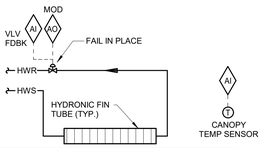


SEQUENCE OF OPERATION:

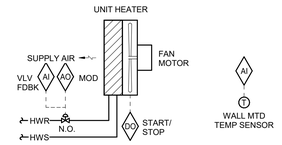
WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 60°F (ADJ.), THE FMCS SHALL MODULATE THE RADIATION CONTROL VALVE TO MAINTAIN A SPACE TEMPERATURE SETPOINT OF 70°F (ADJ.).

WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 60°F (ADJ.), CONTROL VALVE SHALL BE FULLY CLOSED.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE FALLS 10°F (ADJ.) BELOW SETPOINT.

1 STAND ALONE RADIATION CONTROL
NO SCALE



SEQUENCE OF OPERATION:

WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 40°F (ADJ.), TEMPERATURE SENSOR SHALL MODULATE THE CONTROL VALVE AND CYCLE THE UNIT FAN TOGETHER TO MAINTAIN A SPACE TEMPERATURE OF 70°F (ADJ.).

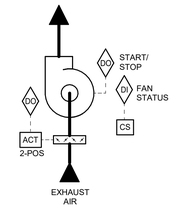
WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F (ADJ.), TEMPERATURE SENSOR SHALL MODULATE THE CONTROL VALVE TO MAINTAIN A SPACE TEMPERATURE OF 70°F (ADJ.) AND THE UNIT FAN SHALL RUN CONTINUOUSLY.

IN LOCATIONS WITH MULTIPLE UNIT HEATERS, STAGE THE UNIT HEATERS ON/OFF BY SETTING INDIVIDUAL TEMPERATURE SENSORS 2ºF APART.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF SPACE TEMPERATURE FALLS 10°F (ADJ.) BELOW SETPOINT.

2 UNIT HEATER CONTROL - HYDRONIC
NO SCALE

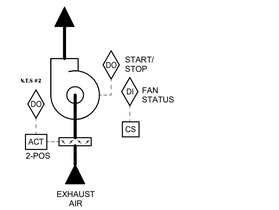


SEQUENCE OF OPERATION:
EXHAUST FAN SHALL BE TO RUN CONTINUOUSLY.

2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED.
WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FMCS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

3 FAN - RUN CONTINUOUSLY
NO SCALE

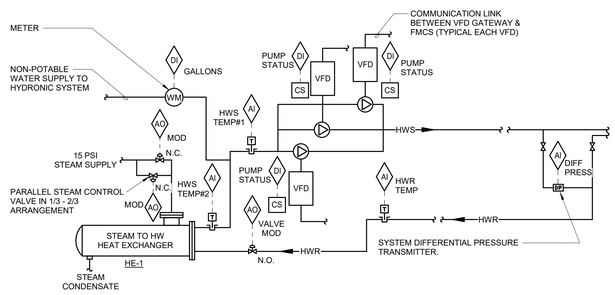


SEQUENCE OF OPERATION:
EXHAUST FAN SHALL BE INTERLOCKED TO RUN CONTINUOUSLY WHEN RESPECTIVE AHU IS OPERATING.

2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED. WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FMCS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

4 FAN - INTERLOCK WITH AHU
NO SCALE



5 HEATING PLANT - HX HEATING HOT WATER CONTROL
NO SCALE

GENERAL:
ONE 100% CAPACITY HEAT EXCHANGER (FUTURE INCLUDED) AND TWO 50% CAPACITY HEATING WATER PUMPS (A THIRD FUTURE) ARE PROVIDED IN THE SYSTEM. (ONE PUMP IS REDUNDANT).

SEQUENCE OF OPERATION:
THE STEAM CONTROL VALVES SHALL MODULATE THE HEAT EXCHANGER AS REQUIRED TO MAINTAIN SYSTEM SUPPLY TEMP HWS#1 AS FOLLOWS:

- THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL BE MODULATED IN ORDER TO MAINTAIN THE HEATING WATER SUPPLY TEMPERATURE.
- IF THE 1/3 CAPACITY CONTROL VALVE IS 100% OPEN AND THE HEAT EXCHANGER IS UNABLE TO MAINTAIN SETPOINT, THE 1/3 CAPACITY CONTROL VALVE SHALL CLOSE AND THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN SETPOINT.
- IF THE 2/3 CAPACITY CONTROL VALVE IS 100% OPEN AND IS UNABLE TO MAINTAIN SETPOINT, THE 2/3 CAPACITY CONTROL VALVE SHALL REMAIN OPEN AND THE 1/3 CAPACITY CONTROL VALVE SHALL ALSO MODULATE OPEN TO MAINTAIN SETPOINT.
- ON A DECREASE IN LOAD, THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL REMAIN OPEN AND THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE CLOSED UNTIL SETPOINT IS ACHIEVED.
- ON A FURTHER DECREASE IN LOAD, THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL REMAIN SHUT AND THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE CLOSED UNTIL SETPOINT IS ACHIEVED OR UNTIL IT REACHES 40% (ADJ.) OPEN.
- IF THE 2/3 CAPACITY STEAM CONTROL VALVE REACHES 40% (ADJ.) OPEN AND SETPOINT IS STILL NOT ACHIEVED, THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL CLOSE AND THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE OPEN UNTIL SETPOINT IS ACHIEVED.

FMCS SHALL LIMIT THE HWS TEMP#2, TO MAX. 190°F (ADJ.).

STEAM CONTROL VALVE OPERATION SHALL NOT BE ENABLED UNLESS ONE PUMP IS RUNNING AS PROVEN BY VFD STATUS AND THE ASSOCIATED HEATING WATER CONTROL VALVE IS OPEN.

FMCS SHALL DISABLE OPERATION OF THE STEAM CONTROL VALVE SERVING THE HEAT EXCHANGER WHEN BOTH OF THE FOLLOWING CONDITIONS EXIST:
- HWS#1 TEMP SETPOINT DROPS BELOW 150°F.
- STEAM VALVE MODULATING OUTPUT SIGNAL TO HEAT EXCHANGER VALVE REMAINS BELOW 40% FOR 30 MIN (ADJ.)

UPON DISABLING THE STEAM CONTROL VALVE THE HEATING WATER CONTROL VALVE SHALL BE CLOSED AFTER A 3 MINUTE (ADJ.) TIME DELAY.

INCLUDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH HX IS LEAD AND WHICH IS LAG.

HEATING WATER PUMP CONTROL:

START/STOP: THE FMCS SHALL START THE LEAD PUMP VIA THE VFD AND SHALL RUN CONTINUOUSLY. HEATING WATER PUMPS SHALL BE STARTED AND STOPPED THROUGH A HAND-OFF-AUTO SWITCH ON THE FACE OF THE VFD. WHEN PLACED IN THE HAND POSITION, PUMP MOTOR SHALL RUN CONTINUOUSLY. WHEN PLACED IN THE AUTO POSITION, THE FMCS SHALL CONTROL PUMP OPERATION. WHEN PLACED IN THE OFF POSITION, THE PUMP MOTOR SHALL BE DE-ENERGIZED.

THE FMCS SHALL MODULATE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN DP SETPOINT AT THE LOCATION OF THE DP TRANSMITTER. FMCS SHALL RESET THE DP SETPOINT UNTIL ONE SYSTEM COIL MODULATING CONTROL VALVE IS 95% OPEN. IN NO CASE SHALL DP SETPOINT EXCEED 10 PSID (ADJ) OR DROP BELOW 2 PSID. PROVIDE BALL VALVES ON EACH SIDE OF DP TRANSMITTER.

PUMP SETTING: IF THE OPERATING PUMP(S) CANNOT MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT FOR 10 MINUTES (ADJ). THE OPERATING PUMP(S) SPEED SHALL BE REDUCED TO 60% (ADJ). AND THE LAG PUMP SHALL START. ONCE ALL OPERATING PUMP(S) ARE AT 65% (ADJ) SPEED. THE PUMPS SHALL MODULATE IN UNISON TO MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT.

THE FMCS SHALL LEAD/LAG THE PUMPS ON A WEEKLY BASIS. INCLUDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND WHICH IS LAG.

ALARMS, INTERLOCKS & SAFETIES:
FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:

- SHOULD THE FMCS COMMAND THE LEAD HW PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE LAG HW PUMP SHALL AUTOMATICALLY START.
- AN ALARM CONDITION OCCURS AT ANY VFD.
- WHEN 2 GALLONS (ADJ.) OF HYDRONIC SYSTEM MAKE-UP WATER FLOWS THROUGH METER AFTER THE LAST ACKNOWLEDGEMENT. WHEN ALARM IS MANUALLY ACKNOWLEDGED, THE FMCS SHALL RE-ZERO THE COUNTER.
- IF HEATING WATER SUPPLY TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT FOR MORE THAN 10 MINUTES (ADJ.).
- IF SYSTEM DIFFERENTIAL PRESSURE IS NOT MAINTAINED FOR MORE THAN 15 MINUTES (ADJ.).

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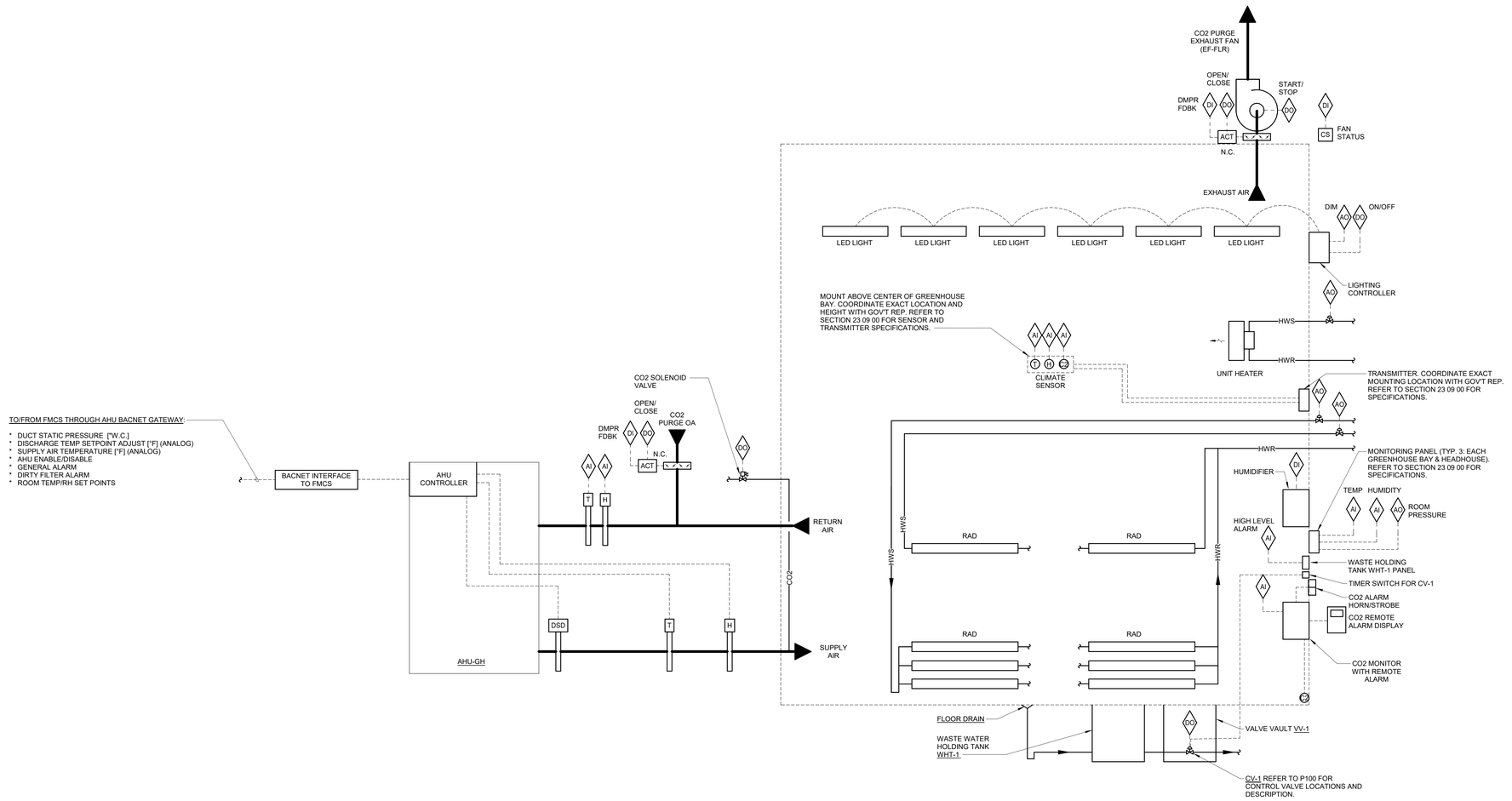

1 TYPICAL GREENHOUSE BAY CONTROL DIAGRAM

NO SCALE

SEQUENCE OF OPERATION

THE SEQUENCES SHALL BE INDEPENDENT FOR EACH GREENHOUSE BAY.

RTUS:
THE BMS SHALL START/STOP THE RTU.
- THE RTU CONTROLLER SHALL CONTROL THE SEQUENCE OF THE UNIT.
- THE RTU SHALL RUN CONTINUOUSLY.
- THE RTU CONTROLLER SHALL RECEIVE THE ROOM TEMP AND RELATIVE HUMIDITY SETPOINTS FROM THE BMS.
- THE RTU CONTROLLER SHALL MAINTAIN ROOM SETPOINTS.
  1. LIGHTS ON: 80F, 75% RH (ADJ.)
  2. LIGHTS OFF: 74F, 55%RH (ADJ.)

LIGHTING CONTROLS:
THE BMS SHALL CONTROL THE LIGHTING ON/OFF SCHEDULE
- LIGHTS ON: 8:00AM-8:00PM (ADJ.)
- LIGHTS OFF: 8:00PM-8:00AM (ADJ.)

CO2 CONTROL:
BMS SHALL ENABLE/DISABLE THE SOLENOID VALVE BASED ON A PID CALCULATION OF ROOM CO2 VS CO2 SETPOINT.
- SET POINT: 1200 PPM

CO2 SHALL BE DISABLED DURING DISINFECTION OR PURGE CYCLE.

RADIATION:
WHEN THE OUTSIDE AIR IS BELOW 60F (ADJ.) THE FMCS SHALL MODULATE THE RADIATION CONTROL VALVES TO MAINTAIN SPACE SETPOINT TEMPERATURE.

WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 60F (ADJ.) THE CONTROL VALVES SHALL CLOSE.

DURING THE DISINFECTION CYCLE, THE RADIATION SHALL SUPPLEMENT THE UNIT HEATER AS REQUIRED TO HEAT THE SPACE TO 113F (ADJ.).

UNIT HEATER:
UNIT HEATER SHALL BE USED TO DISINFECT ROOM. WHEN THE DISINFECTION SEQUENCE IS ACTIVATED THE UNIT HEATER SHALL BE ENABLED AND THE CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN A ROOM SET POINT OF 113F (ADJ.).

RTU SHALL BE DISABLED DURING DISINFECTION CYCLE.

HUMIDIFICATION:
THE BMS SHALL ENABLE/DISABLE THE ELECTRIC HUMIDIFER TO MAINTAIN THE RELATIVE HUMIDITY SET POINT OF 50%RH (ADJ).

HUMIDIFIER SHALL BE DISABLED DURING DISINFECTION OR PURGE CYCLE.

EXHAUST FAN/CO2 PURGE CYCLE:
PROVIDE CO_2 SAFETY ALARM SYSTEM TO MONITOR AND CONTROL CO2 PURGE SYSTEM FOR EACH GREENHOUSE BAY. THE SYSTEM SHALL CONSIST OF:
- SPACE SENSOR TO MONITOR CO_2 LEVELS
- REMOTE LCD DISPLAY
- AUDIBLE AND VISUAL ALARMS
- RELAYS FOR CONTROL OF VENTILATION
- SYSTEM SHALL COMPLY WITH CURRENT IFC REQUIREMENTS.

IN THE EVENT CO2 LEVELS INCREASE ABOVE 3,000 PPM (ADJ.) THE FOLLOWING SHALL OCCUR:
- HORN/STROBE(S) FOR SPECIFIC SENSOR(S) SHALL BE ACTIVATED.
- THE CO2 SOLENOID VALVE SERVING THE GREENHOUSE BAY SHALL CLOSE.
- MAKE-UP AIR DAMPER SHALL OPEN.
- PURGE EXHAUST FAN SHALL INCREASE AIR FLOW TO MAXIMUM AIRFLOW

WHEN CO2 LEVEL IS BELOW 3,000 PPM (ADJ.) THE FOLLOWING SHALL OCCUR:
- HORN/STROBE(S) FOR SPECIFIC SENSOR(S) SHALL DEACTIVATE.
- THE CO2 SOLENOID VALVE IN ASSOCIATED AHU SHALL RESUME NORMAL OPERATIONS.
- PURGE EXHAUST FAN SHALL RETURN TO MINIMUM AIRFLOW.
- MAKE-UP AIR DAMPER SHALL CLOSE.

CONTROL VALVE CV-1 & WHT-1 HIGH LEVEL ALARM PANEL:

- REFER TO CV-1 LOCATIONS AND DESCRIPTION ON P100.
- REFER TO P300 FOR WHT-1 LOCATIONS AND P600 FOR DESCRIPTION.
- PROVIDE ALL WIRING FOR CV-1 AND WHT-1 HIGH LEVEL ALARM PANEL. ALL WIRING SHALL BE INSTALLED IN CONDUIT.
- CV-1 SHALL BE CONTROLLED BY A MANUAL DIGITAL TIMER SWITCH LOCATED ON THE WALL OF EACH GREENHOUSE BAY NEXT TO THE WHT-1 HIGH LEVEL ALARM.
- CV-1 SHALL BE NORMALLY CLOSED IN "OFF" POSITION TO PREVENT CONTAMINATED WATER FROM EXITING THE WASTE WATER HOLDING TANK AND GOING INTO THE SANITARY SEWER UNTIL IT IS PROPERLY SANITIZED.
- ONCE THE WASTE WATER HAS BEEN SANITIZED BY POURING BLEACH INTO THE HOLDING TANK, THE WALL SWITCH SHALL BE MANUALLY SWITCHED TO THE "ON" POSITION TO ALLOW CV-1 TO FULLY OPEN AND PERMIT THE TREATED WATER TO GO TO THE SEWER. THE WALL SWITCH SHALL HAVE A TIMER TO ONLY ALLOW CV-1 TO REMAIN OPEN FOR 1 TO 15 MINUTES (ADJUSTABLE) TO ENSURE THE VALVE IS RETURNED TO ITS FULLY CLOSED POSITION. THE SWITCH SHALL HAVE A LIGHT THAT SHALL BE ON WHENEVER THE CONTROL VALVE IS OPEN TO MAKE IT EASY TO CONFIRM THE VALVE POSITION. MOUNT THE TIMER SWITCH NEXT TO THE WHT-1 HIGH LEVEL ALARM.
- PROVIDE PLASTIC ENGRAVED SIGN WITH 1/2" MIN. HIGH LETTERS NEXT TO THE TIMER SWITCH WITH DIRECTIONS ON USAGE. VERIFY EXACT SWITCH PLACEMENT AND SIGNAGE VERBIAGE AND COLORS WITH GOVERNMENT REP.

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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USDA Agricultural Research Service

MECHANICAL DIAGRAMS

USDA PEORIA - HEADHOUSE & GREENHOUSE

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Peoria, Illinois 61604

DWG. NO. M502

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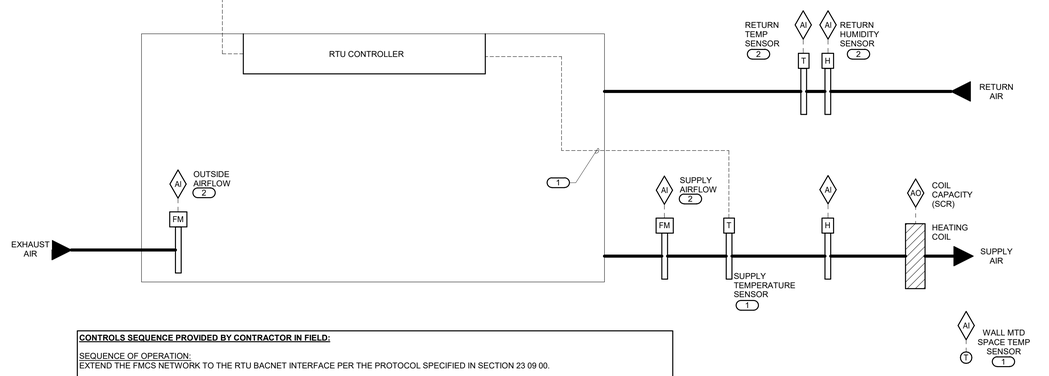
TO/FROM FMCS THROUGH RTU BACNET GATEWAY:

- DUCT STATIC PRESSURE [°W.C.]
- DISCHARGE TEMP SETPOINT ADJUST [°F] (ANALOG)
- SUPPLY AIR TEMPERATURE [°F] (ANALOG)
- RTU ENABLE/DISABLE
- OA SETPOINT (CFM) (ANALOG)
- OA AIRFLOW (CFM) (ANALOG)
- GENERAL ALARM
- DIRTY FILTER



KEYNOTES:
1. SENSOR PROVIDED BY RTU MANUFACTURER. SENSOR FEEDER/RACEWAY AND CONNECTION SHALL BE INSTALLED BY CONTRACTOR IN THE FIELD.
2. PROVIDE POINT, SENSOR AND FEEDER/RACEWAY.

CONTROLS SEQUENCE PROVIDED BY CONTRACTOR IN FIELD:

SEQUENCE OF OPERATION:
EXTEND THE FMCS NETWORK TO THE RTU BACNET INTERFACE PER THE PROTOCOL SPECIFIED IN SECTION 23 09 00.

WHEN RTU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:
- AFTER A 30 SECOND DELAY TO ALLOW FOR OPENING OF COMBINATION FIRE/SMOKE DAMPERS. SUPPLY FAN SHALL BE ENABLED TO RUN.
- WHEN THE SUPPLY FAN HAS STARTED THE INTERLOCKED EXHAUST FANS SHALL START AS SHOWN IN THE FAN INTERLOCK SCHEDULE.

BUILDING OCCUPANCY SCHEDULING:
ENABLE RTU TO RUN BASED ON THE FOLLOWING OCCUPANCY SCHEDULE WITH ALLOWANCE FOR ENERGY CODE OPTIMAL START.

- OCCUPIED MODE: MONDAY THROUGH FRIDAY 6:00AM-9:00PM (ADJ.); SATURDAY THROUGH SUNDAY 8:00AM-6:00PM (ADJ.)
- UNOCCUPIED MODE: MONDAY THROUGH FRIDAY 9:00PM-5:00AM (ADJ.); SATURDAY THROUGH SUNDAY 6:00PM-7:00AM (ADJ.)

CONTRACTOR SHALL FIELD INSTALL THE FOLLOWING MANUFACTURER PROVIDED EXTERNAL SENSORS AND WIRE BACK TO RTU CONTROLLER:
- BUILDING PRESSURE SENSOR.
- SUPPLY AIR TEMPERATURE IN SUPPLY DUCT.

ALARMS, INTERLOCKS AND SAFETIES:
THE FOLLOWING SAFETIES SHALL BE INSTALLED AND WIRED IN THE FIELD.
- HIGH STATIC SWITCH (WIRED TO UNIT ENABLE/DISABLE TO TURN FANS OFF)
- LOW STATIC SWITCH (WIRED TO UNIT ENABLE/DISABLE TO TURN FANS OFF)
- FIRE ALARM RELAY (WIRED TO UNIT ENABLE/DISABLE TO TURN FANS OFF)

CONTROLS PROVIDED BY PACKED EQUIPMENT MANUFACTURER:

PACKAGE ROOFTOP UNIT SYSTEM DESCRIPTION:
REFER TO SECTION 23 74 11 FOR A DESCRIPTION OF THE RTU AND THE CONTROLS PROVIDED BY THE RTU MANUFACTURER.

SUPPLY FAN CONTROL:
RTU CONTROLLER SHALL START. SUPPLY FAN. SUPPLY FAN SHALL RUN CONTINUOUSLY WHEN OCCUPIED.

SUPPLY AIR CONTROL:
DISCHARGE AIR TEMPERATURE SHALL BE MODULATED AS REQUIRED TO MAINTAIN SPACE SETPOINT. WHENEVER THE SUPPLY AIR TEMPERATURE IS ABOVE SETPOINT, THE FOLLOWING SHALL OCCUR IN SEQUENCE:
- MODULATE ELECTRIC HEATER OFF.
- THE COMPRESSORS SHALL BE ENABLED AND MFR SHALL MODULATE COMPRESSOR CAPACITY AS REQUIRED TO MAINTAIN SET POINT.

WHENEVER THE DISCHARGE AIR TEMPERATURE IS BELOW SETPOINT, THE FOLLOWING SHALL OCCUR IN SEQUENCE:
- IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5°F (ADJ.) BELOW SETPOINT. MFR SHALL MODULATE COMPRESSORS OFF.
- MODULATE RTU ELECTRIC HEATER AS REQUIRED TO MAINTAIN SET POINT.
- IF OUTSIDE TEMPERATURE IS BELOW 20F, ENEABLE DUCT MOUNTED ELECTRIC DUCT HEATER.
- IF RTU ELECTRIC HEATER CANNOT MAINTAIN SPACE TEMPERATURE, THE FMCS SHALL MODULATE THE DUCT MOUNTED ELECTRIC HEATER TO MAINTAIN SPACE TEMP.

OUTSIDE AIR CONTROL:
THE OUTSIDE AIR DAMPER SHALL OPEN TO MINIMUM (750 CFM) WHENEVER TO THE UNIT IS OPERATING TO PROVIDE MAKE-UP AIR TO EF-PEST. WHEN EF-HEAD IS ENABLE THE OUTSIDE AIR DAMPER SHALL OPEN TO MAXIMUM (1,750) POSTION TO PROVIDE MAKE-UP AIR TO EF-PEST AND EF-HEAD.

SEND AN ALARM TO THE FMCS FOR THE FOLLOWING:
- SUPPLY FAN FAULT (AIRFLOW OR CURRENT)
- DIRTY FILTERS (WHEN FILTER PRESSURE DROP EXCEEDS 0.6" W.C. (ADJ.)
- IF SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.
- EMERGENCY STOP

WHENEVER RTU IS SHUTDOWN THE RTU CONTROLLER SHALL COMMAND THE FOLLOWING TO OCCUR:
- SUPPLY FAN SHALL STOP.
- OUTSIDE AIR AIR DAMPERS SHALL FULLY CLOSE.
- HEATING AND COOLING SHALL BE DISABLED.
- OUTSIDE AIR DAMPER SHALL REMAIN CLOSED.

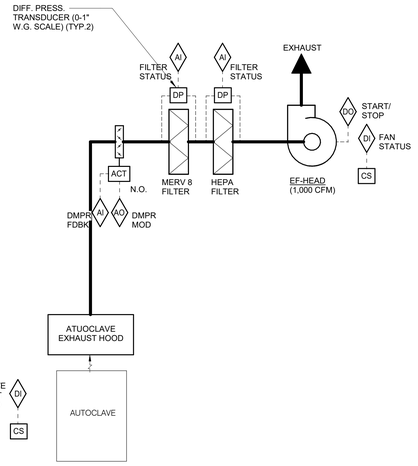
UN-OCCUPIED MODE OPERATION:
- OUTSIDE AIR AND RELIEF AIR DAMPER SHALL REMAIN CLOSED. RETURN AIR DAMPER SHALL BE 100% OPEN.

2 PACKAGED ROOFTOP UNIT - HEADHOUSE
NO SCALE

HEADHOUSE PRESSURIZATION SCHEDULE

SYSTEM	SUPPLY CFM	EXHAUST FANS	PRESSURIZATION CFM	REMARKS
RTU-HEAD	1,750	EF-HEAD & EF-PEST	500	NOTES 1 & 2

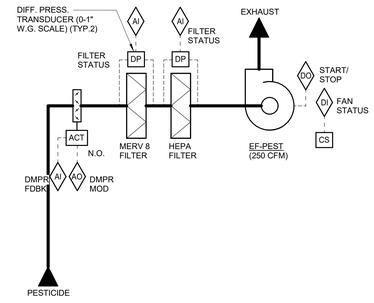
NOTES:
1. FMCS SHALL DETERMINE THE OPERATIONAL STATUS OF EACH EXHAUST FAN VIA THE CURRENT SENSING RELAY TO DETERMINE WHETHER THE CFM ASSOCIATED WITH THAT FAN SHOULD BE INCLUDED IN THE RTU OUTSIDE AIR FLOW AIRFLOW CALCULATION.
2. EXHAUST FAN AIRFLOWS SHALL NOT BE THE CFM INDICATED ON THE FAN SCHEDULE, BUT SHALL BE THE AIRFLOW INDICATED IN THE FINAL TAB REPORT.



SEQUENCE OF OPERATION:
EXHAUST FAN SHALL BE TO RUN WHENEVER THE AUTOCLAVE IS RUNNING.

2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED.
WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FMCS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.



SEQUENCE OF OPERATION:
EXHAUST FAN SHALL BE TO RUN CONTINUOUSLY.

2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED.
WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FMCS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

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PACKAGED ROOFTOP UNIT SCHEDULE – ELECTRIC- DX

NOTES:
1. TOTAL OPERATING WEIGHT INCLUDES UNIT, CURB, ACCESSORIES. DUCT MOUNTED ACCESSORIES AND EQUIPMENT ARE NOT INCLUDED. CONTRACTOR IS RESPONSIBLE FOR ALL CHANGES REQUIRED DUE TO ROOFTOP UNIT HEAVIER THAN THE BASIS OF DESIGN AT NO ADDITIONAL COST.
2. PROVIDE SHAFT GROUNDING. REFER TO 23 05 13.
3. LAT LISTED IS AT LEAVING SIDE OF COOLING COIL.
4. REFER TO CONTROL DRAWINGS FOR REQUIRED CONTROL COMPONENTS AND SEQUENCES.
5. PROVIDE WITH 18" HIGH INSULATED PLENUM CURB FOR MOUNTING ON CONCRETE PAD. RTU-4 SHALL HAVE 24" HIGH INSULATED CURB TO MATCH ROOF SLOPE WITH TOP LEVEL.
6. UNIT SHALL HAVE MODULATING HOT GAS REHEAT, LOW AMBIENT OPERATION DOWN TO -20F, AND HAIL GUARD.
7. PROVIDE WITH 2" MERV 8 AND 4" HEPA MIXED AIR FILTER BANK. PROVIDE WITH ADJUSTABLE PRESSURE DIFFERENTIAL SENSOR FOR EACH FILTER BANK CONNECTED TO BAS.

				SUPPLY FAN (NOTE 2)						UNIT ELECTRICAL DATA										COOLING COIL - DX							HEATING - ELECTRIC				HOT GAS REHEAT COIL					WEIGHT (NOTE 1)					
															DISCONNECT(S)		CONTROLLER STARTER(S)																							
TAG NAME	AREA SERVED	NOMINAL TONS	MINIMUM OUTSIDE AIR (CFM)	NO. OF FANS	CFM TOTAL	EXT S.P. IN W.C.	R P M	BHP EACH	MHP EACH	NO. OF POWER CONNECTIONS	VOLTAGE	PHASES	MCA	MOCP	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE B)	SCCR	NO. OF AUXILIARY CONNECTIONS	EAT DB °F	EAT WB °F	LAT DB °F (NOTE 3)	LAT WB °F (NOTE 3)	SENSIBLE MBH	TOTAL MBH	AMB TEMP °F	KW	TURN DOWN/STEPS	SEER (EER)	FILTER TYPE	DISCHARGE DIRECTION	CAPACITY (MBH)	LDB (F)	LWB (F)	CONTROL TYPE (NOTE 4)	CURB TYPE (NOTE G)	UNIT WEIGHT	CURB WEIGHT	(TOTAL) OPERATING	MANUFACTURER	MODEL	NOTES
RTU-GH1	GREENHOUSE 1	22	0	1	6500	1.5	1372	8.5	15	1	208	3	260	300	MFR	NF	MFR	VFD	100,000	1	73.0	60.8	51.0	51.0	152	177	95	41	SCR	18.3	NOTE 7	SIDE	260	70	58.7	MFR	MFR	4805	500	5305	CAPTIVEAIRE	CAS-HVAC4	NOTES 5, 6
RTU-GH2	GREENHOUSE 2	22	0	1	6500	1.5	1372	8.5	15	1	208	3	260	300	MFR	NF	MFR	VFD	100,000	1	73.0	60.8	51.0	51.0	152	177	95	41	SCR	18.3	NOTE 7	SIDE	260	70	58.7	MFR	MFR	4805	500	5305	CAPTIVEAIRE	CAS-HVAC4	NOTES 5, 6
RTU-GH-CIRC	GREENHOUSE CIRC	8	0	1	3000	1.3	2498	3.8	5	1	208	3	87	90	MFR	NF	MFR	VFD	10,000	1	75.0	62.0	51.0	51.0	77.1	99	95	9	SCR	20.2	NOTE 7	SIDE	60	69	59.6	MFR	MFR	1860	350	2210	CAPTIVEAIRE	CAS-RTU2	NOTES 5, 6
RTU-HEAD	HEADHOUSE	12.5	1750	1	1750	1.3	1228	1.3	3	1	208	3	120	125	MFR	NF	MFR	VFD	10,000	1	80.0	76.0	54.0	53.0	61.5	149	95	38	SCR	21.3	NOTE 7	BOTTOM	101	0	0	MFR	MFR	2400	350	2750	CAPTIVEAIRE	CASRTU2	NOTES 5, 6

SCHEDULE GENERAL NOTES:

A. DISCONNECT AND CONTROLLER STARTER FURNISHED AND INSTALLED BY:
MFR = MANUFACTURER
MFR/EC = FURNISHED LOOSE BY MANUFACTURER INSTALLED BY ELECTRICAL CONTRACTOR.
TCC = TEMPERATURE CONTROL CONTRACTOR

B. DISCONNECT TYPE:
CB = CIRCUIT BREAKER
F = FUSED
NF = NON-FUSED
PLUG = PLUG AND CORD

C. CONTROLLER STARTER TYPE:
FV = FULL VOLTAGE
WYE = WYE-DELTA
SS = SOLID STATE (SOFT START)
MS = MANUAL STARTER
VFD = VARIABLE FREQUENCY DRIVE
VFD/B = VARIABLE FREQUENCY DRIVE WITH BYPASS
YD = WYE - DELTA
ECM = ELECTRONICALLY COMMUTATED MOTOR

D. FAN RPM SHALL NOT EXCEED 110% OF SCHEDULED VALUE, WITH THE SCHEDULED WHEEL TYPE. SUBSTITUTION OF BI OR BIA FANS FOR FC IS ACCEPTABLE IF EFFICIENCY IS NOT LOWER.

E. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING.

F. MUST BE WITHIN +/- 10% OF SCHEDULED RPM.

G. CURB TYPE:
MFR = STANDARD CURB BY MANUFACTURER
GC = BY GENERAL CONTRACTOR
SAC = SOUND ATTENUATOR CURB

PUMP SCHEDULE

NOTES:
1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.
2. PUMPS ARE SIZED FOR FUTURE FOUR GREENHOUSES, WITH THE FUTURE PUMP BEING REDUNDANT.

							ELECTRICAL (NOTE 1)									
											DISCONNECT		CONTROLLER/ STARTER			
TAG NAME	AREA SERVED	GPM	PUMP FT. HEAD AT DESIGN	MINIMUM PUMP EFFICIENCY	INLET SIZE	IMPELLER SIZE	HP (NOTE E)	RPM	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	MANUFACTURER	MODEL	NOTES
HWP-GH1A	GREENHOUSE	96.0	50.00	57.9	2"	7.875	3	1604	208	3	EC	NF	MFR	VFD	B & G	1510 SERIES	NOTE 2
HWP-GH1B	GREENHOUSE	96.0	50.00	57.9	2"	7.875	3	1604	208	3	EC	NF	MFR	VFD	B & G	1510 SERIES	NOTE 2

AIR TERMINAL SCHEDULE

NOTES:
1.CONTRACTOR SHALL DETERMINE PROPER BORDER TYPE TO MATCH CEILING CONSTRUCTION.
2.REFER TO DRAWINGS FOR NECK SIZE. ALL BRANCH DUCTWORK TO AIR TERMINALS SHALL BE NECK SIZE UNLESS NOTED OTHERWISE.

TAG NAME	FACE SIZE (IN.) (NOTE 2)	TYPE	BORDER (NOTE 1)	MATERIAL	FINISH	VOLUME DAMPER REQUIRED	MANUFACTURER	MODEL	NOTES
EG-1	SEE DWG	35 DEGREE DEFLECTION	SURFACE MOUNT	ALUMINUM	WHITE	NO	TITUS	350	LONG BLADES
ER-#	SEE DWG	35 DEGREE DEFLECTION	SURFACE MOUNT	[ALUMINUM] [STEEL]	WHITE	YES	TITUS	350	LONG BLADES
RG-1	SEE DWG	EGG CRATE	SURFACE MOUNT	STAINLESS STEEL	MILL	NO	TITUS	50RSS	
SG-#	SEE DWG.	DOUBLE DEFLECTION	SURFACE MOUNT	[ALUMINUM] [STEEL]	WHITE	NO	TITUS	300	LONG FRONT BLADES
SR-1	INLET + 1 1/2	DOUBLE DEFLECTION	DUCT MOUNTED	ALUMINUM	WHITE	YES	TITUS	S300FL	

HEAT EXCHANGER SCHEDULE - STEAM TO WATER

NOTES:
1.STEAM PRESSURE INDICATED IS THE PRESSURE AVAILABLE DOWNSTREAM OF THE CONTROL VALVE.
2. HEAT EXCHANGER IS SIZED FOR FUTURE 4 GREENHOUSES

		WATER				STEAM (NOTE 1)		HEATING SURFACE FT²	FOULING FACTOR	MAX. DIMENSIONS		WEIGHT (LB)				
TAG NAME	AREA SERVED	GPM	W.P.D. FT. HEAD	EWT °F	LWT °F	PSIG	LB/HR			LENGTH	DIAMETER	DRY	OPERATING	MANUFACTURER	MODEL	NOTES
HX-GH	GREENHOUSE	192.0	1.5	160	180	15	1975	43.5	0.0001	42	10"	279	391	BELL & GOSSET	SU 103-2	NOTE 1, 2

HOOD SCHEDULE

			HOOD SIZE			EXHAUST AIR					WEIGHT LBS			
						CONNECTION			CFM	A.P.D.				
TAG NAME	SERVICE	TYPE	WIDTH	HEIGHT	DEPTH	QTY	WIDTH	HEIGHT	TOTAL	IN. W.C.	OPERATING	MANUFACTURER	MODEL	NOTES
EH-HEAD	HEADWORKS	TYPE II	4'-0"	2'-0"	6'-0"	1	1'-0"	1'-0"	1,000	0.28	129	GREENHECK	GD1	

HUMIDIFIER SCHEDULE - ELECTRIC

NOTES:
1. PROVIDE WITH REMOTE SUPPLY DISPERSION UNIT (SDU).
2. HUMIDIFIER SHALL HAVE BACNET CONTROLLER TO MANAGE HUMIDITY OUTPUT VIA THE BUILDING AUTOMATION SYSTEM. COORDINATE HUMIDIFIER CONTROLS WITH SIEMENS.

