WAYNE STATE UNIVERSITY

HEALTH SCIENCES RESEARCH BUILDING

545 E. CANFIELD ST, DETROIT, MI 48201

HKS

SET ORGANIZATION

VOLUME I: CIVIL, LANDSCAPE, ARCHITECTURAL & STRUCTURAL

VOLUME II: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL & TECHNOLOGY

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ADDENDUM No. 1

17 OCTOBER 2025

VOLUME II: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL & TECHNOLOGY

PROJECT NO. 26234.000

ROOM NAME ABBREVIATIONS

A

ACSNG	ACCESSIONING (LAB)
ACTV	ACTIVITY
ADMIN RCPT	ADMINISTRATIVE RECEPTION
ADMIT	ADMITTING STATION
ADL BDRM	ADULT BEDROOM
ADL KIT	ADULT KITCHEN
AEROB	AEROBICS AREA
AC	AIR CONDITIONING
ALC	ALCOVE
ANESTH	ANESTHESIA
ANIM STOR	ANIMAL STORAGE
ANTE	ANTE ROOM
AV	AUDIO VISUAL
AUDLGY	AUDIOLOGY
ATM	AUTOMATED TELLER
AUTOPSY	AUTOPSY

B

BARM KIT	BARIUM KITCHEN
BED RM	BEDROOM
BIO HAZ	BIO-HAZARD
BIO EQUIP	BIOLOGY EQUIPMENT
BIO MED	BIO-MEDICAL
BIO MED ENG	BIO-MEDICAL ENGINEERING
BIO MED LAB	BIO-MEDICAL LABORATORY
BIO MED SAT	BIO-MEDICAL SATELLITE
BIO WST	BIO-MEDICAL WASTE
BLD BNK	BLOOD BANK
BLD DNR	BLOOD DONOR AREA
BLD DWG	BLOOD DRAWING
BLD GAS	BLOOD GAS LABORATORY
BRD RM	BOARD ROOM
BLR RM	BOILER ROOM
BNE DNSTY	BONE DENSITY
BKPG	BOOK KEEPING
BTQUE	BOUTIQUE
BRKDN	BREAK DOWN
BRK RM	BREAK ROOM
BRKDN/EQ	BREAKDOWN EQUIPMENT
BRST FD	BREAST FEEDING
BRST ULT	BREAST ULTRASOUND
BULK ST	BULK STORAGE

C

CG WSH	CAGE WASH
CNTEN	CANTEEN
CARD GYM	CARDIAC CATH GYM
CARD CATH	CARDIAC CATHETERIZATION
CARD CIRCUIT	CARDIAC CIRCUIT
CARD REHAB	CARDIAC REHABILITATION
CARD RM	CARDIAC ROOM
C/V COND	CARDIOVASCULAR CONDITIONING
C/V EXAM	CARDIOVASCULAR EXAM
C/V STRESS TEST	CARDIOVASCULAR STRESS TESTING
CAST	CAST ROOM/ORTHO/FRACTURE
CATH PROC	CATHETERIZATION PROCEDURE
CHNG (M-MALE, F-FEMALE, H/C-HANDICAPPED)	CHANGING ROOM
CHRT RD	CHART READING
CHRT/HLD	CHART HOLDING
CHRT/DCT	CHARTING/DICTATION
CHEM COLD ST	CHEMICAL COLD STORAGE
CHEM ST	CHEMICAL STORAGE
CHEM	CHEMISTRY
CHEMO	CHEMOTHERAPY
CHILD BIRTH ED	CHILD BIRTH EDUCATION
CHILD WTG	CHILD BIRTH WAITING
CLSRM	CLASSROOM
CLSRM/CONF	CLASSROOM CONFERENCE
CLSRM/CNSLT	CLASSROOM CONSULT
CLN EQPCP	CLEAN EQUIPMENT
CLN HOLD	CLEAN HOLDING
CLN LINEN	CLEAN LINEN
CLN MED	CLEAN MEDICATION
CLN ST	CLEAN STORAGE
CLN SPLY	CLEAN SUPPLY
CLN SPLY/ST	CLEAN SUPPLY STORAGE
CLN UTIL	CLEAN UTILITY
CLERCL/FILES	CLERICAL/FILES
CLIN CONS	CLINICAL CONSULT
CLIN WK	CLINICAL WORKSTATION
CL	CLOSET
CLD RM	COLD ROOM
COMM	COMMUNICATION
COMM EQ	COMMUNICATION EQUIPMENT
COMMUNITY	COMMUNITY ASSEMBLY
CT	COMPUTED TOMOGRAPHY
CT CNTRL	COMPUTED TOMOGRAPHY CONTROL
CT IMAG	COMPUTED TOMOGRAPHY IMAGING
CT PREP	COMPUTED TOMOGRAPHY PREPARATION
CMWP	COMPOSITE METAL WALL PANEL
CT READ	COMPUTED TOMOGRAPHY READING
CT SCAN	COMPUTED TOMOGRAPHY SCAN
CT SIM	COMPUTED TOMOGRAPHY SIMULATOR
COMP	COMPUTER
COMP SERVER	COMPUTER SERVER
COMP ST	COMPUTER STATION
CNCSN	CONCESSION AREA
CNCRG	CONCIERGE
CONF/CNSLT	CONFERENCE/CONSULT
CONF	CONFERENCE
CONF/EDU	CONFERENCE/EDUCATION
CONF/GRP/THERAPY	CONFERENCE/GROUP/THERAPY
CONF/LIB	CONFERENCE/LIBRARY
CONF/LNG	CONFERENCE/LOUNGE
CONF/OFF	CONFERENCE/OFFICE
CONF/TEACH	CONFERENCE/TEACHING
COUNSEL	COUNSELING
CNSLT	COUSULT
CNSLT/CONF	CONSULT/CONFERENCE
COPY	COPY AREA
CORR	CORRIDOR
CTYRD	COURTYARD
CCU	CRITICAL CARE UNIT
C-SECT	C-SECTION DELIVERY
CYSTOL LAB	CYSTOLOGY LABORATORY
CYSTOL	CYSTOSCOPY

D

DKRM	DARKROOM
DAYRM	DAY ROOM
DECON	DECONTAMINATION
DECON SHWR	DECONTAMINATION SHOWER
DENTAL LAB	DENTAL LABORATORY
DIAL	DIALYSIS
DICT	DICTATION
DICT WK	DICTATION WORKROOM
DIET	DIETICIAN
DGTL IMAG	DIGITAL IMAGING
DIN	DINING
DIN/ACT	DINING/ACTIVITY
DISH	DISHROOM
DSPTCH	DISPATCH
DISTRIB	DISTRIBUTION
DSMTRY	DOSIMETRY

E

ECHO	ECHOCARDIOGRAM
ECHO READ	ECHOCARDIOGRAM READING
EDUC	EDUCATION ROOM
ELEC	ELECTRICAL
ELEC CL	ELECTRICAL CLOSET
EKG READ	ELECTROCARDIAGRAM READING
EKG	ELECTROCARDIAGRAM TESTING
EEG	ELECTROENCEPHALOGRAM TESTING
EP LAB	ELECTROPHYSIOLOGY LABORATORY
EREG LAB	ELECTRORETINOGRAPHY
EMER ELEC	EMERGENCY ELETRICITY
EMER GEN	EMERGENCY GENERATOR ROOM
EMP HEALTH	EMPLOYEE HEALTH
ENDO	ENDOSCOPY PROCEDURE
ENV SERV	ENVIRONMENTAL SERVICES
EQPM	EQUIPMENT
EQPM ALC	EQUIPMENT ALCOVE
EVS	ENVIRONMENTAL SERVICES
EXAM	EXAM ROOM
EXAM/CNSLT	EXAM/CONSULT
EXAM/TREAT	EXAM/TREATMENT
EXERC	EXERCISE
EXIST	EXISTING

F

FAM RM	FAMILY ROOM
FEED	FEEDING ROOM
FF	FINISH FLOOR
FILE	FILE STORAGE
FILES/ADMIN	FILES ADMINISTRATION
FILM PROC	FILM PROCESSING ROOM
FILM READ	FILM READING
FIN	FINANCE
FIN COUN FITNESS CTR AUTOCL	FINANCIAL COUNSEL FITNESS CENTER AUTOCLAVE/FLASH STERILIZER
FLUORO	FLUOROSCOPY
FOOD ST	FOOD STORAGE
FORM PREP	FORMULA PREPARATION
FREE WGT	FREE WEIGHT AREA
FR SECT	FROZEN SECTION
FNCTN RM	FUNCTION ROOM
FUT EXP	FUTURE EXPANSION

G

GAR	GARAGE
GEN STORES	GENERAL STORES
GEN	GENERATOR
GIFT	GIFT SHOP
GLAUC CTR	GLAUCOMA CENTER
GWN WTG	GOWN WAITING
GWN WTG F	GOWN WAITING FEMALE
GWN WTG M	GOWN WAITING MALE
GRIEVING	GRIEVING ROOM
GROSS	GROSSING

H

PRIV H/C	HANDICAP PRIVACY BEDROOM
SHWR H/C	HANDICAP SHOWERS
TLT H/C STAFF	HANDICAP STAFF TOILET
TLT H/C	HANDICAP TOILET
TLT SH H/C	HANDICAP TOILET/SHOWER
TUB H/C	HANDICAP TUB
HEM	HEMATOLOGY
HISTO	HISTOLOGY
HOLD	HOLDING
HOOD	HOOD AREA
HOT LAB	HOT LABORATORY
HSKP	HOUSEKEEPING
HVF	HUMPHREYS VISUAL FIELD
HYDRO	HYDROTHERAPY TANKS

I

ICE	ICE MACHINE
INF RESUS	INFANT RESUSCITATION
INFECC CTRL	INFECTION CONTROL
INFO	INFORMATION DESK
INFO SYSTEM	INFORMATION SYSTEM
INFUS	INFUSION AREA
INT	INTERVIEW
INV	INVENTORY
ISOL	ISOLATION ROOM
IV PREP	IV PREPARATION
IV ST	IV STORAGE

J

JAN	JANITOR'S CLOSET

K

KIT	KITCHEN
KIT/SAT	KITCHEN SATELLITE

L

LDR	LABOR/DELIVERY/RECOVERY
LDRP	LABOR/DELIVERY/RECOVERY/POST PARDUM
LAB	LABORATORY
LAB/SAT	LABORATORY/SATELLITE
LDRY	LAUNDRY
LIB	LIBRARY
LIB/CONF	LIBRARY/CONFERENCE
LIB/MEDIT	LIBRARY/MEDITATION
LIGHT ADAPT	LIGHT ADAPTATION
LINR ACC	LINEAR ACCELERATOR
LIN CH	LINEN CHUTE
LIN STR	LINEN STORAGE
LR	LIVING ROOM
DOCK	LOADING DOCK
LKRS	LOCKERS
LKRS F	LOCKERS FEMALE
LKRS M	LOCKERS MALE
LKRS/CHNG	LOCKERS/CHANGING
LONG EX	LONG EXAM ROOM

M

MACH RM	MACHINE ROOM
MRI	MAGNETIC RESONANCE IMAGING
MAIL	MAIL ROOM
MAINT	MAINTENANCE
MAMMO/STERO	MAMMOGRAPHY/STEROTACTIC
MGMT	MANAGEMENT
MANIFOLD	MANIFOLD ROOM
MRKTG	MARKETING
MATL MGMT	MATERIALS MANAGEMENT
MECH	MECHANICAL
MECH/ELEC	MECHANICAL/ELECTRICAL
MED REC	MEDICAL RECORDS
MEDS	MEDICATION ROOM
MEDIT	MEDITATION
MTG	MEETING ROOM
MEZZ	MEZZANINE
MICRO BIO LAB	MICROBIOLOGY LABORATORY
MOB DK	MOBILE DOCK

N

NARC CLO	NARCOTICS CLOSET
NICU	NEONATAL INTENSIVE CARE UNIT
NEW NUR	NEWBORN NURSERY
NIGHT PHARM	NIGHT PHARMACY
NITROGEN ST	NITROGEN STORAGE
NOISY ACTV	NOISY ACTIVITY
NOUR	NOURISHMENT
NUC MED	NUCLEAR MEDICINE
NRS STA	NURSE STATION

O

OBSERV	OBSERVATION
OBSERV/EXAM	OBSERVATION EXAM
OBSERV/TREAT	OBSERVATION TREATMENT
OB/GYN	OBSTETRIC/GYNECOLOGY
OT	OCCUPATIONAL THERAPY
OFF	OFFICE
OFF SHRD	OFFICE SHARED
OFF/CONF	OFFICE/CONFERENCE
OFF/CONS	OFFICE CONSULT
OFF/EXAM	OFFICE/EXAM
ON-CALL LNG	ON-CALL LOUNGE
OR	OPERATING ROOM
OR CARDIAC	OR CARDIOTHORACIC
OR EQ ST	OR EQUIPMENT STORAGE
OR ORTHO	OR ORTHOPEDIC
ORTHO	ORTHOPEDIC ROOM
ORTHO ST	ORTHOPEDIC STORAGE
OSTOMY ST	OSTOMY STORAGE
OXYGEN ST	OXYGEN STORAGE

P

PNTR	PANTRY
PARENT LKRS	PARENT LOCKERS
PASS	PASSAGE
PATH LAB	PATHOLOGY LABORATORY
PAT BAY	PATIENT BAY
PAT EDUC	PATIENT EDUCATION
PAT HOLD	PATIENT HOLDING
PAT INTAKE	PATIENT INTAKE
PAT LKRS	PATIENT LOCKERS
PAT LNG	PATIENT LOUNGE
PAT PREP	PATIENT PREPARATION
PAT REG	PATIENT REGISTRATION
PED	PEDIATRIC
PED BAY	PEDIATRIC BAY
PED BLOOD DWG	PEDIATRIC BLOOD DRAWING
PED OBSERV	PEDIATRIC OBSERVATION
PED PLAY	PEDIATRIC PLAY
PHARM	PHARMACY
PHARM ST	PHARMACY STORAGE
PHLEB	PHLEBOTOMY
PT	PHYSICAL THERAPY
PT GYM	PHYSICAL THERAPY GYM
PT TRT	PHYSICAL THERAPY TREATMENT/ MODALITY ROOM
PT/OT	PHYSICAL THERAPY/OCCUPATIONAL THERAPY
PT/OT GYM	PHYSICAL THERAPY/OCCUPATIONAL THERAPY GYM
PET	POSITRON EMISSION TOMOGRAPHY
PACU	POST ANESTHESIA CARE UNIT
PREP	PREPARATION AREA
PREP/RECVO	PREPARATION/RECOVERY
PRIV	PRIVATE
PRIV BAY	PRIVATE BAY
PRIV BDRM	PRIVATE BEDROOM
PRIV RM	PRIVATE ROOM
PROC	PROCEDURE ROOM
PROC/ASSESS	PROCEDURE/ASSESSMENT
PSYCH	PSYCHIATRY
PSYCHOL	PSYCHOLOGY
PUMP AM	PUMPING ROOM

Q

QUIET ACTV	QUIET ACTIVITY
QUIET RM	QUIET ROOM

R

RAD	RADIOLOGY
READ	READING ROOM
RCPT/CSHR	RECEPTION/CASHIER
REC ARC	RECORD ARCHIVE
REC ST	RECORD STORAGE
RECOV	RECOVERY
RECOV BAY	RECOVERY BAY
RECOV/OBS	RECOVERY OBSERVATION
RECYC	RECYCLING
REFR	REFRIGERATOR
REGIST	REGISTRATION
REGIST/FIN	REGISTRATION/FINANCIAL
REHAB GYM	REHABILITATION GYM
RESRCH	RESEARCH
RES RM	RESIDENT ROOM
RESRCE	RESOURCE
RESRCE LIB	RESOURCE LIBRARY
RESP	RESPIRATORY
RT	RESPIRATORY THERAPY
REST	RESTAURANT
RETHERM	RETHERM PANTRY
RETINA CTR	RETINA CENTER

S

SCHED	SCHEDULING
SCOP CLN	SCOPE CLEANING
SCOP ST	SCOPE STORAGE
SCRUB ALC	SCRUB ALCOVE
SCRUB	SCRUB AREA
SECL	SECLUSION ROOM
SECUR	SECURITY
SEMI PRIV RM	SEMI PRIVATE ROOM
SERO	SEROLOGY
SERV	SERVERY
SVC	SERVICE
SERV ENTRY	SERVICE ENTRY
SHELL	SHELL SPACE
SHWR (M-MALE, F-FEMALE, H/C - HANDICAP)	SHOWER
SIM	SIMULATOR
SINK ALC	SINK ALCOVE
SITZ	SITZ BATH
SLP LAB	SLEEP LABORATORY
SLP STUDY	SLEEP STUDY ROOM
SOIL HOLD	SOILED HOLDING
SOIL LN	SOILED LINEN
SOIL UTL	SOILED UTILITY
SOL	SOLARIUM
SORT	SORTING AREA
SP CARE NUR	SPECIAL CARE NURSING
SPEC PROC	SPECIAL PROCEDURES
SP SERV	SPECIAL SERVICES
SP STUD	SPECIAL STUDIES
SP TEST	SPECIAL TESTING
SPEC	SPECIMEN
STAGE I	STAGE I - PACU
STAGE I ISOL	STAGE I ISOLATION - PACU
STAGE II	STAGE II - RECOVERY
STAGE II ISOL	STAGE II ISOLATION - RECOVERY
STR	STAIR
STAT LAB	STAT LABORATORY
STEAM	STEAM ROOM
STER PROC	STERILE PROCEDURE
STER ST	STERILE STORAGE
STER SPLY	STERILE SUPPLY
STER	STERILIZER
ST	STORAGE
STRESS LAB	STRESS LABORATORY
STRESS TEST	STRESS TESTING
STCH ALC	STRETCHER ALCOVE
STCH ST	STRETCHER STORAGE
SUB STA	SUB-STATION
SUB STER	SUB-STERILE
SUB WTG	SUB-WAITING
SPLY	SUPPLY
SUPP	SUPPORT
SURG	SURGERY
SYN LAB	SYNCOPE LABORATORY

T

TDR	TECHNOLOGY DISTRIBUTION ROOM
TECH	TECHNICIANS
TEL	TELEPHONE
TEL ALC	TELEPHONE ALCOVE
TEL CL	TELEPHONE CLOSET
TEL VND	TELEPHONE VENDING
TEL/DATA	TELEPHONE/DATA
TV	TELEVISION LOUNGE
TEMP ST	TEMPORARY STORAGE
TEST	TESTING
TLT (M-MALE, F-FEMALE, P-PUBLIC H/C-HANDICAP, S-STAFF, U-UNISEX)	TOILET
TLT/SH (H/C-HANDICAP, TB-TUB)	TOILET SHOWER
TRANS	TRANSCRIPTION
TRANS WK	TRANSCRIPTION WORKSTATION
TRANSFUS	TRANSFUSION
TRANSFUS BAY	TRANSFUSION BAY
TRSH	TRASH
TRAUMA	TRAUMA ROOM
TRMT	TREATMENT
TRMT BAY	TREATMENT BAY
TREAT/PROC	TREATMENT/PROCEDURE ROOM
TUB	TUB ROOM

U

ULTRA	ULTRASOUND
UBM	ULTRASOUND BIOMICROSCOPY
UNIT SECY	UNIT SECRETARY
UTIL	UTILITY

V

VND	VENDING
VEST	VESTIBULE
VIEW	VIEWING
VISUAL	VISUAL FIELD

W

WAIT	WAITING
WARM	WARMING PANTRY
WASH	WASHING AREA
W/C ALC	WHEELCHAIR ALCOVE
W/C ST	WHEELCHAIR STORAGE
WK AREA	WORK AREA
WK STA	WORK STATIONS
WK RM	WORKROOM

DRAWING ABBREVIATIONS

A

AB	ANCHOR BOLT
AD	AREA DRAIN
AC	AIR CONDITIONING
ACT	ACOUSTICAL CEILING TILE
ADD	ADDENDUM
ADD'L	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AGGR	AGGREGATE
AL ALUM	ALUMINUM
ALT	ALTERNATE
ANOD	ANODIZED
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL

B

B.M.	BENCH MARK
BD	BOARD
BETW	BETWEEN
BF	BACKFACE
BG	BUMPER GUARD
BL	BED LOCATOR
BL	BUILDING LINE
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BR	BUMPER RAIL
BRG	BEARING
BSMT	BASEMENT
BU ROD	BACK-UP ROD
BUR	BUILT-UP ROOF
BW	BEARING WALL

C

C	COMPACT PARKING SPACE
CC	CUBICAL CURTAIN
CEM	CEMENT
CER	CERAMIC
CFMF	COLD-FORMED METAL FRAMING
CG	CORNER GUARD
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CJ	CONSTRUCTION JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMM	COMMUNICATIONS
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CPE	CHLORINATED POLYETHYLENE
CORR	CORRIDOR
CR	CARD READER
CR	COLD ROLLED
CR	CRASH RAIL
CSK	COUNTERSUNK
CT	CERAMIC TILE
CTD	CENTERED
CTR	CENTER
CW	CURTAIN WALL

D

D	DEPTH
DBA	DEFORMED BAR ANCHOR
DET	DETAIL
DF	DECORATIVE FILM
DIA	DIAMETER
DIAPH	DIAPHRAGM
DIM	DIMENSION
DJ	DEFLECTION JOINT
DL	DEAD LOAD
DN	DOWN
DRG	DRAWING
DS	DOWN SPOUT
DWGS	DRAWINGS
DWLS	DOWELS

E

EA	EACH
EF	EACH FACE
EFG	ENTRANCE FLOOR GRILLE
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATOR
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
ESC	ESCALATOR
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EXP BLT	EXPANSION BOLT
EXPN	EXPANSION
EXT	EXTERIOR

F

FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FHC	FIRE HOSE CABINET
FIB	FIBERGLASS
FIN	FINISH
FLR	FLOOR
FOG	FACE OF GLASS
FOM	FACE OF MULLION
FS	FAR SIDE
FT	FOOT
FT	FLOOR TRANSITION
FTG	FOOTING
FV	FIELD VERIFY
FVC	FIRE VALVE CABINET

G

GA	GAUGE
GAFS	GLAZED ALUMINUM FRAMING SYSTEM
GALV	GALVANIZED
GB	GRADE BEAM
GEN	GENERAL
GFRC	GLASS-FIBER REINFORCED CONCRETE
GI	GALVANIZED IRON
GL	GLASS
GM	GLAZED MASONRY UNIT
GND	GROUND
GR	GRADE
GRG	GLASS-REINFORCED GYPSUM
GYP BD	GYPSUM BOARD

H

HB	HOSE BIB
HDW	HARDWARE
HDWD	HARDWOOD
HK	HOOK
HM	HOLLOW METAL
HOR	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HS	HEADED STUD
HSKP	HOUSEKEEPING
HT	HEIGHT
HW	HAND WASH
HW	HEAD OF WALL

I

IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
INSUL	INSULATION
INT	INTERIOR

J

K

K	KIPS (1000 LB)
KO	KNOCK-OUT
KP	KICKPLATE
KPD	KEYPAD
KSF	KIPS PER SQUARE FOOT

L

L	ANGLE
LAV	LAVATORY
LG	LONG
LKB	LOCKABLE
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LP	LOW POINT
LT	LIGHT
LWC	LIGHTWEIGHT CONCRETE

M

MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MEP	MECHANICAL, ELECTRICAL AND PLUMBING
MFG	MANUFACTURER
MGO	MEDICAL GAS OUTLET
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MOB	MEDICAL OFFICE BUILDING
MOD BIT	MODIFIED BITUMEN
MOD	MODIFIED
MSL	MEAN SEA LEVEL
MTL	METAL

N

N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NOA	NOTICE OF ACCEPTANCE BY FLORIDA GOVERNING AUTHORITY
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
NWC	NORMAL WEIGHT CONCRETE

O

OA	OVER ALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OD	OVERFLOW DRAIN
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OSD	OVERFLOW SCUPPER DRAIN
OSF	OUTSIDE FACE

P

P LAM	PLASTIC LAMINATE
PC	PRECAST CONCRETE
PCF	POUNDS PER CUBIC FOOT
PCP	PRE CAST PANEL
PENT	PENTHOUSE
PL	PROPERTY LINE
PL	PLATE
PLMB	PLUMBING
PLYWD	PLYWOOD
PP	PUSH PLATE
POL	POLISHED
PORT CEM	PORTLAND CEMENT
PORT CEM PNL.	PORTLAND CEMENT PLASTER
PR	PAIR
PREFAB	PREFABRICATED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PT	PNEUMATIC TUBE
PTD	PAINTED

R

R	RISER
RAD	RADIUS
RAF	RUBBERIZED ASPHALT FLASHING
RAM	RUBBERIZED ASPHALT MEMBRANE
RAU	RUBBERIZED ASPHALT UNDERLAYMENT
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REBAR	REINFORCING BAR
RECP	RECEPTACLE
REF	REFER OR REFERENCE
REINF	REINFORCING
RELOC	RELOCATE/RELOCATED
REQD	REQUIRED
RFVC	RECESSED FIRE VALVE CABINET
RM	ROOM
RO	ROUGH OPENING

S

SAB	SOUND ATTENUATION BLANKET
SCHED	SCHEDULE
SDL	SUPERIMPOSED DEAD LOAD
SECT	SECTION
SHH	SINGLE HUNG
SHWR	SHOWER
SIM	SIMILAR
SO	STRUCTURAL OPENING
SOG	SLAB ON GRADE
SP	STAND PIPE
SPA	SPACE, SPACING
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSF	SOLID SURFACE
STA	STATION
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STIFF	STIFFENER
STIR	STIRRUP
STL	STEEL
STRUC	STRUCTURAL
SYM	SYMMETRICAL
SYS	SYSTEM

T

TDR	TECHNOLOGY DISTRIBUTION ROOM
T	TREAD
T&B	TOP AND BOTTOM
TC	TOP OF CURB
TEL	TELEPHONE
TEMP	TEMPERATURE
THK	THICK
TLT	TOILET
TO	TOP OF
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOP	TOP OF PARAPET
TOS	TOP OF SLAB
TOSTL	TOP OF STEEL
TRSH CH	TRASH CHUTE
TW	TOP OF WALL
TYP	TYPICAL

U

U/C	UNDER COUNTER
U/G	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE

V

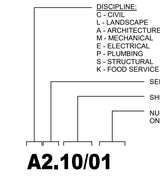
VAR	VARIES
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VWC	VINYL WALL COVERING

W

W/	WITH
W/C	WHEEL CHAIR
W/O	WITHOUT
W	WIDTH
WP	WATERPROOF(ING)
WD	WOOD
WF	WIDE FLANGE
WL	WIND LOAD
WP	WORK POINT
WPO	WORK POINT - POINT OF ORIGIN
WP1	WORK POINT - NUMBERED
WWF	WELDED WIRE FABRIC

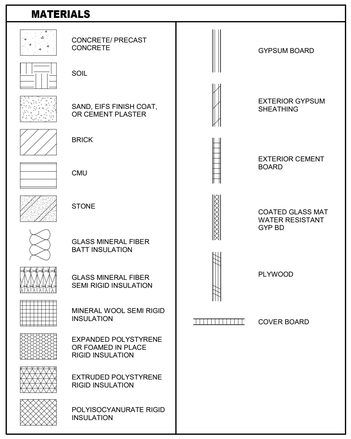
INDEX OF DRAWINGS

NUMBERING SYSTEM:

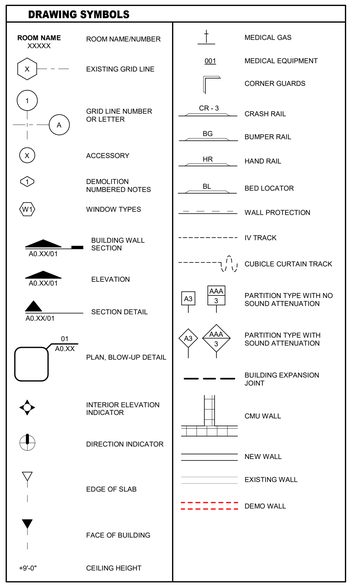


LEGEND

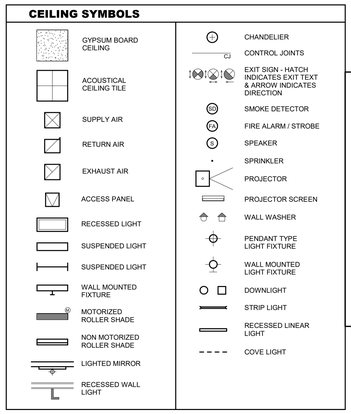
MATERIALS



DRAWING SYMBOLS



CEILING SYMBOLS



BUILDING SUMMARY

PROJECT INFORMATION

PROJECT NAME: Wayne State University - Health Sciences Research Building
ADDRESS: 545 E. Canfield St. Detroit, Michigan 48201
PROPOSED USE: S Story Research (laboratory) Building with Connecting Pedestrian Bridge above Canfield Street.
OWNER-CONTACT PERSON: Robert J. Davenport, CHFM LEED AP
PHONE: 313-577-4301

APPLICABLE CODES

- BUILDING CODE:	2021 Michigan Building Code	- LIFE SAFETY CODE:	2012 NFPA 101
- MECHANICAL:	2021 Michigan Mechanical Code	- ACCESSIBILITY CODE:	2009 ICC/ANSI A117.1
- PLUMBING:	2021 Michigan Plumbing Code		2010 ADA Standards
- ELECTRICAL:	2017 National Electrical Code	- ENERGY CODE:	2021 Michigan Energy Code
- FIRE CODE:	2021 International Fire Code		2013 ASHRAE 90.1
- ELEVATOR	Broad Elevator Code	- SIGN CODE:	2019 Detroit City Code - Chapter 4 Sign Ordinance

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Sheet Number	SHEET NAME	2023/01/31_SCHEMATIC DESIGN	2023-03-18_50% DESIGN DEVELOPMENT	2023-05-09_DESIGN DEVELOPMENT	2023-06-02_DESIGN DEVELOPMENT #2	2023-07-11_DESIGN DEVELOPMENT #3	2023-07-25_50% CD - WSU PERMIT REVIEW	2023-09-12_95% CONSTRUCTION DOCUMENTS	2023-09-29_CONSTRUCTION DOCUMENTS	2023-10-17_ADDENDUM NO. 1
GENERAL										
A0.00	COVER	X	X	X	X	X	X	X	X	X
A0.02	PROJECT INFORMATION	X	X	X			X	X	X	X
A0.03	SHEET INDEX	X	X	X	X	X	X	X	X	X
A0.04	ARCHITECTURAL SITE PLAN	X	X	X			X	X	X	X
ARCHITECTURAL										
ALS.01	LEVEL 01 & 02 LIFE SAFETY PLANS	X	X	X			X	X	X	X
ALS.03	LEVEL 03 & 04 LIFE SAFETY PLANS	X	X	X			X	X	X	X
ALS.05	LEVEL 05 & PH LIFE SAFETY PLANS	X	X	X			X	X	X	X
ALS.10	LEVEL 01 - 05 LIFE SAFETY CONTROL AREA - MAQ PLANS	X	X	X			X	X	X	
ALS.11	LIFE SAFETY - MAQ	X	X	X			X	X	X	
CIVIL										
C-000	COVER SHEET	X	X	X			X	X	X	
C-100	OVERALL EXISTING CONDITIONS	X	X	X			X	X	X	
C-101	EXISITING CONDITIONS		X	X			X	X	X	X
C-102	UTILITY STRUCTURES TABLE	X	X	X			X	X	X	
C-110	DEMOLITION PLAN		X	X			X	X	X	X
C-120	SITE PLAN & PAVING PLAN	X	X	X			X	X	X	X
C-130	UTILITY PLAN	X	X	X			X	X	X	X
C-131	DRAINAGE AREA MAP AND STORMWATER CALCULATIONS		X	X			X	X	X	
C-132	UTILITY PROFILE NORTH-WEST								X	X
C-133	UTILITY PROFILE SOUTH-EAST								X	
C-140	GRADING PLAN		X	X			X	X	X	X
C-150	SOIL EROSION AND SEDIMENTATION CONTROL PLAN		X	X			X	X	X	X
C-160	FIRE HYDRANT COVERAGE AND FIRE TRUCK TURNING MOVEMENT		X				X	X	X	X
C-520	PAVING NOTES & DETAILS	X	X	X			X	X	X	
C-530	UTILITY DETAILS	X	X	X			X	X	X	
C-531	MISCELLANEOUS DETAILS								X	X
C-550	SOIL EROSION AND SEDIMENTATION CONTROL DETAILS AND NOTES		X	X			X	X	X	X
LANDSCAPE										
L-000	RENDERING LANDSCAPE			X						
L-100	PEDESTRIAN HARDSCAPE SURFACE TREATMENTS			X			X	X	X	X
L-101	SITE FURNITURE PLAN							X	X	X
L-110	GREEN STORMWATER INFRASTRUCTURE PLAN						X	X	X	X
L-111	GREEN STORMWATER INFRASTRUCTURE DETAILS			X			X	X	X	X
L-112	GREEN STORMWATER INFRASTRUCTURE DETAILS			X			X			
L-120	TREE, SHRUB, ORNAMENTAL GRASS PLANTING AND SEEDING PLAN			X			X	X	X	X
L-121	DETAILED PLANTING PLAN - NORTHEAST			X			X	X	X	X
L-122	DETAILED PLANTING PLAN - SOUTHEAST			X			X	X	X	
L-123	DETAILED PLANTING PLAN - WEST			X			X	X	X	X
ARCHITECTURAL										
D2.01	LEVEL 01 - ELLIMAN DEMOLITION PLANS				X			X	X	X
D2.03	LEVEL 03 - SCOTT HALL DEMOLITION PLANS				X			X	X	
D2.04	SCOTT HALL DEMOLITION SECTION AND DETAILS				X			X	X	
A1.01	LEVELS 1 & 2 - DIM CONTROL & E.O.S. PLAN					X		X	X	X
A1.03	LEVELS 3 & 4 - DIM CONTROL & E.O.S. PLAN							X	X	X
A1.05	LEVELS 5, 6, 7 & 8 - DIM CONTROL & E.O.S. PLAN					X		X	X	X
A1.08	DOCK & CONNECTOR DC & E.O.S. PLANS								X	X
A1.10	DUMPSTER ENCLOSURE DETAILS							X	X	
A1.11	GENERATOR ENCLOSURE							X	X	X
A1.12	BIKE STORAGE ENCLOSURE	X	X	X			X	X	X	X
A1.13	GARAGE ACCESS - PLANS, SECTIONS AND DETAILS	X	X	X			X	X	X	X
A2.01	LEVEL 01 FLOOR PLAN - COMPOSITE	X	X	X			X	X	X	
A2.01.1	LEVEL 01 FLOOR PLAN - SECTOR 01	X	X	X			X	X	X	X
A2.01.2	LEVEL 01 FLOOR PLAN - SECTOR 02	X	X	X			X	X	X	X
A2.02	LEVEL 02 FLOOR PLAN	X	X	X			X	X	X	X
A2.03	LEVEL 03 FLOOR PLAN - COMPOSITE	X	X	X			X	X	X	X
A2.03.1	LEVEL 03 FLOOR PLAN - SECTOR 01	X	X	X			X	X	X	X
A2.03.3	LEVEL 03 FLOOR PLAN - SECTOR 03	X	X	X			X	X	X	X
A2.03.4	LEVEL 03 - SCOTT HALL RENOVATION PLANS						X	X	X	X
A2.04	LEVEL 04 FLOOR PLAN	X	X	X			X	X	X	X
A2.05	LEVEL 05 FLOOR PLAN	X	X	X			X	X	X	X
A2.06	LEVEL 06 - PENTHOUSE FLOOR PLAN	X	X	X			X	X	X	X
A2.07	LEVEL 07 - PENTHOUSE ROOF PLAN	X	X	X			X	X	X	X
A2.11	LEVEL 01 FINISH PLAN	X	X	X			X	X	X	X
A2.12	LEVEL 02 FINISH PLAN	X	X	X			X	X	X	X
A2.13	LEVEL 03 FINISH PLAN	X	X	X			X	X	X	X
A2.14	LEVEL 04 FINISH PLAN	X	X	X			X	X	X	X
A2.15	LEVEL 05 FINISH PLAN	X	X	X			X	X	X	X
A2.16	LEVEL 06 FINISH PLAN	X	X	X			X	X	X	
A2.20	ENLARGED TYPICAL FLOOR PLANS	X	X	X			X	X	X	
A2.21	ENLARGED SHAFT PLANS, SECTIONS AND DETAILS	X	X	X			X	X	X	
A3.00	PARTITION TYPES		X	X			X	X	X	X
A3.02	PARTITION HEAD DETAILS		X	X			X	X	X	X
A3.03	PARTITION FRAMING AND LEAD LINED DETAILS		X	X			X	X	X	
A3.04	GYP BD DETAILS		X	X			X	X	X	X
A3.10	METAL FABRICATIONS		X	X			X	X	X	
A3.11	METAL FABRICATIONS		X	X			X	X	X	X
A3.20	ADASAD-A117.1-2017 TOILET LAYOUTS, ACCS AND LOCKERS		X				X	X	X	X
A3.21	ENLARGED TOILET LAYOUTS		X	X			X	X	X	
A3.27	SHOWER DETAILS - WITHOUT SLAB DEPRESSION			X			X	X	X	
A3.30	DOOR, SAFETY GLAZING AND LOUVER INFORMATION		X	X			X	X	X	
A3.31	DOOR DETAILS		X	X			X	X	X	
A3.32	DOOR SCHEDULE		X	X			X	X	X	X
A3.33	DOOR SCHEDULE		X	X			X	X	X	X
A3.41	INTERIOR FINISH INFORMATION 1/2	X	X	X			X	X	X	X
A3.42	INTERIOR FINISH INFORMATION 2/2	X	X	X			X	X	X	X
A3.43	INTERIOR SUSTAINABILITY INFORMATION 1/2	X	X	X			X	X	X	X
A3.44	INTERIOR SUSTAINABILITY INFORMATION 2/2							X	X	X
A3.45	EXPANSION JOINT DETAILS AND FLOOR TRANSITIONS	X	X	X			X	X	X	X
A3.46	WALL PROTECTION						X	X	X	
A3.50	CABINET		X	X			X	X	X	X
A3.51	CASEWORK ELEVATIONS		X	X			X	X	X	X
A3.60	MILLWORK PLANS AND ELEVATIONS		X	X			X	X	X	X
A3.61	MILLWORK DETAILS		X	X			X	X	X	X
A3.70	INTERIOR ELEVATIONS		X	X			X	X	X	X
A3.71	STAIR CURTAIN WALL ENCLOSURE	X	X	X			X	X	X	
A3.80	INTERIOR DETAILS		X	X			X	X	X	X
A3.81	DESIGN INTENT - INTERIOR PERSPECTIVES	X	X	X			X	X	X	X
A4.01.1	LEVEL 01 REFLECTED CEILING PLAN - SECTOR 01	X	X	X			X	X	X	X
A4.01.2	LEVEL 01 REFLECTED CEILING PLAN - SECTOR 02		X	X			X	X	X	
A4.02	LEVEL 02 REFLECTED CEILING PLAN		X	X			X	X	X	X
A4.03.1	LEVEL 03 REFLECTED CEILING PLAN - SECTOR 01	X	X	X			X	X	X	X
A4.03.3	LEVEL 02 - 03 REFLECTED CEILING PLAN - SECTOR 03		X	X			X	X	X	X
A4.04	LEVEL 04 REFLECTED CEILING PLAN		X	X			X	X	X	X
A4.05	LEVEL 05 REFLECTED CEILING PLAN		X	X			X	X	X	X
A4.10	CEILING DETAILS		X	X			X	X	X	X
A4.11	CEILING DETAILS		X	X			X	X	X	X
A4.12	CEILING DETAILS							X	X	X
A5.00	EXTERIOR 3D ILLUSTRATIONS	X	X	X			X	X	X	
A5.01	EXTERIOR MATERIALS AND LOUVER SCHEDULES		X	X			X	X	X	X
A5.03	EXTERIOR ELEVATION - SOUTH	X	X	X			X	X	X	X
A5.04	EXTERIOR ELEVATION - WEST	X	X	X			X	X	X	X
A5.05	EXTERIOR ELEVATIONS - NORTH	X	X	X			X	X	X	X
A5.06	EXTERIOR ELEVATION - EAST	X	X	X			X	X	X	X
A5.07	EXTERIOR ELEVATIONS	X	X	X			X	X	X	X
A5.20	EXTERIOR MOCK-UP ELEV, SECTIONS & DETAILS		X	X			X	X	X	
A6.01	WALL SECTIONS - SOUTH ELEVATION	X	X	X			X	X	X	X
A6.02	WALL SECTIONS - SOUTH ELEVATION		X	X			X	X	X	X
A6.03	WALL SECTIONS - WEST ELEVATION	X	X	X			X	X	X	X
A6.04	WALL SECTIONS - NORTH ELEVATION		X	X			X	X	X	
A6.05	WALL SECTIONS - EAST ELEVATION		X	X			X	X	X	
A6.06	WALL SECTIONS - BRIDGE	X	X	X			X	X	X	
A6.07	WALL SECTIONS - ELLIMAN CONNECTOR	X	X	X			X	X	X	

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Sheet Number	SHEET NAME	2023/01/31_SCHEMATIC DESIGN	2023-03-18_50% DESIGN DEVELOPMENT	2023-05-09_DESIGN DEVELOPMENT	2023-06-02_DESIGN DEVELOPMENT #2	2023-07-11_DESIGN DEVELOPMENT #3	2023-07-25_50% CD - WSU PERMIT REVIEW	2023-09-12_95% CONSTRUCTION DOCUMENTS	2023-09-29_CONSTRUCTION DOCUMENTS	2023-10-17_ADDENDUM NO. 1
ARCHITECTURAL										
A7.00	FOUNDATION & WATER PROOFING DETAILS		X	X	X		X	X	X	
A7.01	PRE-CAST CONCRETE DETAILS		X	X			X	X	X	
A7.02	PRE-CAST CONCRETE DETAILS		X	X			X	X	X	X
A7.03	PRE-CAST CONCRETE DETAILS		X	X			X	X	X	
A7.04	TERRACOTTA DETAILS		X	X			X	X	X	X
A7.05	TERRACOTTA DETAILS		X	X			X	X	X	X
A7.06	COMPOSITE METAL PANEL DETAILS		X	X			X	X	X	
A7.07	COMPOSITE METAL PANEL DETAILS		X	X			X	X	X	
A7.08	FORMED METAL PANEL DETAILS		X	X			X	X	X	
A7.09	GAFS DETAILS		X	X			X	X	X	
A7.10	GAFS DETAILS		X	X			X	X	X	X
A7.11	GAFS GLAZED IN COMPOSITE METAL PANEL DETAILS		X	X			X	X	X	
A7.13	SINGLE PLY ROOFING DETAILS		X	X			X	X	X	X
A7.14	SINGLE PLY ROOFING DETAILS		X	X			X	X	X	
A7.20	ENLARGED PLAN DETAILS - LEVEL 01							X	X	
A7.21	ENLARGED PLAN DETAILS - LEVEL 01							X	X	
A7.22	ENLARGED PLAN DETAILS - LEVEL 01							X	X	
A7.23	ENLARGED PLAN DETAILS - LEVEL 02							X	X	
A7.24	ENLARGED PLAN DETAILS - LEVEL 03							X	X	
A7.25	ENLARGED PLAN DETAILS - LEVEL 04 THRU 07							X	X	
A7.26	BLOW-UP PLAN DETAILS							X	X	X
A7.30	ENLARGED SECTION DETAILS - SOUTH		X	X			X	X	X	
A7.31	ENLARGED SECTION DETAILS - SOUTH						X	X	X	
A7.32	ENLARGED SECTION DETAILS - SOUTH		X				X	X	X	
A7.33	ENLARGED SECTION DETAILS - WEST						X	X	X	
A7.34	ENLARGED SECTION DETAILS - WEST			X			X	X	X	
A7.35	ENLARGED SECTION DETAILS - NORTH		X	X			X	X	X	
A7.36	ENLARGED SECTION DETAILS							X		
A7.37	ENLARGED SECTION DETAILS - SECTOR 3 - BRIDGE		X	X			X	X	X	
A7.38	ENLARGED SECTION DETAILS - SECTOR 2 ELLIMAN CONNECT.							X		
A7.50	NORTH ENTRY PERGOLA DETAILS			X			X	X	X	
A7.51	NORTH ENTRY PERGOLA - ENL. SECTION DETAILS								X	
A7.52	NORTH ENTRY PERGOLA SCUPPER DETAILS							X	X	
A7.55	STORMWATER MANAGEMENT DETAILS								X	
A8.01	STAIR NO. 1 PLANS + SECTIONS		X	X			X	X	X	X
A8.02	STAIR NO. 1 SECTION + DETAILS						X	X	X	
A8.03	STAIR NO. 2 PLANS + SECTIONS		X	X			X	X	X	
A8.04	STAIR NO. 2 SECTIONS + ELEVATIONS + 3D						X	X	X	
A8.05	STAIR NO. 2 SECTION+ DETAILS						X	X	X	
A8.06	ROOF ACCESS STAIRS - PLANS, SECT + DETAILS						X	X	X	
A8.10	STEEL STAIR PLANS, SECTIONS, AND DETAILS		X	X			X	X	X	X
A8.11	STEEL STAIR PLANS, SECTIONS, AND DETAILS		X	X			X	X	X	
A8.20	ELEVATORS 1 + 2 PLANS + SECTIONS		X	X			X	X	X	X
A8.21	ELEVATORS 3 PLANS + SECTIONS		X	X			X	X	X	X
A8.25	ELEVATOR SCHEDULE & DETAILS		X	X			X	X	X	X
A9.01	FURNITURE SELECTION INFORMATION		X	X			X	X	X	
A9.02	LEVEL 01 FURNITURE PLAN		X	X			X	X	X	
A9.03	LEVEL 02 FURNITURE PLAN		X	X			X	X	X	
A9.04	LEVEL 03 FURNITURE PLAN		X	X			X	X	X	
A9.05	LEVEL 04 FURNITURE PLAN		X	X			X	X	X	
A9.06	LEVEL 05 FURNITURE PLAN		X	X			X	X	X	
ARCHITECTURAL - LAB										
LF0.01	LAB CASEWORK LEGENDS & GENERAL NOTES			X	X			X	X	X
LF0.02	LAB FIXTURE SCHEDULES & SINK TYPES							X	X	X
LF0.03	LAB CASEWORK DETAILS							X	X	
LF0.04	FUME HOOD TYPES							X	X	X
LF2.01	LAB FURNISHINGS LEVEL 01 FLOOR PLAN	X	X	X			X	X	X	X
LF2.01.1	LAB FURNISHINGS PARTIAL LEVEL 01 PLAN - AREA A		X	X			X	X	X	X
LF2.01.2	LAB FURNISHINGS PARTIAL LEVEL 01 PLAN - AREA B		X	X			X	X	X	
LF2.02	LEVEL 02 LAB FURNISHINGS FLOOR PLAN	X	X	X			X	X	X	
LF2.03	LEVEL 03 LAB FURNISHINGS FLOOR PLAN	X	X	X			X	X	X	
LF2.04	LEVEL 04 LAB FURNISHINGS FLOOR PLAN	X	X	X			X	X	X	
LF2.05	LEVEL 05 LAB FURNISHINGS FLOOR PLAN	X	X	X			X	X	X	
LF3.01	ENLARGED TYPICAL LAB FURNISHINGS FLOOR PLANS		X	X			X	X	X	
LF3.02	ENLARGED TYPICAL LAB FURNISHINGS FLOOR PLANS		X	X			X	X	X	
LF3.03	ENLARGED TYPICAL LAB FURNISHINGS FLOOR PLANS		X	X			X	X	X	
LF3.04	ENLARGED TYPICAL LAB FURNISHINGS FLOOR PLANS		X	X			X	X	X	
LF3.05	ENLARGED TYPICAL LAB FURNISHINGS FLOOR PLANS		X	X			X	X	X	
LF3.06	ENLARGED TYPICAL LAB FURNISHINGS FLOOR PLANS		X	X			X	X	X	
LF3.07	ENLARGED TYPICAL LAB FURNISHINGS FLOOR PLANS			X			X	X	X	
LF3.10	ENLARGED LAB ELEVATIONS			X			X	X	X	
LF3.11	ENLARGED LAB ELEVATIONS						X	X	X	
LF7.01	ENLARGED CASEWORK DETAILS						X	X	X	
LF7.10	ENLARGED CASEWORK DETAILS							X	X	
LF9.00	LAB EQUIPMENT SCHEDULES							X	X	
LF9.01	CORE LAB EQUIPMENT LIST		X	X			X	X	X	
LF9.02	CORE LAB EQUIPMENT LIST		X	X			X	X	X	
LF9.03	CORE LAB EQUIPMENT LIST		X	X			X	X	X	
STRUCTURAL										
S0.01	SYMBOLS AND DESIGNATIONS	X	X	X	X	X	X	X	X	
S0.02	GENERAL NOTES	X	X	X	X	X	X	X	X	
S0.03	GENERAL NOTES		X	X	X	X	X	X	X	
S0.04	SPECIAL INSPECTIONS	X	X	X	X	X	X	X	X	
S0.05	LOAD MAPS			X	X	X	X	X	X	
S0.06	SNOW LOAD MAPS			X	X	X	X	X	X	
S1.00	FOUNDATION PLAN - COMPOSITE		X	X	X	X	X	X	X	
S1.00.1	FOUNDATION PLAN - SECTOR 01	X	X	X	X	X	X	X	X	X
S1.00.2	FOUNDATION PLAN - SECTOR 02		X	X	X	X	X	X	X	X
S1.00.3	FOUNDATION PLAN - SECTOR 03		X	X	X	X	X	X	X	X
S1.02	LEVEL 02 FRAMING PLAN COMPOSITE		X	X	X	X	X	X	X	
S1.02.1	LEVEL 02 FRAMING PLAN - SECTOR 01	X	X	X	X	X	X	X	X	X
S1.02.2	LEVEL 02 FRAMING PLAN - SECTOR 02		X	X	X	X	X	X	X	X
S1.03	LEVEL 03 FRAMING PLAN - COMPOSITE		X	X	X	X	X	X	X	
S1.03.1	LEVEL 03 FRAMING PLAN - SECTOR 01	X	X	X	X	X	X	X	X	X
S1.03.3	LEVEL 03 FRAMING PLAN - SECTOR 03		X	X	X	X	X	X	X	X
S1.04	LEVEL 04 FRAMING PLAN - COMPOSITE		X	X	X	X	X	X	X	
S1.04.1	LEVEL 04 FRAMING PLAN - SECTOR 01		X	X	X	X	X	X	X	X
S1.04.3	LEVEL 04 FRAMING PLAN - SECTOR 03		X	X	X	X	X	X	X	X
S1.05	LEVEL 05 FRAMING PLAN		X	X	X	X	X	X	X	X
S1.06	LEVEL 06 PENTHOUSE FRAMING PLAN	X	X	X	X	X	X	X	X	X
S1.07	LEVEL 07 PENTHOUSE ROOF FRAMING PLAN	X	X	X	X	X	X	X	X	X
S1.08	LEVEL 08 ELEVATOR ROOF FRAMING PLAN		X	X	X	X	X	X	X	X
S2.00	BRACED FRAME ELEVATIONS	X	X	X	X	X	X	X	X	
S2.01	BRACED FRAME ELEVATIONS		X	X	X	X	X	X	X	
S2.02	MOMENT FRAME ELEVATIONS							X	X	
S2.03	MOMENT FRAME ELEVATIONS							X	X	
S2.10	BRIDGE ELEVATIONS	X	X	X	X	X	X	X	X	X
S2.50	ENLARGED FRAMING PLANS		X	X			X	X	X	
S3.00	TYPICAL CONCRETE DETAILS	X	X	X			X	X	X	
S3.01	TYPICAL DRILLED PIER DETAILS			X			X	X	X	
S3.02	TYPICAL FOUNDATION DETAILS		X	X			X	X	X	X
S3.03	TYPICAL FOUNDATION DETAILS		X	X			X	X	X	
S3.04	TYPICAL FOUNDATION DETAILS		X	X			X	X	X	
S3.05	TYPICAL FOUNDATION DETAILS		X	X			X	X	X	
S3.20	FOUNDATION SECTIONS AND DETAILS			X			X	X	X	
S3.21	FOUNDATION SECTIONS AND DETAILS			X	X		X	X	X	X
S3.22	FOUNDATION SECTIONS AND DETAILS			X	X		X	X	X	X
S5.00	STEEL COLUMN SCHEDULE		X	X	X	X	X	X	X	
S5.01	STEEL COLUMN SCHEDULE		X	X	X	X	X	X	X	
S5.02	TYPICAL STEEL COLUMN DETAILS		X	X	X	X	X	X	X	
S5.03	TYPICAL STEEL DETAILS		X	X	X	X	X	X	X	
S5.04	TYPICAL STEEL DETAILS		X	X	X	X	X	X	X	
S5.05	TYPICAL STEEL DETAILS		X	X	X	X	X	X	X	
S5.06	TYPICAL STEEL DETAILS		X	X	X	X	X	X	X	
S5.07	TYPICAL STEEL DETAILS			X	X	X	X	X	X	
S5.08	TYPICAL STEEL DETAILS			X	X	X	X	X	X	
S5.09	TYPICAL STEEL DETAILS		X	X	X	X	X	X	X	
S5.20	SECTIONS AND DETAILS			X	X		X	X	X	
S5.21	SECTIONS AND DETAILS			X	X		X	X	X	
S5.22	SECTIONS AND DETAILS							X	X	
S5.23	SECTIONS AND DETAILS							X	X	
S5.24	SECTIONS AND DETAILS								X	
S5.25	SECTIONS AND DETAILS							X	X	X
S5.26	SECTIONS AND DETAILS								X	
S5.30	SECTIONS AND DETAILS			X	X		X	X	X	
S5.31	SECTIONS AND DETAILS							X	X	X
S5.32	SECTIONS AND DETAILS							X	X	
S5.35	SECTIONS AND DETAILS						X	X	X	
S5.36	SECTIONS AND DETAILS						X	X	X	
S5.37	SECTIONS AND DETAILS							X	X	
S5.80	GENERATOR ENCLOSURE ENLARGED PLAN & DETAILS							X	X	
S5.81	GARAGE ACCESS STAIR ENLARGED PLAN & DETAILS								X	X

INDEX OF DRAWINGS VOL 2

Sheet Number	SHEET NAME	2023/01/31_SCHEMATIC DESIGN	2023-03-18_50% DESIGN DEVELOPMENT	2023-05-09_DESIGN DEVELOPMENT	2023-06-02_DESIGN DEVELOPMENT #2	2023-07-11_DESIGN DEVELOPMENT #3	2023-07-25_50% CD - WSU PERMIT REVIEW	2023-09-12_95% CONSTRUCTION DOCUMENTS	2023-09-29_CONSTRUCTION DOCUMENTS	2023-10-17_ADDENDUM NO. 1
GENERAL										
A0.00	COVER	X	X	X	X	X	X	X	X	X
A0.02	PROJECT INFORMATION	X	X	X			X	X	X	X
A0.03	SHEET INDEX	X	X	X	X	X	X	X	X	X
MECHANICAL										
M-001	MECHANICAL SYMBOL LEGEND AND NOTES	X	X	X			X	X	X	
MD-101	LEVEL 1 MECHANICAL DEMOLITION PLAN						X	X	X	
MD-103	LEVEL 3 MECHANICAL DEMOLITION PLAN						X	X		
M-101	LEVEL 1 MECHANICAL PLAN		X	X			X	X	X	X
M-101.2	LEVEL 1 MECHANICAL PLAN - SERVICE DOCK		X	X			X	X	X	X
M-102	LEVEL 2 MECHANICAL PLAN			X			X	X	X	X
M-102.2	ROOF MECHANICAL PLAN - SERVICE DOCK			X			X	X	X	
M-103	LEVEL 3 MECHANICAL PLAN		X	X			X	X	X	X
M-103.3	LEVEL 3 MECHANICAL PLAN - BRIDGE			X			X	X	X	X
M-103.4	LEVEL 3 MECHANICAL PLAN - SCOTT HALL			X			X	X	X	
M-104	LEVEL 4 MECHANICAL PLAN			X			X	X	X	X
M-105	LEVEL 5 MECHANICAL PLAN			X			X	X	X	X
M-106	PENTHOUSE MECHANICAL PLAN	X	X	X			X	X	X	X
M-107	ROOF MECHANICAL PLAN	X	X	X			X	X	X	
M-201	LEVEL 1 MECHANICAL PIPING PLAN		X	X			X	X	X	X
M-201.2	LEVEL 1 MECHANICAL PIPING PLAN - DOCK		X	X			X	X	X	
M-202	LEVEL 2 MECHANICAL PIPING PLAN			X			X	X	X	
M-203	LEVEL 3 MECHANICAL PIPING PLAN			X			X	X	X	
M-203.3	LEVEL 3 MECHANICAL PIPING PLAN - BRIDGE			X			X	X	X	
M-203.4	LEVEL 3 MECHANICAL PLAN - SCOTT HALL			X			X	X	X	
M-204	LEVEL 4 MECHANICAL PIPING PLAN			X			X	X	X	X
M-205	LEVEL 5 MECHANICAL PIPING PLAN			X			X	X	X	X
M-206	PENTHOUSE MECHANICAL PIPING PLAN		X	X			X	X	X	
M-207	ROOF MECHANICAL PIPING PLAN		X	X			X	X	X	X
M-501	MECHANICAL DETAILS		X	X			X	X	X	
M-502	MECHANICAL DETAILS		X	X			X	X	X	
M-503	MECHANICAL DETAILS		X	X			X	X	X	
M-504	MECHANICAL DETAILS		X	X			X	X	X	X
M-505	MECHANICAL DETAILS						X	X	X	
M-506	PIPING SCHEMATIC	X	X	X			X	X	X	X
M-507	PIPING SCHEMATIC	X	X	X			X	X	X	X
M-508	PIPING SCHEMATIC	X	X	X			X	X	X	
M-509	PIPING SCHEMATIC	X	X	X			X	X	X	X
M-510	PIPING RISER DIAGRAM	X	X	X			X	X	X	
M-511	AIR HANDLING RISER DIAGRAM	X	X	X			X	X	X	
M-512	HIGH PLUME EXHAUST FAN RISER DIAGRAM						X	X	X	
M-513	STAIRWELL AND ELEVATOR RISER DIAGRAM	X	X	X			X	X	X	
M-514	AIR HANDLING UNIT DETAIL			X			X	X	X	X
M-515	AIR HANDLING UNIT DETAIL			X			X	X	X	X
M-516	FIRE FIGHTER SMOKE CONTROL PANEL						X	X	X	
M-601	MECHANICAL CONTROLS			X			X	X	X	
M-602	MECHANICAL CONTROLS			X			X	X	X	
M-603	MECHANICAL CONTROLS						X	X	X	
M-604	MECHANICAL CONTROLS			X			X	X	X	
M-605	MECHANICAL CONTROLS						X	X	X	
M-606	MECHANICAL CONTROLS			X			X	X	X	
M-607	MECHANICAL CONTROLS			X			X	X	X	
M-608	MECHANICAL CONTROLS			X			X	X	X	X
M-609	MECHANICAL CONTROLS			X			X	X	X	
M-610	MECHANICAL CONTROLS							X	X	
M-611	MECHANICAL CONTROLS						X	X	X	X
M-612	MECHANICAL CONTROLS						X	X	X	
M-613	MECHANICAL CONTROLS						X	X	X	
M-614	MECHANICAL CONTROLS						X	X	X	X
M-615	MECHANICAL CONTROLS						X	X	X	
M-616	MECHANICAL CONTROLS							X	X	
M-617	MECHANICAL CONTROLS						X	X	X	
M-701	MECHANICAL SCHEDULES		X	X			X	X	X	
M-702	MECHANICAL SCHEDULES			X			X	X	X	
M-703	MECHANICAL SCHEDULES			X			X	X	X	
M-704	MECHANICAL SCHEDULES			X			X	X	X	
M-705	MECHANICAL SCHEDULES			X			X	X	X	X
M-706	MECHANICAL SCHEDULES			X			X	X	X	
M-707	MECHANICAL SCHEDULES							X	X	
M-801	LEVEL 1 MECHANICAL AIR BALANCE			X			X	X	X	
M-802	LEVEL 2 MECHANICAL AIR BALANCE			X			X	X	X	
M-803	LEVEL 3 MECHANICAL AIR BALANCE			X			X	X	X	
M-804	LEVEL 4 MECHANICAL AIR BALANCE			X			X	X	X	
M-805	LEVEL 5 MECHANICAL AIR BALANCE			X			X	X	X	
FIRE PROTECTION										
FP-001	FIRE PROTECTION SYMBOL LEGEND AND NOTES		X	X			X	X	X	
FPD-103	LEVEL 3 FIRE PROTECTION DEMOLITION PLAN							X		
FP-101	LEVEL 1 FIRE PROTECTION PLAN		X	X			X	X	X	X
FP-101.2	LEVEL 1 FIRE PROTECTION PLAN - SERVICE DOCK		X	X			X	X	X	
FP-102	LEVEL 2 FIRE PROTECTION PLAN		X	X			X	X	X	
FP-103	LEVEL 3 FIRE PROTECTION PLAN		X	X			X	X	X	
FP-103.3	LEVEL 3 FIRE PROTECTION PLAN - BRIDGE		X	X			X	X	X	
FP-103.4	LEVEL 3 FIRE PROTECTION PLAN - SCOTT HALL							X		
FP-104	LEVEL 4 FIRE PROTECTION PLAN		X	X			X	X	X	
FP-105	LEVEL 5 FIRE PROTECTION PLAN		X	X			X	X	X	
FP-106	PENTHOUSE FIRE PROTECTION PLAN		X	X			X	X	X	
FP-107	ROOF FIRE PROTECTION PLAN		X	X			X	X	X	
FP-501	FIRE PROTECTION DETAILS		X	X			X	X	X	
PLUMBING										
P-001	PLUMBING SYMBOL LEGEND AND NOTES	X	X	X			X	X	X	X
P-010	SITE PLUMBING PLAN		X	X			X	X	X	X
P-100	UNDERG

*CERTAIN ITEMS LISTED BELOW MAY NOT APPLY TO THIS PROJECT.

CONTROLS LEGEND

INPUTS / OUTPUTS / VARIABLES			
AI	ANALOG INPUT	BO	BINARY OUTPUT
AO	ANALOG OUTPUT	GV	GLOBAL VARIABLE
BI	BINARY INPUT	NV	NETWORK VARIABLE
		SC	SAFETY CIRCUIT (HARDWIRED)

CONTROL DEVICE TYPE			
AFT	AIRFLOW TRANSMITTER	HSP	HIGH STATIC PRESSURE DIFFERENTIAL PRESSURE SWITCH
APS	AIRFLOW PROVING SWITCH	IR	CURRENT SWITCH
AQT	AIR QUALITY TRANSMITTER	LD	LEAK DETECTION
CO	CARBON MONOXIDE SENSOR	LSP	LOW STATIC PRESSURE DIFFERENTIAL PRESSURE SWITCH
CO2	CARBON DIOXIDE SENSOR	LTT	LOW LIMIT TEMPERATURE SWITCH
CT	CURRENT TRANSDUCER	O2	OXYGEN SENSOR
CTR	CURRENT TRANSDUCER WITH RELAY	OS	OCCUPANCY SENSOR
DPS	DIFFERENTIAL PRESSURE SWITCH	PA	PNEUMATIC ACTUATOR
DPT	DIFFERENTIAL PRESSURE TRANSMITTER	PI	PRESSURE INDICATOR
DSD	DUCT SMOKE DETECTOR	PT	PRESSURE TRANSMITTER
EA	ELECTRONIC ACTUATOR	SDR	SHUTDOWN RELAY
ECM	ELECTRONICALLY COMMUTATED MOTOR CONTROLLER	SP	STATIC PRESSURE TRANSMITTER
EPT	ELECTRIC / PNEUMATIC TRANSDUCER	ST	MOTOR START / STOP
EPV	ELECTRIC / PNEUMATIC SOLENOID VALVE	TI	TEMPERATURE INDICATOR
FM	FLOW METER	TLS	TEMPERATURE LIMIT SWITCH
FS	FLOW SWITCH	TS	TEMPERATURE SENSOR
HA	HYDRAULIC ACTUATOR	TT	TEMPERATURE TRANSMITTER
HHL	HIGH HUMIDITY LEVEL SWITCH	VFD	VARIABLE FREQUENCY DRIVE
HT	HUMIDITY TRANSMITTER	VP	VELOCITY PRESSURE TRANSMITTER

DEVICE APPLICATION TYPE			
		XX	WALL-MOUNTED DEVICE
XX	DUCT-MOUNTED PROBE	XX	FLOW METER
XX	DUCT MOUNTED AVERAGING ELEMENT	XX	OUTSIDE AIR-MOUNTED PROBE
CV	2-WAY CONTROL VALVE	XX	FLUID BALL VALVE
CV	3-WAY CONTROL VALVE	XX	THERMOWELL-MOUNTED PROBE

CERTAIN ITEMS IN THE LEGEND BELOW MAY NOT APPLY TO THIS PROJECT.
DARK DUCTWORK INDICATES NEW DUCTWORK AND LIGHT INDICATES EXISTING.