			HEATING ELEMENT		ELECTRICAL							
			TOTAL KW (QTY * KW)				DISCONNECT		CONTROLLER/ STARTER			
TAG NAME	AREA SERVED	CAPACITY LB HR	QTY	KW	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	SCCR	MANUFACTURER	MODEL	NOTES
H-GH1	GREENHOUSE 1	75	1	25	208	3	EC	NF	MFR	5000	DRISTEAM	VM-25	NOTE 1, 2
H-GH2	GREENHOUSE 2	75	1	25	208	3	EC	NF	MFR	5000	DRISTEAM	VM-25	NOTE 1, 2

FILTER SCHEDULE (F)

NOTES:
1.PROVIDE WITH DUCTED FILTER BOX (CAMFIL GLIDE PACK OR APPROVED EQUAL)

			FILTER BOX DIMENSIONS				CFM		INITIAL A.P.D. IN. W.C.	FINAL A.P.D. IN. W.C.			
TAG NAME	SERVICE	TYPE	WIDTH	HEIGHT	DEPTH	MERV	DESIGN	FACE FPM			MANUFACTURER	MODEL	NOTES
F-GH1-EX	GREENHOUSE 1	CARTRIDGE	2'-0"	1'-0"	2'-0"	MERV 8 + HEPA	650	325	0.5	0.9	CAMFIL	ABSOLUTE VG	NOTE 1
F-GH2-EX	GREEHOUSE 2	CARTRIDGE	2'-0"	1'-0"	2'-0"	MERV 8 + HEPA	650	325	0.5	0.9	CAMFIL	ABSOLUTE VG	NOTE 1
F-HEAD	HEADHOUSE	CARTRIDGE	2'-0"	2'-0"	2'-0"	MERV 8 + HEPA	1,000	250	0.5	0.9	CAMFIL	ABSOLUTE VG	NOTE 1
F-PEST	PESTICIDE	CARTRIDGE	2'-0"	1'-0"	2'-0"	MERV 8 + HEPA	250	125	0.5	0.9	CAMFIL	ABSOLUTE VG	NOTE 1

TRAP SCHEDULE

NOTES:
1.CAPACITY LISTED IS FOR EACH TRAP AND INCLUDES SAFETY FACTOR.
2.SUITABLE TO 125 PSIG, SIDE INLET & OUTLET, SS FLOAT MECHANISM AND VALVE, CAST IRON BODY, BALANCED PRESSURE THERMOSTATIC AIR VENT, ALL INTERNALS REPLACEABLE IN-LINE.
3.CAPACITY AT OTHER DIFFERENTIAL PRESSURES SHALL BE AT LEAST 525#/HR AT 10 PSID, AND 1080#/HR AT 75 PSID. 1/8" ORIFICE,WITH INTEGRAL VACUUM BREAKER.
5.SIDE INLET AND OUTLET INVERTED BUCKET TRAP. 250 PSIG RATED. CAST IRON BODY, ALL INTERNAL COMPONENTS OF STAINLESS STEEL AND REPLACEABLE IN-LINE.
6.CAPACITY AT OTHER DIFFERENTIAL PRESSURES SHALL BE AT LEAST 150#/HR AT 10 PSID, 310#/HR AT 40 PSID, & 420#/HR AT 75 PSID. #38 ORIFICE.

TAG NAME	AREA SERVED	TYPE	SAFETY FACTOR	SIZE	CAPACITY LB HR (NOTE 1)	PRESSURE DIFFERENTIAL	MANUFACTURER	MODEL	NOTES
T-1	S50 DRIP TRAPS	I.B.	1.25	3/4"	100	0.5	ARMSTRONG	800T	NOTES 5 & 6
T-2	S15 DRIP TRAPS	I.B.	1.25	3/4"	100	0.5	ARMSTRONG	800T	NOTES 5 & 6
T-3	HX-GH	F & T	1.25	2"	2470	0.5	HOFFMAN SPECIALTY	C SERIES	NOTES 2 & 3

LOUVER SCHEDULE

NOTES:
1. FINISH TYPES: BAKED EPOXY FINISH ON PRIME COATED METAL. STANDARD COLOR - SELECTION BY ARCHITECT.
2. LOUVER SHALL MATCH EXISTING WALL OPENING SIZE. FIELD VERIFY EXISTING EXTERIOR WALL OPENING SIZE.

TAG NAME	AREA SERVED	CFM	SIZE (INCHES)		FREE AREA VELOCITY	S.P. IN. W.C.	FINISH	MANUFACTURER	MODEL	NOTES
			WIDTH	HEIGHT						
EAL-MR	MECH. RM.	200	14	14	0	0.00	NOTE 1	RUSKIN	ELF375	NOTE 2
OAL-UC	UTILITY CHASE	500	14	14	734	0.10	NOTE 1	RUSKIN	ELF375	

CONDENSATE RETURN STATION SCHEDULE - ELECTRIC

NOTES:
1.LB/HR IS ACTUAL MAXIMUM LOAD OF SYSTEM.
2.GPM HAS A SAFETY FACTOR OF THREE.

							ELECTRICAL										
											DISCONNECT		CONTROLLER/ STARTER				
TAG NAME	CONFIGURATION	LB/HR (NOTE 1)	CONDENSATE TEMPERATURE °F	GPM TOTAL (NOTE 2)	RECEIVER CAPACITY GALLONS	DISCHARGE PRESSURE (PSI)	HP EA.	NO OF POWER CONNECTIONS	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	SCCR	MANUFACTURER	MODEL	NOTES
CPU-7	DUPLEX	5000	210	10	15	20	0.33	1	120	1	EC	NF	MFR	5000	ROTH	27FD	

STEAM PRESSURE REDUCING VALVE SCHEDULE

NOTES:
1. PROVIDE WITH NOISE SUPPRESSION. REFER TO SECTION 23 22 18 FOR ADDITIONAL REQUIREMENTS.

TAG NAME	AREA SERVED	LB/HR	INLET PRESSURE PSI	OUTLET PRESSURE PSI	VALVE SIZE	MANUFACTURER	MODEL	NOTES
PRV-GH	GREENHOUSE	1975	50	15	2"	HOFFMAN SPECIALTY	2250	

FAN SCHEDULE

NOTES:
1. PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.
2. FAN SHALL BE SPARK RESISTANCE WITH EXPLOSION PROOF MOTOR.
3. PROVIDE WITH SPEED CONTROLLER THAT ALLOWS THE FAN TO OPERATE AT TWO DISCREET SPEEDS. (250 CFM AND 650 CFM).
4. PROVIDE WITH SPEED CONTROL AND GALVANIZED FAN HOUSING THAT IS APPROXIMATELY 13" x 13" x 19" LONG TO MATE WITH WALL SLEEVE THAT IS APPROXIMATELY 14" x 14" (FIELD VERIFY) AND REMOVABLE FAN GUARD.

								ELECTRICAL (NOTE 1)										VIBRATION ISOLATION				
												DISCONNECT		CONTROLLER/ STARTER								
TAG NAME	AREA SERVED	CFM	S.P. IN. W.C.	FAN RPM (NOTE F)	DRIVE TYPE	BACKDRAFT DAMPER TYPE	CURB TYPE (NOTE G)	BHP (NOTE E)	MHP (NOTE E)	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	SCCR	WEIGHT	TYPE	DEFL.	MANUFACTURER	MODEL	NOTES
EF-GH1	GREENHOUSE 1	650	2.00	1802	DIRECT	MOTORIZED	N/A	0.44	0.75	120	1	MFR	NF	MFR	ECM	5000	75	N/A	0.00"	GREENHECK	CUE-140HP-VG	NOTE 3
EF-GH2	GREENHOUSE 2	650	2.00	1802	DIRECT	MOTORIZED	N/A	0.44	0.75	120	1	MFR	NF	MFR	ECM	5000	75	N/A	0.00"	GREENHECK	CUE-140HP-VG	NOTE 3
EF-HEAD	HEADHOUSE	1000	2.00	3047	BELT	MOTORIZED	MFR	0.3	0.75	120	1	MFR	NF	MFR	VFD	5000	250	SPRING	1.00"	GREENHECK	FJI-09-BI-X	
EF-MR	MECH ROOM	180	0.30	1697	DIRECT	MOTORIZED	N/A	0.17	0.17	120	1	MFR	NF	MFR	ecm	5000	40	N/A	0.00"	GREENHECK	SE1-8-440-VG	NOTE 4
EF-PEST	PESTICIDE	250	2.00	2490	BELT	MOTORIZED	MFR	0.7	1	208	3	MFR	NF	MFR	VFD	5000	150	SPRING	1.00"	GREENHECK	FJI-07-BI-X	NOTE 2
EF-UC	UTILITY CHASE	500	0.50	1550	DIRECT	MOTORIZED	N/A	0.1	0.3	120	1	MFR	NF	MFR	FV	5000	100	N/A	0.00"	GREENHECK	CUE-095D	NOTE 4

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DESIGNER: JPT
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MECHANICAL SCHEDULES

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COIL SCHEDULE - ELECTRIC HEATING

TAG NAME	AREA SERVED	CFM	EAT °F	LAT °F	HEATING ELEMENT			ELECTRICAL						MAX. DIMENSIONS		MANUFACTURER	MODEL	NOTES
					NUMBER OF STAGES	TOTAL KW (QTY * KW) QTY	KW	VOLTAGE	PHASES	DISCONNECT BY (NOTE A)	DISCONNECT TYPE (NOTE B)	CONTROLLER/ STARTER BY (NOTE A)	CONTROLLER/ STARTER SCCR	WIDTH	HEIGHT			
HC-1	HEADHOUSE	1,750	54	90	3	1	11	208	3	MFR	NF	MFR	5000	1'-6"	1'-6"	GREEENHECK	IDHE	

UNIT HEATER SCHEDULE - HOT WATER

NOTES:
1.UNIT HEATER SHALL BE RATED TO OPERATE WITH A ROOM TEMPERATURE OF 113F. THE DISINFECTION PROCESS OF THE SPACE REQUIRES THE SPACE TEMPERATURE TO BE HEATED TO 113F FOR 24-48 HOURS.

TAG NAME	AREA SERVED	CONFIGURATION	CFM	MBH	GPM	EWT °F	LWT °F	W.P.D. FT. HEAD	ELECTRICAL HP	RPM	VOLTAGE	PHASES	DISCONNECT BY (NOTE A)	DISCONNECT TYPE (NOTE B)	CONTROLLER/ STARTER BY (NOTE A)	CONTROLLER/ STARTER SCCR	CONTROL	MANUFACTURER	MODEL	NOTES
UH-GH1	GREENHOUSE 1	HORIZONTAL	2550	118	18.0	180	160	1.3	0.3	1725	120	1	MFR	NF	MFR	5000	TSTAT	LJ WING	HU-20	NOTE 1
UH-GH2	GREENHOUSE 2	HORIZONTAL	2550	118	18.0	180	160	1.3	0.3	1725	120	1	MFR	NF	MFR	5000	TSTAT	LJ WING	HU-20	NOTE 1
UH-UC	UTLITY CHASE	HORIZONTAL	1200	42	4.2	180	160	0.4	0.2	1140	120	1	MFR	NF	MFR	5000	TSTAT	LJ WING	HU-15	

MOTOR OPERATED DAMPER SCHEDULE (MOD)

NOTES:
1.COORDINATE DAMPER ACTUATOR LOCATION AND MOUNTING REQUIREMENTS.

TAG NAME	SERVICE	DAMPER SIZE WIDTH	DAMPER SIZE HEIGHT	BLADE ORIENTATION	BLADE CONFIG.	INSULATED	CFM DESIGN	ACTUATOR (NOTE 1) TYPE	ACTUATOR (NOTE 1) FEEDBACK	ELECTRICAL VOLTS	ELECTRICAL PH	MANUFACTURER	MODEL	NOTES
MOD-GH1	GREENHOUSE 1	1'-0"	1'-0"	VERTICAL	PARALLEL	YES	650	ELECTRIC	YES	120	1	TAMCO	9000 BF	
MOD-GH2	GREENHOUSE 2	1'-0"	1'-0"	VERTICAL	PARALLEL	YES	650	ELECTRIC	YES	120	1	TAMCO	9000 BF	
MOD-HEAD	HEADWORKS	1'-2"	1'-2"	VERTICAL	PARALLEL	YES	1,000	ELECTRIC	YES	120	1	TAMCO	9000 BF	
MOD-PEST	PESTICIDE	1'-0"	1'-0"	VERTICAL	PARALLEL	YES	250	ELECTRIC	YES	120	1	TAMCO	9000 BF	
MOD-UC	UTILITY CORRIDOR	1'-2"	1'-2"	VERTICAL	PARALLEL	YES	500	ELECTRIC	YES	120	1	TAMCO	9000 BF	

RADIATION SCHEDULE

1. FINTUBE PIPE SHALL BE 1 1/4" SCH. 40 ALUMINUM WITH 3.25" x 3.25" x 0.025" THICK #5052 ALUMNIUM ALLOY FINS AT 55 FINS PER FOOT.
2. ALL FINTUBE SHALL HAVE FACTORY PROVIDED EXPANDED ALUMINUM COVERS.
3. BTUH HEAT OUTPUT SHALL BE BASED ON AVERAGE WATER TEMPERATURE OF 170F WATER TEMPERATURE AND 65F AMBIENT TEMPERATURE.
4. REFER TO M501 FOR FINTUBE CONTROL SEQUENCE.

TAG NAME	AREA SERVED	BTUH	GPM	ELEMENT MAT'L	ELEMENT LENGTH FT.	ELEMENT PIPE SIZE	ELEMENT FIN HEIGHT	ELEMENT FIN WIDTH	ELEMENT NUMBER OF TIERS	MANUFACTURER	MODEL	NOTES
RAD-1A-HI	GH BAY 1	14400	2.8	ALUMINUM	25' - 8"	1 1/4"	3 1/2"	3 1/2"	1	BIOTHERM	SUNFIN	ALL NOTES
RAD-1A-LO	GH BAY 1	34320	6.8	ALUMINUM	25' - 8"	1 1/4"	3 1/2"	3 1/2"	3	BIOTHERM	SUNFIN	ALL NOTES
RAD-1B-HI	GH BAY 1	9400	1.8	ALUMINUM	16' - 8"	1 1/4"	3 1/2"	3 1/2"	1	BIOTHERM	SUNFIN	ALL NOTES
RAD-1B-LO	GH BAY 1	22400	4.5	ALUMINUM	16' - 8"	1 1/4"	3 1/2"	3 1/2"	3	BIOTHERM	SUNFIN	ALL NOTES
RAD-2A-HI	GH BAY 2	14400	2.8	ALUMINUM	25' - 8"	1 1/4"	3 1/2"	3 1/2"	1	BIOTHERM	SUNFIN	ALL NOTES
RAD-2A-LO	GH BAY 2	34320	6.8	ALUMINUM	25' - 8"	1 1/4"	3 1/2"	3 1/2"	3	BIOTHERM	SUNFIN	ALL NOTES
RAD-2B-HI	GH BAY 2	9900	1.9	ALUMINUM	17' - 8"	1 1/4"	3 1/2"	3 1/2"	1	BIOTHERM	SUNFIN	ALL NOTES
RAD-2B-LO	GH BAY 2	23750	4.8	ALUMINUM	17' - 8"	1 1/4"	3 1/2"	3 1/2"	3	BIOTHERM	SUNFIN	ALL NOTES
RAD-3A-HI	GH CIRCULATION	9900	1.9	ALUMINUM	17' - 8"	1 1/4"	3 1/2"	3 1/2"	1	BIOTHERM	SUNFIN	ALL NOTES
RAD-3A-LO	GH CIRCULATION	23750	4.8	ALUMINUM	17' - 8"	1 1/4"	3 1/2"	3 1/2"	3	BIOTHERM	SUNFIN	ALL NOTES

RELIEF VALVE SCHEDULE - STEAM (RV)

TAG NAME	SIZE INLET	SIZE OUTLET	SIZE ORIFICE	LB/HR	SET POINT PSIG	MANUFACTURER	MODEL	NOTES
RV-1	4"	6"	1.29	1975	25	KUNKLE	300/600	

PIPE INSULATION SCHEDULE (HVAC)

GENERAL NOTES:
1. REFER TO THE SECTION 23 07 19 FOR PIPE INSULATION DESCRIPTIONS AND JACKETING REQUIREMENTS.
2. PROVIDE RIGID INSERT AT HANGERS. REFER TO SECTION 23 07 19 FOR REQUIREMENTS.
3. PROVIDE ALUMINUM JACKET ON ALL PIPING WITHIN GREENHOUSE BAYS AND GREENHOUSE CIRCULATION SPACE.
4. PROVIDE INSULATION WITHIN 10' OF EXTERIOR PENETRATION.

SYMBOL	PIPE SYSTEM	INSULATION TYPE	INSULATION THICKNESS PER NOMINAL PIPE OR TUBE SIZE < 1"	1" TO < 1.5"	1.5" TO < 4"	4" TO < 8"	≥ 8"	NOTES
23 PIPING - HEATING WATER								
HWR	HEATING WATER RETURN	A (GlsFbr)	1 1/2"	1 1/2"	2"	2"	2"	NOTE 3
HWS	HEATING WATER SUPPLY	A (GlsFbr)	1 1/2"	1 1/2"	2"	2"	2"	NOTE 3
23 PIPING - STEAM								
LPC	LOW PRESSURE CONDENSATE	A (GlsFbr),	2 1/2"	2 1/2"	2 1/2"	3"	3"	
PC	PUMPED CONDENSATE	A (GlsFbr)	2 1/2"	2 1/2"	2 1/2"	3"	3"	
S15	LOW PRESSURE STEAM - 15 PSIG	A (GlsFbr)	2 1/2"	2 1/2"	2 1/2"	3"	3"	
S50	MEDIUM PRESSURE STEAM - 50 PSIG	A (GlsFbr)	3"	4"	4 1/2"	4 1/2"	4 1/2"	
SV	SAFETY RELIEF VENT	A (GlsFbr)	2 1/2"	2 1/2"	2 1/2"	3"	3"	NOTE 4

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CONDUIT INSTALLATION SCHEDULE

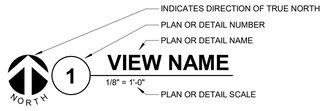
THE FOLLOWING SCHEDULE SHALL BE ADHERED TO UNLESS THEY CONSTITUTE A VIOLATION OF APPLICABLE CODES OR ARE NOTED OTHERWISE ON THE DRAWINGS. THE INSTALLATION OF RMC CONDUIT WILL BE PERMITTED IN PLACE OF ALL CONDUIT SPECIFIED IN THIS SCHEDULE. REFER TO CONDUIT AND BOXES SPECIFICATION 26 05 33 FOR ADDITIONAL INFORMATION.

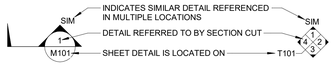
INSTALLATION TYPE	RMC	EMT	PVC	PVC CONCRETE ENCASED	PVC COATED RMC
FEEDERS: SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS, MOTOR CONTROL CENTERS, ETC.		X			
BRANCH CIRCUITS: LIGHTING, RECEPTACLES, CONTROLS, ETC.		X			
MECHANICAL EQUIPMENT FEEDERS: PUMPS, CHILLERS, AIR HANDLING UNITS, ETC.		X			
FLOOR MOUNTED EQUIPMENT FEEDERS: PUMPS, ETC. (INCLUDE NO MORE THAN 6 FEET OF LFMC TO PUMP)		X			
CONTROLS (LIGHTING, POWER, BUILDING AUTOMATION, ETC.)		X			
WET AND DAMP LOCATIONS: (CONDUIT, BOXES, FITTINGS, INSTALLED AND EQUIPPED TO PREVENT WATER ENTRY)	X				
CORROSIVE LOCATIONS					X
ELEVATED CONCRETE SLABS (ABOVE GRADE)	X		X		
INTERIOR LOCATIONS WITH FINISHED CEILING AND WALLS: CONCEALED IN WALLS AND ABOVE FINISHED CEILINGS		X			
INTERIOR LOCATIONS WITHOUT FINISHED CEILINGS: CONCEALED IN WALL, EXPOSED ABOVE CEILINGS		X			
EXISTING INTERIOR LOCATIONS WITH FINISHED CEILINGS AND WALLS: CONCEALED IN WALLS AND ABOVE FINISHED CEILING UNLESS OTHERWISE NOTED		X			
UNDERGROUND / SLABS ON GRADE (IN OR UNDER SLABS ON GRADE)					
WITHIN 5' FROM THE PERIMETER OF THE BUILDING	X		X		
WITHIN 5' FROM THE PERIMETER OF THE BUILDING WHEN PASSING THROUGH THE PERIMETER OF THE BUILDING FOUNDATION:	X			X	
UNDERGROUND SITE CONDUITS:					
WITHIN 5' FROM THE PERIMETER OF A BUILDING FOUNDATION	X			X	
5' OR GREATER FROM THE PERIMETER OF A BUILDING FOUNDATION	X		X		
UNDER ROADS, DRIVES, AND VEHICLE TRAVELED WAYS. WHEN HDPE DIRECTIONAL BORING IS ALLOWED: PROVIDE PRESSURIZED GROUT			X	X	X
DUCTBANKS (REFER TO DUCTBANK DETAILS WHEN APPLICABLE)					
REINFORCING SHALL CONSIST OF ONE-HALF INCH DEFORMED BARS SPACED 12 INCHES ON CENTER, PARALLELING THE DUCTS ON BOTTOM, WITH ONE-HALF INCH DEFORMED TIE BARS SPACED TWELVE INCHES ON CENTERS.				X	
BARS SHALL OVERLAP 40 DIAMETERS AND SHALL EXTEND 5' BEYOND ROADS, DRIVES, TRAVELED WAYS, ETC.				X	
PROVIDE MINIMUM 3" CONCRETE COVER ON ALL SIDES OF REINFORCING.				X	
ENTIRE DUCTBANK SHALL BE INSTALLED ON PRECAST CONCRETE PAVERS ON 3' CENTERS.				X	
HAZARDOUS (CLASSIFIED LOCATIONS AS DEFIED BY THE NATIONAL ELECTRICAL CODE: COMPLETE WITH SCREWED FITTINGS AND CONDUIT SEALS	X				
DEFINITIONS:					
CONCRETE ENCASEMENT: CONDUIT WITH A MINIMUM OF 3" THICKNESS BETWEEN THE SURFACE OF THE CONCRETE AND THE NEAREST CONDUIT. CONCRETE TO BE DOWELED INTO THE FOUNDATION.					

VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL





LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
NEW
EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
EXISTING
EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

ELECTRICAL ABBREVIATION KEY

ABBR:	DESCRIPTION:
ABV	ABOVE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ASR	ARCHITECTURAL SURFACE RACEWAY
BC	BELOW COUNTER
C	CONDUIT (BRANCH CIRCUIT OR FEEDER CONTEXT)
CO	CONDUIT AND BOX ROUGH-IN ONLY (ROUGH-IN ONLY)
EG	EQUIPMENT GROUND
EGC	EQUIPMENT GROUNDING CONDUCTOR
EOL	END OF LINE
EPO	EMERGENCY POWER OFF
GFR	GROUND FAULT REMOTE
HOA	HAND/OFF/AUTO
ITR	IT RACK MOUNTED RECEPTACLE
NC	NORMALLY CLOSED
NEMA #	NEMA RATING
NIC	NOT IN CONTRACTED SCOPE
NO	NORMALLY OPEN
ROOF	EQUIPMENT LOCATED ON ROOF ABOVE
SM	SURFACE MOUNTED
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED

ELECTRICAL SYMBOL LIST

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
E	ECONN	26 05 33	ELECTRICAL CONNECTION
J	JB	26 05 33	JUNCTION BOX
	PANEL '###'	26 24 16	PANELBOARD - SURFACE MOUNT
	MX-#/MS-#	26 24 19	SURFACE OR RECESS MOUNTED MANUAL SWITCH / STARTER. REFER TO DISC/STA SCHEDULE.
	DS-#/FDS-#	26 28 16	DISCONNECT SWITCH FUSED DISCONNECT SWITCH REFER TO DISC/STA SCHEDULE
	TR-#	26 22 00	TRANSFORMER. REFER TO TRANSFORMER SCHEDULE.
	REC-DUP	26 27 26	DUPLEX RECEPTACLE, 125V
	REC-DUP-GFI	26 27 26	DUPLEX GFI RECEPTACLE, 125V
W	REC-DUP-WP	26 27 26	DUPLEX GFI WEATHERPROOF RECEPTACLE 125V

ELECTRICAL EQUIPMENT TAGS

TAG:	DESCRIPTION:	RELATED SPECIFICATION
DP-#	DISTRIBUTION PANEL	26 24 16
SPD-#	SURGE PROTECTION DEVICE	26 43 00

RECEPTACLE SUBSCRIPT KEY:

DEVICE KEY:

DEVICE — # = MOUNTING (IF APPLICABLE)
1 = CIRCUIT NUMBER

*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: A / 1

ELECTRICAL MOUNTING SUBSCRIPT KEY:

A	MOUNT AT +6" TO CENTERLINE ABOVE COUNTER OR BACKSPLASH
C	MOUNT AT CEILING (DEVICE OR ROUGH-IN CONTEXT)
H	MOUNT ORIENTED HORIZONTALLY
L	MOUNT IN CASEWORK
R	MOUNT IN SURFACE RACEWAY
S	SURFACE MOUNTED
WP	WEATHERPROOF

ELECTRICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.
2. NOT ALL EXISTING EQUIPMENT, LUMINAIRES, AND CONDUIT ARE SHOWN. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.
3. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS PRIOR TO FABRICATION OF CABLE TRAY, BUSWAY, CONDUIT RACKS, AND OTHER SYSTEMS. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS TO VERIFY ACCESSIBILITY TO THE AREAS OF THEIR WORK INCLUDING WALLS, FLOOR, CEILINGS, CEILING TILES/GRID, AND ROOF. CONTRACTOR IS RESPONSIBLE TO PROVIDE CUTTING, REMOVAL, PATCHING, AND REINSTALLATION OF AFFECTED AREAS ASSOCIATED WITH THEIR WORK.
5. WHERE EXISTING ELECTRICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, CONDUIT, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING ELECTRICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.

ELECTRICAL INSTALLATION NOTES:

1. CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL PROVIDED. COMMON NEUTRALS MAY NOT BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
2. FLUSH MOUNT ALL LIGHTING CONTROL DEVICES AT +42" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED.
3. FLUSH MOUNT ALL DUPLEX RECEPTACLES AND TECHNOLOGY OUTLETS AT +18" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED. RECEPTACLES AND OUTLETS MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED. MOUNT EXTERIOR LOCATED RECEPTACLES WITH WHILE-IN-USE COVERS AT +20" FROM FINISHED GRADE (CENTER DIMENSIONS) TO MAINTAIN INSTALLATION ADA COMPLIANCE.
4. ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS. REFER TO DIVISION 7 FOR ADDITIONAL INFORMATION AND REQUIREMENTS SPECIFIC TO FIRESTOPPING.
5. MOUNT ALL FIRE ALARM PULL STATIONS AT +42" FROM FLOOR (CENTERLINE DIMENSION) EXCEPT WHERE OTHERWISE NOTED.
6. INSTALL ALL WALL MOUNTED FIRE ALARM NOTIFICATION DEVICES AT 90" ABOVE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER, EXCEPT WHERE OTHERWISE NOTED. HEIGHT SHALL BE MEASURED TO THE TOP OF THE DEVICE.
7. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CEILING MOUNTED DEVICES AND EQUIPMENT WITH LUMINAIRES, SPRINKLER, AND CEILING DIFFUSERS. CENTER ALL DEVICES IN CEILING TILE PATTERN. SMOKE DETECTORS,CARBON MONOXIDE DETECTORS, AND OCCUPANCY/VACANCY SENSORS SHALL BE LOCATED NO CLOSER THAN 3 FEET TO AN AIR SUPPLY DIFFUSER OR RETURN GRILLE. CARBON MONOXIDE DETECTORS SHALL BE LOCATED 10 PLUS FT FROM FIRE PLACES, COOKING, AND SIMILAR FUEL-BURNING APPLIANCES
8. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS, AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION, CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS, OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
9. ELECTRICAL AND TECHNOLOGY EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF, OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
11. CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO THE WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
12. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN. ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER ELECTRICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
13. ELECTRICAL IDENTIFICATION. REFER TO SPECIFICATION SECTION 26 05 53 FOR COLOR/LABEL REQUIREMENTS FOR CONDUIT, BOX, CABLE/WIRE, AND EQUIPMENT.

ELECTRICAL SHEET INDEX

E000	ELECTRICAL COVERSHEET
E001	ELECTRICAL COVERSHEET
E010	SITE PLAN - ELECTRICAL
E099	GROUND FLOOR DEMO PLAN - ELEC.
E101	GROUND FLOOR PLAN - LIGHTING
E111	GROUND FLOOR PLAN - POWER
E120	GROUND FLOOR PLAN - SYSTEMS
E300	ELECTRICAL ENLARGED PLANS
E400	ELECTRICAL DETAILS
E500	ELECTRICAL DIAGRAMS
E600	ELECTRICAL SCHEDULES
E700	ELECTRICAL PANEL SCHEDULES
GRAND TOTAL: 12	

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ELECTRICAL COVERSHEET

USDA PEORIA - HEADHOUSE & GREENHOUSE

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DWG. NO. E000

ELECTRICAL SYMBOL LIST

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
COMMON AND SEQUENCE OF OPERATION SUBSCRIPTS			SUBSCRIPTS: TYPE / PROGRAMMING W = WEATHERPROOF D = HVAC CONTROL # = 15, 30, 75, 110, 177 CANDELA RATING
(S)# (S)#	FA-120	28 31 00	FIRE ALARM SMOKE DETECTOR, CEILING OR WALL MOUNT BLANK - PHOTOELECTRIC
(S)	FA-122	28 31 00	FIRE ALARM DUCT SMOKE DETECTOR # = EQUIP OR SYSTEM
(H)# (H)#	FA-140	28 31 00	FIRE ALARM HEAT DETECTOR # = EQUIP OR SYSTEM
F	FA-130	28 31 00	FIRE ALARM MANUAL PULL STATION
	FA-200	28 31 00	FIRE ALARM VISUAL ALARM DEVICE, CEILING OR WALL MOUNT # = CANDELA RATING.
(F)# (F)#	FA-211	28 31 00	COMBINATION AUDIO HORN/CHIME AND VISUAL ALARM DEVICE, CEILING OR WALL MOUNTED # = CANDELA RATING
CM	FA-161	28 31 00	FIRE ALARM ADDRESSABLE CONTROL MODULE BLANK = REFER TO PLANS

LUMINAIRE CIRCUIT AND CONTROL KEY

LUMINAIRE

F1 = FIXTURE TAG
1 = CIRCUIT NUMBER
a = SWITCH DESIGNATION
z1=ZONE DESIGNATION
NL INDICATES LUMINAIRE IS UNSWITCHED FOR NIGHT LIGHT.
SE INDICATES LUMINAIRE IS SWITCHED/CONTROLLED DURING NORMAL OPERATION AND OPERATES FROM EMERGENCY CIRCUIT UPON LOSS OF POWER.

*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: F1 / 1 / a / NL

LUMINAIRE SHADING KEY

NORMAL BRANCH LUMINAIRE

EMERGENCY BRANCH LUMINAIRE

SHADED LUMINAIRE OR DEVICE INDICATES LUMINAIRE OR DEVICE IS CONNECTED TO AN EMERGENCY CIRCUIT.

ELECTRICAL SYMBOL LIST

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
	REFER TO LUMINAIRE SCHEDULE		LINEAR LUMINAIRES TROFFER WALL SCONCE LUMINAIRE DOWNLIGHT LUMINAIRE AIMABLE OR WALL WASH LUMINAIRE INDUSTRIAL LUMINAIRE WALL BRACKET LUMINAIRE POLE MOUNTED LUMINAIRE SINGLE FACE EXIT SIGN DOUBLE FACE EXIT SIGN WALL/CEILING EMERGENCY EXIT SIGN EMERGENCY UNIT

SEQUENCE OF OPERATION / SYSTEM INPUTS		PANEL/ANNUNCIATOR ALARM INDICATION	PANEL/ANNUNCIATOR SUPERVISORY INDICATION	PANEL/ANNUNCIATOR TROUBLE INDICATION	AUDIBLE ALARMS SEQUENCE	VISUAL ALARMS SEQUENCE	AHU & MECHANICAL FAN SHUTDOWN SEQUENCE	CM
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL LOW BATTERY			X					
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL BATTERY OR CHARGER FAILURE				X				
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL ABNORMAL SWITCH OR CONTROL POSITION.			X					
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL GROUND FAULT, OPEN CIRCUIT, SHORT CIRCUIT				X				
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL AC POWER LOSS OR IRREGULARITY				X				
NOTIFICATION APPLIANCE CIRCUIT OR SLC LOOP GROUND FAULT, OPEN CIRCUIT, SHORT CIRCUIT				X				
INITIATING DEVICE FAILURE OR COMMUNICATION ERROR				X				
FIRE ALARM PANEL MANUAL FIRE DRILL			X		X	X		
MANUAL PULL STATION	F	X			X	X	X	
SMOKE DETECTOR	(S)#_ (S)#_	X			X	X	X	
HEAT DETECTOR	(H)#_ (H)#_	X			X	X	X	
SMOKE DETECTOR FOR HVAC CONTROL	(S)#_ (S)#_ (S)	X	X	X	X	X	X	

NOTES:

1. ALL SYSTEM EVENTS SHALL BE LOGGED AND DISPLAYED ON THE ANNUNCIATOR INTERFACE, IF APPLICABLE. SEE SPECIFICATIONS FOR MORE INFORMATION AND DESCRIPTIONS OF SEQUENCES OF OPERATION.

1 FIRE ALARM OPERATION MATRIX

NO SCALE

ELECTRICAL SYMBOL LIST

SYMBOL:	SPEC TAG:	SPEC SECTION:	DESCRIPTION:

S
##
	SW-1P
	SW-2P
	SW-3W
	SW-4W
	SW-D
	SW-D3
	SW-DML
	
	SW-DO
	
	SW-1P-WP
	SW-O
	
	SW-O2
	SW-1P-K
	SW-2P-K
	SW-3W-K
	SW-4W-K
	SW-1P-EM
	SW-3W-EM
	SW-4W-EM
	SW-1P-PL
	SW-1P-LH
	SW-1P-M
	SW-1P-060
	SW-1P-ADJ
	SW-1P-EX
		26 09 33	SWITCH
			SUBSCRIPTS:
			BLANK = SINGLE POLE
			2 = TWO POLE
			3 = THREE WAY
			4 = FOUR WAY
			D = DIMMER - STAND ALONE
			D3=DIMMER - THREE WAY WITH S3 TYPE
			DML=DIMMER - MULTI-LOCATION FADE CONTROL [NTS: RESIDENTIAL USE - DIFFERS FROM #B PUSH BUTTON DIMMER]
			DO=DIMMER - OCCUPANCY/VACANCY SENSORS - DUAL TECHNOLOGY ULTRASONIC/ACOUSTIC AND PIR
			W = WEATHERPROOF
			O = DUAL TECHNOLOGY OCCUPANCY SENSOR WITH WALL SWITCH
			O2=OCCUPANCY SENSOR AND DUAL SWITCH
			K = SINGLE POLE - KEY LOCK
			K2=TWO POLE - KEY LOCK
			K3=THREE WAY - KEY LOCK
			K4=FOUR WAY - KEY LOCK
			E = SINGLE POLE - EMERGENCY
			3E=THREE WAY - EMERGENCY
			4E=FOUR WAY - EMERGENCY
			P = SINGLE POLE - RED PILOT LIGHT
			L = SINGLE POLE - LIGHTED HANDLE
			M = THREE POSITION MOMENTARY
			60=LOCAL TIMER - SPRING WOUND
			T = LOCAL TIMER - USER ADJUSTABLE
			X = SINGLE POLE - EXPLOSION PROOF

LS ##	SW-LS	26 09 33	DAYLIGHT LEVEL SENSOR - CEILING MOUNTED SUBSCRIPTS: BLANK = DIMMING CONTROL # = SPECIAL FUNCTION S = SWITCHED CONTROL W =WIRELESS WITH BATTERY
OC ##	SW-OC-D SW-OC-A SW-OC-P SW-OC-P2 SW-OC-U SW-OC-HA SW-OC-HB SW-OC-W	26 09 33	OCCUPANCY SENSOR - CEILING MOUNTED SUBSCRIPTS: BLANK = DUAL TECHNOLOGY A = ULTRASONIC - TWO SIDED CORRIDOR COVERAGE P = PASSIVE INFRARED - 360° COVERAGE P2=PASSIVE INFRARED - 100° COVERAGE U = ULTRASONIC - 360° COVERAGE HA=HIGHBAY - ISLE COVERAGE HB=HIGH BAY W = WIRELESS WITH BATTERY
VC ##	SW-VC-D SW-VC-A SW-VC-P SW-VC-P2 SW-VC-U SW-VC-HA SW-VC-HB SW-VC-W	26 09 33	VACANCY SENSOR - CEILING MOUNTED SUBSCRIPTS: BLANK = DUAL TECHNOLOGY A = ULTRASONIC - TWO SIDED CORRIDOR COVERAGE P = PASSIVE INFRARED - 360° COVERAGE P2=PASSIVE INFRARED - 100° COVERAGE U = ULTRASONIC - 360° COVERAGE HA=HIGHBAY - ISLE COVERAGE HB=HIGH BAY W = WIRELESS WITH BATTERY
PC ##	SW-LS-PC	26 09 33	EXTERIOR PHOTOCELL SUBSCRIPTS: BLANK = STAND ALONE DEVICE #R=ROOM BASED LIGHTING CONTROL DEVICE #N =NETWORK BASED LIGHTING CONTROL DEVICE
#B ##	SW-#B	26 09 33	LIGHTING CONTROL STATION - DEFAULT DIMMED CONTROL - # DEFINES MINIMUM QUANTITY OF CONTROL SCENES, PLUS OFF, REFER TO LIGHTING SEQUENCE OF OPERATIONS WHEN NOT DEFINED. SUBSCRIPTS: BLANK = DIMMING CONTROL S = SWITCHED CONTROL W = WIRELESS WITH BATTERY # = UNIQUE ID WHEN APPLICABLE
LCD ##	SW-LCD	26 09 33	LCD LIGHTING CONTROL - CUSTOM PROGRAMMING SUBSCRIPTS: BLANK = DIMMING CONTROL S = SWITCHED CONTROL # = UNIQUE ID WHEN APPLICABLE

LIGHTING SYSTEM DESCRIPTION KEY:

THE DESIGN DOCUMENTS DESCRIBE THE OPERATIONAL PERFORMANCE REQUIREMENTS OF THE LIGHTING CONTROL SYSTEM. THE PROJECT MAY REQUIRE ONE OR MORE LIGHTING CONTROL STRATEGIES FOR THE PROJECT. REFER TO THE ELECTRICAL SYMBOL KEY, SPECIFICATION SECTION 26 09 33 LIGHTING CONTROL SYSTEMS, AND THE DRAWINGS TO DETERMINE THE DESIGN APPLICATION FOR EACH SPACE. THE POTENTIAL STRATEGIES ARE AS FOLLOWS:

1. STANDALONE LIGHTING CONTROL DEVICES: INDEPENDENT (STANDALONE) DEVICES TRADITIONALLY OPERATING AT LINE OR LOW VOLTAGE, FIELD CONFIGURABLE WITH OTHER STANDALONE DEVICES TO PROVIDE AN OVERALL LIGHTING CONTROL SYSTEM.