HVAC DUCTWORK LEGEND

	SUPPLY AIR DUCT OR OUTSIDE AIR DUCT
	RETURN DUCT
	EXHAUST AIR DUCT
	4-WAY CEILING DIFFUSER
	RETURN GRILLE
	EXHAUST GRILLE
	DUCT TRANSITION
	BALANCED DAMPER
FD	FIRE DAMPER
SD	SMOKE DAMPER
FSD	FIRE/SMOKE DAMPER
M	MOTORIZED DAMPER
DP	DIFFERENTIAL PRESSURE SWITCH/SENSOR
S	SMOKE DETECTOR
SP	STATIC PRESSURE SENSOR
SW	MANUAL TIMER ON/OFF SWITCH
CO2	SENSOR (TYPE TO VARY. REFER TO PLANS)
TS	TEMPERATURE SENSOR
T	THERMOSTAT
T1	ROOM TEMPERATURE SENSOR (ADJ) "XXX-#" = EQUIPMENT SERVED
T2	ROOM TEMPERATURE & CO2 SENSOR (ADJ) "XXX-#" = EQUIPMENT SERVED
T3	ROOM TEMP. & HUMIDITY SENSOR (ADJ) "XXX-#" = EQUIPMENT SERVED
T4	ROOM TEMP, CO2, & HUMIDITY SENSOR (ADJ) "XXX-#" = EQUIPMENT SERVED
T5	ROOM NON-ADJUSTABLE TEMP SENSOR "XXX-#" = EQUIPMENT SERVED
	AIRFLOW
	DUCT BREAK
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW
	DUCT WITH LINING
	CONNECT TO EXISTING
	LIMIT OF DEMOLITION
XXX / XX	SYSTEM ABBREVIATION / IDENTIFIER — DUCT RISER TAG
(E)SG-12 1500 48"L	IDENTIFIER, AIRFLOW, LINEAR LENGTH; (E)SG-12 1500 — AIR TERMINAL TAG
(E)AHU-2	EQUIPMENT IDENTIFIER, EQUIPMENT MARK, PHASE IDENITIFER (OPTIONAL) — EQUIPMENT TAG

CERTAIN ITEMS IN THE LEGEND BELOW MAY NOT APPLY TO THIS PROJECT.
DARK PIPING INDICATES NEW PIPING AND LIGHT INDICATES EXISTING.

HVAC PIPING & VALVE LEGEND

	GATE VALVE OR GENERAL ISOLATION VALVE
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	PLUG VALVE
	NEEDLE VALVE
	CHECK VALVE
	WYE STRAINER
	THREE-WAY VALVE
	MODULATING CONTROL VALVE
	TWO POSITION CONTROL VALVE
	THREE-WAY MODULATING CONTROL VALVE
	THREE-WAY TWO POSITION CONTROL VALVE
M	MOTOR OPERATED VALVE
S	SOLENOID VALVE
	PRESSURE REGULATING VALVE
	PRESSURE REDUCING VALVE
	PRESSURE RELIEF VALVE
	TEE
	FLEXIBLE CONNECTION
	WATER BALANCE VALVE/CIRCUIT SETTER
	UNION
	FLANGED CONNECTION FOR EQUIPMENT REMOVAL
	BLIND FLANGE
	CAP OR PLUG
	QUICK CONNECTOR
	ELBOW - TURNED DOWN
	ELBOW - TURNED UP
	TEE - DOWN
	TEE - UP
	TOP CONNECTION
	BOTTOM CONNECTION
	REDUCER
	THERMOMETER
	PRESSURE GAUGE
	DIRECTION OF SLOPE
	DIRECTION OF FLOW
	GENERIC VALVE
	ELECTRONIC CONTROL VALVE
	PIPE BREAK
M G	WATER OR NATURAL GAS METER
	CONNECT TO EXISTING
	LIMIT OF DEMOLITION
	SHUT OFF VALVE-VERTICAL
	CHECK VALVE-VERTICAL
	BACK FLOW PREVENTER

MECHANICAL BUILDING CODE DATA

APPLICABLE CODES

2021 MICHIGAN BUILDING CODE
2021 MICHIGAN MECHANICAL CODE
2021 MICHIGAN ENERGY CODE
2019 MICHIGAN FIRE CODE
2023 MICHIGAN ELECTRICAL CODE

APPLICABLE STANDARDS

ASHRAE 62.1 - 2019
ASHRAE 90.1 - 2019
SMACNA - HVAC DUCT CONSTRUCTION STANDARDS METAL & FLEXIBLE, 4TH EDITION

CERTAIN ITEMS IN THE LEGEND BELOW MAY NOT APPLY TO THIS PROJECT.

HVAC ABBREVIATIONS

AC	ALTERNATING CURRENT
ACB	ACTIVE CHILLED BEAM
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
ACD	AUTOMATIC CONTROLLED DAMPERD DAMPER
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHRI	AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUE
AHU	AIR HANDLING UNIT
AMCA	AIR MOVEMENT AND CONTROL ASSOCIATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ASJ	ALL SERVICE JACKET
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BAS	BUILDING AUTOMATION SYSTEM
BD	BACK-DRAFT DAMPER
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSE POWER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
C	CELSIUS
CA	COMBUSTION AIR
CD	CEILING DIFFUSER
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CH	CHILLER (WATER-COOLED)
CHW	CHILLED WATER
CHWP	CHILLED WATER PUMP
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CM	CENTIMETERS
CO	CARBON MONOXIDE
COD	CABLE OPERATED DAMPER
COND	CONDENSATE
CONN	CONNECTION
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D	DRAIN
D&R	DISCONNECT & REMOVE
DB	DRY BULD
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DE	DRYER EXHAUST
DEG, °	DEGREE
DIA, ø	DIAMETER
DIM	DIMENSION
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG(S)	DRAWING(S)
DWH	DOMESTIC WATER HEATER
E	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRARACTOR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
ER	EXHAUST REGISTER
ERU	ENERGY RECOVER UNIT HEATER
EUH	ELECTRIC UNIT HEATER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	FAHRENHEIT
F&T	FLOAT & THERMOSTATIC
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FDA	U.S. FOOD AND DRUG ADMINISTRATION
FF	FINSHED FLOOR
FG	FINISHED GRADE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLUE	COMBUSTION FLUE
FPB	FAN POWERED BOX
FPM	FEET PER MINUTE
FSD	COMBINATION SMOKE AND FIRE DAMPER
FT, '	FEET
FTR	FIN TUBE RADIATION
FVAV	FAN POWERED VAV
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GE	GREASE EXHAUST
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HOSE BIB (CONNECTION)
HP	HORSE POWER
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HUM	HUMIDIFIER
HVAC	HEATING VENTILATION AND AIR CONDITIONING

CERTAIN ITEMS IN THE LEGEND BELOW MAY NOT APPLY TO THIS PROJECT.

HVAC ABBREVIATIONS

HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
I/O	INPUT/OUTPUT
IAQ	INDOOR AIR QUALITY
ID	INSIDE DIAMETER
IFB	INTEGRAL FACE AND BYPASS
IN, "	INCHES
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LD	LINEAR DIFFUSER
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LVR	LOUVER
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTUH
MC	MECHANICAL CONTRACTOR
MERV	MINIMUM EFFICIENCY REPORTING VALUE
MIN	MINIMUM
MM	MILLIMETERS
MPH	MILES PER HOUR
N	NEW WORK
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPENED
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
ODP	OPEN DRIP PROOF
OS&Y	OUTSIDE SCREW AND YOKE
OSHA	OCCUPATIONAL SAFTEY AND HEALTH ADMINISTRATION
PC	PUMPED CONDENSATE
PCB	PASSIVE CHILLED BEAM
PCF	POUNDS PER CUBIC FOOT
PD	PRESSURE DROP
PDF	PORTABLE DOCUMENT FORMAT
PRV	PRESSURE REDUCTION VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINLY CHLORIDE
R	RELOCATED
R&R	REMOVE AND RELOCATE
RA	RETURN AIR
REQ'D	REQUIRED
RF	RETURN FAN
RG	RETURN GRILLE
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RHG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
RS	REFRIGERANT SUCTION
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAHU	SPLIT AIR HANDLING UNIT
SD	SMOKE DAMPER
SEN	SENSIBLE
SF	SUPPLY FAN
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SP	STATIC PRESSURE
SQ	SQUARE
SQ FT	SQUARE FEET
SR	SUPPLY REGISTER
STD	STANDARD
STM	STEAM
SX	SMOKE EXHAUST
T	THERMOSTAT
TA	TRANSFER AIR
TCP/IP	TRANSMISSION CONTROL PROTOCOL/INTERNET PROTOCOL
TEAO	TOTALLY ENCLOSED AIR OVER
TEFC	TOTALLY ENCLOSED FAN COOLED
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TOD	TOP OF DUCT
TON	12,000 BTU (COOLING CAPACITY)
TYP	TYPICAL
UC	UNDER COUNTER
UH	UNIT HEATER
UL	UNDERWRITERS LABRATORIES
V	VOLTS
VA	VOLT AMPS
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF
VVT	VARIABLE VOLUME AND TEMPERATURE
WB	WET BULB
WC	WATER COLUMN
WFS	WATER FLOW SWITCH
WG	WATER GAUGE
WPD	WATER PRESSURE DROP

MECHANICAL SHEET LIST

SHEET NUMBER	SHEET NAME
M-001	MECHANICAL SYMBOL LEGEND AND NOTES
MD-101	LEVEL 1 MECHANICAL DEMOLITION PLAN
MD-103	LEVEL 3 MECHANICAL DEMOLITION PLAN
M-101	LEVEL 1 MECHANICAL PLAN
M-101.2	LEVEL 1 MECHANICAL PLAN - SERVICE DOCK
M-102	LEVEL 2 MECHANICAL PLAN
M-102.2	ROOF MECHANICAL PLAN - SERVICE DOCK
M-103	LEVEL 3 MECHANICAL PLAN
M-103.3	LEVEL 3 MECHANICAL PLAN - BRIDGE
M-103.4	LEVEL 3 MECHANICAL PLAN - SCOTT HALL
M-104	LEVEL 4 MECHANICAL PLAN
M-105	LEVEL 5 MECHANICAL PLAN
M-106	PENTHOUSE MECHANICAL PLAN
M-107	ROOF MECHANICAL PLAN
M-201	LEVEL 1 MECHANICAL PIPING PLAN
M-201.2	LEVEL 1 MECHANICAL PIPING PLAN - DOCK
M-202	LEVEL 2 MECHANICAL PIPING PLAN
M-203	LEVEL 3 MECHANICAL PIPING PLAN
M-203.3	LEVEL 3 MECHANICAL PIPING PLAN - BRIDGE
M-203.4	LEVEL 3 MECHANICAL PLAN - SCOTT HALL
M-204	LEVEL 4 MECHANICAL PIPING PLAN
M-205	LEVEL 5 MECHANICAL PIPING PLAN
M-206	PENTHOUSE MECHANICAL PIPING PLAN
M-207	ROOF MECHANICAL PIPING PLAN
M-501	MECHANICAL DETAILS
M-502	MECHANICAL DETAILS
M-503	MECHANICAL DETAILS
M-504	MECHANICAL DETAILS
M-505	MECHANICAL DETAILS
M-506	PIPING SCHEMATIC
M-507	PIPING SCHEMATIC
M-508	PIPING SCHEMATIC
M-509	PIPING SCHEMATIC
M-510	PIPING RISER DIAGRAM
M-511	AIR HANDLING RISER DIAGRAM

MECHANICAL SHEET LIST

SHEET NUMBER	SHEET NAME
M-512	HIGH PLUME EXHAUST FAN RISER DIAGRAM
M-513	STAIRWELL AND ELEVATOR RISER DIAGRAM
M-514	AIR HANDLING UNIT DETAIL
M-515	AIR HANDLING UNIT DETAIL
M-516	FIRE FIGHTER SMOKE CONTROL PANEL
M-601	MECHANICAL CONTROLS
M-602	MECHANICAL CONTROLS
M-603	MECHANICAL CONTROLS
M-604	MECHANICAL CONTROLS
M-605	MECHANICAL CONTROLS
M-606	MECHANICAL CONTROLS
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M-608	MECHANICAL CONTROLS
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M-611	MECHANICAL CONTROLS
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M-613	MECHANICAL CONTROLS
M-614	MECHANICAL CONTROLS
M-615	MECHANICAL CONTROLS
M-616	MECHANICAL CONTROLS
M-617	MECHANICAL CONTROLS
M-701	MECHANICAL SCHEDULES
M-702	MECHANICAL SCHEDULES
M-703	MECHANICAL SCHEDULES
M-704	MECHANICAL SCHEDULES
M-705	MECHANICAL SCHEDULES
M-706	MECHANICAL SCHEDULES
M-707	MECHANICAL SCHEDULES
M-801	LEVEL 1 MECHANICAL AIR BALANCE
M-802	LEVEL 2 MECHANICAL AIR BALANCE
M-803	LEVEL 3 MECHANICAL AIR BALANCE
M-804	LEVEL 4 MECHANICAL AIR BALANCE
M-805	LEVEL 5 MECHANICAL AIR BALANCE

GENERAL MECHANICAL NOTES:

1. FOR NATURAL GAS PIPING, SEE PLUMBING DRAWINGS.
2. FOR EXACT LOCATION OF DIFFUSERS AND GRILLES, SEE ARCHITECTURAL REFLECTED CEILING PLANS.
3. FOR ROOF PENETRATION DETAILS SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
4. FLEX DUCTWORK TO DIFFUSERS SHALL MATCH NECK SIZE OF DIFFUSER WHERE INDICATED.
5. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE HVAC SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY STATE AND LOCAL CODES.
6. INSTALL ALL NEW WORK IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
7. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE BEST APPROXIMATES ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
8. COORDINATE CONSTRUCTION OF ALL HVAC WORK WITH ARCHITECTURAL, STRUCTURAL, PLUMBING, CIVIL, ELECTRICAL, TECHNOLOGY, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
9. ALL HVAC WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO OWNER.
10. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE TO UNDERSIDE OF PIPES AND SUSPENDED EQUIPMENT THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
11. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
12. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.
13. COORDINATE ACCESS PANEL LOCATIONS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE VALVES, ALL DAMPER TYPES, VAV BOXES, AND OTHER CONCEALED HVAC EQUIPMENT.
14. ALL EQUIPMENT, PIPING, ETC. SHALL BE SUPPORTED AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
15. PROVIDE FLEXIBLE CONNECTIONS IN ALL PIPING SYSTEMS CONNECTED TO PUMPS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AS CLOSE TO THE EQUIPMENT AS POSSIBLE OR AS INDICATED ON THE DRAWINGS.
16. ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. HVAC EQUIPMENT AND PIPING SHALL NOT BE SUPPORTED FROM METAL DECK.
17. CONTRACTOR TO INFORM THE STRUCTURAL ENGINEER IN WRITING OF ANY SUSPENDED LOAD IN EXCESS OF 400 POUNDS.
18. PROVIDE SHUTOFF VALVES IN ALL HEATING WATER PIPING SYSTEM BRANCHES BETWEEN FLOOR LEVELS AND AT BRANCHES SERVING THREE OR MORE PIECES OF EQUIPMENT IN ADDITION TO ANY AREAS SHOWN ON PLANS.
19. INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
20. WATER AND DRAIN PIPING SHALL NOT BE RUN THROUGH OR ABOVE ELECTRICAL SWITCH GEAR OR ROOMS, TECHNOLOGY ROOMS, OR TELEPHONE ROOMS.
21. IF THERE IS ANY DEVIATION BETWEEN THE SPECIFICATIONS AND DRAWINGS THE CONTRACTOR SHALL ADHERE TO THE MORE STRINGENT CONDITION.
22. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY THE CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 4 INCHES. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4 INCHES ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS.
23. EXHAUST ONLY ROOMS SUCH AS SMALL SINGLE RESTROOMS, JANITORS CLOSETS, ELECTRICAL CLOSETS, AND STORAGE ROOMS SHALL HAVE DOOR UNDERCUTS OF 5/8" FOR MAKEUP AIR. COORDINATE WITH ARCHITECTURAL DRAWINGS.

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9/25/2025

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL SYMBOL LEGEND AND NOTES

SHEET NO.
M-001

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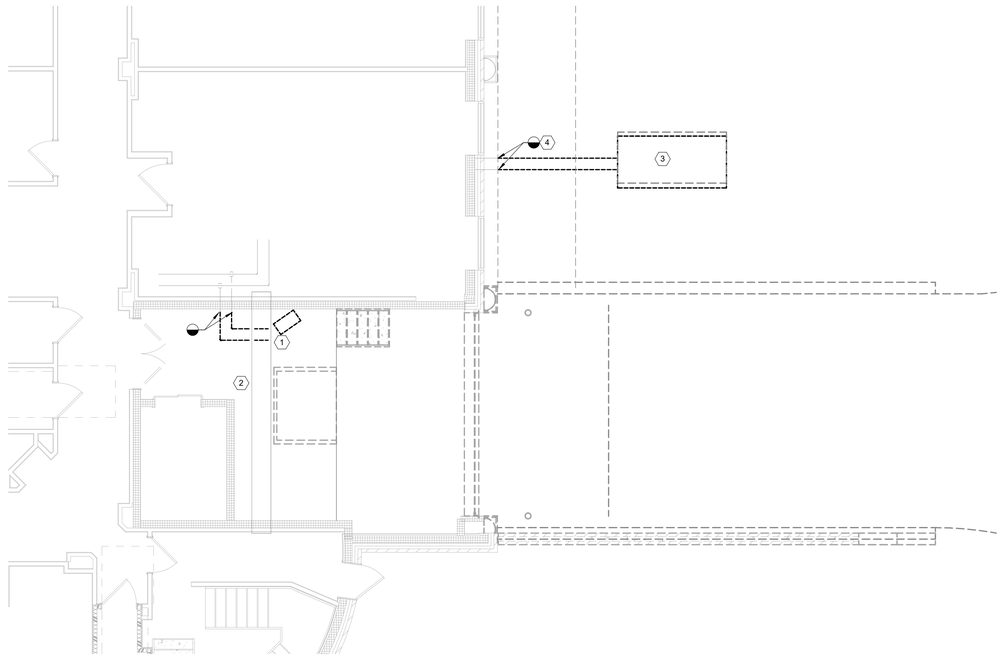
GENERAL DEMOLITION NOTES

1. IN EVERY INSTANCE OF DEMOLITION AND/OR REMODELING, THE MECHANICAL CONTRACTOR SHALL PROVIDE A COMPLETE SCOPE OF WORK AS NONE OTHER SHALL BE ACCEPTED.
2. THE DRAWINGS ARE TO BE USED ONLY AS A GUIDELINE FOR DEMOLITION. THE MECHANICAL CONTRACTOR MUST VISIT THE SITE PRIOR TO BIDDING TO VERIFY ALL WORK REQUIRED FOR A COMPLETE SCOPE OF WORK AND INCLUDE THE COST OF SUCH WORK IN THEIR BID.
3. THE MECHANICAL CONTRACTOR SHALL MAINTAIN EXISTING SERVICES TO AND IN THE EXISTING AREA AS REQUIRED.
4. IF NECESSARY, THE MECHANICAL CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES IN THE EXISTING AREAS.
5. IN ADDITION TO ALL OTHER DEMOLITION REQUIREMENTS, ANY MECHANICAL EQUIPMENT AND/OR DEVICES SHOWN AS BEING REMOVED SHALL BE REMOVED COMPLETE INCLUDING SUPPORTING STEEL AND TEMPERATURE CONTROLS. ALL EXISTING RECESSED CONTROLS REMOVED SHALL BE REPLACED WITH STAINLESS STEEL COVER PLATE.
6. ALL WALLS, CEILINGS, FLOORS, ETC., BEING DISTURBED BY THE WORK SHALL BE RETURNED TO FINISHED CONDITIONS TO MATCH EXISTING BY THE MECHANICAL CONTRACTOR AND THEY SHALL DO THEIR OWN CUTTING AND PATCHING AS NECESSARY UNDER THEIR CONTRACT.
7. EXISTING EQUIPMENT AND MATERIALS SHALL BE TURNED OVER TO THE OWNER FOR FIRST RIGHT OF REFUSAL. IF NOT REQUIRED BY THE OWNER, THE CONTRACTOR SHALL REMOVE SAID EQUIPMENT AND MATERIALS FROM THE PREMISES AND DISPOSE OF IN A LEGAL MANNER.
8. MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR AND OWNER'S REPRESENTATIVE REGARDING TESTING AND ABATEMENT OF ANY HAZARDOUS MATERIAL PRIOR TO STARTING ANY DEMOLITION WORK.

(#) SHEET KEY NOTES:

1. REMOVE UNIT HEATER, CONTROLS, SUPPORTS, AND PIPING BACK TO THE POINT INDICATED. CAP AND SEAL PIPING.
2. DUCTWORK TO REMAIN AND SHALL BE PROTECTED DURING CONSTRUCTION.
3. DISCONNECT POWER, REFRIGERANT LINES, CONTROLS WIRING PRIOR TO RELOCATING. PROVIDE TEMPORARY COOLING FOR SPACES THAT ARE AFFECTED BY THE CONDENSING UNIT SHUTDOWN. TEMPORARY COOLING TO MAINTAIN CURRENT TEMPERATURE REQUIREMENTS. CONTRACTOR TO PROTECT CONDENSING UNIT DURING CONSTRUCTION.
4. REMOVE PIPING BACK TO THIS GENERAL AREA AND PREPARE TO CONNECT TO NEW.



1 LEVEL 01 HVAC DEMO PLAN - ELLIMAN
SCALE: 3/16" = 1'-0"

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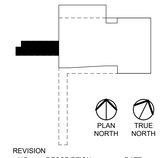
9/25/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 MECHANICAL DEMOLITION PLAN

SHEET NO.
MD-101

OSBORN ENGINEERING
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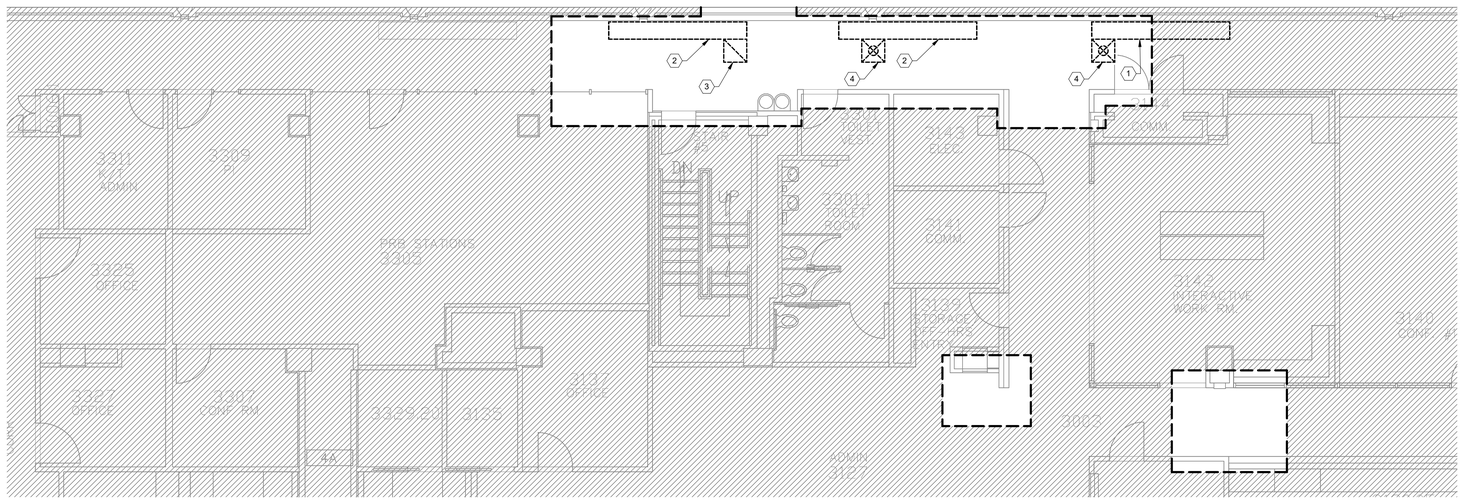
GENERAL DEMOLITION NOTES

1. IN EVERY INSTANCE OF DEMOLITION AND/OR REMODELING, THE MECHANICAL CONTRACTOR SHALL PROVIDE A COMPLETE SCOPE OF WORK AS NONE OTHER SHALL BE ACCEPTED.
2. THE DRAWINGS ARE TO BE USED ONLY AS A GUIDELINE FOR DEMOLITION. THE MECHANICAL CONTRACTOR MUST VISIT THE SITE PRIOR TO BIDDING TO VERIFY ALL WORK REQUIRED FOR A COMPLETE SCOPE OF WORK AND INCLUDE THE COST OF SUCH WORK IN THEIR BID.
3. THE MECHANICAL CONTRACTOR SHALL MAINTAIN EXISTING SERVICES TO AND IN THE EXISTING AREA AS REQUIRED.
4. IF NECESSARY, THE MECHANICAL CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES IN THE EXISTING AREAS.
5. IN ADDITION TO ALL OTHER DEMOLITION REQUIREMENTS, ANY MECHANICAL EQUIPMENT AND/OR DEVICES SHOWN AS BEING REMOVED SHALL BE REMOVED COMPLETE INCLUDING SUPPORTING STEEL AND TEMPERATURE CONTROLS. ALL EXISTING RECESSED CONTROLS REMOVED SHALL BE REPLACED WITH STAINLESS STEEL COVER PLATE.
6. ALL WALLS, CEILINGS, FLOORS, ETC., BEING DISTURBED BY THE WORK SHALL BE RETURNED TO FINISHED CONDITIONS TO MATCH EXISTING BY THE MECHANICAL CONTRACTOR AND THEY SHALL DO THEIR OWN CUTTING AND PATCHING AS NECESSARY UNDER THEIR CONTRACT.
7. EXISTING EQUIPMENT AND MATERIALS SHALL BE TURNED OVER TO THE OWNER FOR FIRST RIGHT OF REFUSAL. IF NOT REQUIRED BY THE OWNER, THE CONTRACTOR SHALL REMOVE SAID EQUIPMENT AND MATERIALS FROM THE PREMISES AND DISPOSE OF IN A LEGAL MANNER.
8. MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR AND OWNER'S REPRESENTATIVE REGARDING TESTING AND ABATEMENT OF ANY HAZARDOUS MATERIAL PRIOR TO STARTING ANY DEMOLITION WORK.

(#) SHEET KEY NOTES:

1. REMOVE RADIANT PANEL, CAP PIPING, AND REMOVE ASSOCIATED CONTROLS.
2. REMOVE HYDRONIC RADIANT PANEL AND TEMPORARILY CAP PIPING. STORE AND PROTECT RADIANT PANEL DURING CONSTRUCTION UNTIL IT IS REINSTALLED.
3. REMOVE RETURN GRILLE. STORE AND PROTECT RETURN GRILLE DURING CONSTRUCTION UNTIL IT IS REINSTALLED.
4. REMOVE SUPPLY DIFFUSER. STORE AND PROTECT SUPPLY DIFFUSER DURING CONSTRUCTION UNTIL IT IS REINSTALLED. PERFORM PRE TEST AND BALANCE ON DIFFUSER BEFORE REMOVAL.



1 LEVEL 03 HVAC DEMO PLAN - SCOTT HALL
SCALE: 3/16" = 1'-0"

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STATE OF MICHIGAN — NATHANIEL C. STALKER — ENGINEER — No. 51101 — REGISTERED PROFESSIONAL ENGINEER

9/25/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 MECHANICAL DEMOLITION PLAN

SHEET NO.
MD-103

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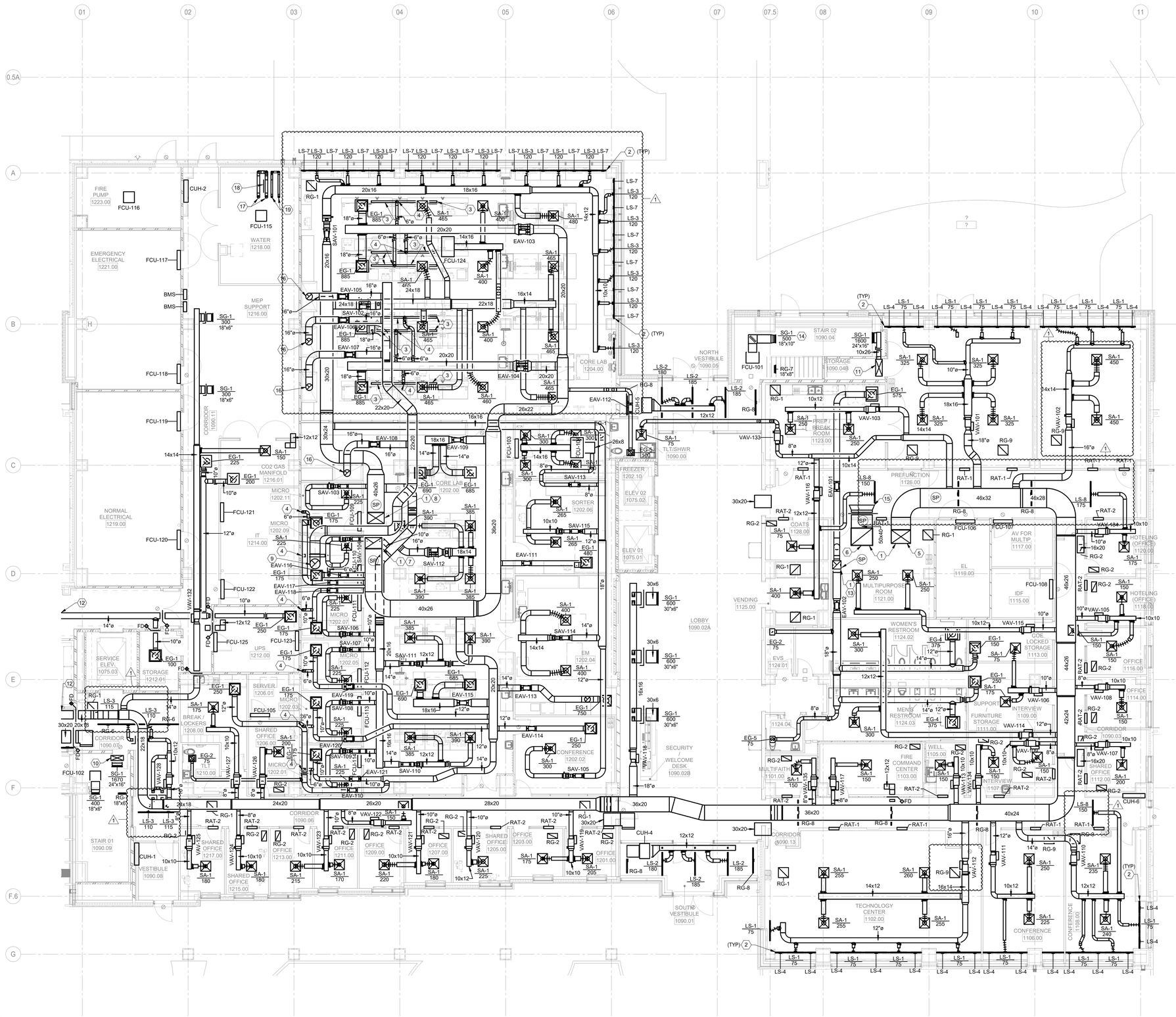

1 LEVEL 1 MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:40:02 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF FLOOR, WALL, AND ROOF PENETRATIONS AS WELL AS LOUVER SIZES, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. REFER TO SCHEDULES FOR HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SIZES
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE ACCESSIBLE FOR SERVICE.
10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

SHEET KEY NOTES:

1. PROVIDE FIRE / SMOKE DAMPER IN THE DUCTWORK AS IT PENETRATES THE FLOOR ABOVE.
2. INSTALL LINEAR SLOT FOR CONTINUOUS LOOK COLUMN TO COLUMN (TYP).
3. ROUTE 4" DUCTWORK HORIZONTAL IN LOW WALL TO EXHAUST AIR TURRET.
4. ROUTE 6" DUCTWORK DOWN TO HORIZONTAL WALL TO EXHAUST DUCTWORK.
5. 46"X32" SUPPLY AIR DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-102 FOR CONTINUATION.
6. 50"X40" RETURN AIR DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-102 FOR CONTINUATION.
7. 46"X26" SUPPLY AIR DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-102 FOR CONTINUATION.
8. 46"X26" EXHAUST AIR DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-102 FOR CONTINUATION.
9. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-102 FOR CONTINUATION.
10. 50"X16" STAIR PRESSURIZATION DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-102 FOR CONTINUATION.
11. 40"X16" STAIR PRESSURIZATION DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-102 FOR CONTINUATION.
12. REFER TO SHEET M-101.2 FOR CONTINUATION OF DUCTWORK.
13. 20"X20" EXHAUST AIR DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-102 FOR CONTINUATION.
14. AIR FROM SUPPLY GRILLE SHALL BE DIRECTED TOWARD GLASS.
15. PROVIDE 1/2"X1/2" WIRE MESH OVER RETURN AIR OPENING.
16. TRANSITION DUCTWORK AS REQUIRED TO MAKE FINAL CONNECTION WITH FUME HOOD.
17. 6" FLUE GAS EXHAUST VENT UP THROUGH ROOF FROM DOMESTIC WATER HEATER. REFER TO SHEET M-102 FOR CONTINUATION.
18. DOMESTIC WATER HEATERS ARE STACKED. REFER TO PLUMBING PLANS FOR EXACT LOCATION AND ADDITIONAL INFORMATION.
19. 4" COMBUSTION AIR INLET UP THROUGH ROOF FROM DOMESTIC WATER HEATER. REFER TO SHEET M-102 FOR CONTINUATION.

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10/17/2025

KEY PLAN

PLAN NORTH / TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 MECHANICAL PLAN

SHEET NO.
M-101

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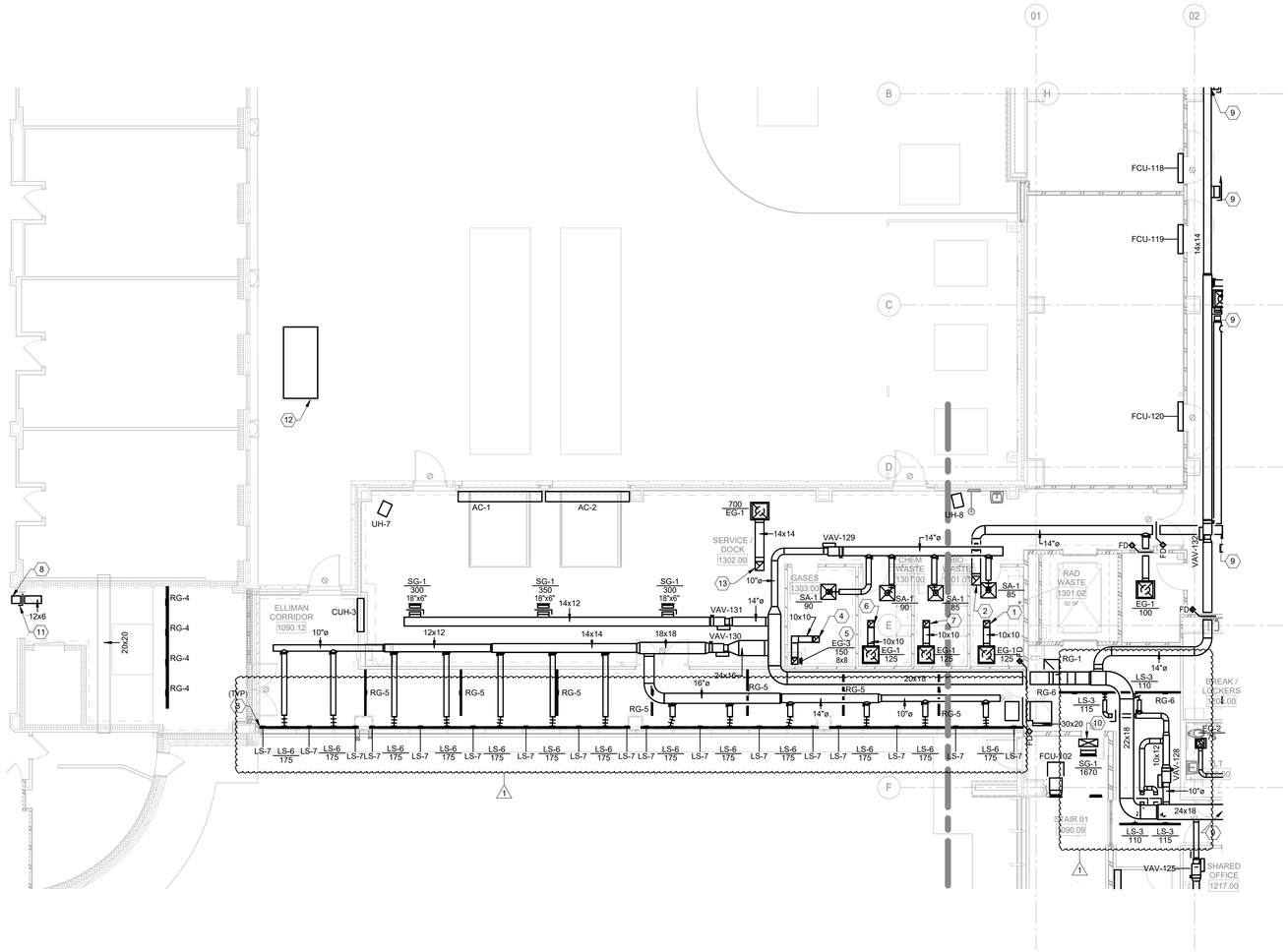
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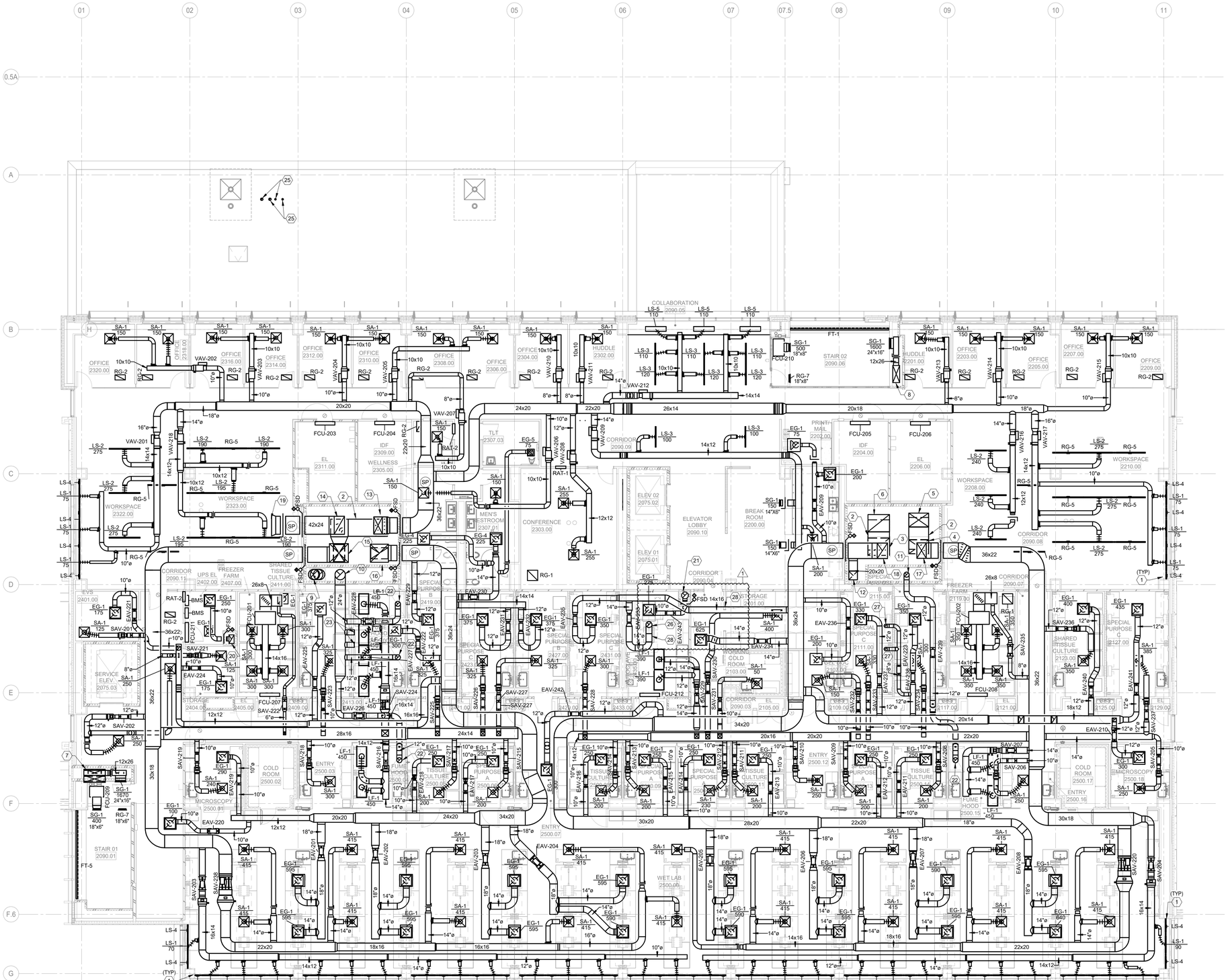

1 LEVEL 2 HVAC PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:40:19 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
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3. THE CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF FLOOR, WALL, AND ROOF PENETRATIONS AS WELL AS LOUVER SIZES, ETC. WITH GENERAL TRADES.
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5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. REFER TO SCHEDULES FOR HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SIZES
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
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9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE ACCESSIBLE FOR SERVICE.
10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. INSTALL LINEAR SLOT FOR CONTINUOUS LOOK COLUMN TO COLUMN (TYP).
2. DUCTWORK TRANSITIONS WITHIN CHASE.
3. 46"X32" SUPPLY AIR DUCTWORK UP TO DOWN FLOOR. REFER TO SHEET M-101 FOR CONTINUATION.
4. 50"X40" RETURN AIR DUCTWORK UP TO DOWN FLOOR. REFER TO SHEET M-101 FOR CONTINUATION.
5. 46"X32" SUPPLY AIR DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-103 FOR CONTINUATION.
6. 50"X40" RETURN AIR DUCTWORK UP TO NEXT FLOOR. REFER TO SHEET M-103 FOR CONTINUATION.
7. 50"X16" STAIR PRESSURIZATION DUCTWORK UP AND DOWN. REFER TO SHEET M-101 AND M-103 FOR CONTINUATION.
8. 40"X16" STAIR PRESSURIZATION DUCTWORK UP AND DOWN. REFER TO SHEET M-101 AND M-103 FOR CONTINUATION.
9. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-101 AND M-103 FOR CONTINUATION.
10. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION.
11. 12" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION.
12. 20"X20" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-101 FOR CONTINUATION.
13. 40"X20" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION.
14. 42"X24" RETURN AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION.
15. 44"X44" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION. 40"X26" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-101 FOR CONTINUATION.
16. 44"X44" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION. 40"X26" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-101 FOR CONTINUATION.
17. 36"X24" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION.
18. 36"X22" RETURN AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION.
19. PROVIDE 1/2"X1/2" WIRE MESH OVER RETURN AIR OPENING.
20. 20"X12" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION.
21. 16" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-103 FOR CONTINUATION. ALL DUCTWORK CONNECTED TO THIS SYSTEM SHALL BE FULLY WELDED STAINLESS STEEL.
22. TRANSITION DUCTWORK AS REQUIRED TO MAKE FINAL CONNECTION WITH FUME HOOD.
23. CAP AND SEAL DUCTWORK.
24. TRANSITION DUCTWORK AS REQUIRED TO MAKE FINAL CONNECTION WITH FUME HOOD.
25. 4" COMBUSTION AIR INLET AND 6" FLUE GAS EXHAUST VENT DOWN TO DOMESTIC WATER HEATER. REFER TO SHEET M-101 FOR CONTINUATION. TERMINATE ON ROOF AS REQUIRED PER MANUFACTURER.
26. TRANSITION DUCTWORK AS REQUIRED TO MAKE FINAL CONNECTION WITH CANOPY. EXHAUST 600 CFM FROM CANOPY.
27. PROVIDE CONNECTION TO SNORKEL.
28. DUCTWORK SHALL BE STAINLESS STEEL.

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NATHANIEL C. METALKER — STATE OF MICHIGAN — 51101 — REGISTERED PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN

PLAN NORTH / TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 2 MECHANICAL PLAN

SHEET NO.
M-102

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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GENERAL SHEET NOTES

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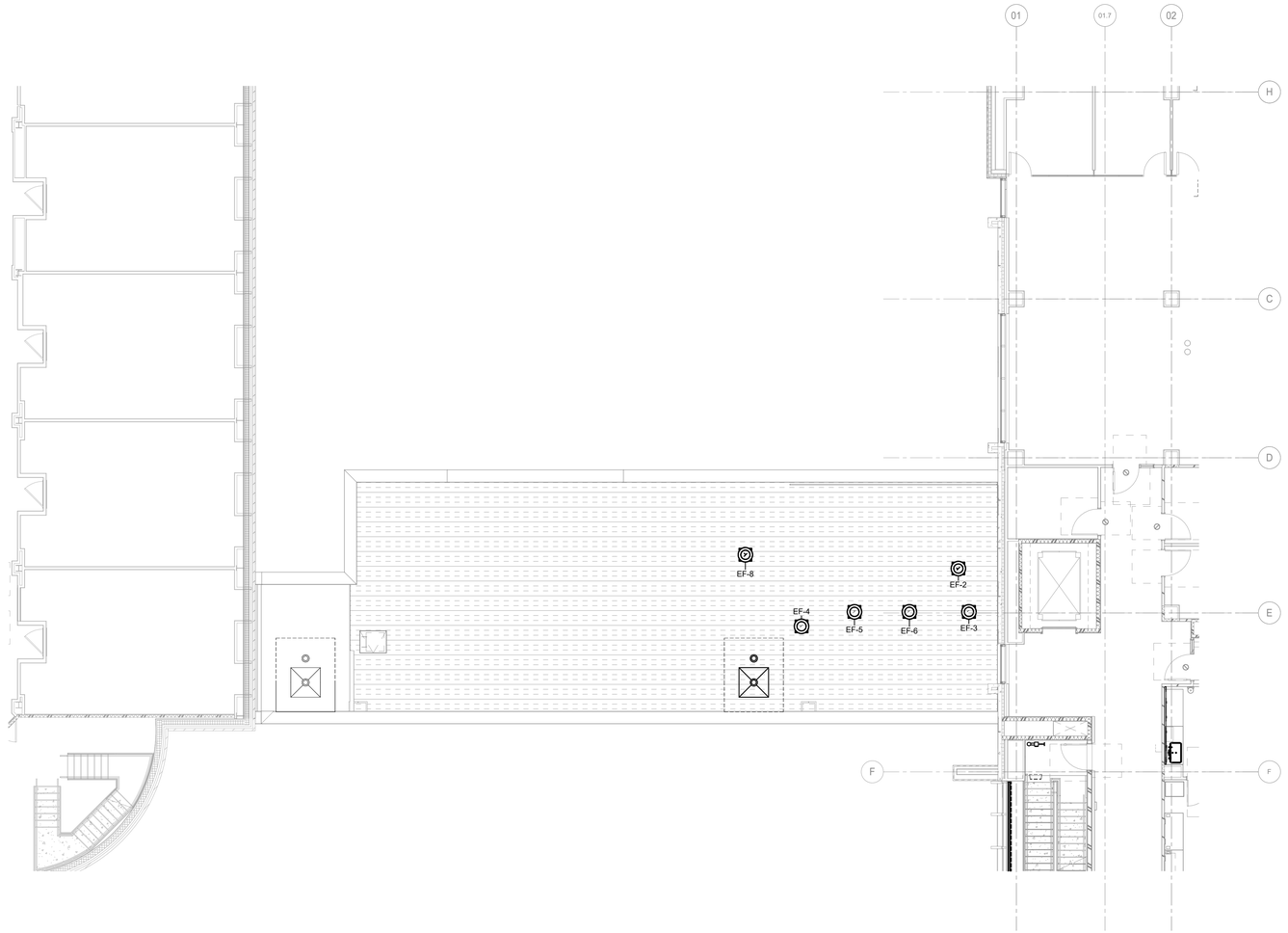

1 ROOF MECHANICAL PLAN - SERVICE DOCK
SCALE: 1/8" = 1'-0"

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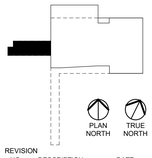
9/25/2025

KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ROOF MECHANICAL PLAN - SERVICE DOCK
SHEET NO.
M-102.2

OSBORN ENGINEERING
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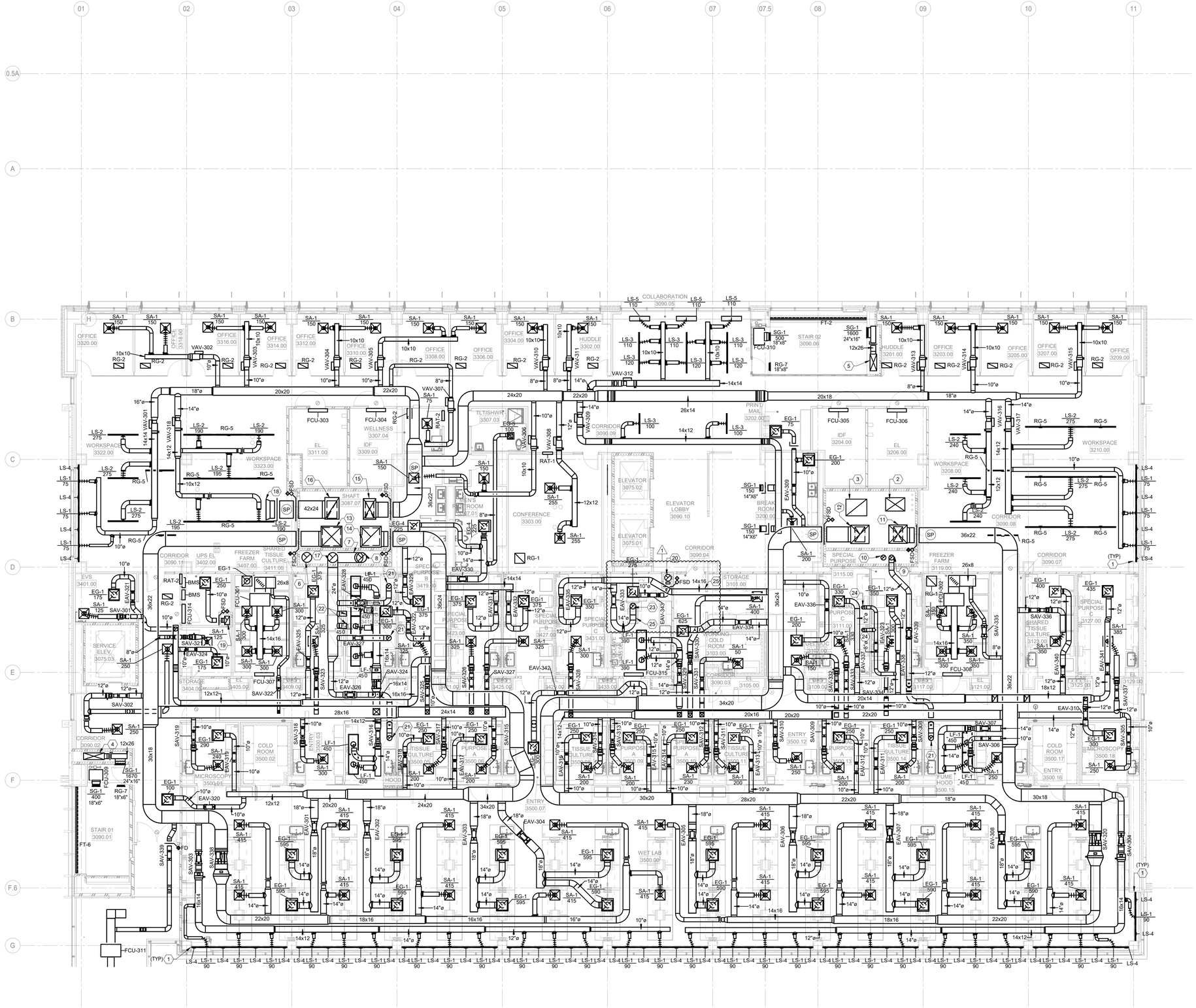
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RG-7 18"x8"
FT-2
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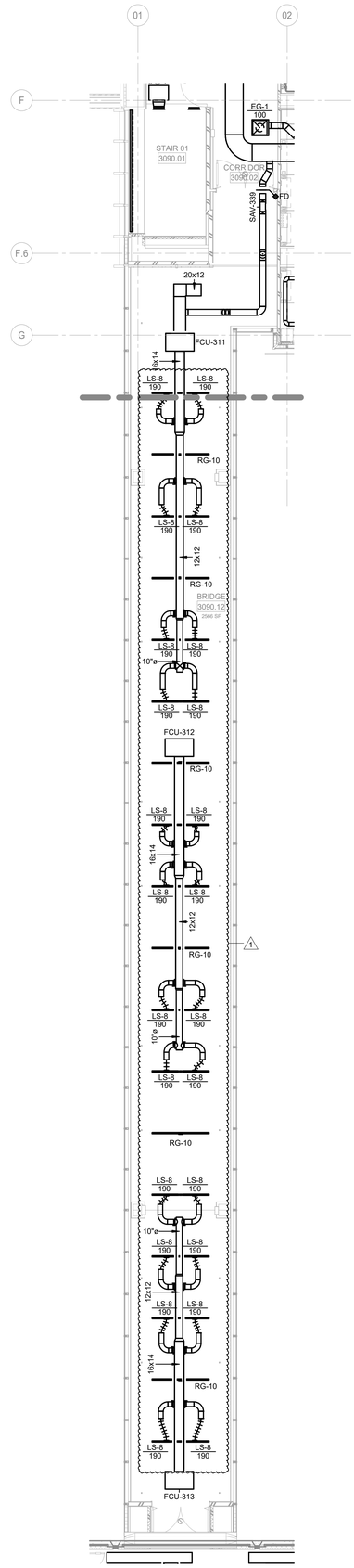

1 LEVEL 3 MECHANICAL PLAN - BRIDGE
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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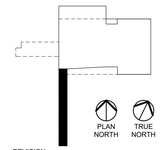
STATE OF MICHIGAN
NATHANIEL C. STALKER
ENGINEER
No. 51101
LICENSED PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN



REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 MECHANICAL PLAN - BRIDGE

SHEET NO.
M-103.3

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PLOT DATE: 10/16/2025 2:40:32 PM TEMPLATE VERSION: 23.0.4

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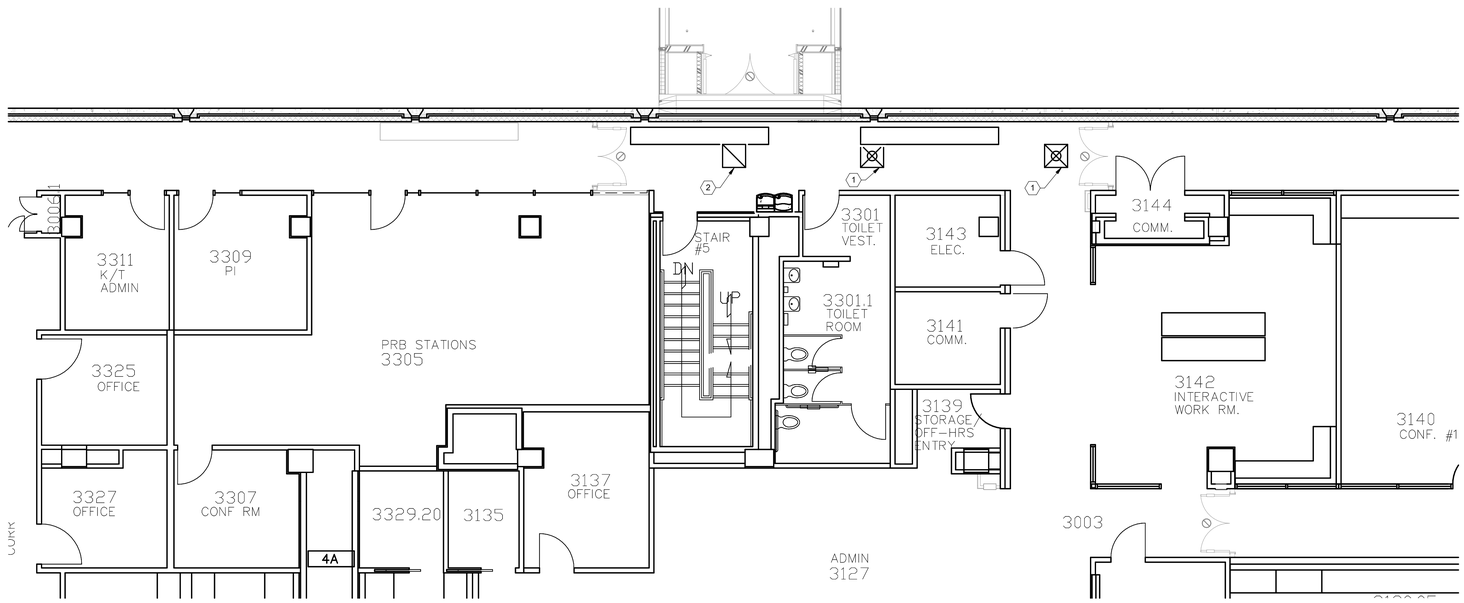
(#) SHEET KEY NOTES:

1. INSTALL EXISTING SUPPLY GRILLES. EXTEND SUPPLY DUCTWORK TO DIFFUSER. BALANCE DIFFUSER TO MATCH PRE TEST AND BALANCE REPORT.
2. INSTALL EXISTING RETURN GRILLE IN CEILING.



1 LEVEL 3 MECHANICAL PLAN - SCOTT HALL
SCALE: 3/16" = 1'-0"

PLOT DATE: 10/16/2025 2:40:33 PM TEMPLATE VERSION: 23.0.4

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STATE OF MICHIGAN
NATHANIEL C. NTALAGIN
ENGINEER
No. 51101
PROFESSIONAL ENGINEER

9/25/2025

KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 3 MECHANICAL PLAN - SCOTT HALL
SHEET NO.
M-103.4

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5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. REFER TO SCHEDULES FOR HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SIZES
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE ACCESSIBLE FOR SERVICE.
10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

SHEET KEY NOTES:

1. INSTALL LINEAR SLOT FOR CONTINUOUS LOOK COLUMN TO COLUMN (TYP).
2. 46"X32" SUPPLY AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-103 AND M-105 FOR CONTINUATION.
3. 50"X40" RETURN AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-103 AND M-105 FOR CONTINUATION.
4. 50"X16" STAIR PRESSURIZATION DUCTWORK UP AND DOWN. REFER TO SHEET M-103 AND M-105 FOR CONTINUATION.
5. 40"X16" STAIR PRESSURIZATION DUCTWORK UP AND DOWN. REFER TO SHEET M-103 AND M-105 FOR CONTINUATION.
6. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-102 AND M-105 FOR CONTINUATION.
7. DUCTWORK TRANSITIONS WITHIN CHASE.
8. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-103 AND M-105 FOR CONTINUATION.
9. 12" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION.
10. 12" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-103 AND M-105 FOR CONTINUATION.
11. 50"X50" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 44"X44" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
12. 50"X50" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 44"X44" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
13. 56"X56" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 50"X50" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
14. 56"X56" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 50"X50" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
15. 50"X30" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 40"X20" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
16. 52"X34" RETURN AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 22"X24" RETURN AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
17. 12" ROUND CHEMICAL EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION.
18. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION.
19. PROVIDE 1/2"X1/2" WIRE MESH OVER RETURN AIR OPENING.
20. 20"X12" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 20"X12" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
21. 16" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 16" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION. ALL DUCTWORK CONNECTED TO THIS SYSTEM SHALL BE FULLY WELDED STAINLESS STEEL.
22. PROVIDE BUBBLE TIGHT DAMPER.
23. TRANSITION DUCTWORK AS REQUIRED TO MAKE FINAL CONNECTION WITH FUME HOOD.
24. CAP AND SEAL DUCTWORK.
25. TRANSITION DUCTWORK AS REQUIRED TO MAKE FINAL CONNECTION WITH CANOPY. EXHAUST 600 CFM FROM CANOPY.
26. DUCTWORK SHALL BE STAINLESS STEEL.

1 LEVEL 4 MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:40:43 PM TEMPLATE VERSION: 23.0.4

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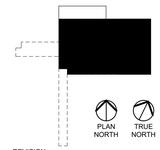
STATE OF MICHIGAN — NATHANIEL C. STALKER — 51101 — REGISTERED PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN



REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 4 MECHANICAL PLAN

SHEET NO.
M-104

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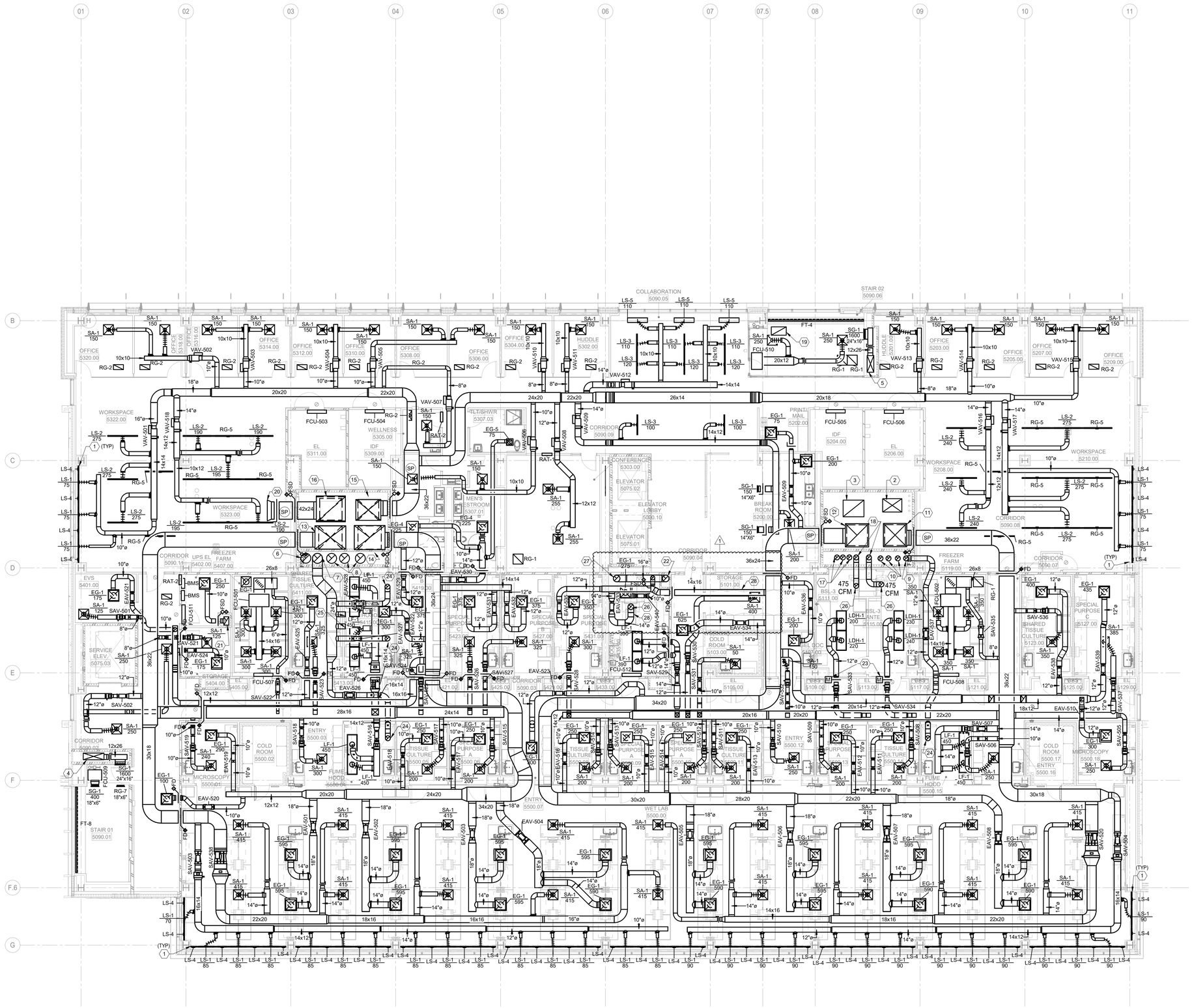

1 LEVEL 5 MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:49:53 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF FLOOR, WALL, AND ROOF PENETRATIONS AS WELL AS LOUVER SIZES, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. REFER TO SCHEDULES FOR HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SIZES
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE ACCESSIBLE FOR SERVICE.
10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

SHEET KEY NOTES:

1. INSTALL LINEAR SLOT FOR CONTINUOUS LOOK COLUMN TO COLUMN (TYP).
2. 46"X32" SUPPLY AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-104 AND M-106 FOR CONTINUATION.
3. 50"X40" RETURN AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-104 AND M-106 FOR CONTINUATION.
4. 50"X16" STAIR PRESSURIZATION DUCTWORK UP AND DOWN. REFER TO SHEET M-104 AND M-106 FOR CONTINUATION.
5. 40"X16" STAIR PRESSURIZATION DUCTWORK UP AND DOWN. REFER TO SHEET M-104 AND M-106 FOR CONTINUATION.
6. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-102 AND M-105 FOR CONTINUATION.
7. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION.
8. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-103 AND M-105 FOR CONTINUATION.
9. 12" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION.
10. 12" ROUND FUME HOOD EXHAUST AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-104 AND M-106 FOR CONTINUATION.
11. 56"X56" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 50"X50" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
12. 56"X56" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 50"X50" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-103 FOR CONTINUATION.
13. 56"X74" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-105 FOR CONTINUATION. 56"X56" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-104 FOR CONTINUATION.
14. 56"X74" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION. 56"X56" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-104 FOR CONTINUATION.
15. 60"X50" SUPPLY AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION. 50"X50" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-104 FOR CONTINUATION.
16. 70"X60" RETURN AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION. 52"X54" RETURN AIR DUCTWORK DOWN. REFER TO SHEET M-104 FOR CONTINUATION.
17. 12" ROUND CHEMICAL EXHAUST AIR DUCTWORK UP AND DOWN. REFER TO SHEET M-104 AND M-106 FOR CONTINUATION.
18. 12" ROUND CHEMICAL EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION.
19. 36"X20" RELIEF AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION. PROVIDE 1/2"X1/2" WIRE MESH OVER THE OPENING. DUCTWORK SHALL NOT PENETRATE THE CEILING.
20. PROVIDE 1/2"X1/2" WIRE MESH OVER RETURN AIR OPENING.
21. 20"X12" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION. 20"X12" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-104 FOR CONTINUATION.
22. 16" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-106 FOR CONTINUATION. 16" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-104 FOR CONTINUATION. ALL DUCTWORK CONNECTED TO THIS SYSTEM SHALL BE FULLY WELDED STAINLESS STEEL.
23. PROVIDE BUBBLE TIGHT DAMPER.
24. TRANSITION DUCTWORK AS REQUIRED TO MAKE FINAL CONNECTION WITH FUME HOOD.
25. CAP AND SEAL DUCTWORK.
26. TRANSITION DUCTWORK AS REQUIRED TO MAKE FINAL CONNECTION WITH CANOPY. EXHAUST 600 CFM FROM CANOPY.
27. 16" EXHAUST DUCT UP TO FLOOR ABOVE. REFER TO SHEET M-106 FOR CONTINUATION. ALL DUCTWORK CONNECTED TO THIS SYSTEM SHALL BE FULLY WELDED STAINLESS STEEL.
28. DUCTWORK SHALL BE STAINLESS STEEL.