2. ROOM BASED LIGHTING CONTROLS: INTEGRATED SYSTEM COMPRISED OF SWITCH STATIONS, SENSORS, ROOM CONTROLLERS, CONTROL PANELS, AND ACCESSORIES, OPERATING AT LINE AND/OR LOW VOLTAGE, CONFIGURED AS AN INTEGRATED OVERALL 'INTELLIGENT' LIGHTING CONTROL SYSTEM. LIGHTING CONTROL ZONES AND POWER CIRCUITS COMMONLY ALIGN.

3. NETWORK BASED LIGHTING CONTROLS: INTEGRATED SYSTEM COMPRISED OF SWITCH STATIONS, SENSORS, ROOM CONTROLS, CONTROL PANELS, DIMMER RACKS, AND ACCESSORIES, OPERATING AT LINE AND/OR LOW VOLTAGE, CONFIGURED AS AN INTEGRATED OVERALL 'INTELLIGENT' LIGHTING CONTROL SYSTEM FOR ADVANCED ARCHITECTURALLY BASED LIGHTING CONTROL SYSTEMS. LIGHTING CONTROL ZONES COMMONLY ASSOCIATED WITH ONE OR MORE BRANCH POWER CIRCUITS WITHIN THE SAME CONTROL ZONE.

LIGHTING CONTROL SYSTEM DESIGNATION: THE FOLLOWING KEY MAY BE USED AS AN EXAMPLE TO DETERMINE THE DESIGNATED LIGHTING CONTROL SYSTEM FOR EACH SPACE. REFER TO ELECTRICAL COVERSHEET FOR ELECTRICAL SYMBOLS LIST AND DEVICE SPECIFICATION TAG. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. STANDALONE LIGHTING CONTROL DEVICES: CONTROL STATION COMMONLY DEFINED BY AN ALPHA CHARACTER WITH SUBSCRIPTS.
   - A. EXAMPLE SYMBOL "S", SPECIFICATION TAG "SW-1P", DESCRIPTION "SWITCH-SINGLE POLE SWITCH".
   - B. EXAMPLE CONTROL DESIGNATION: a, b, c (WHEN REQUIRED TO CLARIFY DESIGN INTENT).
   - C. SINGLE POLE LIGHT SWITCH "SA" CONTROLS LUMINAIRES WITH THE SUBSCRIPT "a" WITHIN THE SAME SPACE.
   - D. REFER TO THE LIGHT CONTROL SEQUENCE OF OPERATION TAG (L#-##) FOR A COMPLETE DESCRIPTION OF THE LIGHTING CONTROL REQUIREMENTS.

   F#/a — LUMINAIRE; a/S — CONTROL

2. ROOM BASED LIGHTING CONTROLS: CONTROL STATION COMMONLY DEFINED BY A RECTANGLE SYMBOL.
   - A. EXAMPLE CONTROL STATION: SYMBOL "#B", TAGGED "SW-#B", DESCRIPTION "LIGHTING CONTROL STATION".
   - B. EXAMPLE PANEL/RACK/CABINET: TAGGED "LCPR#", DESCRIPTION "ROOM BASED LIGHTING CONTROL PANEL/RACK/CABINET.
   - C. EXAMPLE CONTROL DESIGNATIONS: a, b, c
   - D. LIGHTING CONTROL STATION "#B" a,b CONTROLS LUMINAIRES WITH THE SUBSCRIPT "a" AND "b" WITHIN THE SAME SPACE
   - E. REFER TO THE LIGHT CONTROL SEQUENCE OF OPERATION TAG (L#-##) FOR A COMPLETE DESCRIPTION OF THE LIGHTING CONTROL AND PRE-PROGRAMMED SCENE SELECTION REQUIREMENTS.

   F#/a — LUMINAIRE; F#/b — LUMINAIRE; a,b/#B — CONTROL

3. NETWORK BASED LIGHTING CONTROLS: CONTROL STATION COMMONLY DEFINED BY A RECTANGLE SYMBOL.
   - A. EXAMPLE SYMBOL "#B", TAGGED "SW-#B", DESCRIPTION "LIGHTING CONTROL STATION".
   - B. EXAMPLE PANEL/RACK/CABINET: TAGGED "LCPN", DESCRIPTION "NETWORK BASED LIGHTING CONTROL PANEL/RACK/CABINET.
   - C. EXAMPLE CONTROL DESIGNATIONS: z1, z2, z3
   - D. LIGHTING CONTROL STATION "#B" z1 CONTROLS LUMINAIRES WITH THE SUBSCRIPT "z1". LUMINAIRES WITH A z1 DESIGNATION MAY OR MAY NOT BE SERVED BY THE SAME BRANCH LIGHTING CIRCUIT.
   - E. REFER TO THE LIGHT CONTROL SEQUENCE OF OPERATION TAG (L#-##) FOR A COMPLETE DESCRIPTION OF THE LIGHTING CONTROL AND PRE-PROGRAMMED SCENE SELECTION REQUIREMENTS.

   F#/z1/1 — LUMINAIRE; F#/z1/5 — LUMINAIRE; z1/#B — CONTROL

   BOTH LUMINAIRES ARE CONTROLLED BY THE SAME CONTROL STATION, SAME LIGHTING CONTROL ZONE Z1, BUT POWERED BY DIFFERENT BRANCH LIGHTING CIRCUITS.

LIGHTING CONTROL NOTES:

LIGHTING CONTROL NOTES:

(L###) INDICATES THE LIGHTING SEQUENCE OF OPERATION FOR THE SPACE. REFER TO THE LIGHTING SEQUENCE OF OPERATION MATRIX ON SHEET E600.

(#B) LIGHTING CONTROL STATION. THE "#" INDICATES THE MINIMUM QUANTITY OF ZONES/SCENES AS DEFINED IN THE LIGHTING SEQUENCE OF OPERATIONS. THE LIGHTING CONTROL STATION SHALL PROVIDE SEPARATE ON AND OFF AS WELL AS RAISE AND LOWER BUTTON(S). CONTROL SHALL BE CAPABLE OF DIMMING UP/DOWN AND SWITCHING AS DEFINED IN THE LIGHTING SEQUENCE OF OPERATIONS. REFER TO DRAWINGS AND LUMINAIRE SUBSCRIPTS TO DETERMINE IF A ROOM BASED CONTROLLER (a, b, c SUBSCRIPTS) OR NETWORK CONTROL SYSTEM (z1, z2, z3) IS REQUIRED.

(z##) INDICATES ZONING AND REFLECTS A LIGHTING CONTROL GROUP. PROVIDE RELAYS AS REQUIRED TO ALLOW LUMINAIRES WITHIN THE DEFINED ZONE TO FUNCTION TOGETHER.

LIGHTING CONTROL SUBSCRIPTS:
1. LOWER CASE ALPHA SUBSCRIPTS "a, b, c" INDICATE LINE VOLTAGE OR ROOM BASED LIGHTING CONTROL SYSTEMS. REFER TO DRAWINGS TO DETERMINE IF LINE VOLTAGE CONTROL (S, S3, S4, ETC) OR (#B) ROOM BASED CONTROLLER SYSTEM (#B) IS REQUIRED.
2. LOWER CASE ALPHA NUMERIC SUBSCRIPTS "z1, z2, z3" INDICATE NETWORK BASED LIGHTING CONTROL SYSTEM.

EMERGENCY LIGHTING OVERRIDE CONTROL (UL924 AND UL1008): LIGHTING CONTROL EQUIPMENT COUPLED WITH REMOTE EMERGENCY POWER SOURCES (EXTERNAL TO THE LUMINAIRE) REQUIRE ALCR (UL924) OR BCELTS (UL1008) DEVICES FOR EMERGENCY (LIFE SAFETY) COMPLIANCE. AN EMERGENCY LIGHTING CONTROL BYPASS IS REQUIRED FOR EVERY INDIVIDUAL LIGHTING CONTROL ZONE-CIRCUIT BUT NOT SHOWN ON THE PLANS. REFER TO THIS SPECIFICATION FOR ALCR AND BCELTS DESCRIPTIONS. REFER TO THE SEQUENCE OF OPERATION LIGHTING CONTROL DESCRIPTIONS ON THE PLANS FOR ADDITIONAL REQUIREMENTS.

REFER TO SHEET E600 FOR LUMINAIRE SCHEDULE

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USDA — Agricultural Research Service

ELECTRICAL COVERSHEET

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SHEET 45 OF 74

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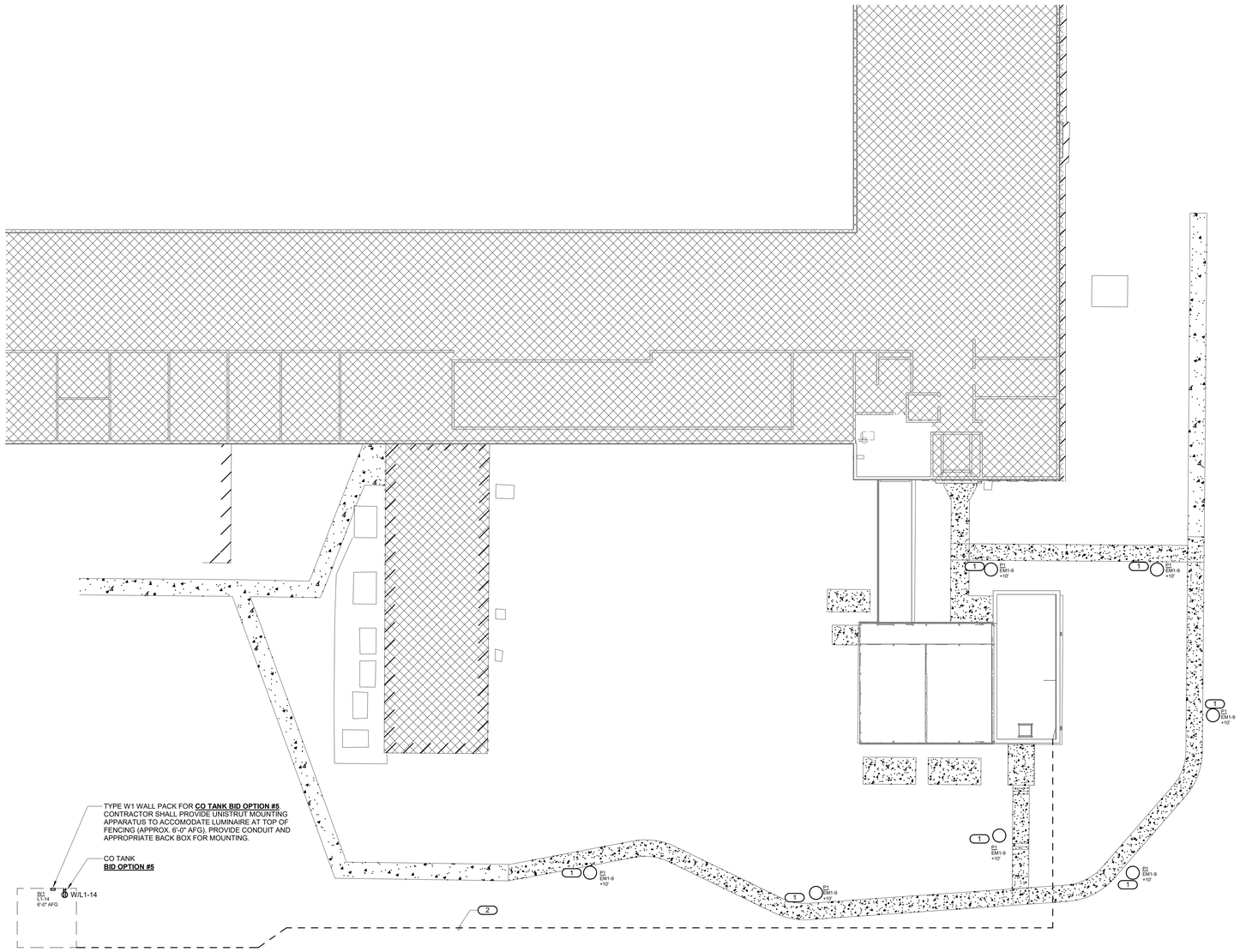
KEYNOTES: (#)

1. REFER TO 8/E400 FOR POLE BASE DETAIL. ALL BASES SHALL BE 1'-6" ON CENTER AWAY FROM THE EDGE OF THE PATHWAY.
2. CONDUIT SHALL ROUTE ALONG SAME PATH AS GAS PIPING TO THE CO TANK. COORDINATE EXACT ROUTING WITH CIVIL DRAWINGS.



1 SITE PLAN - ELECTRICAL

1/16" = 1'-0"

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BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:	DWG. NO. E010
			SHEET 46 OF 74

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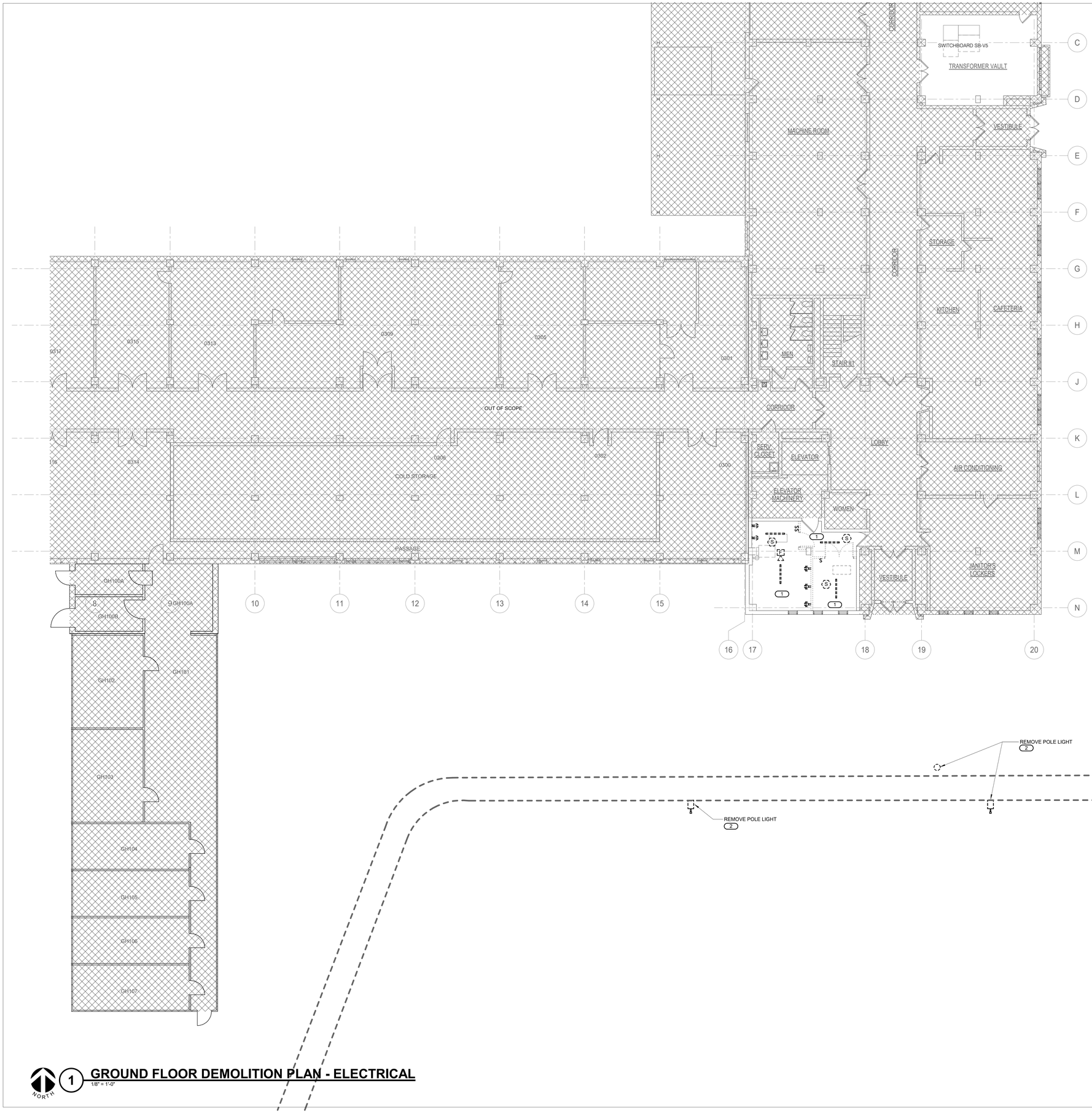

KEYNOTES: (#)

1. REMOVE ALL EXISTING DEVICES, CONDUIT, WIRE, ETC. FROM EXISTING ROOMS.
2. CONTRACTOR TO VERIFY FEED, CONDUIT AND CONDUCTORS FOR LIGHT POLES PLANNED FOR REMOVAL AND DISCONNECT FROM BUILDING. THE CONDUIT AND CONDUCTORS, BEFORE CONSTRUCTION BEGINS TO PREVENT DAMAGE DUE TO POSSIBLE DAMAGE DURING EXCAVATION.

1 GROUND FLOOR DEMOLITION PLAN - ELECTRICAL

1/8" = 1'-0"

NORTH

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Agricultural Research Service

GROUND FLOOR DEMO PLAN - ELEC.

USDA PEORIA - HEADHOUSE & GREENHOUSE

TASK ORDER NO.:

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NCAUR
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DWG. NO. E099

SHEET 47 OF 74

LICENSED PROFESSIONAL ENGINEER
ERIC J. HENDERSON
26825
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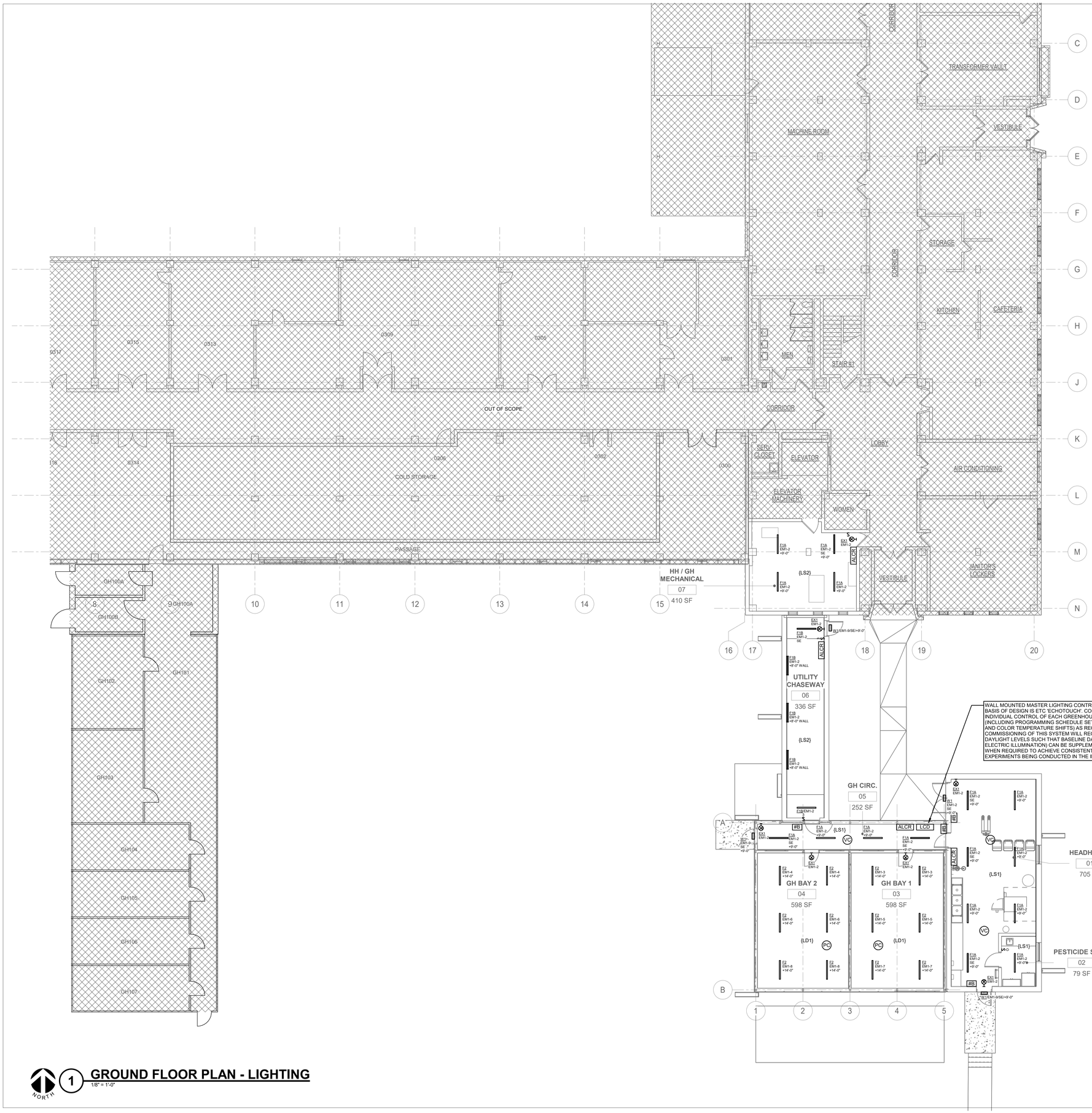

NORTH

1 **GROUND FLOOR PLAN - LIGHTING**

1/8" = 1'-0"

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USDA — Agricultural Research Service

GROUND FLOOR PLAN - LIGHTING

USDA PEORIA - HEADHOUSE & GREENHOUSE

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LICENSED PROFESSIONAL ENGINEER — ERIC J. HENDERSON 20825 — IOWA

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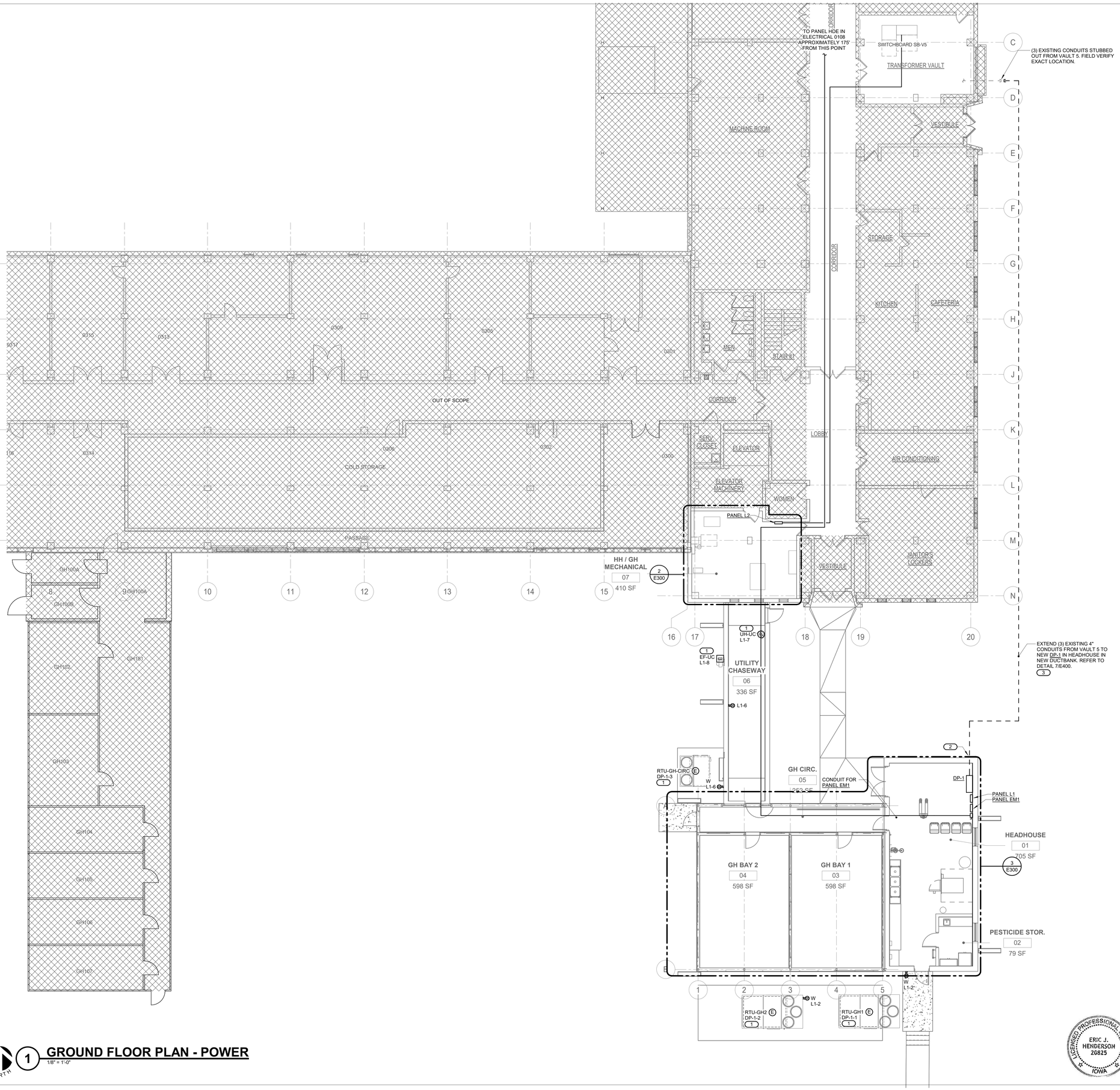

KEYNOTES: #

1. DISCONNECT/STARTER PROVIDED BY EQUIPMENT MANUFACTURER.
2. REFER TO 2/E500 FOR DUCT BANK AT FOUNDATION WALL DETAIL.
3. COORDINATE EXACT ROUTING WITH CIVIL PLANS PRIOR TO EXCAVATION.

1 GROUND FLOOR PLAN - POWER

1/8" = 1'-0"

NORTH

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DESIGNER: ZACROS	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
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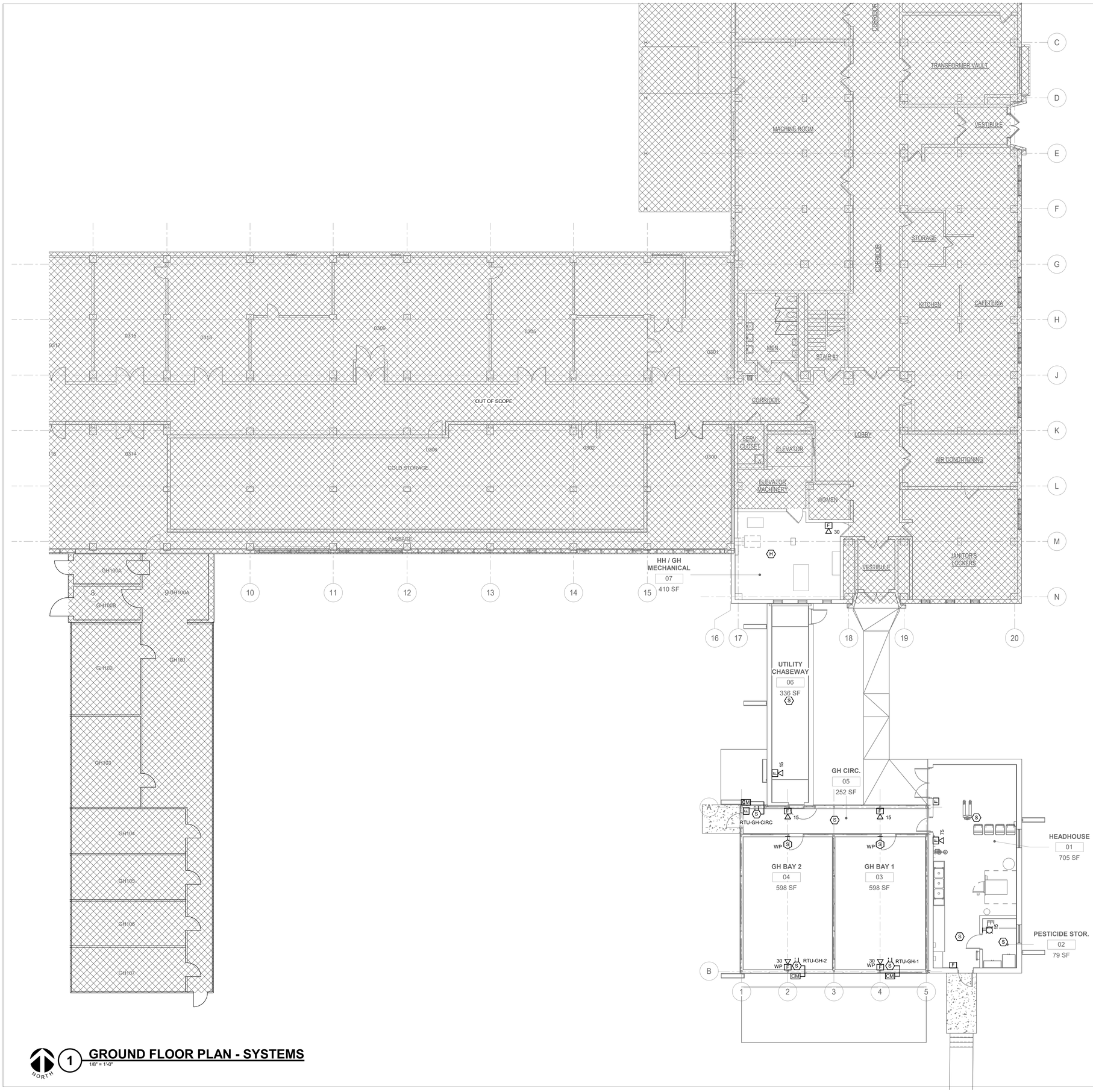
SHEET NOTES:

1. EXISTING FIRE ALARM SYSTEM IS A SIMPLEX 4120 SYSTEM LOCATED IN BUILDING 1 AT MAIN ENTRANCE.



1 GROUND FLOOR PLAN - SYSTEMS

1/8" = 1'-0"

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GROUND FLOOR PLAN - SYSTEMS

USDA PEORIA - HEADHOUSE & GREENHOUSE

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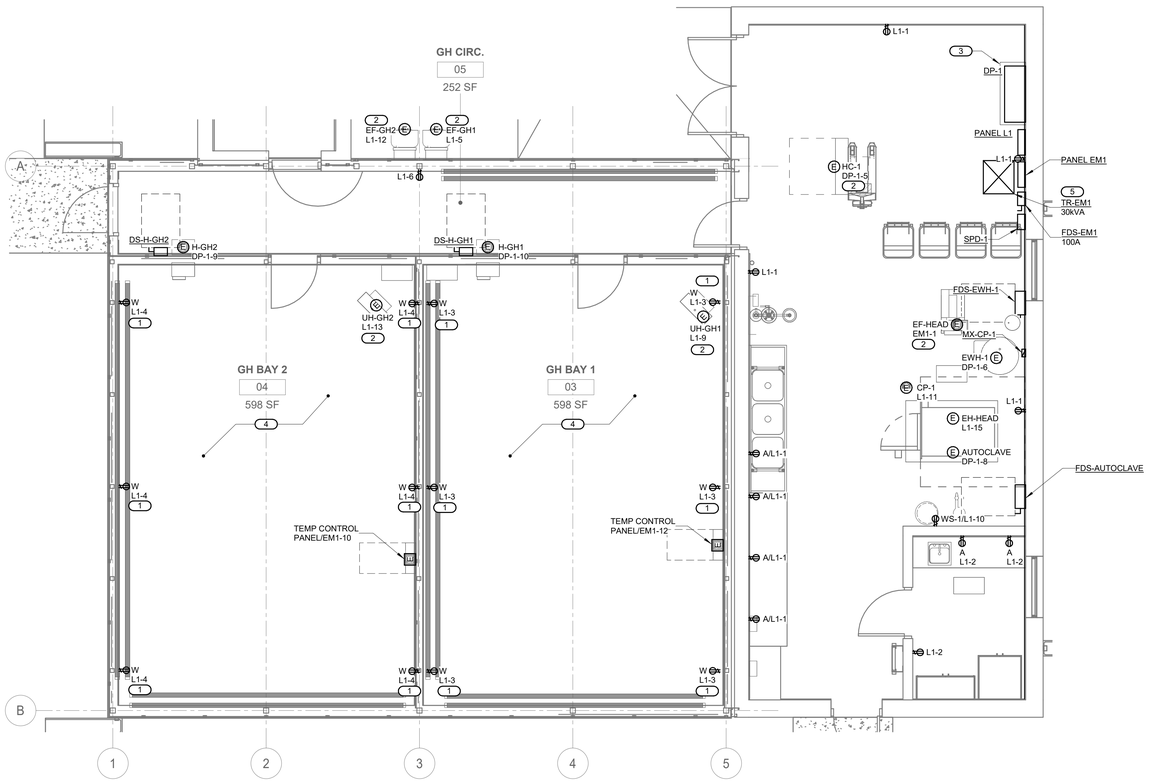
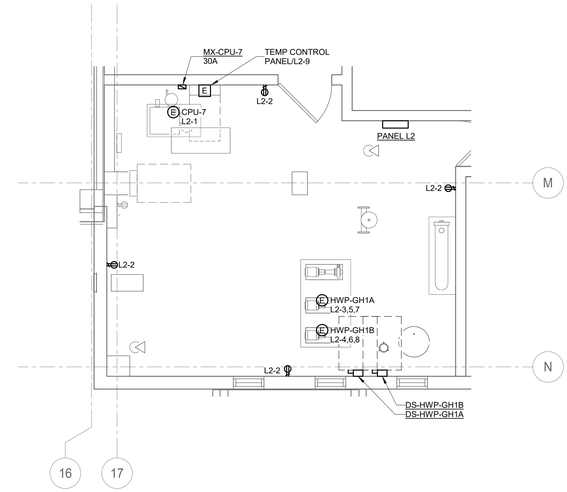
KEYNOTES: (#)

1. DEVICE TO BE MOUNTED ON THE MULLION.
2. DISCONNECT/STARTER TO BE PROVIDED BY EQUIPMENT MANUFACTURER.
3. PROVIDE EQUIPMENT WITH CONCRETE HOUSEKEEPING PAD.
4. ALL DEVICES, CONDUIT, AND FITTINGS WITHIN GREENHOUSE SHALL BE LISTED FOR WET LOCATIONS TO PREVENT CORROSION.
5. MOUNT TRANSFORMER ON WALL ABOVE PANEL. PROVIDE MOUNTING BRACKETS FOR WALL AS SUGGESTED BY TRANSFORMER MANUFACTURER.



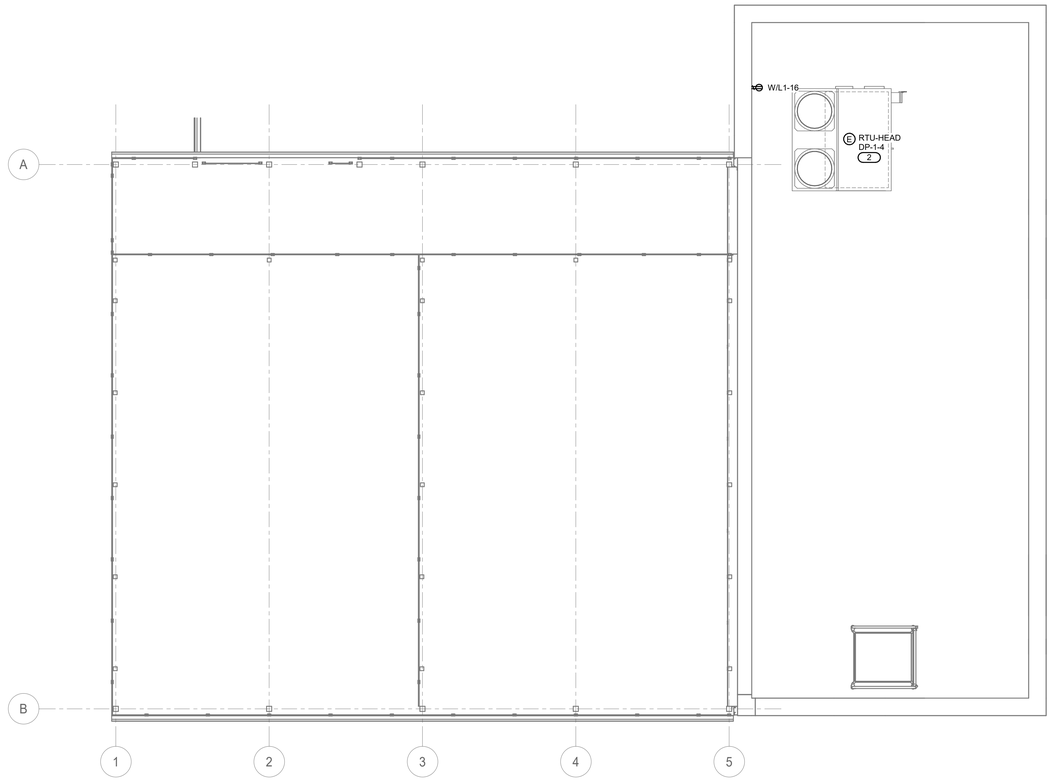
1 GREENHOUSE FLOOR PLAN - POWER

1/4" = 1'-0"



2 HH/GH MECHANICAL - POWER

1/4" = 1'-0"



3 GREENHOUSE ROOF PLAN - POWER

1/4" = 1'-0"

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ELECTRICAL ENLARGED PLANS

USDA PEORIA - HEADHOUSE & GREENHOUSE

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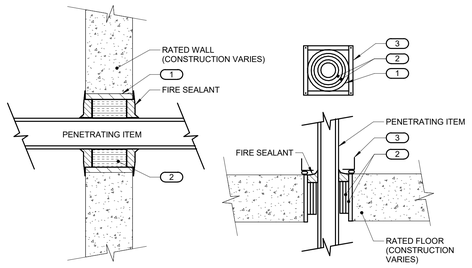


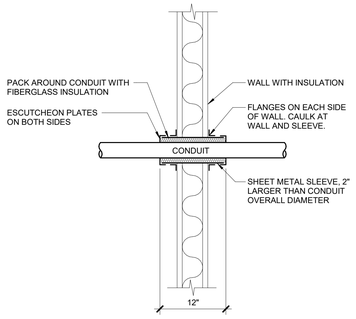
NOTES:

1. THIS GENERAL DETAIL APPLIES TO ALL ITEMS PENETRATING FIRE RATED WALLS OR FLOORS. THE INTENT IS TO MAINTAIN THE FIRE RATING AND TO ALLOW LONGITUDINAL MOVEMENT. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.

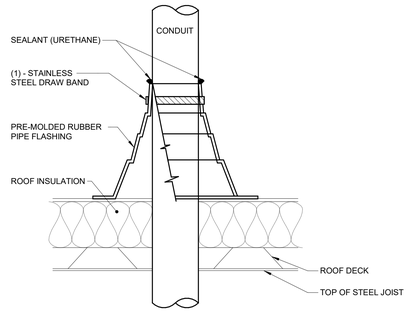
KEYNOTES:

1. SCHEDULE 5 PIPE SLEEVE EMBEDDED IN WALL OR FLOOR, OR SMOOTH CORE DRILL. CONTRACTOR FURNISHES SLEEVE. COORDINATES SLEEVE LOCATIONS AND DEBURS SLEEVE. CONTRACTOR TO BUILDS SLEEVE INTO WALL OR FLOOR ALLOWING NO GAP AROUND SLEEVE. IF SLEEVE IS NOT PROVIDED WHEN WALL OR FLOOR IS BUILT, CONTRACTOR SHALL INSTALL SLEEVE. SLEEVE SIZE SHALL ALLOW ANNULAR SPACE REQUIRED BY THE SELECTED FIRE STOP SYSTEM.
2. INSTALL BACKING MATERIAL, SUCH AS MINERAL WOOL SAFING, AS REQUIRED FOR FIRE STOP SYSTEM. INSTALL IN ACCORDANCE WITH FIRE STOP SYSTEM APPLICATION LISTING. SECURE TO WALL OR FLOOR TO ALLOW LONGITUDINAL MOVEMENT OF PENETRATING ITEM WITHOUT MOVEMENT OF FIRE BARRIER.
3. WATER-TIGHT WELDED 1"x1" 20 GAUGE MINIMUM GALVANIZED SHEET METAL ANGLE FRAME, BY CONTRACTOR IN EQUIPMENT ROOMS FOR WATER STOP. PLACE A BEAD OF WATERPROOF SEALANT BETWEEN FLOOR AND BOTTOM OF ANGLE FRAME. SECURE TO FLOOR WITH MASONRY ANCHORS IN CORNERS AND ON 12" MAXIMUM CENTERS. MULTIPLE PENETRATING ITEMS MAY BE ENCLOSED IN ONE FRAME.

1 FIRE BARRIER PENETRATION
NO SCALE



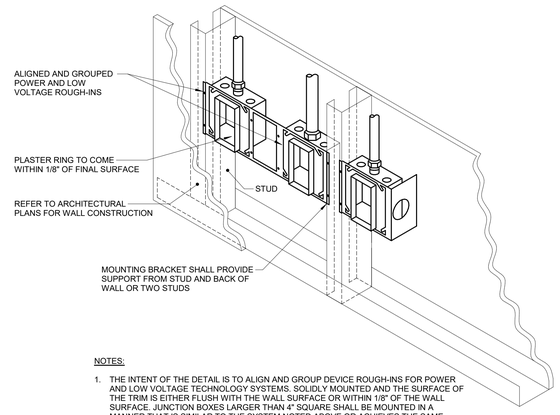
2 CONDUIT WALL PENETRATION
NO SCALE



NOTES:

1. CONDUIT SHALL BE SUPPORTED WITHIN 24 INCHES ABOVE AND BELOW ROOF.

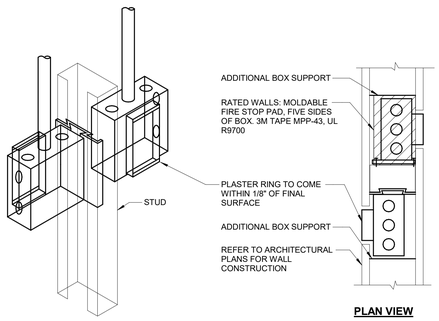
3 CONDUIT ROOF PENETRATION
NO SCALE



NOTES:

1. THE INTENT OF THE DETAIL IS TO ALIGN AND GROUP DEVICE ROUGH-INS FOR POWER AND LOW VOLTAGE TECHNOLOGY SYSTEMS. SOLIDLY MOUNTED AND THE SURFACE OF THE TRIM IS EITHER FLUSH WITH THE WALL SURFACE OR WITHIN 1/8" OF THE WALL SURFACE. JUNCTION BOXES LARGER THAN 4" SQUARE SHALL BE MOUNTED IN A MANNER THAT IS SIMILAR TO THE SYSTEM NOTED ABOVE OR ACHIEVES THE SAME RESULTS.
2. PLASTER RINGS DEPTH SHALL BE 1/8" DEEPER THAN THE GYP BOARD APPLIED TO THE WALL. PLASTER RING SHALL BE 3/4" FOR USE WITH 5/8" GYP BOARD.
3. METAL STUD-TO-STUD MOUNTING BRACKETS FOR MULTIPLE BOXES BETWEEN STUD. ERICO CADDY RBS SERIES, EATON B-LINE BB SERIES, OR EQUAL.
4. MOUNTING SUPPORT BRACKETS SIZES FOR SINGLE BOXES IN A STUD CAVITY SHALL MATCH THE STUD DEPTH. ERICO CADDY H SERIES, EATON B-LINE BB SERIES, OR EQUAL.
5. WHERE RECEPTACLE AND TECHNOLOGY DEVICES ARE SHOWN SERVING A COMMON COMPUTER OR EQUIPMENT, OR SHOWN IN SIMILAR LOCATIONS ON THE DRAWINGS THE DEVICES SHALL BE INSTALLED IN THE SAME STUD CAVITY WITH MOUNTING BRACKETS OR ALIGNED ON OPPOSITE SIDES OF A COMMON STUD WITH SEPARATE SUPPORT.

4 BACKBOX MOUNTING DETAIL
NO SCALE

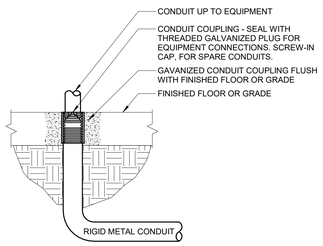


PLAN VIEW

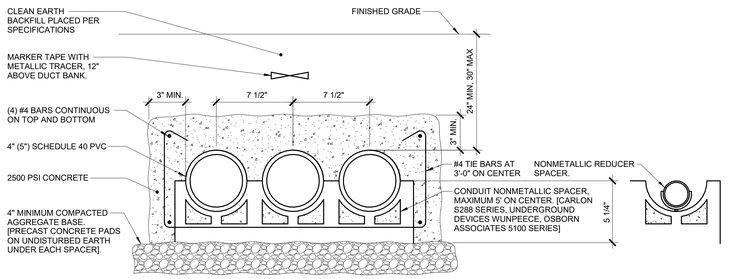
NOTES:

1. HORIZONTAL CONDUIT CONNECTION BETWEEN BOXES LESS THAN 2'-0" NOT PERMITTED. SEE SPECIFICATIONS AND DRAWING NOTES FOR ADDITIONAL SPACE REQUIREMENTS BETWEEN DEVICES.

5 SIDE BY SIDE DEVICE OPENINGS
NO SCALE



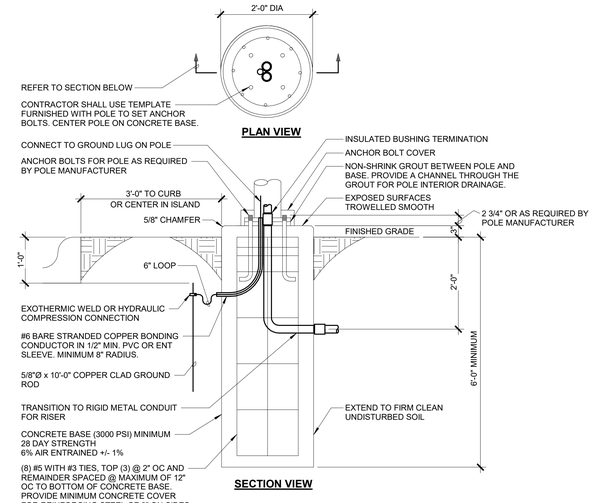
6 SPARE CONDUIT STUB UP
NO SCALE



NOTES:

1. INSTALL 2000 lb TENSILE STRENGTH BRAIDED POLYPROPYLENE PULL CORD IN ALL CONDUITS.
2. TRENCHING AND BACKFILL ACCORDING TO SPECIFICATIONS.
3. MINIMUM OF 4'-0" CLEAR BETWEEN ADJACENT DUCTBANKS.
4. DOWEL ENDS OF DUCTBANK TO FOUNDATION OR MANHOLE WITH A MINIMUM OF (4) #4 DOWELS.

7 DUCT BANK DETAIL (3x1)
NO SCALE



8 POLE BASE DETAIL
NO SCALE

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PROJECT MANAGER:	AOE:		ELECTRICAL DETAILS
DESIGNER: ZACROS	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
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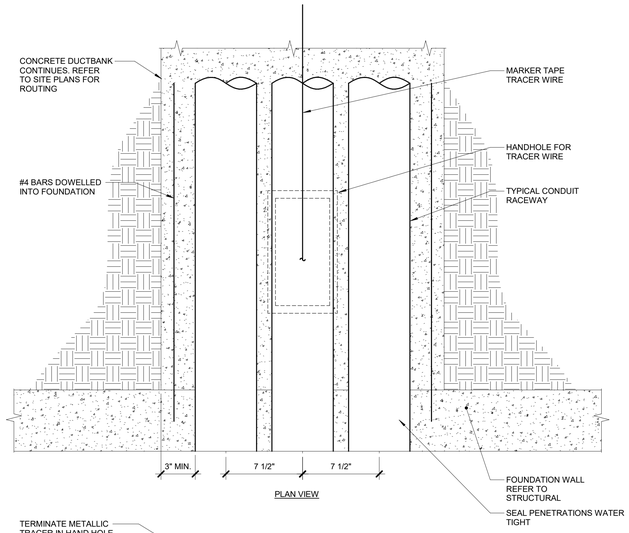
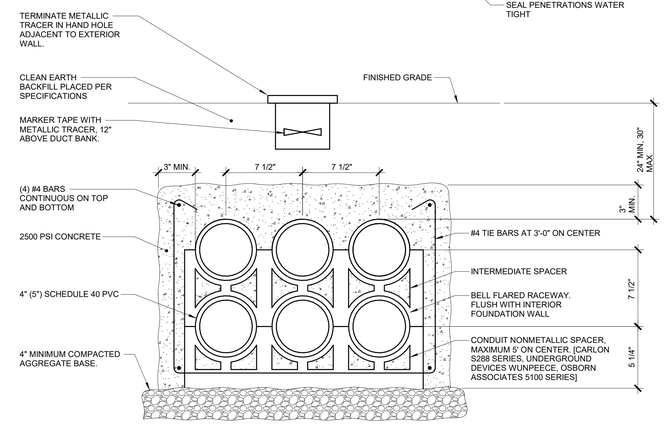


PLAN VIEW

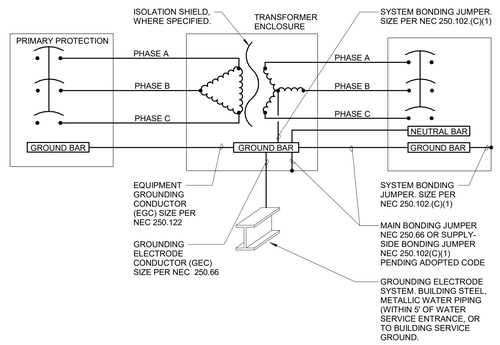


SECTION

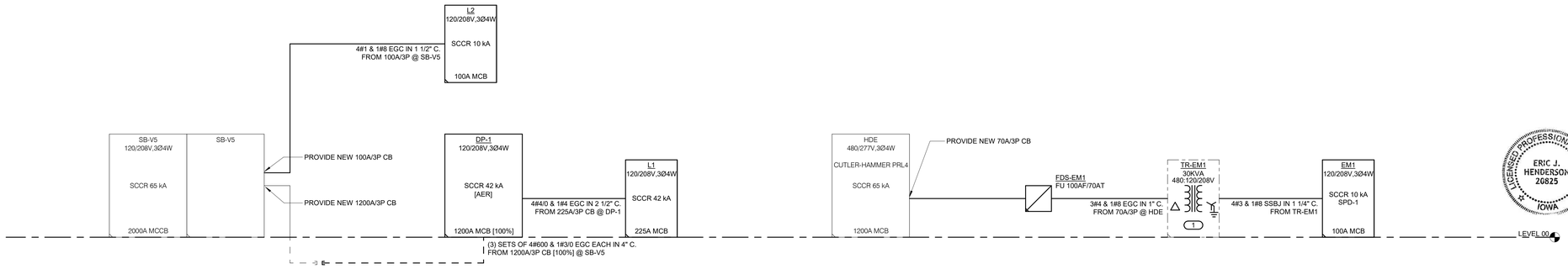
NOTES:

1. EPOXY ENDS OF REINFORCEMENT INTO SIDE OF FOUNDATION OR MANHOLE WITH A MINIMUM OF (4) #4 DOWELS.
2. REFER TO STRUCTURAL PLANS FOR FOUNDATION WALL STRUCTURAL REQUIREMENTS.

2 DUCT BANK AT FOUNDATION WALL DETAIL
NO SCALE



3 TRANSFORMER WIRING DETAIL
NO SCALE



1 RISER DIAGRAM
NO SCALE

ELECTRICAL - RISER DIAGRAM NOTES:

1. THE RISER DIAGRAM IS INTENDED TO CONVEY THE COMPONENTS OF THE ELECTRICAL DISTRIBUTION SYSTEM. REFER TO ELECTRICAL DRAWINGS, DETAILS, DISTRIBUTION / PANEL / EQUIPMENT / EQUIPMENT CONNECTION SCHEDULES, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. SHORT CIRCUIT CURRENT RATINGS (SCCR) FOR EQUIPMENT ARE MINIMUM REQUIREMENTS FOR BUSS BRACING AND DEVICE RATING. ALL EQUIPMENT SHALL BE FULLY RATED UNLESS SPECIFICALLY NOTED AS SERIES RATED.
3. THE BASIS OF DESIGN: THE CONTRACTOR SHALL BE RESPONSIBLE FOR DERATING AND SIZING CONDUCTORS AND CONDUITS TO EQUAL OR EXCEED AMPACITY OF THE BASIS OF DESIGN CIRCUITS WHEN ALTERNATIVE METHODS OR MATERIALS OTHER THAN THE BASIS OF DESIGN ARE APPLIED.
   a. RACEWAY: EMT UNLESS OTHERWISE NOTED
   b. FEEDER CHARACTERISTICS: ALL CURRENT CARRYING CONDUCTORS SHALL BE COPPER UNLESS NOTED OTHERWISE. CONDUCTOR SIZES ARE BASED ON AMERICAN WIRE GAUGE AWG AND KCMIL THOUSANDS OF CIRCULAR MIL. REFER TO SPECIFICATION SECTION 26 05 13 WIRE AND CABLE FOR ADDITIONAL INFORMATION
   c. GROUNDING AND BONDING CONDUCTORS SHALL BE COPPER.
   d. CONDUCTORS (MOTORS): COPPER
   e. CONDUCTOR LENGTHS LISTED IN RISER DIAGRAMS AND SCHEDULES ARE FOR ENGINEERING CALCULATIONS AND SHALL NOT BE USED FOR BIDDING PURPOSES.
   f. [BLANK] OR [CU] INDICATES COPPER CONDUCTOR
4. DRY TYPE TRANSFORMER AND SEPARATELY DERIVED SYSTEMS. PROVIDE GROUNDING ELECTRODE CONDUCTOR FOR SEPARATELY DERIVED SYSTEM. ROUTE TO STRUCTURAL BUILDING STEEL WHEN AVAILABLE. OTHERWISE ROUTE TO MAIN GROUNDING ELECTRODE SYSTEM.
5. PROVIDE O.Z. GEDNEY OR EQUAL GROUND BUSHING FOR ALL SERVICE AND FEEDER RACEWAYS BONDED TO GROUND BUS WITH CONDUCTOR SIZED TO MAXIMUM FEEDER GROUND CAPACITY.
6. CONDUCTORS AND GROUND SIZES ON THE LINE AND LOAD SIDES OF ALL DISCONNECT SWITCHES SHALL BE IDENTICAL UNLESS NOTED OTHERWISE.
7. REFER TO COVER SHEET FOR ADDITIONAL EQUIPMENT TAG INFORMATION (SPD-#, M-#, ETC).
8. REFER TO GROUNDING ELECTRODE SYSTEM AND BONDING DETAILS
   a. EGC – EQUIPMENT GROUNDING CONDUCTOR
   b. GEC – GROUNDING ELECTRODE CONDUCTOR
   c. SSBJ – SUPPLY SIDE BONDING JUMPER
9. CIRCUIT BREAKER CHARACTERISTICS AND ACCESSORIES:
   a. [CB] INDICATES CIRCUIT BREAKER
   b. [FU] INDICATES FUSED SWITCH
   c. [NF] INDICATES NON-FUSED SWITCH
   d. [MLO] INDICATES MAIN LUG ONLY
   e. [MCB] INDICATES MAIN CIRCUIT BREAKER
   f. [MCCB] INDICATES MOLDED CASE CIRCUIT BREAKER
   g. [GF] INDICATES GROUND FAULT RELAY
   h. [AER] INDICATES ARC ENERGY REDUCTION SYSTEM
   i. [100% RATED] INDICATES INSULATED CASE BREAKER RATED FOR FULL CONTINUOUS CAPACITY OF CIRCUIT BREAKER NAMEPLATE
   j. [LOCK] INDICATES PADLOCK HASP
   k. [RED] INDICATES RED HANDLE
   l. [SHUNT] INDICATES SHUNT TRIP BREAKER
   m. [KIRK] CAPTURED KEY INTERLOCK SWITCH

ELECTRICAL DISTRIBUTION AND PANEL SCHEDULE NOTES:

1. BRANCH PANEL KEY:
   a. *A = ARC FAULT CIRCUIT INTERRUPT
   b. *G = GROUND FAULT CIRCUIT INTERRUPT
   c. *I = ISOLATED GROUND
   d. *P = PADLOCK HASP
   e. *R = RED HANDLE
   f. *S = SHUNT TRIP
   g. *NB = NEW BREAKER
   h. *RB = REPLACE EXISTING BREAKER WITH NEW BREAKER
   i. *EB = EXISTING BREAKER
   j. *M = [CBM] CIRCUIT BREAKER METER - PROVIDE *EM WHEN NOT AVAILABLE (SPECIFICATION 26 09 13)
   k. *EM = [DEM] DIGITAL ENERGY METER - ADD ON (SPECIFICATION 26 09 13)

SHEET NOTES:

1. ALL NEW CIRCUIT BREAKERS IN EXISTING PANELS SHALL MATCH EXISTING RATINGS AND CHARACTERISTICS.

KEYNOTES: (#)

1. REFER TO 3/E500 FOR TRANSFORMER WIRING DETAIL.

ERIC J. HENDERSON 20825 LICENSED PROFESSIONAL ENGINEER IOWA

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BED PROJECT NO.:	REAL PROPERTY:
	TASK ORDER NO.:
	ORDER DATE:

USDA Agricultural Research Service

ELECTRICAL DIAGRAMS

USDA PEORIA - HEADHOUSE & GREENHOUSE

NCAUR
1815 North University Street
Peoria, Illinois 61604

DWG. NO. E500

SHEET 53 OF 74

Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/MEP23_23005300.03_USDA-Peoria-New Greenhouse_C.rvt
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LUMINAIRE SCHEDULE LEGEND

DESCRIPTION:

PAF - PAINT AFTER FABRICATION

OPTICS:

BEAM ANGLE

##° or ## DEG - BEAM ANGLE IN DEGREES

VNSP - VERY NARROW SPOT
NSP - NARROW SPOT
SP - SPOT
WSP - WIDE SPOT
VWSP - VERY WIDE SPOT
NFL - NARROW FLOOD
FL - FLOOD
WFL - WIDE FLOOD
VWF - VERY WIDE FLOOD

MOUNTING (MTG):

CL - CEILING
CV - COVE
G - GROUND SURFACE
IG - IN GRADE
P - PERIMETER
PL - POLE
RE - RECESSED
SP - SUSPENDED
SU - SURFACE
UC - UNDER CABINET
WL - WALL
O - OTHER (SEE DESCRIPTION)

VERIFY AND COORDINATE ALL CEILING TYPES WITH LUMINAIRE MOUNTING AND TRIM REQUIREMENTS. REFER TO ARCHITECTURAL AND INTERIOR DESIGN ELEVATIONS, SECTIONS, AND DETAILS FOR LUMINAIRE MOUNTING LOCATIONS AND REQUIREMENTS.

MOUNTING HEIGHTS INDICATED IN THE SCHEDULE ARE TO THE BOTTOM OF FIXTURE UNLESS NOTED OTHERWISE.

DIMENSIONS:

L - LENGTH **W** - WIDTH **H** - HEIGHT **D** - DEPTH **Ø** - DIAMETER
VAR. - DIMENSION VARIES, SEE ARCHITECTURAL PLANS.

LIGHT SOURCE:

SOURCE TYPE
LED - INTEGRAL LIGHT EMITTING DIODE
DLED - DYNAMIC TUNABLE WHITE LED
RLED - RETROFIT LED LAMP
WLED - WARM DIM LED

CCT / CRI
INTERIOR CORRELATED COLOR TEMPERATURE 4000/4100K, COLOR RENDERING INDEX (CRI) AT OR ABOVE 80, UNLESS NOTED OTHERWISE.
EXTERIOR CORRELATED COLOR TEMPERATURE 3000K, COLOR RENDERING INDEX (CRI) AT OR ABOVE 80, UNLESS NOTED OTHERWISE.

DELIVERED LUMENS:

LUMENS INDICATED ARE MINIMUM INITIAL DELIVERED LUMENS AT SPECIFIED CCT AND CRI.

WATTS:

MAXIMUM ANSI WATTS PER: (BLANK) = PER LUMINAIRE **FT** = LINEAR FOOT **LAMP** **POLE**

POWER SUPPLY:

PS TYPE
(BLANK) - INTEGRAL UNLESS NOTED OTHERWISE
REM - REMOTE
EM - EMERGENCY BATTERY

CONTROL METHOD
0-10V - 0 TO 10V DIMMING
10% **1%** **0.1%** **0.01%** AS INDICATED
DALI - DIGITAL ADDRESSABLE LIGHTING INTERFACE (IEC 62386)
DMX - USITT DMX512-A (ANSI E1.11)
UPC - UNIVERSAL PHASE CONTROL DIMMING (PHASE ADAPTIVE)
SWC - SWITCHED CONTROL
O - OTHER (SEE DESCRIPTION)

COORDINATE LUMINAIRE DRIVER DIMMING METHODS AND PROTOCOLS WITH THE LIGHTING CONTROL SYSTEM AND CONTROL MANUFACTURER REQUIREMENTS TO ENSURE DIMMING COMPATIBILITY.

MANUFACTURER - SERIES:

1. **THE FIRST MANUFACTURER AND MODEL LISTED IS THE BASIS OF DESIGN.**
2. **SHOP DRAWINGS BASED ON NON-LISTED MANUFACTURERS SHALL BE REJECTED. VOLUNTARY ALTERNATES SHALL NOT BE CONSIDERED UNLESS THE LISTED MANUFACTURER PRODUCT(S) ARE NOT AVAILABLE OR NOT SUITABLE TO THE APPLICATIONS. IF NOT PROVIDING THE BASIS OF DESIGN EQUIPMENT, CONTRACTOR MUST PROVIDE DOCUMENTATION TO SHOW THE PRODUCT PROPOSED IS EQUAL TO THE BASIS OF DESIGN PRODUCT.**

LUMINAIRE SCHEDULE

TAG	DESCRIPTION	OPTICS	MTG	DIMENSIONS	LIGHT SOURCE	DELIVERED LUMENS	WATTS	MANUFACTURER - SERIES	NOTES
EX1	SINGLE-FACE EXIT SIGN, BRUSHED ALUMINUM DIE-CAST ALUMINUM BODY, RED LETTERS, UNIVERSAL ARROWS/MOUNTING. VERIFY END, BACK OR CEILING MOUNTING AND ARROWS WITH PLANS.	NA	WL	13"L X 2"W X 9"H	LED	0 lm	3 / FIX	ACUITY LITHONIA - LE-S-1-R LIGHTALARMS GALAXY TX SERIES OR APPROVED EQUAL	
F1A	ENCLOSED AND GASKETED INDUSTRIAL WITH MOLDED IN PLACE GASKET, FROSTED ACRYLIC LENS. FIBERGLASS HOUSING, STAINLESS STEEL LATCHES. WIDE DISTRIBUTION. DAMP LOCATION LISTED WITH 6FT CONNECTOR CORD AND DUAL PENDANT MOUNT BRACKETS. COORDINATE WITH DESIGN TEAM PRIOR TO ROUGH IN IF OBSTRUCTIONS OCCUR WITH MECHANICAL EQUIPMENT AND RELOCATION IS REQUIRED.	WIDE	SP	48"L X 2 3/4"W X 2 3/4"H X 0"D, 0°Ø	LED	6,000 lm	39 / FIX	ACUITY LITHONIA FEM-L48-6000LM-IMAFL-WD-MVOLT-GZ10-40K-80CRI-DPMB-STS-DL-CNP16WWL CURRENT HLI COLUMBIA 'LXEM' METALUX 'VTZ' OR APPROVED EQUAL	
F1B	ENCLOSED AND GASKETED INDUSTRIAL WITH MOLDED IN PLACE GASKET, FROSTED ACRYLIC LENS. FIBERGLASS HOUSING, STAINLESS STEEL LATCHES. WIDE DISTRIBUTION. DAMP LOCATION LISTED WITH 6FT CONNECTOR CORD AND QUICK MOUNT SURFACE BRACKETS. COORDINATE WITH DESIGN TEAM PRIOR TO ROUGH IN IF OBSTRUCTIONS OCCUR WITH MECHANICAL EQUIPMENT AND RELOCATION IS REQUIRED.	WIDE	SU	48"L X 2 3/4"W X 2 3/4"H X 0"D, 0°Ø	LED	6,000 lm	39 / FIX	ACUITY LITHONIA FEM-L48-6000LM-IMAFL-WD-MVOLT-GZ10-40K-80CRI-QMB-STS-DL-CNP16WWL CURRENT HLI COLUMBIA 'LXEM' METALUX 'VTZ' OR APPROVED EQUAL	
F2	AGRICULTURAL GROW-LIGHT WITH WIRELESS CONTROLS AND DAYLIGHT INTEGRAL SETTINGS. TUNEABLE WHITE COLOR TEMPERATURES. SUSPENSION MOUNTED WITH V-HOOKS AND SUSPENSION TO CEILING. COORDINATE 0-10V TUNEABLE DIMMING AND CONTROL PROGRAMMING WITH TOUCH SCREEN CONTROLLER AS REQUIRED.	WIDE	SP	48"L X 2 3/4"W X 2 3/4"H X 0"D, 0°Ø	LED	60,000 lm	625 / FIX	RAYN 'FOTONO' SERIES - CT141-R20 LUX DYNAMICS 'GRO+' HELIOSPECTRA 'MITRA X' OR APPROVED EQUAL	
P1	PEDESTRIAN POST TOP. CAST ALUMINUM HOUSING. INTEGRAL PHOTOCELL FOR DAWN TO DUSK OPERATION. TYPE III "PATHWAY" OPTICAL DISTRIBUTION. MOUNTED VIA EXPANSION FITTER TO 4" OUTSIDE DIAMETER 10'-0" TALL ROUND STRAIGHT STEEL POLE. DARK BRONZE LUMINAIRE AND POLE FINISH.	TYPE III	PL	24"L X 24"W X 26"H, 0°Ø	LED	2,613 lm	25 / FIX	ACUITY LITHONIA LUMINAIRE: RADPT-LED-P1-30K-PATH-MVOLT-PT4-PE-DDBXD POLE: RSS-10-4B-PT-DDBXD OR APPROVED EQUAL	
W1	WALL PACK, GLASS LENS, DIE-CAST ALUMINUM HOUSING, GASKETED, SILICONE SEALED OPTICAL LED CHAMBER, SUITABLE FOR OPERATION IN TEMPERATURES BETWEEN -40 DEGREE CELSIUS AND 40 DEGREE CELSIUS, IP66 RATED. INTEGRAL PHOTOCELL FOR DAWN TO DUSK OPERATION. DARK BRONZE FINISH.	FORWARD THROW	WL	16"L X 10"W X 10 1/2"H X 0"D, 0°Ø	LED	1,500 lm	11 / FIX	ACUITY LITHONIA WPX1-LED-P1-30K-MVOLT-PE-DDBXD COOPER LUMARK XTOR CURRENT HLI EXO SG SLING OR APPROVED EQUAL	

LIGHTING SEQUENCE OF OPERATION

NOTES:
1. {L##} DENOTES THE LIGHTING SEQUENCE OF OPERATIONS FOR THIS SPACE.
2. [#B] PUSH BUTTON REFERS TO SCENE QUANTITY. CONTROL STATION SHALL BE CAPABLE OF [RAISE/LOWER AND] SWITCHING ON/OFF FOR MULTIPLE SCENES AS INDICATED ON SHEETS AND THE LIGHTING SEQUENCE OF OPERATIONS {L##}. COORDINATE QUANTITIES OF BUTTONS FOR CONTROL STATIONS WITH LIGHTING CONTROL MANUFACTURER.
3. (Z#) DENOTES LIGHTING CONTROL ZONE. PROVIDE SEPARATE CONTROL OF EACH CONTROLLED ZONE. LUMINAIRES ASSOCIATED WITH THE SAME ZONE SHALL OPERATE TOGETHER WITHIN THE SAME PROGRAMMED SCENE.
4. a = SWITCH DESIGNATION FOR LIGHTING CONTROL
5. VERIFY AND COORDINATE ALL TIME CLOCK SETTINGS WITH OWNER PRIOR TO FINAL PROGRAMMING.
6. VERIFY AND COORDINATE ALL PUSH BUTTON WALL DEVICES AND QUANTITIES OF INDIVIDUAL BUTTONS WITH SCENES AND ZONES PER LOCATION.
7. VERIFY AND COORDINATE ALL PUSH BUTTON QUANTITIES AND SCENE NAMES WITH OWNER PRIOR TO SUBMITTING ENGRAVING TEMPLATE TO MANUFACTURER.

PLAN ID	LIGHTING SWITCHED
{LD1}	Sequence: Lighting control provides manual switching, programmed scheduling and photocell responsive dimming for each greenhouse individually. ON: Lights turn on via rgrammed schedule or with an LCD wall controller ADJUST: Lighting in this space shall have programmable timeclock scheduling, tunable white control, and daylight responsive dimming. Set points for daylight dimming response to be programmed during commissioning. OFF: Lights turn off using a wall controller, by programmed schedule sweep, or when daylight contribution is at level set by reasearch team. NOTE: Lighting Control system in this area shall be by ETC. EchoTouch LCD controller will be capable of programming schedule set points, daylight dimming control levels and color temperature shifts as required by research team. Commissioning of this system will require detailed programming of daylight levels such that baseline daylight levels (unassisted by the electric illumination) are supplemented by the electric illumination when required to achieve consistent illumination levels for the experiments being conducted in the indivuudual greenhouses.
{LS1}	Sequence: Lighting control provides vacancy control and manual switching control in this space. ON: Lights turn on using a wall control. OFF: Lights turn off using a wall controller. Lights automatically turn off after the space has been vacant for 15 minutes.
{LS2}	Sequence: Lighting control provides manual switching lighting control in this space. ON: Lights turn on using a wall control. OFF: Lights turn off using a wall controller.

DISCONNECT AND STARTER SCHEDULE

NOTE: ALL DISCONNECTS (EXCEPT MANUAL STARTERS) SHALL BE HEAVY DUTY TYPE.

DISCONNECT TYPE:	**ACCESSORIES & OPTIONS**	
FU - FUSED	SA - STANDARD ACCESSORIES (INCLUDES * ITEMS)	PF - PHASE LOSS PROTECTION (5 HP OR GREATER, 3 PHASE MOTOR)
NF - NON-FUSED	*CT - CONTROL TRANSFORMER, FUSED 120V	TO - MELTING THERMAL OVERLOADS (1 PHASE)
CB - CIRCUIT BREAKER	*EO - ELECTRONIC OVERLOAD (3 PHASE MOTORS)	TS - 2 SPEED SELECTOR SWITCH IN DOOR
	*HA - HAND-OFF-AUTO IN DOOR	GP - GREEN (OFF) PILOT LIGHT IN DOOR
STARTER TYPE:	*RP - RED (RUN) PILOT LIGHT IN DOOR	FA - 4-CONVERTIBLE AUXILIARY CONTACTS
FV - FULL VOLTAGE	*TA - TWO CONVERTIBLE AUXILIARY CONTACTS	EI - ELECTRICAL INTERLOCK (2)-N.O. & (2)-N.C.
YD - WYE - DELTA	S/N - INSULATED NEUTRAL ASSEMBLY	SS - START-STOP PUSHBUTTON IN DOOR
RE - REVERSING		HL - HANDLE PADLOCK HASP
TW - 2 SPEED, 2 WINDING		
SW - 2 SPEED, 1 WINDING		
RV - REDUCED VOLTAGE AUTOXFMR		
SS - SOLID STATE		
MS - MANUAL STARTER		
MX - MANUAL SWITCH		
FS - FUSED SWITCH		
AMS-ASSEMBLED MOTOR STARTER		

ITEM	DISCONNECT TYPE & RATING: TYPE	RATING	TRIP RATING	VOLTAGE	POLES	STARTER: NEMA SIZE	STARTER: TYPE	ENCLOSURE	REQUIRED ACCESSORIES & OPTIONS	COMMENTS
MX-CPU-7		30		120	1	0	MX	NEMA 1		
MX-CP-1		30		120	1	0	MX	NEMA 1		
FDS-EM1	FU	100	70	480	3			NEMA 1		
FDS-EWH-1	FU	200	150	208	3			NEMA 1		
FDS-AUTOCLAVE	FU	200	175	208	3			NEMA 1		
DS-HWP-GH1A	NF	30		208	3			NEMA 1		
DS-HWP-GH1B	NF	30		208	3			NEMA 1		
DS-H-GH2	NF	100		208	3			NEMA 1		
DS-H-GH1	NF	100		208	3			NEMA 1		

TRANSFORMER SCHEDULE

TYPE:		**ACCESSORIES & OPTIONS**
K1 - DOE 2016 DRY TYPE	AUT - AUTOTRANSFORMER	AL - ALUMINUM WINDINGS
K4 - K4 RATED DRY TYPE	BB - BUCK BOOST	CU - COPPER WINDINGS
K13 - K13 RATED DRY TYPE	LIQ - LIQUID FILLED	RS - EPOXY RESIN ENCAPSULATED
HM - HARMONIC MITIGATING		NV - NON-VENTILATED
PE - NEMA PREMIUM EFFICIENCY		NL - 200% RATED NEUTRAL
		EL - ELECTROSTATIC SHIELD
		TTM - TRANSFORMER TEMP MONITOR (REFER TO SPECIFCATION 26 09 13)

ITEM	KVA RATING	TYPE	ENCLOSURE	MAX. TEMP. RISE C.	PRIMARY: VOLTS	PRIMARY: PH	SECONDARY: VOLTS	SECONDARY: PH	REQUIRED ACCESSORIES & OPTIONS	COMMENTS
TR-EM1	30 kVA	K-1	NEMA 1	150	480	3	120/208	3	CU	

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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BAILEY EDWARD DESIGN	USDA	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:		ELECTRICAL SCHEDULES
DESIGNER: ZACROS	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: ISASTO	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:	DWG. NO. E600 SHEET 54 OF 74

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DISTRIBUTION PANEL DP-1

ENCLOSURE: NEMA 1
FED FROM: 1,200/3P CB [100%] @ SB-V5
LOCATION: HEADHOUSE 01

SOLID NEUTRAL
GROUND BUS

MAIN: 1,200 MCB [100%]
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 42 kA

NOTES: **PROVIDE WITH ARC ENERGY REDUCTION [AER].**

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	RTU-GH1	74.85 kVA	3	400	300	CB		3#300 & 1#4 EGC IN 2 1/2" C.	
2	RTU-GH2	74.85 kVA	3	400	300	CB		3#300 & 1#4 EGC IN 2 1/2" C.	
3	RTU-GH-CIRC	25.04 kVA	3	150	90	CB		3#2 & 1#8 EGC IN 1 1/4" C.	
4	RTU-HEAD	34.54 kVA	3	150	125	CB		3#1 & 1#6 EGC IN 1 1/2" C.	
5	HC-1	11 kVA	3	150	40	CB		3#8 & 1#10 EGC IN 3/4" C.	
6	EWH-1	40 kVA	3	150	150	CB		3#1/0 & 1#6 EGC IN 1 1/2" C.	
7	L1	12.62 kVA	3	250	225	CB		4#4/0 & 1#4 EGC IN 2 1/2" C.	
8	AUTOCLAVE	45 kVA	3	250	175	CB		4#2/0 & 1#6 EGC IN 2" C.	
9	H-GH2	25 kVA	3	150	90	CB		3#2 & 1#8 EGC IN 1 1/4" C.	
10	H-GH1	25 kVA	3	150	90	CB		3#2 & 1#8 EGC IN 1 1/4" C.	
11	SPACE FOR 200A/3P CB	--	3	--	--	--	--	--	--
12	SPACE FOR 100A/3P CB	--	3	--	--	--	--	--	--

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	213.12 kVA	100.00%	213.12 kVA
HVAC Heating Only	52.256 kVA	100.00%	52.256 kVA
Lighting	0.012 kVA	100.00%	0.012 kVA
Power	97.078 kVA	100.00%	97.078 kVA
Receptacles	5.436 kVA	100.00%	5.436 kVA

TOTALS*

TOTAL CONNECTED LOAD:	367.90 kVA
TOTAL ESTIMATED DEMAND LOAD:	367.902 kVA
TOTAL CONNECTED AMPS:	1021.19 A
TOTAL ESTIMATED DEMAND AMPS:	1,021.2

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL L1

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 225/3P CB @ DP-1
LOCATION: HEADHOUSE 01