1

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No. 61101
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10/17/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 5 MECHANICAL PLAN

SHEET NO.
M-105

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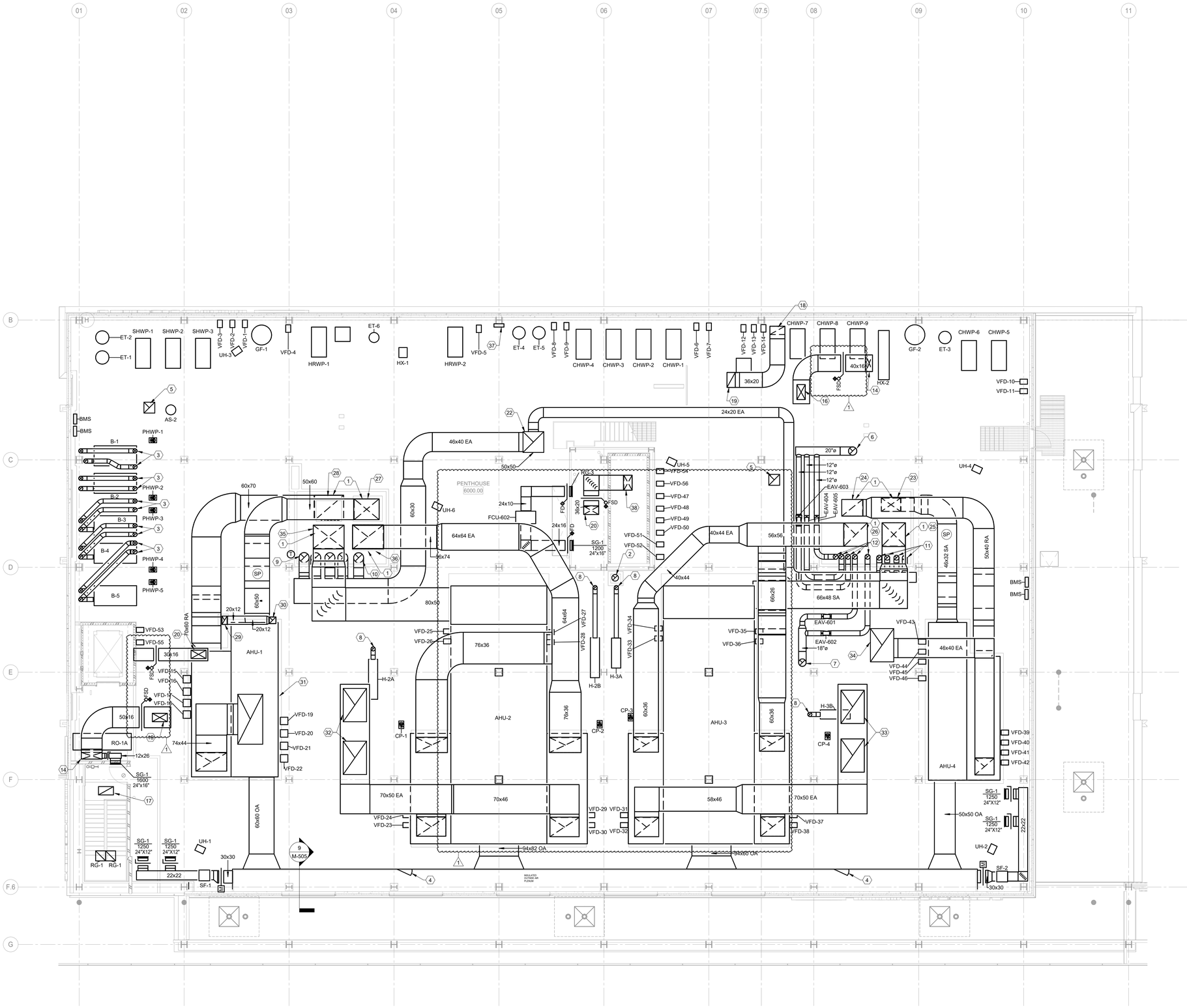

1 PENTHOUSE MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:45:56 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF FLOOR, WALL, AND ROOF PENETRATIONS AS WELL AS LOUVER SIZES, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. REFER TO SCHEDULES FOR HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SIZES
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE ACCESSIBLE FOR SERVICE.
10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. PROVIDE FIRE / SMOKE DAMPER IN THE DUCTWORK AS IT PENETRATES THE FLOOR.
2. 16" EXHAUST DUCT UP FROM FLOOR BELOW. REFER TO SHEET M-105 FOR CONTINUATION. 16" EXHAUST DUCT UP TO EXHAUST FAN EF-01 LOCATED ON ROOF. REFER TO SHEET M-107 FOR CONTINUATION. ALL DUCTWORK CONNECTED TO THIS SYSTEM SHALL BE FULLY WELDED STAINLESS STEEL.
3. 10" BOILER COMBUSTION AIR INLET AND 10" FLUE GAS EXHAUST VENT UP THROUGH ROOF. REFER TO SHEET M-107 FOR CONTINUATION.
4. PROVIDE 36" X 60" ACCESS DOOR INTO OUTSIDE AIR PLENUM.
5. 26" X 26" RELIEF DUCT UP TO RELIEF HOOD ON THE ROOF. PROVIDE 1/2" X 1/2" WIRE MESH TO COVER DUCT OPENING WITHIN THE SPACE.
6. 20" EXHAUST DUCTWORK UP. REFER TO SHEET M-107 FOR CONTINUATION.
7. 18" EXHAUST DUCTWORK UP. REFER TO SHEET M-107 FOR CONTINUATION.
8. STEAM FIRED HUMIDIFIER GAS VENT UP. REFER TO SHEET M-107 FOR CONTINUATION. SIZE PER MANUFACTURERS RECOMMENDATIONS.
9. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION.
10. 24" ROUND FUME HOOD EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION.
11. 12" ROUND FUME HOOD EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION.
12. 12" ROUND FUME HOOD EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION.
13. 50"X16" STAIR PRESSURIZATION DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION.
14. 40"X16" STAIR PRESSURIZATION DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION.
15. 36"X20" STAIR PRESSURIZATION DUCTWORK UP TO SPH-1. REFER TO SHEET M-107 FOR CONTINUATION.
16. 36"X20" STAIR PRESSURIZATION DUCTWORK UP TO SPH-2. REFER TO SHEET M-107 FOR CONTINUATION.
17. 24"X20" STAIR RELIEF DUCTWORK UP TO GRV-7. REFER TO SHEET M-107 FOR CONTINUATION.
18. 36"X20" STAIR RELIEF DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
19. 24"X20" STAIR RELIEF DUCTWORK UP TO GRV-8. REFER TO SHEET M-107 FOR CONTINUATION.
20. 36"X20" ELEVATOR PRESSURIZATION DUCTWORK UP TO SPH-4. REFER TO SHEET M-107 FOR CONTINUATION.
21. 36"X20" ELEVATOR PRESSURIZATION DUCTWORK UP TO SPH-3. REFER TO SHEET M-107 FOR CONTINUATION.
22. 50"X50" FUME HOOD EXHAUST AIR DUCTWORK UP TO LEF-1. REFER TO SHEET M-107 FOR CONTINUATION.
23. 46"X32" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION.
24. 50"X40" RETURN AIR DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION.
25. 56"X56" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
26. 56"X56" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
27. 60"X50" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
28. 70"X60" RETURN AIR DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
29. 20"X12" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-105 FOR CONTINUATION. PROVIDE FIRE / SMOKE DAMPER IN FLOOR PENETRATION.
30. 16"X16" EXHAUST AIR DUCTWORK UP. REFER TO SHEET M-107 FOR CONTINUATION.
31. 60"X120" RELIEF AIR DUCTWORK UP. REFER TO SHEET M-107 FOR CONTINUATION. DUCTWORK CONNECTED TO GRV-5.
32. 80"X56" RELIEF AIR DUCTWORK UP. REFER TO SHEET M-107 FOR CONTINUATION. DUCTWORK CONNECTED TO GRV-1 AND GRV-2.
33. 80"X56" RELIEF AIR DUCTWORK UP. REFER TO SHEET M-107 FOR CONTINUATION. DUCTWORK CONNECTED TO GRV-3 AND GRV-4.
34. 80"X56" RELIEF AIR DUCTWORK UP. REFER TO SHEET M-107 FOR CONTINUATION. DUCTWORK CONNECTED TO GRV-6.
35. 74"X56" SUPPLY AIR DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
36. 74"X56" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
37. CHILLER OPTIMIZATION CONTROL PANEL.
38. MECHANICAL DUCTWORK PENETRATES DOWN INTO ELEVATOR SHAFT.

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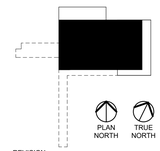
NATHANIEL C. STALKER — STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER — No. 61101

10/17/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
PENTHOUSE MECHANICAL PLAN

SHEET NO.
M-106

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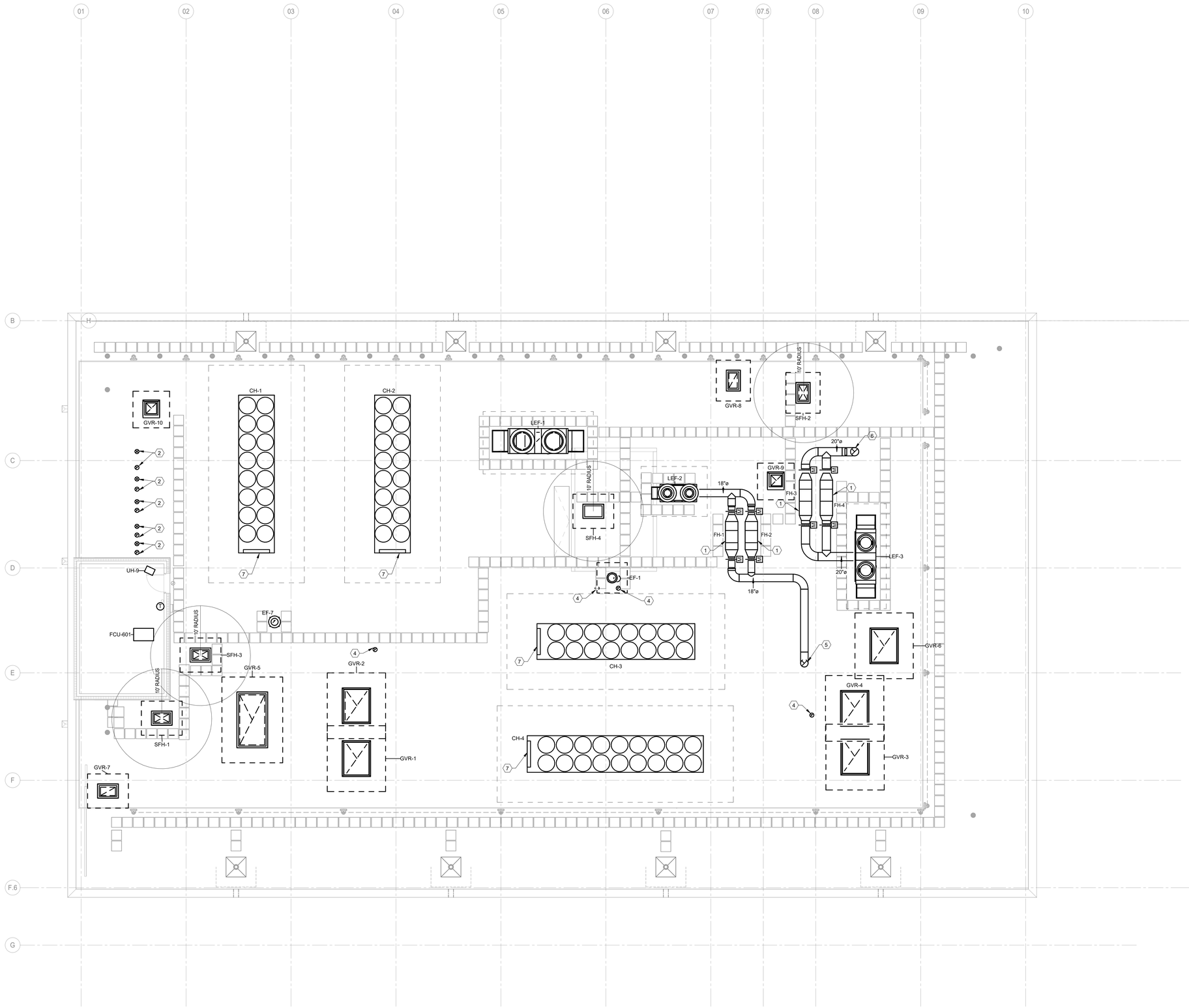

1 ROOF MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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6. REFER TO SCHEDULES FOR HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SIZES
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE ACCESSIBLE FOR SERVICE.
10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. FILTER HOUSING.
2. 10" BOILER COMBUSTION AIR INLET AND 10" FLUE GAS EXHAUST VENT DOWN. REFER TO SHEET M-106 FOR CONTINUATION. TERMINATE ON ROOF AS REQUIRED PER MANUFACTURER.
3. 16"X16" EXHAUST AIR DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
4. FLUE FROM GAS FIRED HUMIDIFIERS UP FROM BELOW. REFER TO SHEET M-106 FOR CONTINUATION. CONTRACTOR TO VERIFY SIZE WITH MANUFACTURER.
5. 18" EXHAUST DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
6. 20" EXHAUST DUCTWORK DOWN. REFER TO SHEET M-106 FOR CONTINUATION.
7. CHILLER CONTROL PANEL LOCATION.

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NATHANIEL C. STALKER
ENGINEER
No. 51101
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9/25/2025

KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ROOF MECHANICAL PLAN

SHEET NO.
M-107

OSBORN ENGINEERING
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PLOT DATE: 10/16/2025 2:40:58 PM TEMPLATE VERSION: 23.0.4

1 LEVEL 1 MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/10/2025 2:41:21 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF FLOOR, WALL, AND ROOF PENETRATIONS AS WELL AS LOUVER SIZES, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
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9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE ACCESSIBLE FOR SERVICE.
10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. PROVIDE A 3-WAY VALVE ON HEATING COIL.
2. 2" CHWR AND CHWS UP TO FLOOR ABOVE. 2" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-202 FOR CONTINUATION.
3. 4" CHWR AND CHWS UP TO FLOOR ABOVE. 3" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-202 FOR CONTINUATION.
4. PROVIDE A 3-WAY VALVE ON COOLING COIL.
5. REMOTE EMERGENCY SWITCH FOR WATER HEATER SHUTDOWN. PROVIDE LABEL "WATER HEATER EMERGENCY SHUTDOWN SWITCH".
6. PROVIDE CO DETECTION. ALARM TO PROVIDE AUDIBLE ALARM IN THE SPACE. SENSOR SHALL BE CONNECTED TO BMS AND PROVIDE ALARM TO BMS.
7. PROVIDE EXPANSION LOOP.

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NATHANIEL C. STALKER
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10/17/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 1 MECHANICAL PIPING PLAN
SHEET NO.
M-201

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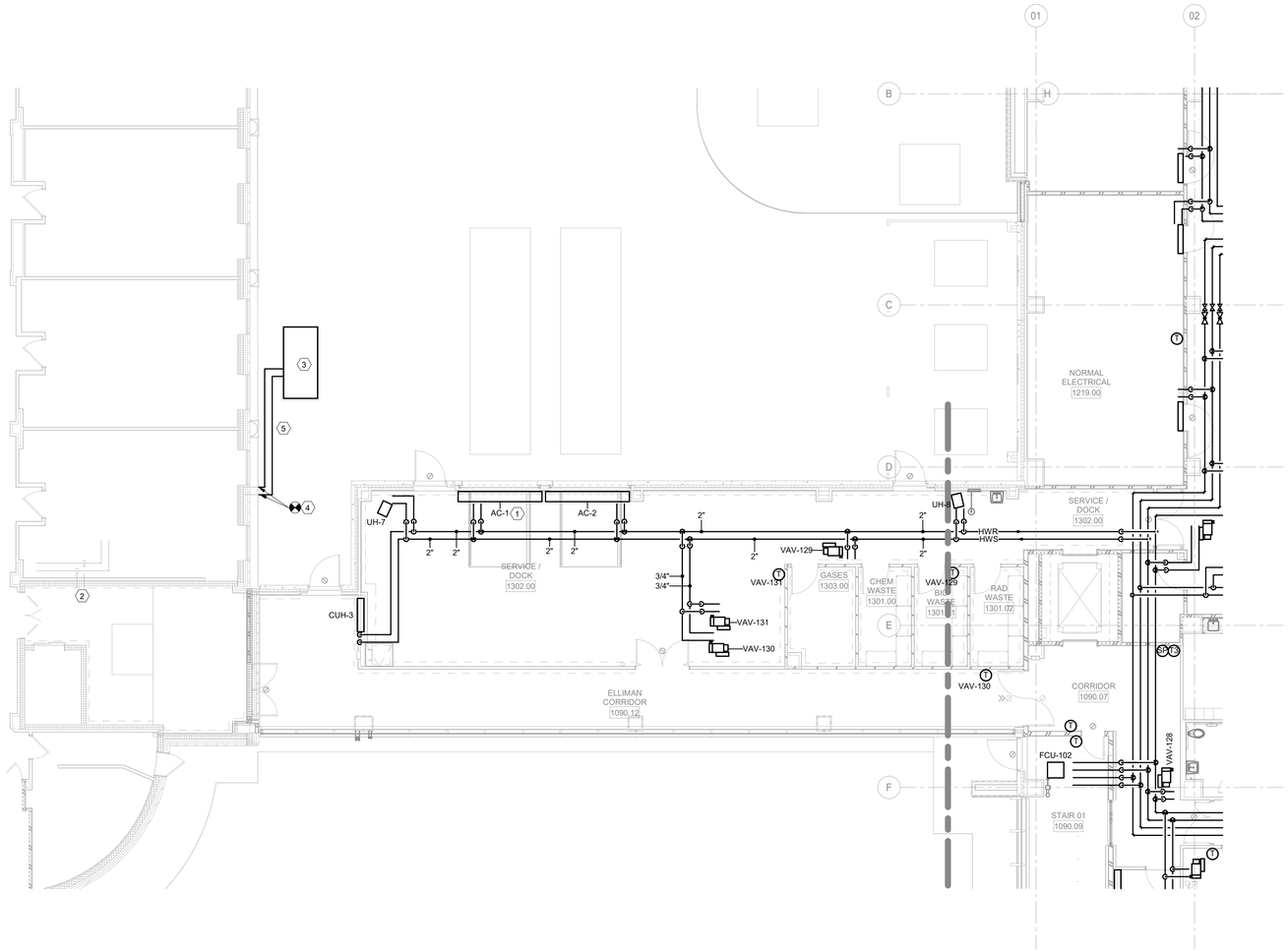

1 LEVEL 1 MECHANICAL PIPING PLAN - SERVICE DOCK
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
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5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. ALL HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SHALL BE 3/4" UNLESS OTHERWISE NOTED ON DRAWING. **[CONFIRM IF APPLICABLE]**
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
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10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. PROVIDE 3-WAY VALVE ON HEATING COIL.
2. CAP AND SEAL PIPING.
3. EXTEND REFRIGERANT PIPING, CONTROL WIRING, AND ELECTRICAL TO RELOCATED CONDENSING UNIT.
4. CONNECT PIPING TO EXISTING. CONTRACTOR TO CONFIRM AND MATCH EXISTING SIZE.
5. ROUTE PIPING ALONG WALL UNTIL IT TRANSITIONS TOWARDS CONDENSER.

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STATE OF MICHIGAN — NATHANIEL C. STALKER — ENGINEER — No. 51101 — REGISTERED PROFESSIONAL ENGINEER

9/25/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 MECHANICAL PIPING PLAN - DOCK

SHEET NO.
M-201.2

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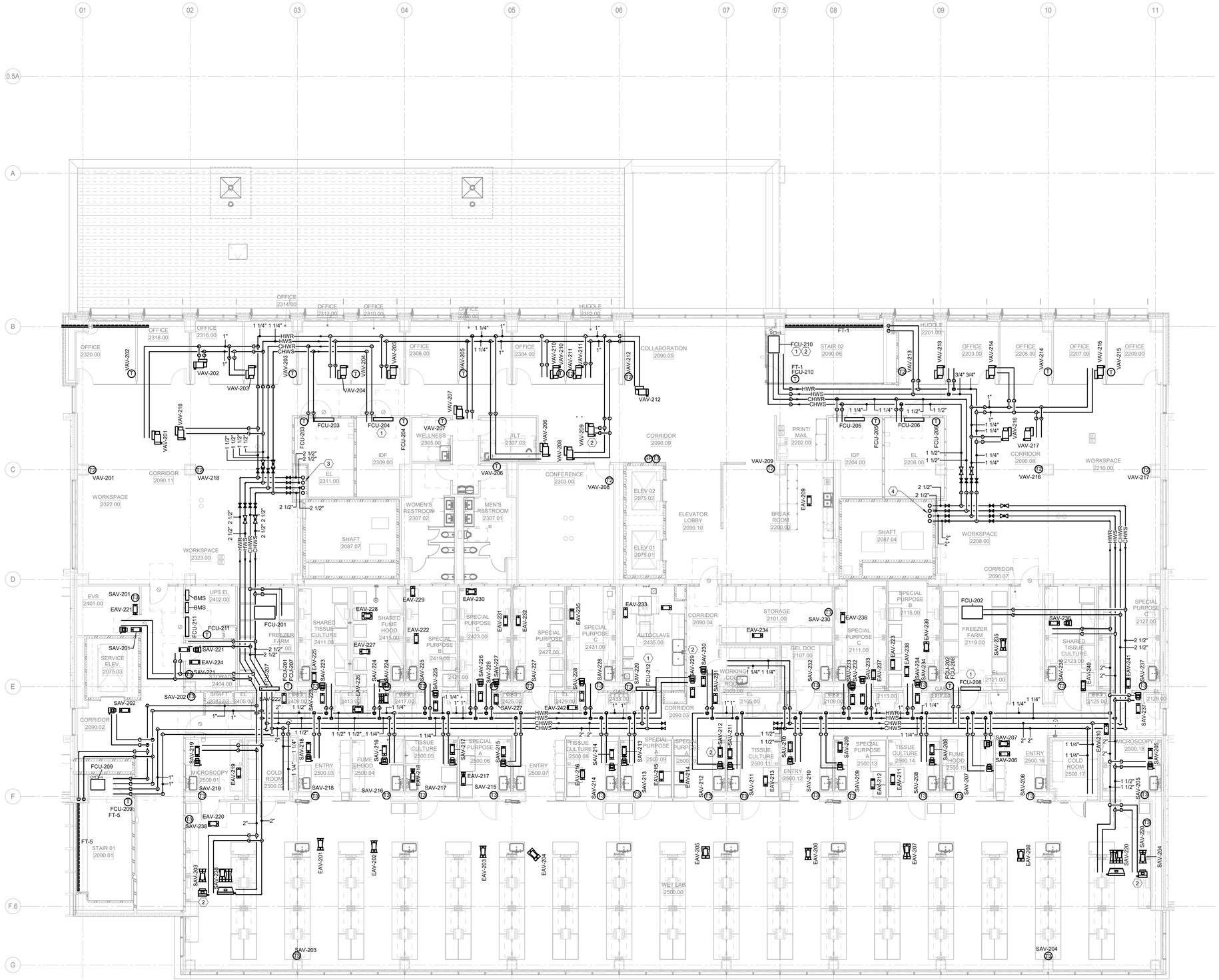

1 LEVEL 2 MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/10/2025 2:41:33 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

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11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

SHEET KEY NOTES:

1. PROVIDE A 3-WAY VALVE ON COOLING COIL.
2. PROVIDE A 3-WAY VALVE ON HEATING COIL.
3. 4" CHWR AND CHWS UP TO FLOOR ABOVE. 4" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-203 FOR CONTINUATION. 4" CHWR AND CHWS DOWN TO FLOOR BELOW. 3" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-201 FOR CONTINUATION.
4. 3" CHWR AND CHWS UP TO FLOOR ABOVE. 2.5" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-203 FOR CONTINUATION. 2" CHWR AND CHWS DOWN TO FLOOR BELOW. 2" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-201 FOR CONTINUATION.

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NATHANIEL C. STALKER
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No. 61101
PROFESSIONAL ENGINEER
9/25/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 2 MECHANICAL PIPING PLAN
SHEET NO.
M-202

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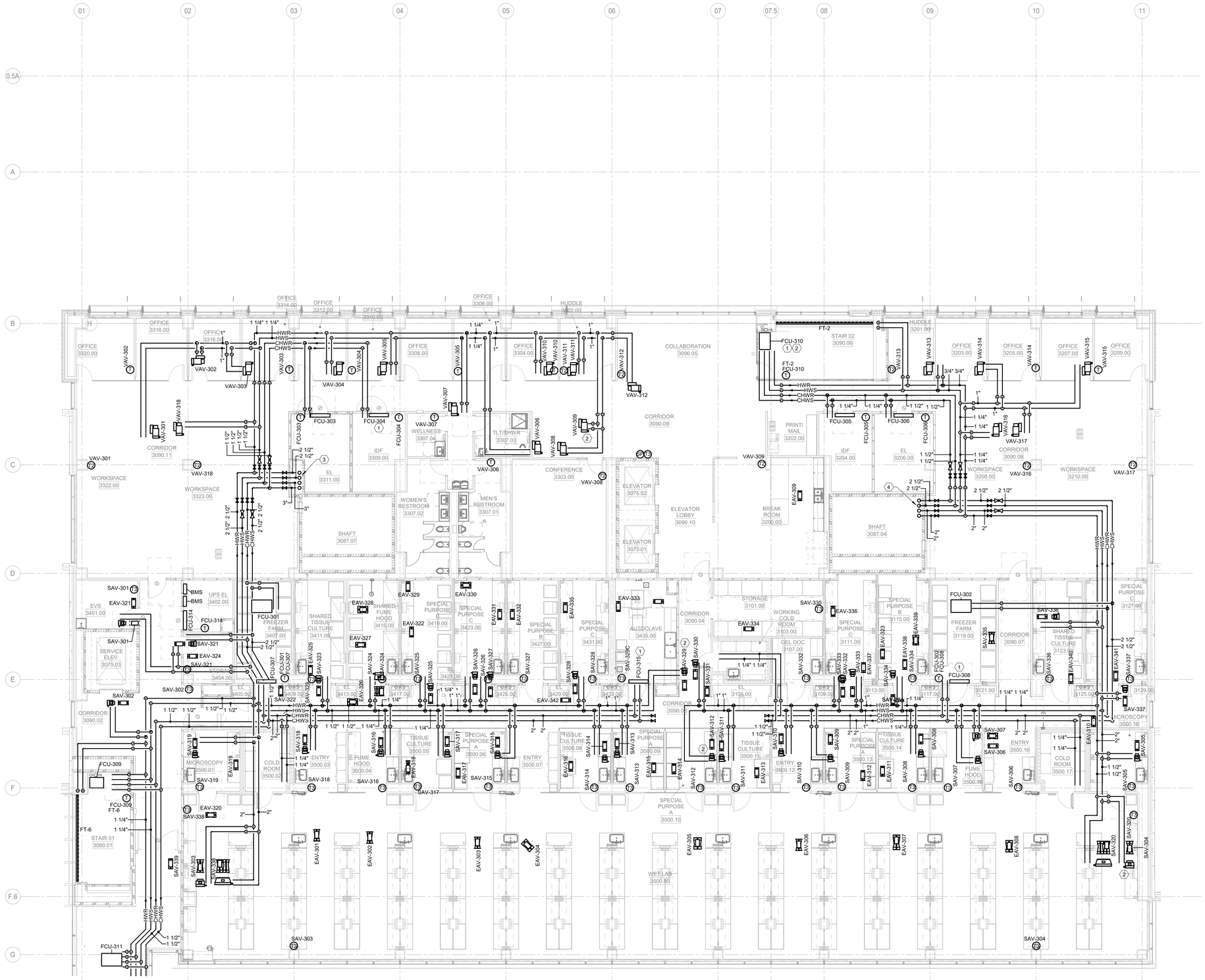

1 LEVEL 3 MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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SHEET KEY NOTES:

1. PROVIDE A 3-WAY VALVE ON COOLING COIL.
2. PROVIDE A 3-WAY VALVE ON HEATING COIL.
3. 6" CHWR AND CHWS UP TO FLOOR ABOVE. 4" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-204 FOR CONTINUATION. 4" CHWR AND CHWS DOWN TO FLOOR BELOW. 4" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-202 FOR CONTINUATION.
4. 4" CHWR AND CHWS UP TO FLOOR ABOVE. 3" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-204 FOR CONTINUATION. 3" CHWR AND CHWS DOWN TO FLOOR BELOW. 2.5" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-202 FOR CONTINUATION.

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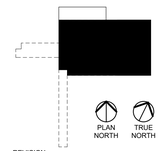
NATHANIEL C. METALKER — STATE OF MICHIGAN — LICENSED PROFESSIONAL ENGINEER — No. 51101
9/25/2025

KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 MECHANICAL PIPING PLAN

SHEET NO.
M-203

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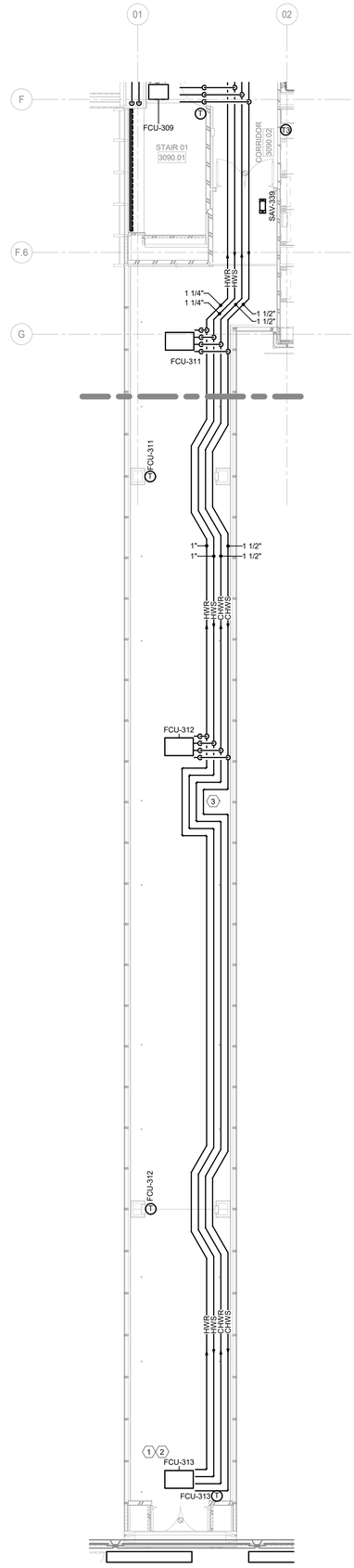

1 LEVEL 3 MECHANICAL PIPING PLAN - BRIDGE
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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(#) SHEET KEY NOTES:

1. PROVIDE A 3-WAY VALVE ON COOLING COIL.
2. PROVIDE A 3-WAY VALVE ON HEATING COIL.
3. PROVIDE EXPANSION LOOP.

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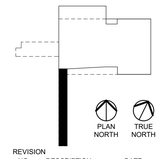
STATE OF MICHIGAN
NATHANIEL C. METALKER
ENGINEER
No. 61101
LICENSED PROFESSIONAL ENGINEER

9/25/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 3 MECHANICAL PIPING PLAN - BRIDGE
SHEET NO.
M-203.3

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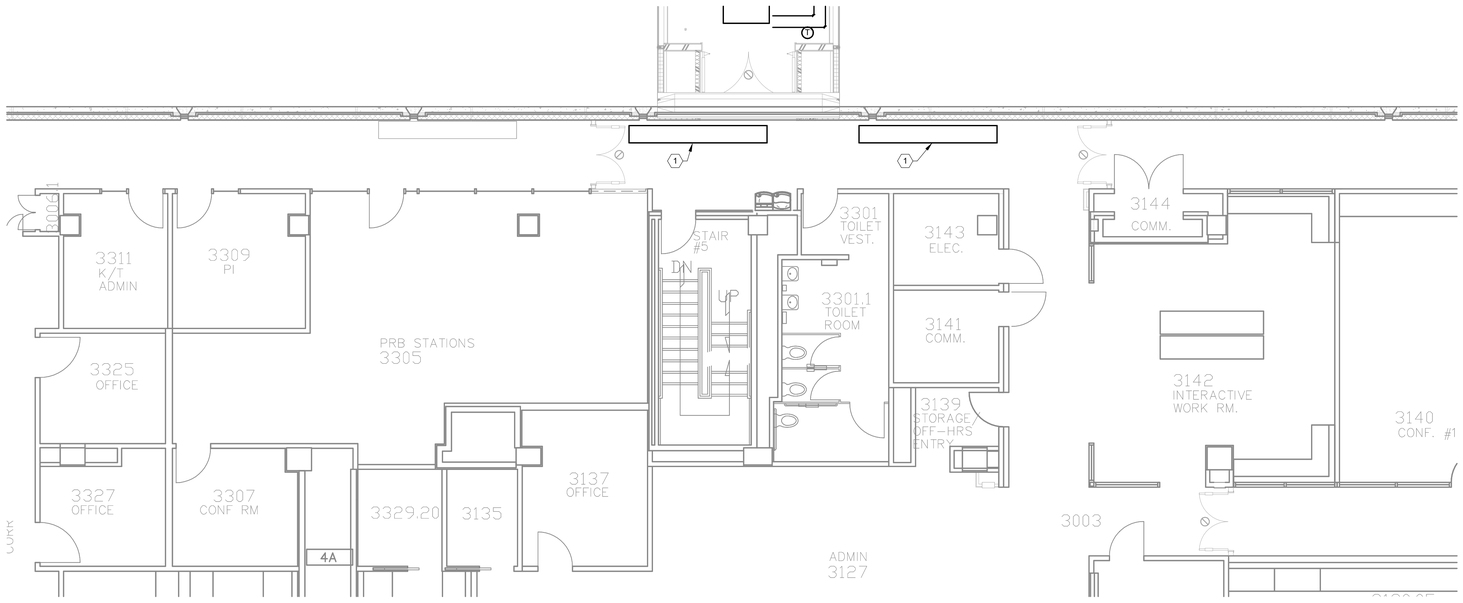
PLOT DATE: 10/16/2025 2:41:46 PM TEMPLATE VERSION: 2.0.0.4

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF FLOOR, WALL, AND ROOF PENETRATIONS AS WELL AS LOUVER SIZES, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. REFER TO SCHEDULES FOR HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SIZES
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE ACCESSIBLE FOR SERVICE.
10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. INSTALL EXISTING RADIANT PANEL. EXTEND PIPING TO RADIANT PIPING CONNECTIONS.



1 LEVEL 3 MECHANICAL PIPING PLAN - SCOTT HALL
SCALE: 3/16" = 1'-0"

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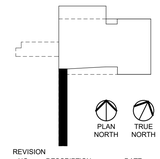
STATE OF MICHIGAN — NATHANIEL C. MITALDER — ENGINEER — No. 51101 — REGISTERED PROFESSIONAL ENGINEER

9/25/2025

KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 MECHANICAL PLAN - SCOTT HALL

SHEET NO.
M-203.4

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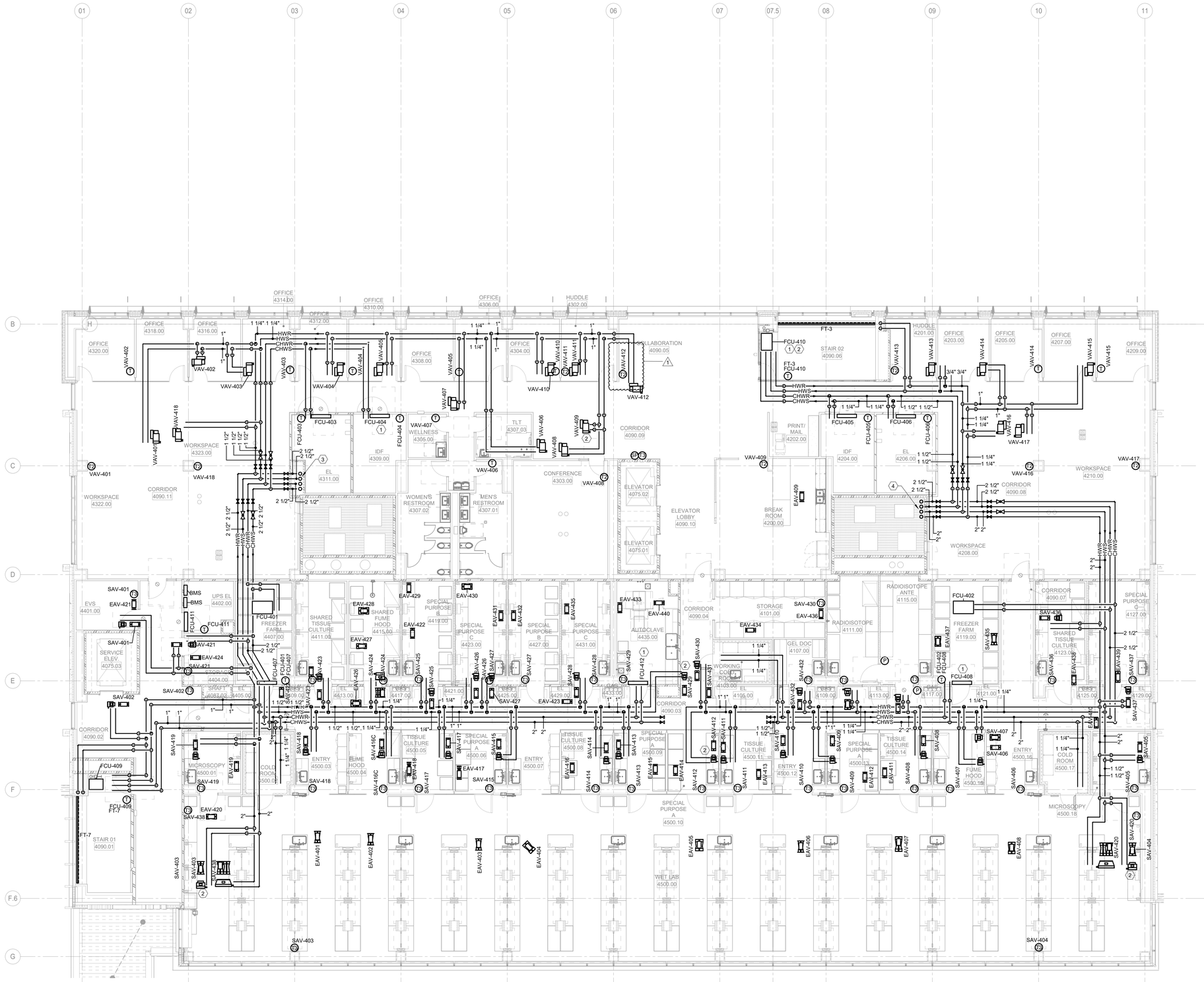

1 LEVEL 4 MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:41:39 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

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4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS, AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. ALL HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SHALL BE 3/4" UNLESS OTHERWISE NOTED ON DRAWING. **[CONFIRM IF APPLICABLE]**
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
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10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. PROVIDE A 3-WAY VALVE ON COOLING COIL.
2. PROVIDE A 3-WAY VALVE ON HEATING COIL.
3. 6" CHWR AND CHWS UP TO FLOOR ABOVE. 4" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-205 FOR CONTINUATION. 6" CHWR AND CHWS DOWN TO FLOOR BELOW. 4" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-203 FOR CONTINUATION.
4. 4" CHWR AND CHWS UP TO FLOOR ABOVE. 4" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-205 FOR CONTINUATION. 4" CHWR AND CHWS DOWN TO FLOOR BELOW. 3" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-203 FOR CONTINUATION.

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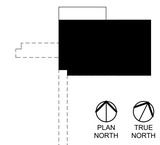
NATHANIEL C. METALIDIS — STATE OF MICHIGAN — REGISTERED — No. 51101 — PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 4 MECHANICAL PIPING PLAN
SHEET NO.
M-204

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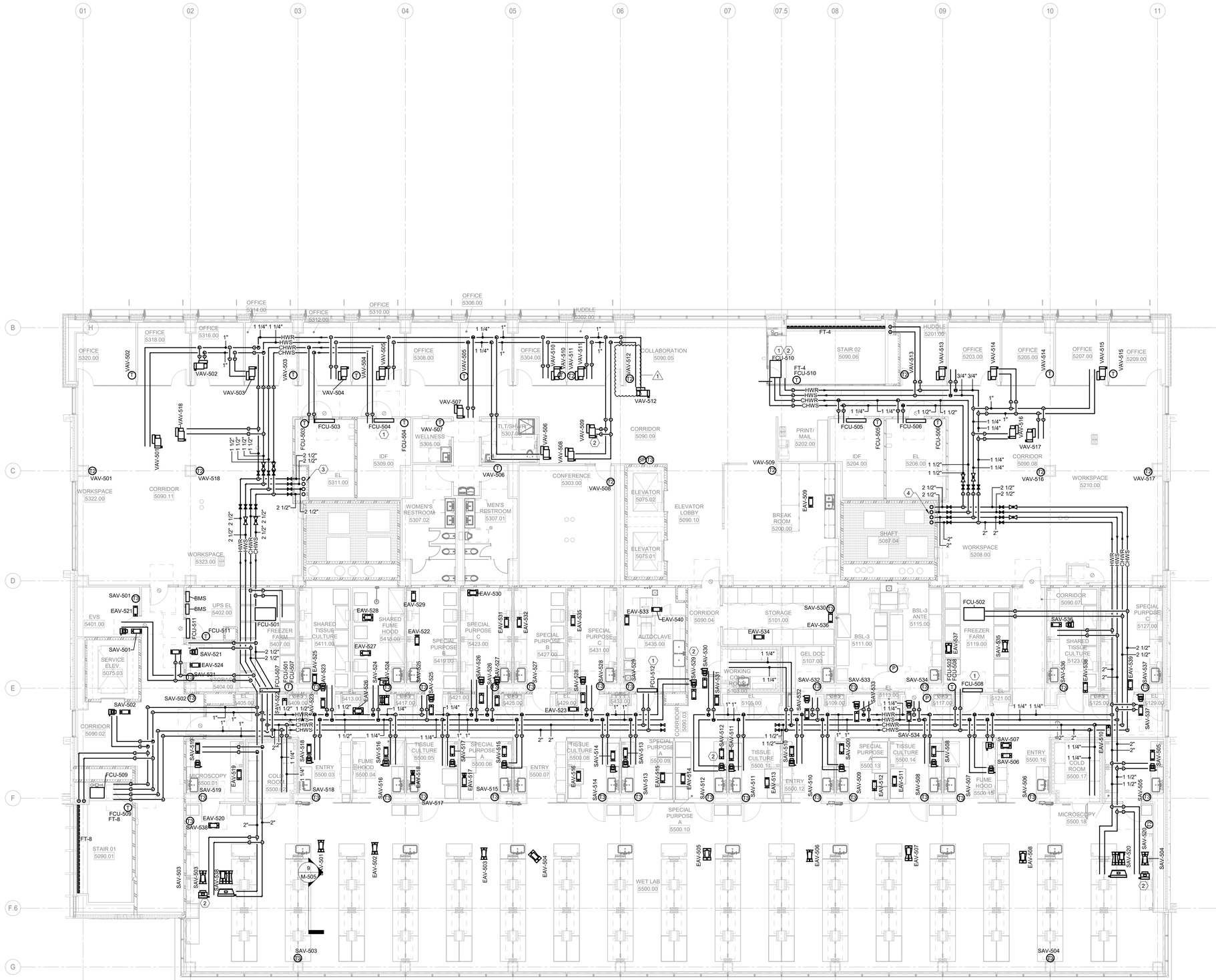

1 LEVEL 5 MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:42:19 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

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11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. PROVIDE A 3-WAY VALVE ON COOLING COIL.
2. PROVIDE A 3-WAY VALVE ON HEATING COIL.
3. 6" CHWR AND CHWS UP TO FLOOR ABOVE. 6" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-206 FOR CONTINUATION. 6" CHWR AND CHWS DOWN TO FLOOR BELOW. 4" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-204 FOR CONTINUATION.
4. 6" CHWR AND CHWS UP TO FLOOR ABOVE. 4" HWR AND HWS UP TO FLOOR ABOVE. REFER TO SHEET M-206 FOR CONTINUATION. 4" CHWR AND CHWS DOWN TO FLOOR BELOW. 4" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-204 FOR CONTINUATION.

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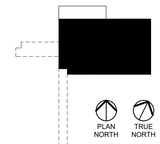
NATHANIEL C. MITALER — STATE OF MICHIGAN — LICENSED PROFESSIONAL ENGINEER — No. 51101
10/17/2025

KEY PLAN



REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 5 MECHANICAL PIPING PLAN

SHEET NO.
M-205

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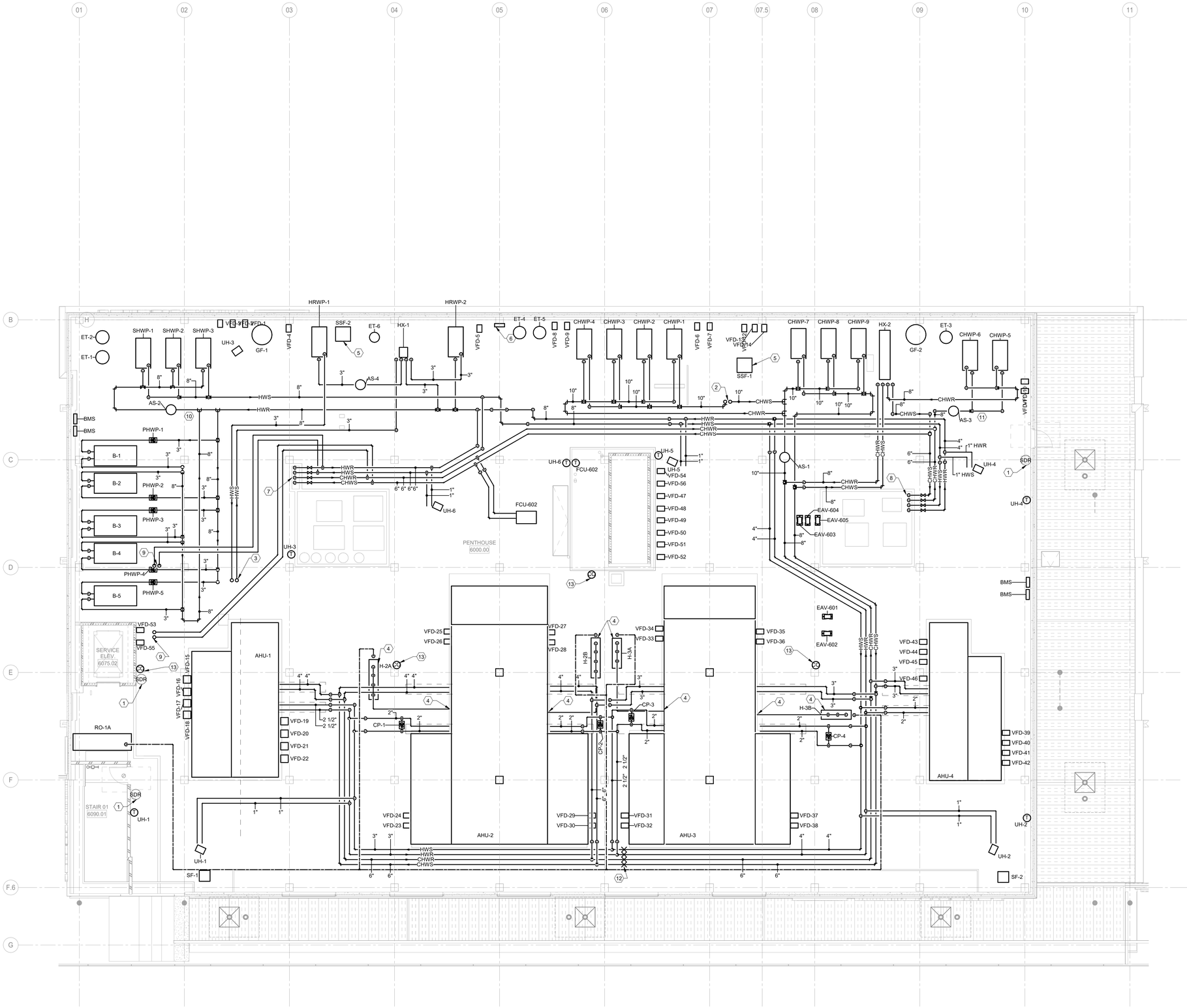

1 PENTHOUSE MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:42:13 PM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES

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6. ALL HOT WATER HEATING SUPPLY AND RETURN BRANCH RUN-OUT PIPING SHALL BE 3/4" UNLESS OTHERWISE NOTED ON DRAWING. **[CONFIRM IF APPLICABLE]**
7. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
8. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC. COORDINATE THE RATING OF THE ACCESS PANEL TO MAINTAIN THE OVERALL RATING OF THE ASSEMBLY.
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10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

SHEET KEY NOTES:

1. REMOTE EMERGENCY SWITCH FOR BOILER AND HUMIDIFIER SHUTDOWN. PROVIDE LABEL "BOILER / HUMIDIFIER EMERGENCY SHUTDOWN SWITCH".
2. 10" PIPING UP TO ROOF. REFER TO SHEET M-207 FOR CONTINUATION.
3. 3" PIPING UP TO ROOF. REFER TO SHEET M-207 FOR CONTINUATION.
4. PROVIDE FLUID COOLER FOR STEAM DRAIN LINE.
5. SIDE STREAM FILTRATION.
6. CHILLER OPTIMIZATION CONTROL PANEL.
7. 6" CHWR AND CHWS DOWN TO FLOOR BELOW. 6" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-205 FOR CONTINUATION.
8. 6" CHWR AND CHWS DOWN TO FLOOR BELOW. 4" HWR AND HWS DOWN TO FLOOR BELOW. REFER TO SHEET M-205 FOR CONTINUATION.
9. PIPING UP. REFER TO SHEET M-207 FOR CONTINUATION.
10. PROVIDE COLD WATER MAKE UP CONNECTION TO HEATING WATER SYSTEM IN THIS GENERAL LOCATION.
11. PROVIDE COLD WATER MAKE UP CONNECTION TO CHILLED WATER SYSTEM IN THIS GENERAL LOCATION.
12. PROVIDE PIPE ANCHORS IN THIS GENERAL LOCATION.
13. PROVIDE CO DETECTION. ALARM TO PROVIDE AUDIBLE ALARM IN THE SPACE. SENSOR SHALL BE CONNECTED TO BMS AND PROVIDE ALARM TO BMS.

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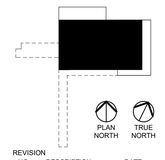
NATHANIEL C. STALKER — STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER — No. 51101

9/25/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
PENTHOUSE MECHANICAL PIPING PLAN

SHEET NO.
M-206

OSBORN ENGINEERING
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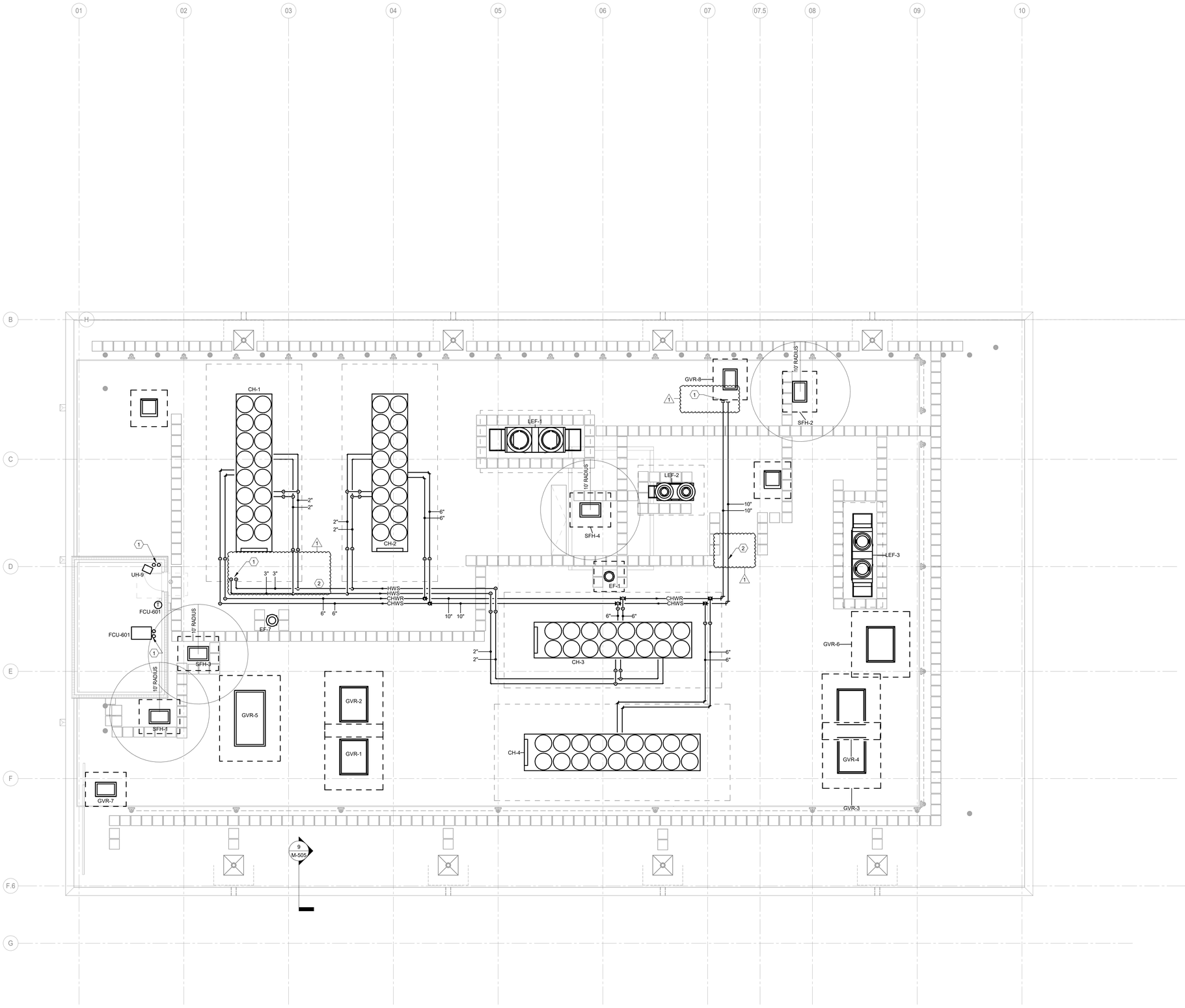

1 ROOF MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

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10. CONTRACTOR TO COORDINATE AND VERIFY THERMOSTAT LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION.
11. SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE AND/OR SMOKE BARRIERS.

(#) SHEET KEY NOTES:

1. PIPING DOWN. REFER TO SHEET M-206 FOR CONTINUATION.
2. PROVIDE HEAT TRACE ON ALL EXTERIOR PIPING.

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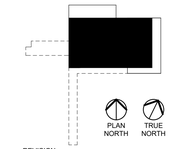
STATE OF MICHIGAN
NATHANIEL C. STALKER
LICENSED
No. 61101
REGISTERED PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ROOF MECHANICAL PIPING PLAN

SHEET NO.
M-207

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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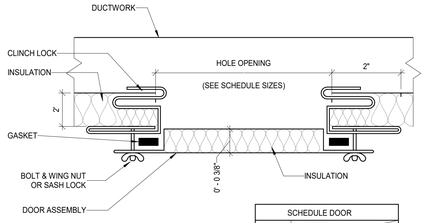
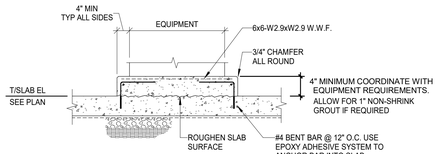


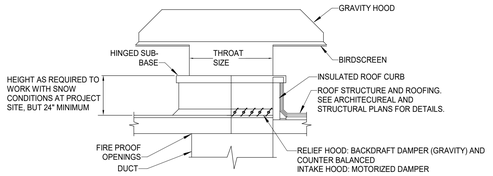
SCHEDULE DOOR		
DUCT SIZE	WIDTH	HEIGHT
8" TO 12"	12"	7"
14" TO 18"	16"	10"
20" TO UP	16"	16"

4 DUCT ACCESS PANEL DETAIL
SCALE: NONE



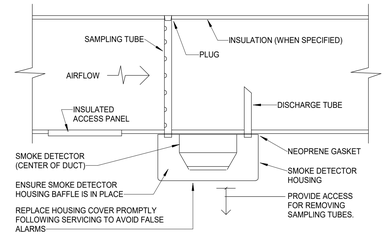
NOTES:
1. ALL CONCRETE SHALL HAVE A MIN. COMPRESSION STRENGTH OF 4000 PSI AT 28 DAYS.
2. ALL CONCRETE & REINFORCING STEEL SHALL BE FURNISHED, FABRICATED AND INSTALLED IN ACCORDANCE WITH THE ACI STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCE CONCRETE (ACI 318-83)

3 INDOOR EQUIPMENT CONCRETE PAD
SCALE: NONE



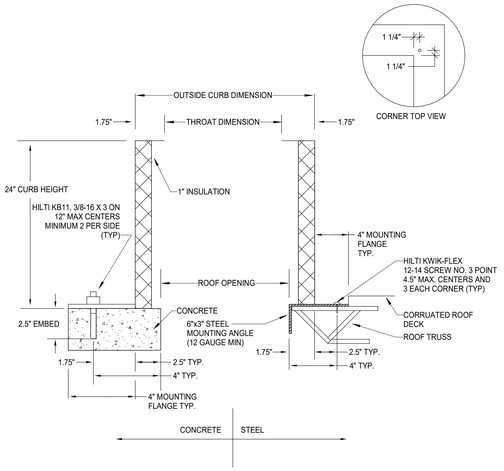
NOTE:
CURB TO BE DESIGNED WITH BOTTOM TO FOLLOW ROOF SLOPE WITHOUT SHIMS, AND SUPPORT HOOD LEVEL.

2 GRAVITY INTAKE/RELIEF HOOD
SCALE: NONE

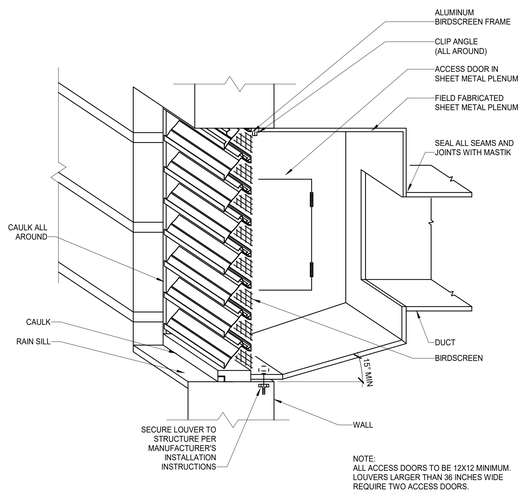


NOTES:
1. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. NEW SMOKE DETECTOR TO BE FURNISHED BY ELECTRICAL (DIVISION 16) AND MOUNTED IN DUCTS BY MECHANICAL (DIVISION 15).
3. SAMPLING TUBE MUST BE INSTALLED ACROSS GREATEST DUCT DIMENSION.
4. WHERE DUCT ASPECT RATIO IS GREATER THAN 3 TO 1, INSTALL SAMPLING AND DISCHARGE TUBES IN THE LONG DIMENSION.
5. PROVIDE WITH WEATHERPROOF COVER FOR EXTERIOR MOUNTING WHERE REQUIRED.

1 DUCT SMOKE DETECTOR DETAIL
SCALE: NONE

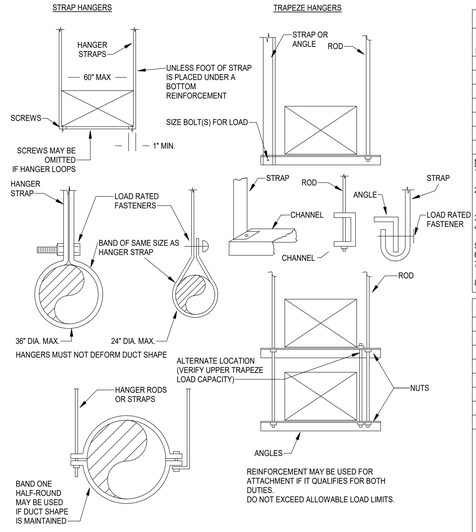


7 FAN CURB ANCHOR DETAIL
SCALE: NONE



NOTE:
ALL ACCESS DOORS TO BE 12X12 MINIMUM. LOUVERS LARGER THAN 36 INCHES WIDE REQUIRE TWO ACCESS DOORS.

6 EXTREME WEATHER PLENUM
SCALE: NONE



5 LOWER HANGER ATTACHMENTS
SCALE: NONE

RECTANGULAR DUCT HANGER SCHEDULE

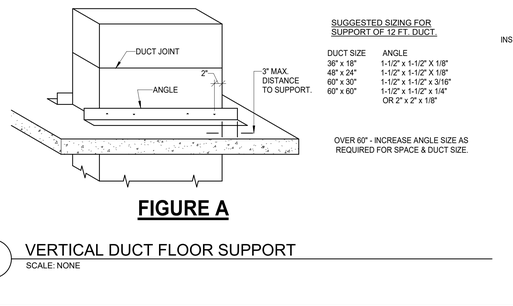
HALF OF DUCT PERIMETER	PAIR AT 10FT SPACING		PAIR AT 8FT SPACING		PAIR AT 5FT SPACING		PAIR AT 4FT SPACING	
	STRAP	ROD	STRAP	ROD	STRAP	ROD	STRAP	ROD
P/2≤30"	1"x22 GA	1/4"	1"x22 GA	1/4"	1"x22 GA	1/4"	1"x22 GA	1/4"
P/2≤72"	1"x18 GA	3/8"	1"x20 GA	1/4"	1"x22 GA	1/4"	1"x22 GA	1/4"
P/2≤96"	1"x16 GA	3/8"	1"x18 GA	3/8"	1"x20 GA	3/8"	1"x22 GA	1/4"
P/2≤120"	1.5"x16 GA	1/2"	1"x16 GA	3/8"	1"x18 GA	3/8"	1"x20 GA	1/4"
P/2≤168"	1.5"x16 GA	1/2"	1.5"x16 GA	1/2"	1"x16 GA	3/8"	1"x18 GA	3/8"
P/2≤192"	N/A	1/2"	1.5"x16 GA	1/2"	1"x16 GA	3/8"	1"x16 GA	3/8"
P/2>192"	SPECIAL ANALYSIS REQUIRED							

NOTES:
1. SCHEDULE CREATED FROM SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", FOURTH EDITION - 2020. SMACNA REQUIREMENTS GOVERN.
2. TABLE ALLOWS FOR TYPICAL DUCT WEIGHT WITH NORMAL REINFORCEMENT AND JOINTS, 1 LB/SF INSULATION WEIGHT, AND TRAPEZE WEIGHT, BUT NO EXTERNAL LOADS. IF HEAVIER DUCTS ARE TO BE INSTALLED (SUCH AS DOUBLE-WALL OR DENSE INSULATIONS), ADJUST HANGER SIZES TO BE WITHIN THEIR LOAD LIMITS.
3. STRAPS ARE TO BE GALVANIZED STEEL.
4. ALLOWABLE LOADS FOR P/2 ASSUME THAT DUCTS ARE 16 GA MAX., EXCEPT THAT WHEN MAXIMUM DUCT DIMENSION (W) IS OVER 60", THEN P/2 MAX. IS 1.25W.
5. WIRE IS AN APPROVED HANGER ON FLOORS 1, 2, 3, 4, AND 5.
6. STRAP AND ROD SIZES ARE MINIMUM ALLOWABLE.
7. FOR UPPER ATTACHMENTS, LOWER ATTACHMENTS, TRAPEZE SIZES, AND ROD/STRAP ALLOWABLE LOADS, SEE SMACNA MANUAL.
8. WIRE IS AN APPROVED HANGER WITHIN MECHANICAL ROOM ON DUCTWORK WITH A PERIMETER OF LESS THAN 120".