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 42 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	WIRE SIZE N	WIRE SIZE G	VD %	A	B	C	VD %	WIRE SIZE G	WIRE SIZE N	WIRE SIZE H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
	1	RECEPTS, HEADHOUSE	20	1	12	12	12	1.92	1.44	0.9					1.14	12	12	12	1	20	RECEPTS, PEST STORAGE / ...	2	
	3	RECEPTS, GREENHOUSE 1	20	1	12	12	12	1.81			1.08	1.08			2.31	12	12	12	1	20	RECEPTS, GREENHOUSE 2	4	
	5	EF-GH1	20	1	12	12	12	2.2					1.66	0.54	0.84	12	12	12	1	20	RECEPTS, CORRIDOR / EXTERIOR	6	
	7	UH-UC	15	1	12	12	12	1.23	0.53	0.53					1.28	12	12	12	1	15	EF-UC	8	
	9	UH-GH1	20	1	12	12	12	0.98			0.88	0.04				12	12	12	1	20	WS-1	10	
	11	CP-1	15	1	12	12	12	0.07					0.08	1.66	2.95	12	12	12	1	25	EF-GH2	12	
	13	UH-GH2	15	1	12	12	12	1.82	0.86	0.19					1.83	12	12	12	1	20	RECEPTS, CO TANK	14	
	15	EH-HEAD	20	1	12	12	12	0.82			1	0.18			0.23	12	12	12	1	20	RECEPTS, ROOF	16	
--	17	SPARE	20	1	--	--	--						0	0		--	--	--	1	20	SPARE	18	--
--	19	SPARE	20	1	--	--	--		0	0						--	--	--	1	20	SPARE	20	--
--	21	SPARE	20	1	--	--	--				0	0				--	--	--	1	20	SPARE	22	--
--	23	SPARE	20	1	--	--	--						0	0		--	--	--	1	20	SPARE	24	--
--	25	SPARE	20	1	--	--	--		0	0						--	--	--	1	20	SPARE	26	--
--	27	SPARE	20	1	--	--	--				0	0				--	--	--	1	20	SPARE	28	--
--	29	SPARE	20	1	--	--	--						0	0		--	--	--	1	20	SPARE	30	--
--	31	SPACE	--	1	--	--	--		--	--						--	--	--	1	--	SPACE	32	--
--	33	SPACE	--	1	--	--	--				--	--				--	--	--	1	--	SPACE	34	--
--	35	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	36	--
--	37	SPACE	--	1	--	--	--		--	--						--	--	--	1	--	SPACE	38	--
--	39	SPACE	--	1	--	--	--				--	--				--	--	--	1	--	SPACE	40	--
--	41	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	42	--
								Total Load:	4.45 kVA		4.24 kVA				3.93 kVA							
								Total Amps:	37.50		35.73				32.75							

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	3.84 kVA	100.00%	3.84 kVA
HVAC Heating Only	2.256 kVA	100.00%	2.256 kVA
Lighting	0.012 kVA	100.00%	0.012 kVA
Power	1.078 kVA	100.00%	1.078 kVA
Receptacles	5.436 kVA	100.00%	5.436 kVA

TOTALS*

TOTAL CONNECTED LOAD:	12.62 kVA
TOTAL ESTIMATED DEMAND LOAD:	12.622 kVA
TOTAL CONNECTED AMPS:	35.04 A
TOTAL ESTIMATED DEMAND AMPS:	35

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL EM1

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 100/3P @ TR-EM1
LOCATION: HEADHOUSE 01
SPD: SPD-1

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 100 MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 10 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	WIRE SIZE N	WIRE SIZE G	VD %	A	B	C	VD %	WIRE SIZE G	WIRE SIZE N	WIRE SIZE H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
	1	EF-HEAD	25	1	12	12	12	1.58	1.66	0.95					2.13	12	12	12	1	20	LIGHTS, HEADHOUSE / CORRIDOR	2	
G	3	GREENHOUSE 1 LIGHTS	20	1	12	12	12	2.91			1.39	1.39			2.27	10	10	10	1	20	GREENHOUSE 2 LIGHTS	4	G
G	5	GREENHOUSE 1 LIGHTS	20	1	12	12	12	2.49					1.39	1.39	2.01	10	10	10	1	20	GREENHOUSE 2 LIGHTS	6	G
G	7	GREENHOUSE 1 LIGHTS	20	1	12	12	12	2.62	1.39	1.39					2.01	10	10	10	1	20	GREENHOUSE 2 LIGHTS	8	G
	9	LIGHTS, EXTERIOR	20	1	12	12	12	0.2			0.24	0.5			1	12	12	12	1	15	TEMPERATURE CONTROL PANEL	10	
--	11	SPARE	20	1	--	--	--						0	0.5	0.73	12	12	12	1	15	TEMPERATURE CONTROL PANEL	12	
--	13	SPARE	20	1	--	--	--		0	0						--	--	--	1	20	SPARE	14	--
--	15	SPARE	20	1	--	--	--				0	0				--	--	--	1	20	SPARE	16	--
--	17	SPARE	20	1	--	--	--						0	0		--	--	--	1	20	SPARE	18	--
--	19	SPACE	--	1	--	--	--		--	--						--	--	--	1	--	SPACE	20	--
--	21	SPACE	--	1	--	--	--				--	--				--	--	--	1	--	SPACE	22	--
--	23	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	24	--
--	25	SPACE	--	1	--	--	--		--	0												26	
--	27	SPACE	--	1	--	--	--				--	0				10	10	10	3	30	SPD-1	28	
--	29	SPACE	--	1	--	--	--						--	0								30	
								Total Load:	5.38 kVA		3.52 kVA				3.28 kVA							
								Total Amps:	45.14		29.65				27.31							

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	1.656 kVA	100.00%	1.656 kVA
Lighting	9.522 kVA	100.00%	9.522 kVA
Power	1 kVA	100.00%	1 kVA

TOTALS*

TOTAL CONNECTED LOAD:	12.18 kVA
TOTAL ESTIMATED DEMAND LOAD:	12.178 kVA
TOTAL CONNECTED AMPS:	33.80 A
TOTAL ESTIMATED DEMAND AMPS:	33.8

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: G=GFCI CIRCUIT BREAKER

PANEL L2

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 100/3P @ SB-V5
LOCATION: HH / GH MECHANICAL 07

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 100 MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 10 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	WIRE SIZE N	WIRE SIZE G	VD %	A	B	C	VD %	WIRE SIZE G	WIRE SIZE N	WIRE SIZE H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
	1	CPU-7	20	1	12	12	12	0.69	0.86	0.72					0.73	12	12	12	1	20	RECEPTS, HH/GH MECHANICAL	2	
	3										1.27	1.27										4	
	5	HWP-GH1A	20	3	12	--	12	0.54														6	
	7								1.27	1.27												8	
	9	TEMPERATURE CONTROL PANEL	15	1	12	12	12	0.37			0.5	0				--	--	--	1	20	SPARE	10	--
--	11	SPARE	20	1	--	--	--						0	0		--	--	--	1	20	SPARE	12	--
--	13	SPARE	20	1	--	--	--		0	0						--	--	--	1	20	SPARE	14	--
--	15	SPARE	20	1	--	--	--				0	0				--	--	--	1	20	SPARE	16	--
--	17	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	18	--
--	19	SPACE	--	1	--	--	--		--	--						--	--	--	1	--	SPACE	20	--
--	21	SPACE	--	1	--	--	--				--	--				--	--	--	1	--	SPACE	22	--
--	23	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	24	--
--	25	SPACE	--	1	--	--	--		--	0						--	--	--	1	--	SPACE	26	--
--	27	SPACE	--	1	--	--	--				--	0				--	--	--	1	--	SPACE	28	--
--	29	SPACE	--	1	--	--	--						--	0		--	--	--	1	--	SPACE	30	--
								Total Load:	4.13 kVA		3.05 kVA				2.55 kVA							
								Total Amps:	35.06		26.02				21.22							

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Motor	7.638 kVA	100.00%	7.638 kVA
Power	1.364 kVA	100.00%	1.364 kVA
Receptacles	0.72 kVA	100.00%	0.72 kVA

TOTALS*

TOTAL CONNECTED LOAD:	9.72 kVA
TOTAL ESTIMATED DEMAND LOAD:	9.722 kVA
TOTAL CONNECTED AMPS:	26.98 A
TOTAL ESTIMATED DEMAND AMPS:	27

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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BAILEY EDWARD DESIGN	USDA		
PROJECT MANAGER:	AOE:	USDA	Agricultural Research Service
DESIGNER: ZACROS	EPM:		ELECTRICAL PANEL SCHEDULES
			USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: ISASTO	SAFETY & HEALTH:	TASK ORDER NO.:	NCAUR 1815 North University Street Peoria, Illinois 61604
BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:	DWG. NO. E700
			SHEET 55 OF 74

LICENSED PROFESSIONAL ENGINEER
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IOWA

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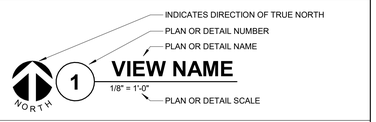
4/3/2026 10:43:11 AM

VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL



LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
——— NEW
- - - - - - - - EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
— — — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
——— EXISTING
- - - - - - - - EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
— — — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

PLUMBING SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
CW	COLD WATER - POTABLE
HW	HOT WATER - POTABLE
HWC	HOT WATER CIRCULATING - POTABLE
D	DRAIN
DI	DEIONIZED WATER
CA	COMPRESSED AIR
NCW	NON-POTABLE COLD WATER
NHW	NON-POTABLE HOT WATER
GSAN	SANITARY DRAINAGE (GREENHOUSE SANITARY DRAINAGE)
SAN	SANITARY DRAINAGE
V	VENT
TW	TEMPERED WATER
ST(1,000)	STORM DRAINAGE (ROOF SQUARE FOOTAGE)
STS	STORM DRAINAGE (SECONDARY)
	PIPE CONTINUATION
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
FD	PIPE SERVING FIXTURE ON FLOOR ABOVE (EXAMPLE: FD = FLOOR DRAIN)
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	ROUTE TO DRAIN
RD-1 6"(1000)	ROOF DRAIN PROPERTIES SYMBOL SIZE (ROOF SQ. FT.)
	DIELECTRIC CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
GPM	BALANCING VALVE (NUMBER INDICATES GPM)
	CHECK VALVE
	BACKFLOW PREVENTER
	SOLENOID VALVE
	SAFETY/RELIEF VALVE
	VACUUM BREAKER
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
	THERMOMETER WITH WELL (FILLED TYPE)
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	PUMP
M	METER

PLUMBING ABBREVIATION KEY

ABBR:	DESCRIPTION:
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
CO	CLEANOUT
DN	DOWN
E	EXISTING
ESE	EMERGENCY SHOWER/EYEWASH
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
HB	HOSE BIBB
I.E.	INVERT ELEVATION (FOR REFERENCE ONLY)
MV	MIXING VALVE
NIC	NOT IN CONTRACT
NT	NEUTRALIZATION TANK
RD	ROOF DRAIN
SCCR	SHORT CIRCUIT CURRENT RATING
SK	SINK
TYP	TYPICAL
VTR	VENT THROUGH ROOF
WCO	WALL CLEANOUT
WH	WATER HEATER
UON	UNLESS OTHERWISE NOTED
YCO	YARD CLEANOUT

PLUMBING SLOPE REQUIREMENTS:

INTERIOR:	
SANITARY WASTE:	≤2-1/2"ø=1/4" PER FOOT ≥3"ø = 1/8" PER FOOT ≥8"ø = 1/16" PER FOOT
CONDENSATE AND INDIRECT DRAINAGE:	1/8" PER FOOT
SANITARY VENT:	NO SPECIFIC PITCH, PITCH TO FIXTURES
DOMESTIC WATER:	NO SPECIFIC PITCH, PITCH TO FIXTURES

PLUMBING ROUGH-IN SCHEDULE

NOTES: (APPLIES TO ALL PLUMBING FIXTURES LISTED BELOW)
1) SIZES SHOWN ARE MINIMUMS. LARGER SIZES SHOWN ON THE DRAWING SHALL DICTATE THE ROUGH-IN SIZE. 2) SANITARY RISERS UP IN WALL TO FIXTURES SHALL BE A MINIMUM OF 2". 3) DOMESTIC WATER BRANCH PIPING OUTSIDE OF THE WALL/CHASE SHALL BE A MINIMUM OF 3/4" UNLESS NOTED OTHERWISE. ONLY THE FINAL RISE-DROP SHALL BE SMALLER. 4) FINAL SANITARY SIZE SHALL MATCH P-TRAP SIZE (REFER TO MATERIAL LIST).

TAG NAME	DESCRIPTION	TRAP	COLD WATER	HOT WATER	SANITARY	VENT
ESE-1	EMERGENCY SHOWER EYE/FACE WASH		1 1/4"	1"	-	-
FD-1	FLOOR DRAIN				2"	1 1/2"
FD-2	FLOOR DRAIN				4"	2"
FD-3	FLOOR DRAIN				2"	4"
FD-4	FLOOR DRAIN				2"	1 1/2"
FS-1	FLOOR SINK				4"	2"
SK-1	SINK (ACCESSIBLE)		1/2"	1/2"	1 1/2"	2"
SS-1	SERVICE SINK		3/4"	3/4"	4"	2"

RENOVATION NOTES:

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY GOVERNMENT REPRESENTATIVE OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. FIELD VERIFY ACCESSIBILITY TO THE AREA OF THEIR WORK AND SHALL NOTIFY THE GOVERNMENT REPRESENTATIVE PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO THEIR AREA OF WORK.
5. CONTRACTOR SHALL CUT AND PATCH ROOFS, WALLS, AND FLOORS ASSOCIATED WITH THEIR WORK. ALL PROPOSED OPENING SIZES AND LOCATIONS IN STRUCTURAL WALLS (INCLUDING EXISTING BUILDING EXTERIOR WALL), FLOORS, AND ROOFS AND OTHER STRUCTURAL RELATED ITEMS SHALL BE REVIEWED AND APPROVED BY THE GOVERNMENT REPRESENTATIVE BEFORE BEGINNING WORK.
6. REMOVE AND REPLACE CEILINGS, CEILING TILES, AND CEILING GRIDS AS REQUIRED TO ACCOMMODATE PROJECT WORK.
7. WHERE EXISTING DUCTWORK OR PIPING SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
8. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. PROVIDE SHUTOFF VALVES AT ALL NEW TIE-IN POINTS. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
9. OBTAIN PERMISSION FROM GOVERNMENT REPRESENTATIVE BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
10. MAINTAIN EXISTING SYSTEMS IN SERVICE UNTIL NEW SYSTEMS ARE COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEMS ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM CONTRACTING OFFICER'S REPRESENTATIVE BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
11. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.
12. PROPERLY RECLAIM AND DISPOSE OF ALL REFRIGERANT IN REMOVED EQUIPMENT/ REFRIGERANT PIPING. RECLAIMED REFRIGERANT SHALL HAVE DOCUMENTATION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ).

PLUMBING GENERAL NOTES:

1. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
2. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.
3. CONTRACTOR SHALL VERIFY THAT FIXTURES SUPPLIED ARE APPROVED PER ALL APPLICABLE STATE, LOCAL AND GOVERNING AUTHORITIES.
4. ALL FIXTURES SHALL CONFORM TO FEDERAL ACT S.3874
5. INVERT ELEVATIONS ARE FROM EXISTING DRAWINGS AND MAY NOT BE ACCURATE. VERIFY ALL ELEVATIONS BEFORE BEGINNING WORK.
6. VERIFY UNDERGROUND PIPE SIZES, INVERT ELEVATIONS, AND LOCATIONS PRIOR TO BEGINNING ANY WORK.
7. REFER TO THE PLUMBING ROUGH-IN SCHEDULE FOR THE SIZES OF BRANCH PIPES TO PLUMBING FIXTURES.
8. FOR CLARITY, NOT ALL VALVES HAVE BEEN SHOWN. PROVIDE SHUTOFF VALVES IN ALL DOMESTIC WATER BRANCH LINES AT CONNECTION TO MAIN OR NEAREST POINT THAT IS ACCESSIBLE. THESE SHUTOFF VALVES ARE IN ADDITION TO THE STOP VALVES AT INDIVIDUAL FIXTURES.
9. EXISTING CONDITIONS ON DEMOLITION PLANS ARE PROVIDED TO INDICATE THE GENERAL SCOPE OF ITEMS TO BE REMOVED. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL DEMOLITION INFORMATION.
10. CONTRACTOR SHALL CUT AND PATCH EXISTING AS REQUIRED FOR NEW OR DEMOLITION WORK UNLESS NOTED OTHERWISE. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL INFORMATION.

GENERAL NOTES:

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE GOVERENMENT REPRESENTATIVE BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIOVISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES.
10. CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GOVERNMENT REPRESENTATIVE FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
12. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. [PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
13. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
14. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
15. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
16. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
17. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
18. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
19. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT EXCEPT WHERE PAD EXTENSION WOULD INTERFERE WITH WORKING SPACE AT EQUIPMENT CONTROL PANELS AND ELECTRICAL PANELS.
20. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'-0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

PLUMBING SHEET INDEX

P098	UNDERFLOOR DEMOLITION PLAN - PLUMBING
P099	GROUND FLOOR DEMOLITION PLAN - PLUMBING
P000	PLUMBING COVERSHEET
P100	UNDERFLOOR PLAN - PLUMBING
P101	GROUND FLOOR PLAN - PLUMBING
P102	LEVEL 01 PLAN - PLUMBING
P103	LEVEL 02 PLAN - PLUMBING
P104	LEVEL 03 PLAN - PLUMBING
P105	PENTHOUSE PLAN - PLUMBING
P300	PLUMBING ENLARGED PLANS
P400	PLUMBING DETAILS
P401	PLUMBING DETAILS
P600	PLUMBING SCHEDULES
GRAND TOTAL: 13	

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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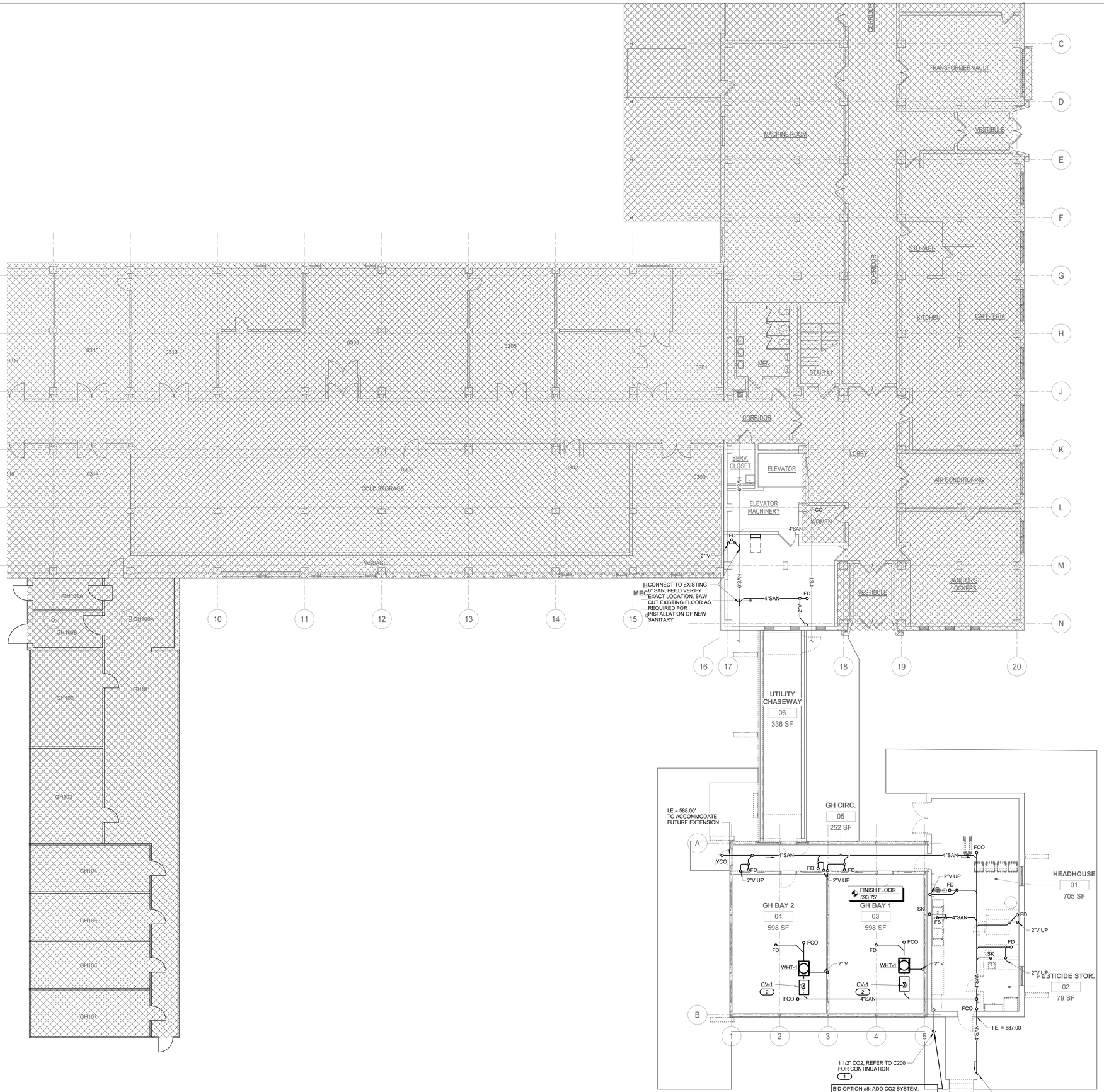
PROJECT MANAGER:	AOE:		PLUMBING COVERSHEET
DESIGNER: JPT	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: LAK	SAFETY & HEALTH:	TASK ORDER NO.:	DWG. NO. P000
BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:	NCAUR 1815 North University Street Peoria, Illinois 61604

SHEET 56 OF 74

Autodesk Docs://023110 USDA ARS Construct New Headhouse Greenhouse/MEP23_23005300.03_USDA-Peoria-New Greenhouse_C.rvt
4/7/2026 9:36:08 AM



KEYNOTES:

1. ALL UNDERGROUND CO2 PIPING SHALL BE BRAZED AND INSTALLED WITHIN A CONTINUOUS AND WATERTIGHT 4" SCH. 40 PVC SLEEVE FOR PROTECTION FROM DAMAGE AND CORROSION. THIS INCLUDES ALL UNDERGROUND PIPING SHOWN ON C200. THE SLEEVE SHALL EXTEND AT LEAST 6" ABOVE GRADE AT BOTH ENDS AND TERMINATE WITH WATERTIGHT REMOVABLE CAP AND SEAL. REFER TO 22 10 00 FOR ADDITIONAL REQUIREMENTS.
2. CV-1: 4" SIZE, CPVC TRUE UNION 2-WAY BALL VALVE, FLANGED END CONNECTIONS, FULL PORT, EPDM SEALS, ALL COMPONENTS SHALL BE SUITABLE FOR BLEACH WATER, 150 PSI AT 70F NON-SHOCK, 120 VOLT ACTUATOR SIZED FOR TORQUE, FAIL CLOSED POSITION. ACCEPTABLE MFRS: HAYWARD TB SERIES WITH ELECTRIC ACTUATOR OR ASAHI/AMERICAN. REFER TO M502 FOR CONTROL VALVE OPERATION VIA TIMER SWITCH.

1 UNDERFLOOR PLAN - PLUMBING

1/8" = 1'-0"

NORTH

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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USDA Agricultural Research Service

UNDERFLOOR PLAN - PLUMBING

USDA PEORIA - HEADHOUSE & GREENHOUSE

NCAUR
1815 North University Street
Peoria, Illinois 61604

DWG. NO. P100

SHEET 57 OF 74

LICENSED PROFESSIONAL ENGINEER
ERIC J. HENDERSON
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IOWA

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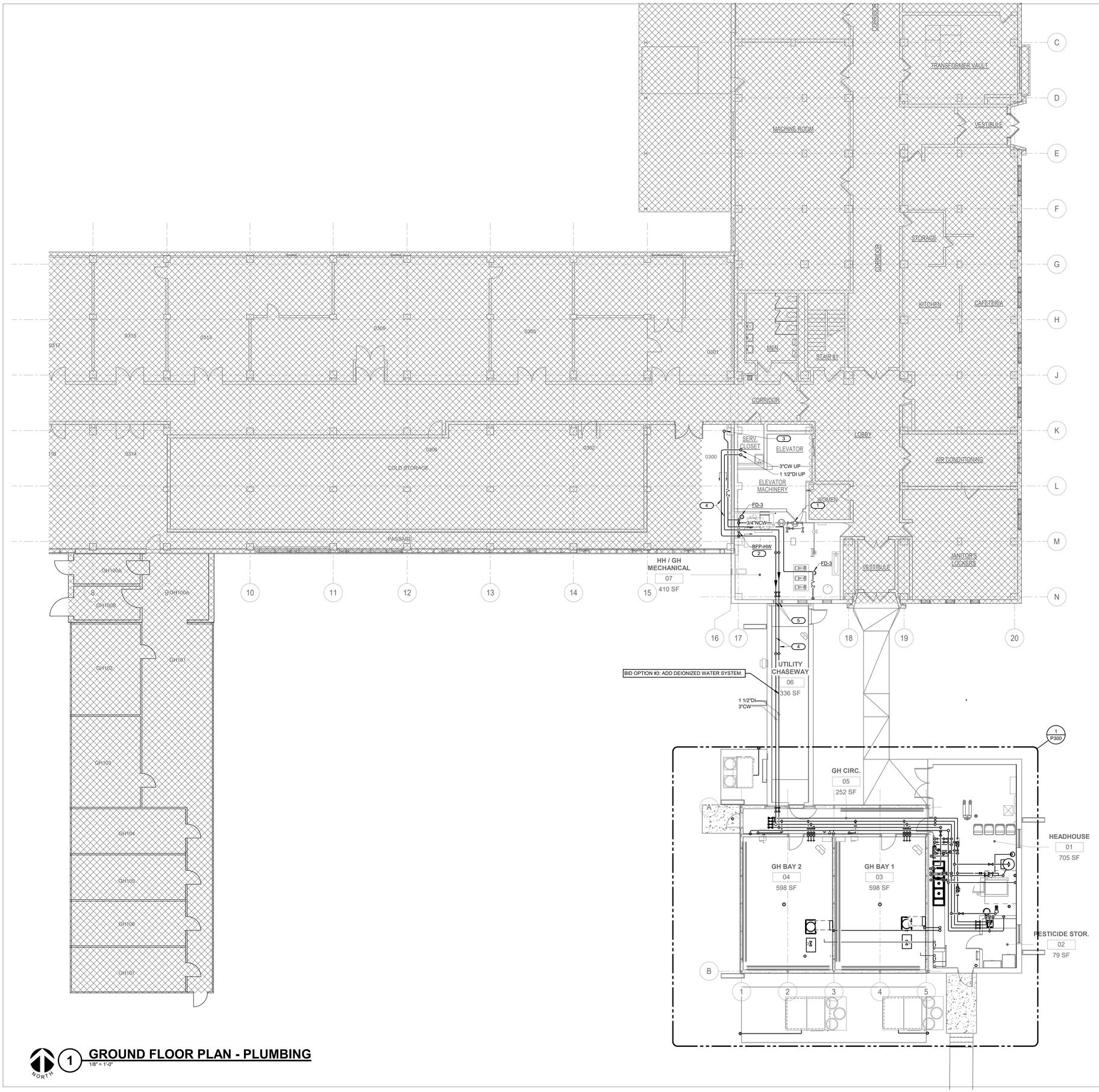
NOTES:

1. PROVIDE COORDINATION DRAWINGS IN ACCORDANCE WITH SECTION 22 05 00. THE DRAWINGS SHALL SHOW THE EXACT ROUTING, SLOPE, AND INVERTS OF ALL PIPING.

KEYNOTES:

1. NON-POTABLE CW PIPING/PRV. REFER TO M302 FOR ADDITIONAL DETAILS.
2. INSTALL SHUTOFF VALVE UPSTREAM AND DOWNSTREAM OF BACKFLOW PREVENTER IN VERTICAL PIPING.
3. CONNECT VENT TO EXISTING VENT RISER. FIELD VERIFY EXACT LOCATION AND SIZE OF VENT RISER.
4. INSTALL CW AND DI PIPING WITH SLOPE FROM THE RISERS IN THE BUILDING ALL THE WAY TO THE GREENHOUSE EQUIPMENT CONNECTIONS SO THE PIPING DRAINS COMPLETELY. DO NOT INSTALL LOW POINTS OR TRAPS IN THE PIPING.
5. ROUTE PIPING THROUGH EXISTING WINDOW OPENING AS HIGH AS POSSIBLE. DO NOT PENETRATE EXISTING EXTERIOR WALL. REFER TO ARCHITECTURAL PLANS FOR 2-HOUR BLANK-OFF IN EXISTING WINDOW OPENINGS. PROVIDE PIPE SLEEVES AND FIRESTOPPING AT PIPE PENETRATIONS THROUGH WINDOW BLANK-OFF.
6. INVERT IS LOW TO ACCOMMODATE EXTENSION OF SANITARY INTO A FUTURE ADDITION.



1 **GROUND FLOOR PLAN - PLUMBING**
1/8" = 1'-0"

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GROUND FLOOR PLAN - PLUMBING

USDA PEORIA - HEADHOUSE & GREENHOUSE

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DWG. NO. P101

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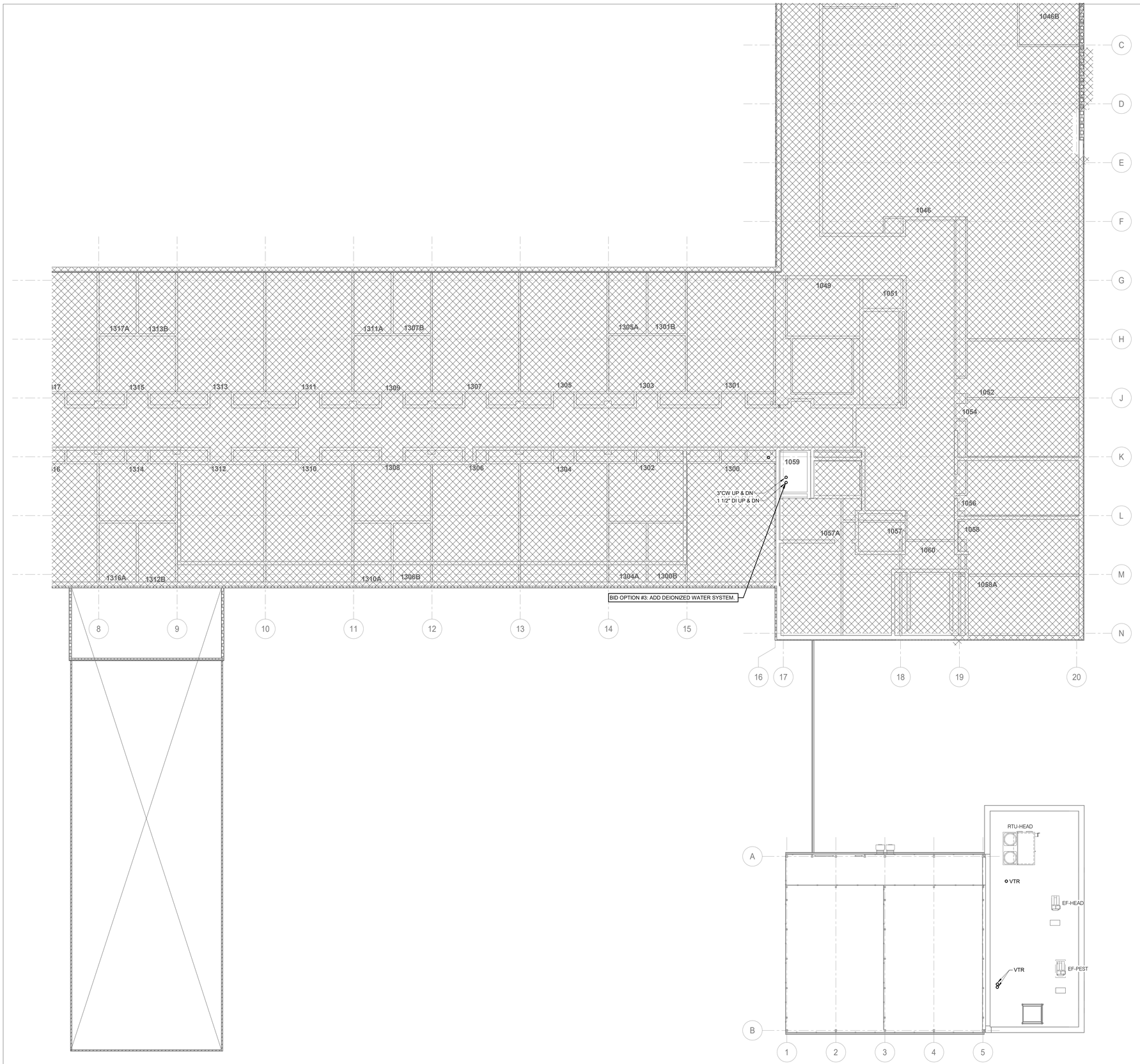

NORTH

1 **LEVEL 01 PLAN - PLUMBING**
1/8" = 1'-0"

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LEVEL 01 PLAN - PLUMBING

USDA PEORIA - HEADHOUSE & GREENHOUSE

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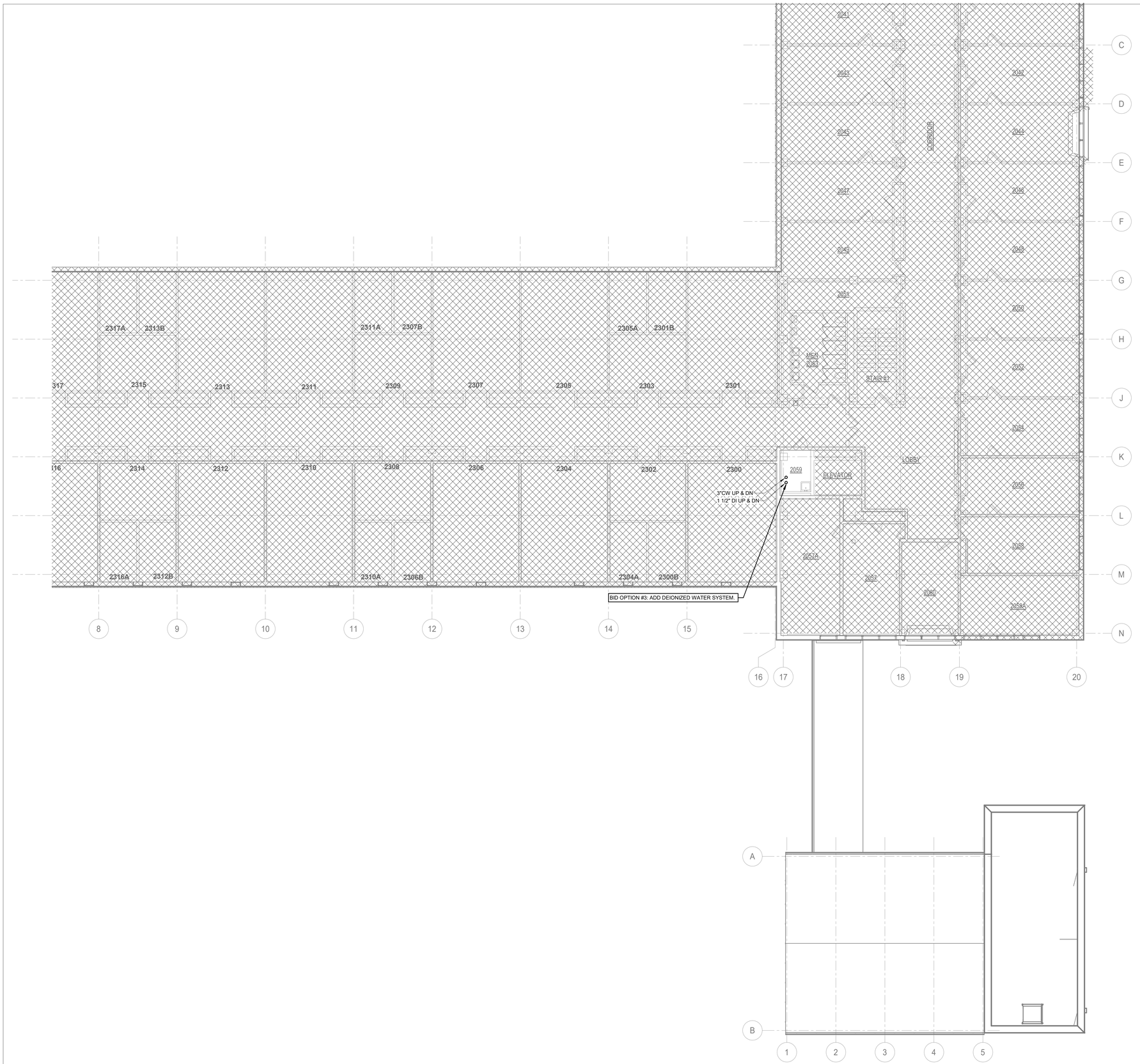

1 LEVEL 02 PLAN - PLUMBING

1/8" = 1'-0"

NORTH

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LEVEL 02 PLAN - PLUMBING

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1 LEVEL 03 PLAN - PLUMBING

1/8" = 1'-0"

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LEVEL 03 PLAN - PLUMBING

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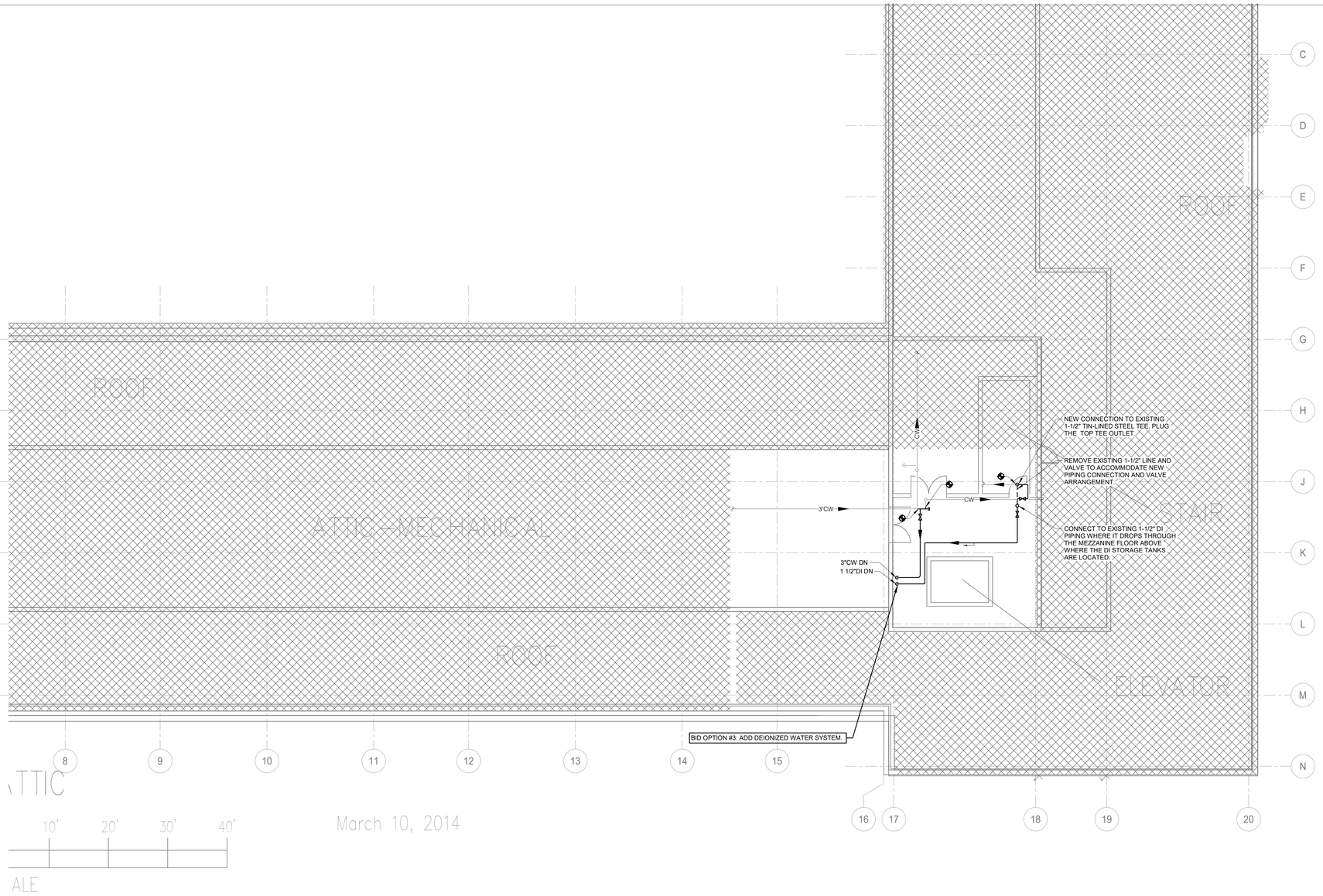

NOTES:

1. PROVIDE COORDINATION DRAWINGS IN ACCORDANCE WITH SECTION 22 05 00. THE DRAWINGS SHALL SHOW THE EXACT TIE-IN CONNECTION POINTS AND EXISTING AND NEW PIPING CONFIGURATIONS. COORDINATE ALL PENTHOUSE PIPING WITH THE GOVERNMENT REPRESENTATIVE BEFORE BEGINNING WORK.
2. INSTALL CW AND DI PIPING WITH SLOPE FROM THE PENTHOUSE TIE-IN POINTS TO THE PIPE DROPS. DO NOT INSTALL LOW POINTS OR TRAPS IN THE PIPING. REMOVE AND RELOCATE EXISTING PIPING AS REQUIRED TO MAINTAIN PROPER SLOPE WHILE KEEPING THE PIPING AS HIGH AS POSSIBLE.