ROUND DUCT HANGER SCHEDULE

DIAMETER	MAX. SPACING	ROD	STRAP	
10" & DN	12'	1/4"	1" x 22" GA.	
11"-18"	12'	1/4"	1" x 22" GA.	
19"-24"	12'	1/4"	1" x 22" GA.	
25"-36"	12'	3/8"	1" x 20" GA.	
37"-50"	12'	TWO(2) 3/8"	TWO(2) 1" x 20 GA.	
51"-60"	12'	TWO(2) 3/8"	TWO(2) 1" x 18 GA.	
61"-84"	12'	TWO(2) 3/8"	TWO(2) 1" x 16 GA.	

NOTES:
1. SCHEDULE CREATED FROM SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", FOURTH EDITION - 2020.
2. TALE ALLOWS FOR CONVENTIONAL WALL THICKNESS, AND JOINT SYSTEMS PLUS 1 LB/SF INSULATION WEIGHT. IF HEAVIER DUCTS ARE TO BE INSTALLED, ADJUST HANGER SIZES TO BE WITHIN THEIR LOAD LIMITS.
3. HANGER SPACING MAY BE ADJUSTED BY SPECIAL ANALYSIS.
4. STRAPS ARE TO BE GALVANIZED STEEL. WIRE IS NOT AN APPROVED HANGER.
5. STRAP AND ROD SIZES ARE MINIMUM ALLOWABLE.
6. FOR UPPER ATTACHMENTS, LOWER ATTACHMENTS, TRAPEZE SIZES, AND ROD/STRAP ALLOWABLE LOADS, SEE SMACNA MANUAL.



SUGGESTED SIZING FOR SUPPORT OF 12 FT. DUCT.

DUCT SIZE	ANGLE
36" x 18"	1-1/2" x 1-1/2" X 1/8"
48" x 24"	1-1/2" x 1-1/2" X 1/8"
60" x 30"	1-1/2" x 1-1/2" x 3/16"
60" x 60"	1-1/2" x 1-1/2" x 1/4" OR 2" x 2" x 1/8"

OVER 60" - INCREASE ANGLE SIZE AS REQUIRED FOR SPACE & DUCT SIZE.

FIGURE A

11 VERTICAL DUCT FLOOR SUPPORT
SCALE: NONE

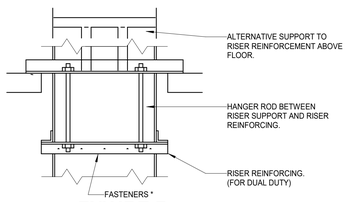


FIGURE B

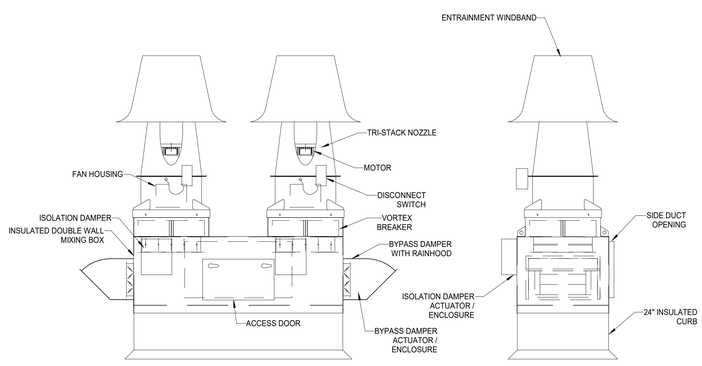
* MINIMUM NUMBER OF FASTENERS ON EACH OF TWO SUPPORT BARS.

LARGEST DUCT DIM.	MINIMUM NUMBER OF FASTENERS.
16" AND DOWN	2
17" THRU 24"	3
OVER 24"	LARGEST DUCT DIM. DIVIDED BY 8

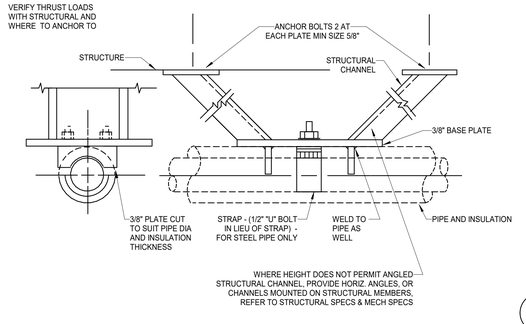
LOCATE A FASTENER WITHIN 2" OF THE DUCT EDGES.
LOCATE OTHERS AT EVENLY SPACED INTERVALS.

PLAN VIEW

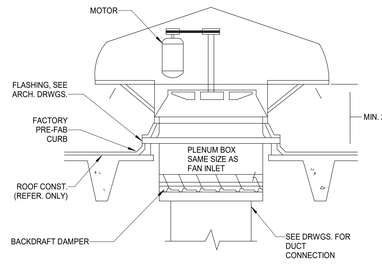
10 ROOF MOUNTED HIGH PLUME EXHAUST FAN
SCALE: NONE



9 PIPE ANCHOR
SCALE: NONE



PIPE SIZE	BOLT SIZE	STRAP STOCK SIZE
1/2"-3/4"	5/16"	1/8" X 1"
1"-1-1/4"	3/8"	1/8" X 1-1/4"
1-1/2"-3-1/2"	3/8"	3/16" X 1-1/4"
4"	1/2"	1/4" X 1-1/4"



8 ROOF MOUNTED EXHAUST FAN
SCALE: NONE

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9/25/2025

REVISION

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HKS PROJECT NUMBER
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SHEET TITLE
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SHEET NO.
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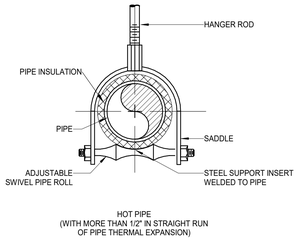
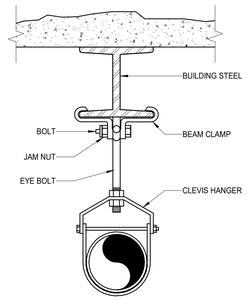
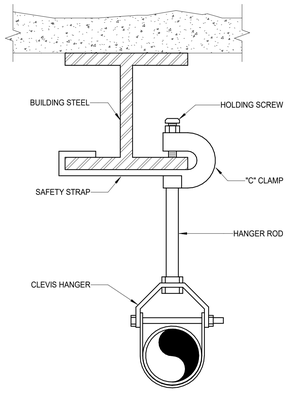


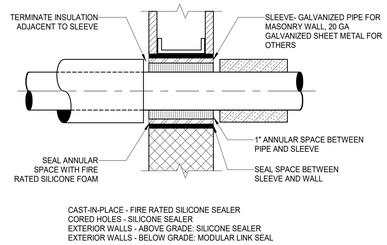
4 INSULATED PIPE HANGER WITH SADDLE
SCALE: NONE



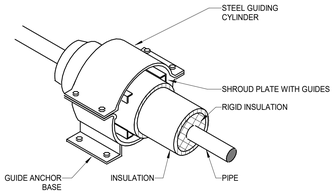
3 HANGER FROM STEEL - PIPES 6" & LARGER
SCALE: NONE



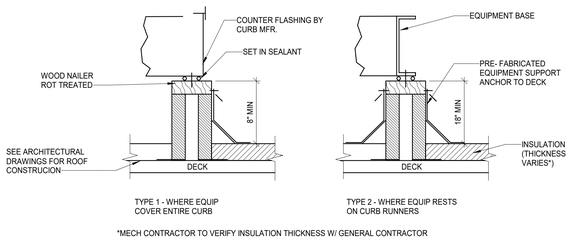
2 HANGER FROM STEEL - PIPES 4" & SMALLER
SCALE: NONE



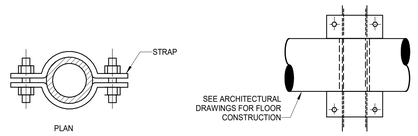
1 PIPE WALL SLEEVE
SCALE: NONE



8 PIPE GUIDE FOR INSULATED PIPE
SCALE: NONE

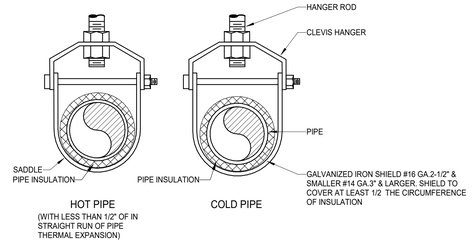


7 ROOF MOUNTED EQUIPMENT SUPPORTS
SCALE: NONE

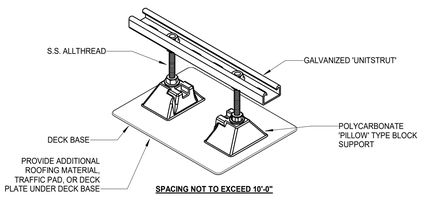


PIPE SIZE	BOLT	STRAP
1/2" THRU 1"	3/8"	1-1/4" X 3/16"
1-1/4" THRU 3"	3/8"	1-1/4" X 1/4"
4"	1/2"	1-1/2" X 1/4"
5" & 6"	1/2"	2" X 1/4"
8"	5/8"	2" X 3/8"
10" THRU 14"	5/8"	2" X 1/2"

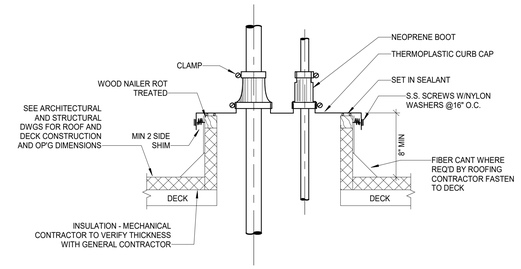
6 PIPE RISER ANCHOR
SCALE: NONE



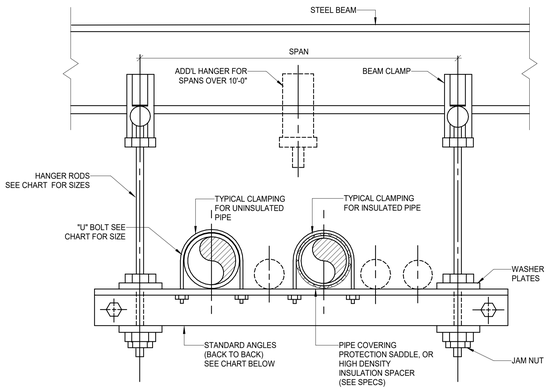
5 INSULATED PIPE CLEVIS HANGER
SCALE: NONE



11 ROOF MOUNTED PIPE SUPPORT
SCALE: NONE



10 ROOF CURB WITH PIPE PENETRATIONS
SCALE: NONE



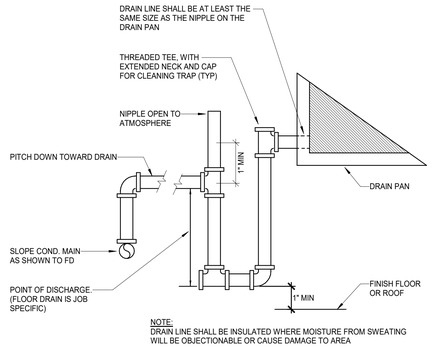
ANGLE SIZING FOR SPANS UP TO 10' (LOAD EQUALLY DISTRIBUTED)		
LOAD ON TRAPEZE (LB)	ANGLE SIZE (BACK TO BACK)	HANGER ROD SIZE
0-500	1-1/2" X 1-1/2" X 1/4"	3/8"∅
600-1200	2" X 2" X 1/4"	1/2"∅
1300-2000	2-1/2" X 2-1/2" X 1/4"	5/8"∅

PIPE SIZE	"U" BOLT SIZE
UP TO 1"∅	1/4"∅
1-1/4"∅ TO 4"∅	3/8"∅
6"∅ TO 10"∅	5/8"∅
12"∅	3/4"∅

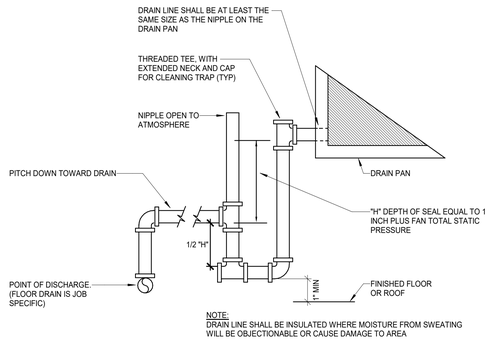
NOTE: 1. BOLT ANGLES TOGETHER AT EACH HANGER WITH BOLTS THE SAME SIZE AS THE HANGER RODS.

2. USE ROLLER CHAIR UNDER HOT PIPING WITH MORE THAN 1/2" THERMAL EXPANSION.

9 TRAPEZE PIPE HANGER
SCALE: NONE



13 CONDENSATE TRAP - BLOW-THRU
SCALE: NONE



12 CONDENSATE TRAP - DRAW-THRU
SCALE: NONE

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DETROIT, MI 48226

STATE OF MICHIGAN — NATHANIEL C. STALKER — ENGINEER — No. 51101 — REGISTERED PROFESSIONAL ENGINEER

9/25/2025

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL DETAILS

SHEET NO.
M-502

OSBORN ENGINEERING
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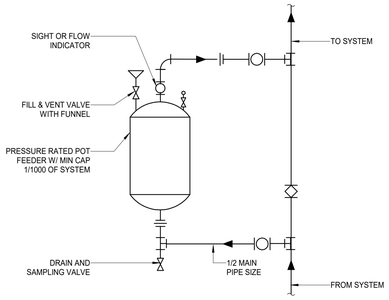
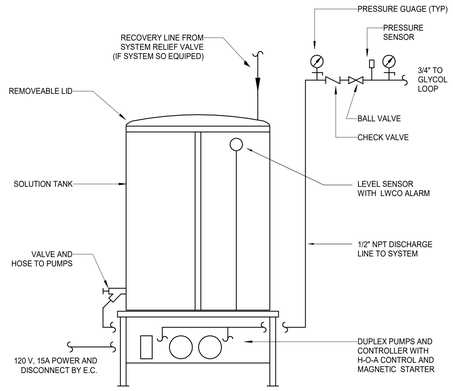
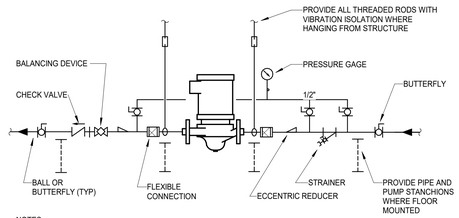


4 CHEMICAL POT FEEDER PIPING
SCALE: NONE



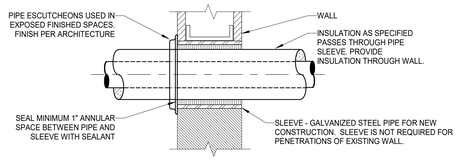
3 GLYCOL PUMP PACKAGE DETAIL
SCALE: NONE



NOTES:

1. SUPPORT PUMP FROM PIPING ONLY. DO NOT SUPPORT PUMP FROM MOTOR.
2. PROVIDE VIBRATION ISOLATION PER PUMP MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.

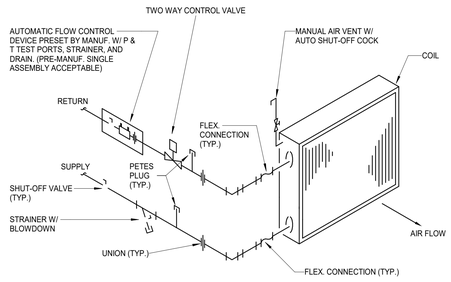
2 INLINE PUMP
SCALE: NONE



NOTES:

1. FOR UNINSULATED PIPING ALL OTHER ELEMENTS OF THIS DETAIL APPLY.
2. FOR PENETRATION THROUGH RATED SLAB FOLLOW MANUFACTURERS UL LISTED DETAIL, 3M, TREMCO, HILTI OR EQUAL.

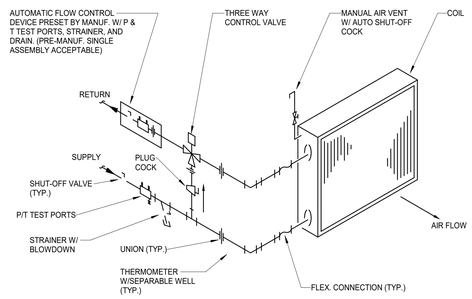
1 PIPE WALL SLEEVE
SCALE: NONE



NOTES:

1. PROVIDE (4 x DIA.) OF STRAIGHT PIPE ON BOTH SIDES OF BALANCING VALVE
2. ALL COMPONENTS FULL LINE SIZE UNLESS NOTED OTHERWISE
3. LOCATE UNIONS TO ALLOW FOR COIL PULL

8 2-WAY COIL PIPING DIAGRAM
SCALE: NONE



NOTES:

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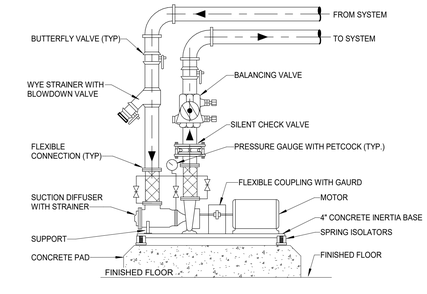
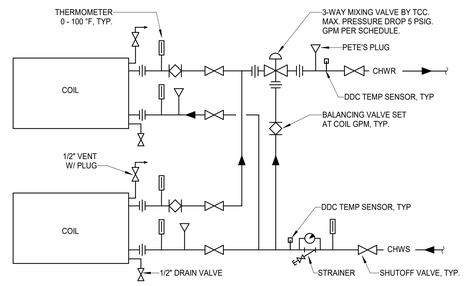
3. LOCATE UNIONS TO ALLOW FOR COIL PULL

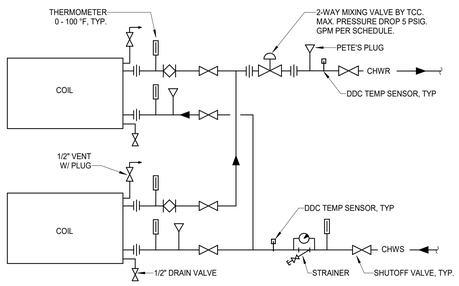
7 3-WAY COIL PIPING DIAGRAM
SCALE: NONE



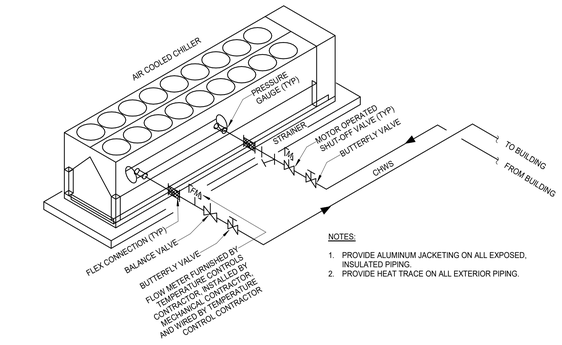
6 END SUCTION PUMP
SCALE: NONE



5 3-WAY WATER COIL - DUAL COILS
SCALE: NONE



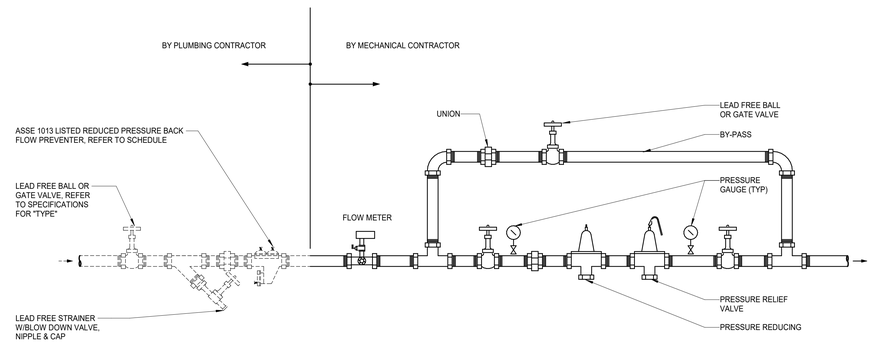
11 2-WAY WATER COIL - DUAL COILS
SCALE: NONE



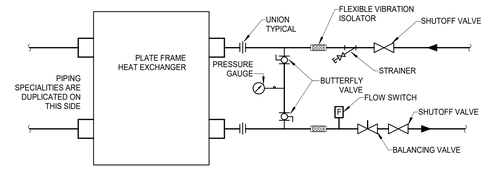
NOTES:

1. PROVIDE ALUMINUM JACKETING ON ALL EXPOSED, INSULATED PIPING.
2. PROVIDE HEAT TRACE ON ALL EXTERIOR PIPING.

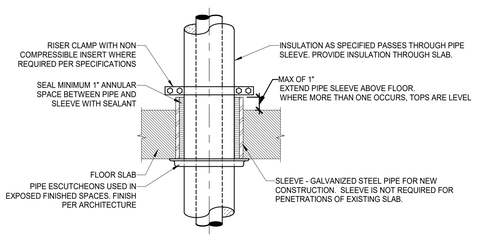
10 AIR COOLED CHILLER PIPING
SCALE: NONE



9 MECHANICAL MAKE-UP WATER ASSEMBLY
SCALE: NONE



14 HEAT EXCHANGER PIPING DETAIL
SCALE: NONE



NOTES:

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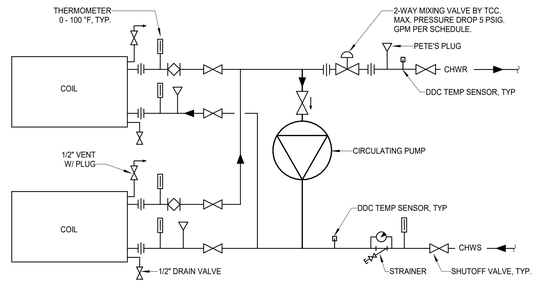
2. FOR PENETRATION THROUGH RATED SLAB FOLLOW MANUFACTURERS UL LISTED DETAIL, 3M, TREMCO, HILTI OR EQUAL.

13 PIPE FLOOR SLEEVE
SCALE: NONE



12 2-WAY WATER COIL - DUAL COILS
SCALE: NONE

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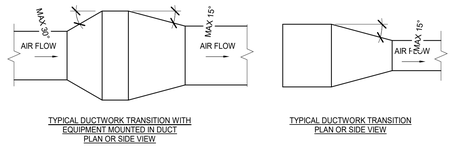
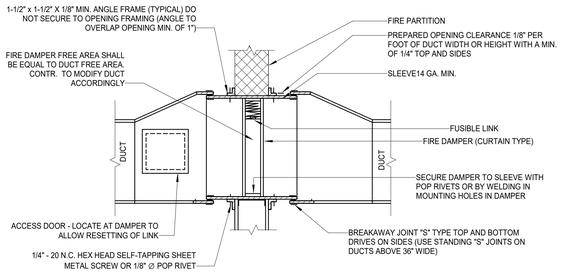


TYPICAL DUCTWORK TRANSITION WITH EQUIPMENT MOUNTED IN DUCT PLAN OR SIDE VIEW

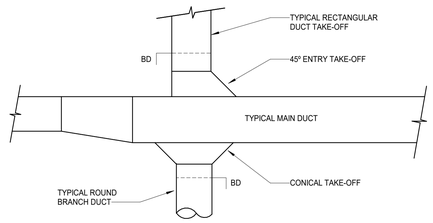
TYPICAL DUCTWORK TRANSITION PLAN OR SIDE VIEW

NOTE:
UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.

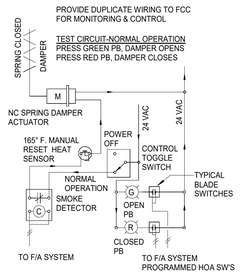
3 DUCT TRANSITIONS
SCALE: NONE



2 TYPICAL BRANCH DUCT TAKE-OFF
SCALE: NONE



1 FIRE/SMOKE DAMPER CONTROL
SCALE: NONE



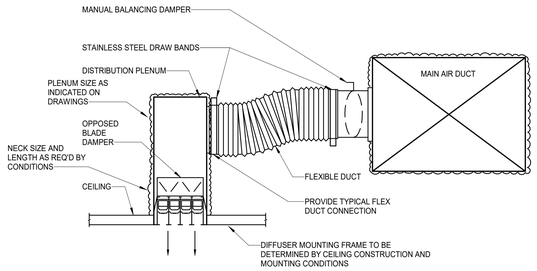
MAIN TERMINAL BUILDING

SEQUENCE OF OPERATION-TYPICAL ZONE

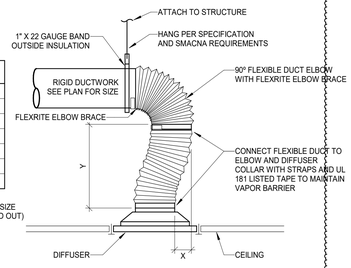
1. ACTIVATING ANY FIRE ALARM DEVICE SHALL CAUSE THE SHUTDOWN OF ALL HVAC SYSTEMS IN CORRESPONDING ZONE. ALL HVAC SYSTEMS ARE NOT A PART OF THE POST-FIRE SMOKE PURGE SYSTEM
2. ALL COMBINATION FIRE AND SMOKE DAMPERS (FSD) ON ZONE OF ALARM SHALL CLOSE UNDER GENERAL ALARM.
3. CONTROL OF THE ENTIRE SYSTEM SHALL BE TRANSFERRED TO THE FIRE ALARM SYSTEM FOR "SMOKE CONTROL".
4. AN ELECTRICAL SIGNAL FROM THE FIRE ALARM PANEL TO RELAYS SHALL CAUSE THE FOLLOWING TO OCCUR: THE BUILDING IS FULLY SPRINKLERED. IN ALARM, MOTORIZED SMOKE DAMPERS FSD-A SHALL OPEN FIRST, ALL MOTORIZED DOORS SHALL OPEN NEXT AND CORRESPONDING SEF'S AND SSF'S SHALL START.
5. ALL BACK-OF-HOUSE (BOH) HVAC SYSTEMS ARE NOT A PART OF ANY FIRE-SMOKE PURGE SYSTEM
6. ALL FANS SHALL BE PROVIDED WITH VARIABLE FREQUENCY DRIVES WITH FAN SPEED SET-POINTS ESTABLISHEDBY THE TEST & BALANCE CONTRACTOR. UPON FAN ACTIVATION, FAN SPEED SET-POINTS SHALL BE ACHIEVED WITHIN 60 SECONDS.
7. THE BUILDING IS FULLY SPRINKLERED.

GENERAL NOTES
1. ALL CONTROL WIRING MUST BE INSTALLED IN METAL CONDUIT OR AMORED CABLE.

6 HORIZONTAL FIRE DAMPER
SCALE: NONE

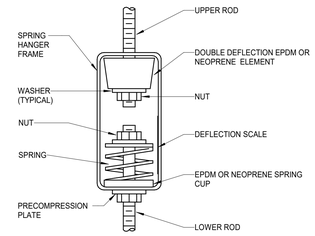


5 DUCT ACCESS DOOR
SCALE: NONE



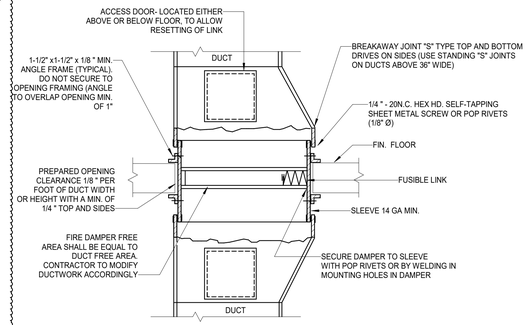
MAXIMUM ALLOWABLE DISTANCES	
"Y"	"X"
0" - 6"	1"
6" - 1'-0"	2"
1'-0" - 1'-6"	3"
1'-6" - 2'-0"	4"
2'-0" - 2'-6"	5"
2'-6" - 3'-0"	6"

NOTE:
FLEXIBLE DUCT, SEE PLAN FOR SIZE
(MAX LENGTH = 3'-0" STRETCHED OUT)



NOTES:
1. THE SPRING SHALL BE PRE-COMPRESSED SO THAT WHEN PROPERLY INSTALLED AND LOADED, THE SPRING IS ADJUSTED TO THE MIDPOINT OF THE DEFLECTION SCALE.
2. REFER TO THE SPECIFICATIONS FOR THE DEFLECTION REQUIREMENTS.

4 RETURN & EXHAUST AIR GRILL
SCALE: NONE

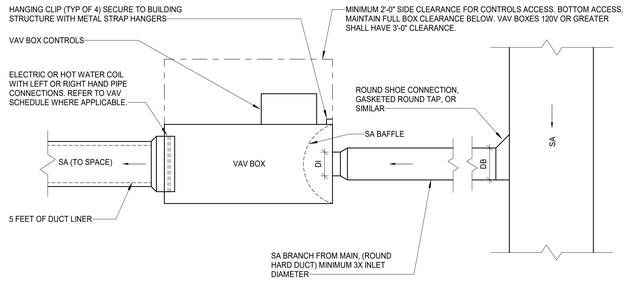


10 LINEAR DIFFUSER - VERTICAL CONFIGURATION
SCALE: NONE

9 ROUND DUCT & DIFFUSER CONNECTION
SCALE: NONE

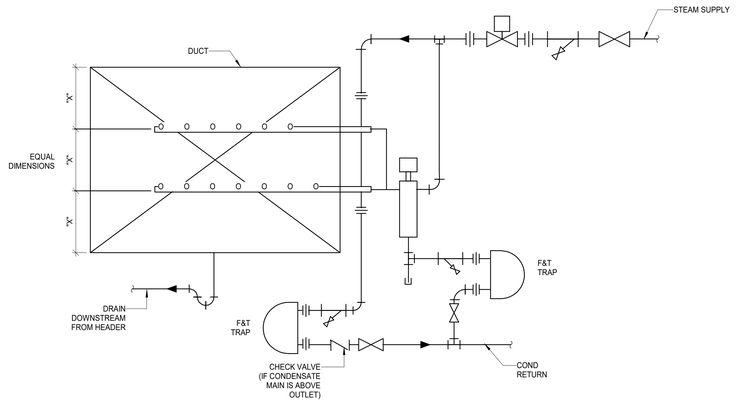
8 SPRING ISOLATED HANGER FOR PIPE OR EQUIPMENT
SCALE: NONE

7 VERTICAL FIRE DAMPER
SCALE: NONE

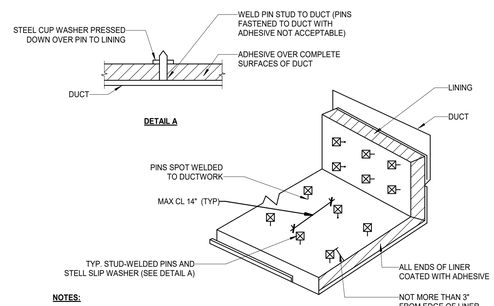


NOTES:
1. WHEN BRANCH DUCT TO AIR TERMINAL UNIT EXCEEDS 15' OR HAS TWO OR MORE ELBOWS, THEN DB = DI +2", OTHERWISE DB = DI.
2. DI = THE INLET SIZE CONNECTION OF THE AIR TERMINAL UNIT. SEE PLANS FOR DUCT SIZE.
3. PROVIDE A MINIMUM OF 3 DUCT DIAMETERS (DI) OF STRAIGHT DUCT AT INLET.
4. OFFSETS WITH FLEX DUCT SHALL NOT EXCEED 30° AND SHALL BE GRADUAL. OFFSETS IN EXCESS OF 30° AND SHALL BE HARD DUCTED.
5. FLEX DUCT SHALL NOT HAVE MORE THAN 1/2" SAG.
6. IF INDICATED STRAIGHT RUN CANNOT BE OBTAINED, A FLOW STRAIGHTENER SHALL BE PROVIDED AT BOX.
7. VAV BOX LOCATIONS SHALL BE COORDINATED SO THAT THEY ARE NOT INSTALLED DIRECTLY ABOVE LIGHTS, PIPING, SPRINKLERS, SPEAKERS, DUCTWORK, OR ANYTHING ELSE THAT IMPEDES ACCESS TO THE UNIT

13 SHUT OFF VAV BOX
SCALE: NONE

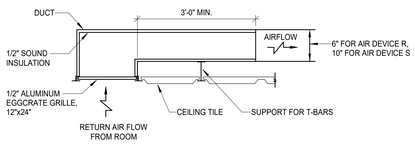


12 MULTI MANIFOLD STEAM HUMIDIFER
SCALE: NONE



NOTES:
1. FOR NOSING, JOINTS AND DETAILS AT DAMPERS AND TURNING VANES SEE SOUND LINING NOSING DETAILS
2. PROVIDE NOT LESS THAN TWO PINS ON EACH FACE TO DUCT.

11 SOUND LINING INSTALLATION
SCALE: NONE



14 RETURN GRILLE SOUND BOOT
SCALE: NONE

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10/17/2025

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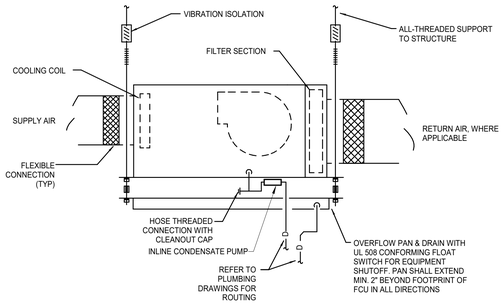
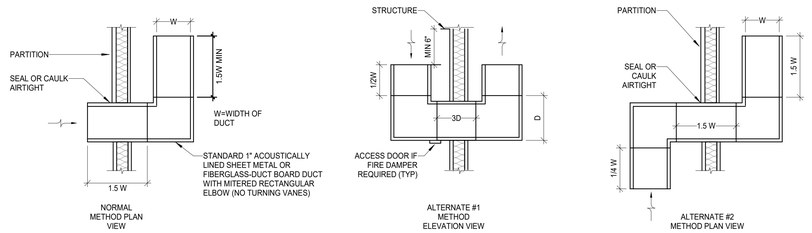
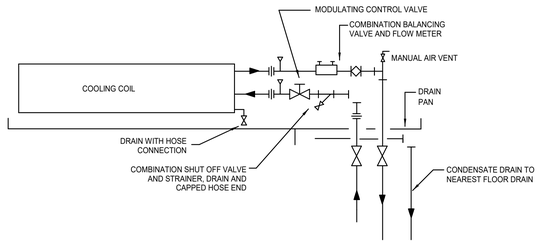


3 FAN COIL DRAIN PAN DETAIL
SCALE: NONE



NOTES:
1. IF PARTITION IS FIRE RATED PROVIDE FIRE RATED DAMPER.
2. IF SIZE NOT SHOWN ON PLANS, SIZE TRANSFER DUCT AT 300 FPM MAXIMUM.
3. REFER TO SPECIFICATIONS FOR LINING TYPE ALLOWED.
4. PROVIDE WIRE MESH SCREEN OVER OPENINGS.
5. SUPPORT DUCT PER SPECIFICATIONS.

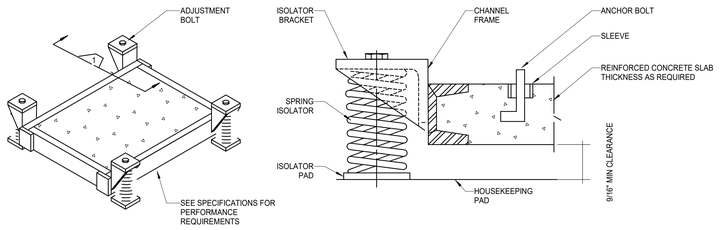
2 TRANSFER DUCT
SCALE: NONE



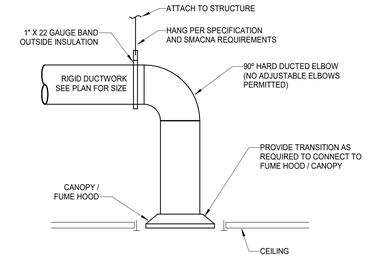
NOTE:

1. PROVIDE LOCAL CONDENSATE PUMP AND PIPING WHERE REQUIRED
2. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS, SERVICING OF FILTERS, VALVES, REMOVAL OF COILS OR OTHER EQUIPMENT

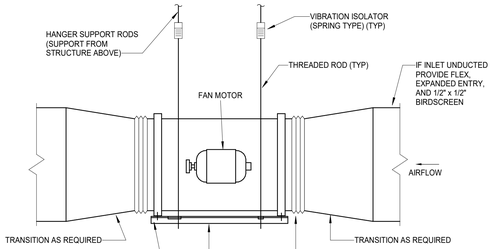
1 FAN COIL UNIT PIPING DETAIL
SCALE: NONE



6 CONCRETE INERTIA PAD
SCALE: NONE



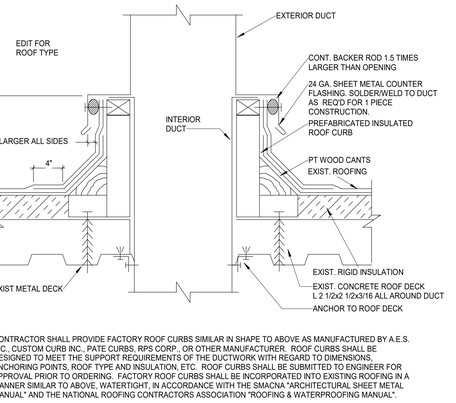
5 ROUND DUCT & HOOD / CANOPY CONNECTION
SCALE: NONE



NOTES:

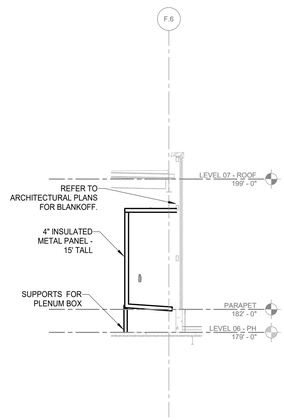
1. PROVIDE ADDITIONAL LATERAL OR AXIAL BRACING IF REQUIRED
2. BELT/DRIVE GUARDS NOT SHOWN FOR CLARITY

4 INLINE CENTRIFUGAL FAN
SCALE: NONE

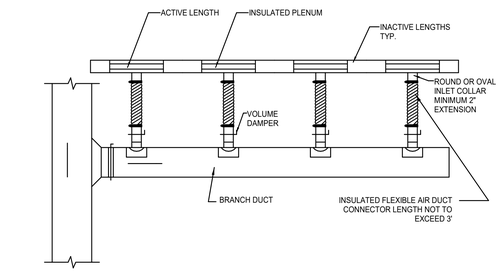


CONTRACTOR SHALL PROVIDE FACTORY ROOF CURBS SIMILAR IN SHAPE TO ABOVE AS MANUFACTURED BY A.E.S. INC., CUSTOM CURB INC., PATE CURBS, RPS CORP., OR OTHER MANUFACTURER. ROOF CURBS SHALL BE DESIGNED TO MEET THE SUPPORT REQUIREMENTS OF THE DUCTWORK WITH REGARD TO DIMENSIONS, ANCHORING POINTS, ROOF TYPE AND INSULATION, ETC. ROOF CURBS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO ORDERING. FACTORY ROOF CURBS SHALL BE INCORPORATED INTO EXISTING ROOFING IN A MANNER SIMILAR TO ABOVE, WATERTIGHT, IN ACCORDANCE WITH THE SMACNA "ARCHITECTURAL SHEET METAL MANUAL" AND THE NATIONAL ROOFING CONTRACTORS ASSOCIATION "ROOFING & WATERPROOFING MANUAL".

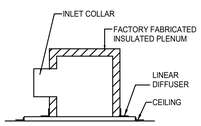
~~10 DUCT THROUGH ROOF PENETRATION DETAIL~~
SCALE: NONE



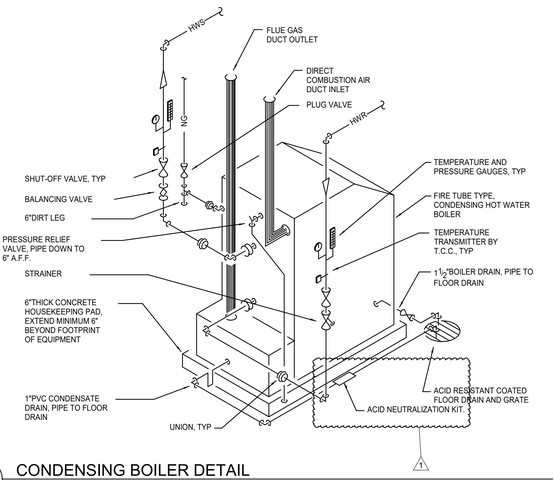
9 OUTSIDE AIR PLENUM
SCALE: 1/8" = 1'-0"



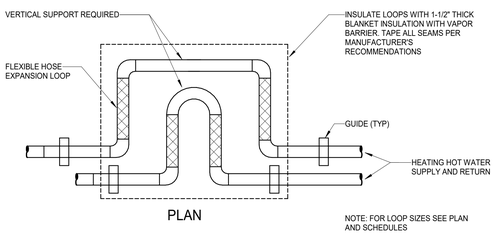
NOTES:
1. COORDINATE SLOT DIFFUSER FRAME/BORDER TYPE AND END BORDER CONFIGURATION WITH CEILING TYPE.
2. FACTORY FABRICATED INSUALTED PLENUM, EXTERNAL INSULATION WRAP ONLY. INTERNALLY LINED PLENUM BOXES NOT ACCEPTABLE.



8 LINEAR SLOT DIFFUSER DETAIL
SCALE: NONE

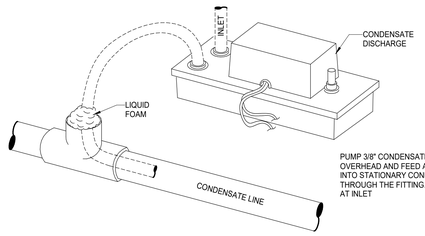


7 CONDENSING BOILER DETAIL
SCALE: NONE



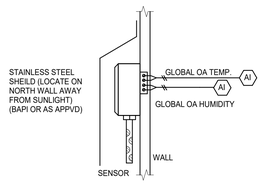
NOTE: FOR LOOP SIZES SEE PLAN AND SCHEDULES

14 HORIZONTAL EXPANSION LOOP
SCALE: NONE

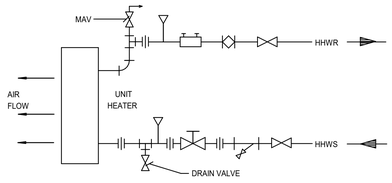


PUMP 3/8" CONDENSATE DISCHARGE OVERHEAD AND FEED APPOXIMATELY 12" INTO STATIONARY CONDENSATE LINE THROUGH THE FITTING. SECURE DISCHARGE AT INLET

13 CONDENSATE PUMP DISCHARGE
SCALE: NONE



12 GLOBAL OA TEMP & HUMIDITY SENSOR
SCALE: NONE



11 HOT WATER UNIT HEATER PIPING DETAIL
SCALE: NONE

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NATHANIEL C. STALKER
ENGINEER
No. 51101
PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL DETAILS

SHEET NO.
M-505

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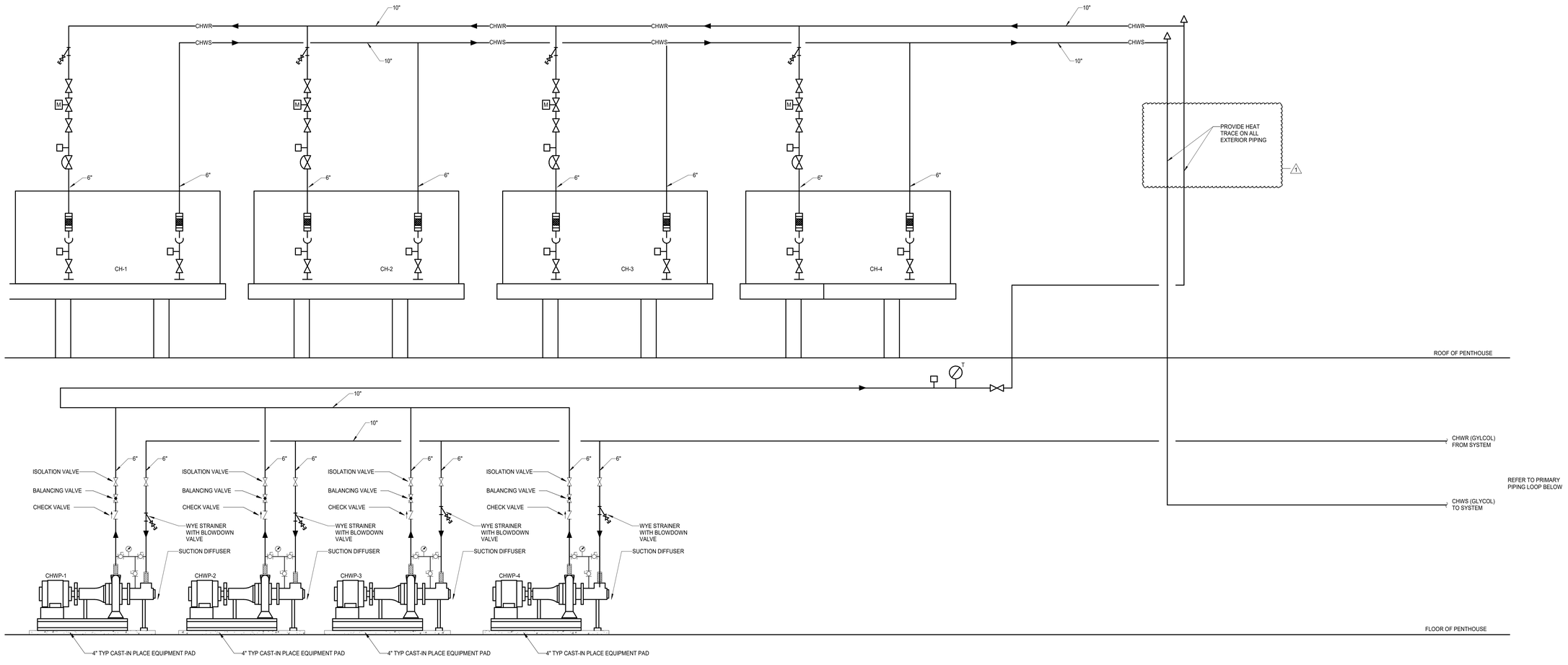

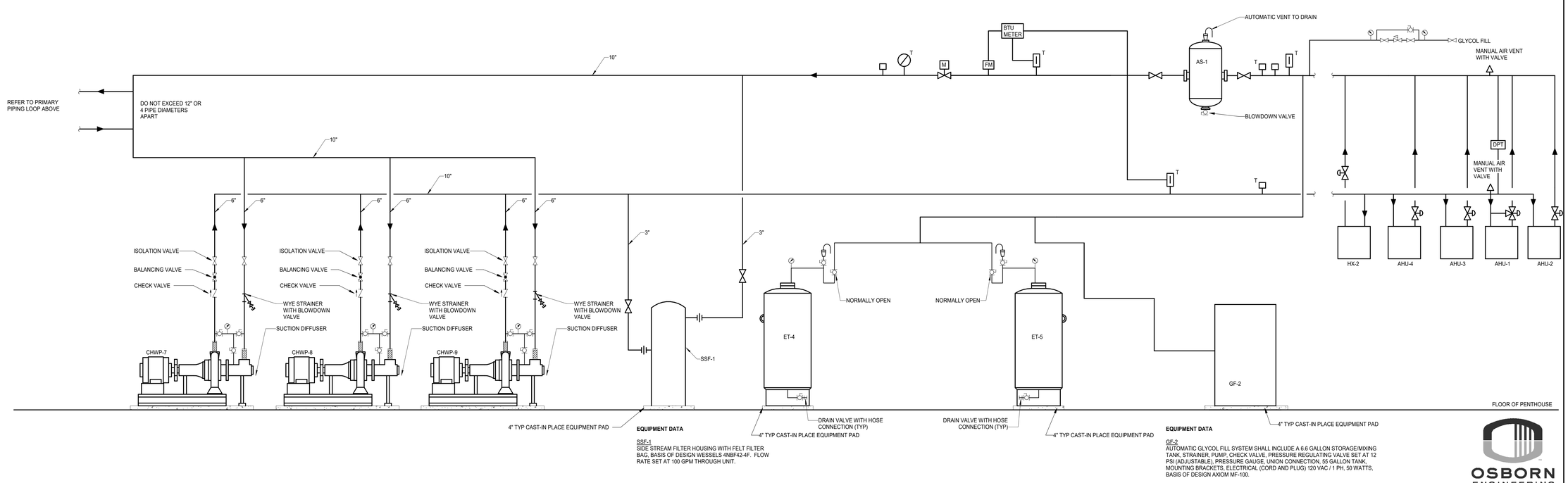

EQUIPMENT DATA

SSF-1
SIDE STREAM FILTER HOUSING WITH FELT FILTER BAG, BASIS OF DESIGN WESSELS 4NBF42-4F. FLOW RATE SET AT 100 GPM THROUGH UNIT.

EQUIPMENT DATA

GF-2
AUTOMATIC GLYCOL FILL SYSTEM SHALL INCLUDE A 6.6 GALLON STORAGE/MIXING TANK, STRAINER, PUMP, CHECK VALVE, PRESSURE REGULATING VALVE SET AT 12 PSI (ADJUSTABLE), PRESSURE GAUGE, UNION CONNECTION, 55 GALLON TANK, MOUNTING BRACKETS, ELECTRICAL (CORD AND PLUG) 120 VAC / 1 PH, 50 WATTS, BASIS OF DESIGN AXIOM MF-100.

1 CHILLED WATER SCHEMATIC
SCALE: NONE

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10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PIPING SCHEMATIC

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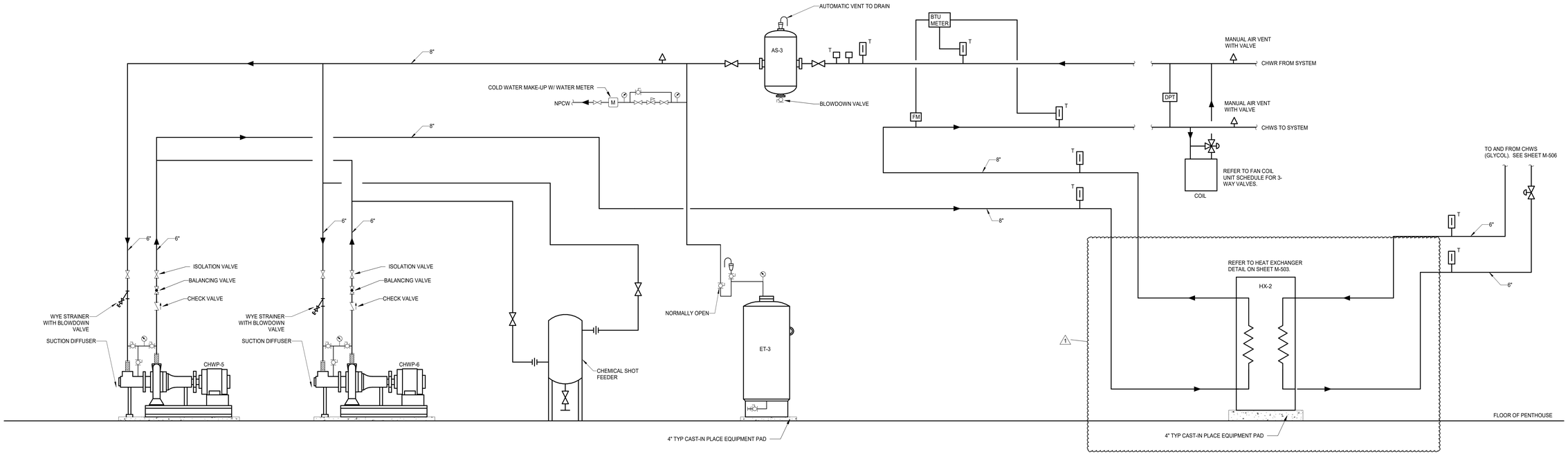

1 CHILLED WATER LOOP
SCALE: NONE

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NATHANIEL C. METALKER — STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER — No. 61101
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PIPING SCHEMATIC

SHEET NO.
M-507

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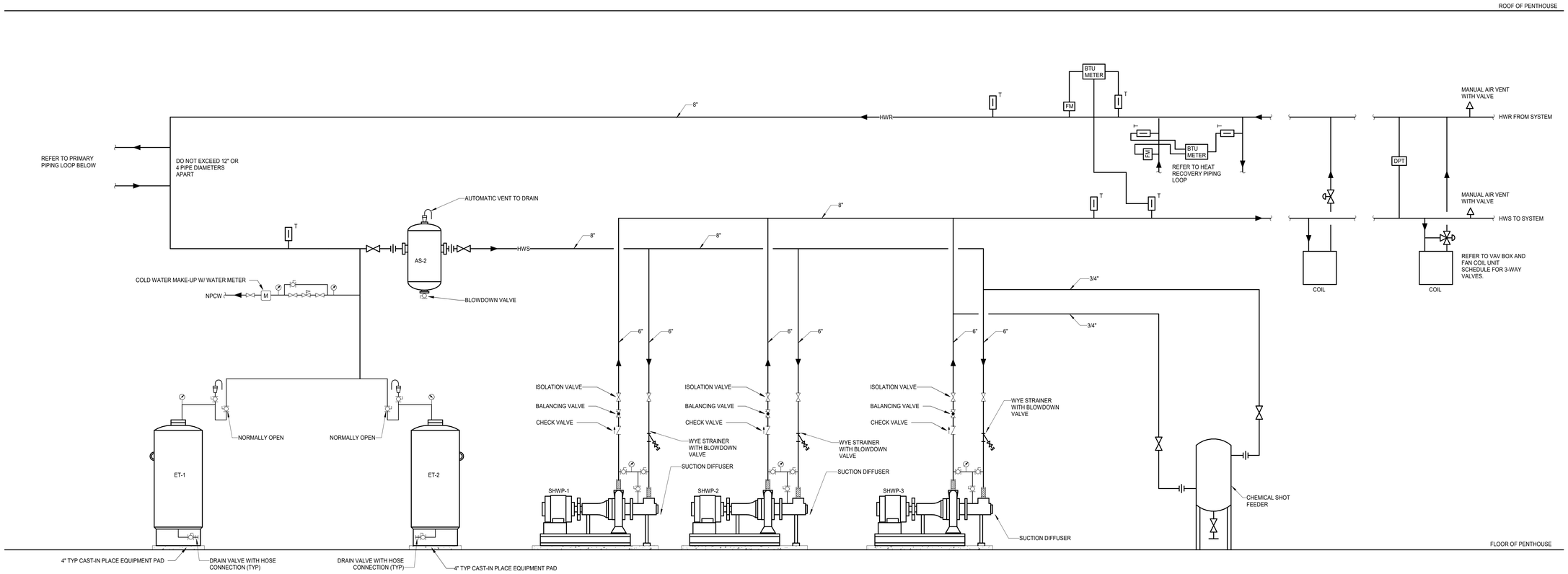

1 HEATING WATER SCHEMATIC

SCALE: NONE

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ENGINEER
No. 51101
PROFESSIONAL ENGINEER

9/25/2025

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

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SHEET TITLE
PIPING SCHEMATIC

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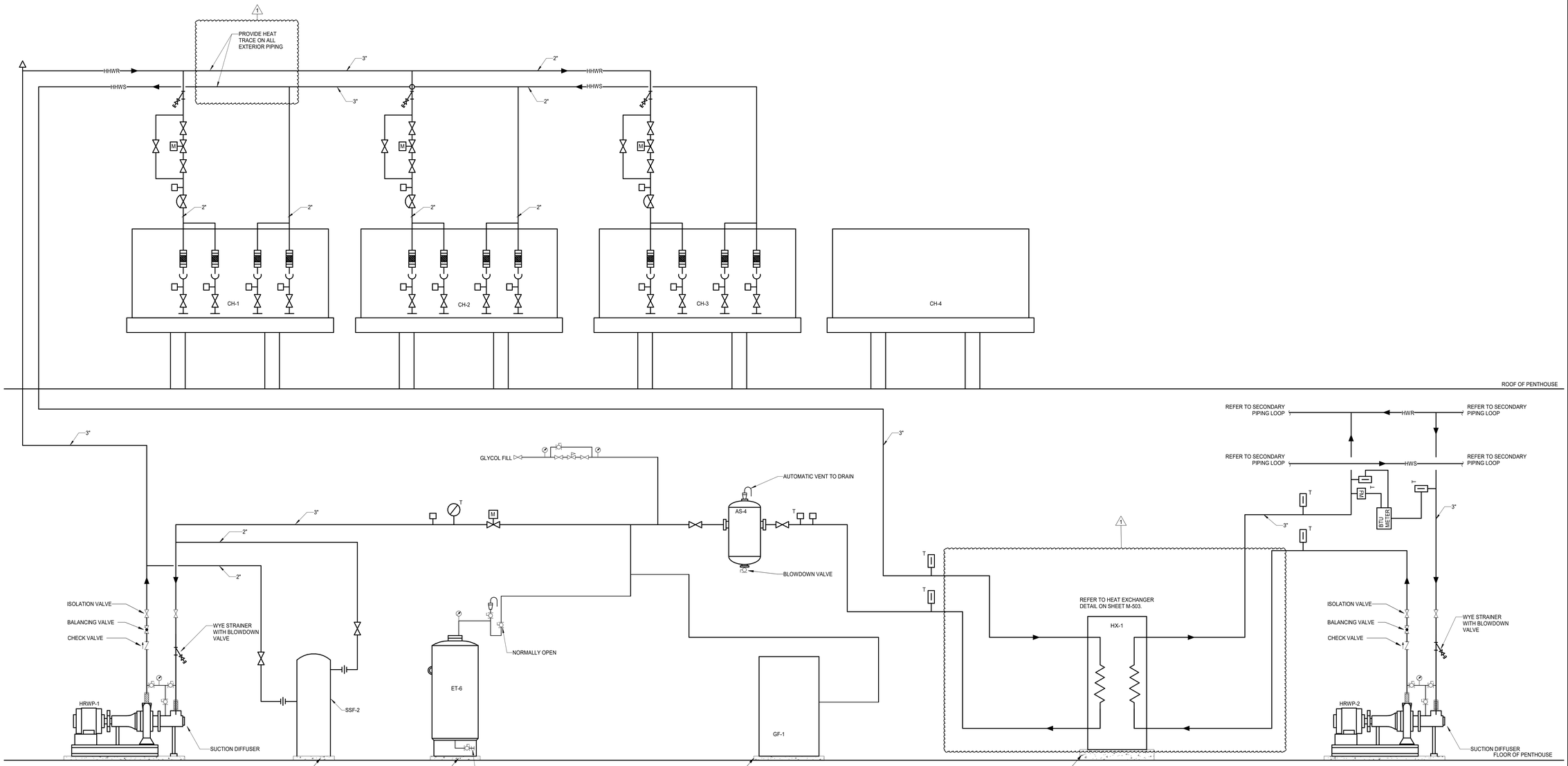

EQUIPMENT DATA

SSF-2
SIDE STREAM FILTER HOUSING WITH FELT FILTER BAG, BASIS OF DESIGN WESSELS 4NBF11-2. FLOW RATE SET AT 20 GPM THROUGH UNIT.

EQUIPMENT DATA

GF-1
AUTOMATIC GLYCOL FILL SYSTEM SHALL INCLUDE A 6.6 GALLON STORAGE/MIXING TANK, STRAINER, PUMP, CHECK VALVE, PRESSURE REGULATING VALVE SET AT 12 PSI (ADJUSTABLE), PRESSURE GAUGE, UNION CONNECTION, 55 GALLON TANK, MOUNTING BRACKETS, ELECTRICAL (CORD AND PLUG) 120 VAC / 1 PH, 50 WATTS, BASIS OF DESIGN AXIOM MF-100.

1 HEAT RECOVERY
SCALE: NONE

HKS

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SHEET TITLE
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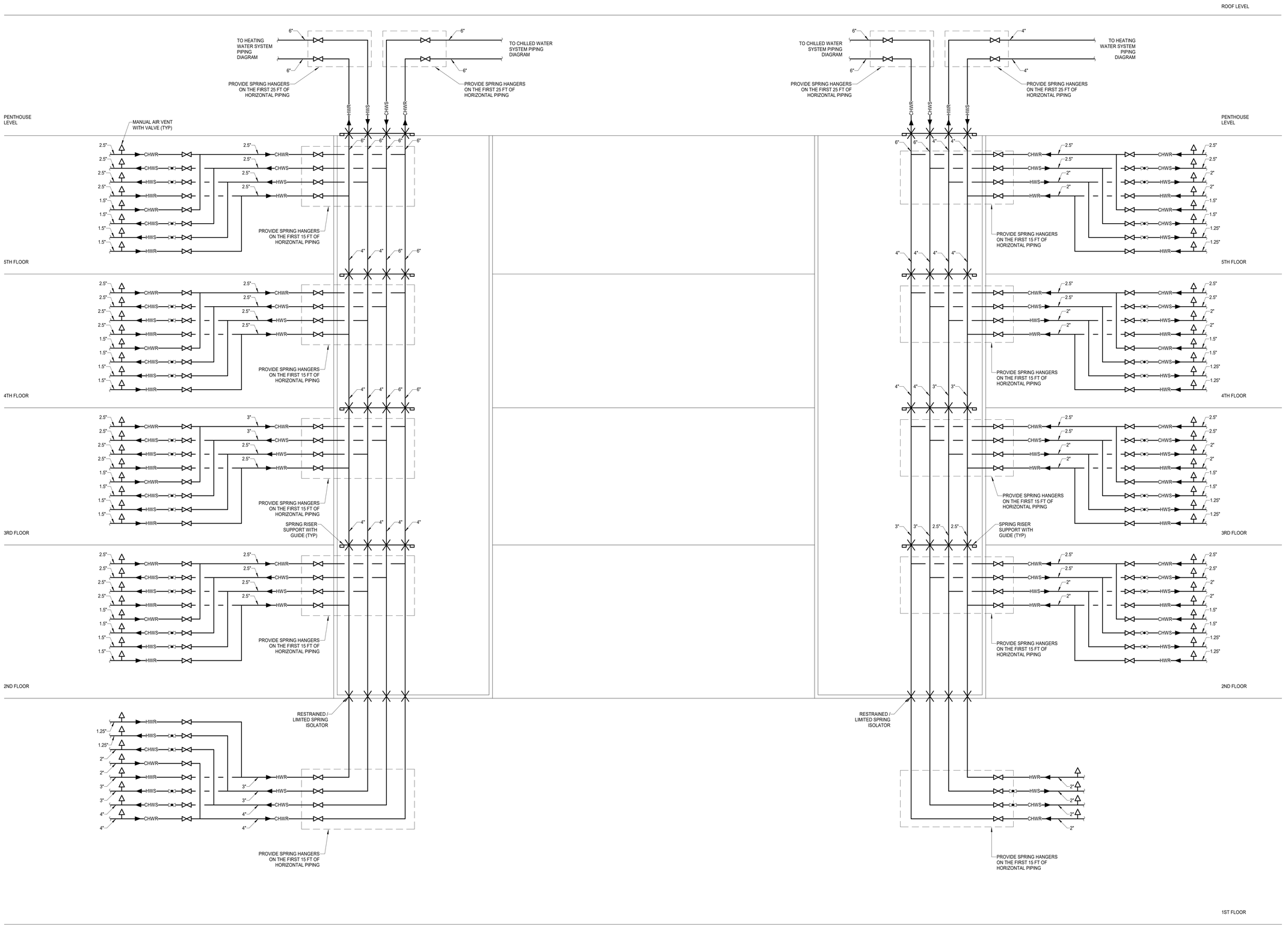

1 CHILLED WATER AND HEATING WATER RISER DIAGRAM
SCALE: NONE

HKS

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9/25/2025

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DATE
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ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PIPING RISER DIAGRAM

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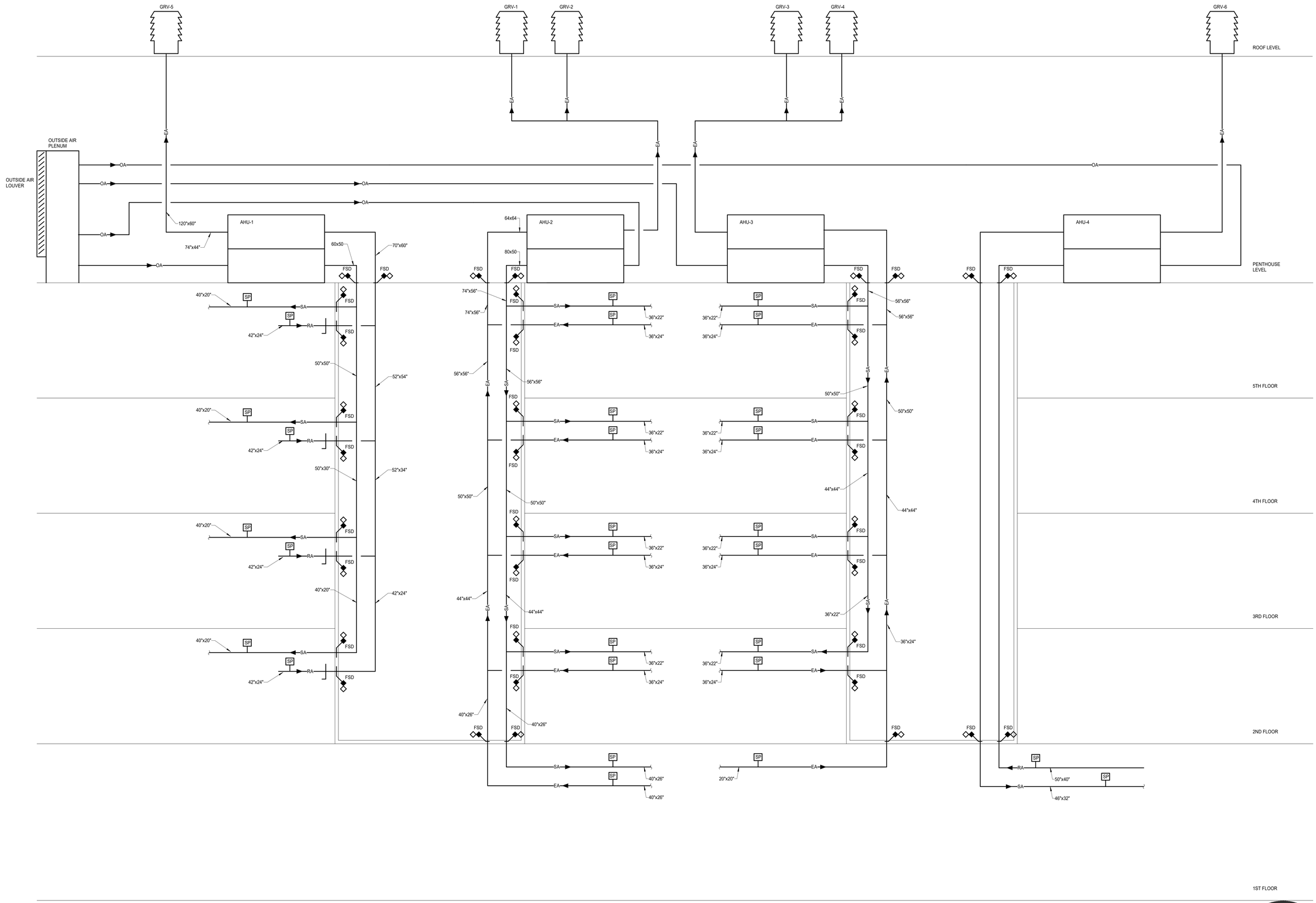

1 AIR HANDLING RISER DIAGRAM
SCALE: NONE

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LICENSED PROFESSIONAL ENGINEER
9/25/2025

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
AIR HANDLING RISER DIAGRAM

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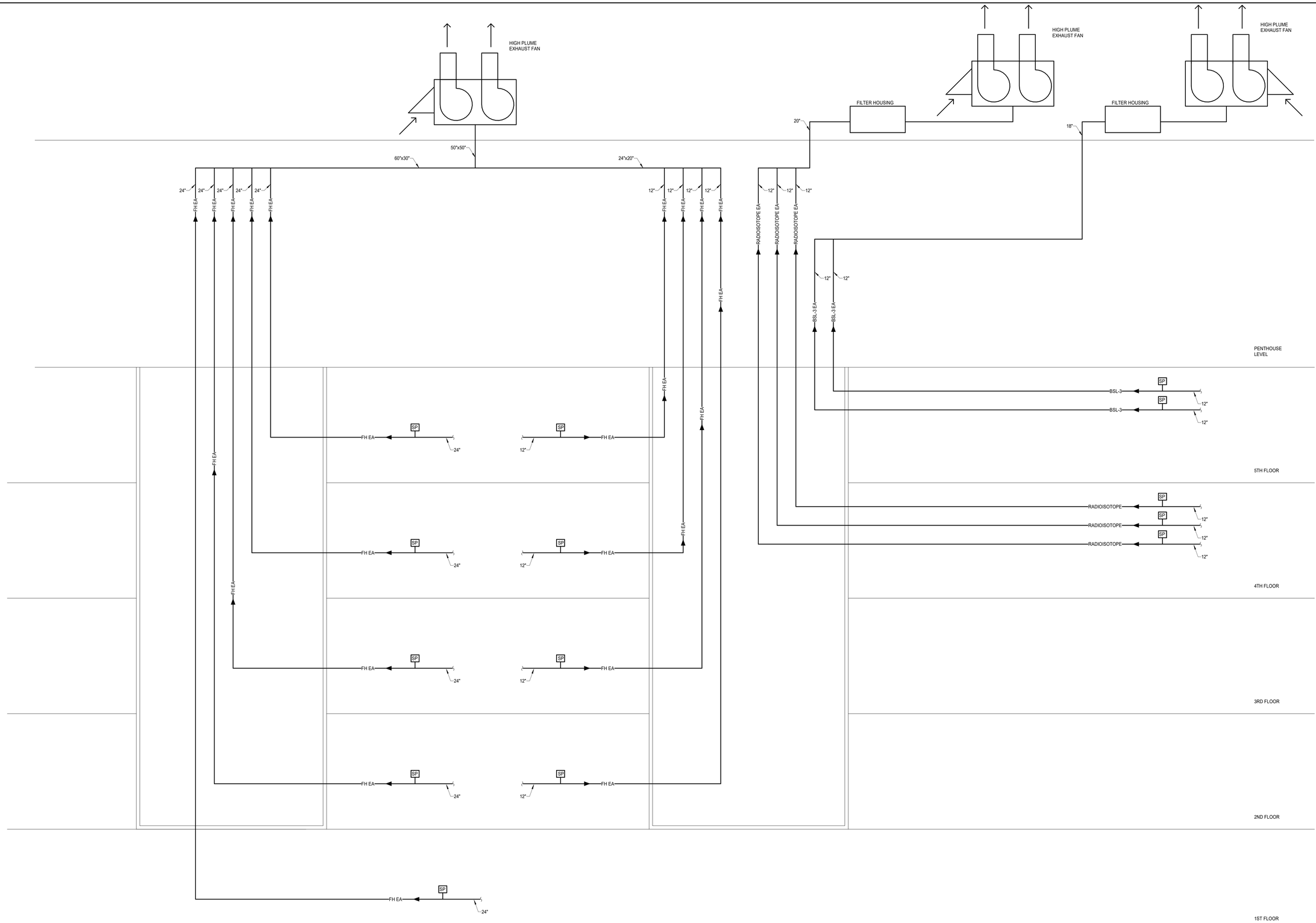

1 HIGH PLUME EXHAUST FAN RISER DIAGRAM
SCALE: NONE

PLOT DATE: 10/16/2025 2:42:24 PM TEMPLATE VERSION: 23.0.4

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STATE OF MICHIGAN
51101
9/25/2025

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
HIGH PLUME EXHAUST FAN RISER DIAGRAM
SHEET NO.
M-512

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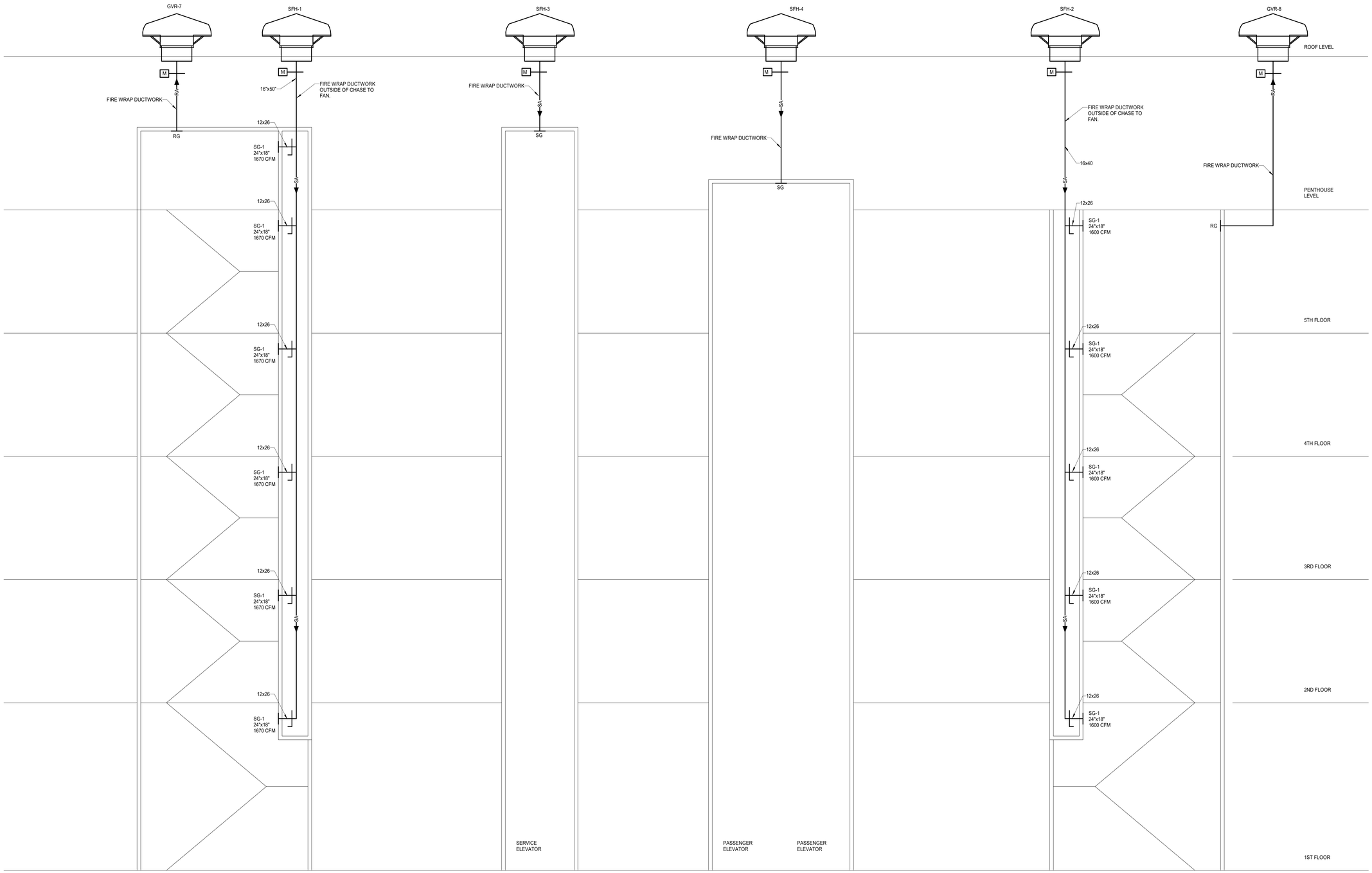

1 STAIRWELL AND ELEVATOR PRESSURIZATION RISER DIAGRAM

SCALE: NONE

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9/25/2025

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
STAIRWELL AND ELEVATOR RISER DIAGRAM

SHEET NO.
M-513

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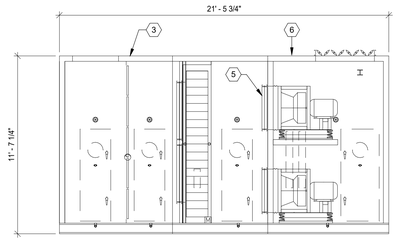
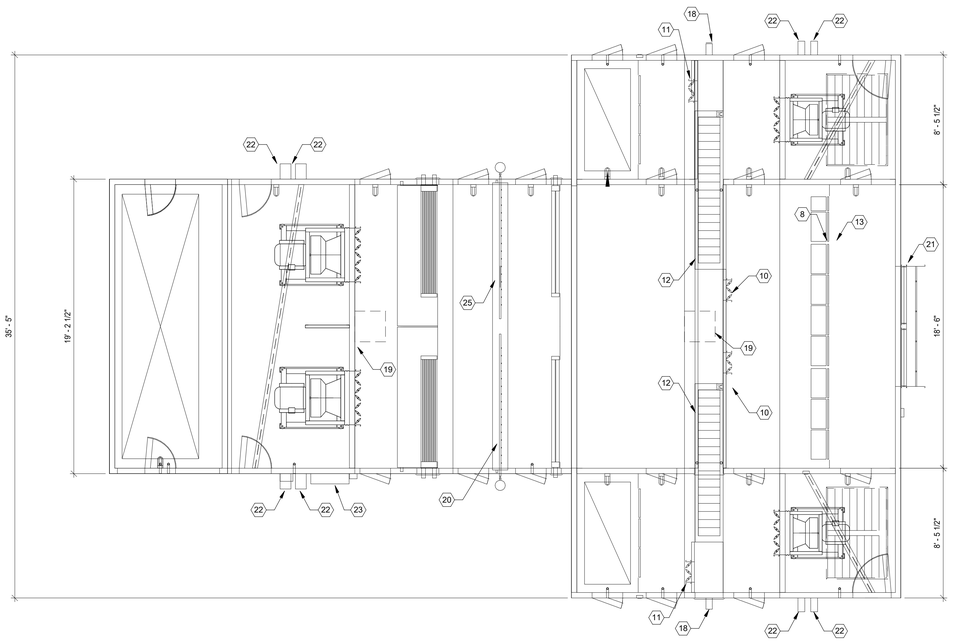
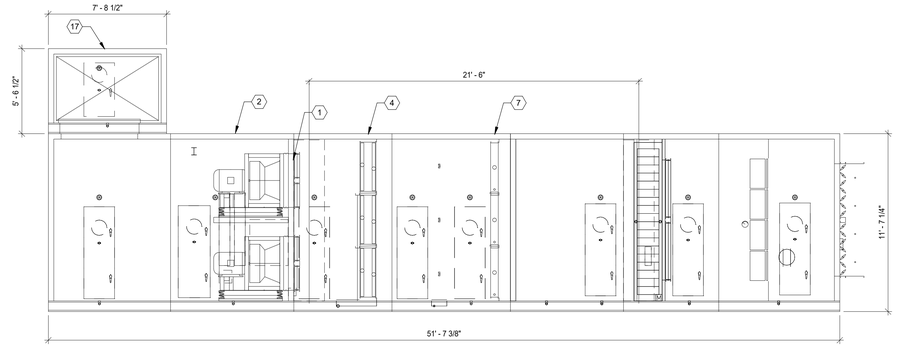


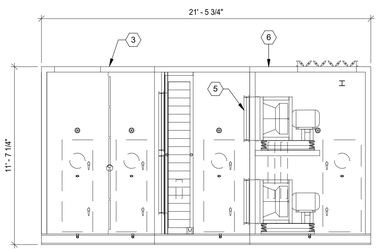
SECTION OF EXHAUST AIR TUNNEL - AHU-2



PLAN VIEW - AHU-2



SECTION OF SUPPLY AIR TUNNEL - AHU-2



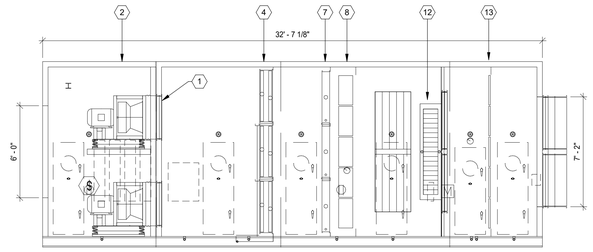
SECTION OF EXHAUST AIR TUNNEL - AHU-2

DIMENSIONS ARE +/- 2 "

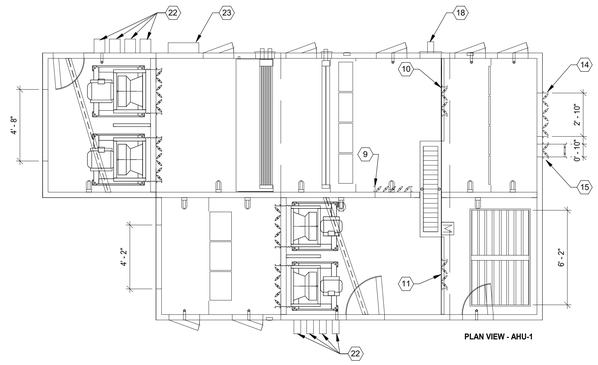
2 AHU-2
SCALE: NONE

SHEET KEY NOTES:

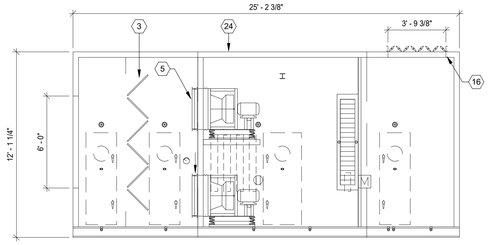
1. SUPPLY FAN INLET GRAVITY BACKDRAFT DAMPER.
2. SUPPLY FAN SECTION.
3. MERV 9 EXHAUST AIR FILTERS.
4. COOLING COIL.
5. EXHAUST FAN INLET GRAVITY BACKDRAFT DAMPER.
6. EXHAUST FAN SECTION.
7. PREHEAT COIL.
8. MERV 14 SUPPLY AIR FILTERS.
9. RETURN AIR DAMPER.
10. SUPPLY AIR BYPASS DAMPER.
11. EXHAUST BYPASS DAMPER.
12. HEAT WHEEL.
13. MERV 9 SUPPLY AIR FILTERS.
14. ECONOMIZER OUTSIDE AIR DAMPER.
15. MINIMUM OUTSIDE AIR DAMPER.
16. EXHAUST AIR DAMPER.
17. SUPPLY AIR PLENUM.
18. HEAT RECOVERY VFD BY MANUFACTURER.
19. 24X24 CASING CUTOUT FOR COLUMN.
20. HUMIDIFIER GRID.
21. OUTSIDE AIR DAMPER.
22. VFD. (PROVIDED BY TCC INSTALLED AT FACTORY)
23. SINGLE POINT POWER.
24. RETURN FAN SECTION.
25. DRAIN PAN WITH STAINLESS STEEL GRATING. 1



SECTION OF SUPPLY AIR TUNNEL - AHU-1



PLAN VIEW - AHU-1



SECTION OF EXHAUST AIR TUNNEL - AHU-1

DIMENSIONS ARE +/- 2 "

1 AHU-1
SCALE: NONE

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ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
AIR HANDLING UNIT DETAIL

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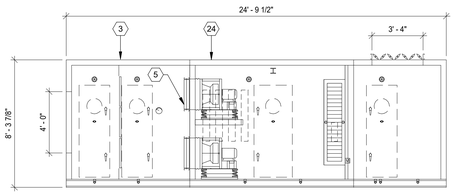
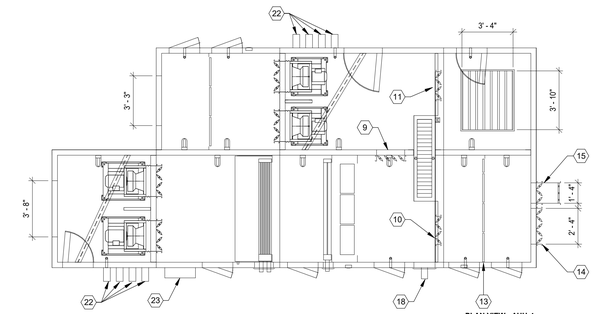
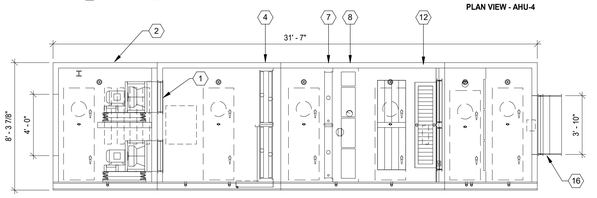


SECTION OF EXHAUST AIR TUNNEL - AHU-4



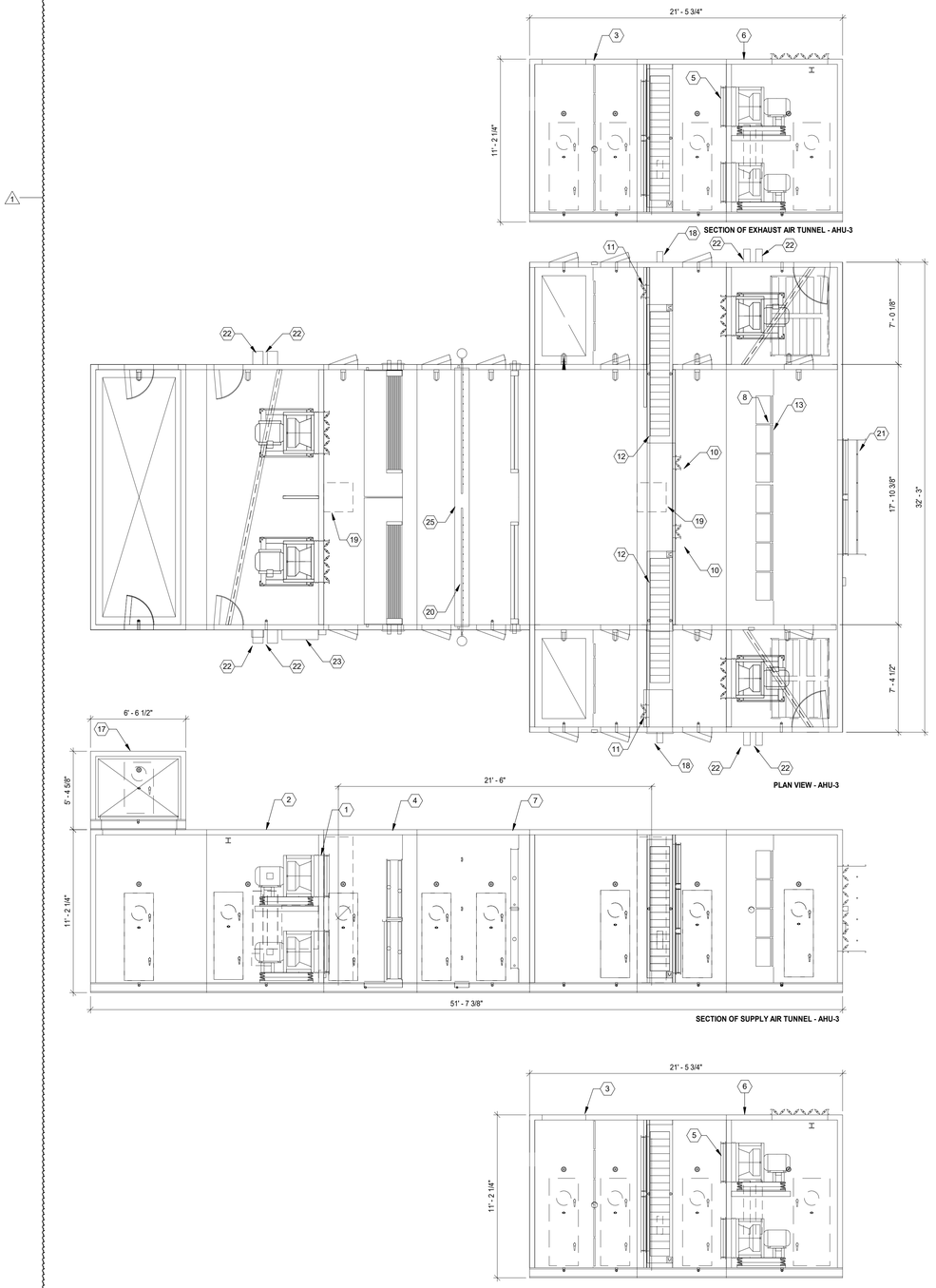
PLAN VIEW - AHU-4



SECTION OF SUPPLY AIR TUNNEL - AHU-4

DIMENSIONS ARE +/- 2 "

2 AHU-4
SCALE: NONE



SECTION OF EXHAUST AIR TUNNEL - AHU-3

PLAN VIEW - AHU-3

SECTION OF SUPPLY AIR TUNNEL - AHU-3

SECTION OF EXHAUST AIR TUNNEL - AHU-3

DIMENSIONS ARE +/- 2 "

1 AHU-3
SCALE: NONE

SHEET KEY NOTES:

1. SUPPLY FAN INLET GRAVITY BACKDRAFT DAMPER.
2. SUPPLY FAN SECTION.
3. MERV 9 EXHAUST AIR FILTERS.
4. COOLING COIL.
5. EXHAUST FAN INLET GRAVITY BACKDRAFT DAMPER.
6. EXHAUST FAN SECTION.
7. PREHEAT COIL.
8. MERV 14 SUPPLY AIR FILTERS.
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19. 24X24 CASING CUTOUT FOR COLUMN.
20. HUMIDIFIER GRID.
21. OUTSIDE AIR DAMPER.
22. VFD. (PROVIDED BY TCC INSTALLED AT FACTORY)
23. SINGLE POINT POWER.
24. RETURN FAN SECTION.
25. DRAIN PAN WITH STAINLESS STEEL GRATING. (1)

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SMOKE CONTROL SYSTEM NOTES:

1. PROVIDE ALL LOGIC FOR THE EMERGENCY SMOKE CONTROL SYSTEM AS PART OF THE FIRE ALARM CONTROL SYSTEM PANEL (FACP).

2. ALL PANEL COMPONENTS SHALL BE UL APPROVED FOR FIRE/SMOKE OPERATION.

3. PROVIDE POSITIVE FAN AND DAMPER POSITION/STATUS VERIFICATION.

4. THE FIRE ALARM CONTRACTOR SHALL PROVIDE THE FIREFIGHTERS CONTROL PANEL AS PART OF THE SMOKE CONTROL SYSTEM.

5. THE FIRE ALARM CONTRACTOR SHALL PROVIDE MODULES FOR INTERFACE TO SMOKE CONTROL SYSTEM AS NECESSARY. COORDINATE INTERFACE REQUIREMENTS WITH UL864 CONTROL SYSTEM CONTRACTOR.

6. THE CONTROLS CONTRACTOR SHALL PROVIDE POWER MONITORING DEVICES AND CONNECTION TO MONITOR MODULE (MM BY FAS CONTRACTOR) DOWNSTREAM OF THE LAST DISCONNECT FOR SMOKE DAMPERS, FIRE/SMOKE DAMPERS, SUPPLY FANS AND EXHAUST FANS BEING MONITORED BY THE FIREFIGHTERS CONTROL PANEL.

7. EMERGENCY SMOKE CONTROL SYSTEM SHALL MEET ALL REQUIREMENTS OF THE RATIONAL ANAYLSIS REPORT. CONTRACTOR SHALL BE PROVIDED A COPY OF THE RATIONAL ANALYSIS AND REFERENCE REPORT FOR REQUIREMENTS NOT SHOWN ON THE MEHCANICAL PLANS.

8. ALL INTERIOR PRESSURIZATION AND SMOKE CONTROL DUCTWORK SHALL BE FURNISHED AS FLAMEBAR BW11 UL LISTED 2-HOUR FIRE RATED DUCT B SYSTEM FOR ALL HORIZONTAL DUCTWORK ON ALL LEVELS. VERTICAL DUCTWORK TO BE ENCLOSED IN 2-HOUR RATED SHAFT. REFER TO ARCHITECTURAL PLANS FOR RATED SHAFT CONSTRUCTION.

9. THE CONTROLS CONTRACTOR SHALL PROVIDE POWER MONITORING DOWNSTREAM OF THE LAST DISCONNECT FOR SMOKE DAMPERS, FIRE/SMOKE DAMPERS, SUPPLY FANS AND EXHAUST FANS BEING MONITORED BY THE FIREFIGHTERS CONTROL PANEL.

10. INTERLOCK ALL LIFE SAFETY FNAS INDICATED IN SCHEDULE WITH FIRE ALARM SYSTEM TO ENERGIZE UPON HVAC SHUTDOWN PER SMOKE CONTROL RISER DIAGRAM.

FIRE FIGHTER'S SMOKE CONTROL PANEL SEQUENCE OF OPERATION:

AUTO MODE:
AUTO MODE IS AN EVENT ACTIVATED BY A SMOKE DETECTOR OR A FLOW SWITCH. FOR AUTO MODE TO WORK PROPERLY, ALL HOA SWITCHES ON THE FIRE FIGHTER'S SMOKE CONTROL PANEL SHALL BE SET TO THE AUTO POSITION AT ALL TIMES.

IF AN EVENT IS DETECTED VIA A SMOKE DETECTOR OR A FLOW SWITCH THEN THE SMOKE CONTROL SYSTEM SHALL OPERATE ACCORDING TO THE SMOKE CONTROL PANEL AUTO MODE MATRIX. THE SMOKE CONTROL PANEL WILL NO LONGER BE IN AUTO MODE ONCE ONE (1) HOA SWITCH HAS BEEN REMOVED FROM THE AUTO POSITION.

BUILDING SYSTEM SWITCH:

AUTO: FANS SHALL OPERATE ACCORDING TO THE SMOKE CONTROL PANEL AUTO MODE MATRIX. IF THE HOA SWITCH IS CHANGED TO ON OR OFF, THE PANEL WILL NO LONGER BE IN AUTO MODE AND SHALL COMPLY WITH 909.16.

ON: SMOKE CONTROL DEVICES SHALL OPERATE ACCORDING TO THE SMOKE CONTROL PANEL AUTO MODE MATRIX, HOWEVER THE PANEL WILL NO LONGER BE IN AUTO MODE, AND SHALL COMPLY WITH 909.16. THE PRESSURIZATION FANS STAY ON OR SHALL TURN ON.

OFF: THE PRESSURIZATION FANS TURN OFF AND ASSCOIATED SMOKE DAMPERS CLOSE.

FAN SWITCH:

AUTO: FANS SHALL OPERATE ACCORDING TO THE SMOKE CONTROL PANEL AUTO MODE MATRIX. IF THE HOA SWITCH IS CHANGED TO ON OR OFF, THE PANEL WILL NO LONGER BE IN AUTO MODE AND SHALL COMPLY WITH 909.16.

ON: OVERRIDES FANS TO TURN ON & ASSCOIATED DAMPER OPEN. THE MOTOR START AND VFD HOA SWITCH SHALL BE OVERRIDDEN AND THE FAN SHALL STAY ON OR TURN ON.

OFF: OVERRIDES FANS TO TURN OFF & ASSCOIATED DAMPER CLOSED.

IN THE EVENT THAT AN ACTIVE DAMPER FAILS IT SHALL BE INDICATED PER THE BUILDING FAULT LIGHT.

IF A FIRE ALARM PULL STATION IS ACTIVATED, THE SYSTEM SHALL OPERATE PER THE SMOKE CONTROL MATRIX.

ELEVATOR SHAFT SEQUENCE OF OPERATION:

NORMAL MODE (NO SMOKE EVENT): ELEVATOR SUPPLY FANS (HPF'S) SHALL BE TURNED OFF.

SMOKE CONTAINTMENT MODE: UPON DETECTION OF SMOKE BY THE ELEVATOR SHAFT SPOT-TYPE SMOKE DETECTOR, THE ELEVATOR SUPPLY FAN SHALL REMAIN OFF AND ELEVATOR CAR SHALL BE COMMANDED TO THE FIRST FLOOR.

OVERRIDE MODE:
OVERRIDE MODE IS AN EVENT TRIGGERED MANUALLY AT THE SMOKE CONTROL PANEL

IF NO EVENT IS DETECTED VIA A SMOKE DETECTOR, PULL STATION OR FLOW SWITCH AND A FIRE FIGHTER TURNS THE BUILDING HOA SWITCH FROM AUTO TO ON. THE SMOKE CONTROL SYSTEM SHALL ACTIVATE AND OPERATE PER THE AUTO MODE SEQUENCE. EVEN THOUGH THE AUTO MODE SEQUENCE IS BEING USED THE FIRE FIGHTER CONTROL PANEL IS NOT IN AUTO MODE. BY MANUALLY ACTIVATING AN EVENT THE LOW LIMIT FIRE SMOKE DAMPER LINKAGE TEMPERATURE IS OVERRIDDEN AND THE CONTROL PANEL WILL HAVE TO BE MANUALLY OPERATED.

TYPICAL PRESSURIZATION DAMPER AND FAN OPERATION
ASSOCIATED DAMPERS FOR EACH FAN SHALL OPEN OR CLOSE DEPENDING ON THEIR FUNCTION AND BE VERIFIED OPEN VIA DAMPER END SWITCHES PRIOR TO THE ASSOCIATED FAN STARTING.

SMOKE CONTROL:

THE FIREFIGHTER'S SMOKE CONTROL PANEL, FOR FIRE DEPARTMENT EMERGENCY RESPONSE PURPOSES ONLY, SHALL BE PROVIDED AND SHALL INCLUDE MANUAL SYSTEMS. THE PANEL SHALL BE LOCATED IN THE FIRST FLOOR FIRE COMMAND CENTER COMPLYING WITH SECTION 911, AND SHALL COMPLY WITH SECTIONS 909.16.1 THROUGH 909.16.3 AS INDICATED BELOW. THE PANEL SHALL BE LOCATED ON A WALL AND POSITIONED TO MATCH THE BUILDING ORIENTATION.

909.16.1 SMOKE CONTROL SYSTEMS:
FANS WITHIN THE BUILDING SHALL BE SHOWN ON THE FIREFIGHTER'S CONTROL PANEL. A CLEAR INDICATION OF THE DIRECTION OF AIRFLOW AND THE RELATIONSHIP OF COMPONENTS SHALL BE DISPLAYED. STATUS INDICATORS SHALL BE PROVIDED FOR ALL SMOKE CONTROL EQUIPMENT, ANNUNCIATED BY FAN AND ZONE, AND BY PILOT-LAMP-TYPE INDICATORS AS FOLLOWS:

1. FANS, DAMPERS AND OTHER OPERATING EQUIPMENT IN THEIR NORMAL STATUS - WHITE.
2. FANS, DAMPERS AND OTHER OPERATING EQUIPMENT IN THEIR OFF OR CLOSED STATUS - RED.
3. FANS, DAMPERS AND OTHER OPERATING EQUIPMENT IN THEIR ON OR OPEN STATUS - GREEN.
4. FANS, DAMPERS AND OTHER OPERATING EQUIPMENT IN A FAULT STATUS - YELLOW/AMBER.

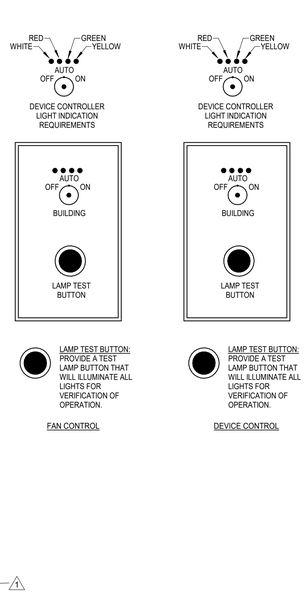
909.16.2 SMOKE CONTROL PANEL:
THE FIREFIGHTER'S CONTROL PANEL SHALL PROVIDE CONTROL CAPABILITY OVER THE COMPLETE SMOKE-CONTROL SYSTEM EQUIPMENT WITHIN THE BUILDING AS FOLLOWS:

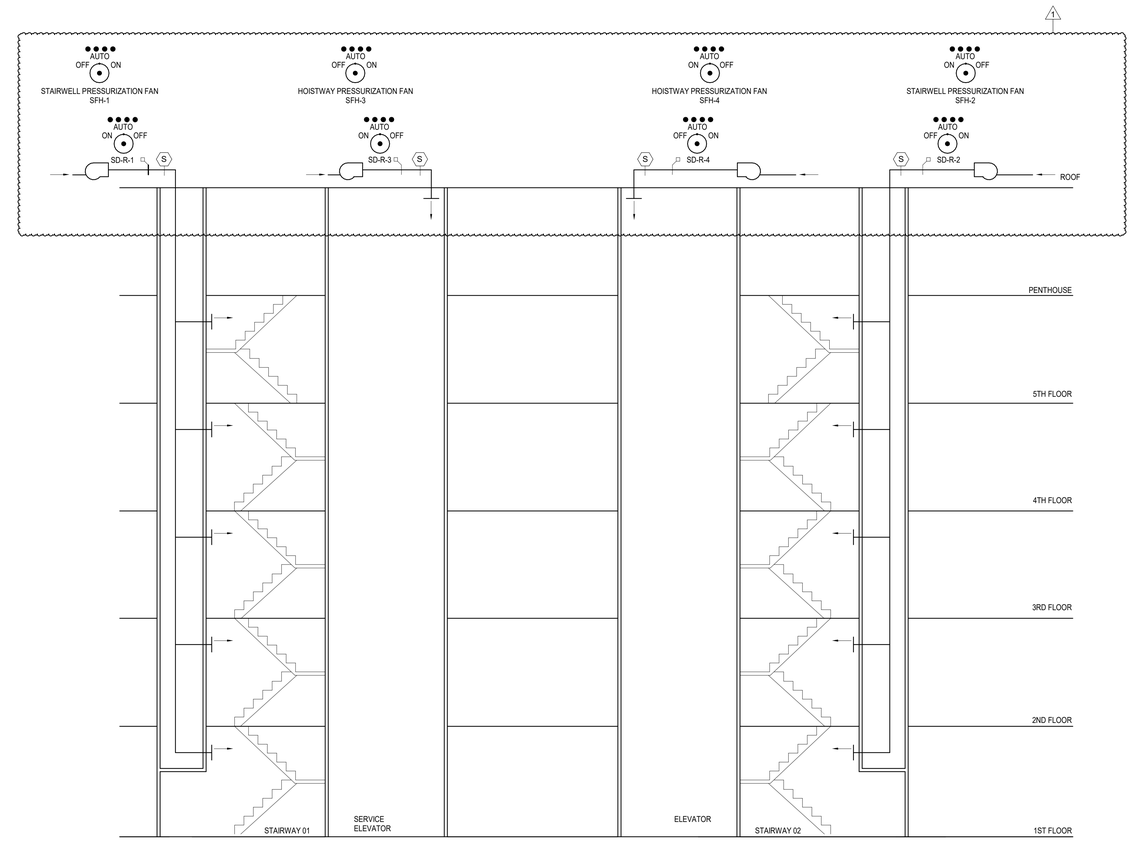
1. ON-AUTO-OFF CONTROL OVER EACH INDIVIDUAL PIECE OF OPERATING SMOKE CONTROL EQUIPMENT THAT CAN ALSO BE CONTROLLED FROM OTHER SOURCES WITHIN THE BUILDING. THIS INCLUDES STAIRWAY PRESSURIZATION FANS; SMOKE EXHAUST FANS; SUPPLY, RETURN AND EXHAUST FANS AND OTHER OPERATING EQUIPMENT USED OR INTENDED FOR SMOKE CONTROL PURPOSES.
2. OPEN-AUTO-CLOSE CONTROL OVER INDIVIDUAL DAMPERS RELATING TO SMOKE CONTROL AND THAT ARE ALSO CONTROLLED FROM OTHER SOURCES WITHIN THE BUILDING.
3. ON-OFF OR OPEN-CLOSED CONTROL OVER SMOKE CONTROL AND OTHER CRITICAL EQUIPMENT ASSOCIATED WITH A FIRE OR SMOKE EMERGENCY AND THAT CAN ONLY BE CONTROLLED FROM THE FIREFIGHTER'S CONTROL PANEL.

EXCEPTIONS:

1. COMPLEX SYSTEMS, WHERE APPROVED, WHERE THE CONTROLS AND INDICATORS ARE COMBINED TO CONTROL AND INDICATE ALL ELEMENTS OF A SINGLE SMOKE ZONE AS A UNIT.
2. COMPLEX SYSTEMS, WHERE APPROVED, WHERE THE CONTROL IS ACCOMPLISHED BY COMPUTER INTERFACE USING APPROVED, PLAIN ENGLISH COMMANDS.

909.16.3 CONTROL ACTION AND PRIORITIES:
1. ON-OFF, OPEN-CLOSE CONTROL ACTIONS SHALL HAVE THE HIGHEST PRIORITY OF ANY CONTROL POINT WITHIN THE BUILDING. ONCE ISSUED FROM THE FIREFIGHTER'S CONTROL PANEL, NO AUTOMATIC OR MANUAL CONTROL FROM ANY OTHER CONTROL POINT WITHIN THE BUILDING SHALL CONTRADICT THE CONTROL ACTION. WHERE AUTOMATIC MEANS ARE PROVIDED TO INTERRUPT NORMAL, NONEMERGENCY EQUIPMENT OPERATION OR PRODUCE A SPECIFIC RESULT TO SAFEGUARD THE BUILDING OR EQUIPMENT (I.E., DUCT FREEZESTATS, DUCT SMOKE DETECTORS, HIGH TEMPERATURE CUTOUTS, TEMPERATURE-ACTUATED LINKAGE AND SIMILAR DEVICES), SUCH MEANS SHALL BE CAPABLE OF BEING OVERRIDDEN BY THE FIREFIGHTER'S CONTROL PANEL SWITCH POSITION SHALL PREVAIL. IN NO CASE SHALL CONTROL ACTIONS REQUIRE THE SMOKE CONTROL SYSTEM TO ASSUME MORE THAN ONE CONFIGURATION AT ANY ONE TIME.
2. ONLY THE AUTO POSITION OF EACH THREE POSITION FIREFIGHTER'S CONTROL PANEL SWITCH SHALL ALLOW AUTOMATIC OR MANUAL CONTROL ACTION FROM OTHER CONTROL POINTS WITHIN THE BUILDING. THE AUTO POSITION SHALL BE THE NORMAL, NONEMERGENCY, BUILDING CONTROL POSITION. WHERE A FIREFIGHTER'S CONTROL PANEL IS IN THE AUTO POSITION, THE ACTUAL STATUS OF THE DEVICE (ON, OFF, OPEN, CLOSED) SHALL CONTINUE TO BE INDICATED BY THE STATUS INDICATOR DESCRIBED ABOVE. WHEN DIRECTED BY AN AUTOMATIC SIGNAL TO ASSUME AN EMERGENCY CONDITION, THE NORMAL POSITION SHALL BECOME THE EMERGENCY CONDITION FOR THAT DEVICE OR GROUP OF DEVICES WITHIN THE ZONE. IN NO CASE SHALL CONTROL ACTIONS REQUIRE THE SMOKE CONTROL SYSTEM TO ASSUME MORE THAN ONE CONFIGURATION AT ANY ONE TIME.





FIREFIGHTER SMOKE CONTROL PANEL DIAGRAM

1 FIRE FIGHTER CONTROL PANEL1
SCALE: NONE

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FIRE FIGHTER SMOKE CONTROL PANEL
SHEET NO.
M-516

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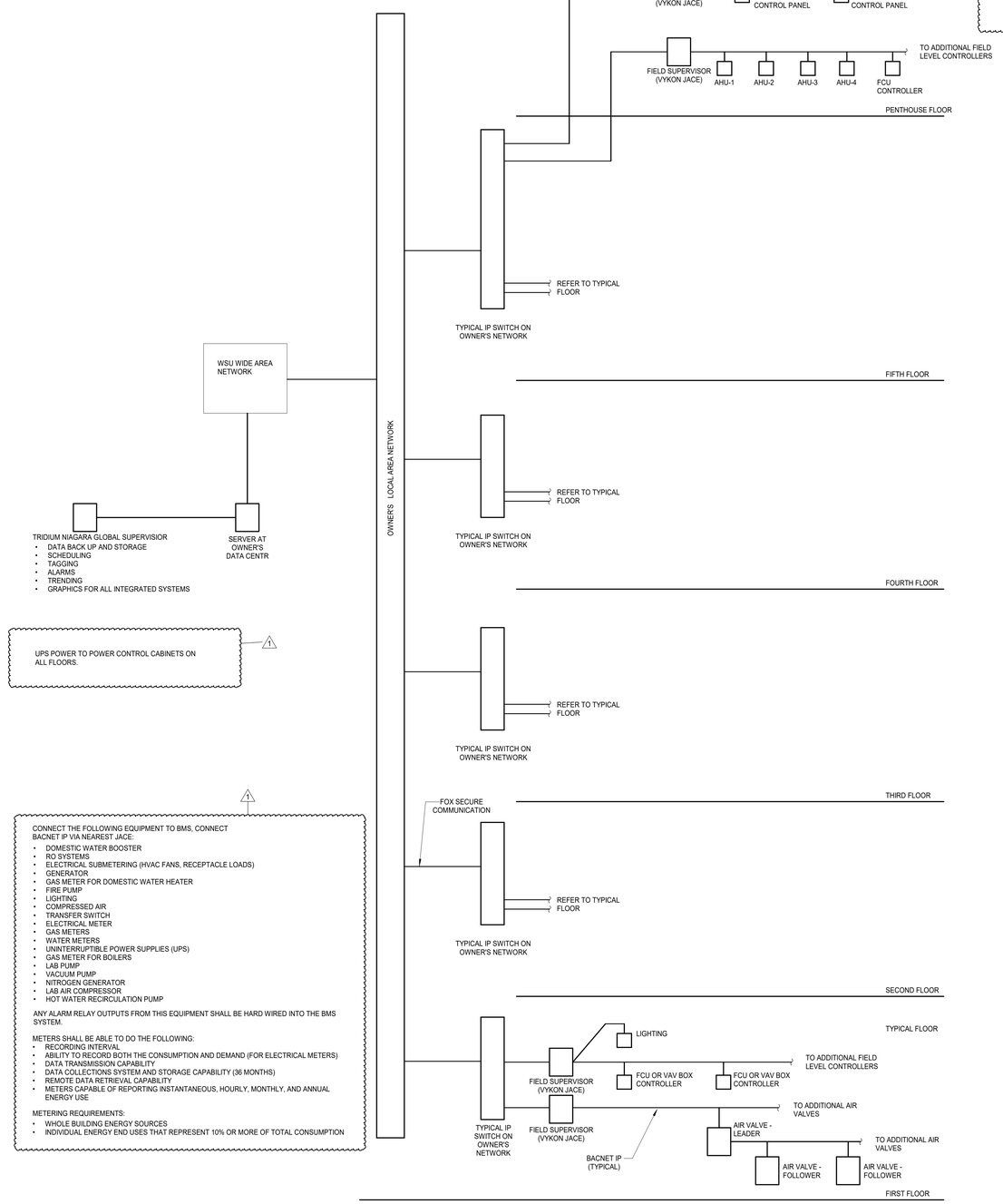
PLOT DATE: 10/16/2025 2:42:26 PM TEMPLATE VERSION: 23.0.4



6 CONTROLS SYSTEM ARCHITECTURE

SCALE: NONE

1

GAS HUMIDIFIER SEQUENCE

UNIT SHALL BE CONNECTED TO BMS. THE FOLLOWING POINTS SHALL BE MONITORED: OPERATION (ON/OFF), PERCENT CAPACITY, ALARMS.

RUN CONDITIONS:

A. HUMIDIFIER SHALL HAVE AN INTEGRAL CONTROL CABINET AND CONTROLLER.

B. ELECTRONIC THREE ROD PROBE WATER LEVEL CONTROLLER CONTROLS A SOLENOID VALVE TO MAINTAIN THE OPERATING WATER LEVEL.

C. IT SHALL HAVE AN ELECTRICAL HEATING ELEMENT CONTROLLED TO MAINTAIN A MINIMUM WATER TEMPERATURE.

D. ELECTRIC DRAIN VALVE SHALL OPEN FOR DRAIN FOR FLUSHING CYCLES.

E. UNIT SHALL SKIM WATER SURFACE EACH TIME EVAPORATING SURFACE FILLS.

F. UPON A CALL FOR HUMIDITY BLOWERS TURN ON, AND GAS/AIR VALVE SHALL OPEN TO GAS BURNERS. GAS BURNERS WILL HEAT THE WATER TO A BOIL AND GENERATE STEAM.

G. EVAPORATING TANK SHALL USE A TEMPERATURE SENSOR FOR FREEZE PROTECTION.

H. TCC SHALL PROVIDE HUMIDITY SENSOR IN SUPPLY AIR DUCTWORK. THIS SENSOR SHALL PROVIDE HIGH HUMIDITY LIMIT. HIGH LIMIT SENSOR SHALL BE A MANUAL RESET, HARDWIRE INTERLOCK TO DISABLE THE UNIT AND GENERATE AN ALARM ON ACTIVATION.

I. TCC SHALL PROVIDE HUMIDITY SENSOR IN THE RETURN AIR DUCTWORK. THIS SENSOR SHALL BE USED TO CONTROL HUMIDIFIER.

2 GAS HUMIDIFIER SEQUENCE

SCALE: NONE

R.O. WATER TREATMENT SEQUENCE

UNIT SHALL BE CONNECTED TO BMS. THE FOLLOWING POINTS SHALL BE MONITORED: OPERATION (ON/OFF), PERCENT CAPACITY, ALARMS.

RUN CONDITIONS:

A. WATER TREATMENT PACKAGE SHALL HAVE AN INTEGRAL CONTROL PANEL.

B. WHEN SWITCHED ON, UNIT SHALL PRE-TREAT INCOMING WATER AND ADD TO STORAGE TANK.

C. UNIT SHALL INDICATE WHEN IN PRE-TREAT MODE.

D. UNIT SHALL INDICATE WHEN STORAGE TANK IS FULL.

E. WHEN UNIT IS NOT FILLING STORAGE TANK, UNIT SHALL ENABLE STANDBY MODE.

F. UNIT SHALL ALARM UPON SIGNAL FOR PRESSURE FAULT. THIS ALARM SHALL BE VISIBLE TO THE BUILDING AUTOMATION SYSTEM.

G. UNIT SHALL HAVE SYSTEM FLUSH OPERATING MODE. THIS MODE SHALL DIRECT PERMEATE DISCHARGE TO DRAIN FOR FIRST 30 MINUTES OF OPERATION.

H. UNIT SHALL GENERATE A LOW LEVEL TANK ALARM. THIS ALARM SHALL BE VISIBLE ON THE BUILDING AUTOMATION SYSTEM.

3 R.O. WATER TREATMENT SEQUENCE

SCALE: NONE

COMMENTS:

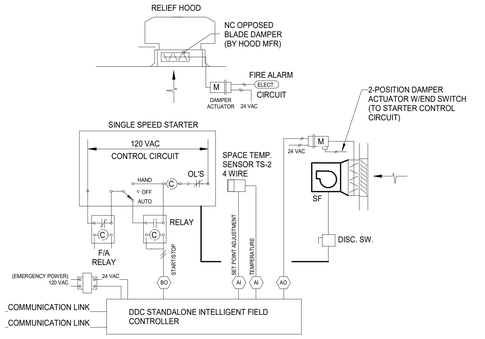
- PROVIDE PANEL MOUNTED COMPONENT AT EACH BOILER TO BE PROVIDED BY TCC.
- REFER TO FLOOR PLANS FOR EMERGENCY SWITCH QUANTITY AND LOCATIONS. COORDINATE SWITCH LOCATIONS WITH ALL OTHER TRADES.
- TCC CONTRACTOR SHALL PROVIDE AN ENGRAVED PLASTIC LABEL TO BE PLACED ADJACENT TO EACH PUSHBUTTON SWITCH.
- TCC SHALL SUPPLY POWER TO PUSHBUTTON(S) AND CONTROL RELAYS FROM POWER CIRCUIT. REFER TO ELECTRICAL PANEL SCHEDULES AND COORDINATE WITH ELECTRICAL CONTRACTOR AS NECESSARY.
- TCC SHALL WIRE BOILER'S CONTROL CIRCUITS THRU NORMALLY OPEN RELAY CONTACTS. TCC SHALL COORDINATE EXACT WIRING AND TERMINATION REQUIREMENTS WITH BOILER MANUFACTURER AS REQUIRED.
- TCC SHALL MOUNT CONTROL RELAYS AT RESPECTIVE BOILER CONTROL PANELS.
- TCC SHALL PROVIDE MUSHROOM PUSHBUTTON SWITCH WITH NORMALLY CLOSED CONTACTS. PROVIDE FLIP COVER AND JUNCTION BOX FOR SWITCH MOUNTING.

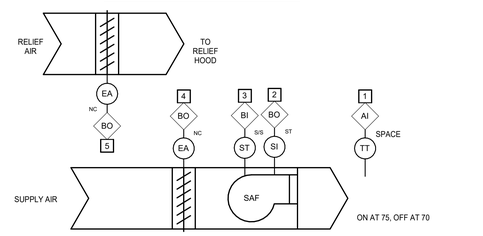
BOILER SHUTDOWN SEQUENCE

1. UNDER NORMAL OPERATING CONDITIONS, THE EMERGENCY SHUTDOWN SWITCH CIRCUIT SHALL BE ENERGIZED AND THE RELAYS' NORMALLY OPEN CONTACTS SHALL BE CLOSED TO ALLOW NORMAL OPERATION OF EQUIPMENT.
2. WHEN A SWITCH IS PUSHED, THE RELAYS' CONTACTS SHALL OPEN AND INTERRUPT THE BOILER'S CONTROL CIRCUITS TO SHUTDOWN EQUIPMENT. WHEN SWITCH IS RELEASED, THE RELAY SHALL BE ENERGIZED AND ITS NORMAL OPEN CONTACTS SHALL CLOSE, ENERGIZING THE EQUIPMENT CONTROL CIRCUITS.
3. THE BMS SHALL ACTIVATE AN ALARM WHEN A REMOTE SWITCH HAS BEEN PUSHED.

5 EMERGENCY BOILER SHUTDOWN SEQUENCE

SCALE: NONE





TEMPERATURE SENSING SUPPLY

THE SUPPLY SYSTEM SHALL BE ENABLED / DISABLED THRU THE BAS. WHERE SPACE TEMPERATURE EXCEEDS SET POINT, BOTH RELIEF AIR AND INTAKE AIR DAMPERS SHALL BE DRIVEN OPEN AND SUPPLY FAN SHALL START. FAN SHALL DE-ENERGIZE AND DAMPERS SHALL BE DRIVEN CLOSED WHEN SPACE TEMPERATURE DROPS TO 5°F BELOW SET POINT. ALARM IF SPACE TEMPERATURE EXCEEDS 95°F OR DROPS BELOW 65°F, ALARM SHALL BE SENT TO THE BMS, SUPPLY FAN SHALL TURN OFF AND DAMPERS SHALL CLOSE.

END SWITCH AT DAMPERS SHALL PROVE FOR FAN OPERATION. FAILURE OF SWITCHES SHALL GENERATE AN ALARM TO BAS.

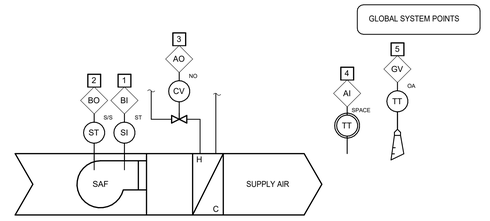
UNIT SHALL BE DISABLED BY FIRE ALARM PANEL

SF CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS	END SWITCH
1	SPACE TEMPERATURE	X				°F	
2	SUPPLY FAN MOTOR STATUS				X	ON/OFF	
3	SUPPLY FAN STARTER			X		ENABLE/DISABLE	
4	SUPPLY AIR DAMPER				X	OPEN/CLOSED	X
5	RELIEF AIR DAMPER				X	OPEN/CLOSED	X

1 NON-AIR CONDITIONED ROOM VENTILATION SYSTEM CONTROL DIAGRAM

SCALE: NONE



AIR CURTAIN

THE AIR CURTAIN SHALL BE ENABLED AND DISABLED THROUGH A DOOR SENSOR. WHERE ENABLED, UNIT FAN SHALL CYCLE ON, IF THE OUTSIDE AIR TEMPERATURE IS ABOVE 60 DEGREES. WHERE ENABLED, THE UNIT FAN SHALL CYCLE ON AND THE HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT OF 70 DEGREES (ADJ) AS SENSED BY INTEGRAL UNIT THERMOSTAT WHEN, IF THE OUTSIDE AIR TEMPERATURE IS BELOW 60 DEGREES.

UNIT FAN SHALL REMAIN ON WHEN ENABLED AND HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT AS SENSED BY REMOTE MOUNTED TEMPERATURE SENSOR.

NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

AIR CURTAIN CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	UNITS
1	SUPPLY FAN MOTOR STATUS			X			ON/OFF
2	SUPPLY FAN STARTER				X		ENABLE/DISABLE
3	HEATING CONTROL VALVE		X				% OPEN
4	SPACE TEMPERATURE	X					°F
5	OUTSIDE AIR TEMPERATURE - GLOBAL SYSTEM POINT					X	°F

4 AIR CURTAIN CONTROL DIAGRAM

SCALE: NONE

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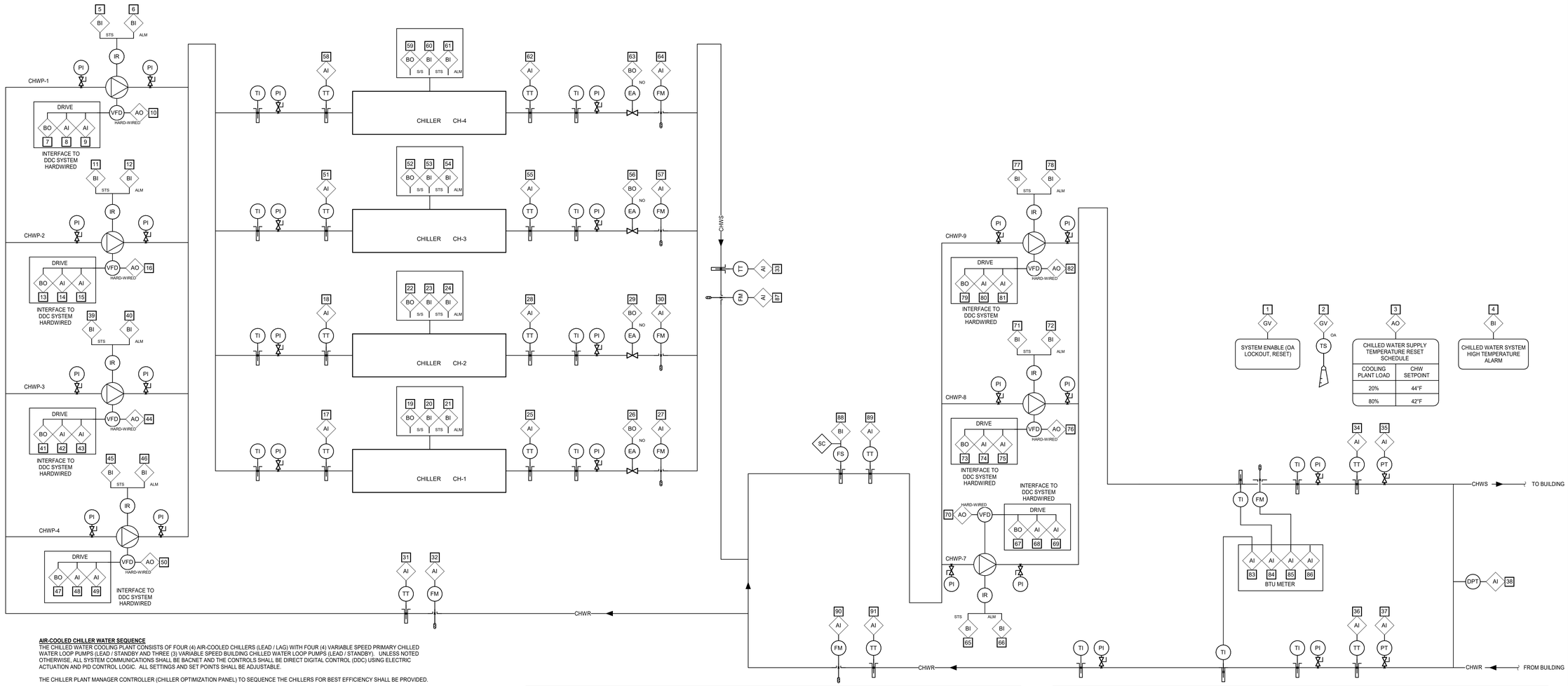
NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-601

PLOT DATE: 10/16/2025 2:42:27 PM TEMPLATE VERSION: 23.0.4



AIR-COOLED CHILLER WATER SEQUENCE

THE CHILLED WATER COOLING PLANT CONSISTS OF FOUR (4) AIR-COOLED CHILLERS (LEAD / LAG) WITH FOUR (4) VARIABLE SPEED PRIMARY CHILLED WATER LOOP PUMPS (LEAD / STANDBY AND THREE (3) VARIABLE SPEED BUILDING CHILLED WATER LOOP PUMPS (LEAD / STANDBY). UNLESS NOTED OTHERWISE, ALL SYSTEM COMMUNICATIONS SHALL BE BACNET AND THE CONTROLS SHALL BE DIRECT DIGITAL CONTROL (DDC) USING ELECTRIC ACTUATION AND PID CONTROL LOGIC. ALL SETTINGS AND SET POINTS SHALL BE ADJUSTABLE.

THE CHILLER PLANT MANAGER CONTROLLER (CHILLER OPTIMIZATION PANEL) TO SEQUENCE THE CHILLERS FOR BEST EFFICIENCY SHALL BE PROVIDED.

THE COOLING PLANT CHILLED WATER SYSTEM IS SCHEDULED FOR AUTOMATIC OPERATION ON A TIME OF DAY BASIS FOR OCCUPIED AND UNOCCUPIED MODES. WITHIN THE UNOCCUPIED MODE, THE SYSTEM CAN ENTER THE COOL-DOWN MODE WHEN THE SPACE TEMPERATURE IS ABOVE SET POINT. THE SYSTEM STAYS IN COOL-DOWN MODE UNTIL THE MODE SET POINT IS SATISFIED. THE LATEST START TIME IS THE SCHEDULED OCCUPANCY FOR THE SPACE.

THE PUMP VARIABLE FREQUENCY DRIVES (VFDS) SHALL COMMUNICATE TO THE BAS VIA A BACNET INTERFACE. THROUGH THE VFD CONTROL INTERFACE, THE BAS SHALL BE ABLE TO ENABLE AND DISABLE PUMPS AND ADJUST PUMP SPEED SET POINT. AT A MINIMUM, EACH VFD CONTROL INTERFACE SHALL COMMUNICATE PUMP STATUS, PUMP SPEED, KW AND FAULT CONDITION. VFD SPEED CONTROL SHALL BE HARDWIRED.

THE PLANT SHALL BE CONTROLLED AS FOLLOWS:

THE COOLING SYSTEM ENABLE POINT IS CONTROLLED EITHER MANUALLY BY THE OPERATOR OR BY A PROGRAM FUNCTION. IF THE COOLING SYSTEM ENABLE POINT IS ON AND THE OUTDOOR AIR TEMPERATURE IS ABOVE THE ENABLE SET POINT, THE LEAD CHILLER'S ISOLATION VALVE SHALL OPEN AND THE LEAD PRIMARY CHILLED WATER PUMP SHALL BE ENABLED. THE LEAD SECONDARY CHILLED WATER PUMP SHALL BE ENABLED. THE PUMP VFD SHALL MAINTAIN THE DIFFERENTIAL SET POINT ACROSS THE BUILDING CHILLED WATER SUPPLY AND RETURN PIPING MAINS. ONCE CHILLED WATER FLOW IS PROVEN, THE CHILLER SHALL BE ALLOWED TO START AND ITS INTEGRAL CONTROLS SHALL MODULATE THE CHILLER'S CAPACITY TO MAINTAIN THE SYSTEM CHILLED WATER SUPPLY TEMPERATURE SET POINT. CHILLED WATER FLOW SHALL BE PROVEN BY THE CHILLER'S INTEGRAL DIFFERENTIAL PRESSURE TRANSMITTER. THE LAG CHILLER SHALL BE LOCKED OUT FROM STARTING FOR A MINIMUM OF ONE HOUR (ADJUSTABLE) AFTER THE START OF THE LEAD CHILLER.

WHEN THE LEAD CHILLER IS AT OR ABOVE 90% CAPACITY, THE LEAD CHILLER SHALL UNLOAD TO 45% CAPACITY AND THEN A LAG CHILLER SHALL BE ENABLED. WHEN A LAG CHILLER IS NO LONGER REQUIRED, IT SHALL BE SHUTDOWN. WHEN CHILLED WATER IS NO LONGER REQUIRED DUE TO DROP IN DEMAND, OUTSIDE AIR LOCKOUT TEMPERATURE OR THE BUILDING ENTERS THE UNOCCUPIED MODE, THE LEAD CHILLER SHALL BE SHUT DOWN. AFTER A PRESCRIBED TIME DELAY THE ISOLATION VALVE SHALL CLOSE AND THE LEAD CHILLED WATER PUMP SHALL BE TURNED OFF.

PRIMARY / SECONDARY PUMPS SHALL ENABLE AS REQUIRED TO MAINTAIN FLOW THROUGH THE SYSTEM AND CHILLERS.

MANUAL OR AUTOMATIC LEAD / LAG / STANDBY ROTATION OF THE CHILLER AND PUMPS SHALL BE ALLOWED. ROTATION TIME INTERVAL SHALL BE OPERATOR ADJUSTABLE AND CAN BE INITIATED EITHER BASED ON TIME AND DATE OR BY OPERATOR INTERVENTION. THE DEFAULT LEAD / STANDBY ROTATION INTERVAL SHALL BE WEEKLY AND SHALL BE INITIATED TUESDAY AT 9:00AM.

CHILLER STAGING
THE CHILLER OPTIMIZATION CONTROLLER SHALL REVIEW OUTSIDE TEMPERATURE AND THE CAPABILITY OF CH-4 WITH FREE COOLING CAPACITY, TO DETERMINE WHEN CH-4 BECOMES THE PRIMARY CHILLER. CH-1, CH-2, AND CH-3 SHALL ROUTE AS PRIMARY CHILLER WHEN FREE COOLING IS NOT AVAILABLE. CH-1, CH-2, AND CH-3 SHALL REMAIN ENABLED AND AVAILABLE TO PROVIDE COOLING CAPACITY DOWN TO -10°F. CH-4 SHALL REMAIN ENABLED AND AVAILABLE TO PROVIDE COOLING CAPACITY DOWN TO -20°F.

CHILLED WATER RESET
THE BUILDING CHILLED WATER SUPPLY TEMPERATURE SHALL BE RESET BASED ON THE COOLING LOAD DEMAND (IN TONS). THE MAXIMUM CHILLED WATER SUPPLY SET POINT SHALL BE 46°F AT 20% OF LEAD CHILLER CAPACITY. THE MINIMUM CHILLED WATER SUPPLY TEMPERATURE SET POINT SHALL BE 42°F AT 80% OF THE LEAD CHILLER CAPACITY.

CHILLED WATER DEADBAND RESET
THE LEAD CHILLER'S LEAVING WATER TEMPERATURE DEADBAND SHALL BE RESET BASED ON CHILLED WATER DEMAND TO THE BUILDING. IF THE BUILDING COOLING DEMAND IS LESS THAN 30% OF THE NOMINAL CAPACITY OF THE LEAD CHILLER THEN THE LEAVING WATER DEADBAND SHALL BE PROPORTIONALLY RESET FROM 2°F AT 30% OF THE LEAD CHILLER NOMINAL CAPACITY TO 5°F AT 20% OF THE LEAD CHILLER NOMINAL CAPACITY. THE DEADBAND SHALL REMAIN AT 2°F WHEN THE BUILDING DEMAND IS GREATER THAN 30% OF THE LEAD CHILLER'S NOMINAL CAPACITY. BOTH CHILLERS SHALL HAVE DEADBAND RESET CAPABILITY.