1 PENTHOUSE PLAN - PLUMBING

1/8" = 1'-0"

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PENTHOUSE PLAN - PLUMBING

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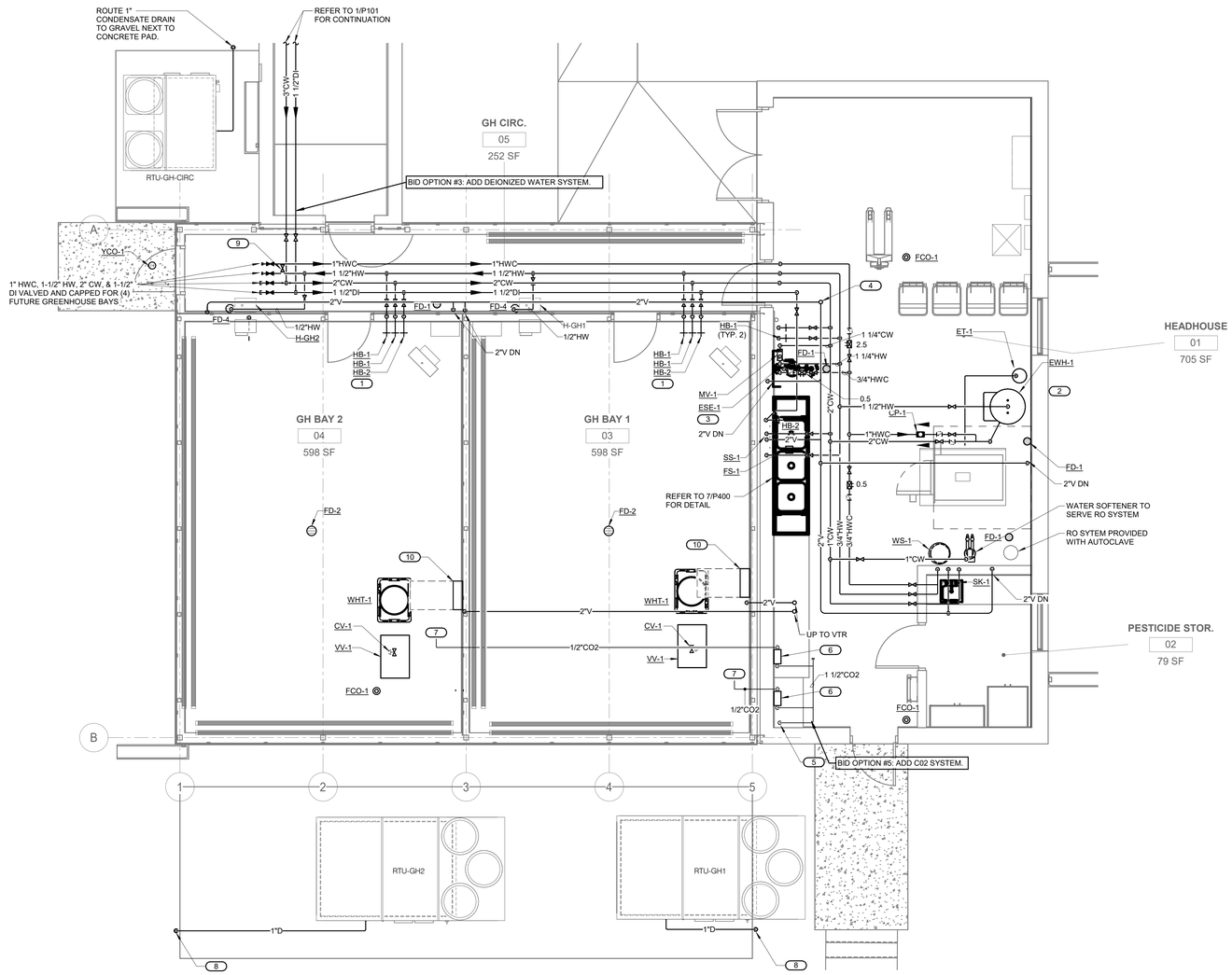
KEYNOTES:

1. MOUNT HOSE BIBBS 36" A.F.F.
2. REFER TO 1/P400 FOR ELECTRIC WATER HEATER DETAIL.
3. REFER TO 2/P400 FOR EMERGENCY SHOWER / EYEWASH DETAIL.
4. REFER TO 3/P400 FOR VENT THROUGH ROOF FLASHING DETAIL.
5. 1 1/2" CO2 LINE STUBS UP OUTSIDE THE BUILDING AT THIS LOCATION AND PENETRATES EXTERIOR WALL APPROX. 24" ABOVE FLOOR LEVEL. SEAL WALL PENETRATION WATERTIGHT. REFER TO DRAWING C200 FOR UNDERGROUND CO2 PIPE ROUTING TO NEW BUILDING AND FOR THE LOCATION OF THE CO2 BULK TANK AND ASSOCIATED CONCRETE PAD. REFER TO 8/P400 FOR CONCRETE PAD AND CO2 TANK DETAIL.
6. CO2 MANIFOLD PANEL. LOCATE AT 6'-0" A.F.F. REFER TO P401 FOR DETAIL.
7. CONNECT 1/2" CO2 PIPING TO SUPPLY DUCT, SEAL PENETRATION AIR TIGHT. REFER TO P401 FOR DETAIL.
8. RTU WILL BE PRODUCING CONDENSATE IN THE WINTER MONTHS. ROUTE CONDENSATE FROM RTU TO GRAVEL AREA. DO NOT DISCHARGE ONTO CONCRETE BECAUSE OF ICING. INSTALL HEAT TRACE AND INSULATION WITH PVC JACKET ON FULL LENGTH OF PIPING.
9. INSTALL 3/4" BYPASS FOR RECIRULATION FOR THIS PHASE, VALVE WILL BE CLOSED IN THE FUTURE PHASE.
10. WASTE WATER HOLDING TANK (WHT-1) HIGH LEVEL ALARM PANEL.



1 PLUMBING ENLARGED PLAN - NEW GREENHOUSE/HEADHOUSE

1/4" = 1'-0"

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PLUMBING ENLARGED PLANS

USDA PEORIA - HEADHOUSE & GREENHOUSE

TASK ORDER NO.:

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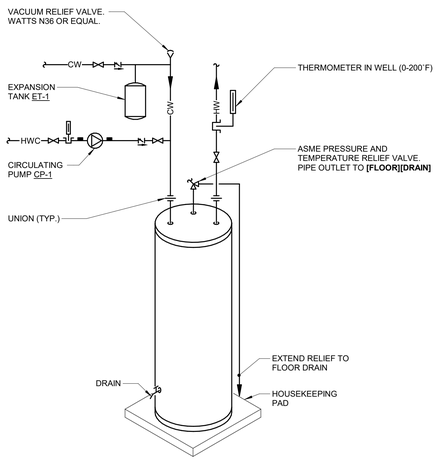
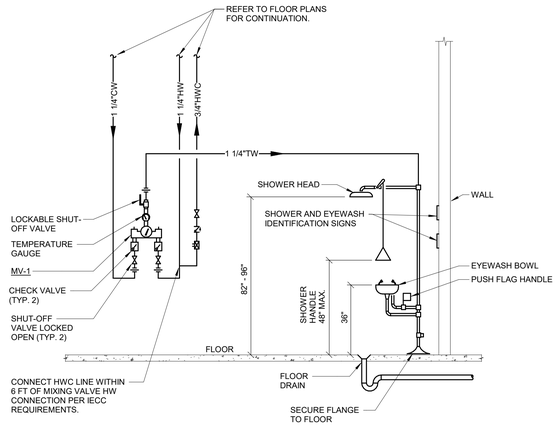


1 ELECTRIC WATER HEATER

NO SCALE

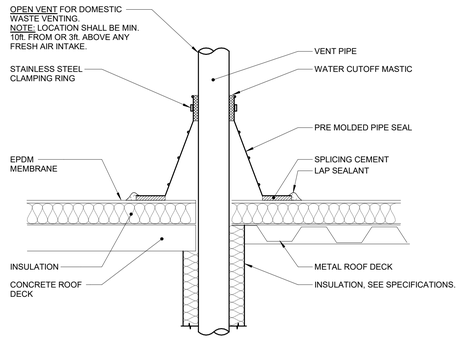


2 EMERGENCY SHOWER & EYEWASH

NO SCALE

NOTES:

1. EYEWASH AND SHOWER PERFORMANCE AND ROUGH-IN SHALL MEET THE CURRENT VERSION OF ANSI Z358.1.
2. PAINT AREA AROUND AND BEHIND SHOWER/EYEWASH A BRIGHT COLOR AS DIRECTED BY THE GOVERNMENT REPRESENTATIVE.
3. COORDINATE THE EXACT PLACEMENT OF THE MIXING VALVE ASSEMBLY WITH THE GOVERNMENT REPRESENTATIVE.

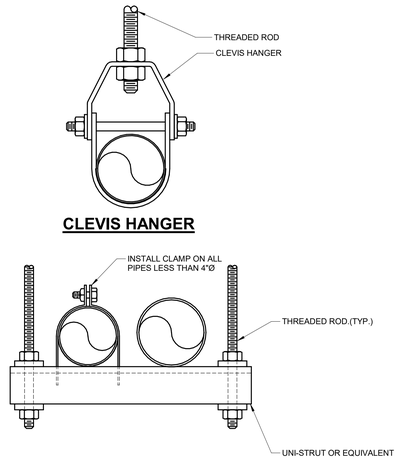


3 VENT PIPE FLASHING

NO SCALE

NOTES:

1. VENT PIPE SHALL BE A MINIMUM OF 4" DIAMETER UNLESS NOTED LARGER ON FLOOR PLANS. INCREASERS, IF REQUIRED TO TRANSITION TO THE LARGER VTR SIZE, MUST BE INSTALLED AT LEAST 12 INCHES BELOW THE THERMAL ENVELOPE OF THE BUILDING.
2. PRIME AND PROVIDE TWO FINISH COATS OF PAINT TO THE EXTERIOR VENT PIPE. COLOR SELECTED BY THE GOVERNMENT REPRESENTATIVE.

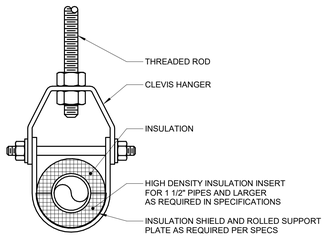


4 PIPE SUPPORT - NO INSULATION

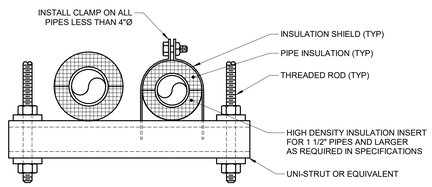
NO SCALE

NOTES:

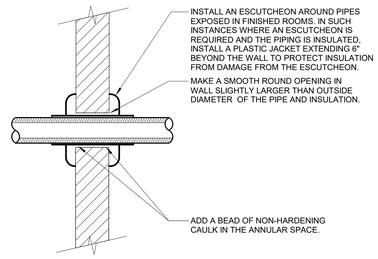
1. FOR USE WITH PIPES NOT REQUIRING INSULATION.
2. REFER TO SPECIFICATION SECTION 22 05 29 AND 22 07 19.

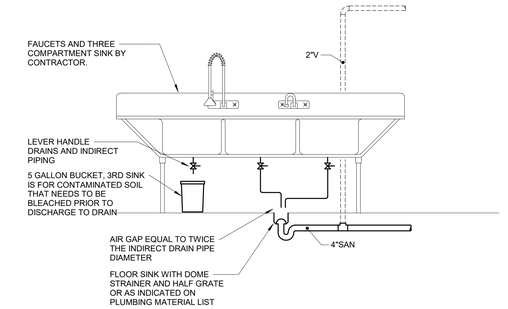


INSULATED PIPE HANGER



TRAPEZE HANGER





5 PIPE SUPPORT - WITH INSULATION

NO SCALE

NOTES:

1. FOR USE WITH PIPES REQUIRING INSULATION.
2. REFER TO SPECIFICATION SECTIONS 22 05 29 & 22 07 19.

6 WALL PENETRATION - NON-FIRE RATED

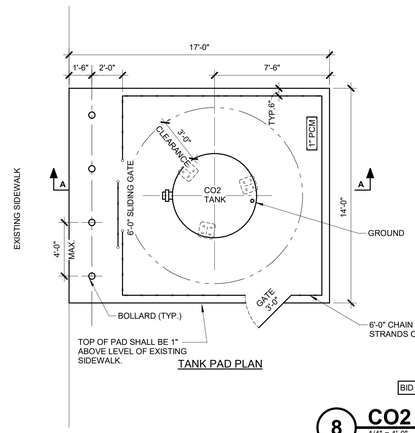
NO SCALE

NOTES:

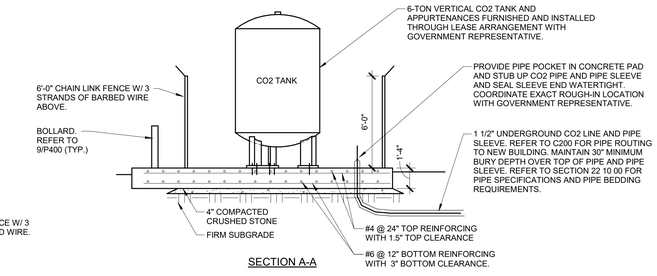
1. THIS DETAIL APPLIES TO ALL PIPES. THE INTENTION IS TO CONTINUE THE INSULATION AND VAPOR BARRIER THROUGH ALL PENETRATIONS. PERMIT THERMAL EXPANSION WITHOUT DAMAGING INSULATION, AND TO SEAL AIRTIGHT AROUND INSULATED AND UNINSULATED PIPES FOR NOISE TRANSMISSION CONTROL.
2. SEE SPECIFICATION SECTIONS (SECTION 22 05 29 - PLUMBING) FOR ADDITIONAL INFORMATION.

7 THREE COMPARTMENT SINK

NO SCALE



TANK PAD PLAN



SECTION A-A

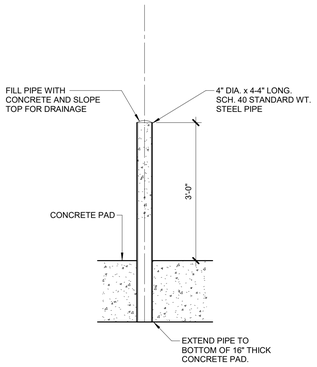
BID OPTION #5: ADD CO2 SYSTEM.

8 CO2 TANK & CONCRETE PAD (BID OPTION #5)

1/4" = 1'-0"

NOTES:

1. ALL WORK SHOWN SHALL BE PROVIDED UNDER BID OPTION #5.
2. REFER TO C200 FOR THE LOCATION OF THE CONCRETE PAD. COORDINATE THE EXACT SIZE AND PLACEMENT OF THE CONCRETE PAD, FENCING, GATES, AND BOLLARDS WITH THE GOVERNMENT BEFORE BEGINNING WORK.
3. NEW FENCING SHALL BE 6 FT. HIGH WITH THREE STRANDS OF BARBED WIRE ABOVE. LINE, TERMINAL, END, AND CORNERS SHALL BE 3" O.D. GALVANIZED POSTS. TOP, MIDDLE, AND BOTTOM RAILS SHALL BE 1 5/8" O.D. GALVANIZED. ALL POSTS AND RAILS SHALL BE ASTM F1043 GROUP IC. POSTS SHALL BE SPACED NO MORE THAN 10 FT. ON CENTER. ALL POSTS SHALL BE ANCHORED TO THE CONCRETE WITH GALVANIZED ANCHOR PLATES WITH FOUR ANCHOR BOLTS. CHAIN-LINK MESH CORE SHALL BE 9 GAUGE. TIES SHALL BE 9 GAUGE ALUMINUM. PROVIDE 6'-0" WIDE SLIDING GATE HAVING FULL PERIMETER AND MIDDLE RAIL, ROLLERS, AND LOCKING HARDWARE. ALL FENCING MATERIALS AND HARDWARE SHALL BE BLACK VINYL COATED. PROVIDE WITH BOTTOM LOCKING COLORED PVC SLATS TO FILL ALL SIDES AND GATES. SLAT COLOR OPTIONS SHALL BE PROVIDED TO CGOVERNMENT FOR FINAL COLOR SELECTION.



9 BOLLARD DETAIL

3/4" = 1'-0"

NOTES:

1. COORDINATE THE EXACT PLACEMENT OF THE BOLLARDS WITH THE A/E.
2. REMOVE RUST AND SCALE FROM PIPE AND APPLY ALKYD ENAMEL PRIMER AND TWO FINISH COATS OF SAFETY YELLOW ALKYD ENAMEL.

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PLUMBING DETAILS

USDA PEORIA - HEADHOUSE & GREENHOUSE

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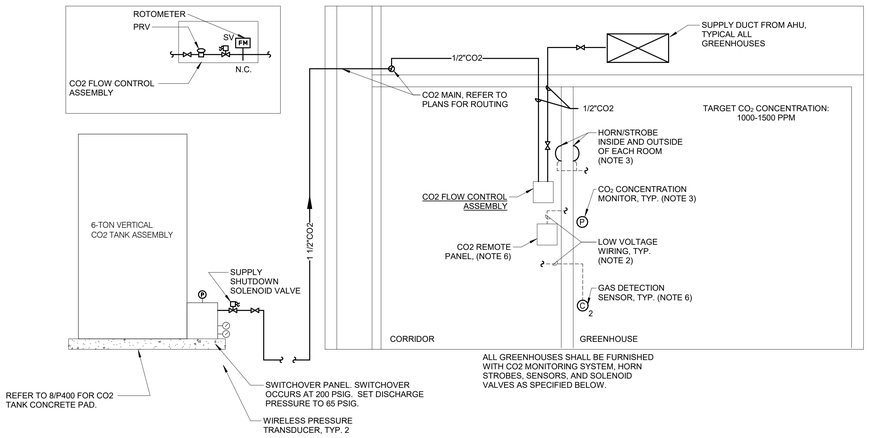

NOTES:

1. CONTRACTOR SHALL PROVIDE THE FOLLOWING:
   - BULK TANK AND ACCESSORIES
   - SWITCHOVER PANEL WITH PRESSURE TRANSDUCERS AND ROUTER PANEL
   - BULK TANK VAPORIZER
2. CONTRACTOR SHALL PROVIDE ALL REQUIRED LOW VOLTAGE WIRING BETWEEN COMPONENTS. ALL WIRING SHALL BE INSTALLED IN CONDUIT.
3. PROVIDE CONCENTRATION MONITORS SHALL BE FURNISHED AND INSTALLED. THE SOLENOID VALVES SHALL OPEN/CLOSE BASED ON THE LIGHTING SCHEDULE AND TO MAINTAIN THE DESIRED CONCENTRATION OF CO_2 IN THE SPACE. REFER TO CONTROL DIAGRAMS ON FOR ADDITIONAL INFORMATION.
4. REFER TO MECHANICAL DRAWINGS FOR DUCT LOCATION AND SIZE.
5. REFER TO PLUMBING DRAWINGS FOR PIPE ROUTING AND QUANITY OF FLOW CONTROL ASSEMBLIES PER ROOM.
6. EACH GREENHOUSE BAY SHALL HAVE AN INDEPENDENT CO2 MONITORING SYSTEM, HORN STROBES, SENSORS, AND SOLENOID VALVES.
7. EACH GREENHOUSE BAY (CO2 ENRICHED SPACE) SHALL HAVE APPROPRIATE SIGNAGE IN ACCORDANCE WITH IFC 5307.4.5 REQUIREMENTS.

1 CARBON DIOXIDE ENRICHMENT FLOW DIAGRAM

NO SCALE

BID OPTION #5: ADD CO2 SYSTEM.

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USDA Agricultural Research Service

PLUMBING DETAILS

USDA PEORIA - HEADHOUSE & GREENHOUSE

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1815 North University Street
Peoria, Illinois 61604

LICENSED PROFESSIONAL ENGINEER
ERIC J. HENDERSON
20825
IOWA

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PLUMBING MATERIAL LIST

TAG NAME	DESCRIPTION	MANUFACTURER AND MODEL
BFP-HW	BACK FLOW PREVENTER (SERVING HEATING WATER SYSTEM) - REDUCED PRESSURE ZONE, LEAD FREE BRONZE CONSTRUCTION, SIZE SAME AS PIPE, NON-CORROSIVE INTERNAL PARTS, STAINLESS STEEL SPRINGS, DIFFERENTIAL PRESSURE RELIEF VALVE BETWEEN SPRING-LOADED CHECK VALVES, BALL STYLE SHUT-OFF VALVES ON INLET AND OUTLET OF UNIT, AIR GAP DRAIN FITTING, TEST PORTS WITH SHUT-OFF VALVES, RATED FOR 175 PSI AT 33°F TO 140°F, 15 PSI (MAXIMUM) PRESSURE DROP AT 10 FPS, FACTORY TESTED, ALL PARTS TO BE SERVICEABLE WITHOUT REMOVING UNIT FROM LINE, APPROVED BY USC FCCC & HR, AWWA C511-92, ASSE 1013, IAPMO AND SBCCI LISTED. MOUNT WITHIN 60" OF FINISHED FLOOR. ROUTE DRAIN PIPE FROM AIR GAP FITTING TO FLOOR DRAIN. PROVIDE AND INSTALL BRONZE OR EPOXY COATED STRAINER UPSTREAM OF EACH UNIT AND ADDITIONAL VALVE UPSTREAM OF EACH STRAINER. FLOW PRESSURE DROP CURVES SHALL BE SUBMITTED.	APOLLO (RPLF4A), WATTS (LF919), ZURN WILKINS (975XL2)
ESE-1	EMERGENCY SHOWER & EYE/FACE WASH - ACCESSIBLE, COMBINATION UNIT, FREESTANDING, FLOOR MOUNTED WITH TOP INLET, STAINLESS STEEL SHOWER HEAD, BRASS/BRONZE STAY OPEN BALL VALVE, STAINLESS STEEL/ALUMINUM PULL ROD, STAINLESS STEEL BOWL[WITH HINGED DUST COVER, SPRAY HEADS WITH CAPS AND RETAINING CHAINS/STRAPS, BRASS SUPPLY ARMS, BRASS/BRONZE STAY OPEN BALL VALVE, METAL FLAG, INTEGRAL FLOW CONTROL FITTINGS,STAINLESS STEEL SUPPLY PIPING AND FITTINGS, UNIVERSAL IDENTIFICATION SIGN, ANSI Z358.1 COMPLIANT. MINIMUM FLOW RATE OF SHOWER SHALL BE 20 GPM AT 30 PSI. MINIMUM FLOW RATE OF EYE/FACE WASH SHALL BE 3.0 GPM AT 30 PSI. ACTIVATION TIME SHALL BE 1 SECOND OR LESS. BRASS/BRONZE PIPING, FITTINGS, AND VALVES SHALL BE CHROME-PLATED OR CHEMICAL-RESISTANT POWDER COATED. MOUNT SHOWER HEAD BETWEEN 80"-96" AND PULL ROD AT MAXIMUM 48" ABOVE FINISH FLOOR. EYE/FACE WASH OUTLET HEADS SHALL BE AT MAXIMUM 36" ABOVE FINISH FLOOR WITH MINIMUM 27" OF KNEE CLEARANCE BELOW, AND MINIMUM OF 19" OF CLEARANCE FROM CENTER OF BOWL TO WALL OR OBSTRUCTION. IN COMPLIANCE WITH LATEST ADA AND ANSI 117.1 STANDARDS	EMERGENCY SHOWER - GUARDIAN (GBF1909 SERIES), BRADLEY (S19314BF SERIES), ACORN SAFETY (S13/S23 SERIES), HAWS (8309WC SERIES), SPEAKMAN (SE-1200 SERIES), ENCON
ET-1	EXPANSION TANK - WELDED STEEL CONSTRUCTION, GUARANTEED AIRTIGHT AND LEAKPROOF, STAINLESS STEEL SYSTEM CONNECTION, HEAVY DUTY BUTYL DIAPHRAGM AND RIGID POLYPROPYLENE LINER MECHANICALLY BONDED TO TANK TO PROVIDE A 100% NON-CORROSIVE WATER RESERVOIR, DIAPHRAGM AND LINER SHALL BE APPROVED FOR USE IN POTABLE WATER SYSTEMS, ALL WETTED COMPONENTS OF FDA APPROVED MATERIALS. PROVIDE STANDARD SCHRADER AIR VALVE FOR FIELD CHARGING. TANK SHALL COMPLY WITH FEDERAL ACT S.3874. STATIC SYSTEM PRESSURE 40 PSI MAXIMUM TANK DESIGN PRESSURE 135 PSI MINIMUM TANK VOLUME TO BE 6.4 GALLONS MINIMUM ACCEPTING VOLUME TO BE 3.2 GALLONS TANK SHALL HAVE A WORKING TEMPERATURE OF 200°F AND A WORKING PRESSURE OF 150 PSIG. FACTORY PRE-CHARGED FOR SHIPPING. FIELD CHARGE TANK TO MATCH FIELD VERIFIED STATIC SYSTEM PRESSURE	EXPANSION TANK - AMTROL (THERM-X-TROL ST-12C-DD), B&G (PT), FLEXTRON (FTT), WATTS (PLT), WESSELS (T)
FCO-1	FLOOR CLEANOUT - ADJUSTABLE, CAST IRON HOUSING, ANCHOR FLANGE, TAPERED THREAD PLUG, SECURED NICKEL BRONZE TOP. TOP STYLE SHALL MATCH FLOOR FINISH AS FOLLOWS: UNFINISHED FLOOR - ROUND SOLID SCORIATED TOP TILE OR TERRAZZO - ROUND RECESSED TOP	ZURN (Z1400), JOSAM (55000), MIFAB (C1100), SMITH (4000), WADE (6000), WATTS (CO-200), SIOUX CHIEF (854 OR 834 SERIES)
FD-1	FLOOR DRAIN - CAST IRON BODY, NICKEL BRONZE ADJUSTABLE TOP, 8" ROUND, 2" BOTTOM OUTLET, FLASHING COLLAR. TRAP SEAL - 2", PLASTIC HOUSING WITH FLEXIBLE DIAPHRAGM, SEALING GASKETS, RECLOSES AND SEALS WHEN DISCHARGE IS COMPLETED, ASSE 1072.	FLOOR DRAIN - ZURN (Z-415), SMITH (2005), WADE (1100), JOSAM (30000), WATTS (FD-100), MIFAB (F1100), SUN (FD1000), SIOUX CHIEF (862-N) TRAP SEAL - SURE SEAL (SS), PROVENT (TRAP GUARD), SMITH (QUAD CLOSE), GREEN DRAIN, MIFAB (MI-GARD), ZURN (Z1072), SIOUX CHIEF (835)
FD-2	FLOOR DRAIN - 316 STAINLESS STEEL BODY, 12" ROUND, SLOTTED SPECIAL DUTY STAINLESS STEEL GRATE WITH FINGER HOLES, 4" BOTTOM OUTLET, DEEP SUMP, STAINLESS STEEL SUSPENDED PERFORATED SEDIMENT BUCKET, FLASHING COLLAR.	FLOOR DRAIN - MIFAB (P3100), SMITH, WADE, JOSAM
FD-3	FLOOR DRAIN - CAST IRON BODY, HEAVY DUTY CAST/DUCTILE IRON GRATE, 12" ROUND, 4" BOTTOM OUTLET, DEEP SUMP WITH FREE STANDING SEDIMENT BUCKET, FLASHING COLLAR, TRAP. TRAP SEAL - 4", PLASTIC HOUSING WITH FLEXIBLE DIAPHRAGM, SEALING GASKETS, RECLOSES AND SEALS WHEN DISCHARGE IS COMPLETED, ASSE 1072.]	FLOOR DRAIN - MIFAB ZURN (Z-539), SMITH (2242), JOSAM (32300), MIFAB (F1350), WADE (1220) TRAP SEAL - SURE SEAL (SS), PROVENT (TRAP GUARD), SMITH (QUAD CLOSE), GREEN DRAIN, MIFAB (MI-GARD), ZURN (Z1072), SIOUX CHIEF (835)
FD-4	FLOOR DRAIN - OPEN SITE HUB DRAIN, CAST IRON BODY, SEDIMENT BUCKET, 4" BOTTOM OUTLET. TRAP SEAL - 4", PLASTIC HOUSING WITH FLEXIBLE DIAPHRAGM, SEALING GASKETS, RECLOSES AND SEALS WHEN DISCHARGE IS COMPLETED, ASSE 1072.	FLOOR DRAIN - WATTS (FD-100-DD), SMITH (2005-HUB), SIOUX CHIEF (833-DAHHD) TRAP SEAL - SURE SEAL (SS), PROVENT (TRAP GUARD), SMITH (QUAD CLOSE), GREEN DRAIN, MIFAB (MI-GARD), ZURN (Z1072), SIOUX CHIEF (835)
FS-1	FLOOR SINK - 14 GAUGE TYPE 304 STAINLESS STEEL RECEPTOR, 12"x12"x6" DEEP, 4" OUTLET, TRAP, STAINLESS STEEL RIM AND SECURED FULL GRATE WITH 1/2" SQUARE OPENINGS, STAINLESS STEEL SEDIMENT BUCKET.	ZURN (Z1750), SMITH (9690), WADE (9100), WATTS (FS-780), BLUCHER-JOSAM (76640), MIFAB (FS1920-FL-3)
HB-1	HOSE BIBB - FOR INDOOR USE, BRASS CONSTRUCTION, STANDARD FINISH, VACUUM BREAKER, 3/4" MALE HOSE THREAD, METAL WHEEL HANDLE, ASSE 1011 LISTED AND APPROVED. MOUNT AT 36" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE ON DRAWINGS.	PRIER (C-155NP.75), WOODFORD (24), CHICAGO FAUCET (293), ACORN (8121-LF), T&S BRASS (B-0736), MIFAB (MHY-9031)
HB-2	DEIONIZED WATER HOSE BIBB – WALL MOUNTED, TYGON-LINED LABORATORY PURE WATER FITTING, SINGLE HOLE, CHROME PLATED, ½" NPT MALE THREAD INLET. COORDINATE EXACT MOUNTING LOCATION WITH CONTRACTING OFFICER'S REPRESENTATIVE BEFORE BEGINNING WORK.	CHICAGO FAUCETS 839-CP
MV-1	MIXING VALVE - THERMOSTATIC MIXING VALVE FOR EMERGENCY SHOWER OR COMBINATION SHOWER/EYEWASH FIXTURE, BRONZE BODY CONSTRUCTION, FAIL TO COLD WATER ONLY, INLET AND OUTLET THERMOMETERS, COMBINATION CHECK STOPS OR SEPARATE SUPPLY CHECK VALVES AND SHUT OFF VALVES, [OUTLET ISOLATION VALVE.] MOUNTING BRACKET. SUPPLY SHUT OFF VALVES SHALL BE LOCKED OPEN [OR CONTRACTOR SHALL PROVIDE A LOCKING CABINET] TO PREVENT UNAUTHORIZED CLOSURE. [CABINET SHALL BE [RECESSED]/SURFACE MOUNTED] 18 GAUGE [STAINLESS]/[PAINTED] STEEL WITH 16 GAUGE LOCKING DOOR TO ENCLOSE VALVE, INLET CHECK STOPS, OUTLET THERMOMETER, [AND OUTLET VALVE].] DUAL THERMOSTATIC MIXING AND PRESSURE REGULATING VALVE TO DELIVER 25 GPM OF TEMPERED WATER (60-100 DEGREE F) WITH 10 PSI PRESSURE DIFFERENTIAL. UNIT SHALL BE ASSE 1071 LISTED AND APPROVED. VALVE SHALL COMPLY WITH FEDERAL ACT S.3874.	LEONARD (EXL-800-LF), ACORN CONTROLS (ET71 SERIES), ARMSTRONG (Z358), BRADLEY (S19), HAWS (9201E), LAWLER (911), POWERS (ETV400), GUARDIAN (G6040)
SK-1	SINK - ACCESSIBLE, SELF-RIMMING SINGLE COMPARTMENT WITH FAUCET DECK, 18 GAUGE TYPE 304 STAINLESS STEEL, 18" (SIDE-TO-SIDE) x 18" (FRONT-TO-BACK) OVERALL SIZE, 10" x 14" x6.5" DEEP BOWL, SOUND DEADENING ON BOTTOM OF BASIN, 3-1/2" DIAMETER DRAIN OUTLET LOCATION CENTERED IN BOWL, REMOVABLE TYPE 304 STAINLESS STEEL BASKET STRAINER WITH NEOPRENE STOPPER. SINK TRIM - TWO HANDLE MIXING FAUCET, BRASS CONSTRUCTION, CHROME-PLATED FINISH, GOOSENECK SWING SPOUT, NOMINAL 6" REACH, LAMINAR FLOW OUTLET, 4" WRISTBLADE HANDLES AT 8" CENTERS, 1/4-TURN OPERATION CERAMIC DISC CARTRIDGE, . MAXIMUM FLOW TO BE 2.2 GPM IN COMPLIANCE WITH ENERGY POLICY ACT OF 2005 AND ASME/ANSI STANDARD A112.18.1M. FAUCET SHALL COMPLY WITH FEDERAL ACT S.3874. PROVIDE RESTRICTIVE DEVICE AND ESCUTCHEON PLATE AS REQUIRED. MIXING VALVE - POINT-OF-USE ANTI-SCALD THERMOSTATIC MIXING VALVE FOR TEMPERED WATER CONTROL, ALL BRONZE/BRASS CONSTRUCTION, ROUGH FINISH, THREADED INLETS, TAMPER RESISTANT SETPOINT, 3/8" COMPRESSION INLETS AND OUTLETS, COLD WATER BYPASS IF USED WITH MIXING FAUCET. 0.5 GPM OUTPUT. UNIT TO MIX 140 DEGREE F HOT WATER SUPPLY AND 40 DEGREE F COLD WATER SUPPLY FOR 110 DEGREE F OUTLET. UNIT SHALL BE ASSE 1070 LISTED AND APPROVED. VALVE SHALL COMPLY WITH FEDERAL ACT S.3874.	SINK - ELKAY (LRAD/LKAD35), JUST (SL-ADAU-ADA-35), FRANKE (ALBS), ACORN-SINKS (SDADA/BST) SINK TRIM - DELTA (27C2), AMERICAN STANDARD (6540), CHICAGO FAUCET (786), SPEAKMAN (SC-3000 SERIES), SYMMONS (S-254), T&S BRASS (B-2866-05CR), ZURN (Z831-XL)
SS-1	SINK - TRIPLE COMPARTMENT, 14 GAUGE STAINLESS STEEL, 115" (SIDE-TO-SIDE) x 27" (FRONT-TO-BACK) OVERALL SIZE, EACH COMPARTMENT 20" x 20" x 14" DEEP, 8" BACKSPLASH WITH SLOPING TOP, 24" DRAINBOARDS, 3-1/2" DIAMETER DRAIN OUTLETS, 14 GAUGE STAINLESS STEEL TUBULAR LEGS WITH ADJUSTABLE BULLET SHAPED FEET, NSF COMPLIANT. SINK TRIM - TWO HANDLE MIXING VALVE, BRASS CONSTRUCTION, CHROME-PLATED FINISH, INDEXED LEVER HANDLES, ADJUSTABLE SUPPLY ARMS, WALL/SPLASH GUARD MOUNTED, INTEGRAL STOPS, 18" DOUBLE JOINTED SWINGING SPOUT, AERATOR. ACCESSORIES - REMOVABLE STRAINER PLATES AND NEOPRENE STOPPERS, LEVER OPERATED DRAIN VALVE, 1-1/2" 17 GAUGE CHROME-PLATED BRASS TAILPIECES AND P-TRAP, QUARTER-TURN BALL VALVE TYPE 3/8" CHROME PLATED BRASS ANGLE SUPPLIES WITH STOPS, CHROME PLATED SOFT COPPER SUPPLY LINES. MIXING VALVE - POINT-OF-USE ANTI-SCALD THERMOSTATIC MIXING VALVE FOR TEMPERED WATER CONTROL, ALL BRONZE/BRASS CONSTRUCTION, ROUGH FINISH, THREADED INLETS, TAMPER RESISTANT SETPOINT, 3/8" COMPRESSION INLETS AND OUTLETS, COLD WATER BYPASS IF USED WITH MIXING FAUCET. 0.5 GPM OUTPUT. UNIT TO MIX 140 DEGREE F HOT WATER SUPPLY AND 40 DEGREE F COLD WATER SUPPLY FOR 110 DEGREE F OUTLET. UNIT SHALL BE ASSE 1070 LISTED AND APPROVED. VALVE SHALL COMPLY WITH FEDERAL ACT S.3874.	SINK - ELKAY (WNSF), JUST (NSFB), FRANKE COMMERCIAL (WTL) SINK TRIM - CHICAGO FAUCET (445-DJ18ABCP), T&S BRASS (B-0265), ZURN (Z-841K1-XL))
VV-1	VALVE VAULT - POLYMER CONCRETE CONSTRUCTION, 7/16" MINIMUM WALL THICKNESS, 24"W X 36"L X 36" DEEP, SOLID BOTTOM, BOLTED AND GASKETED POLYMER COVER WITH STAINLESS STEEL RECESSED BOLTS. COVER SHALL BE FLUSH WITH GREENHOUSE FLOOR. PROVIDE WITH ROUND OPENING ON EACH END FOR 4" SCH. 40 PVC PIPE AND MEANS TO SEAL THE PIPE PENETRATIONS WATERTIGHT. THE EXACT HEIGHT AND PLACEMENT OF EACH PIPE OPENING SHALL BE COORDINATED WITH DRAINAGE PIPE INVERTS BEFORE ORDERING.	OLDCASTLE INFRASTRUCTURE (2436) ZURN
WHT-1	WASTE WATER HOLDING TANK - GRAVITY TYPE, POLYETHYLENE CONSTRUCTION, FIELD ADJUSTABLE EXTENSIONS TO GRADE, TWO VENT CONNECTIONS, BOLTED AND GASKETED POLYETHYLENE COVER. CAPACITY SHALL BE 28"W x 37"L x 31-1/2" DEEP BOTTOM TO TOP OF COVER, 57 GALLON HOLDING CAPACITY, 4" INLET WITH CENTER 18" ABOVE BOTTOM, 4" OUTLET WITH CENTER 6" ABOVE BOTTOM, AND 2" VENT CONNECTIONS WITH CENTER 20" ABOVE BOTTOM. HIGH LEVEL ALARM - NEMA 4X FIBERGLASS, CORROSION-RESISTANT WEATHERPROOF ENCLOSURE SUITABLE FOR OUTDOOR AND DAMP ENVIRONMENTS, NEMA 4X ALARM BUZZER 95dB AT 2' AND FLASHING ALARM LIGHT ON TOP OF PANEL, POWER ON LIGHT AND OFF/ON RESET SWITCH INSIDE ENCLOSURE; LOCKING HASP. ALARM BUZZER AND LIGHT SHALL STAY ON UNTIL RESET EVEN IF LEVEL GOES DOWN, EXTRA DRY CONTACT FOR CONNECTION TO BUILDING ALARM SYSTEM, EXPLOSION PROOF STAINLESS STEEL FLOAT SWITCH, 120 VOLT, 60 HERTZ, UL AND CSA LISTED. TANK ASSEMBLY AND HIGH LEVEL ALARM FLOAT SWITCH SHALL BE SUITABLE FOR BLEACH WATER (WASTE WATER WILL BE BLEACHED TO SANITIZE IT BEFORE EMPTYING TANK).	WASTE WATER HOLDING TANK: STRIEM (LB-50 & C24H COVER) ZURN TRAP2ILLA HIGH LEVEL ALARM: STRIEM (AVA-3)
YCO-1	YARD CLEANOUT - ROUND, DURA-COATED CAST IRON, SIZE AS LISTED ON DRAWINGS, DOUBLE FLANGED HOUSING, HEAVY DUTY SECURED SCORIATED DURA-COATED CAST IRON COVER, LIFTING DEVICE, BRONZE CLEANOUT PLUG WITH GAS/WATER-TIGHT SEAL.	ZURN (Z1474), SMITH (4261), WADE (8401), JOSAM (58680), WATTS (CO-300-MF), MIFAB (C1300-MF)