DIFFERENTIAL PRESSURE RESET
DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET BASED ON THE CRITICAL VALVE POSITION. IF THE CRITICAL VALVE IS MORE THAN 95% OPEN THEN THE DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET UPWARD UNTIL THE CRITICAL VALVE IS LESS THAN 90% OPEN OR THE MAXIMUM DIFFERENTIAL PRESSURE SET POINT IS REACHED. IF THE CRITICAL VALVE IS LESS THAN 80% OPEN THEN THE DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET DOWNWARD UNTIL THE CRITICAL VALVE IS GREATER THAN 90% OPEN. THE CRITICAL VALVE IS DEFINED AS THE MOST OPEN CONTROL VALVE. THE MAXIMUM DIFFERENTIAL SET POINT SHALL BE SET BY THE TEST AND BALANCE CONTRACTOR. THE DEFAULT SYSTEM DIFFERENTIAL SET POINT SHALL BE SET BY THE TEST AND BALANCE CONTRACTOR.

SAFETY
ALL SAFETIES SHALL BE HARDWIRED AND GENERATE AN ALARM SIGNAL TO THE BAS.

NEITHER THE LEAD NOR THE LAG CHILLER SHALL START UNTIL CHILLER WATER FLOW IS PROVEN BY THE CHILLER'S INTEGRAL DIFFERENTIAL PRESSURE TRANSMITTER.

IF THE LEAD CHILLER FAILS FOR 15 MINUTES OR MORE, AS INDICATED BY A CURRENT SENSOR ON THE CHILLER, THEN THE LAG CHILLER SHALL START AND AN ALARM SIGNAL SHALL BE INITIATED.

THE CONTROL SYSTEM USES CURRENT SENSORS TO CONFIRM THAT ALL PUMPS ARE IN THEIR DESIRED STATE AND GENERATES AN ALARM IF STATUS DEVIATES FROM START / STOP CONTROL.

TREND LOGS:
REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

1 AIR-COOLED CHILLER CONTROL DIAGRAM
SCALE: NONE

AIR COOLED CHILLER CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	SYSTEM ENABLED COMMAND (OA LOCKOUT, RESET)					X		ENABLE/DISABLE	X	X		
2	OUTSIDE AIR TEMPERATURE - GLOBAL					X		°F	X	X		
3	CHW SUPPLY TEMPERATURE SETPOINT		X					°F	X	X		
4	CHW SYSTEM HIGH TEMPERATURE ALARM			X				NORMAL / ALARM	X	X	X	
5	CHWP-1 PUMP STATUS - HARDWIRE			X				ON / OFF	X	X		
6	CHWP-1 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	
7	CHWP-1 VFD START/STOP - HARDWIRE				X			ON / OFF	X	X		
8	CHWP-1 VFD MOTOR SPEED - HARDWIRE	X						HZ	X	X		
9	CHWP-1 VFD MOTOR POWER - HARDWIRE	X						KW	X			
10	CHWP-1 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
11	CHWP-2 PUMP STATUS			X				ON / OFF	X	X		
12	CHWP-2 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	
13	CHWP-2 VFD START/STOP - HARDWIRED				X			ON / OFF	X	X		
14	CHWP-2 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
15	CHWP-2 VFD MOTOR POWER - HARDWIRED	X						KW	X			
16	CHWP-2 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
17	CH-1 ENTERING CHILLED WATER TEMPERATURE	X						°F	X	X		
18	CH-2 ENTERING CHILLED WATER TEMPERATURE	X						°F	X	X		
19	CH-1 CHILLER COMMAND (START/STOP)				X			ON / OFF	X	X		
20	CH-1 CHILLER STATUS			X				ON / OFF	X	X		
21	CH-1 CHILLER ALARM			X				NORMAL / ALARM	X	X	X	
22	CH-2 CHILLER COMMAND (START/STOP)				X			ON / OFF	X	X		
23	CH-2 CHILLER STATUS			X				ON / OFF	X	X		
24	CH-2 CHILLER ALARM			X				NORMAL / ALARM	X	X	X	
25	CH-1 LEAVING CHILLED WATER TEMPERATURE	X						°F	X	X		
26	CH-1 CHILLER ISOLATION VALVE				X			OPEN/CLOSED	X			X
27	CH-1 CHILLED WATER FLOW RATE	X						GPM	X	X		
28	CH-2 LEAVING CHILLED WATER TEMPERATURE	X						°F	X	X		
29	CH-2 CHILLER ISOLATION VALVE				X			OPEN/CLOSED	X			X
30	CH-2 CHILLED WATER FLOW RATE	X						GPM	X	X		
31	PLANT CHILLED WATER RETURN TEMPERATURE	X						°F	X	X		
32	PLANT CHILLED WATER RETURN FLOW RATE	X						GPM	X	X		
33	PLANT CHILLED WATER SUPPLY TEMPERATURE	X						°F	X	X		
34	BUILDING CHILLED WATER SUPPLY TEMPERATURE	X						°F	X	X		
35	BUILDING CHILLED WATER SUPPLY PRESSURE	X						PSIG	X	X		
36	BUILDING CHILLED WATER RETURN TEMPERATURE	X						°F	X	X		
37	BUILDING CHILLED WATER RETURN PRESSURE	X						PSIG	X	X		
38	BUILDING CHILLED WATER DIFFERENTIAL PRESSURE	X						PSIG	X	X		
39	CHWP-3 PUMP STATUS			X				ON / OFF	X	X		
40	CHWP-3 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	
41	CHWP-3 VFD START/STOP - HARDWIRED				X			ON / OFF	X	X		
42	CHWP-3 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
43	CHWP-3 VFD MOTOR POWER - HARDWIRED	X						KW	X			
44	CHWP-3 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
45	CHWP-4 PUMP STATUS			X				ON / OFF	X	X		
46	CHWP-4 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	

AIR COOLED CHILLER CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
47	CHWP-4 VFD START/STOP - HARDWIRED				X			ON / OFF	X	X		
48	CHWP-4 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
49	CHWP-4 VFD MOTOR POWER - HARDWIRED	X						KW	X			
50	CHWP-4 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X	X	
51	CH-3 ENTERING CHILLED WATER TEMPERATURE	X						°F	X	X		
52	CH-3 CHILLER COMMAND (START/STOP)				X			ON / OFF	X	X	X	
53	CH-3 CHILLER STATUS				X			ON / OFF	X	X		
54	CH-3 CHILLER ALARM				X			NORMAL / ALARM	X	X		
55	CH-3 LEAVING CHILLED WATER TEMPERATURE	X						°F	X	X		
56	CH-3 CHILLER ISOLATION VALVE					X		OPEN/CLOSED	X			X
57	CH-3 CHILLED WATER FLOW RATE	X						GPM	X	X		
58	CH-4 ENTERING CHILLED WATER TEMPERATURE	X						°F	X	X		
59	CH-4 CHILLER COMMAND (START/STOP)				X			ON / OFF	X	X	X	
60	CH-4 CHILLER STATUS				X			ON / OFF	X	X		
61	CH-4 CHILLER ALARM				X			NORMAL / ALARM	X	X		
62	CH-4 LEAVING CHILLED WATER TEMPERATURE	X						°F	X	X		
63	CH-4 CHILLER ISOLATION VALVE					X		OPEN/CLOSED	X			X
64	CH-4 CHILLED WATER FLOW RATE	X						GPM	X	X		
65	CHWP-7 PUMP STATUS				X			ON / OFF	X	X		
66	CHWP-7 PUMP FAILURE ALARM				X			NORMAL / ALARM	X		X	
67	CHWP-7 VFD START/STOP - HARDWIRED					X		ON / OFF	X	X		
68	CHWP-7 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
69	CHWP-7 VFD MOTOR POWER - HARDWIRED	X						KW	X			
70	CHWP-7 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
71	CHWP-8 PUMP STATUS				X			ON / OFF	X	X		
72	CHWP-8 PUMP FAILURE ALARM				X			NORMAL / ALARM	X		X	
73	CHWP-8 VFD START/STOP - HARDWIRED					X		ON / OFF	X	X		
74	CHWP-8 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
75	CHWP-8 VFD MOTOR POWER - HARDWIRED	X						KW	X			
76	CHWP-8 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
77	CHWP-9 PUMP STATUS				X			ON / OFF	X	X		
78	CHWP-9 PUMP FAILURE ALARM				X			NORMAL / ALARM	X		X	
79	CHWP-9 VFD START/STOP - HARDWIRED					X		ON / OFF	X	X		
80	CHWP-9 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
81	CHWP-9 VFD MOTOR POWER - HARDWIRED	X						KW	X			
82	CHWP-9 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
83	BTU METER HOT WATER RETURN TEMPERATURE	X						°F	X	X	X	
84	BTU METER HOT WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
85	BTU METER HOT WATER SUPPLY FLOW RATE	X						GPM	X	X		
86	BTU METER ENERGY FLOW RATE	X						BTUH	X	X	X	
87	PLANT CHILLED WATER SUPPLY FLOW RATE	X						GPM	X	X		
88	TOTAL CHILLED WATER SUPPLY FLOW SWITCH			X				FLOW / NO FLOW	X	X		
89	TOTAL CHILLED WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
90	CHILLED WATER RETURN FLOW RATE	X						GPM	X	X	X	
91	CHILLED WATER RETURN TEMPERATURE	X						°F	X	X		

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10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-602

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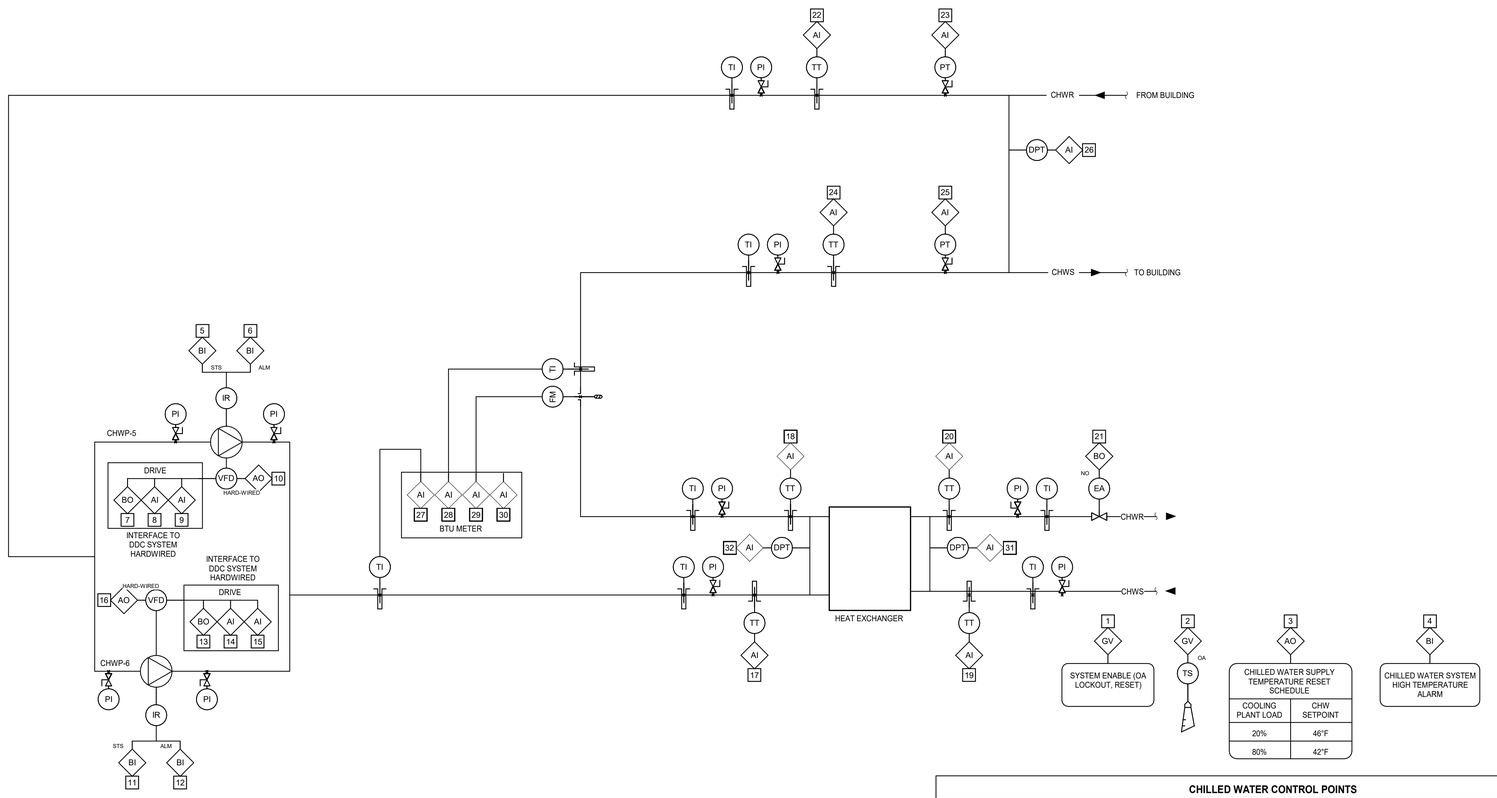

CHILLED WATER SEQUENCE
THE CHILLED WATER COOLING PLANT CONSISTS OF A HEAT EXCHANGER AND TWO (2) VARIABLE SPEED BUILDING CHILLED WATER LOOP PUMPS (LEAD / STANDBY). UNLESS NOTED OTHERWISE, ALL SYSTEM COMMUNICATIONS SHALL BE BACNET AND THE CONTROLS SHALL BE DIRECT DIGITAL CONTROL (DDC) USING ELECTRIC ACTUATION AND PID CONTROL LOGIC. ALL SETTINGS AND SET POINTS SHALL BE ADJUSTABLE.

THE COOLING PLANT CHILLED WATER SYSTEM IS SCHEDULED FOR AUTOMATIC OPERATION BASED ON A CHILLED WATER REQUIREMENT.

THE PUMP VARIABLE FREQUENCY DRIVES (VFDS) SHALL COMMUNICATE TO THE BAS VIA A BACNET INTERFACE. THROUGH THE VFD CONTROL INTERFACE, THE BAS SHALL BE ABLE TO ENABLE AND DISABLE PUMPS AND ADJUST PUMP SPEED SET POINT. AT A MINIMUM, EACH VFD CONTROL INTERFACE SHALL COMMUNICATE PUMP STATUS, PUMP SPEED, KW AND FAULT CONDITION. VFD SPEED CONTROL SHALL BE HARDWIRED.

THE PLANT SHALL BE CONTROLLED AS FOLLOWS:

THE COOLING SYSTEM ENABLE POINT IS CONTROLLED EITHER MANUALLY BY THE OPERATOR OR BY A PROGRAM FUNCTION. IF THE COOLING SYSTEM ENABLE POINT IS ON, THE LEAD HEAT EXCHANGER ISOLATION VALVE SHALL OPEN AND THE LEAD CHILLED WATER PUMP SHALL BE ENABLED. THE PUMP VFD SHALL MAINTAIN THE DIFFERENTIAL SET POINT ACROSS THE BUILDING CHILLED WATER SUPPLY AND RETURN PIPING MAINS.

MANUAL OR AUTOMATIC LEAD / LAG / STANDBY ROTATION OF THE PUMPS SHALL BE ALLOWED. ROTATION TIME INTERVAL SHALL BE OPERATOR ADJUSTABLE AND CAN BE INITIATED EITHER BASED ON TIME AND DATE OR BY OPERATOR INTERVENTION. THE DEFAULT LEAD / STANDBY ROTATION INTERVAL SHALL BE WEEKLY AND SHALL BE INITIATED TUESDAY AT 9:00AM.

CHILLED WATER RESET
THE BUILDING CHILLED WATER SUPPLY TEMPERATURE SHALL BE RESET BASED ON THE COOLING LOAD DEMAND (IN TONS). THE MAXIMUM CHILLED WATER SUPPLY SET POINT SHALL BE 46°F AT 20% OF LEAD CHILLER CAPACITY. THE MINIMUM CHILLED WATER SUPPLY TEMPERATURE SET POINT SHALL BE 42°F AT 80% OF THE LEAD CHILLER CAPACITY.

CHILLED WATER DEADBAND RESET
THE HEAT EXCHANGER LEAVING WATER TEMPERATURE DEADBAND SHALL BE RESET BASED ON CHILLED WATER DEMAND TO THE BUILDING. IF THE BUILDING COOLING DEMAND IS LESS THAN 30% OF THE NOMINAL CAPACITY OF THE HEAT EXCHANGER THEN THE LEAVING WATER DEADBAND SHALL BE PROPORTIONALLY RESET FROM 2°F AT 30% OF THE HEAT EXCHANGER NOMINAL CAPACITY TO 5°F AT 20% OF THE LEAD CHILLER NOMINAL CAPACITY. THE DEADBAND SHALL REMAIN AT 2°F WHEN THE BUILDING DEMAND IS GREATER THAN 30% OF THE HEAT EXCHANGER NOMINAL CAPACITY. BOTH CHILLERS SHALL HAVE DEADBAND RESET CAPABILITY.

DIFFERENTIAL PRESSURE RESET
DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET BASED ON THE CRITICAL VALVE POSITION. IF THE CRITICAL VALVE IS MORE THAN 95% OPEN THEN THE DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET UPWARD UNTIL THE CRITICAL VALVE IS LESS THAN 90% OPEN OR THE MAXIMUM DIFFERENTIAL PRESSURE SET POINT IS REACHED. IF THE CRITICAL VALVE IS LESS THAN 80% OPEN THEN THE DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET DOWNWARD UNTIL THE CRITICAL VALVE IS GREATER THAN 90% OPEN. THE CRITICAL VALVE IS DEFINED AS THE MOST OPEN CONTROL VALVE. THE MAXIMUM DIFFERENTIAL SET POINT SHALL BE SET BY THE TEST AND BALANCE CONTRACTOR. THE DEFAULT SYSTEM DIFFERENTIAL SET POINT SHALL BE SET BY THE TEST AND BALANCE CONTRACTOR.

SAFETY
ALL SAFETIES SHALL BE HARDWIRED AND GENERATE AN ALARM SIGNAL TO THE BAS.

THE CONTROL SYSTEM USES CURRENT SENSORS TO CONFIRM THAT ALL PUMPS ARE IN THEIR DESIRED STATE AND GENERATES AN ALARM IF STATUS DEVIATES FROM START / STOP CONTROL.

TREND LOGS:
REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

△1

CHILLED WATER CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	SYSTEM ENABLED COMMAND (OA LOCKOUT, RESET)					X		ENABLE/DISABLE	X	X		
2	OUTSIDE AIR TEMPERATURE - GLOBAL					X		°F	X	X		
3	CHW SUPPLY TEMPERATURE SETPOINT		X					°F	X	X		
4	CHW SYSTEM HIGH TEMPERATURE ALARM			X				NORMAL / ALARM	X	X	X	
5	CHWP-5 PUMP STATUS			X				ON / OFF	X	X		
6	CHWP-5 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	
7	CHWP-5 VFD START/STOP - HARDWIRED				X			ON / OFF	X	X		
8	CHWP-5 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
9	CHWP-5 VFD MOTOR POWER - HARDWIRED	X						KW	X			
10	CHWP-5 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
11	CHWP-6 PUMP STATUS			X				ON / OFF	X	X		
12	CHWP-6 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	
13	CHWP-6 VFD START/STOP - HARDWIRED				X			ON / OFF	X	X		
14	CHWP-6 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
15	CHWP-6 VFD MOTOR POWER - HARDWIRED	X						KW	X			
16	CHWP-6 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
17	HX ENTERING CHILLED WATER TEMPERATURE	X						°F	X	X		
18	HX LEAVING CHILLED WATER TEMPERATURE	X						°F	X	X		
19	HX ENTERING CHILLED WATER TEMPERATURE	X						°F	X	X		
20	HX LEAVING CHILLED WATER TEMPERATURE	X						°F	X	X		
21	HX ISOLATION VALVE				X			OPEN/CLOSED	X			X
22	BUILDING CHILLED WATER SUPPLY TEMPERATURE	X						°F	X	X		
23	BUILDING CHILLED WATER SUPPLY PRESSURE	X						PSIG	X	X		
24	BUILDING CHILLED WATER RETURN TEMPERATURE	X						°F	X	X		
25	BUILDING CHILLED WATER RETURN PRESSURE	X						PSIG	X	X		
26	BUILDING CHILLED WATER DIFFERENTIAL PRESSURE	X						PSIG	X	X		
27	BTU METER HOT WATER RETURN TEMPERATURE	X						°F	X	X	X	
28	BTU METER HOT WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
29	BTU METER HOT WATER SUPPLY FLOW RATE	X						GPM	X	X		
30	BTU METER ENERGY FLOW RATE	X						BTU	X	X	X	
31	CHILLED WATER DIFFERENTIAL PRESSURE - GLYCOL	X						PSIG	X	X		
32	CHILLED WATER DIFFERENTIAL PRESSURE - W/O GLYCOL	X						PSIG	X	X		

1 CHILLED WATER HEAT EXCHANGER CONTROL DIAGRAM
SCALE: NONE

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10/17/2025

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NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-603

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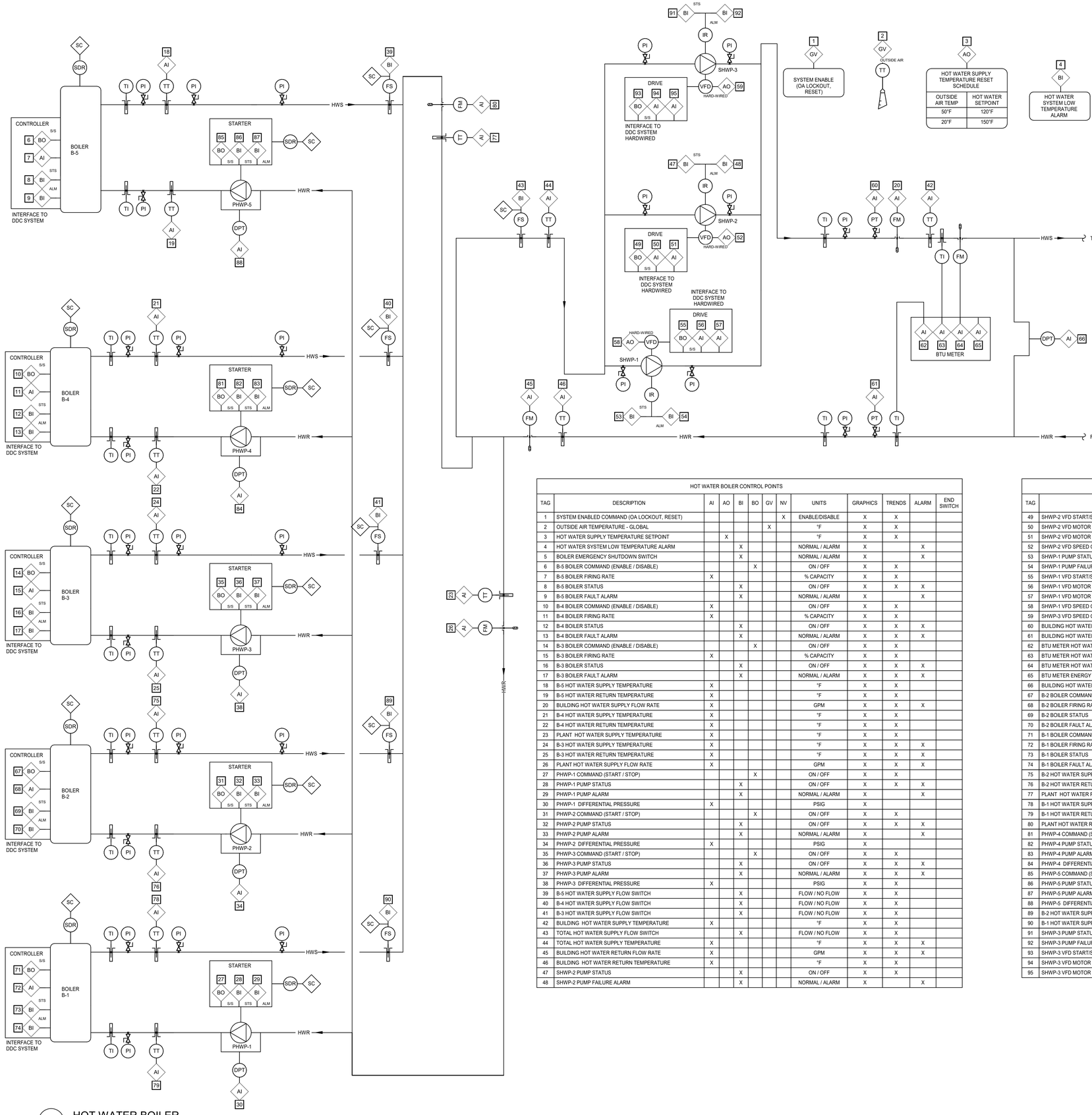

1 HOT WATER BOILER
SCALE: NONE

HOT WATER BOILER SEQUENCE
THE HOT WATER HEATING PLANT CONSISTS OF FIVE (5) CONDENSING HEATING HOT WATER BOILERS (LEAD / LAG / STANDBY) EACH WITH A DEDICATED CONSTANT SPEED PRIMARY CIRCULATING PUMP AND THREE (3) SECONDARY VARIABLE SPEED BUILDING HOT WATER LOOP PUMPS (LEAD / STANDBY). UNLESS NOTED OTHERWISE, ALL SYSTEM COMMUNICATIONS SHALL BE BACNET AND THE CONTROLS SHALL BE DIRECT DIGITAL CONTROL (DDC) USING ELECTRIC ACTUATION AND PID CONTROL LOGIC. ALL SETTINGS AND SET POINTS SHALL BE ADJUSTABLE.

EACH OF THE BOILERS INTEGRAL CONTROLLERS SHALL COMMUNICATE TO THE BUILDING AUTOMATION SYSTEM (BAS) VIA A BACNET INTERFACE. THROUGH THE BOILER CONTROL INTERFACE, THE BAS SHALL BE ABLE TO ENABLE AND DISABLE BOILERS AND ADJUST LEAVING WATER TEMPERATURE SET POINT. AT A MINIMUM, EACH BOILER CONTROL INTERFACE SHALL COMMUNICATE BOILER STATUS, FIRING RATE, AND ALARM STATUS TO THE BAS. THE PRIMARY PUMP ASSOCIATED TO EACH BOILER SHALL BE INTERLOCKED WITH THE BOILER AND CONTROLLER. THE PUMP VARIABLE FREQUENCY DRIVES (VFDS) SHALL COMMUNICATE TO THE BAS VIA A BACNET INTERFACE. THROUGH THE VFD CONTROL INTERFACE, THE BAS SHALL BE ABLE TO ENABLE AND DISABLE PUMPS AND ADJUST PUMP SPEED SET POINT. AT A MINIMUM, EACH VFD CONTROL INTERFACE SHALL COMMUNICATE PUMP STATUS, PUMP SPEED, KW AND FAULT CONDITION. VFD SPEED CONTROL SHALL BE HARDWIRED.

THE PLANT SHALL BE CONTROLLED AS FOLLOWS:
THE HEATING SYSTEM ENABLE POINT IS CONTROLLED EITHER MANUALLY BY THE OPERATOR OR BY A PROGRAM FUNCTION. IF THE HEATING SYSTEM ENABLE POINT IS ON AND THE OUTDOOR AIR TEMPERATURE IS BELOW THE ENABLE SET POINT, BOILER CONTROLLER WILL INITIATE THE BOILER SEQUENCE THROUGH THE BOILER CONTROLLER. THE BOILER CONTROLLER WILL START THE PRIMARY PUMP TO DETERMINE FLOW THROUGH ASSOCIATED BOILER PRIOR TO STARTING BOILER. THE CONTROLLER WILL INITIATE ADDITIONAL PRIMARY PUMP / BOILER COMBINATIONS ALLOWING THE HEATING WATER SYSTEM TO OPERATE AT THE HIGHEST EFFICIENCY POSSIBLE. WHEN THE BOILER CONTROLLER SHUTS DOWN A BOILER, THE BOILER SHALL BE TURNED OFF AND THE PRIMARY PUMP SHALL HAVE A DELAYED SHUTDOWN. THE DELAYED SHUTDOWN SHALL ALLOW HEATING WATER TO DISSIPATE FROM THE SHUTDOWN BOILER.

MANUAL OR AUTOMATIC LEAD / LAG / STANDBY ROTATION OF THE BOILERS AND ASSOCIATED SECONDARY PUMPS SHALL BE ALLOWED. ROTATION TIME INTERVAL SHALL BE OPERATOR ADJUSTABLE AND CAN BE INITIATED EITHER BASED ON TIME AND DATE OR BY OPERATOR INTERVENTION. THE DEFAULT LEAD / STANDBY ROTATION INTERVAL SHALL BE WEEKLY AND SHALL BE INITIATED TUESDAY AT 9:00AM.

DIFFERENTIAL PRESSURE RESET
DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET BASED ON THE CRITICAL VALVE POSITION. IF THE CRITICAL VALVE IS MORE THAN 95% OPEN THEN THE DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET UPWARD UNTIL THE CRITICAL VALVE IS LESS THAN 90% OPEN OR THE MAXIMUM DIFFERENTIAL PRESSURE SET POINT IS REACHED. IF THE CRITICAL VALVE IS LESS THAN 80% OPEN THEN THE DIFFERENTIAL PRESSURE SET POINT SHALL BE RESET DOWNWARD UNTIL THE CRITICAL VALVE IS GREATER THAN 90% OPEN. THE CRITICAL VALVE IS DEFINED AS THE MOST OPEN CONTROL VALVE. THE MAXIMUM DIFFERENTIAL SET POINT SHALL BE SET BY THE TEST AND BALANCE CONTRACTOR. THE DEFAULT SYSTEM DIFFERENTIAL SET POINT SHALL BE SET BY THE TEST AND BALANCE CONTRACTOR.

HOT WATER SUPPLY TEMPERATURE RESET
IF SECONDARY PUMP SPEED DECREASES BELOW 25%, THEN THE HEATING HOT WATER SUPPLY TEMPERATURE SET POINT SHALL BE RESET DOWNWARD UNTIL PUMP SPEED IS GREATER THAN 30% OR THE MINIMUM HOT WATER SUPPLY TEMPERATURE IS REACHED. IF SECONDARY PUMP SPEED INCREASES ABOVE 95%, THEN THE HEATING HOT WATER SUPPLY TEMPERATURE SET POINT SHALL BE RESET UPWARD UNTIL PUMP SPEED IS LESS THAN 90% OR UNTIL THE MAXIMUM HOT WATER SUPPLY TEMPERATURE IS REACHED. THE MINIMUM AND MAXIMUM HOT WATER SUPPLY TEMPERATURES SHALL BE 120°F AND 150°F , RESPECTIVELY. THE DEFAULT HOT WATER SUPPLY TEMPERATURE SHALL BE 150°F .

SAFETY
ALL SAFETIES SHALL BE HARDWIRED AND GENERATE AN ALARM SIGNAL TO THE BAS. IF A BOILER FAILS, A CRITICAL BUILDING ALARM IS GENERATED AND THE NEXT BOILER IN THE SEQUENCE STARTS. THE CONTROL SYSTEM USES CURRENT SENSORS TO CONFIRM THAT ALL PUMPS ARE IN THEIR DESIRED STATE AND GENERATES AN ALARM IF STATUS DEVIATES FROM START / STOP CONTROL. IF THE LEAD SECONDARY PUMP FAILS, AN ALARM IS GENERATED AND THE STANDBY SECONDARY PUMP STARTS. IF BOTH PUMPS FAIL, THE BOILERS ARE DISABLED AND A CRITICAL BUILDING ALARM IS GENERATED. THE ASSOCIATED BOILER PRIMARY HOT WATER PUMP SHALL CONTINUE TO RUN FOR A MINIMUM OF 5 MINUTES AFTER THE BOILER IS DISABLED. BOILER EMERGENCY SHUTDOWN SWITCH - MANUAL MUSHROOM STYLE PUSHBUTTON SWITCH MOUNTED UNDER PLEXIGLAS COVER WHEN PUSHED SHALL IMMEDIATELY SHUTDOWN THE BOILERS BURNERS. RESET SHALL BE MANUAL BY PULLING PUSHBUTTON. WHEN A SWITCH IS DEPRESSED AN ALARM IS GENERATED.

TREND LOGS:
REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

HOT WATER BOILER CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	SYSTEM ENABLED COMMAND (OA LOCKOUT, RESET)						X	ENABLE/DISABLE	X	X		
2	OUTSIDE AIR TEMPERATURE - GLOBAL					X		°F	X	X		
3	HOT WATER SUPPLY TEMPERATURE SETPOINT		X					°F	X	X		
4	HOT WATER SYSTEM LOW TEMPERATURE ALARM			X				NORMAL / ALARM	X		X	
5	BOILER EMERGENCY SHUTDOWN SWITCH			X				NORMAL / ALARM	X		X	
6	B-5 BOILER COMMAND (ENABLE / DISABLE)				X			ON / OFF	X	X		
7	B-5 BOILER FIRING RATE	X						% CAPACITY	X	X		
8	B-5 BOILER STATUS			X				ON / OFF	X	X	X	
9	B-5 BOILER FAULT ALARM			X				NORMAL / ALARM	X		X	
10	B-4 BOILER COMMAND (ENABLE / DISABLE)	X						ON / OFF	X	X		
11	B-4 BOILER FIRING RATE	X						% CAPACITY	X	X		
12	B-4 BOILER STATUS			X				ON / OFF	X	X	X	
13	B-4 BOILER FAULT ALARM			X				NORMAL / ALARM	X	X	X	
14	B-3 BOILER COMMAND (ENABLE / DISABLE)				X			ON / OFF	X	X		
15	B-3 BOILER FIRING RATE	X						% CAPACITY	X	X		
16	B-3 BOILER STATUS			X				ON / OFF	X	X	X	
17	B-3 BOILER FAULT ALARM			X				NORMAL / ALARM	X	X	X	
18	B-5 HOT WATER SUPPLY TEMPERATURE	X						°F	X	X		
19	B-5 HOT WATER RETURN TEMPERATURE	X						°F	X	X		
20	BUILDING HOT WATER SUPPLY FLOW RATE	X						GPM	X	X	X	
21	B-4 HOT WATER SUPPLY TEMPERATURE	X						°F	X	X		
22	B-4 HOT WATER RETURN TEMPERATURE	X						°F	X	X		
23	PLANT HOT WATER SUPPLY TEMPERATURE	X						°F	X	X		
24	B-3 HOT WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
25	B-3 HOT WATER RETURN TEMPERATURE	X						°F	X	X	X	
26	PLANT HOT WATER SUPPLY FLOW RATE	X						GPM	X	X	X	
27	PHWP-1 COMMAND (START / STOP)				X			ON / OFF	X	X		
28	PHWP-1 PUMP STATUS			X				ON / OFF	X	X	X	
29	PHWP-1 PUMP ALARM			X				NORMAL / ALARM	X		X	
30	PHWP-1 DIFFERENTIAL PRESSURE	X						PSIG	X			
31	PHWP-2 COMMAND (START / STOP)				X			ON / OFF	X	X		
32	PHWP-2 PUMP STATUS			X				ON / OFF	X	X	X	
33	PHWP-2 PUMP ALARM			X				NORMAL / ALARM	X		X	
34	PHWP-2 DIFFERENTIAL PRESSURE	X						PSIG	X			
35	PHWP-3 COMMAND (START / STOP)				X			ON / OFF	X	X		
36	PHWP-3 PUMP STATUS			X				ON / OFF	X	X	X	
37	PHWP-3 PUMP ALARM			X				NORMAL / ALARM	X	X	X	
38	PHWP-3 DIFFERENTIAL PRESSURE	X						PSIG	X	X		
39	B-5 HOT WATER SUPPLY FLOW SWITCH			X				FLOW / NO FLOW	X	X		
40	B-4 HOT WATER SUPPLY FLOW SWITCH			X				FLOW / NO FLOW	X	X		
41	B-3 HOT WATER SUPPLY FLOW SWITCH			X				FLOW / NO FLOW	X	X		
42	BUILDING HOT WATER SUPPLY TEMPERATURE	X						°F	X	X		
43	TOTAL HOT WATER SUPPLY FLOW SWITCH			X				FLOW / NO FLOW	X	X		
44	TOTAL HOT WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
45	BUILDING HOT WATER RETURN FLOW RATE	X						GPM	X	X	X	
46	BUILDING HOT WATER RETURN TEMPERATURE	X						°F	X	X		
47	SHWP-2 PUMP STATUS			X				ON / OFF	X	X		
48	SHWP-2 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	

HOT WATER BOILER CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
49	SHWP-2 VFD START/STOP - HARDWIRED				X			ON / OFF	X			
50	SHWP-2 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
51	SHWP-2 VFD MOTOR POWER - HARDWIRED	X						KW	X	X		
52	SHWP-2 VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
53	SHWP-1 PUMP STATUS			X				ON / OFF	X	X		
54	SHWP-1 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	
55	SHWP-1 VFD START/STOP - HARDWIRED				X			ON / OFF	X			
56	SHWP-1 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
57	SHWP-1 VFD MOTOR POWER - HARDWIRED	X						KW	X	X		
58	SHWP-1 VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
59	SHWP-3 VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
60	BUILDING HOT WATER SUPPLY PRESSURE	X						PSIG	X	X		
61	BUILDING HOT WATER RETURN PRESSURE	X						PSIG	X	X		
62	BTU METER HOT WATER RETURN TEMPERATURE	X						°F	X	X	X	
63	BTU METER HOT WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
64	BTU METER HOT WATER SUPPLY FLOW RATE	X						GPM	X	X		
65	BTU METER ENERGY FLOW RATE	X						BTUH	X	X	X	
66	BUILDING HOT WATER DIFFERENTIAL PRESSURE	X						PSIG	X	X	X	
67	B-2 BOILER COMMAND (ENABLE / DISABLE)	X						ON / OFF	X	X		
68	B-2 BOILER FIRING RATE	X						% CAPACITY	X	X		
69	B-2 BOILER STATUS				X			ON / OFF	X	X	X	
70	B-2 BOILER FAULT ALARM				X			NORMAL / ALARM	X	X	X	
71	B-1 BOILER COMMAND (ENABLE / DISABLE)					X		ON / OFF	X	X		
72	B-1 BOILER FIRING RATE	X						% CAPACITY	X	X		
73	B-1 BOILER STATUS				X			ON / OFF	X	X	X	
74	B-1 BOILER FAULT ALARM				X			NORMAL / ALARM	X	X	X	
75	B-2 HOT WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
76	B-2 HOT WATER RETURN TEMPERATURE	X						°F	X	X	X	
77	PLANT HOT WATER RETURN TEMPERATURE	X						°F	X	X		
78	B-1 HOT WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
79	B-1 HOT WATER RETURN TEMPERATURE	X						°F	X	X	X	
80	PLANT HOT WATER RETURN FLOW RATE	X						GPM	X	X	X	
81	PHWP-4 COMMAND (START / STOP)					X		ON / OFF	X	X		
82	PHWP-4 PUMP STATUS				X			ON / OFF	X	X	X	
83	PHWP-4 PUMP ALARM				X			NORMAL / ALARM	X	X	X	
84	PHWP-4 DIFFERENTIAL PRESSURE	X						PSIG	X	X		
85	PHWP-5 COMMAND (START / STOP)					X		ON / OFF	X	X		
86	PHWP-5 PUMP STATUS				X			ON / OFF	X	X	X	
87	PHWP-5 PUMP ALARM				X			NORMAL / ALARM	X	X	X	
88	PHWP-5 DIFFERENTIAL PRESSURE	X						PSIG	X	X		
89	B-2 HOT WATER SUPPLY FLOW SWITCH				X			FLOW / NO FLOW	X	X		
90	B-1 HOT WATER SUPPLY FLOW SWITCH				X			FLOW / NO FLOW	X	X		
91	SHWP-3 PUMP STATUS				X			ON / OFF	X	X		
92	SHWP-3 PUMP FAILURE ALARM				X			NORMAL / ALARM	X		X	
93	SHWP-3 VFD START/STOP - HARDWIRED					X		ON / OFF	X			
94	SHWP-3 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
95	SHWP-3 VFD MOTOR POWER - HARDWIRED	X						KW	X	X		

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10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-604

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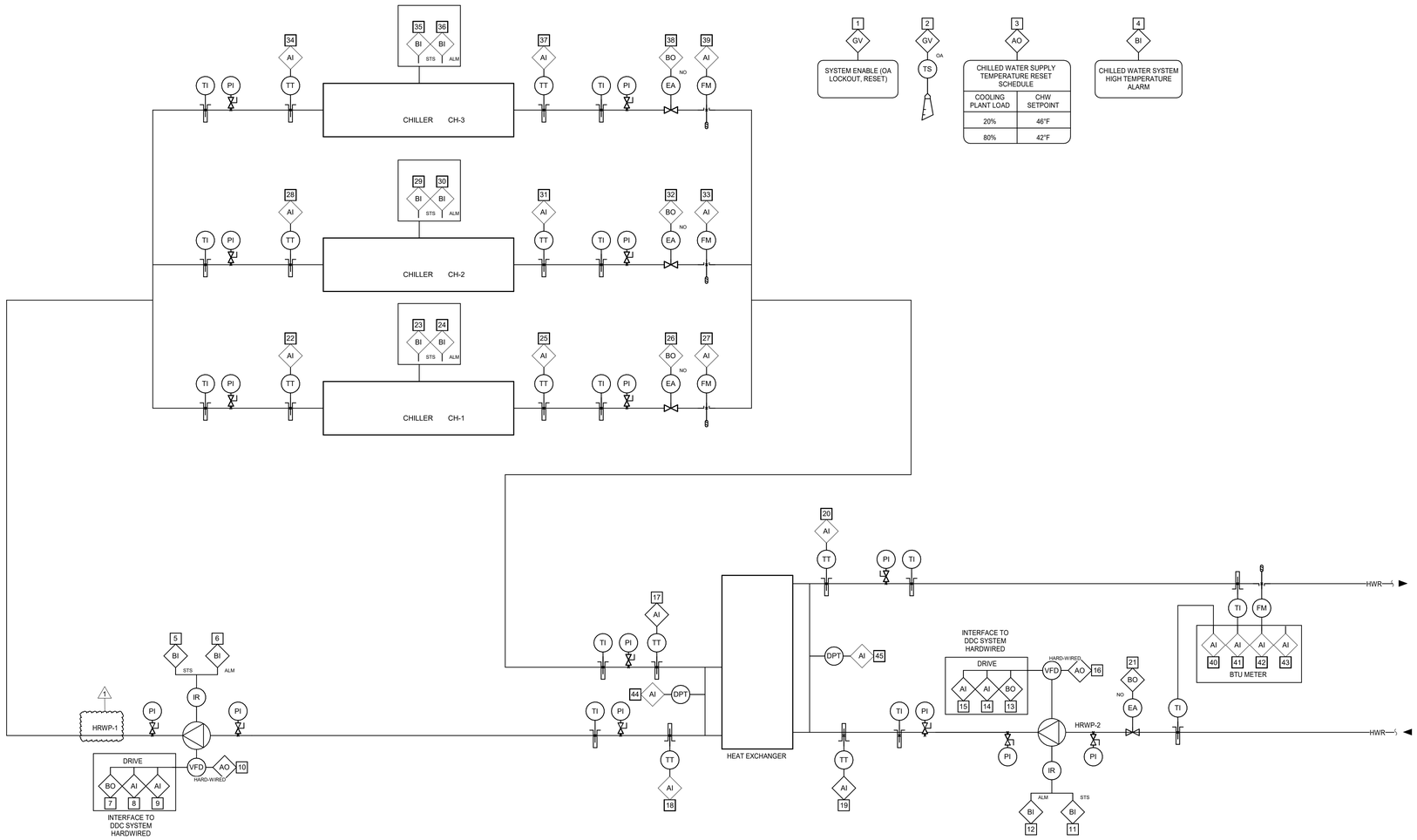
PLOT DATE: 10/16/2025 2:42:39 PM TEMPLATE VERSION: 23.0.4



HEATING WATER SEQUENCE

THE HEATING WATER REHEAT PLANT CONSISTS OF A HEAT EXCHANGER AND TWO (2) VARIABLE SPEED BUILDING HEATING WATER LOOP PUMPS. UNLESS NOTED OTHERWISE, ALL SYSTEM COMMUNICATIONS SHALL BE BACNET AND THE CONTROLS SHALL BE DIRECT DIGITAL CONTROL (DDC) USING ELECTRIC ACTUATION AND PID CONTROL LOGIC. ALL SETTINGS AND SET POINTS SHALL BE ADJUSTABLE.

1 THE HEATING WATER REHEAT WATER SYSTEM IS SCHEDULED FOR AUTOMATIC OPERATION BASED ON A HEATING WATER REQUIREMENT. THE HEAT RECOVERY SHALL BE ENABLED WHENEVER THERE IS A CALL FOR HEATING WHEN THE OUTSIDE TEMPERATURE IS ABOVE 70°F.

THE PUMP VARIABLE FREQUENCY DRIVES (VFDS) SHALL COMMUNICATE TO THE BAS VIA A BACNET INTERFACE. THROUGH THE VFD CONTROL INTERFACE, THE BAS SHALL BE ABLE TO ENABLE AND DISABLE PUMPS AND ADJUST PUMP SPEED SET POINT. AT A MINIMUM, EACH VFD CONTROL INTERFACE SHALL COMMUNICATE PUMP STATUS, PUMP SPEED, KW AND FAULT CONDITION. VFD SPEED CONTROL SHALL BE HARDWIRED.

THE PLANT SHALL BE CONTROLLED AS FOLLOWS:

THE HEATING WATER REHEAT PLANT ENABLE POINT IS CONTROLLED EITHER MANUALLY BY THE OPERATOR OR BY A PROGRAM FUNCTION. IF THE COOLING SYSTEM ENABLE POINT IS ON, THE LEAD HEAT EXCHANGER ISOLATION VALVE SHALL OPEN AND THE HEATING WATER PUMP SHALL BE ENABLED. THE PUMP VFD SHALL MAINTAIN THE DIFFERENTIAL SET POINT ACROSS THE HEAT EXCHANGER. THE REHEAT HEATING WATER PUMP SHALL ENABLE AND FLOW WATER THROUGH THE HEAT RECOVERY SECTIONS WITHIN THE CHILLER.

HEATING WATER REHEAT
THE PUMP SHALL ONLY FLOW WATER THROUGH THE HEAT RECOVERY SECTION OF THE CHILLERS AS THEY ARE ACTIVATED. MODULATING VALVES SHALL OPEN FOR THE OPERATING CHILLER AS HEATING WATER IS REQUIRED WITH THE HEATING SYSTEM OF THE BUILDING.

SAFETY
ALL SAFETIES SHALL BE HARDWIRED AND GENERATE AN ALARM SIGNAL TO THE BAS.

THE COATBOL SYSTEM USES CURRENT SENSORS TO CONFIRM THAT ALL PUMPS ARE IN THEIR DESIBED STATE AND GENERATES AN ALARM IF STATUS DEVIATES FROM START / STOP CONTROL.

TREND LOGS:
1 REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

CHILLED WATER CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	SYSTEM ENABLED COMMAND (OA LOCKOUT, RESET)					X		ENABLE/DISABLE	X	X		
2	OUTSIDE AIR TEMPERATURE - GLOBAL					X		°F	X	X		
3	CHW SUPPLY TEMPERATURE SETPOINT		X					°F	X	X		
4	CHW SYSTEM HIGH TEMPERATURE ALARM			X				NORMAL / ALARM	X	X	X	
5	HRWP-1 PUMP STATUS			X				ON / OFF	X	X		
6	HRWP-1 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	
7	HRWP-1 VFD START/STOP - HARDWIRED				X			ON / OFF	X	X		
8	HRWP-1 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
9	HRWP-1 VFD MOTOR POWER - HARDWIRED	X						KW	X			
10	HRWP-1 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
11	HRWP-2 PUMP STATUS			X				ON / OFF	X	X		
12	HRWP-2 PUMP FAILURE ALARM			X				NORMAL / ALARM	X		X	
13	HRWP-2 VFD START/STOP - HARDWIRED				X			ON / OFF	X	X		
14	HRWP-2 VFD MOTOR SPEED - HARDWIRED	X						HZ	X	X		
15	HRWP-2 VFD MOTOR POWER - HARDWIRED	X						KW	X			
16	HRWP-2 VFD SPEED CONTROL - HARDWIRED		X					HZ	X	X		
17	HX ENTERING CHILLED WATER TEMPERATURE	X						°F	X	X		
18	HX LEAVING CHILLED WATER TEMPERATURE	X						°F	X	X		
19	HX ENTERING CHILLED WATER TEMPERATURE	X						°F	X	X		
20	HX LEAVING CHILLED WATER TEMPERATURE	X						°F	X	X		
21	HX ISOLATION VALVE				X			OPEN/CLOSED	X			X
22	CH-1 ENTERING HEATING WATER TEMPERATURE	X						°F	X	X		
23	CH-1 CHILLER STATUS			X				ON / OFF	X	X		
24	CH-1 CHILLER ALARM			X				NORMAL / ALARM	X	X	X	
25	CH-1 LEAVING HEATING WATER TEMPERATURE	X						°F	X	X		
26	CH-1 HEATING WATER ISOLATION VALVE				X			OPEN/CLOSED	X			X
27	CH-1 HEATING WATER FLOW RATE	X						GPM	X	X		
28	CH-2 ENTERING HEATING WATER TEMPERATURE	X						°F	X	X		
29	CH-2 CHILLER STATUS			X				ON / OFF	X	X		
30	CH-2 CHILLER ALARM			X				NORMAL / ALARM	X	X	X	
31	CH-2 LEAVING HEATING WATER TEMPERATURE	X						°F	X	X		
32	CH-2 HEATING WATER ISOLATION VALVE				X			OPEN/CLOSED	X			X
33	CH-2 HEATING WATER FLOW RATE	X						GPM	X	X		
34	CH-3 ENTERING HEATING WATER TEMPERATURE	X						°F	X	X		
35	CH-3 CHILLER STATUS			X				ON / OFF	X	X		
36	CH-3 CHILLER ALARM			X				NORMAL / ALARM	X	X	X	
37	CH-3 LEAVING HEATING WATER TEMPERATURE	X						°F	X	X		
38	CH-3 HEATING WATER ISOLATION VALVE				X			OPEN/CLOSED	X			X
39	CH-3 HEATING WATER FLOW RATE	X						GPM	X	X		
40	BTU METER HOT WATER RETURN TEMPERATURE	X						°F	X	X	X	
41	BTU METER HOT WATER SUPPLY TEMPERATURE	X						°F	X	X	X	
42	BTU METER HOT WATER SUPPLY FLOW RATE	X						GPM	X	X		
43	BTU METER ENERGY FLOW RATE	X						BTU	X	X	X	
44	HEATING WATER DIFFERENTIAL PRESSURE - GLYCOL	X						PSIG	X	X		
45	HEATING WATER DIFFERENTIAL PRESSURE - W/O GLYCOL	X						PSIG	X	X		

1 HEATING WATER HEAT EXCHANGER CONTROL DIAGRAM
SCALE: NONE

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NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-605

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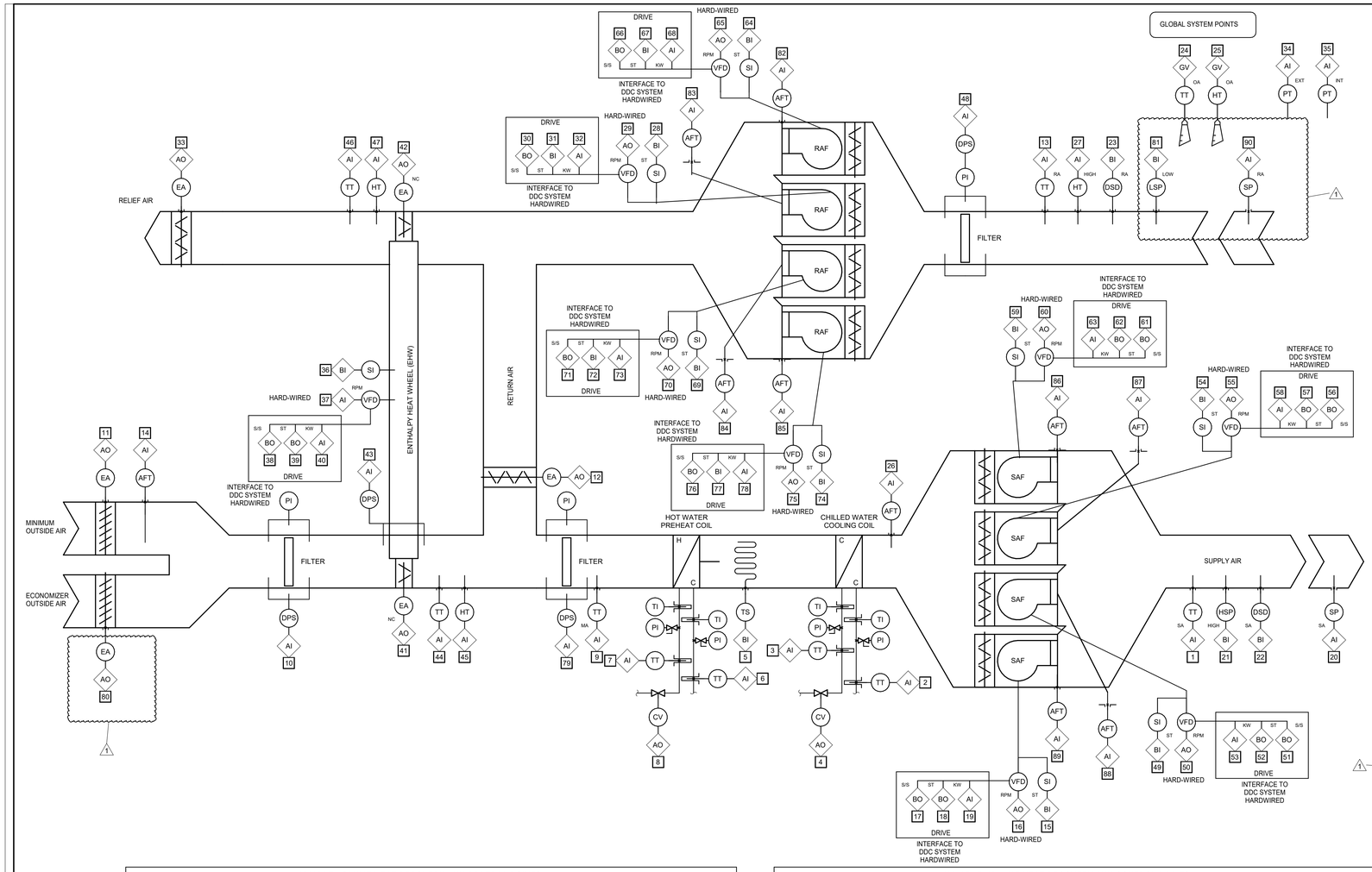

1 VARIABLE VOLUME UNIT WITH ENTHALPY WHEEL CONTROL DIAGRAM (AHU-1 AND AHU-4)
SCALE: NONE

VARIABLE VOLUME HEAT RECOVERY AHU CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	SUPPLY AIR TEMPERATURE	X						°F	X	X		
2	CHILLED WATER SUPPLY TEMPERATURE	X						°F	X	X		
3	CHILLED WATER RETURN TEMPERATURE	X						°F	X	X		
4	CHILLED WATER CONTROL VALVE		X					% OPEN	X	X		
5	LOW LIMIT TEMPERATURE FREEZE STAT (*)			X				NORMAL / ALARM	X		X	
6	HEATING WATER SUPPLY TEMPERATURE	X						°F	X	X		
7	HEATING WATER RETURN TEMPERATURE	X						°F	X	X		
8	HEATING WATER CONTROL VALVE		X					% OPEN	X	X		
9	MIXED AIR TEMPERATURE	X						°F	X			
10	OA FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
11	MINIMUM OUTSIDE AIR DAMPER		X					% OPEN	X			X
12	RETURN AIR DAMPER		X					% OPEN	X			
13	RETURN AIR TEMPERATURE	X						°F	X			
14	OUTSIDE AIR FLOW MEASURING STATION	X						CFM	X			
15	SUPPLY AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
16	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
17	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
18	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X			ON / OFF	X		X	
19	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X						kW	X			
20	SUPPLY AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
21	SUPPLY AIR DUCT HIGH LIMIT STATIC PRESSURE (*)			X				NORMAL / ALARM	X		X	
22	SUPPLY AIR DUCT SMOKE DETECTOR			X				NORMAL / ALARM	X		X	
23	RETURN AIR DUCT SMOKE DETECTOR			X				NORMAL / ALARM	X		X	
24	OUTSIDE AIR TEMPERATURE - GLOBAL SYSTEM POINT					X		°F	X	X		
25	OUTSIDE AIR HUMIDITY - GLOBAL SYSTEM POINT					X		% RH	X	X		
26	SUPPLY AIR FLOW MEASURING STATION	X						CFM	X			
27	RETURN AIR HUMIDITY	X						% RH	X			
28	RETURN AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
29	RETURN AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
30	RETURN AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
31	RETURN AIR FAN VFD STATUS - HARDWIRED			X				ON / OFF	X		X	
32	RETURN AIR FAN MOTOR POWER - HARDWIRED	X						kW	X		X	
33	RELIEF AIR DAMPER		X					% OPEN	X			X
34	EXTERIOR STATIC PRESSURE	X						IN WC	X			
35	BUILDING INTERIOR STATIC PRESSURE	X						IN WC	X			
36	HEAT WHEEL MOTOR STATUS			X				ON / OFF	X		X	
37	HEAT WHEEL VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
38	HEAT WHEEL VFD START / STOP				X			START / STOP	X			
39	HEAT WHEEL VFD STATUS			X				ON / OFF	X		X	
40	HEAT WHEEL MOTOR POWER	X						kW	X		X	
41	HEAT WHEELOUTSIDE AIR BYPASS DAMPER		X					% OPEN	X			
42	HEAT WHEEL EXHAUST AIR BYPASS DAMPER		X					% OPEN	X			
43	HEAT WHEEL DIFFERENTIAL PRESSURE	X						IN WC	X			
44	HEAT WHEEL SUPPLY AIR TEMPERATURE	X						°F	X			
45	HEAT WHEEL SUPPLY AIR HUMIDITY	X						% RH	X			
46	HEAT WHEEL EXHAUST AIR TEMPERATURE	X						°F	X			
47	HEAT WHEEL EXHAUST AIR HUMIDITY	X						% RH	X			
48	RA FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	

VARIABLE VOLUME HEAT RECOVERY AHU CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
49	SUPPLY AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
50	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
51	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
52	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X			ON / OFF	X		X	
53	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X						kW	X			
54	SUPPLY AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
55	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
56	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
57	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X			ON / OFF	X		X	
58	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X						kW	X			
59	SUPPLY AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
60	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
61	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
62	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X			ON / OFF	X		X	
63	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X						kW	X			
64	RETURN AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
65	RETURN AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
66	RETURN AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
67	RETURN AIR FAN VFD STATUS - HARDWIRED			X				ON / OFF	X		X	
68	RETURN AIR FAN MOTOR POWER - HARDWIRED	X						kW	X		X	
69	RETURN AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
70	RETURN AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
71	RETURN AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
72	RETURN AIR FAN VFD STATUS - HARDWIRED			X				ON / OFF	X		X	
73	RETURN AIR FAN MOTOR POWER - HARDWIRED	X						kW	X		X	
74	RETURN AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
75	RETURN AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
76	RETURN AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
77	RETURN AIR FAN VFD STATUS - HARDWIRED			X				ON / OFF	X		X	
78	RETURN AIR FAN MOTOR POWER - HARDWIRED	X						kW	X		X	
79	SUPPLY AIR FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
~~80~~	~~ECONOMIZER OUTSIDE AIR DAMPER~~		~~X~~					~~% OPEN~~	~~X~~			~~X~~
81	RETURN AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	
82	RETURN FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
83	RETURN FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
84	RETURN FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
85	RETURN FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
86	SUPPLY FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
87	SUPPLY FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
88	SUPPLY FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
89	SUPPLY FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
90	RETURN AIR DUCT STATIC PRESSURE	X						IN WC	X	X		

~~(*) PROVIDED TO INDICATE SAFETY DEVICE TO BE HARDWIRE INTERLOCK, MANUAL RESET TO~~
THE MOTOR STARTER / VFD AND ALARM TO BMS.

HEAT RECOVERY UNITS
AIR HANDLING UNITS SHALL BE SCHEDULED FOR AUTOMATIC OPERATION ON A TIME OF DAY BASIS FOR OCCUPIED AND UNOCCUPIED MODES. WITHIN THE UNOCCUPIED MODE, THE SYSTEM CAN ENTER THE WARM-UP MODE WHEN THE SPACE TEMPERATURE IS BELOW SET POINT OR THE COOL-DOWN MODE WHEN THE SPACE TEMPERATURE IS ABOVE SET POINT. THE SYSTEM STAYS IN WARM-UP OR COOL-DOWN MODE UNTIL THE MODE SET POINT IS SATISFIED. WITHIN THE UNOCCUPIED MODE, NIGHT HEATING IS AVAILABLE WHEN THE SPACE TEMPERATURE DROPS BELOW 60°F.

ALL SYSTEM COMMUNICATIONS SHALL BE OPEN PROTOCOL. THE CONTROLS SHALL BE DDC USING ELECTRIC ACTUATION AND PID CONTROL LOGIC. ALL CONTROL, MONITORING AND ALARM POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION AND ALL SET POINTS AND SETTINGS ARE ADJUSTABLE.

OCCUPIED MODE
THE SUPPLY FAN SHALL START OR CONTINUE TO RUN. THE OUTSIDE AIR DAMPER IS MODULATED TO MAINTAIN VENTILATION SET POINT WHILE THE HEATING AND COOLING SECTIONS MODULATE WITHOUT OVERLAP TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT. THE SUPPLY AIR FAN SPEED SHALL MODULATE TO MAINTAIN SUPPLY AIR DUCT STATIC PRESSURE SET POINT.

VENTILATION CONTROL. THE MINIMUM OUTSIDE AIR SHALL BE THE SET POINT ON THE AIR HANDLER UNIT SCHEDULE DURING OCCUPIED HOURS.

ENTHALPY / DRY BULB ECONOMIZER CONTROL. IN THE COOLING MODE, IF THE OUTSIDE AIR DRY BULB IS LOWER THAN THE RETURN AIR DRY BULB TEMPERATURE, OR IF THE OUTSIDE AIR ENTHALPY IS LOWER THAN THE RETURN AIR ENTHALPY, THE ECONOMIZER CAN OPERATE. THE ENTHALPY WHEEL SHALL STOP AND THE BYPASS DAMPER SHALL OPEN. THE SYSTEM MODULATES THE OUTSIDE AIR ECONOMIZER DAMPER AND THE RETURN AIR DAMPER IN UNISON TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT. THE SYSTEM MAY SIMULTANEOUSLY USE MECHANICAL COOLING IF NEEDED TO ACHIEVE THE DESIRED TEMPERATURE.

DEACTIVATION / TRANSITION TO MECHANICAL COOLING (IF CONDITIONS ARE UNFAVORABLE). IF THE OUTSIDE AIR DRY BULB TEMPERATURE RISES ABOVE THE RETURN AIR DRY BULB, OR IF THE OUTSIDE ENTHALPY RISES ABOVE THE RETURN AIR ENTHALPY, THE ECONOMIZER IS NO LONGER BENEFICIAL FOR COOLING. THE ENTHALPY WHEEL SHALL BE STARTED AND THE BYPASS DAMPERS SHALL CLOSE. IF THE SYSTEM STILL REQUIRES COOLING, THE CHILLED WATER CONTROL VALVE SHALL BE MODULATED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT.

ECONOMIZER HIGH-LIMIT SHUTOFF. THE ECONOMIZER SHALL BE DISABLED WHEN THE OUTDOOR DRY BULB TEMPERATURE IS ABOVE 75°F (ADJ.).

RETURN FAN CONTROL - BUILDING PRESSURIZATION. THE RETURN FAN SPEED SHALL MODULATE TO MAINTAIN BUILDING PRESSURIZATION SET POINT. WHEN THE INDOOR PRESSURE FALLS BELOW SET POINT, THE RETURN FAN SPEED SHALL REDUCE TO 30% AND REMAIN CONSTANT WHILE THE EXHAUST AIR DAMPER MODULATES TO MAINTAIN PRESSURE SET POINT. INDOOR PRESSURE SET POINT SHALL BE 0.05 IN WC. THE INDOOR STATIC PRESSURE SENSORS SHALL BE INSTALLED EITHER IN AN INTERIOR CORRIDOR AWAY FROM ANY EXTERIOR WALLS OR DOORS, OR IN THE LARGEST ZONE SERVED BY THE AIR HANDLER WHERE THE LARGEST ZONE PEAK SUPPLY AIR FLOW IS GREATER THAN 50% OF THE PEAK AIR HANDLER SUPPLY RATE. THE OUTDOOR AIR STATIC PRESSURE SENSORS SHALL BE INSTALLED ON THE ROOF WITHIN A WIND PROTECTIVE BARRIER.

UNOCCUPIED MODE
THE SUPPLY FAN IS OFF, THE COOLING SECTION MODULATES CLOSED AND THE MIXED AIR DAMPERS CLOSE TO THE OUTDOOR AIR.