PLUMBING (WITH POWER) MATERIAL LIST

TAG NAME	DESCRIPTION	ELECTRICAL: WATTS	# OF STAGES	TOTAL (QTY*KW): QTY	TOTAL (QTY*KW): KW	HP (NOTE E)	FLA	MCA	MOCP	VOLTAGE	PHASES	SCCR	# OF WIRES	DISCONNECT: BY (NOTE A)	DISCONNECT: TYPE (NOTE B)	CONTROLLER /STARTER: BY (NOTE A)	CONTROLLER /STARTER: TYPE (NOTE C)	EMERGENCY POWER	MANUFACTURER AND MODEL
CP-1	CIRCULATING PUMP - VARIABLE SPEED CONTROLLER WITH SETTINGS TO ADJUST AND MAINTAIN A CONSTANT: SPEED, FIXED PRESSURE, OR PROPORTIONAL PRESSURE. LEAD FREE BRONZE OR STAINLESS STEEL CONSTRUCTION, PERMANENTLY LUBRICATED SEALED BEARINGS, MECHANICAL SEAL, OIL LUBRICATED, ECM MOTOR WITH INTEGRATED VARIABLE SPEED CONTROL, FLANGED CONNECTIONS, RATED FOR 125 PSIG AT 225°F, UL LISTED. 3 GPM @ 10 FEET OF HEAD. ELECTRICAL REQUIREMENTS - HARD-WIRE	0	0	0	0	0	0.65	0	0	120	1	0	0	EC	NF	MFR	FV	No	PUMP - GRUNDFOS (ALPHA2 15-55SF/LC), B&G (ECOCIRC SERIES), ARMSTRONG (COMPASS 20-20 SS SERIES)
EWH-1	WATER HEATER - ELECTRIC, VERTICAL, METAL CABINET, BAKED ENAMEL FINISH, GLASS-LINED ASME STAMPED WELDED STEEL TANK, 150 PSI WORKING PRESSURE, FIBERGLASS OR FOAM INSULATION, BRASS WATER CONNECTIONS AND DRAIN VALVE, ASME APPROVED T&P RELIEF VALVE, MAGNESIUM ANODE ROD, INDIVIDUAL FLANGE-MOUNTED IMMERSION HEATING ELEMENTS SHEATHED WITH CORROSION-RESISTANT METAL ALLOY, EXTERNALLY ADJUSTABLE AUTOMATIC IMMERSION WATER THERMOSTAT, MANUAL RESET HIGH TEMPERATURE CUTOFF SWITCH, ENCLOSED CONTROLS, VENTILATED CONTROL CABINET, PILOT LIGHTS INDICATING MAIN POWER AND HEATING STEPS, CONTROL CIRCUIT TOGGLE SWITCH, SEQUENCING STEP CONTROLLER, CONTROL TRANSFORMER, POWER CIRCUIT FUSES, MAGNETIC CONTACTORS, CERAMIC TERMINAL BLOCK, FACTORY ASSEMBLED AND WIRED, 3-YEAR WARRANTY, UL LISTED, NEC COMPLIANT ELECTRICAL COMPONENTS, COMPLIANT TO NAECA, ASHRAE 90.1 AND ASHRAE 90A. 120 GALLON CAPACITY, 74 GPH RECOVERY RATE AT 100°F TEMPERATURE RISE. HEATING ELEMENTS RATED FOR LESS THAN 75 WATTS PER SQUARE INCH. ELECTRICAL REQUIREMENTS - 120V CONTROL CIRCUIT. SET WATER TEMPERATURE AT 140°F.	0	0	1	40	0	0	0	0	208	3	5000	0	EC	NF	MFR	FV	No	WATER HEATER - A.O. SMITH (DRE), AMERICAN (ITCE31), BOCK (F SERIES), BRADFORD WHITE (ElectriFLEX HD), RHEEM/RUUD (E SERIES), STATE (SSE), HTP (CGE SERIES HEAVY DUTY)
WS-1	WATER SOFTENER - PRE-PIPED AND SKID MOUNTED, SIMPLEX SOFTENER TANKS, AUTOMATIC REGENERATION TYPE BASED ON VOLUMETRIC TOTAL, BRINE RECLAIMATION SYSTEM, POWER SUPPLY WITH CORD AND PLUG. EACH TANK - (1 CU/FT TOTAL) CONTINUOUS FLOW RATE OF 10 GPM AT 15 PSI PRESSURE DROP MAXIMUM FLOW RATE OF 12 GPM AT 25 PSI PRESSURE DROP MINIMUM CAPACITY OF 15,000 GRAINS PER TANK SALT DOSAGE OF 10 LBS PER CUBIC FOOT OF RESIN FIBERGLASS SOFTENER TANK SIZE: 9"x48" BRINE TANK SIZE: 15"x17"x36 ELECTRICAL REQUIREMENTS - PROVIDE ONE RECEPTACLE PER CONTROL VALVE. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.	0	0	0	0	0	0.3	0	0	120	1	0	0	EC	PLUG	MFR	FV	No	REFER TO SPECIFICATIONS

PIPE INSULATION SCHEDULE (PLUMBING)

GENERAL NOTES:
1. REFER TO SECTION 22 07 19 FPR INSULATION DESCRIPTIONS AND JACKETING REQUIREMENTS.
2. TYPE A INSULATION IS NOT ALLOWED ON COLD PIPE (<65°F) IN NON-AIR CONDITIONED SPACES SUCH AS MECHANICAL ROOMS, ETC. USE TYPE B INSULATION INSTEAD.
3. TYPE B INSULATION GREATER THAN 1" THICK SHALL BE INSTALLED USING MULTIPLE LAYERS OF 3/4" OR 1" WITH STAGGERED SEAMS.
4. PROVIDE RIGID INSERT AT HANGERS. REFER TO SECTION 22 07 19 FOR REQUIREMENTS.

SYMBOL	PIPE SYSTEM	INSULATION TYPE	INSULATION THICKNESS PER NOMINAL PIPE OR TUBE SIZE: < 1"	1" TO < 1.5"	1.5" TO < 4"	4" TO < 8"	≥ 8"	NOTES
22 PLUMBING - WASTE								
D	DRAIN	A (GlsFbr), B (Elasto)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY TO LOW TEMP DRAINS (55 DEG AND LOWER IE: COOLING COIL CONDENSATE, ICE MACHINE DRAINS, ETC.)
SAN	SANITARY DRAINAGE	A (GlsFbr), B (Elasto)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY TO FLOOR DRAIN BODY, P-TRAP AND 10' DOWNSTREAM AT LOW TEMP DRAIN DISCHARGE (55 DEG AND LOWER IE: COOLING COIL CONDENSATE, ICE MACHINE DRAINS, ETC.)
V	VENT	A (GlsFbr), B (Elasto)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY WITHIN 10' OF EXTERIOR PENETRATION
22 PLUMBING - WATER								
CW	COLD WATER - POTABLE	A (GlsFbr), B (Elasto)	1/2"	1/2"	1"	1"	1"	
HW	HOT WATER - POTABLE	A (GlsFbr), B (Elasto)	1"	1"	1 1/2"	1 1/2"	1 1/2"	
HWC	HOT WATER CIRCULATING - POTABLE	A (GlsFbr), B (Elasto)	1"	1"	1 1/2"	1 1/2"	1 1/2"	
NCW	NON-POTABLE COLD WATER	A (GlsFbr), B (Elasto)	1/2"	1/2"	1"	1"	1"	
NCWPP	NON-POTABLE COLD WATER	A (GlsFbr), B (Elasto)	1/2"	1/2"	1"	1"	1"	
TW	TEMPERED WATER - POTABLE	A (GlsFbr), B (Elasto)	1"	1"	1 1/2"	1 1/2"	1 1/2"	

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USDA Agricultural Research Service

PLUMBING SCHEDULES

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VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

(1) — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL

INDICATES DIRECTION OF TRUE NORTH
PLAN OR DETAIL NUMBER
PLAN OR DETAIL NAME
NORTH (1) VIEW NAME
1/8" = 1'-0"
PLAN OR DETAIL SCALE

SIM — INDICATES SIMILAR DETAIL REFERENCED IN MULTIPLE LOCATIONS — SIM
1 — DETAIL REFERRED TO BY SECTION CUT — 1 2 3 4
M101 — SHEET DETAIL IS LOCATED ON — T101

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
- NEW
- EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
- NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
- EXISTING
- EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
- EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E	TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING
TAG-1	UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST
⯐	INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

FIRE / SMOKE BARRIER DESIGNATIONS

THE LINE TYPES SHOWN ARE FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY RATINGS WITH THE LATEST SET OF ARCHITECTURAL PLANS AND FURNISH ALL MATERIALS REQUIRED TO COMPLY WITH THOSE RATINGS WHETHER SHOWN OR NOT.

ALL [FLOOR, FLOOR CEILING, AND ROOF CEILING] ASSEMBLIES SHALL BE DESIGNATED AS [1], [2], [3], [4] HOUR FIRE [/SMOKE], BARRIER(S), UNLESS NOTED OTHERWISE ON THE PLANS. RATINGS WERE ACQUIRED FROM THE ARCHITECTURAL PLANS.

FIRE PARTITION	- - - - - - - -
1 HOUR FIRE BARRIER	— - — - — - —
2 HOUR FIRE BARRIER OR WALL	— - - — - - —
SMOKE PARTITION	· · · · · · · ·
SMOKE BARRIER	————————
1 HOUR FIRE/SMOKE BARRIER OR SHAFT ENCLOSURE	— · — · — · —
2 HOUR FIRE/SMOKE BARRIER OR SHAFT ENCLOSURE	— ·· — ·· — ·· —

TECHNOLOGY SYMBOL LIST

SYMBOL	TAG	EQUIPMENT LIST ABBREVIATION	DESCRIPTION
CSS			CONTROLLED SECURITY SCHEME SCHEDULE IDENTIFIER
R1		AC-R1-W	SECURITY CREDENTIAL READER (WALL) TYPE 1
A	AL1	ID-AL1-W	INTRUSION DETECTION AUDIBLE ALARM (WALL)
S	S1	PA-S1-C	FACILITY PAGING SPEAKER (CEILING)
C#	C1	SC-IO-C	INFORMATION OUTLET (CEILING)
C#	C2	SC-IO-W	INFORMATION OUTLET (WALL)

PATHWAY SYMBOL LIST:

SYMBOL	DESCRIPTION
—DIAMETERø C—	CONDUIT
	CONDUIT DOWN
	CONDUIT UP OR UP/DOWN
	CONDUIT SLEEVE
	CONTINUATION

TECHNOLOGY SYMBOL LIST GENERAL NOTES:

1. "C#" INDICATES INFORMATION OUTLET FACEPLATE CONFIGURATION. REFER TO INFORMATION OUTLET SCHEDULE ON T600 FOR ADDITIONAL INFORMATION.
2. REFER TO CONTROLLED SECURITY SCHEME (CSS) TYPE SCHEDULE ON T600 FOR ADDITIONAL INFORMATION.
3. INFORMATION OUTLET INSTALLED IN CONTRACTOR PROVIDED FLOOR BOX. "C#" INDICATES INFORMATION OUTLET FACEPLATE CONFIGURATION. REFER TO INFORMATION OUTLET SCHEDULE ON T600 FOR ADDITIONAL INFORMATION. REFER TO THE ELECTRICAL FLOOR PLANS AND ELECTRICAL EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.

TECHNOLOGY ABBREVIATION KEY

ABBR:	DESCRIPTION:
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
BFC	BELOW FINISHED CEILING
C	CONDUIT
DE	DELAYED EGRESS
DPDT	DOUBLE POLE DOUBLE THROW
FOV	FIELD OF VIEW
J-BOX	JUNCTION BOX
POE	POWER OVER ETHERNET
PTZ	PAN TILT ZOOM
SIM	SIMILAR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
+#	MOUNTING HEIGHT ABOVE FINISHED FLOOR
EF-#	ENTRANCE FACILITY
MC-#	MAIN CROSS-CONNECT
TR-#	TELECOMMUNICATIONS ROOM

TELECOM ROOM REFERENCES

TELECOM ROOM	DETAIL / SHEET REFERENCE	FLOOR PLAN REFERENCE
EXISTING ER-1	3/T300	T102
EXISTING ER-2	NA	T103
TR-1	1/T300	T101

TECHNOLOGY SHEET INDEX

T099	GROUND FLOOR DEMOLITION PLAN - TECHNOLOGY
T000	TECHNOLOGY COVERSHEET
T101	GROUND FLOOR PLAN - TECHNOLOGY
T102	LEVEL 01 PLAN - TECHNOLOGY
T103	LEVEL 02 PLAN - TECHNOLOGY
T300	TECHNOLOGY ENLARGED PLANS
T400	TECHNOLOGY DETAILS
T500	TECHNOLOGY DIAGRAMS
T600	TECHNOLOGY SCHEDULES
GRAND TOTAL: 9	

TECHNOLOGY GENERAL NOTES:

1. ##-###-# INDICATES TECHNOLOGY EQUIPMENT SCHEDULE ITEM LABELED AS "EQUIPMENT LIST ABBREVIATION"
2. REFER TO TECHNOLOGY EQUIPMENT SCHEDULE AND SPECIFICATIONS FOR FULL DESCRIPTIONS AND MANUFACTURERS OF ALL DEVICES.

TECHNOLOGY MOUNTING SUBSCRIPT KEY:
- A MOUNT AT +6" TO CENTERLINE ABOVE COUNTER OR BACKSPLASH
- H MOUNT ORIENTED HORIZONTALLY
- L MOUNT IN CASEWORK
- M MOUNT IN MODULAR FURNITURE
- S MOUNT IN SURFACE RACEWAY

A SLASH IS USED BETWEEN TWO SUBSCRIPTS, E.G., A/H.

3. REFER TO THE TECHNOLOGY EQUIPMENT SCHEDULE ON T600 FOR MORE COMPLETE DESCRIPTION AND ITEMS.
4. REFER TO DIAGRAMS ON SHEET(S): **T500**

TECHNOLOGY INSTALLATION NOTES:

1. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADA STANDARDS FOR ACCESSIBLE DESIGN. REFER TO THE ADA GUIDELINES FOR ALL CONFIGURATION DETAILS ON THIS PAGE FOR ADDITIONAL INFORMATION.
2. CONCEAL ALL CONDUIT IN WALLS, PARTITIONS, ABOVE CEILING, IN FLOOR SLAB, ETC. UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE SPECIFICATIONS. CONDUIT IN MECHANICAL ROOMS AND STORAGE ROOMS WITHOUT CEILINGS MAY BE EXPOSED ON BUILDING STRUCTURE.
3. BOXES LOCATED ON OPPOSITE SIDES OF NON-RATED WALLS SHALL BE OFFSET A MINIMUM OF 6" HORIZONTALLY. BOXES ON OPPOSITE SIDES OF FIRE RATED WALLS SHALL BE OFFSET A MINIMUM OF 24" HORIZONTALLY. "THRU-THE-WALL" BOXES SHALL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE GOVERNMENT.
4. VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS, AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL TELECOMMUNICATIONS INSTALLATION, ADJUST OUTLETS OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
5. TELECOMMUNICATIONS EQUIPMENT SHALL BE MOUNTED TO ALLOW ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF TELECOMMUNICATION DEVICES ON EQUIPMENT SUPPLIED BY THE CONTRACTOR SHALL BE APPROVED IN ADVANCE BY THE CONTRACTOR.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
7. ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS. REFER TO 27 05 03 FOR ADDITIONAL INFORMATION AND REQUIREMENTS SPECIFIC TO FIRESTOPPING.
8. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF THE CEILINGS, CEILING TILES, AND CEILING GRID ASSOCIATED WITH THE TECHNOLOGY AREAS OF WORK.
9. THE CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO THE WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
10. FLUSH MOUNT ALL TELECOMMUNICATION OUTLETS AT +18" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED. OUTLETS MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED.

INSTALL ABOVE COUNTER DEVICE AT 44" ABOVE FINISHED FLOOR.
INSTALL ABOVE COUNTER DEVICE AT 40" ABOVE FINISHED FLOOR.
INSTALL DEVICE AT 18" ABOVE FINISHED FLOOR.

ADA STANDARDS - FRONT ACCESS

INSTALL DEVICE AT 44" ABOVE FINISHED FLOOR.
INSTALL DEVICE AT 42" ABOVE FINISHED FLOOR.

ADA STANDARDS - SIDE ACCESS

ADA STANDARDS FOR ACCESSIBLE DESIGN

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DESIGNER: STEENG	EPM:		USDA PEORIA - HEADHOUSE & GREENHOUSE	
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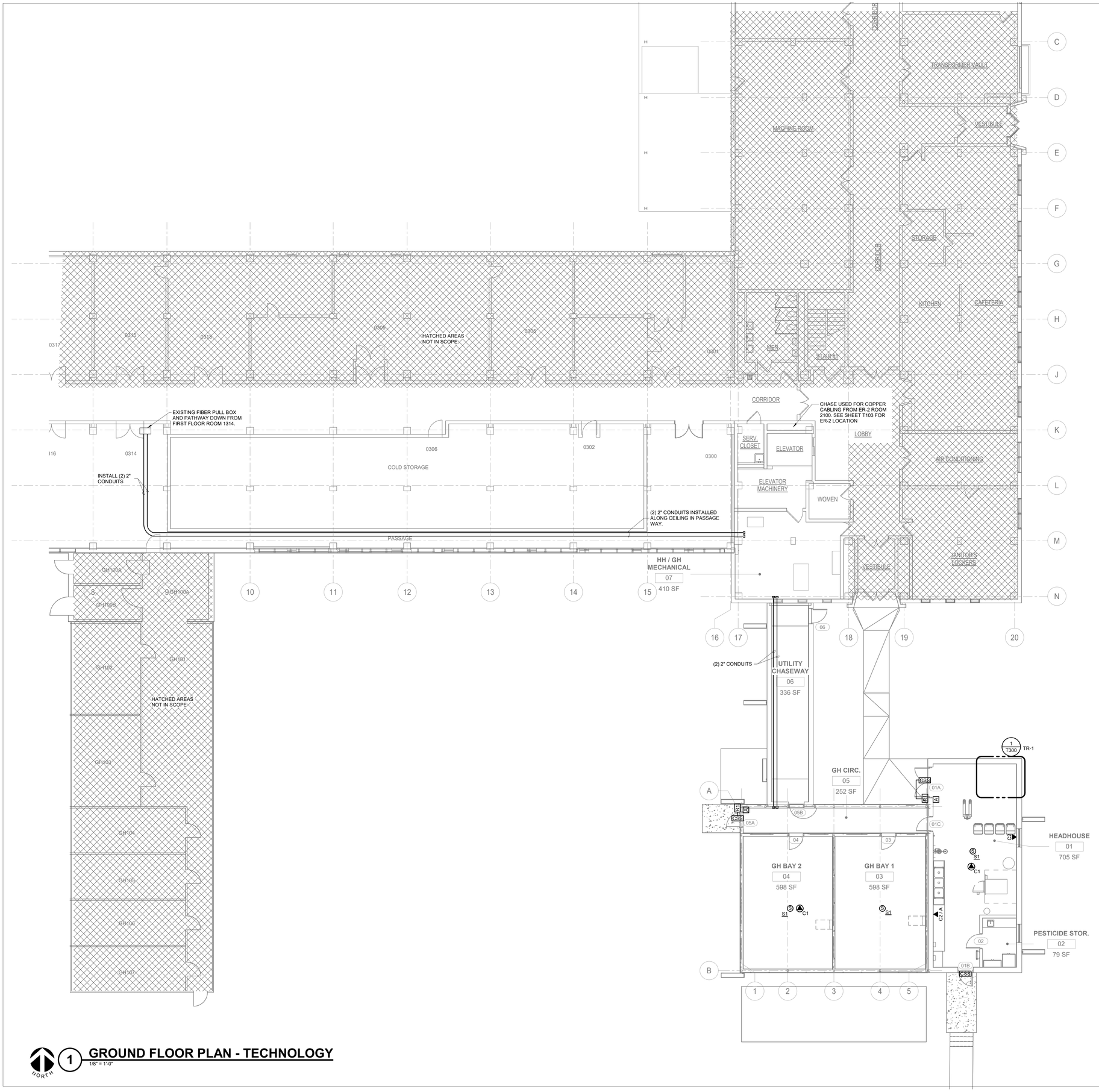

1 GROUND FLOOR PLAN - TECHNOLOGY

1/8" = 1'-0"

NORTH

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GROUND FLOOR PLAN - TECHNOLOGY

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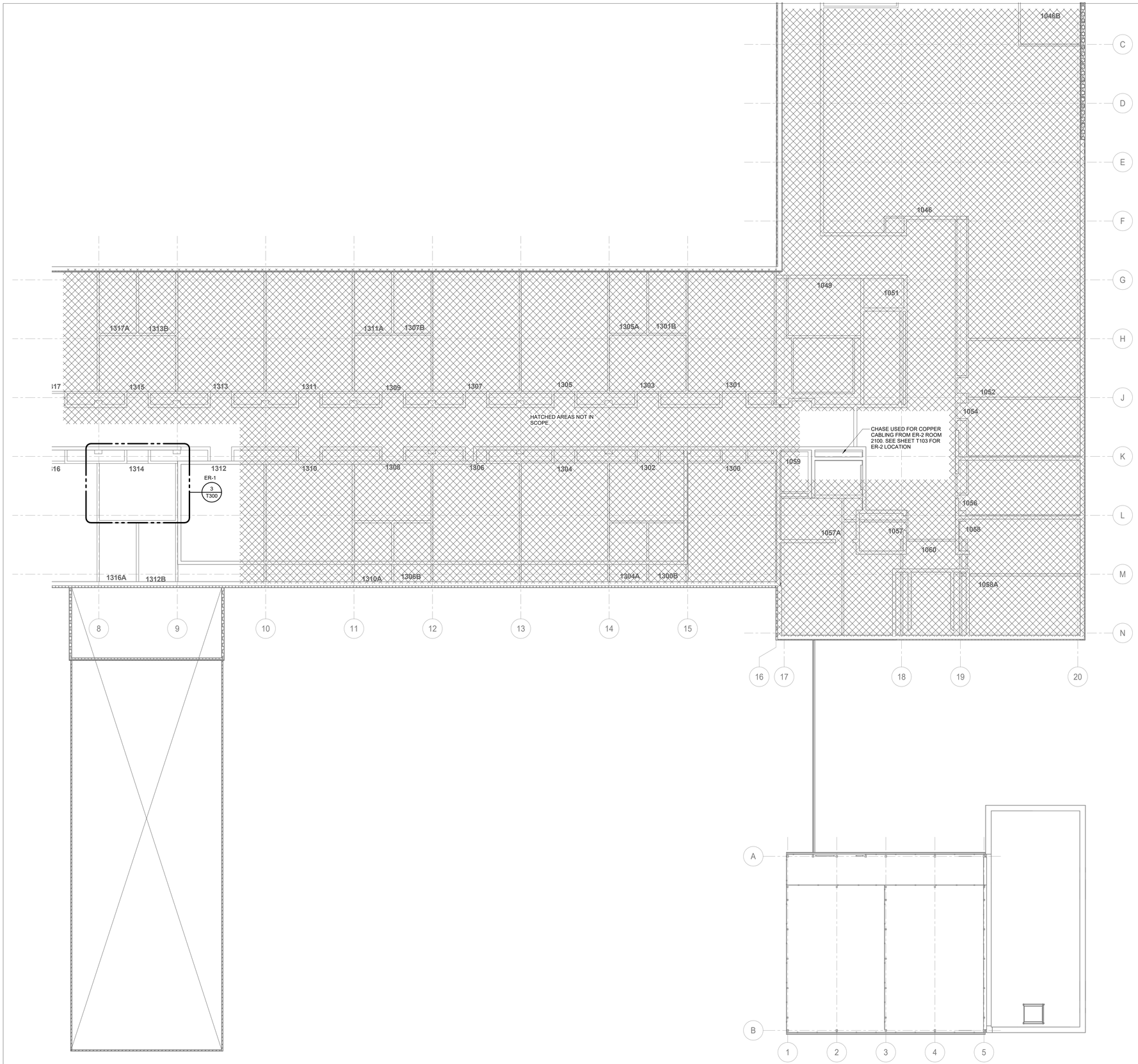

1 LEVEL 01 PLAN - TECHNOLOGY
1/8" = 1'-0"

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LEVEL 01 PLAN - TECHNOLOGY

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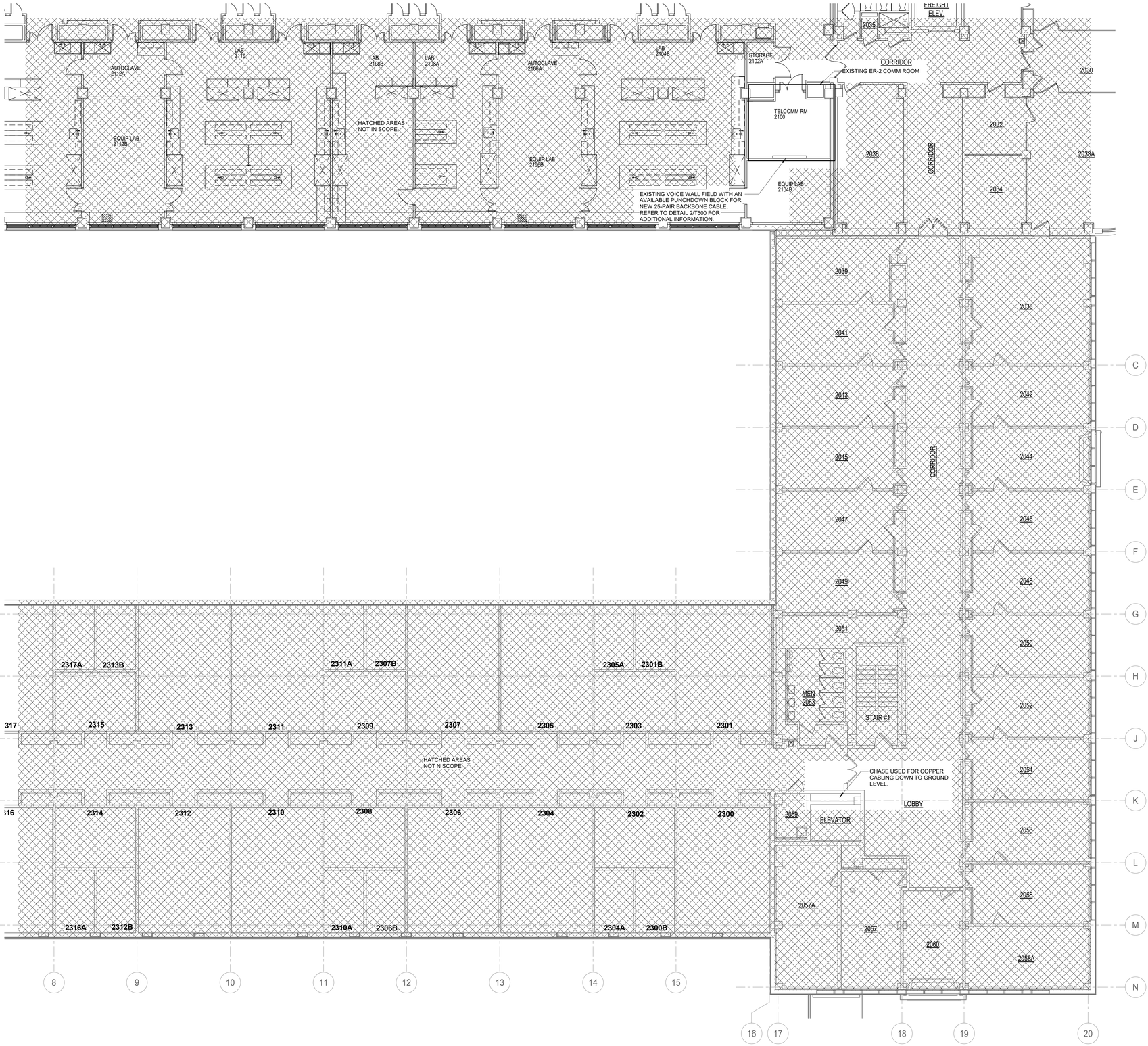

1 **LEVEL 02 PLAN - TECHNOLOGY**
1/8" = 1'-0"

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LEVEL 02 PLAN - TECHNOLOGY

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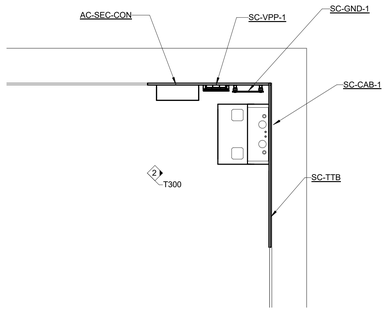
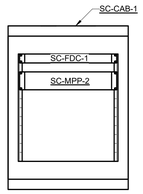


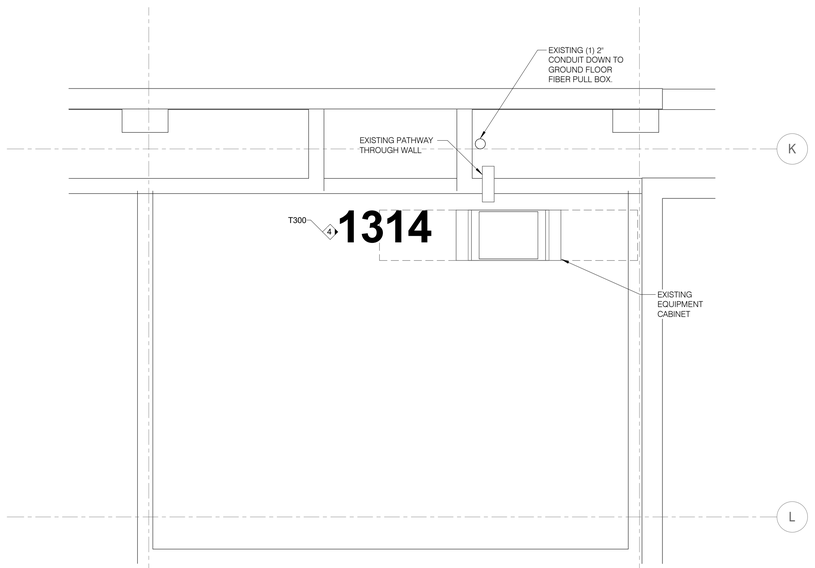
1 ROOM ENLARGEMENT - TR-1

1/2" = 1'-0"



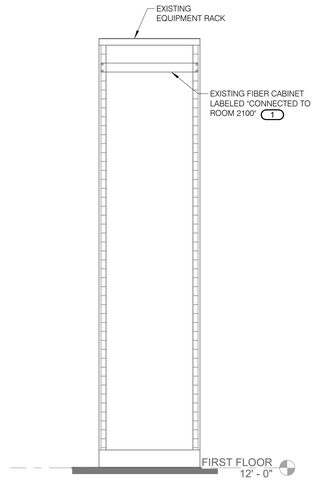
2 CABINET ELEVATION - TR-1

1" = 1'-0"



3 ROOM ENLARGEMENT - ER-1

1/2" = 1'-0"



4 EXISTING RACK ELEVATION - ER-1

1" = 1'-0"

KEYNOTES: (#)

1. THIS CABINET WILL BE UTILIZED TO CONNECT FIBER CABLE TO BE RUN TO (TR-1). COORDINATE WITH THE GOVERNMENT ON EXISTING FIBER MODULES TO CONNECT FIBER BACKBONE TO.

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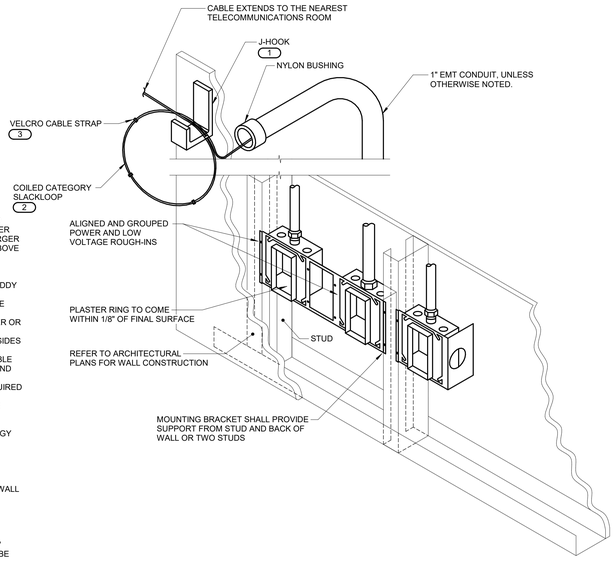


NOTES:

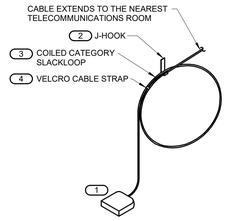
1. THE INTENT OF THE DETAIL IS TO ALIGN AND GROUP DEVICE ROUGH-INS FOR POWER AND LOW VOLTAGE TECHNOLOGY SYSTEMS. SOLIDLY MOUNTED AND THE SURFACE OF THE TRIM IS EITHER FLUSH WITH THE WALL SURFACE OR WITHIN 1/8" OF THE WALL SURFACE. JUNCTION BOXES LARGER THAN 4" SQUARE SHALL BE MOUNTED IN A MANNER THAT IS SIMILAR TO THE SYSTEM NOTED ABOVE OR ACHIEVES THE SAME RESULTS.
2. PLASTER RINGS DEPTH SHALL BE 1/8" DEEPER THAN THE GYP BOARD APPLIED TO THE WALL. PLASTER RING SHALL BE 3/4" FOR USE WITH 5/8" GYP BOARD.
3. METAL STUD-TO-STUD MOUNTING BRACKETS FOR MULTIPLE BOXES BETWEEN STUD. ERICO CADDY RBS## SERIES, EATON B-LINE BB SERIES, OR EQUAL.
4. MOUNTING SUPPORT BRACKETS SIZES FOR SINGLE BOXES IN A STUD CAVITY SHALL MATCH THE STUD DEPTH. ERICO CADDY H## SERIES, EATON B-LINE BB## SERIES, OR EQUAL.
5. WHERE RECEPTACLE AND TECHNOLOGY DEVICES ARE SHOWN SERVING A COMMON COMPUTER OR EQUIPMENT, OR SHOWN IN SIMILAR LOCATIONS ON THE DRAWINGS THE DEVICES SHALL BE INSTALLED IN THE SAME STUD CAVITY WITH MOUNTING BRACKETS OR ALIGNED ON OPPOSITE SIDES OF A COMMON STUD WITH SEPARATE SUPPORT.
6. TERMINATE CONDUIT STUB ORIENTED HORIZONTALLY AT THE HEIGHT OF THE ASSOCIATED CABLE TRAY OR J-HOOK ROUTE. CONDUIT RUN SHALL NOT CONTAIN MORE THAN 180 DEGREES OF BEND BETWEEN ACCESSIBLE JUNCTION BOXES OR BETWEEN JUNCTION BOX AND END OF CONDUIT.
7. WHERE CONDUIT STUB IS LOCATED IN A ROOM WITH AN ACCESSIBLE CEILING AND IS NOT REQUIRED TO RUN TO CABLE ROUTE LOCATED OUTSIDE THE ROOM, STUB MUST TERMINATE ABOVE THE ACCESSIBLE CEILING WITH A 90-DEGREE BEND AT THE TOP ORIENTED IN TO THE ROOM AT THE HEIGHT OF THE ASSOCIATED CABLE TRAY OR J-HOOK ROUTE IN THE ROOM.
8. ALL STUBS MUST BE FITTED WITH A NYLON BUSHING ON EACH END OF THE CONDUIT.
9. INSTALLING CONTRACTOR SHALL FURNISH AND INSTALL FIRESTOP MATERIALS FOR TECHNOLOGY ROUGH-INS PER PROJECT REQUIREMENTS. REFER TO SPECIFICATIONS FOR FIRESTOP REQUIREMENTS.