UNOCCUPIED HEATING. WHEN THE CRITICAL ZONE SPACE TEMPERATURE IS BELOW 60°F, THE SUPPLY FAN STARTS AND THE HEATING SECTION MODULATES TO MAINTAIN THE LEAVING AIR TEMPERATURE AT 85°F, WHILE THE MIXING SECTION REMAINS CLOSED TO OUTDOOR AIR. WHEN THE CRITICAL ZONE SPACE TEMPERATURE IS ABOVE 63°F OR WHEN THE SUPPLY FAN SPEED IS LESS THAN 30%, THE SUPPLY FAN STOPS, THE HEATING COIL VALVE CLOSES AND THE INDIVIDUAL TERMINAL UNIT DAMPERS SHALL CLOSE FULLY.

UNOCCUPIED COOLING. WHEN THE CRITICAL ZONE SPACE TEMPERATURE IS ABOVE 85°F, THE SUPPLY AND RETURN FANS START WHILE THE COOLING SECTION MODULATES TO MAINTAIN THE LEAVING SUPPLY AIR TEMPERATURE AT 55°F. WHEN THE CRITICAL ZONE SPACE TEMPERATURE IS BELOW 80°F OR WHEN THE SUPPLY FAN SPEED IS LESS THAN 30%, THE SUPPLY FAN STOPS WHILE THE COOLING COIL VALVE AND OUTSIDE AIR DAMPER CLOSE AND THE INDIVIDUAL TERMINAL UNIT DAMPERS SHALL CLOSE FULLY.

MORNING WARM-UP. WHEN THE CRITICAL ZONE SPACE TEMPERATURE IS BELOW 65°F, THE SUPPLY AND RETURN FANS START, THE MIXING DAMPERS ARE POSITIONED FOR 100% RETURN AIR AND THE HEATING SECTION MODULATES WHILE THE COOLING COIL VALVE REMAINS CLOSED. THE HEATING SECTION MODULATES TO MAINTAIN THE LEAVING AIR TEMPERATURE AT 85°F. IF THE TIME REACHES THE LATEST START TIME DURING THE WARM-UP MODE THEN THE OUTDOOR AIR DAMPER OPENS TO ITS MINIMUM POSITION. THE SYSTEM IS PREVENTED FROM ENTERING THE WARM-UP MODE MORE THAN ONCE PER DAY. WHEN THE CRITICAL ZONE SPACE TEMPERATURE IS ABOVE 70°F OR WHEN THE SUPPLY FAN SPEED IS LESS THAN 30%, THE AIR HANDLER SHALL GO TO NORMAL OCCUPIED MODE OF OPERATION. THE INDIVIDUAL TERMINAL UNIT DAMPERS SHALL CLOSE FULLY ONCE THE ZONE SPACE TEMPERATURE REACHES 72°F. THE WARM-UP MODE SHALL BE ENABLED ONE HOUR BEFORE SCHEDULED OCCUPANCY.

MORNING COOL-DOWN. WHEN THE CRITICAL ZONE SPACE TEMPERATURE IS ABOVE 80°F, THE SUPPLY AND RETURN FANS START, THE HEATING COIL VALVE REMAINS CLOSED. THE COOLING COIL VALVE AND THE MIXING DAMPERS MODULATE TO MAINTAIN THE LEAVING AIR TEMPERATURE AT 55°F. WHEN THE OUTSIDE AIR DRY BULB TEMPERATURE IS ABOVE THE ECONOMIZER CHANGEOVER VALUE, THE MIXING DAMPERS ARE POSITIONED FOR 100% RETURN AIR. IF TIME REACHES THE LATEST START TIME DURING THE COOL-DOWN MODE, THE OUTDOOR AIR DAMPER OPENS TO ITS MINIMUM POSITION OR IS CONTROLLED IN ECONOMIZER OPERATION. THE SYSTEM IS PREVENTED FROM ENTERING THE COOL-DOWN MODE MORE THAN ONCE PER DAY. WHEN THE CRITICAL ZONE SPACE TEMPERATURE IS BELOW 78°F OR WHEN THE SUPPLY FAN SPEED IS LESS THAN 30%, THE AIR HANDLER SHALL GO TO NORMAL OCCUPIED MODE OF OPERATION. THE INDIVIDUAL TERMINAL UNIT DAMPERS SHALL CLOSE FULLY ONCE THE ZONE SPACE TEMPERATURE REACHES 75°F. THE COOL-DOWN MODE SHALL BE ENABLED 1 HOUR BEFORE SCHEDULED OCCUPANCY.

ENTHALPY HEAT WHEEL FROST CONTROL: WHEN EITHER THE DIFFERENTIAL PRESSURE ACROSS THE HEAT WHEEL IS GREATER THAN SET POINT OR WHEN OUTDOOR AIR IS BELOW THE FROST THRESHOLD SET POINT, THE VFD SHALL REDUCE THE ROTATIONAL SPEED OF THE HEAT WHEEL AND/OR THE EXHAUST AIR HEAT WHEEL BYPASS DAMPER SHALL MODULATE AS REQUIRED.

ENERGY RECOVERY WHEEL: AIR HANDLING UNIT MANUFACTURER SHALL SUPPLY CONTROLLER FOR ENERGY RECOVERY WHEEL.

SMOKE DETECTORS. SMOKE DETECTORS INSTALLED IN THE SUPPLY AND/OR RETURN AIR STREAMS SHALL DE-ENERGIZE THE SUPPLY FAN UPON ACTIVATION. ALL DAMPERS AND VALVES SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED.

END SWITCHES. END SWITCHES INSTALLED ON DAMPERS SHALL ENSURE THE DAMPERS ARE FULLY OPENED BEFORE THE FANS ARE ALLOWED TO START. END SWITCHES SHALL BE MONITORED AND IF CLOSED SHALL SHUT DOWN ASSOCIATED FAN OR FANS.

CURRENT SWITCHES. CURRENT SWITCHES ARE INSTALLED AT THE SUPPLY AND RETURN FANS. THE CONTROL SYSTEM USES THE SWITCH TO CONFIRM THE FAN IS IN THE DESIRED STATE AND GENERATES AN ALARM SIGNAL IF STATUS DEVIATES FROM THE START/STOP CONTROL

FREEZE PROTECTION. A LOW TEMPERATURE SENSOR DOWNSTREAM OF THE HEATING COIL AND UPSTREAM OF THE COOLING COIL. DE-ENERGIZES THE SUPPLY FAN WHILE THE HEATING SECTION MODULATES OPEN AND THE MIXED AIR DAMPERS CLOSE TO OUTSIDE AIR, WHEN THE TEMPERATURE FALLS BELOW 38°F.

ISOLATION DAMPER. ARE GRAVITY DAMPERS AND WILL OPEN WHEN THE FAN IS OPERATING.

ADDITIONAL REQUIREMENTS FOR VARIABLE VOLUME AIR HANDLING UNITS

SUPPLY AIR TEMPERATURE RESET - VARIABLE VOLUME SYSTEMS. THE SUPPLY AIR TEMPERATURE SET POINT SHALL BE RESET LINEARLY BASED ON OUTSIDE AIR TEMPERATURE. THE SUPPLY AIR TEMPERATURE SET POINT SHALL BE 65°F AT 0°F AND TO 55°F AT 70°F AND HIGHER OUTSIDE AIR TEMPERATURE (ADJ).

IF RETURN AIR RELATIVE HUMIDITY RISES ABOVE 60 PERCENT RH, THE RESET SCHEDULE SHALL BE DEACTIVATED, AND THE SETPOINT SHALL BE SET TO 48 DEGREES F. AFTER 60 MINUTES, RE-ACTIVATE RESET SCHEDULE IF BUILDING RH FALLS BELOW 55 PERCENT. PROVIDE RETURN DUCT RH SENSOR FOR MONITORING AND RESET CONTROL

CRITICAL ZONE SUPPLY AIR STATIC PRESSURE RESET - VARIABLE VOLUME SYSTEMS. THE SUPPLY AIR FAN SPEED SHALL MODULATE TO MAINTAIN STATIC PRESSURE SET POINT. THE DEFAULT SYSTEM STATIC PRESSURE SET POINT SHALL BE SET BY THE TEST AND BALANCE CONTRACTOR. THE STATIC PRESSURE SET POINT SHALL BE RESET EVERY 5 MINUTES BASED ON THE POSITION OF THE CRITICAL ZONE DAMPER. IF THE CRITICAL ZONE DAMPER IS GREATER THAN 90% OPEN, THEN THE STATIC PRESSURE SET POINT SHALL BE REST UPWARD UNTIL THE CRITICAL DAMPER POSITION IS LESS THAN 90% OPEN OR UNTIL THE MAXIMUM STATIC PRESSURE SET POINT IS REACHED. IF THE CRITICAL ZONE DAMPER IS 85% OPEN, THEN THE STATIC PRESSURE SET POINT SHALL BE REST DOWNWARD UNTIL THE CRITICAL DAMPER POSITION IS 90% OPEN. THE STATIC PRESSURE SHALL BE MEASURED IMMEDIATELY DOWNSTREAM OF THE AIR HANDLER AND UPSTREAM OF ANY BRANCH DUCTS. THE INITIAL DEFAULT STATIC PRESSURE SET POINT SHALL BE EQUAL TO THE SCHEDULED EXTERNAL STATIC PRESSURE AND THE MAXIMUM STATIC PRESSURE SET POINT SHALL BE 0.50 IN WC ABOVE THE INITIAL DEFAULT SET POINT. INITIALLY ALL ZONES SHALL BE INCLUDED IN THE CRITICAL ZONE RESET STRATEGY, HOWEVER THE OPERATOR SHALL HAVE THE ABILITY TO SELECT AND UNSELECT THE ZONES TO INCLUDE AS WELL AS THE ABILITY TO BYPASS THE CRITICAL ZONE RESET STRATEGY ALTOGETHER AND INSTEAD UTILIZE THE INITIAL DEFAULT STATIC PRESSURE AS A CONSTANT VALUE.

CRITICAL ZONE IS THE ZONE WITH THE DAMPER THAT IS THE GREATEST PERCENTAGE OPEN.

SAFETY:

SUPPLY STATIC PRESSURE CUTOUT. DISCHARGE HIGH STATIC PRESSURE CUTOUT AND VARIABLE FREQUENCY DRIVE FAULTS DE-ENERGIZE THE SUPPLY FAN AND RETURN FAN UPON ACTIVATION AND GENERATE AN ALARM SIGNAL. ALL OTHER DAMPERS AND VALVES SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED. THE DISCHARGE HIGH STATIC PRESSURE SET POINT SHALL BE THE SCHEDULED EXTERNAL STATIC PRESSURE PLUS 1.0 IN WC.

RETURN STATIC PRESSURE CUTOUT. RETURN LOW STATIC PRESSURE CUTOUT AND VARIABLE FREQUENCY DRIVE FAULTS DE-ENERGIZE THE SUPPLY FAN AND RETURN FAN UPON ACTIVATION AND GENERATE AN ALARM SIGNAL. ALL OTHER DAMPERS AND VALVES SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED. THE RETURN LOW STATIC PRESSURE SET POINT SHALL BE MINUS 3.0 IN WC.

SUPPLY AIR VOLUME LIMIT. THE MAXIMUM SUPPLY AIR CFM SHALL BE NO HIGHER THAN THE MAXIMUM INDICATED ON THE AIR HANDLER SCHEDULE. THE SUPPLY FAN SHALL NOT BE ALLOWED TO OPERATE PAST THIS LIMIT.

TREND LOGS:
REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

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REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-606

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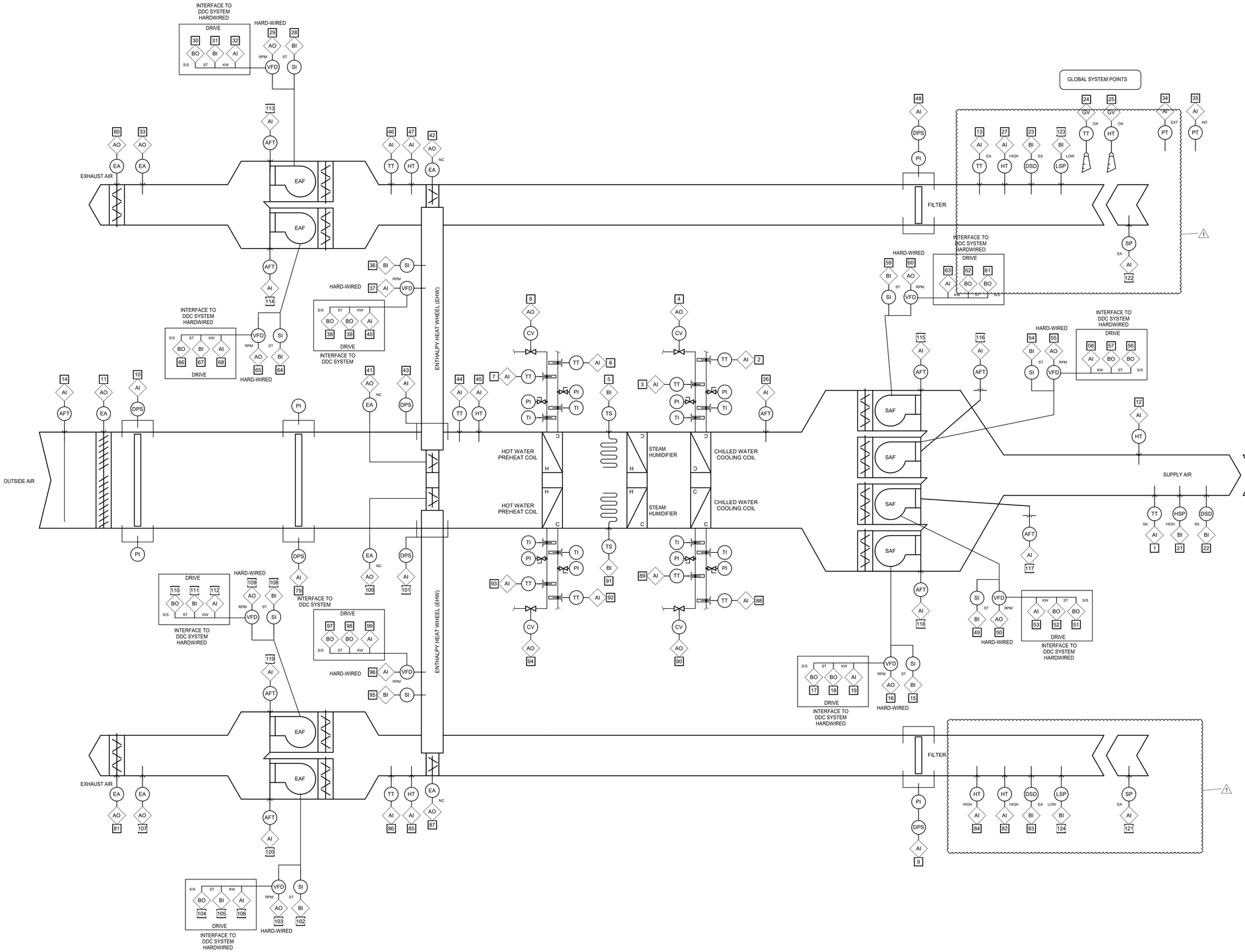

1 DOAS UNIT WITH ENTHALPY WHEEL CONTROL DIAGRAM (AHU-2 AND AHU-3) (1 OF 2)
SCALE: NONE

PLOT DATE: 10/16/2025 2:42:22 PM TEMPLATE VERSION: 23.0.4

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NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
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CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
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HEAT RECOVERY UNITS
AIR HANDLING UNITS SHALL BE SCHEDULED FOR AUTOMATIC OPERATION ALL DAY, EVERY DAY.

ALL SYSTEM COMMUNICATIONS SHALL BE OPEN PROTOCOL. THE CONTROLS SHALL BE DDC USING ELECTRIC ACTUATION AND PID CONTROL LOGIC. ALL CONTROL, MONITORING AND ALARM POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION AND ALL SET POINTS AND SETTINGS ARE ADJUSTABLE.

OPERATION MODE
THE SUPPLY FAN SHALL START OR CONTINUE TO RUN, THE HEATING AND COOLING SECTIONS MODULATE WITHOUT OVERLAP TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT. THE SUPPLY AIR FAN SPEED SHALL MODULATE TO MAINTAIN SUPPLY AIR DUCT STATIC PRESSURE SET POINT.

CRITICAL ZONE SUPPLY AIR STATIC PRESSURE RESET. THE SUPPLY AIR FAN SPEED SHALL MODULATE TO MAINTAIN STATIC PRESSURE SET POINT. THE DEFAULT SYSTEM STATIC PRESSURE SET POINT SHALL BE SET BY THE TEST AND BALANCE CONTRACTOR. THE STATIC PRESSURE SET POINT SHALL BE RESET EVERY 5 MINUTES BASED ON THE POSITION OF THE CRITICAL ZONE VALVE. IF THE CRITICAL ZONE VALVE IS GREATER THAN 90% OPEN, THEN THE STATIC PRESSURE SET POINT SHALL BE RESET UPWARD UNTIL THE CRITICAL VALVE POSITION IS LESS THAN 90% OPEN OR UNTIL THE MAXIMUM STATIC PRESSURE SET POINT IS REACHED. IF THE CRITICAL ZONE VALVE IS 85% OPEN, THEN THE STATIC PRESSURE SET POINT SHALL BE RESET DOWNWARD UNTIL THE CRITICAL VALVE POSITION IS 90% OPEN. THE STATIC PRESSURE SHALL BE MEASURED IMMEDIATELY DOWNSTREAM OF THE AIR HANDLER AND UPSTREAM OF ANY BRANCH DUCTS. THE INITIAL DEFAULT STATIC PRESSURE SET POINT SHALL BE EQUAL TO THE SCHEDULED EXTERNAL STATIC PRESSURE AND THE MAXIMUM STATIC PRESSURE SET POINT SHALL BE 0.50 IN WC ABOVE THE INITIAL DEFAULT SET POINT. INITIALLY ALL ZONES SHALL BE INCLUDED IN THE CRITICAL ZONE RESET STRATEGY, HOWEVER THE OPERATOR SHALL HAVE THE ABILITY TO SELECT AND UNSELECT THE ZONES TO INCLUDE AS WELL AS THE ABILITY TO BYPASS THE CRITICAL ZONE RESET STRATEGY ALTOGETHER AND INSTEAD UTILIZE THE INITIAL DEFAULT STATIC PRESSURE AS A CONSTANT VALUE.

CRITICAL ZONE IS THE ZONE WITH THE DAMPER THAT IS THE GREATEST PERCENTAGE OPEN.

ENTHALPY / DRY BULB ECONOMIZER CONTROL. IN THE COOLING MODE, IF THE OUTSIDE AIR DRY BULB IS LOWER THAN THE RETURN AIR DRY BULB TEMPERATURE, OR IF THE OUTSIDE AIR ENTHALPY IS LOWER THAN THE RETURN AIR ENTHALPY, THE ECONOMIZER CAN OPERATE. THE ENTHALPY WHEEL SHALL STOP AND THE BYPASS DAMPER SHALL OPEN. THE SYSTEM MAY SIMULTANEOUSLY USE MECHANICAL COOLING IF NEEDED TO ACHIEVE THE DESIRED TEMPERATURE.

DEACTIVATION / TRANSITION TO MECHANICAL COOLING (IF CONDITIONS ARE UNFAVORABLE). IF THE OUTSIDE AIR DRY BULB TEMPERATURE RISES ABOVE THE RETURN AIR DRY BULB, OR IF THE OUTSIDE ENTHALPY RISES ABOVE THE RETURN AIR ENTHALPY, THE ECONOMIZER IS NO LONGER BENEFICIAL FOR COOLING. THE ENTHALPY WHEEL SHALL BE STARTED AND THE BYPASS DAMPERS SHALL CLOSE. IF THE SYSTEM STILL REQUIRES COOLING, THE CHILLED WATER CONTROL VALVE SHALL BE MODULATED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT.

ECONOMIZER HIGH-LIMIT SHUTOFF. THE ECONOMIZER SHALL BE DISABLED WHEN THE OUTDOOR DRY BULB TEMPERATURE IS ABOVE 75°F (ADJ.).

SUPPLY AIR TEMPERATURE RESET. THE SUPPLY AIR TEMPERATURE SET POINT SHALL BE RESET BASED ON OUTSIDE AIR TEMPERATURE. THE SUPPLY AIR TEMPERATURE SET POINT SHALL BE 60°F AT 45°F AND LOWER OUTSIDE AIR TEMPERATURE AND RESET PROPORTIONALLY TO 55°F AT 55°F AND HIGHER OUTSIDE AIR TEMPERATURE.

EXHAUST FAN CONTROL. THE EXHAUST FAN SPEED SHALL MODULATE TO MAINTAIN EXHAUST DUCT NEGATIVE STATIC PRESSURE.

HUMIDIFICATION. THE HUMIDIFIER SHALL BE ACTIVATED WHEN THE EXHAUST AIR RELATIVE HUMIDITY DROPS BELOW 35% (ADJ). THE CONTROLLER SHALL MODULATE THE STEAM HUMIDIFIER BASED ON THE EXHAUST AIR RELATIVE HUMIDITY. THE CONTROL SETPOINT SHALL BE BETWEEN AN OWNER SPECIFIED 40% MAXIMUM / 20% MINIMUM VALUE TO MAINTAIN RELATIVE HUMIDITY REQUIREMENT. THE HUMIDIFIER SHALL BE DISABLED WHENEVER THE SUPPLY FAN SECTION STATUS IS OFF. ALARMS / SAFETIES: HUMIDIFIERS SHALL ALARM AT EXHAUST AIR RELATIVE HUMIDITY LEVELS MAXIMUM / MINIMUMS. WHERE THE HIGH LIMIT IS TRIPPED, THE HUMIDIFIER CONTROL VALVES SHALL CLOSE AND GENERATE AN ALARM.

ENTHALPY HEAT WHEEL FROST CONTROL: WHEN EITHER THE DIFFERENTIAL PRESSURE ACROSS THE HEAT WHEEL IS GREATER THAN SET POINT OR WHEN OUTDOOR AIR IS BELOW THE FROST THRESHOLD SET POINT, THE VFD SHALL REDUCE THE ROTATIONAL SPEED OF THE HEAT WHEEL AND/OR THE EXHAUST AIR HEAT WHEEL BYPASS DAMPER SHALL MODULATE AS REQUIRED.

ENERGY RECOVERY WHEEL: AIR HANDLING UNIT MANUFACTURER SHALL SUPPLY CONTROLLER FOR ENERGY RECOVERY WHEEL.

SMOKE DETECTORS. SMOKE DETECTORS INSTALLED IN THE SUPPLY AND/OR RETURN AIR STREAMS SHALL DE-ENERGIZE THE SUPPLY FAN UPON ACTIVATION. ALL DAMPERS AND VALVES SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED.

END SWITCHES. END SWITCHES INSTALLED ON DAMPERS SHALL ENSURE THE DAMPERS ARE FULLY OPENED BEFORE THE FANS ARE ALLOWED TO START. END SWITCHES SHALL BE MONITORED AND IF CLOSED SHALL SHUT DOWN ASSOCIATED FAN OR FANS

CURRENT SWITCHES. CURRENT SWITCHES ARE INSTALLED AT THE SUPPLY AND RETURN FANS. THE CONTROL SYSTEM USES THE SWITCH TO CONFIRM THE FAN IS IN THE DESIRED STATE AND GENERATES AN ALARM SIGNAL IF STATUS DEVIATES FROM THE START/STOP CONTROL

FREEZE PROTECTION. A LOW TEMPERATURE SENSOR DOWNSTREAM OF THE HEATING COIL AND UPSTREAM OF THE COOLING COIL, DE-ENERGIZES THE SUPPLY FAN WHILE THE HEATING SECTION MODULATES OPEN AND THE MIXED AIR DAMPERS CLOSE TO OUTSIDE AIR, WHEN THE TEMPERATURE FALLS BELOW 38°F.

ISOLATION DAMPER. ARE GRAVITY DAMPERS AND WILL OPEN WHEN THE FAN IS OPERATING.

SAFETY:

STATIC PRESSURE CUTOUT. DISCHARGE HIGH STATIC PRESSURE CUTOUT AND VARIABLE FREQUENCY DRIVE FAULTS DE-ENERGIZE THE SUPPLY FAN AND RETURN FAN UPON ACTIVATION AND GENERATE AN ALARM SIGNAL. ALL OTHER DAMPERS AND VALVES SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED. THE DISCHARGE HIGH STATIC PRESSURE SET POINT SHALL BE THE SCHEDULED EXTERNAL STATIC PRESSURE PLUS 1.0 IN WC.

EXHAUST STATIC PRESSURE CUTOUT. EXHAUST LOW STATIC PRESSURE CUTOUT AND VARIABLE FREQUENCY DRIVE FAULTS DE-ENERGIZE THE SUPPLY FAN AND EXHAUST FAN UPON ACTIVATION AND GENERATE AN ALARM SIGNAL. ALL OTHER DAMPERS AND VALVES SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED. THE EXHAUST LOW STATIC PRESSURE SET POINT SHALL BE MINUS 3.0 IN WC.

SUPPLY AIR VOLUME LIMIT. THE MAXIMUM SUPPLY AIR CFM SHALL BE NO HIGHER THAN THE MAXIMUM INDICATED ON THE AIR HANDLER SCHEDULE. THE SUPPLY FAN SHALL NOT BE ALLOWED TO OPERATE PAST THIS LIMIT.

TREND LOGS:
REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

VARIABLE VOLUME HEAT RECOVERY AHU CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	SUPPLY AIR TEMPERATURE	X						°F	X	X		
2	CHILLED WATER SUPPLY TEMPERATURE	X						°F	X	X		
3	CHILLED WATER RETURN TEMPERATURE	X						°F	X	X		
4	CHILLED WATER CONTROL VALVE		X					% OPEN	X	X	1	
5	LOW LIMIT TEMPERATURE FREEZE STAT (*)			X				NORMAL / ALARM	X		X	
6	HEATING WATER SUPPLY TEMPERATURE	X						°F	X	X		
7	HEATING WATER RETURN TEMPERATURE	X						°F	X	X		
8	HEATING WATER CONTROL VALVE		X					% OPEN	X	X		
9	EXHAUST FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
10	OA FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
11	OUTSIDE AIR DAMPER		X					% OPEN	X			X
12	SUPPLY AIR HUMIDITY	X						% RH	X			
13	EXHAUST AIR TEMPERATURE	X						°F	X			
14	OUTSIDE AIR FLOW MEASURING STATION	X						CFM	X			
15	SUPPLY AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
16	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
17	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
18	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X			ON / OFF	X		X	
19	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X						kW	X			
20	SUPPLY AIR DUCT STATIC PRESSURE (*)	X						IN WC	X	X		
21	SUPPLY AIR DUCT HIGH LIMIT STATIC PRESSURE			X				NORMAL / ALARM	X		X	
22	SUPPLY AIR DUCT SMOKE DETECTOR			X				NORMAL / ALARM	X		X	
23	EXHAUST AIR DUCT SMOKE DETECTOR			X				NORMAL / ALARM	X		X	
24	OUTSIDE AIR TEMPERATURE - GLOBAL SYSTEM POINT					X		°F	X	X		
25	OUTSIDE AIR HUMIDITY - GLOBAL SYSTEM POINT					X		% RH	X	X		
26	SUPPLY AIR FLOW MEASURING STATION	X						CFM	X			
27	EXHAUST AIR HUMIDITY	X						% RH	X			
28	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
29	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
30	EXHAUST AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
31	EXHAUST AIR FAN VFD STATUS - HARDWIRED			X				ON / OFF	X		X	
32	EXHAUST AIR FAN MOTOR POWER - HARDWIRED	X						kW	X		X	
33	EXHAUST AIR DAMPER		X					% OPEN	X			
34	EXTERIOR STATIC PRESSURE	X						IN WC	X			
35	BUILDING INTERIOR STATIC PRESSURE	X						IN WC	X			
36	HEAT WHEEL MOTOR STATUS			X				ON / OFF	X		X	
37	HEAT WHEEL VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
38	HEAT WHEEL VFD START / STOP				X			START / STOP	X			
39	HEAT WHEEL VFD STATUS			X				ON / OFF	X		X	
40	HEAT WHEEL MOTOR POWER	X						kW	X		X	
41	HEAT WHEELOUTSIDE AIR BYPASS DAMPER		X					% OPEN	X			
42	HEAT WHEEL EXHAUST AIR BYPASS DAMPER		X					% OPEN	X			
43	HEAT WHEEL DIFFERENTIAL PRESSURE	X						IN WC	X			
44	HEAT WHEEL SUPPLY AIR TEMPERATURE	X						°F	X			
45	HEAT WHEEL SUPPLY AIR HUMIDITY	X						% RH	X			
46	HEAT WHEEL EXHAUST AIR TEMPERATURE	X						°F	X			
47	HEAT WHEEL EXHAUST AIR HUMIDITY	X						% RH	X			
48	RA FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
49	SUPPLY AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
50	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
51	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
52	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X			ON / OFF	X		X	
53	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X						kW	X			
54	SUPPLY AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
55	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
56	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
57	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X			ON / OFF	X		X	
58	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X						kW	X			
59	SUPPLY AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
60	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			

VARIABLE VOLUME HEAT RECOVERY AHU CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
61	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
62	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X			ON / OFF	X		X	
63	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X						kW	X			
64	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
65	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
66	EXHAUST AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
67	EXHAUST AIR FAN VFD STATUS - HARDWIRED			X				ON / OFF	X		X	
68	EXHAUST AIR FAN MOTOR POWER - HARDWIRED	X						kW	X		X	
69	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
70	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
71	EXHAUST AIR FAN VFD START / STOP				X			START / STOP	X			
72	EXHAUST AIR FAN VFD STATUS			X				ON / OFF	X		X	
73	EXHAUST AIR FAN MOTOR POWER	X						kW	X		X	
74	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
75	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
76	EXHAUST AIR FAN VFD START / STOP				X			START / STOP	X			
77	EXHAUST AIR FAN VFD STATUS			X				ON / OFF	X		X	
78	EXHAUST AIR FAN MOTOR POWER	X						kW	X		X	
79	SUPPLY AIR FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
80	EXHAUST AIR DAMPER		X					% OPEN	X			X
81	EXHAUST AIR DAMPER		X					% OPEN	X			X
82	EXHAUST AIR TEMPERATURE	X						°F	X			
83	EXHAUST AIR DUCT SMOKE DETECTOR			X				NORMAL / ALARM	X		X	
84	EXHAUST AIR HUMIDITY	X						% RH	X			
85	HEAT WHEEL EXHAUST AIR BYPASS DAMPER		X					% OPEN	X			
86	HEAT WHEEL EXHAUST AIR TEMPERATURE	X						°F	X			
87	HEAT WHEEL EXHAUST AIR HUMIDITY	X						% RH	X			
88	CHILLED WATER SUPPLY TEMPERATURE	X						°F	X	X		
89	CHILLED WATER RETURN TEMPERATURE	X						°F	X	X	1	
90	CHILLED WATER CONTROL VALVE		X					% OPEN	X	X		
91	LOW LIMIT TEMPERATURE FREEZE STAT (*)			X				NORMAL / ALARM	X		X	
92	HEATING WATER SUPPLY TEMPERATURE	X						°F	X	X		
93	HEATING WATER RETURN TEMPERATURE	X						°F	X	X		
94	HEATING WATER CONTROL VALVE		X					% OPEN	X	X		
95	HEAT WHEEL MOTOR STATUS			X				ON / OFF	X		X	
96	HEAT WHEEL VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
97	HEAT WHEEL VFD START / STOP				X			START / STOP	X			
98	HEAT WHEEL VFD STATUS			X				ON / OFF	X		X	
99	HEAT WHEEL MOTOR POWER	X						kW	X		X	
100	HEAT WHEELOUTSIDE AIR BYPASS DAMPER		X					% OPEN	X			
101	HEAT WHEEL DIFFERENTIAL PRESSURE	X						IN WC	X			
102	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
103	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
104	EXHAUST AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
105	EXHAUST AIR FAN VFD STATUS - HARDWIRED			X				ON / OFF	X		X	
106	EXHAUST AIR FAN MOTOR POWER - HARDWIRED	X						kW	X		X	
107	EXHAUST AIR DAMPER		X					% OPEN	X			
108	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
109	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
110	EXHAUST AIR FAN VFD START / STOP - HARDWIRED				X			START / STOP	X			
111	EXHAUST AIR FAN VFD STATUS - HARDWIRED			X				ON / OFF	X		X	
112	EXHAUST AIR FAN MOTOR POWER - HARDWIRED	X						kW	X		X	
113	EXHAUST FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
114	EXHAUST FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
115	SUPPLY FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
116	SUPPLY FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
117	SUPPLY FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
118	SUPPLY FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
119	EXHAUST FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
120	EXHAUST FAN AIRFLOW PIZO TUBE TRANSDUCER	X						CFM	X	X		
121	EXHAUST AIR DUCT STATIC PRESSURE (*)	X						IN WC	X	X	X	
122	EXHAUST AIR DUCT STATIC PRESSURE (*)	X						IN WC	X	X	X	
123	EXHAUST AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	
124	EXHAUST AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	

(*) PROVIDED TO INDICATE SAFETY DEVICE TO BE HARDWIRE INTERLOCK, MANUAL RESET TO THE MOTOR STARTER / VFD AND ALARM TO BMS.

1 VARIABLE VOLUME UNIT WITH ENTHALPY WHEEL CONTROL DIAGRAM (AHU-2 AND AHU-3) (2 OF 2)
SCALE: NONE

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REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-608

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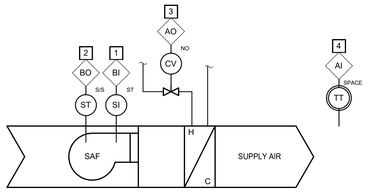


UNIT HEATER

THE UNIT HEATER SHALL BE ENABLED AND DISABLED THRU THE BAS. WHERE ENABLED, UNIT FAN SHALL CYCLE AND HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT AS SENSED BY INTEGRAL UNIT THERMOSTAT.

UNIT FAN SHALL CYCLE AND HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT AS SENSED BY REMOTE MOUNTED TEMPERATURE SENSOR.

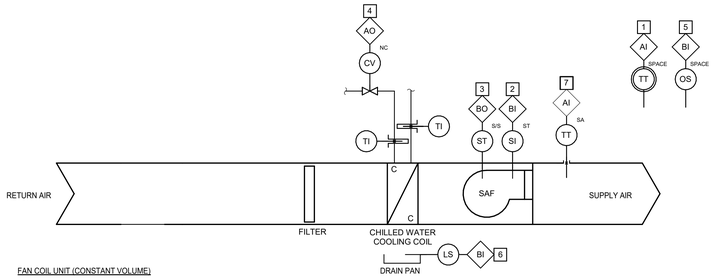
NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

GENERATE ALARM IF THE SPACE TEMP IS 10 DEGREES BELOW SET POINT.

UH CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SUPPLY FAN MOTOR STATUS			X		ON/OFF
2	SUPPLY FAN STARTER				X	ENABLE/DISABLE
3	HEATING CONTROL VALVE		X			% OPEN
4	SPACE TEMPERATURE	X				°F

3 UNITARY HEATER CONTROL DIAGRAM
SCALE: NONE



FAN COIL UNIT (CONSTANT VOLUME)

THE CONSTANT VOLUME FAN COIL UNIT IS CONTROLLED BY AN APPLICATION SPECIFIC DDC CONTROLLER USING ELECTRIC ACTUATION. THE SPACE SERVED BY THE FAN COIL TERMINAL UNIT IS CONTROLLED IN OCCUPIED AND UNOCCUPIED MODES AS FOLLOWS:

OCCUPIED: THE FAN COIL UNIT SUPPLY FAN IS ENERGIZED AND RUNS CONTINUOUSLY. FAN COIL UNIT COOLING COIL CONTROL VALVES SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT.

IF THE SPACE TEMPERATURE SET POINT IS MET, THEN THE FAN COIL UNIT IS DE-ENERGIZED. SPACE TEMPERATURE SET POINT DURING THIS MODE SHALL BE ADJUSTABLE WITH AN INITIAL DEFAULT VALUE EQUAL TO THE NORMAL OCCUPIED MODE SET POINT +/- 3°F. REFER TO HVAC EQUIPMENT SCHEDULE FOR ZONES TO HAVE OCCUPANCY SENSOR SET BACK.

UNOCCUPIED: THE FAN COIL UNIT SUPPLY FAN SHALL BE DE-ENERGIZED AND VALVES SHALL GO TO DEFAULT POSITION.

A SECONDARY CONDENSATE DRAIN PAN LEVEL SWITCH SHALL PROVIDE ALARM TO BAS AND DISABLE COOLING.

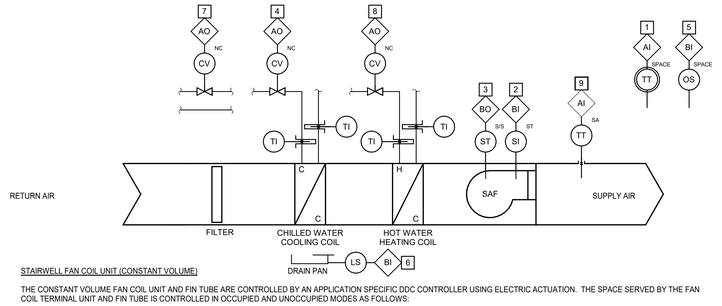
PROVIDE ALARM TO THE BMS IF THE SPACE TEMP IS 10 DEGREE F ABOVE SET POINT.

NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

FCU CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY FAN STATUS			X		ON/OFF
3	SUPPLY FAN STARTER				X	ENABLE/DISABLE
4	COOLING COIL CONTROL VALVE		X			% OPEN
5	SPACE OCCUPANCY SENSOR			X		OCC/UNOCC
6	DRAIN PAN LEVEL SWITCH			X		NORMAL/ALARM
7	SUPPLY AIR TEMPERATURE	X				°F

2 FAN COIL UNIT CONTROL DIAGRAM
SCALE: NONE



STAIRWELL FAN COIL UNIT (CONSTANT VOLUME)

THE CONSTANT VOLUME FAN COIL UNIT AND FIN TUBE ARE CONTROLLED BY AN APPLICATION SPECIFIC DDC CONTROLLER USING ELECTRIC ACTUATION. THE SPACE SERVED BY THE FAN COIL TERMINAL UNIT AND FIN TUBE IS CONTROLLED IN OCCUPIED AND UNOCCUPIED MODES AS FOLLOWS:

OCCUPIED: THE FAN COIL UNIT SUPPLY FAN IS ENERGIZED AND RUNS CONTINUOUSLY. THE FIRST STAGE OF HEATING IS THE FIN TUBE. THE CONTROL VALVE SHALL OPEN FOR THE FIN TUBE. IF THE FIN TUBE IS NOT ABLE TO MAINTAIN HEATING TEMP THE FAN COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT. THE FAN COIL UNIT COOLING COIL CONTROL VALVES SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT. THERE SHALL BE A 5°F DEAD BAND BETWEEN HEATING AND COOLING SET POINTS.

IF THE SPACE IS UNOCCUPIED DURING NORMAL BUILDING OCCUPIED HOURS AS DETERMINED BY THE SPACE OCCUPANCY SENSOR THEN THE PRIMARY AIR SETTING IS ZERO. IF THE SPACE TEMPERATURE SET POINT IS MET, THEN THE FAN COIL UNIT IS DE-ENERGIZED. SPACE TEMPERATURE SET POINT DURING THIS MODE SHALL BE ADJUSTABLE WITH AN INITIAL DEFAULT VALUE EQUAL TO THE NORMAL OCCUPIED MODE SET POINT +/- 3°F. REFER TO HVAC EQUIPMENT SCHEDULE FOR ZONES TO HAVE OCCUPANCY SENSOR SET BACK.

UNOCCUPIED: THE FAN COIL UNIT SUPPLY FAN SHALL BE DE-ENERGIZED AND DAMPERS AND VALVES SHALL GO TO DEFAULT POSITION.

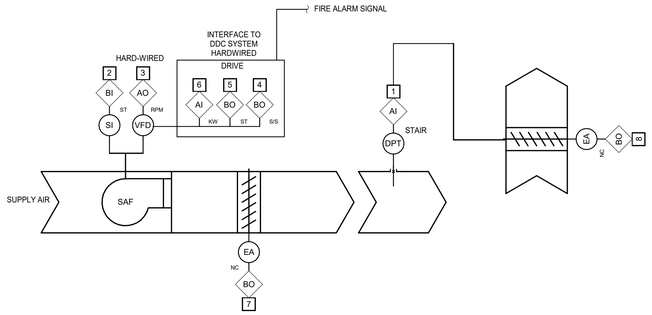
A SECONDARY CONDENSATE DRAIN PAN LEVEL SWITCH SHALL PROVIDE ALARM TO BAS AND DISABLE COOLING.

NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

FCU CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY FAN STATUS			X		ON/OFF
3	SUPPLY FAN STARTER				X	ENABLE/DISABLE
4	COOLING COIL CONTROL VALVE		X			% OPEN
5	SPACE OCCUPANCY SENSOR			X		OCC/UNOCC
6	DRAIN PAN LEVEL SWITCH			X		NORMAL/ALARM
7	RADIANT CONTROL VALVE		X			% OPEN
8	HEATING COIL CONTROL VALVE		X			% OPEN
9	SUPPLY AIR TEMPERATURE	X				°F

1 FAN COIL UNIT CONTROL DIAGRAM WITH FIN TUBE
SCALE: NONE



STAIR PRESSURIZATION

THE EXHAUST SYSTEM SHALL BE ENABLED AT ALL TIMES. REMOTE SIGNAL FROM FIRE ALARM SYSTEM 'FIRE MODE' OR MANUAL OVER-RIDE VFD SHALL START THE FAN AND DRIVE INTAKE DAMPER OPEN. FAN SHALL RUN UNTIL SIGNAL IS DEACTIVATED. IF SPACE PRESSURE EXCEEDS 0.05" RELIEF AIR DAMPER SHALL OPEN.

ALL CONTROL, MONITORING AND ALARM POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION AND ALL SET POINTS AND SETTINGS ARE ADJUSTABLE.

CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS	END SWITCH
1	STAIRWELL DIFFERENTIAL PRESSURE	X				IN WC	
2	SUPPLY AIR FAN MOTOR STATUS			X		ON/OFF	
3	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X			ON/OFF	
4	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X	NORMAL/ALARM	
5	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X		
6	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X					
7	SUPPLY AIR DAMPER		X			% OPEN	X
8	RELIEF AIR DAMPER		X			% OPEN	X

5 STAIR PRESSURIZATION CONTROL DIAGRAM
SCALE: NONE

WALL HUNG AC UNIT (CONSTANT VOLUME)

THE WALL HUNG AC UNIT IS CONTROLLED BY A MANUFACTURERS CONTROLLER CAPABLE OF INTEGRATION WITH BAS.

THE AC UNIT SHALL BE ENABLED AND DISABLED THRU THE BAS. MANUFACTURER CONTROLLER SHALL MODULATE THE INTEGRAL COOLING TO MAINTAIN SPACE REQUIREMENTS.

ALARMS:
- SPACE TEMPERATURE SENSOR SHALL PROVIDE ALARM TO BAS WHERE SPACE TEMPERATURE EXCEEDS 85°F.
- GENERAL FAULT FROM MANUFACTURERS CONTROLLER SHALL PROVIDE ALARM TO BAS

NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

AC UNIT CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY FAN MOTOR STATUS			X		ON/OFF
3	SUPPLY FAN STARTER				X	ENABLE/DISABLE
4	DRAIN PAN LEVEL SWITCH			X		NORMAL/ALARM

4 WALL HUNG AC UNIT
SCALE: NONE

STAIR PRESSURIZATION

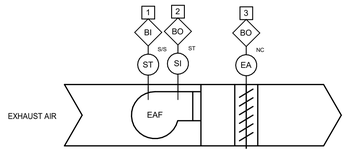
THE EXHAUST SYSTEM SHALL BE ENABLED AT ALL TIMES. REMOTE SIGNAL FROM FIRE ALARM SYSTEM 'FIRE MODE' OR MANUAL OVER-RIDE VFD SHALL START THE FAN AND DRIVE INTAKE DAMPER OPEN. FAN SHALL RUN UNTIL SIGNAL IS DEACTIVATED.

ALL CONTROL, MONITORING AND ALARM POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION AND ALL SET POINTS AND SETTINGS ARE ADJUSTABLE.

CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS	END SWITCH
1	SUPPLY AIR DAMPER		X			% OPEN	X
2	SUPPLY AIR FAN MOTOR STATUS			X		ON/OFF	
3	SUPPLY AIR FAN VFD SPEED CONTROL - HARDWIRED		X			ON/OFF	
4	SUPPLY AIR FAN VFD START / STOP - HARDWIRED				X	NORMAL/ALARM	
5	SUPPLY AIR FAN VFD STATUS - HARDWIRED				X		
6	SUPPLY AIR FAN MOTOR POWER - HARDWIRED	X					

6 ELEVATOR PRESSURIZATION CONTROL DIAGRAM
SCALE: NONE



GENERAL EXHAUST

THE EXHAUST SYSTEM SHALL OPERATE AS SCHEDULED THRU THE BAS. ON SIGNAL FROM THE BAS, EXHAUST AIR DAMPER SHALL DRIVE TO FULLY OPEN AND EXHAUST FAN SHALL START AND RUN CONTINUOUSLY.

END SWITCH AT EXHAUST FAN RELIEF DAMPER SHALL PROVE FOR FAN OPERATION. FAILURE OF SWITCH SHALL GENERATE AN ALARM TO BAS.

EF CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	EXHAUST FAN STARTER			X		ON/OFF
2	EXHAUST FAN MOTOR STATUS				X	ENABLE/DISABLE
3	EXHAUST AIR RELIEF DAMPER				X	OPEN/CLOSED

7 GENERAL EXHAUST CONTROL DIAGRAM
SCALE: NONE

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9/25/2025

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-609

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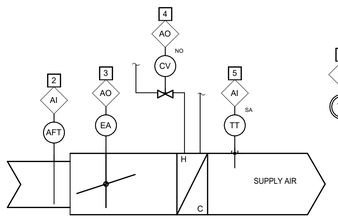


HOT WATER
REHEAT COIL

SINGLE DUCT TERMINAL UNIT WITH HOT WATER REHEAT (VAV)

THE SINGLE DUCT VARIABLE AIR VOLUME TERMINAL UNIT W/ REHEAT IS CONTROLLED INDEPENDENT OF SYSTEM PRESSURE FLUCTUATIONS BY AN APPLICATION SPECIFIC DDC CONTROLLER USING ELECTRIC ACTUATION. THE SPACE SERVED BY THE VAV TERMINAL UNIT IS CONTROLLED IN OCCUPIED AND UNOCCUPIED MODES AS FOLLOWS:

OCCUPIED: THE VAV TERMINAL UNIT IS CONTROLLED WITHIN USER DEFINED MAXIMUM AND MINIMUM SUPPLY AIR VOLUME SETTINGS. THE CONTROLLER MONITORS THE ROOM TEMPERATURE SENSOR AND AIR VELOCITY SENSOR AND MODULATES THE SUPPLY AIR DAMPER BETWEEN THE MINIMUM AND MAXIMUM CFM SETTINGS TO MAINTAIN THE ROOM TEMPERATURE AT SET POINT. AS THE ROOM TEMPERATURE DECREASES, THE CONTROLLER CLOSES THE DAMPER UNTIL IT REACHES MINIMUM POSITION. UPON FURTHER DECREASE IN ROOM TEMPERATURE, THE HOT WATER HEATING CONTROL VALVE COIL OPENS AND MODULATES TO MAINTAIN TEMPERATURE SET POINT.

IF THE SPACE IS UNOCCUPIED DURING NORMAL BUILDING OCCUPIED HOURS AS DETERMINED BY THE SPACE OCCUPANCY SENSOR THEN THE PRIMARY AIR SETTING IS ZERO. IF THE SPACE TEMPERATURE SET POINT IS MET, THEN THE DAMPER IS ALLOWED TO CLOSE. SPACE TEMPERATURE SET POINT DURING THIS MODE SHALL BE ADJUSTABLE WITH AN INITIAL DEFAULT VALUE EQUAL TO THE NORMAL OCCUPIED MODE SET POINT +/- 1° F (ADJ). REFER TO HVAC EQUIPMENT SCHEDULE FOR ZONES TO HAVE OCCUPANCY SENSOR SET BACK.

UNOCCUPIED: THE VAV TERMINAL UNIT IS CONTROLLED USING THE NIGHT SET POINT TEMPERATURE. THE CONTROLLER MAY RESET TO THE OCCUPIED MODE FOR A PREDETERMINED TIME PERIOD UPON A SIGNAL FROM THE CONTROL SYSTEM OR MANUALLY AT THE ROOM SENSOR.

NIGHT HEATING: THE VAV DAMPER IS MODULATED TO ITS MAXIMUM AIR FLOW VALUE (IF AHU AIR SUPPLY TEMPERATURE IS 10 DEGREES WARMER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE PRIMARY AIR DAMPER IS ALLOWED TO MODULATE CLOSED.

NIGHT COOLING: THE VAV DAMPER IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE COOL AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS COOLER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE PRIMARY AIR DAMPER IS ALLOWED TO MODULATE CLOSED.

WARM-UP MODE: THE VAV TERMINAL IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE WARM AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS 10 DEGREES WARMER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS OPENED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE VAV DAMPER AND VALVE ARE ALLOWED TO MODULATE CLOSED. IF THE TIME REACHES THE LATEST START TIME DURING THE WARM-UP MODE, THE TERMINAL UNIT GOES TO ITS NORMAL OCCUPIED MODE OF OPERATION.

COOL-DOWN MODE: THE VAV DAMPER IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE COOL AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS COOLER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE VAV DAMPER IS ALLOWED TO MODULATE CLOSED. IF THE TIME REACHES THE LATEST START TIME DURING THE COOL-DOWN MODE, THE TERMINAL UNIT GOES TO ITS NORMAL OCCUPIED MODE OF OPERATION.

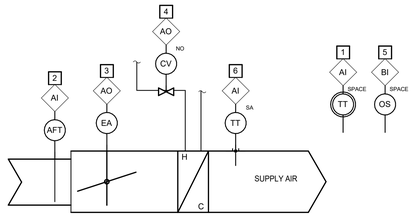
NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

1

VAV BOX WITH REHEAT CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY AIR FLOW MEASURING STATION	X				CFM
3	TERMINAL UNIT DAMPER		X			% OPEN
4	REHEAT COIL CONTROL VALVE		X			% OPEN
5	SUPPLY AIR TEMPERATURE	X				°F

3 VAV WITH HOT WATER REHEAT CONTROL DIAGRAM W/O OCC AND CO2
SCALE: NONE



HOT WATER
REHEAT COIL

SINGLE DUCT TERMINAL UNIT WITH HOT WATER REHEAT (VAV)

THE SINGLE DUCT VARIABLE AIR VOLUME TERMINAL UNIT W/ REHEAT IS CONTROLLED INDEPENDENT OF SYSTEM PRESSURE FLUCTUATIONS BY AN APPLICATION SPECIFIC DDC CONTROLLER USING ELECTRIC ACTUATION. THE SPACE SERVED BY THE VAV TERMINAL UNIT IS CONTROLLED IN OCCUPIED AND UNOCCUPIED MODES AS FOLLOWS:

OCCUPIED: THE VAV TERMINAL UNIT IS CONTROLLED WITHIN USER DEFINED MAXIMUM AND MINIMUM SUPPLY AIR VOLUME SETTINGS. THE CONTROLLER MONITORS THE ROOM TEMPERATURE SENSOR AND AIR VELOCITY SENSOR AND MODULATES THE SUPPLY AIR DAMPER BETWEEN THE MINIMUM AND MAXIMUM CFM SETTINGS TO MAINTAIN THE ROOM TEMPERATURE AT SET POINT. AS THE ROOM TEMPERATURE DECREASES, THE CONTROLLER CLOSES THE DAMPER UNTIL IT REACHES MINIMUM POSITION. UPON FURTHER DECREASE IN ROOM TEMPERATURE, THE HOT WATER HEATING CONTROL VALVE COIL OPENS AND MODULATES TO MAINTAIN TEMPERATURE SET POINT.

IF THE SPACE IS UNOCCUPIED DURING NORMAL BUILDING OCCUPIED HOURS AS DETERMINED BY THE SPACE OCCUPANCY SENSOR THEN THE PRIMARY AIR SETTING IS ZERO. IF THE SPACE TEMPERATURE SET POINT IS MET, THEN THE DAMPER IS ALLOWED TO CLOSE. SPACE TEMPERATURE SET POINT DURING THIS MODE SHALL BE ADJUSTABLE WITH AN INITIAL DEFAULT VALUE EQUAL TO THE NORMAL OCCUPIED MODE SET POINT +/- 1°F (ADJ). REFER TO HVAC EQUIPMENT SCHEDULE FOR ZONES TO HAVE OCCUPANCY SENSOR SET BACK.

UNOCCUPIED: THE VAV TERMINAL UNIT IS CONTROLLED USING THE NIGHT SET POINT TEMPERATURE. THE CONTROLLER MAY RESET TO THE OCCUPIED MODE FOR A PREDETERMINED TIME PERIOD UPON A SIGNAL FROM THE CONTROL SYSTEM OR MANUALLY AT THE ROOM SENSOR.

NIGHT HEATING: THE VAV DAMPER IS MODULATED TO ITS MAXIMUM AIR FLOW VALUE (IF AHU AIR SUPPLY TEMPERATURE IS 10 DEGREES WARMER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE PRIMARY AIR DAMPER IS ALLOWED TO MODULATE CLOSED.

NIGHT COOLING: THE VAV DAMPER IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE COOL AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS COOLER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE PRIMARY AIR DAMPER IS ALLOWED TO MODULATE CLOSED.

WARM-UP MODE: THE VAV TERMINAL IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE WARM AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS 10 DEGREES WARMER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS OPENED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE VAV DAMPER AND VALVE ARE ALLOWED TO MODULATE CLOSED. IF THE TIME REACHES THE LATEST START TIME DURING THE WARM-UP MODE, THE TERMINAL UNIT GOES TO ITS NORMAL OCCUPIED MODE OF OPERATION.

COOL-DOWN MODE: THE VAV DAMPER IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE COOL AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS COOLER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE VAV DAMPER IS ALLOWED TO MODULATE CLOSED. IF THE TIME REACHES THE LATEST START TIME DURING THE COOL-DOWN MODE, THE TERMINAL UNIT GOES TO ITS NORMAL OCCUPIED MODE OF OPERATION.

VAV BOX CONNECTED TO ROOM OCCUPANCY SENSOR. WHEN SPACE IS UNOCCUPIED AS DETERMINED BY THE OCCUPANCY SENSOR OR TIME OF DAY SCHEDULE, THE VAV BOX SHALL CLOSE AND SPACE WILL BE CONTROLLED TO UNOCCUPIED SETPOINTS.

NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

VAV BOX SHALL BE TIED TO OCCUPANCY SENSOR WITHIN ROOM OR ROOMS IT IS SERVING. FOR A VAV BOX SERVING MULTIPLE ROOMS, EACH OCCUPANCY SENSOR SHALL BE WIRED BACK TO VAV BOX CONTROLLER IN SERIES. FOR VAV BOX TO GO TO UNOCCUPIED MODE, ALL OCCUPANCY SENSORS SHALL BE UNOCCUPIED MODE.

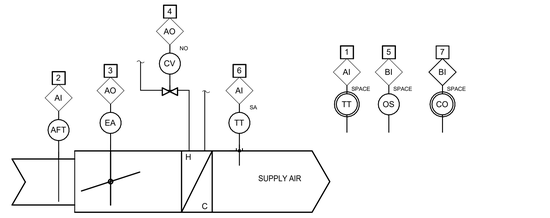
VAV BOX SHALL BE TIED TO OCCUPANCY SENSOR WITHIN ROOM. FOR A VAV BOX SERVING ONE ROOM WITH MULTIPLE OCCUPANCY SENSOR, EACH OCCUPANCY SENSOR SHALL BE WIRED BACK TO VAV BOX CONTROLLER IN SERIES. FOR VAV BOX TO GO TO UNOCCUPIED MODE, ALL OCCUPANCY SENSORS SHALL BE UNOCCUPIED MODE.

1

VAV BOX WITH REHEAT CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY AIR FLOW MEASURING STATION	X				CFM
3	TERMINAL UNIT DAMPER		X			% OPEN
4	REHEAT COIL CONTROL VALVE		X			% OPEN
5	SPACE OCCUPANCY SENSOR			X		OCC/UNOCC
6	SUPPLY AIR TEMPERATURE	X				°F

2 VAV WITH HOT WATER REHEAT CONTROL DIAGRAM WITH OCC AND W/O CO2
SCALE: NONE



HOT WATER
REHEAT COIL

SINGLE DUCT TERMINAL UNIT WITH HOT WATER REHEAT (VAV)

THE SINGLE DUCT VARIABLE AIR VOLUME TERMINAL UNIT W/ REHEAT IS CONTROLLED INDEPENDENT OF SYSTEM PRESSURE FLUCTUATIONS BY AN APPLICATION SPECIFIC DDC CONTROLLER USING ELECTRIC ACTUATION. THE SPACE SERVED BY THE VAV TERMINAL UNIT IS CONTROLLED IN OCCUPIED AND UNOCCUPIED MODES AS FOLLOWS:

OCCUPIED: THE VAV TERMINAL UNIT IS CONTROLLED WITHIN USER DEFINED MAXIMUM AND MINIMUM SUPPLY AIR VOLUME SETTINGS. THE CONTROLLER MONITORS THE ROOM TEMPERATURE SENSOR AND AIR VELOCITY SENSOR AND MODULATES THE SUPPLY AIR DAMPER BETWEEN THE MINIMUM AND MAXIMUM CFM SETTINGS TO MAINTAIN THE ROOM TEMPERATURE AT SET POINT. AS THE ROOM TEMPERATURE DECREASES, THE CONTROLLER CLOSES THE DAMPER UNTIL IT REACHES MINIMUM POSITION. UPON FURTHER DECREASE IN ROOM TEMPERATURE, THE HOT WATER HEATING CONTROL VALVE COIL OPENS AND MODULATES TO MAINTAIN TEMPERATURE SET POINT.

IF THE SPACE IS UNOCCUPIED DURING NORMAL BUILDING OCCUPIED HOURS AS DETERMINED BY THE SPACE OCCUPANCY SENSOR THEN THE PRIMARY AIR SETTING IS ZERO. IF THE SPACE TEMPERATURE SET POINT IS MET, THEN THE DAMPER IS ALLOWED TO CLOSE. SPACE TEMPERATURE SET POINT DURING THIS MODE SHALL BE ADJUSTABLE WITH AN INITIAL DEFAULT VALUE EQUAL TO THE NORMAL OCCUPIED MODE SET POINT +/- 1°F (ADJ). REFER TO HVAC EQUIPMENT SCHEDULE FOR ZONES TO HAVE OCCUPANCY SENSOR SET BACK.

UNOCCUPIED: THE VAV TERMINAL UNIT IS CONTROLLED USING THE NIGHT SET POINT TEMPERATURE. THE CONTROLLER MAY RESET TO THE OCCUPIED MODE FOR A PREDETERMINED TIME PERIOD UPON A SIGNAL FROM THE CONTROL SYSTEM OR MANUALLY AT THE ROOM SENSOR.

NIGHT HEATING: THE VAV DAMPER IS MODULATED TO ITS MAXIMUM AIR FLOW VALUE (IF AHU AIR SUPPLY TEMPERATURE IS 10 DEGREES WARMER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE PRIMARY AIR DAMPER IS ALLOWED TO MODULATE CLOSED.

NIGHT COOLING: THE VAV DAMPER IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE COOL AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS COOLER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE PRIMARY AIR DAMPER IS ALLOWED TO MODULATE CLOSED.

WARM-UP MODE: THE VAV TERMINAL IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE WARM AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS 10 DEGREES WARMER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS OPENED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE VAV DAMPER AND VALVE ARE ALLOWED TO MODULATE CLOSED. IF THE TIME REACHES THE LATEST START TIME DURING THE WARM-UP MODE, THE TERMINAL UNIT GOES TO ITS NORMAL OCCUPIED MODE OF OPERATION.

COOL-DOWN MODE: THE VAV DAMPER IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE COOL AIR TO THE SPACE (IF AHU AIR SUPPLY TEMPERATURE IS COOLER THAN SPACE TEMPERATURE) AND THE HOT WATER REHEAT CONTROL VALVE IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE VAV DAMPER IS ALLOWED TO MODULATE CLOSED. IF THE TIME REACHES THE LATEST START TIME DURING THE COOL-DOWN MODE, THE TERMINAL UNIT GOES TO ITS NORMAL OCCUPIED MODE OF OPERATION.

VAV BOX CONNECTED TO ROOM OCCUPANCY SENSOR. WHEN SPACE IS UNOCCUPIED AS DETERMINED BY THE OCCUPANCY SENSOR OR TIME OF DAY SCHEDULE, THE VAV BOX SHALL CLOSE AND SPACE WILL BE CONTROLLED TO UNOCCUPIED SETPOINTS.

CARBON DIOXIDE (CO2) OVER-RIDE - PROVIDE A WALL-MOUNTED CO2 SENSOR FOR EACH HIGH OCCUPANCY SPACE AS NOTED ON THE DRAWINGS. IF MEASURED CO2 LEVEL RISES ABOVE A HIGH LIMIT OF 1000 PPM (ADJUSTABLE) FOR 5 MINUTES, INCREASE THE ASSOCIATED BOX SUPPLY AIR FLOW SET POINT BY 10 PERCENT. FOR EVERY 5 MINUTES THE CO2 LEVEL IS ABOVE THE HIGH LIMIT, INCREASE BOX SUPPLY AIR FLOW SET POINT AN ADDITIONAL 10 PERCENT. DO NOT EXCEED THE LISTED COOLING CFM. ONCE THE MEASURED CO2 LEVEL IS BELOW 800 PPM FOR 10 MINUTES, CANCEL THE OVER-RIDE SEQUENCE. IF A SPACE C02 RISES ABOVE 1500 PPM AN ALARM SHALL BE ISSUED THRU THE BMS SYSTEM.

NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

VAV BOX SHALL BE TIED TO OCCUPANCY SENSOR WITHIN ROOM. FOR A VAV BOX SERVING ONE ROOM WITH MULTIPLE OCCUPANCY SENSOR, EACH OCCUPANCY SENSOR SHALL BE WIRED BACK TO VAV BOX CONTROLLER IN SERIES. FOR VAV BOX TO GO TO UNOCCUPIED MODE, ALL OCCUPANCY SENSORS SHALL BE UNOCCUPIED MODE.

1

VAV BOX WITH REHEAT CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY AIR FLOW MEASURING STATION	X				CFM
3	TERMINAL UNIT DAMPER		X			% OPEN
4	REHEAT COIL CONTROL VALVE		X			% OPEN
5	SPACE OCCUPANCY SENSOR			X		OCC/UNOCC
6	SUPPLY AIR TEMPERATURE	X				°F
7	CARBON DIOXIDE SENSOR	X				PPM

1 VAV WITH HOT WATER REHEAT CONTROL DIAGRAM WITH OCC AND CO2
SCALE: NONE

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STATE OF MICHIGAN
NATHANIEL C. STALKER
ENGINEER
No. 51101
PROFESSIONAL ENGINEER
10/17/2025

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NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-610

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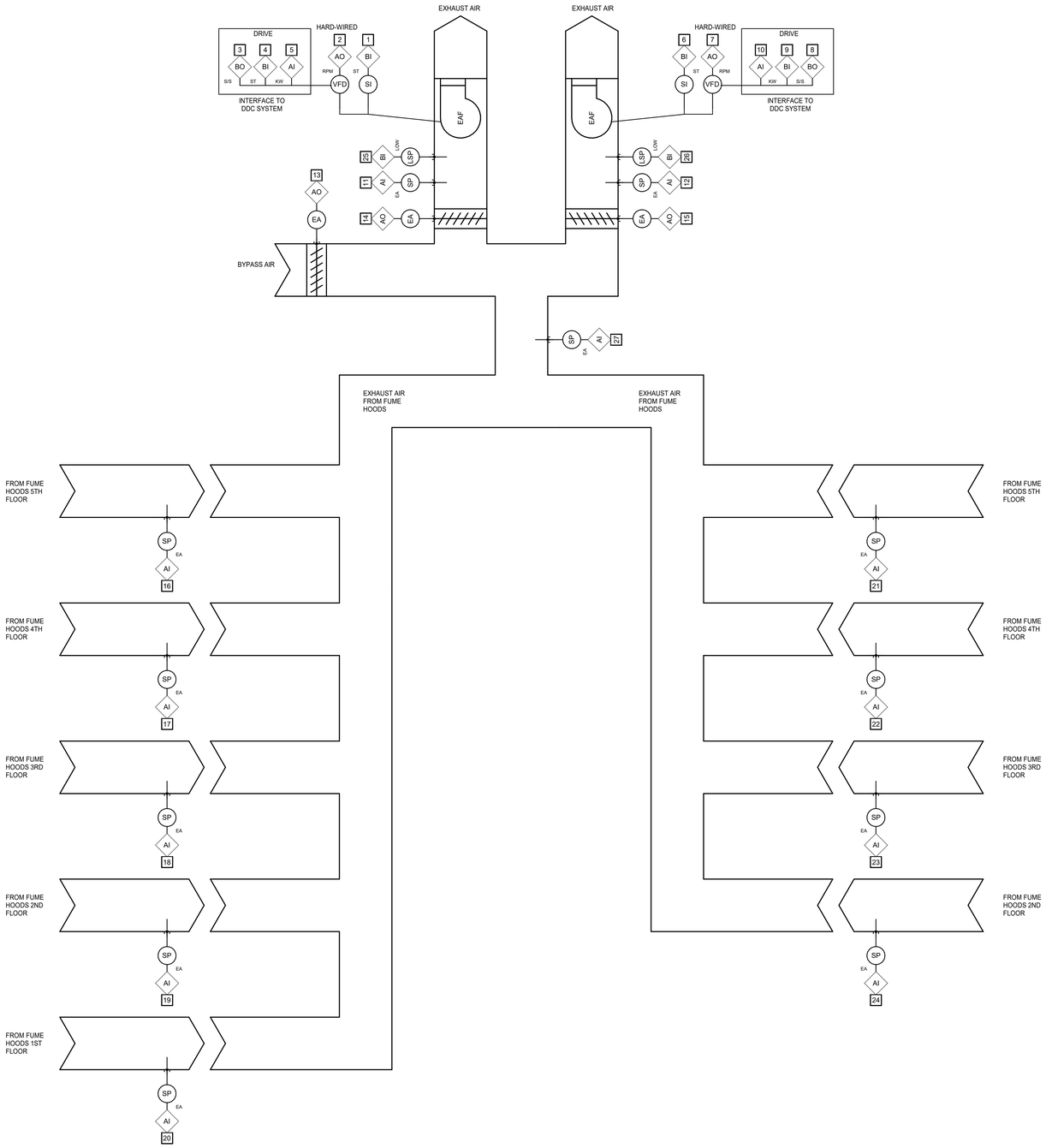

FUME HOOD EXHAUST FANS

FUME HOOD EXHAUST FANS SHALL OPERATE WHEN REQUIRED BASED ON THE OPERATION OF THE FUME HOODS ASSOCIATED TO THE EXHAUST FAN.