KEYNOTES: (#)

1. MOUNT A DEDICATED J-HOOK TO THE NEAREST CEILING SUBSTRUCTURE, COLUMN, JOIST, OR WALL ABOVE THE CEILING AS SHOWN ON THE DRAWINGS. PROVIDE THE PROPER SUPPORT WHEN HANGING FROM THE CEILING SUBSTRUCTURE OR COLUMN WALL OR JOIST. REFER TO SPECIFICATION SECTION 27 05 28 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO SECTION 27 15 00 FOR SLACKLOOP LENGTH. MAINTAIN THE MANUFACTURERS BEND RADIUS FOR SLACKLOOP SIZE.
3. PROVIDE AND INSTALL A VELCRO CABLE STRAP ON THE SLACKLOOP APPROXIMATELY EVERY 6" ALONG THE SLACKLOOP. FOR SLACKLOOPS GREATER THAN 3' A MINIMUM OF (4) STRAPS WILL BE INSTALLED.

1 TECHNOLOGY ROUGH-IN TO J-HOOK DETAIL

NO SCALE



NOTES:

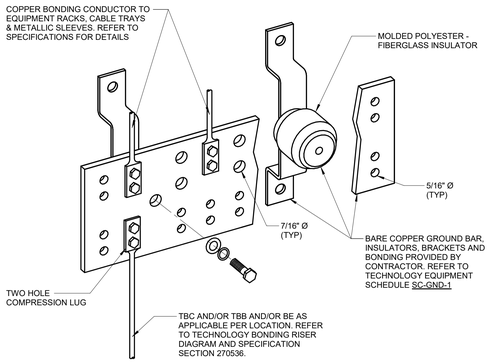
1. THIS DIAGRAM MAY NOT REPRESENT THE QUANTITY OF CABLES TO EACH INFORMATION OUTLET JUNCTION BOX. REFER TO THE DRAWINGS AND THE INFORMATION OUTLET SCHEDULE FOR ADDITIONAL INFORMATION.
2. ALL DEVICES ARE INSTALLED ABOVE THE CEILING UNLESS OTHERWISE NOTED.

KEYNOTES: (#)

1. 1 OR 2-PORT PLENUM RATED SURFACE MOUNTED BOX, SUPPORT FROM J-HOOK. REFER TO THE INFORMATION OUTLET SCHEDULE AND TECHNOLOGY EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.
2. MOUNT A DEDICATED J-HOOK TO THE NEAREST CEILING SUBSTRUCTURE, COLUMN, JOIST, OR WALL ABOVE THE CEILING AS SHOWN ON THE DRAWINGS. PROVIDE THE PROPER SUPPORT WHEN HANGING FROM THE CEILING SUBSTRUCTURE OR COLUMN WALL OR JOIST. REFER TO SPECIFICATION SECTION 27 05 28 FOR ADDITIONAL REQUIREMENTS.
3. REFER TO SECTION 27 15 00 FOR SLACKLOOP LENGTH. MAINTAIN THE MANUFACTURERS BEND RADIUS FOR SLACKLOOP SIZE.
4. PROVIDE AND INSTALL A VELCRO CABLE STRAP ON THE SLACKLOOP APPROXIMATELY EVERY 6" ALONG THE SLACKLOOP. FOR SLACKLOOPS GREATER THAN 3' A MINIMUM OF (4) STRAPS WILL BE INSTALLED.

2 ABOVE CEILING INFORMATION OUTLET MOUNTING DETAIL

NO SCALE

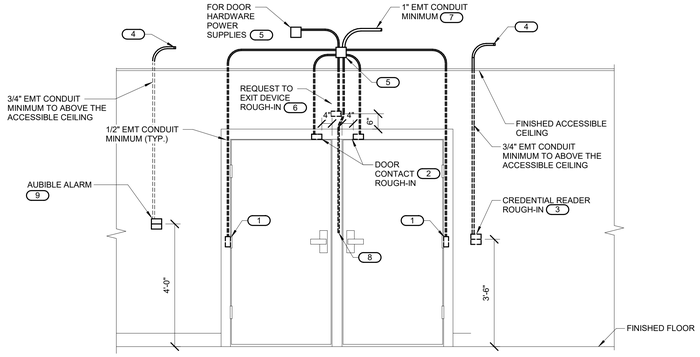


NOTES:

1. REFER TO TECHNOLOGY EQUIPMENT SCHEDULE SC-GND-1 FOR MINIMUM DIMENSION REQUIREMENTS.
2. REFER TO 4/T500 FOR TYPICAL TELECOM ROOM BONDING FLOW DIAGRAM.

3 BONDING BUS BAR DETAIL

NO SCALE



DOOR FRAME ROUGH-IN DIAGRAM
(ALL DOUBLE DOORS WITH OR WITHOUT MULLION)

NOTES:

1. CONFIGURATIONS SHOWN IN THE DETAIL ABOVE ARE DIAGRAMMATIC, INTENDED TO DESCRIBE THE CONTROLLED SECURITY SCHEME ROUGH-IN REQUIREMENTS OF THE DOORS. DETAILS ABOVE MAY NOT ACCURATELY REPRESENT DOOR SIZE, DOOR SWING, DOOR HARDWARE, OR DOOR FUNCTIONALITY. REFER TO ARCHITECTURAL DOOR HARDWARE SCHEDULE, DOOR HARDWARE GROUPS AND DOOR HARDWARE SPECIFICATIONS FOR COMPLETE INFORMATION. MIRROR THE DETAIL AS REQUIRED.
2. ROUGH IN SHOWN IN THE DETAIL ABOVE REPRESENTS THE MINIMUM REQUIREMENTS FOR ALL CONTROLLED SECURITY SYSTEM DEVICES AND CABLING UNLESS OTHERWISE NOTED. COORDINATE EXACT REQUIREMENTS WITH SELECTED DOOR MATERIALS, DOOR HARDWARE, AND CONTROLLED SECURITY DEVICES AND CABLING PRIOR TO INSTALLATION.
3. ALL CABLING IN WALLS AND WHERE EXPOSED ON VERTICAL SURFACES SHALL BE INSTALLED IN EMT CONDUIT OR SURFACE MOUNT RACEWAY. CABLING ROUTED HORIZONTALLY ABOVE THE ACCESSIBLE CEILING MAY BE INSTALLED FREE-AIR CABLING PROPERLY RATED FOR THE CEILING ENVIRONMENT.
4. THE CONTRACTOR SHALL NOT MODIFY ANY FIRE RATED DOOR AND/OR DOOR FRAME. REFER TO THE ARCHITECTURAL DOOR SCHEDULE, DOOR HARDWARE SCHEDULE, AND DOOR HARDWARE SPECIFICATION FOR ADDITIONAL INFORMATION. MODIFICATION TO ANY FIRE RATED DOOR AND/OR FRAME WILL REQUIRE A RE-CERTIFICATION OF THE DOOR AND FRAME WITH THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).
5. INSTALLING CONTRACTOR SHALL FURNISH AND INSTALL FIRESTOP MATERIALS FOR ALL CONTROLLED SECURITY SCHEME ROUGH-INS PER PROJECT REQUIREMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
6. REFER TO THE ACCESS CONTROL RISER DIAGRAM ON 2/T500 FOR CABLING REQUIREMENTS AND THE CONTROLLED SECURITY SCHEME (CSS) TYPE SCHEDULE ON T600 FOR ADDITIONAL INFORMATION.
7. INSTALLATION SHALL INCLUDE ALL POWER REQUIRED FOR SYSTEM OPERATION INCLUDING +120VAC. REFER TO THE SUGGESTED MATRIX OF SCOPE RESPONSIBILITY FOR ADDITIONAL INFORMATION.

KEYNOTES: (#)

1. PROVIDE JUNCTION BOXES IN THE DOOR FRAME WHERE SHOWN ON THIS DETAIL. ROUGH-IN SHALL BE PROVIDED WHETHER THE CURRENT SECURITY SCHEME UTILIZES THEM OR NOT. ALL CONDUITS SHALL BE EMT CONDUIT UNLESS OTHERWISE NOTED. FLEXIBLE CONDUIT OF ANY TYPE WILL NOT BE ACCEPTED. COORDINATE INSTALLATION WITH ON-SITE DOOR FRAME INSTALLATION CONTRACTOR.
2. ALL DOOR POSITION SWITCHES ARE REQUIRED TO BE RECESSED UNLESS OTHERWISE NOTED. ELECTRIC HINGE MONITORS ARE NOT AN ACCEPTABLE REPLACEMENT FOR THE RECESSED DOOR POSITION SWITCH.
3. 4" SQUARE BACKBOX WITH SINGLE GANG PLASTER RING. PROVIDE 2 1/2" DEEP MASONRY BOX WHERE APPLICABLE. REFER TO FLOOR PLAN(S) FOR ACTUAL CREDENTIAL READER TYPE AND ROUGH-IN LOCATIONS.
4. CONDUIT SHALL ROUTE FROM THE BACKBOX TO THE SECURED SIDE OF THE DOOR. CONDUIT SHALL ROUTE A MINIMUM OF 12" FROM THE JUNCTION BOX OR TO THE JUNCTION BOX ABOVE THE DOOR.
5. MOUNT A MINIMUM 4" SQUARE 2-1/8" DEEP JUNCTION BOX WITH BLANK COVER PLATE ON THE SECURED SIDE OF THE DOOR ABOVE ACCESSIBLE CEILING. INSTALLING CONTRACTOR SHALL SIZE THE JUNCTION BOXES PER SYSTEM INSTALLATION REQUIREMENTS AND APPLICABLE CODES. MAINTAIN ACCESS TO THE JUNCTION BOX.
6. PROVIDE A HORIZONTALLY MOUNTED SINGLE GANG BACKBOX FOR THE REQUEST TO EXIT SENSOR. REFER TO THE CONTROLLED SECURITY SCHEME (CSS) TYPE SCHEDULE ON T600 FOR DOORS THAT REQUIRE THIS ROUGH-IN.
7. CONDUIT SHALL ROUTE A MINIMUM OF 12" FROM THE JUNCTION BOX. PROVIDE A NYLON BUSHING ON CONDUIT END.
8. CONDUIT INSTALLED IN PERMANENT MULLIONS ONLY. REFER TO THE ARCHITECTURAL DOOR SCHEDULE AND DOOR HARDWARE GROUPS FOR LOCATIONS THAT REQUIRE THIS ROUGH-IN. PROVIDE A NYLON BUSHING ON THE CONDUIT END.
9. AUDIBLE ALARM SHALL BE INSTALLED ON THE SECURE SIDE OF THE DOOR ONLY.

4 CONTROLLED SECURITY SCHEME DOOR ROUGH-IN DETAIL

NO SCALE

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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TECHNOLOGY DETAILS

USDA PEORIA - HEADHOUSE & GREENHOUSE

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DWG. NO. T400

SHEET 72 OF 74

LICENSED PROFESSIONAL ENGINEER
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IOWA

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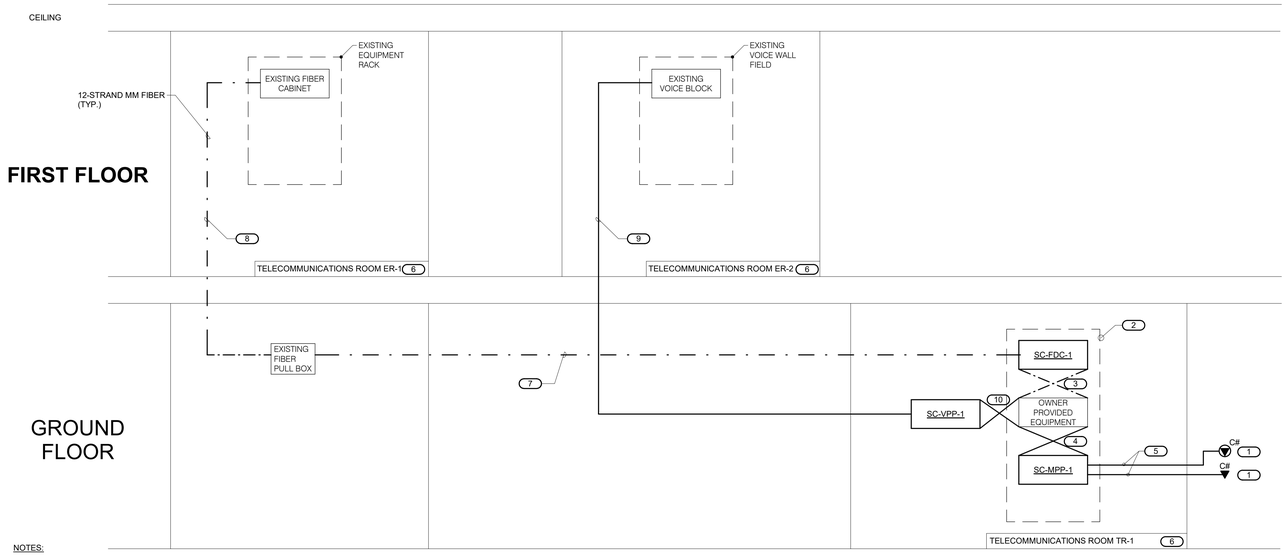


NOTES:

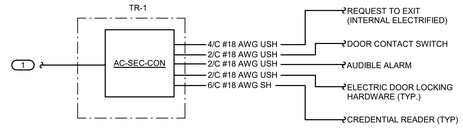
1. THIS RISER IS DIAGRAMMATIC AND MAY NOT SHOW ACTUAL ROUTING OR QUANTITIES OF MATERIALS SHOWN. THIS RISER IS SHOWN FOR CLARIFICATION OF CONNECTION(S), LOCATIONS AND CABLE TYPE. ALL INFORMATION OUTLETS ARE TYPICAL OF THE OUTLETS IN THE AREA SHOWN. REFER TO FLOOR PLANS FOR MORE SPECIFIC ROUTING INFORMATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. REFER TO FLOOR PLANS FOR QUANTITY OF CABLES AND JACKS TO BE INSTALLED AT EACH INFORMATION OUTLET.

KEYNOTES: (#)

1. C# INDICATES VOICE/DATA FACEPLATE CONFIGURATION. REFER TO THE INFORMATION OUTLET SCHEDULE ON T600 FOR ADDITIONAL INFORMATION. REFER TO SPECIFICATIONS SECTION 27 15 00 FOR ADDITIONAL INFORMATION.
2. CABINET AS DEFINED ON THE TELECOM ROOM LAYOUT. REFER TO THE TELECOM ROOM REFERENCES MATRIX ON THE COVERPAGE FOR LOCATION.
3. MULTI-MODE OPTICAL FIBER PATCH CABLES.
4. RJ-45 TO RJ45 CATEGORY6 UTP PATCH CORDS, REFER TO SPECIFIATIONS FOR PATCH CORD REQUIRMENTS.
5. 4-PAIR, CATEGORY 6, UNSHIELDED TWISTED PAIR CABLE, REFER TO SPECIFICATIONS.
6. REFER TO COVERPAGE AND FLOOR PLANS FOR TELECOMMUNICATIONS ROOM LOCATIONS.
7. REFER TO T101 FOR CONDUIT PATHWAY FOR FIBER ROUTE.
8. ROUTE CABLE THROUGH EXISTING CABLE CHASE. REFER TO SHEET T101 FOR LOCATION.
9. 25-PAIR COPPER BACKBONE CABLE. REFER TO FLOOR PLAN DRAWINGS FOR CABLE ROUTE.
10. TERMINATE WITH VOICE CROSS CONNECTS.

2 FIBER OPTIC RISER DIAGRAM

NO SCALE



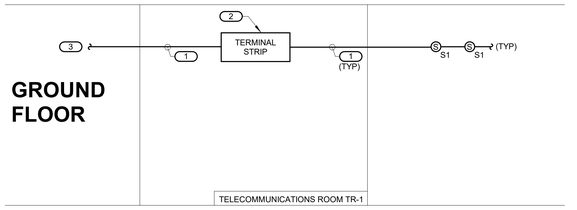
NOTES:

1. THIS DIAGRAM IS DIAGRAMMATIC AND MAY NOT SHOW ACTUAL DEVICE QUANTITIES OR LOCATIONS. ALL DEVICES SHOWN ARE TYPICAL AND MAY NOT REFLECT EVERY WIRE OR CONNECTION THAT MUST BE MADE. WIRING SHOWN ON THIS DIAGRAM REFLECTS THE REQUIREMENTS FOR THE BASIS OF DESIGN MANUFACTURER. ANY CHANGES REQUIRED DUE TO THE T.C.'S SELECTION OF AN ALTERNATE MANUFACTURER, INCLUDING ANY POWER REQUIRED FOR FIELD LOCATED SECURITY CONTROLLERS, SHALL BE INCLUDED IN THE T.C.'S BID.
2. ALL CONDUCTOR SIZES ARE LISTED A MINIMUM SIZES.
3. ALL WORKSTATIONS AND SERVERS REQUIRE A KEYBOARD AND MOUSE.
4. MULTICONDUCTOR COMPOSITE CABLES ARE ACCEPTABLE.

1 ACCESS CONTROL RISER DIAGRAM

NO SCALE

KEYNOTES:
1. 4-PAIR, CATEGORY 6, UNSHIELDED TWISTED PAIR CABLE FROM SC-MPP-1.



NOTES:

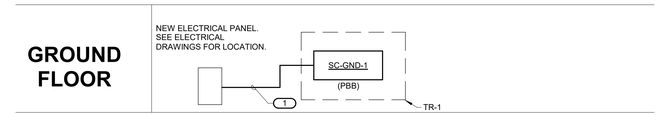
1. THIS RISER IS DIAGRAMMATIC AND MAY NOT SHOW ACTUAL ROUTING OR QUANTITIES OF MATERIALS SHOWN. THIS RISER IS SHOWN FOR CLARIFICATION OF CONNECTION(S), LOCATIONS AND CABLE TYPE. REFER TO FLOOR PLANS FOR MORE SPECIFIC ROUTING INFORMATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. PROPERLY BOND ALL DRAIN CONDUCTORS OF SHIELDED SPEAKER CABLES TO NEAREST SC-GND-1 IN ORIGIN TELECOMMUNICATIONS ROOM ONLY.
3. HORIZONTAL SPEAKER CABLING CONNECTING SPEAKERS AND VOLUME CONTROLS MAY BE T-TAPPED ONLY AT SPEAKER AND VOLUME CONTROL LOCATIONS. ALL HORIZONTAL SPEAKER CABLING CONNECTIONS SHALL BE MADE IN COVERED DEVICE BOXES OR JUNCTION BOXES. CONTRACTOR SHALL SIZE DEVICE BOXES AND JUNCTION BOXES PER APPLICABLE CODES FOR THE AMOUNT OF CABLING SERVED. MAINTAIN CONTINUITY OF DRAIN CONDUCTOR BETWEEN SECTIONS OF HORIZONTAL SPEAKER CABLE AT ALL CONNECTION POINTS. BACKBONE CABLES SHALL NOT BE SPLICED.
4. ALL NECESSARY CONNECTIONS TO BE COMPLETED BY THIS CONTRACTOR.

KEYNOTES: (#)

1. ONE (1) MINIMUM 18/2 SHIELDED CABLE, PLENUM RATED. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. FURNISH AND INSTALL LARGER-GAUGE CABLE WHERE NECESSARY TO MAINTAIN ACCEPTABLE VOLTAGE DROP AS DEFINED IN SPECIFICATIONS.
2. CONTRACTOR PROVIDED AND INSTALLED PAGING TERMINAL STRIP.
3. CONNECTION BACK TO EXISTING PAGING SYSTEM. FIELD CORRDINATE TAP LOCATION IN EXISTING BUILDING. ASSUME 300 FEET DISTANCE FOR BIDDING PURPOSES.

5 OVERHEAD PAGING SYSTEM RISER DIAGRAM

NO SCALE



NOTES:

1. THIS RISER IS DIAGRAMMATIC AND MAY NOT SHOW ACTUAL ROUTING OR QUANTITIES OF MATERIALS. THIS RISER IS SHOWN FOR CLARIFICATION OF CONNECTION LOCATIONS AND CONDUCTOR TYPE. ALL CONNECTIONS AND SYSTEM DEVICES SHOWN ARE TYPICAL AND NOT REPRESENTATIVE OF ACTUAL PROJECT QUANTITIES. REFER TO FLOOR PLANS AND ENLARGED FLOOR PLANS FOR ACTUAL QUANTITIES AND LOCATIONS OF DEVICES AND MORE SPECIFIC ROUTING INFORMATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. TELECOM BONDING BACKBONE SHALL BE PROVIDED PER BONDING CONDUCTOR SIZING SCHEDULE.
3. ALL CONDUCTORS IN THE TECHNOLOGY BONDING SYSTEM SHALL BE [PLENUM RATED] COPPER (GREEN OR MARKED WITH A DISTINCTIVE GREEN COLOR). REFER TO BONDING CONDUCTOR SIZING SCHEDULE FOR SIZING CRITERIA FOR CONDUCTORS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
4. ALL BONDING CONDUCTORS AND BONDING JUMPERS SHALL BE CONNECTED BY COMPRESSION LUGS, EXOTHERMIC WELDING, OR IRREVERSIBLE COMPRESSION CONNECTORS. SOLDER IS NOT AN ACCEPTABLE MEANS OF CONNECTION. SHEET METAL SCREWS SHALL NOT BE USED TO CONNECT COMMUNICATIONS BONDING CONDUCTORS TO EQUIPMENT. WHERE NECESSARY, REMOVE PAINT AND/OR USE PAINT-PIERCING WASHERS TO PROVIDE PROPER ELECTRICAL BOND AT ALL CONNECTIONS.
5. SC-GND-1 IS THE PRIMARY BONDING BUSBAR (PBB) WHICH CONNECTS TO THE (TBC) AND CONNECTS ALL SECONDARY BONDING BUSBAR (SBB) VIA THE (BBC).
6. REFER TO FOR TYPICAL TELECOM ROOM BONDING FLOW DIAGRAM.
7. REFER TO TELECOM ROOM REFERENCES SCHEDULE FOR TELECOMMUNICATIONS ROOM NUMBER AND LOCATION INFORMATION.

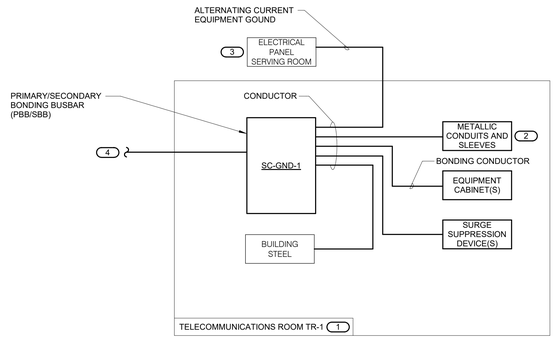
BONDING CONDUCTOR SIZING SCHEDULE	
CONDUCTOR LENGTH IN FEET	**MINIMUM ACCEPTABLE SIZE - AWG**
LESS THAN 13'	6
14' - 20'	4
21' - 26'	3
27' - 33'	2
34' - 41'	1
42' - 52'	1/0
53' - 66'	2/0
67' - 84'	3/0
85' 105'	4/0
106' - 125'	250 kcmil
126' - 150'	300 kcmil
151' - 175'	350 kcmil
176' - 250'	500 kcmil
251' - 300'	600 kcmil
GREATER THAN 301'	750 kcmil

3 TECHNOLOGY BONDING RISER DIAGRAM

NO SCALE

KEYNOTES: (#)

1. TELECOMMUNICATIONS BONDING CONDUCTOR (TBC). TBC SHALL BE THE SAME SIZE AS THE TBB OR LARGER. REFER TO BONDING CONDUCTOR SIZING SCHEDULE FOR SIZING REQUIREMENTS.



NOTES:

1. THIS FLOW DIAGRAM IS DIAGRAMMATIC AND MAY NOT SHOW ACTUAL ROUTING OR QUANTITIES OF MATERIALS. THIS FLOW DIAGRAM IS SHOWN FOR CLARIFICATION OF CONNECTION LOCATIONS AND CONDUCTOR TYPE. ALL CONNECTIONS AND SYSTEM DEVICES SHOWN ARE TYPICAL AND NOT REPRESENTATIVE OF ACTUAL PROJECT QUANTITIES. REFER TO FLOOR PLANS AND ENLARGED FLOOR PLANS FOR ACTUAL QUANTITIES AND LOCATIONS OF DEVICES AND SPECIFIC ROUTING INFORMATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ALL CONDUCTORS IN THE TECHNOLOGY BONDING SYSTEM MUST BE [PLENUM RATED] COPPER (GREEN OR MARKED WITH A DISTINCTIVE GREEN COLOR). REFER TO BONDING CONDUCTOR SIZING SCHEDULE FOR SIZING CRITERIA FOR CONDUCTORS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. ALL BONDING CONDUCTORS MUST BE CONNECTED BY COMPRESSION LUGS, EXOTHERMIC WELDING, OR IRREVERSIBLE COMPRESSION CONNECTORS. SOLDER IS NOT AN ACCEPTABLE MEANS OF CONNECTION. SHEET METAL SCREWS MUST NOT BE USED TO CONNECT COMMUNICATIONS BONDING CONDUCTORS TO EQUIPMENT. WHERE NECESSARY, REMOVE PAINT AND/OR USE PAINT-PIERCING WASHERS TO PROVIDE PROPER ELECTRICAL BOND AT ALL CONNECTIONS.

KEYNOTES: (#)

1. REFER TO TELECOM ROOM REFERENCES SCHEDULE FOR TELECOMMUNICATIONS ROOM NUMBER AND LOCATION INFORMATION.
2. INCLUDES HORIZONTAL AND VERTICAL CONDUIT SLEEVES FOR TECHNOLOGY CABLING.
3. REFER TO THE ELECTRICAL DRAWINGS FOR LOCATION.
4. TELECOMMUNICATIONS BONDING BACKBONE (TBB). REFER TO TELECOMMUNICATIONS BONDING RISER DIAGRAM ON 3/T500.

4 TYPICAL TELECOM ROOM BONDING FLOW DIAGRAM

NO SCALE

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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Agricultural Research Service

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TECHNOLOGY DIAGRAMS

USDA PEORIA - HEADHOUSE & GREENHOUSE

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DWG. NO. T500

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LICENSED PROFESSIONAL ENGINEER
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IOWA

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TECHNOLOGY EQUIPMENT SCHEDULE

THE EQUIPMENT LIST ABBREVIATIONS AND THE TECHNOLOGY EQUIPMENT SCHEDULE ARE FOR THE CONVENIENCE OF THE CONTRACTOR. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF QUANTITIES AND SHALL FURNISH ALL MATERIAL REQUIRED, WHETHER SPECIFIED OR NOT, TO PRODUCE A SATISFACTORY WORKING SYSTEM.

CATALOG NUMBERS ARE NOT TO BE CONSIDERED COMPLETE BUT ARE GIVEN ONLY TO AID THE CONTRACTOR IN THE SEARCH FOR MATERIAL. NO MATERIAL SHALL BE ORDERED BY MANUFACTURER AND CATALOG NUMBER ONLY. EACH CONTRACTOR SHALL FIRST READ THE COMPLETE DESCRIPTION OF THE MATERIAL ON THESE DRAWINGS AND SPECIFICATIONS. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN. "STANDARD COLOR" INDICATES FACTORY FINISH AVAILABLE AT NO ADDITIONAL CHARGE.

EQUIPMENT LIST ABBREVIATION	EQUIPMENT LIST DESCRIPTION	MANUFACTURER AND MODEL
AC-AA-W	ACCESS CONTROL AUDIBLE ALARM, ROUGH-IN ONLY. CONTRACTOR TO COORDINATE WITH GOVERNMENT FOR THE LOCAL ALARM FOR FULL DETAILS ON ROUGH-IN INSTALLATION. PROVIDE AND INSTALL A DOUBLE-GANG BACKBOX AT +48" AFF, AND A MINIMUM OF 3/4" CONDUIT ROUTED TO ABOXE ACCESSIBLE CEILING. REFER TO 4/T400 FOR DOOR ROUGH-IN DETAIL.	ROUGH-IN ONLY
AC-R1-W	CREDENTIAL READER, PROVIDED AS INTEGRAL PART OF SECURITY MANAGEMENT SYSTEM, REFER TO ACCESS CONTROL SYSTEM DOOR SCHEDULE FOR COMPLETE INFORMATION. CARD READERS SHOWN ON PLANS TO IDENTIFY INTENDED MOUNTING LOCATION, REFER TO SPECIFICATION SECTION 28 13 00 FOR COMPLETE INFORMATION. REFER TO 4/T400 FOR CONTROLLED SECURITY SCHEME DOOR ROUGH-IN DETAIL FOR ADDITIONAL INFORMATION.	HID SIGNO SERIES OR APPROVED EQUAL
AC-SEC-CON	SECURITY MANAGEMENT SYSTEM CONTROLLER IN ENCLOSURE WITH INTEGRATED POWER, FOR USE WITH INTEGRATED SECURITY MANAGEMENT SYSTEM, REFER TO SPECIFICATION SECTION 28 13 00 FOR COMPLETE INFORMATION.	ACCESS CONTROL: LENEL/S2 NO EXCEPTIONS INTEGRATED POWER PANEL: LIFESAFETY POWER ALTRONIX TROVE
PA-S1-C	8" CEILING SPEAKER, 25W PEAK POWER HANDLING, 97dB SENSITIVITY, 45 HZ TO 19 KHZ FREQUENCY RESPONSE, 105 DEGREE DISPERSION, PRIMARY TRANSFORMER SUPPORTS 25V//70V, TAP AT 2W. PROVIDE WITH BAFFLE, TILE BRIDGE, AND BACKCAN WHERE NECESSARY. REFER TO OVERHEAD PAGING SYSTEM DIAGRAM ON 5/T500 FOR DETAILS.	ATLAS SOUND SD72W OR APPROVED EQUAL
SC-CAB-1	WALL MOUNTED ENCLOSED CABINET, 24"H X 24"W X 18"D, DOOR MOUNTED ACRYLIC SMOKE TINTED WINDOW, FRONT AND REAR SECTION KEYED SEPARATELY AND ALIKE, LOUVERED SIDES, 19" PANEL MOUNTING, UNIVERSAL MOUNTING RAILS, (4) KNOCKOUTS IN TOP AND BOTTOM, TWO-HINGE DESIGN FOR FRONT-TO-REAR ACCESS, 300LB LOAD CAPACITY, PROVIDES (12) 1.75" MOUNTING SPACES.	CHATSWORTH 11901-724 HUBBELL SIEMON MIDDLE ATLANTI
SC-FDC-1	FIBER DISTRIBUTION CABINET, RACK MOUNTED. 72 FIBER CAPACITY, SLIDE OUT RAILS TO FACILITATE FRONT ACCESS, JUMPER TROUGHS IN CONNECTOR PANELS TO REDUCE MOUNTING SPACE. PROVIDE WITHCLAMP AND GROUNDING KIT REQUIRES (1) 1.75" MOUNTING SPACES. REFER TO SPECIFICATIONS FOR ADDITIONAL FIBER CONNECTOR INFORMATION.	HUBBELL FCR1U3SPX OR APPROVED EQUAL
SC-GND-1	WALL MOUNT GROUND BAR ASSEMBLIES WITH LUG KITS. 2"H X 12"L X 1/4" D COPPER, ELECTRICALLY ISOLATED BY INSULATORS INTEGRAL TO MOUNTING BRACKETS. KIT CONTAINS THREE (3) SETS OF #2 2-HOLE LUGS WITH 3/8" HARDWARE, SIX (6) SETS OF #6 2-HOLE LUGS WITH 1/4" HARDWARE, ONE (1) SET OF 2/0 2-HOLE LUG WITH 3/8" HARDWARE. ANSI/EIA/TIA-607-D AND BICSI COMPLIANT. UL LISTED. REFER TO 3/T400 SECONDARY BONDING BUS BAR (SBB) DETAIL FOR ADDITIONAL INFORMATION.	CHATSWORTH PRODUCTS 10610-019 OR APPROVED EQUAL
SC-IO-C	INFORMATION OUTLET, CEILING MOUNT, 1 PORT SURFACE BOX AS INDICATED ON DRAWINGS, REFER TO 2/T400 FOR ABOVE CEILING MOUNTING DETAIL. " # " INDICATES INFORMATION OUTLET FACEPLATE CONFIGURATION AS INDICATED ON THE PLANS. REFER TO SHEET T600 FOR INFORMATION OUTLET SCHEDULE. REFER TO 2/T400 FOR ABOVE CEILING INFORMATION OUTLET MOUNTING DETAIL	SURFACE MOUNT BOX: HUBBELL HSB1 SERIES JACK: HUBBELL HXJ6 SERIES OR APPROVED EQUAL
SC-IO-W	INFORMATION OUTLET, 2 -PORT COVERPLATE AS INDICATED ON DRAWINGS. "#" INDICATES INFORMATION OUTLET FACEPLATE CONFIGURATION AS INDICATED ON THE PLANS. REFER TO SHEET T600 FOR INFORMATION OUTLET SCHEDULE PIN CONFIGURATION. INSTALL INFORMATION OUTLET IN A 4" SQUARE BACKBOX WITH A SINGLE GANG PLASTER RING. INSTALL A 1" EMT CONDUIT 6" BEYOND BOX AND TERMINATE WITH A NYLON BUSHING. REFER TO DETAIL 1/T400 AND 2/T500 FOR ADDITIONAL DETAILS	FACEPLATE: HUBBELL ISB2 SERIES JACK: HUBBELL HXJ6 SERIES OR APPROVED EQUAL
SC-MPP-2	MODULAR PATCH PANEL, RACK MOUNT, 48 MODULAR RJ-45 TERMINATIONS, MINI-COM UNSHIELDED JACK MODULES, MOUNTS DIRECTLY TO EIA/TIA STANDARD 19" RELAY RACK, PORT IDENTIFICATION NUMBERS, COLOR CODING AND LABEL HOLDER KITS, U.L. LISTED. REQUIRES (2) 1.75" MOUNTING SPACE.	PANDUIT CPP48WBLY OR APPROVED EQUAL
SC-TTB	TELECOMMUNICATIONS TERMINAL BOARD, 4' X 8' X 3/4" A-C GRADE FIRE-RATED PLYWOOD. EXPOSED SIDE SHALL BE SMOOTH. MOUNT VERTICALLY WITH TOP OF PLYWOOD AT 8'6" A.F.F.	*
SC-VPP-1	VOICE PATCH PANEL, 110-TYPE, 50-PAIR, PROVIDE WITH MOUNTING BLOCKS, CONNECTING BLOCKS, HORIZONTAL JUMPER TROUGHS, HARDWARE, LABEL HOLDERS, AND BLANK INSERTS, SEE SPECIFICATIONS.	HUBBELL OR APPROVED EQUAL

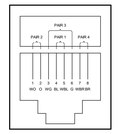
CONTROLLED SECURITY SCHEME (CSS) TYPE SCHEDULE

1. ELECTRONIC DOOR HARDWARE SUCH AS ELECTRIC STRIKES, ELECTRIC LATCH RETRACTION, ETC. SHALL BE PROVIDED AND INSTALLED BY OTHERS.
2. REFER TO THE TECHNOLOGY EQUIPMENT SCHEDULE FOR CREDENTIAL READER TYPE INFORMATION.

		CREDENTIAL READER			INTEGRATION													REQUEST TO EXIT			DOOR HARDWARE / MONITORING									OTHER (REFER TO NOTES)				
DOOR #	ROUGH-IN ONLY	CREDENTIAL READER TYPE	MULTIPLE CREDENTIAL READERS OPERATES SINGLE DOOR	OPERATES MULTIPLE DOORS	AUTOMATIC DOOR OPERATOR	ELEVATOR	LOCKED BY EMERGENCY DURESS SEQUENCE	INFANT PROTECTION	REMOTE UNLOCK VIA INTERCOM MASTER	REMOTE UNLOCK VIA PUSHBUTTON	INTRUSION DETECTION	REMOTE UNLOCK VIA FIRE COMMAND CENTER	VIDEO SURVEILLANCE	WANDER PREVENTION SYSTEM	MOTION DETECTOR	LOCAL PUSHBUTTON DOOR HARDWARE OVERRIDE	INTERNAL ELECTRIFIED HARDWARE CONNECTION (BY OTHERS)	ELECTRONIC LOCKING HARDWARE (BY OTHERS)	MAG LOCK	LATCH STATUS DETECTION (BY OTHERS)	LOCAL ALARM HORN	MONITOR LATCH BOLT (BY OTHERS)	MONITOR DOOR POSITION SWITCH SPDT	MONITOR DOOR POSITION SWITCH DPDT	MONITOR DOOR POSITION SWITCH - OVERHEAD DOOR	MONITOR DOOR POSITION SWITCH - ROOF HATCH	DELAYED EGRESS (BY OTHERS)	LOCAL 120VAC POWER SUPPLY	SCHEDULE BASED LOCKING	VISUAL STROBE/AUDIBLE ALARM	NOTES
01		R1															•	•					•										
01B																		•					•										
05A		R1															•	•					•									•	

INFORMATION OUTLET SCHEDULE

SINGLE GANG WALLPLATES



ANSI/TIA/EIA T568B
PIN/PAIR ASSIGNMENT

NOTES:
1. PROVIDE REMOVABLE BLANK INSERT(S) FOR ALL UNUSED PORTS.
2. REFER TO SPECIFICATIONS SECTION 27 05 53 FOR ADDITIONAL INFORMATION ON LABELING REQUIREMENTS.

SCHEDULE NOTES:
1. LOCATION OF FUTURE OR OWNER PROVIDED WIRELESS ACCESS POINT. PROVIDE A 20' SLACK COIL AT THE NEAREST CABLE SUPPORT FOR POSSIBLE RELOCATION AFTER WIRELESS SURVEY.

LEGEND

DATA	CAT 6 RJ-45
VOICE	CAT 6 RJ-45
BLANK	BLANK FILLER MODULE

CONFIGURATION	FACEPLATE PORTS	FACEPLATE PORT IDENTIFICATION: POSITION 1 JACK TYPE	POSITION 2 JACK TYPE	POSITION 3 JACK TYPE	POSITION 4 JACK TYPE	POSITION 5 JACK TYPE	POSITION 6 JACK TYPE	NOTES
C1	1	DATA						1.
C2	2	DATA	DATA					

NO.	DATE	BY	DESCRIPTION
	05/30/25		50% DESIGN
	08/28/25		95% DESIGN
	04/07/26		100% DESIGN

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PROJECT #23005300.03

BAILEY EDWARD DESIGN	USDA	Agricultural Research Service
PROJECT MANAGER:	AOE:	TECHNOLOGY SCHEDULES
DESIGNER: STEENG	EPM:	USDA PEORIA - HEADHOUSE & GREENHOUSE
CHECKED BY: ADAJUN	SAFETY & HEALTH:	TASK ORDER NO.:
BED PROJECT NO.:	REAL PROPERTY:	ORDER DATE:

NCAUR
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Peoria, Illinois 61604

DWG. NO. T600
SHEET 74 OF 74

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