EXHAUST FANS SHALL HAVE START/STOP CAPABILITY FROM THE BAS SYSTEM. ONE OF THE 2 FANS SHALL BE DESIGNATED AS THE "LEAD" EXHAUST FAN. THE "LEAD" SHALL ROTATE BASED ON 1000 HRS (ADJ) OF OPERATION. THE "LEAD" EXHAUST FAN SHALL BE ENABLED BY THE BAS TO OPERATE CONTINUOUSLY.

THE BAS SHALL MONITOR THE OPERATING STATUS OF THE EXHAUST FANS. IF EITHER EXHAUST FAN DOES NOT ENABLE WHEN CALLED TO OPERATE. THE BAS SHALL PROVIDE A FAILURE ALARM TO THE BAS AND AUTOMATICALLY START THE OTHER FAN.

IF BOTH EXHAUST FAN STATIC PRESSURE INCREASES ABOVE THE STATIC PRESSURE SET POINT, BOTH EXHAUST FANS SHALL BE SHUT DOWN. THE BAS SHALL PROVIDE AN EMERGENCY LOSS ALARM.

THE BAS SHALL MODULATE THE "LEAD" EXHAUST FAN TO MAINTAIN SYSTEM STATIC PRESSURE SET POINT AS DETERMINED BY THE TAB CONTRACTOR. WHEN THE EXHAUST FAN IS AT MINIMUM SPEED WITH CFM ABOVE STATIC PRESSURE SET POINT, THE BAS SHALL MODULATE BYPASS CONTROL DAMPER TO MAINTAIN STATIC PRESSURE SETPOINT.

IF THE "LEAD" EXHAUST FAN IS OPERATING AT OR ABOVE 90% SPEED AND THE SYSTEM STATIC PRESSURE IS BELOW STATIC PRESSURE SETPOINT FOR MORE THAN 5 MINUTES, THE BAS SHALL ACTIVATE THE "LAG" EXHAUST FAN. THE BAS SHALL MODULATE BOTH THE "LEAD" AND "LAG" EXHAUST FANS TOGETHER TO MAINTAIN STATIC PRESSURE SETPOINT.

IF BOTH THE "LEAD" AND "LAG" EXHAUST FANS ARE OPERATING BELOW 40% SPEED SETTING AND THE SYSTEM STATIC PRESSURE IS ABOVE THE SETPOINT, THE BAS SHALL DEACTIVATE THE "LAG" EXHAUST FAN. THE BAS SHALL MODULATE THE "LEAD" EXHAUST FAN TO MAINTAIN SYSTEM STATIC PRESSURE SETPOINT. IF THE "LAG" FAN DOES NOT ENABLE, THE "LEAD" FAN SHALL INCREASE TO MAXIMUM CAPACITY.

THE BAS MONITORS AND PROVIDES THE EXHAUST FANS MEASURED AIRFLOW VALUES FOR CONTROL AND DIAGNOSTIC USE AT THE BAS DISPLAY.

EXHAUST STATIC PRESSURE CUTOUT. EXHAUST LOW STATIC PRESSURE CUTOUT AND VARIABLE FREQUENCY DRIVE FAULTS DE-ENERGIZE THE EXHAUST FAN UPON ACTIVATION AND GENERATE AN ALARM SIGNAL. ALL OTHER DAMPERS SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED. THE EXHAUST LOW STATIC PRESSURE SET POINT SHALL BE MINUS 6.0 IN WC (ADJ).

TREND LOGS:
REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

FUME HOOD EXHAUST FAN CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
2	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
3	EXHAUST AIR FAN VFD START / STOP				X			START / STOP	X			
4	EXHAUST AIR FAN VFD STATUS			X				ON / OFF	X		X	
5	EXHAUST AIR FAN MOTOR POWER	X						kW	X		X	
6	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
7	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
8	EXHAUST AIR FAN VFD START / STOP				X			START / STOP	X			
9	EXHAUST AIR FAN VFD STATUS			X				ON / OFF	X		X	
10	EXHAUST AIR FAN MOTOR POWER	X						kW	X		X	
11	EXHAUST STATIC PRESSURE	X						IN WC	X	X		
12	EXHAUST STATIC PRESSURE	X						IN WC	X	X		
13	BYPASS AIR DAMPER		X					% OPEN	X			
14	ISOLATION DAMPER				X			OPEN / CLOSED	X			X
15	ISOLATION DAMPER				X			OPEN / CLOSED	X			X
16	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
17	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
18	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
19	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
20	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
21	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
22	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
23	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
24	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
25	RETURN AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	
26	RETURN AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	
27	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		

(*) PROVIDED TO INDICATE SAFETY DEVICE TO BE HARDWIRE INTERLOCK, MANUAL RESET TO THE MOTOR STARTER / VFD AND ALARM TO BMS.

1 FUME HOOD EXHAUST FAN CONTROL DIAGRAM
SCALE: NONE

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STATE OF MICHIGAN — NATHANIEL C. METALKER — ENGINEER — No. 51101 — PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-611

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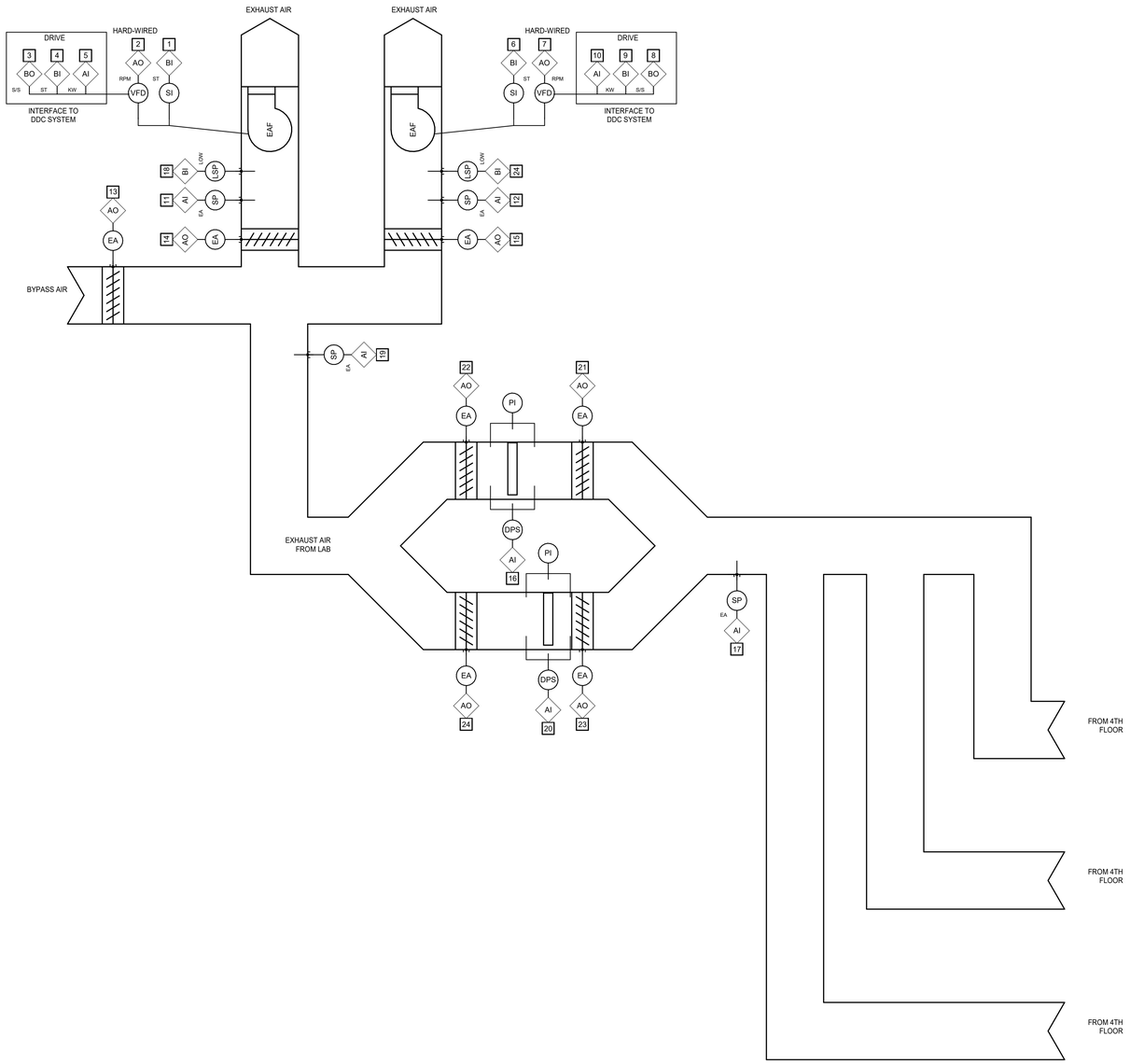

RADIOISOTOPE EXHAUST FANS

RADIOISOTOPE HIGH PLUME EXHAUST FANS SHALL OPERATE WHEN REQUIRED BASED ON THE OPERATION OF THE EXHAUST VALVES ASSOCIATED TO THE RADIOISOTOPE LAB.

EXHAUST FANS SHALL HAVE START/STOP CAPABILITY FROM THE BAS SYSTEM. ONE OF THE 2 FANS SHALL BE DESIGNATED AS THE "LEAD" EXHAUST FAN. THE "LEAD" SHALL ROTATE BASED ON 1000 HRS (ADJ) OF OPERATION. THE "LEAD" EXHAUST FAN SHALL BE ENABLED BY THE BAS TO OPERATE CONTINUOUSLY.

THE BAS SHALL MONITOR THE OPERATING STATUS OF THE EXHAUST FANS. IF EITHER EXHAUST FAN DOES NOT ENABLE WHEN CALLED TO OPERATE. THE BAS SHALL PROVIDE A FAILURE ALARM TO THE BAS AND AUTOMATICALLY START THE OTHER FAN.

IF BOTH EXHAUST FAN STATIC PRESSURE INCREASES ABOVE THE STATIC PRESSURE SET POINT, BOTH EXHAUST FANS SHALL BE SHUT DOWN. THE BAS SHALL PROVIDE AN EMERGENCY LOSS ALARM.

THE BAS SHALL MODULATE THE "LEAD" EXHAUST FAN TO MAINTAIN SYSTEM STATIC PRESSURE SET POINT AS DETERMINED BY THE TAB CONTRACTOR. WHEN THE EXHAUST FAN IS AT MINIMUM SPEED WITH CFM ABOVE STATIC PRESSURE SET POINT, THE BAS SHALL MODULATE BYPASS CONTROL DAMPER TO MAINTAIN STATIC PRESSURE SETPOINT.

IF THE "LEAD" EXHAUST FAN IS OPERATING AT OR ABOVE 90% SPEED AND THE SYSTEM STATIC PRESSURE IS BELOW STATIC PRESSURE SETPOINT FOR MORE THAN 5 MINUTES, THE BAS SHALL ACTIVATE THE "LAG" EXHAUST FAN. THE BAS SHALL MODULATE BOTH THE "LEAD" AND "LAG" EXHAUST FANS TOGETHER TO MAINTAIN STATIC PRESSURE SETPOINT.

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THE BAS MONITORS AND PROVIDES THE EXHAUST FANS MEASURED AIRFLOW VALUES FOR CONTROL AND DIAGNOSTIC USE AT THE BAS DISPLAY.
FILTER CHANGE: BUBBLE TIGHT DAMPERS ON UNUSED FILTER BANK TO BE OPENED. ONCE THE CLEAN FILTER BANK IS OPENED, THE USED FILTERED BANK CAN BE CLOSED.

EXHAUST STATIC PRESSURE CUTOUT. EXHAUST LOW STATIC PRESSURE CUTOUT AND VARIABLE FREQUENCY DRIVE FAULTS DE-ENERGIZE THE EXHAUST FAN UPON ACTIVATION AND GENERATE AN ALARM SIGNAL. ALL OTHER DAMPERS SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED. THE EXHAUST LOW STATIC PRESSURE SET POINT SHALL BE MINUS 6.0 IN WC (ADJ).

TREND LOGS:
REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

RADIOISOTOPE EXHAUST FAN CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
2	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
3	EXHAUST AIR FAN VFD START / STOP				X			START / STOP	X			
4	EXHAUST AIR FAN VFD STATUS			X				ON / OFF	X		X	
5	EXHAUST AIR FAN MOTOR POWER	X						kW	X		X	
6	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
7	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
8	EXHAUST AIR FAN VFD START / STOP				X			START / STOP	X			
9	EXHAUST AIR FAN VFD STATUS			X				ON / OFF	X		X	
10	EXHAUST AIR FAN MOTOR POWER	X						kW	X		X	
11	EXHAUST STATIC PRESSURE	X						IN WC	X	X		
12	EXHAUST STATIC PRESSURE	X						IN WC	X	X		
13	BYPASS AIR DAMPER		X					% OPEN	X			
14	ISOLATION DAMPER				X			OPEN / CLOSED	X			X
15	ISOLATION DAMPER				X			OPEN / CLOSED	X			X
16	FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
17	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
18	RETURN AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	
19	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
20	FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
20	ISOLATION DAMPER - BUBBLE TIGHT		X					% OPEN	X			
21	ISOLATION DAMPER - BUBBLE TIGHT		X					% OPEN	X			
22	ISOLATION DAMPER - BUBBLE TIGHT		X					% OPEN	X			
23	ISOLATION DAMPER - BUBBLE TIGHT		X					% OPEN	X			
24	RETURN AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	

(*) PROVIDED TO INDICATE SAFETY DEVICE TO BE HARDWIRE INTERLOCK, MANUAL RESET TO THE MOTOR STARTER / VFD AND ALARM TO BMS.

1 RADIOISOTOPE EXHAUST FAN CONTROL DIAGRAM
SCALE: NONE

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STATE OF MICHIGAN — NATHANIEL C. STALKER — ENGINEER — No. 61101 — REGISTERED PROFESSIONAL ENGINEER

10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-612

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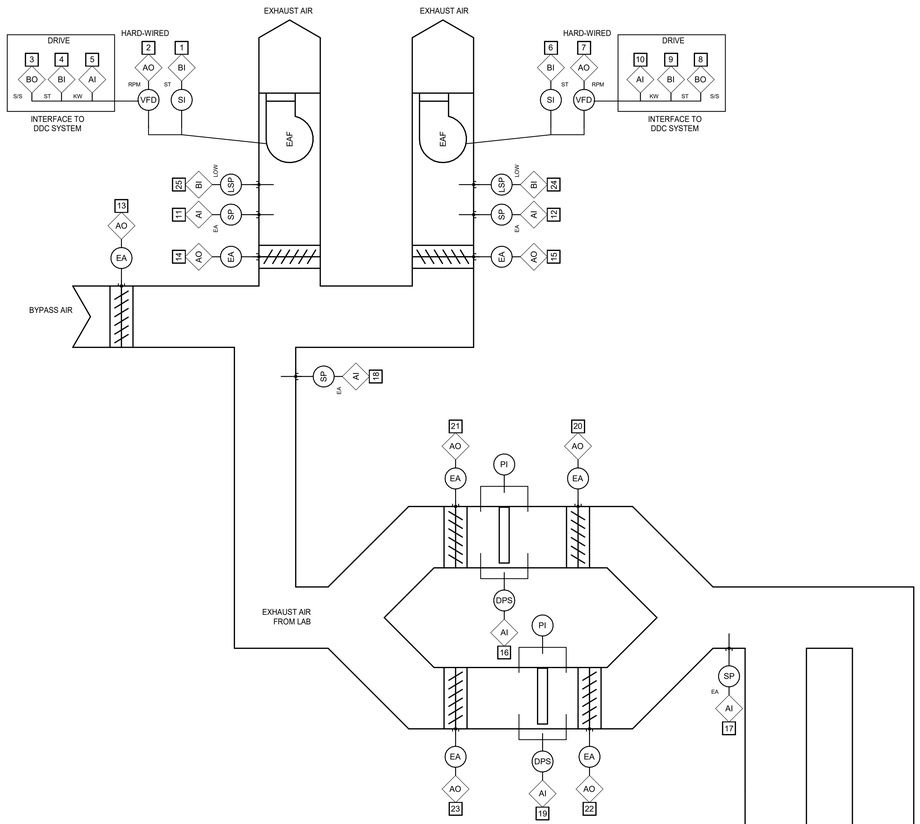

BSL-3 EXHAUST FANS

HIGH PLUME EXHAUST FANS SHALL OPERATE WHEN REQUIRED BASED ON THE OPERATION OF THE EXHAUST VALVES ASSOCIATED TO THE BSL-3 LAB..

EXHAUST FANS SHALL HAVE START/STOP CAPABILITY FROM THE BAS SYSTEM. ONE OF THE 2 FANS SHALL BE DESIGNATED AS THE "LEAD" EXHAUST FAN. THE "LEAD" SHALL ROTATE BASED ON 1000 HRS (ADJ) OF OPERATION. THE "LEAD" EXHAUST FAN SHALL BE ENABLED BY THE BAS TO OPERATE CONTINUOUSLY.

THE BAS SHALL MONITOR THE OPERATING STATUS OF THE EXHAUST FANS. IF EITHER EXHAUST FAN DOES NOT ENABLE WHEN CALLED TO OPERATE. THE BAS SHALL PROVIDE A FAILURE ALARM TO THE BAS AND AUTOMATICALLY START THE OTHER FAN.

IF BOTH EXHAUST FAN STATIC PRESSURE INCREASES ABOVE THE STATIC PRESSURE SET POINT, BOTH EXHAUST FANS SHALL BE SHUT DOWN. THE BAS SHALL PROVIDE AN EMERGENCY LOSS ALARM.

THE BAS SHALL MODULATE THE "LEAD" EXHAUST FAN TO MAINTAIN SYSTEM STATIC PRESSURE SET POINT AS DETERMINED BY THE TAB CONTRACTOR. WHEN THE EXHAUST FAN IS AT MINIMUM SPEED WITH CFM ABOVE STATIC PRESSURE SET POINT, THE BAS SHALL MODULATE BYPASS CONTROL DAMPER TO MAINTAIN STATIC PRESSURE SETPOINT.

IF THE "LEAD" EXHAUST FAN IS OPERATING AT OR ABOVE 90% SPEED AND THE SYSTEM STATIC PRESSURE IS BELOW STATIC PRESSURE SETPOINT FOR MORE THAN 5 MINUTES, THE BAS SHALL ACTIVATE THE "LAG" EXHAUST FAN. THE BAS SHALL MODULATE BOTH THE "LEAD" AND "LAG" EXHAUST FANS TOGETHER TO MAINTAIN STATIC PRESSURE SETPOINT.

IF BOTH THE "LEAD" AND "LAG" EXHAUST FANS ARE OPERATING BELOW 40% SPEED SETTING AND THE SYSTEM STATIC PRESSURE IS ABOVE THE SETPOINT, THE BAS SHALL DEACTIVATE THE "LAG" EXHAUST FAN. THE BAS SHALL MODULATE THE "LEAD" EXHAUST FAN TO MAINTAIN SYSTEM STATIC PRESSURE SETPOINT. IF THE "LAG" FAN DOES NOT ENABLE, THE "LEAD" FAN SHALL INCREASE TO MAXIMUM CAPACITY.

THE BAS MONITORS AND PROVIDES THE EXHAUST FANS MEASURED AIRFLOW VALUES FOR CONTROL AND DIAGNOSTIC USE AT THE BAS DISPLAY.

FILTER CHANGE: BUBBLE TIGHT DAMPERS ON UNUSED FILTER BANK TO BE OPENED. ONCE THE CLEAN FILTER BANK IS OPENED, THE USED FILTERED BANK CAN BE CLOSED.

EXHAUST STATIC PRESSURE CUTOUT. EXHAUST LOW STATIC PRESSURE CUTOUT AND VARIABLE FREQUENCY DRIVE FAULTS DE-ENERGIZE THE EXHAUST FAN UPON ACTIVATION AND GENERATE AN ALARM SIGNAL. ALL OTHER DAMPERS SHALL RETURN TO THEIR NORMAL POSITIONS AFTER THE FAN IS COMPLETELY DE-ENERGIZED. THE EXHAUST LOW STATIC PRESSURE SET POINT SHALL BE MINUS 6.0 IN WC (ADJ).

TREND LOGS:
REFER TO MONITORING BASED COMMISSIONING PLAN AND CONTROL POINTS LIST BELOW FOR TRENDS REQUIRED.

RADIOISOTOPE EXHAUST FAN CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	GV	NV	UNITS	GRAPHICS	TRENDS	ALARM	END SWITCH
1	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
2	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
3	EXHAUST AIR FAN VFD START / STOP				X			START / STOP	X			
4	EXHAUST AIR FAN VFD STATUS			X				ON / OFF	X		X	
5	EXHAUST AIR FAN MOTOR POWER	X						kW	X		X	
6	EXHAUST AIR FAN MOTOR STATUS			X				ON / OFF	X		X	
7	EXHAUST AIR FAN VFD SPEED CONTROL - HARDWIRED		X					HZ	X			
8	EXHAUST AIR FAN VFD START / STOP				X			START / STOP	X			
9	EXHAUST AIR FAN VFD STATUS			X				ON / OFF	X		X	
10	EXHAUST AIR FAN MOTOR POWER	X						kW	X		X	
11	EXHAUST STATIC PRESSURE	X						IN WC	X	X		
12	EXHAUST STATIC PRESSURE	X						IN WC	X	X		
13	BYPASS AIR DAMPER		X					% OPEN	X			
14	ISOLATION DAMPER				X			OPEN / CLOSED	X			X
15	ISOLATION DAMPER				X			OPEN / CLOSED	X			X
16	FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
17	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
18	EXHAUST AIR DUCT STATIC PRESSURE	X						IN WC	X	X		
19	FILTER DIFFERENTIAL PRESSURE	X						IN WC	X		X	
20	ISOLATION DAMPER - BUBBLE TIGHT		X					% OPEN	X			
21	ISOLATION DAMPER - BUBBLE TIGHT		X					% OPEN	X			
22	ISOLATION DAMPER - BUBBLE TIGHT		X					% OPEN	X			
23	ISOLATION DAMPER - BUBBLE TIGHT		X					% OPEN	X			
24	RETURN AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	
25	RETURN AIR DUCT STATIC PRESSURE - LOW STATIC (*)	X						IN WC	X	X	X	

(*) PROVIDED TO INDICATE SAFETY DEVICE TO BE HARDWIRE INTERLOCK, MANUAL RESET TO THE MOTOR STARTER / VFD AND ALARM TO BMS.

1 BSL-3 EXHAUST FAN CONTROL DIAGRAM
SCALE: NONE

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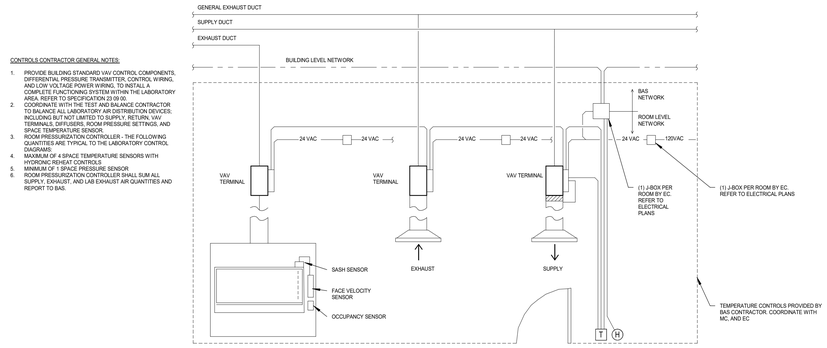
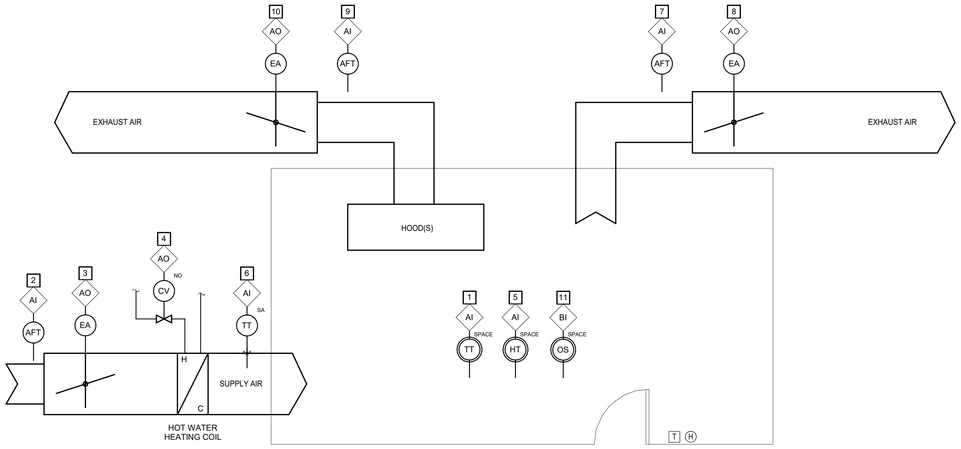


CONTROLS CONTRACTOR GENERAL NOTES:

1. PROVIDE BUILDING STANDARD VAV CONTROL COMPONENTS, DIFFERENTIAL PRESSURE TRANSMITTER, CONTROL WIRING, AND LOW VOLTAGE POWER WIRING, TO INSTALL A COMPLETE FUNCTIONING SYSTEM WITHIN THE LABORATORY AREA. REFER TO SPECIFICATION 23 09 00.
2. COORDINATE WITH THE TEST AND BALANCE CONTRACTOR TO BALANCE ALL LABORATORY AIR DISTRIBUTION DEVICES, INCLUDING BUT NOT LIMITED TO SUPPLY, RETURN, VAV TERMINALS, DIFFUSERS, ROOM PRESSURE SETTINGS, AND SPACE TEMPERATURE SENSOR.
3. ROOM PRESSURIZATION CONTROLLER - THE FOLLOWING QUANTITIES ARE TYPICAL TO THE LABORATORY CONTROL DIAGRAMS:
4. MAXIMUM OF 4 SPACE TEMPERATURE SENSORS WITH HYDRONIC REHEAT CONTROLS
5. MINIMUM OF 1 SPACE PRESSURE SENSOR.
6. ROOM PRESSURIZATION CONTROLLER SHALL SUM ALL SUPPLY, EXHAUST, AND LAB EXHAUST AIR QUANTITIES AND REPORT TO BAS.



VAV BOX WITH REHEAT CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY AIR FLOW MEASURING STATION	X				CFM
3	AIR VALVE UNIT DAMPER		X			% OPEN
4	REHEAT COIL CONTROL VALVE		X			% OPEN
5	SPACE HUMIDITY	X				%RH
6	SUPPLY AIR TEMPERATURE	X				°F
7	EXHAUST AIR FLOW MEASURING STATION	X				CFM
8	AIR VALVE UNIT DAMPER		X			% OPEN
9	EXHAUST AIR FLOW MEASURING STATION - HOOD(S)	X				CFM
10	AIR VALVE UNIT DAMPER		X			% OPEN
11	HOOD OCCUPANCY			X		OCC/UNOCC

SEQUENCE OF OPERATIONS

GENERAL

THE SUPPLY AIR VALVE (SAV) TERMINAL UNIT APPLICATION SPECIFIC CONTROLLER (ASC) MONITORS THE AIRFLOW FEEDBACK SIGNAL AND THE ZONE TEMPERATURE SENSOR THROUGH THE PROPORTIONAL AND INTEGRAL ALGORITHM. THE TERMINAL UNIT AIRFLOW FEEDBACK SIGNAL IS BASED ON THE CALIBRATED POSITIONER STATE. THE ASC FOR THE AIR VALVES SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE AIR VALVE. SO LONG AS THE DIFFERENTIAL PRESSURE ACROSS A VALVE IS WITHIN 0.3" TO 3" WC RANGE, THE AIRFLOW POSITION FEEDBACK SHALL BE ACCEPTABLE AS THE ACTUAL AIRFLOW MEASUREMENT THROUGH THE AIR VALVE. DIFFERENTIAL PRESSURE SHALL BE MEASURED ACROSS THE SUPPLY AIR VALVE TO INFORM AHU DISCHARGE AIR STATIC PRESSURE RESET LOGIC.

OCCUPANCY MODE SHALL BE DETERMINED THROUGH A COMBINATION OF TIME OF DAY SCHEDULE COORDINATED WITH THE OWNER AND OCCUPANCY STATUS VIA AN OCCUPANCY SENSOR LOCATED IN THE ZONE AS PART OF THE LIGHTING CONTROLS SYSTEM. REFER TO THE ELECTRICAL DRAWINGS FOR LOCATION(S) AND TYPE OF OCCUPANCY SENSOR.

IF THE TIME OF DAY SCHEDULE INDICATES THAT THE BUILDING IS SCHEDULED TO BE OCCUPIED AND THE SPACE OCCUPANCY SENSOR SENSES OCCUPANCY, THE UNIT SHALL BE PLACED IN OCCUPIED MODE.

IF THE TIME OF DAY SCHEDULE INDICATES THAT THE BUILDING IS SCHEDULED TO BE OCCUPIED AND THE OCCUPANCY SENSOR DOES NOT SENSE OCCUPANCY FOR 15 MINUTES (ADJ), THE UNIT SHALL BE PLACED INTO STAND-BY MODE UNTIL OCCUPANCY IS SENSED.

UNOCCUPIED MODE SHALL OCCUR DURING THE TIME PERIODS OPPOSITE OF THE OCCUPIED TIME OF DAY SCHEDULE.

UNOCCUPIED MODE CFM IS INDICATED ON THE SCHEDULE AS SUPPLY AIRFLOW UNOCCUPIED.

WHEN THE COMMUNICATION IS LOST BETWEEN THE BMS AND THE ASC, THE ASC SHALL DEFAULT TO OCCUPIED MODE.

ALL SETPOINTS AND TIME OF DAY SCHEDULES SHALL BE COORDINATED WITH THE OWNER.

TEMPERATURE CONTROL OPERATION

TEMPERATURE: OCCUPIED CYCLE: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO FULL CFM SETTING. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

TEMPERATURE: STAND-BY CYCLE: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO SUPPLY AIRFLOW MINIMUM OCCUPIED. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

TEMPERATURE: UNOCCUPIED: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO SUPPLY AIRFLOW MINIMUM UNOCCUPIED. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

FUME HOOD EXHAUST CONTROL

THE FUME HOOD EXHAUST AIR VALVES SHALL OPERATE BASED ON FUME HOOD CONTROLLER SASH POSITION INPUT WITHIN THE DEFINED MAXIMUM AND MINIMUM SUPPLY AIRFLOWS AS INDICATED ON THE SCHEDULES.

THE FUME HOOD CONTROLLER MONITORS THE FUME HOOD SASH POSITION AND DISPLAYS VELOCITY ACROSS THE FUME HOOD OPENING BASED ON VARIABLE VOLUME FUME HOOD EXHAUST. THE FUME HOOD INDICATING PANEL SHALL PROVIDE LOCAL ALARM IF THE VELOCITY FALLS BELOW PRESET LIMITS. THE ALARM SHALL REPORT TO THE BMS FOR BROADCAST.

FUME HOOD EXHAUST: A MINIMUM FACE VELOCITY OF 100 FPM FACE VELOCITY IS MAINTAINED AT ALL SASH POSITIONS AS MEASURED BY THE HOOD MOUNTED SENSOR. SUPPLY AIR VAV: PROVIDES RELIEF AIR FOR THE DIFFERENTIAL AIRFLOW RELATION BETWEEN THE SUPPLY AND FUME HOOD AIRFLOW PER THE LABORATORY AIR BALANCE PLANS. GENERAL ROOM EXHAUST: EXHAUST VAV: PROVIDE A CALIBRATED NET AIRFLOW READING TO THE BAS FOR ROOM PRESSURE CONTROL SPACE.

AIRFLOW / PRESSURE CONTROL

THE SUPPLY AND GENERAL EXHAUST AIR VALVE TERMINAL UNITS SHALL BE CONTROLLED WITHIN THE DEFINED MAXIMUM AND MINIMUM SUPPLY AIR VOLUMES AS SCHEDULED.

FIXED OFFSETS BETWEEN SUPPLY AND EXHAUST AIR VALVES SHALL BE VERIFIED AND ADJUSTED DURING TEST AND BALANCE TO MAINTAIN SPECIFIED CFM OFFSET.

THE EXHAUST AIR VAV SHALL MODULATE IN CONJUNCTION WITH THE SUPPLY AIR VAV MODULATION BY TRACKING SUPPLY AIR CFM. EXHAUST AIR TRACKING VAV SHALL MAINTAIN CFM DIFFERENTIAL AS REQUIRED TO MAINTAIN THE REQUIRED SPACE DIFFERENTIAL PRESSURE MINIMUM. SPACE DIFFERENTIAL PRESSURE REQUIREMENT SHALL BE PRE-DETERMINED BY SUMMING THE SPACE SUPPLY AIR FLOWS VS. EXHAUST VAV AIRFLOWS AND OFFSET CFM VALUE. OFFSET CFM VALUE SHALL BE FIELD DERIVED UNTIL DESIRED PRESSURIZATION IS ACHIEVED.

HUMIDITY

HUMIDITY CONTROL (SINGLE ZONE LAB SPACE): COOLING MODE: ON A RISE IN HUMIDITY ABOVE 60% RELATIVE (ADJUSTABLE). THE SUPPLY AIR VALVE IS MODULATED TO 100%. ON A FALL IN SPACE TEMPERATURE AND CONTINUED RISE IN SPACE HUMIDITY, THE REHEAT COIL IS MODULATED ON TO MAINTAIN SPACE TEMPERATURE.

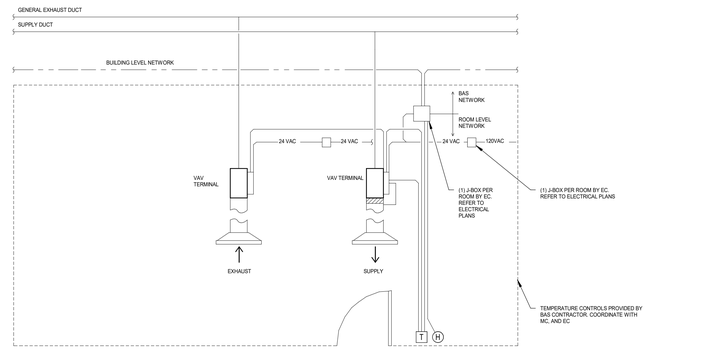
OCC SENSOR

AIR VALVE SHALL BE TIED TO OCCUPANCY SENSOR WITHIN ROOM. FOR AN AIR VALVE SERVING ONE ROOM WITH MULTIPLE OCCUPANCY SENSOR, EACH OCCUPANCY SENSOR SHALL BE WIRED BACK TO AIR VALVE CONTROLLER IN SERIES. FOR AN AIR VALVE TO GO TO UNOCCUPIED MODE, ALL OCCUPANCY SENSORS SHALL BE UNOCCUPIED MODE.

1

1 LAB HOOD CONTROL DIAGRAM

SCALE: NONE



CONTROLS CONTRACTOR GENERAL NOTES:

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2. COORDINATE WITH THE TEST AND BALANCE CONTRACTOR TO BALANCE ALL LABORATORY AIR DISTRIBUTION DEVICES, INCLUDING BUT NOT LIMITED TO SUPPLY, RETURN, VAV TERMINALS, DIFFUSERS, ROOM PRESSURE SETTINGS, AND SPACE TEMPERATURE SENSOR.
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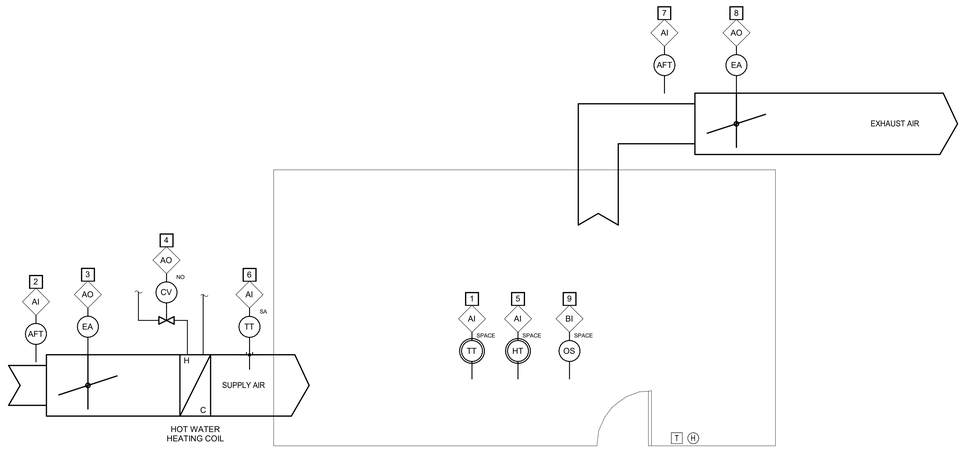

VAV BOX WITH REHEAT CONTROL POINTS

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2	SUPPLY AIR FLOW MEASURING STATION	X				CFM
3	AIR VALVE UNIT DAMPER		X			% OPEN
4	REHEAT COIL CONTROL VALVE		X			% OPEN
5	SPACE HUMIDITY	X				%RH
6	SUPPLY AIR TEMPERATURE	X				°F
7	EXHAUST AIR FLOW MEASURING STATION	X				CFM
8	AIR VALVE UNIT DAMPER		X			% OPEN
9	SPACE OCCUPANCY SENSOR			X		OCC/UNOCC

SEQUENCE OF OPERATIONS

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OCCUPANCY MODE SHALL BE DETERMINED THROUGH A COMBINATION OF TIME OF DAY SCHEDULE COORDINATED WITH THE OWNER AND OCCUPANCY STATUS VIA AN OCCUPANCY SENSOR LOCATED IN THE ZONE AS PART OF THE LIGHTING CONTROLS SYSTEM. REFER TO THE ELECTRICAL DRAWINGS FOR LOCATION(S) AND TYPE OF OCCUPANCY SENSOR.

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AIRFLOW / PRESSURE CONTROL

THE SUPPLY AND GENERAL EXHAUST AIR VALVE TERMINAL UNITS SHALL BE CONTROLLED WITHIN THE DEFINED MAXIMUM AND MINIMUM SUPPLY AIR VOLUMES AS SCHEDULED.

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THE EXHAUST AIR VAV SHALL MODULATE IN CONJUNCTION WITH THE SUPPLY AIR VAV MODULATION BY TRACKING SUPPLY AIR CFM. EXHAUST AIR TRACKING VAV SHALL MAINTAIN CFM DIFFERENTIAL AS REQUIRED TO MAINTAIN THE REQUIRED SPACE DIFFERENTIAL PRESSURE MINIMUM. SPACE DIFFERENTIAL PRESSURE REQUIREMENT SHALL BE PRE-DETERMINED BY SUMMING THE SPACE SUPPLY AIR FLOWS VS. EXHAUST VAV AIRFLOWS AND OFFSET CFM VALUE. OFFSET CFM VALUE SHALL BE FIELD DERIVED UNTIL DESIRED PRESSURIZATION IS ACHIEVED.

HUMIDITY

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OCC SENSOR

AIR VALVE SHALL BE TIED TO OCCUPANCY SENSOR WITHIN ROOM. FOR AN AIR VALVE SERVING ONE ROOM WITH MULTIPLE OCCUPANCY SENSOR, EACH OCCUPANCY SENSOR SHALL BE WIRED BACK TO AIR VALVE CONTROLLER IN SERIES. FOR AN AIR VALVE TO GO TO UNOCCUPIED MODE, ALL OCCUPANCY SENSORS SHALL BE UNOCCUPIED MODE.

1

2 LAB CONTROL DIAGRAM

SCALE: NONE

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10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-614

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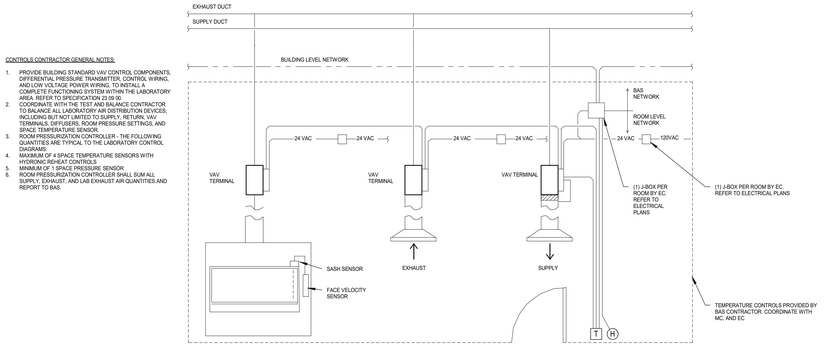
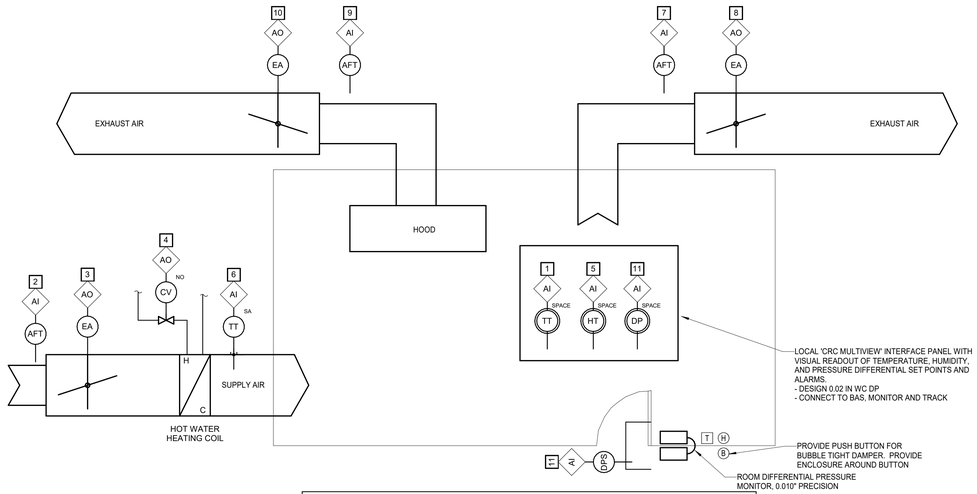


CONTROLS CONTRACTOR GENERAL NOTES:

1. PROVIDE BUILDING STANDARD VAV CONTROL COMPONENTS, DIFFERENTIAL PRESSURE TRANSMITTER, CONTROL WIRING, AND LOW VOLTAGE POWER WIRING, TO INSTALL A COMPLETE FUNCTIONING SYSTEM WITHIN THE LABORATORY AREA. REFER TO SPECIFICATION 23 09 00.
2. COORDINATE WITH THE TEST AND BALANCE CONTRACTOR TO BALANCE ALL LABORATORY AIR DISTRIBUTION DEVICES; INCLUDING BUT NOT LIMITED TO SUPPLY, RETURN, VAV TERMINALS, DIFFUSERS, ROOM PRESSURE SETTINGS, AND SPACE TEMPERATURE SENSOR.
3. ROOM PRESSURIZATION CONTROLLER - THE FOLLOWING QUANTITIES ARE TYPICAL TO THE LABORATORY CONTROL DIAGRAMS:
4. MAXIMUM OF 4 SPACE TEMPERATURE SENSORS WITH HYDRONIC REHEAT CONTROLS
5. MINIMUM OF 1 SPACE PRESSURE SENSOR
6. ROOM PRESSURIZATION CONTROLLER SHALL SUM ALL SUPPLY, EXHAUST, AND LAB EXHAUST AIR QUANTITIES AND REPORT TO BAS.



VAV BOX WITH REHEAT CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY AIR FLOW MEASURING STATION	X				CFM
3	AIR VALVE UNIT DAMPER		X			% OPEN
4	REHEAT COIL CONTROL VALVE		X			% OPEN
5	SPACE HUMIDITY	X				%RH
6	SUPPLY AIR TEMPERATURE	X				°F
7	EXHAUST AIR FLOW MEASURING STATION	X				CFM
8	AIR VALVE UNIT DAMPER		X			% OPEN
9	EXHAUST AIR FLOW MEASURING STATION - HOOD(S)	X				CFM
10	AIR VALVE UNIT DAMPER		X			% OPEN
11	SPACE DIFFERENTIAL PRESSURE	X				POS/NEG IN WC.

1

SEQUENCE OF OPERATIONS

GENERAL

THE SUPPLY AIR VALVE (SAV) TERMINAL UNIT APPLICATION SPECIFIC CONTROLLER (ASC) MONITORS THE AIRFLOW FEEDBACK SIGNAL AND THE ZONE TEMPERATURE SENSOR THROUGH THE PROPORTIONAL AND INTEGRAL ALGORITHM. THE TERMINAL UNIT AIRFLOW FEEDBACK SIGNAL IS BASED ON THE CALIBRATED POSITIONER STATE. THE ASC FOR THE AIR VALVES SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE AIR VALVE. SO LONG AS THE DIFFERENTIAL PRESSURE ACROSS A VALVE IS WITHIN 0.3" TO 3" WC RANGE, THE AIRFLOW POSITION FEEDBACK SHALL BE ACCEPTABLE AS THE ACTUAL AIRFLOW MEASUREMENT THROUGH THE AIR VALVE. DIFFERENTIAL PRESSURE SHALL BE MEASURED ACROSS THE SUPPLY AIR VALVE TO INFORM AHU DISCHARGE AIR STATIC PRESSURE RESET LOGIC.

OCCUPANCY MODE SHALL BE DETERMINED THROUGH A COMBINATION OF TIME OF DAY SCHEDULE COORDINATED WITH THE OWNER AND OCCUPANCY STATUS VIA AN OCCUPANCY SENSOR LOCATED IN THE ZONE AS PART OF THE LIGHTING CONTROLS SYSTEM. REFER TO THE ELECTRICAL DRAWINGS FOR LOCATION(S) AND TYPE OF OCCUPANCY SENSOR.

IF THE TIME OF DAY SCHEDULE INDICATES THAT THE BUILDING IS SCHEDULED TO BE OCCUPIED AND THE SPACE OCCUPANCY SENSOR SENSES OCCUPANCY, THE UNIT SHALL BE PLACED IN OCCUPIED MODE.

IF THE TIME OF DAY SCHEDULE INDICATES THAT THE BUILDING IS SCHEDULED TO BE OCCUPIED AND THE OCCUPANCY SENSOR DOES NOT SENSE OCCUPANCY FOR 15 MINUTES (ADJ), THE UNIT SHALL BE PLACED INTO STAND-BY MODE UNTIL OCCUPANCY IS SENSED.

UNOCCUPIED MODE SHALL OCCUR DURING THE TIME PERIODS OPPOSITE OF THE OCCUPIED TIME OF DAY SCHEDULE.

UNOCCUPIED MODE CFM IS INDICATED ON THE SCHEDULE AS SUPPLY AIRFLOW UNOCCUPIED.

WHEN THE COMMUNICATION IS LOST BETWEEN THE BMS AND THE ASC, THE ASC SHALL DEFAULT TO OCCUPIED MODE.

ALL SETPOINTS AND TIME OF DAY SCHEDULES SHALL BE COORDINATED WITH THE OWNER.

TEMPERATURE CONTROL OPERATION

TEMPERATURE: OCCUPIED CYCLE: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO FULL CFM SETTING. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

TEMPERATURE: STAND-BY CYCLE: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO SUPPLY AIRFLOW MINIMUM OCCUPIED. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

TEMPERATURE: UNOCCUPIED: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO SUPPLY AIRFLOW MINIMUM UNOCCUPIED. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

FUME HOOD EXHAUST CONTROL

THE FUME HOOD EXHAUST AIR VALVES SHALL OPERATE BASED ON FUME HOOD CONTROLLER SASH POSITION INPUT WITHIN THE DEFINED MAXIMUM AND MINIMUM SUPPLY AIRFLOWS AS INDICATED ON THE SCHEDULES.

THE FUME HOOD CONTROLLER MONITORS THE FUME HOOD SASH POSITION AND DISPLAYS VELOCITY ACROSS THE FUME HOOD OPENING BASED ON VARIABLE VOLUME FUME HOOD EXHAUST. THE FUME HOOD INDICATING PANEL SHALL PROVIDE LOCAL ALARM IF THE VELOCITY FALLS BELOW PRESET LIMITS. THE ALARM SHALL REPORT TO THE BMS FOR BROADCAST.

FUME HOOD EXHAUST: A MINIMUM FACE VELOCITY OF 100 FPM FACE VELOCITY IS MAINTAINED AT ALL SASH POSITIONS AS MEASURED BY THE HOOD MOUNTED SENSOR. SUPPLY AIR VAV. PROVIDES RELIEF AIR FOR THE DIFFERENTIAL AIRFLOW RELATION BETWEEN THE SUPPLY AND FUME HOOD AIRFLOW PER THE LABORATORY AIR BALANCE PLANS. GENERAL ROOM EXHAUST: EXHAUST VAV: PROVIDE A CALIBRATED NET AIRFLOW READING TO THE BAS FOR ROOM PRESSURE CONTROL SPACE.

AIRFLOW / PRESSURE CONTROL

THE SUPPLY AND GENERAL EXHAUST AIR VALVE TERMINAL UNITS SHALL BE CONTROLLED WITHIN THE DEFINED MAXIMUM AND MINIMUM SUPPLY AIR VOLUMES AS SCHEDULED.

FIXED OFFSETS BETWEEN SUPPLY AND EXHAUST AIR VALVES SHALL BE VERIFIED AND ADJUSTED DURING TEST AND BALANCE TO MAINTAIN SPECIFIED CFM OFFSET.

THE EXHAUST AIR VAV SHALL MODULATE IN CONJUNCTION WITH THE SUPPLY AIR VAV MODULATION BY TRACKING SUPPLY AIR CFM. EXHAUST AIR TRACKING VAV SHALL MAINTAIN CFM DIFFERENTIAL AS REQUIRED TO MAINTAIN THE REQUIRED SPACE DIFFERENTIAL PRESSURE MINIMUM. SPACE DIFFERENTIAL PRESSURE REQUIREMENT SHALL BE PRE-DETERMINED BY SUMMING THE SPACE SUPPLY AIR FLOWS VS. EXHAUST VAV AIRFLOWS AND OFFSET CFM VALUE. OFFSET CFM VALUE SHALL BE FIELD DERIVED UNTIL DESIRED PRESSURIZATION IS ACHIEVED.

A ROOM PRESSURE MONITOR DISPLAY SHALL BE PROVIDED AT ALERT OCCUPANTS WHEN THE SPACE IS OUTSIDE OF PRESSURE REQUIREMENTS. DOOR CONTACT SWITCHES SHALL BE FURNISHED TO MONITOR THE STATUS OF OPEN DOORS. WHENEVER ANY DOOR CONTACT SWITCH BETWEEN THE ZONE AND THE ADJACENT SPACES SENSES THAT THE DOOR IS OPEN, AN ALARM SHALL BE INITIATED.

HUMIDITY

HUMIDITY CONTROL (SINGLE ZONE LAB SPACE): COOLING MODE: ON A RISE IN HUMIDITY ABOVE 60% RELATIVE (ADJUSTABLE). THE SUPPLY AIR VALVE IS MODULATED TO 100%. ON A FALL IN SPACE TEMPERATURE AND CONTINUED RISE IN SPACE HUMIDITY, THE REHEAT COIL IS MODULATED "ON" TO MAINTAIN SPACE TEMPERATURE.

SAFETIES AND ALARMS

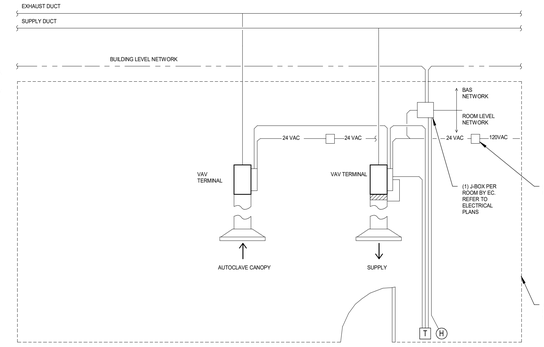
THE BMS SHALL MONITOR THE SAV AND THE REHEAT COIL VALVE POSITION PERCENT OPEN VALUE AND REPORT THE POSITION FOR AIRSIDE AND HYDRONIC DIFFERENTIAL PRESSURE AND/OR TEMPERATURE RESET. IF THE SAV FALLS BELOW 0.3" WC (ADJ), A SIGNAL SHALL BE SENT TO THE BMS FOR THE AHU DISCHARGE AIR STATIC PRESSURE SETPOINT TO INCREASED. IF THE SAV RISES ABOVE 3" WC (ADJ), A SIGNAL SHALL BE SENT THROUGH THE BMS FOR THE AHU DISCHARGE AIR STATIC PRESSURE SETPOINT TO DECREASE.

IF THE SAV EITHER EXCEEDS 3' WC (ADJ) OR FALLS BELOW 0.3" WC (ADJ) CONTINUOUSLY FOR 15 MINUTES (ADJ), AN ALARM SHALL BE GENERATED THROUGH THE BMS.

THE BMS SHALL MONITOR THE DPT. IF THE DIFFERENTIAL PRESSURE ACROSS ANY LAB EXHAUST AIR VALVE, AN ALARM SHALL BE ACTIVATED AND THE SUPPLY AIR VALVE SHALL BE COMMANDED CLOSED. THE BUBBLE TIGHT DAMPER SHALL ALSO BE COMMANDED CLOSED.

ADDITIONAL ALARMS: LOSS OF SUPPLY AIRFLOW, LOSS OF EXHAUST AIRFLOW, RADIOISOTOPE LAB LOSS OF SUPPLY/EXHAUST AIRFLOW RELATIONSHIP, RADIOISOTOPE LAB LOSS OF PRESSURE RELATIONSHIP.

2 LAB HOOD CONTROL DIAGRAM - RADIOISOTOPE LAB
SCALE: NONE



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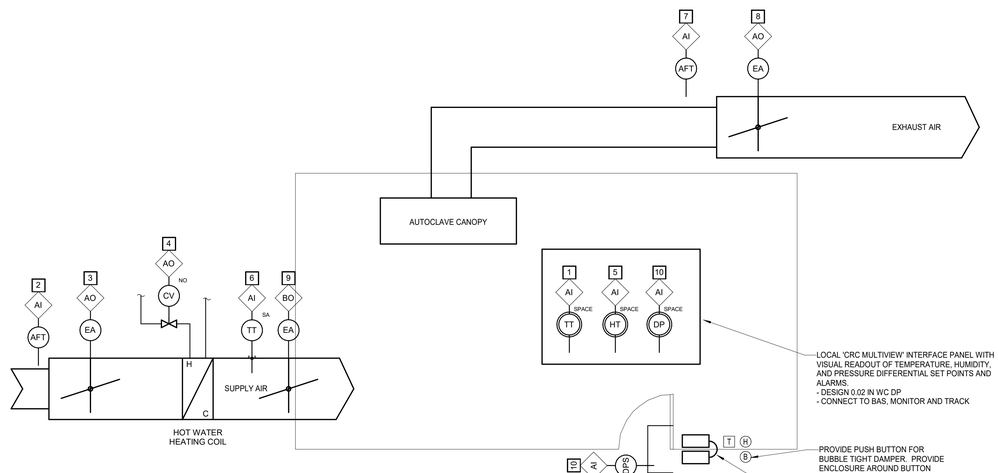

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4	REHEAT COIL CONTROL VALVE		X			% OPEN
5	SPACE HUMIDITY	X				%RH
6	SUPPLY AIR TEMPERATURE	X				°F
7	EXHAUST AIR FLOW MEASURING STATION	X				CFM
8	AIR VALVE UNIT DAMPER		X			% OPEN
9	SUPPLY AIR BUBBLE DAMPER				X	OPEN/CLOSED
10	SPACE DIFFERENTIAL PRESSURE	X				POS/NEG IN WC.

1

SEQUENCE OF OPERATIONS

GENERAL

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GLASS WASH CONTROL

GLASS WASH CONTROL WHEN THE CONTAINMENT HOOD IS IN USE FROM THE OPERATOR INPUT. THE ASSOCIATED EXHAUST AIR VALVE SHALL MODULATE TO MAXIMUM EXHAUST AIRFLOW.

AIRFLOW / PRESSURE CONTROL

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ADDITIONAL ALARMS: LOSS OF SUPPLY AIRFLOW, LOSS OF EXHAUST AIRFLOW, BSL-3 LAB LOSS OF SUPPLY/EXHAUST AIRFLOW RELATIONSHIP, BSL-3 LAB LOSS OF PRESSURE RELATIONSHIP

1 LAB CONTROL DIAGRAM - BSL-3
SCALE: NONE

HKS

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No. 51101
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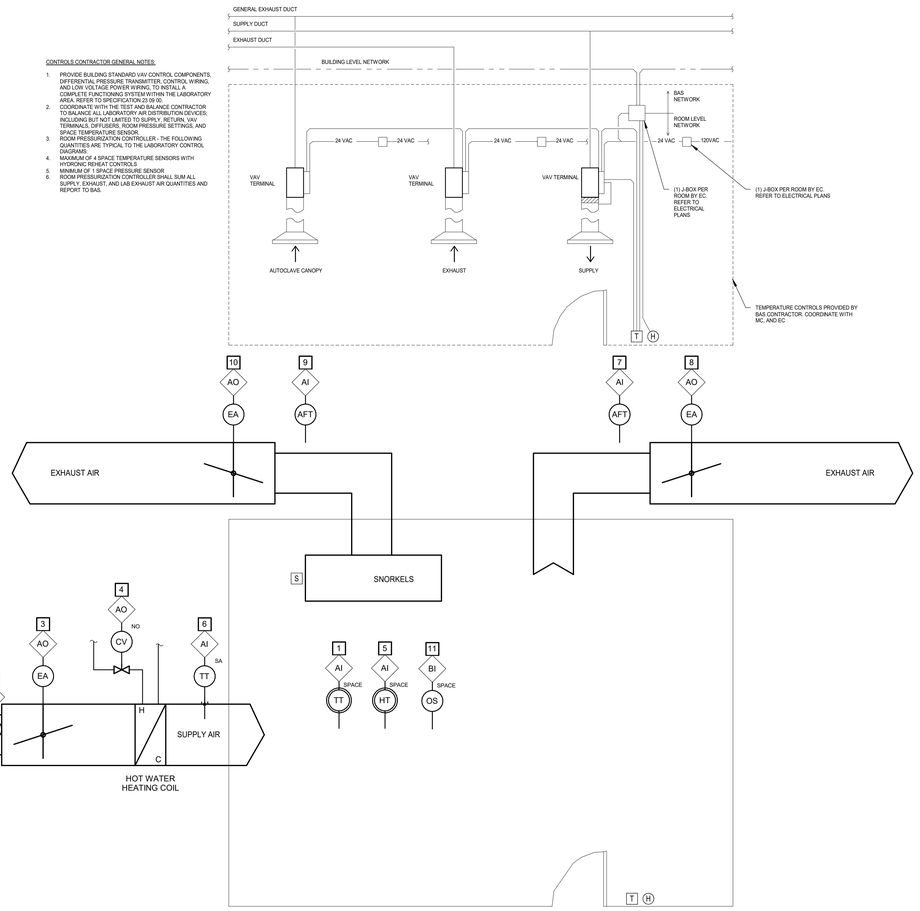

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VAV BOX WITH REHEAT CONTROL POINTS						
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7	EXHAUST AIR FLOW MEASURING STATION	X				CFM
8	AIR VALVE UNIT DAMPER		X			% OPEN
9	EXHAUST AIR FLOW MEASURING STATION - CANOPY	X				CFM
10	AIR VALVE UNIT DAMPER		X			% OPEN
11	SPACE OCCUPANCY SENSOR			X		OCC/UNOCC

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GENERAL

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SNORKEL CONTROL

WHEN THE OPERATOR INPUT SWITCH IS ACTIVATED, THE ASSOCIATED EXHAUST AIR VALVE SHALL MODULATE TO EXHAUST AIRFLOW. THE MAIN EXHAUST VALVE WITHIN SPACE SHALL MODULATE TO MAINTAIN SPACE AIRFLOW OFFSET. WHEN THE SWITCH IS DEACTIVATED, THE EXHAUST AIR VALVE SHALL CLOSE. THE MAIN EXHAUST VALVE WITHIN SPACE SHALL MODULATE TO MAINTAIN SPACE AIRFLOW OFFSET.

AIRFLOW / PRESSURE CONTROL

THE SUPPLY AND GENERAL EXHAUST AIR VALVE TERMINAL UNITS SHALL BE CONTROLLED WITHIN THE DEFINED MAXIMUM AND MINIMUM SUPPLY AIR VOLUMES AS SCHEDULED.

FIXED OFFSETS BETWEEN SUPPLY AND EXHAUST AIR VALVES SHALL BE VERIFIED AND ADJUSTED DURING TEST AND BALANCE TO MAINTAIN SPECIFIED CFM OFFSET.

THE EXHAUST AIR VAV SHALL MODULATE IN CONJUNCTION WITH THE SUPPLY AIR VAV MODULATION BY TRACKING SUPPLY AIR CFM. EXHAUST AIR TRACKING VAV SHALL MAINTAIN CFM DIFFERENTIAL AS REQUIRED TO MAINTAIN THE REQUIRED SPACE DIFFERENTIAL PRESSURE MINIMUM. SPACE DIFFERENTIAL PRESSURE REQUIREMENT SHALL BE PRE-DETERMINED BY SUMMING THE SPACE SUPPLY AIR FLOWS VS. EXHAUST VAV AIRFLOWS AND OFFSET CFM VALUE. OFFSET CFM VALUE SHALL BE FIELD DERIVED UNTIL DESIRED PRESSURIZATION IS ACHIEVED.

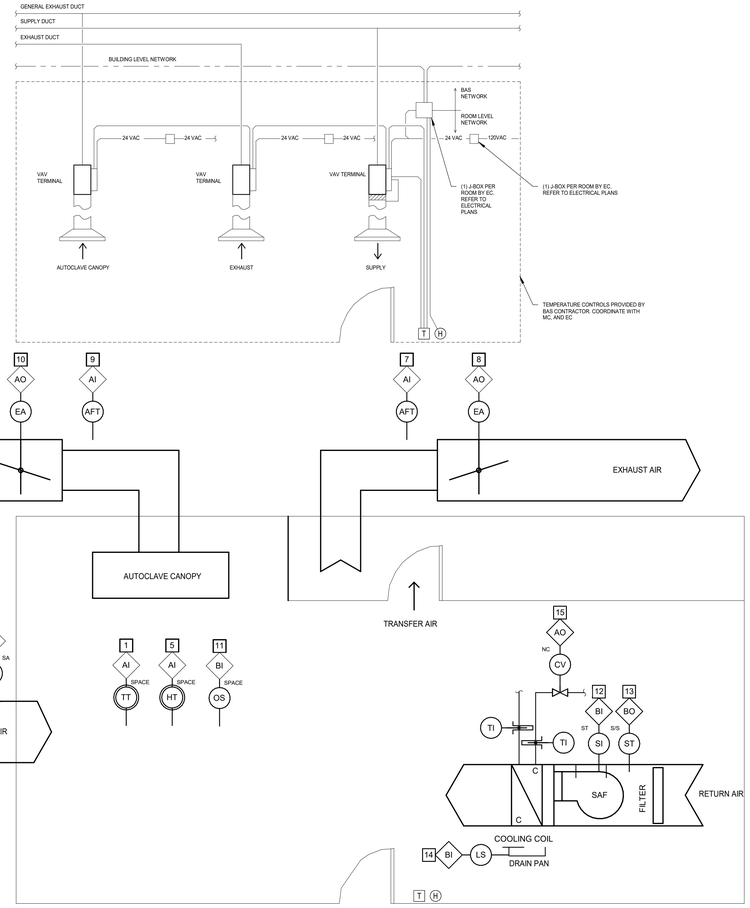
HUMIDITY

HUMIDITY CONTROL (SINGLE ZONE LAB SPACE): COOLING MODE: ON A RISE IN HUMIDITY ABOVE 60% RELATIVE (ADJUSTABLE), THE SUPPLY AIR VALVE IS MODULATED TO 100%. ON A FALL IN SPACE TEMPERATURE AND CONTINUED RISE IN SPACE HUMIDITY, THE REHEAT COIL IS MODULATED "ON" TO MAINTAIN SPACE TEMPERATURE.

OCC SENSOR

AIR VALVE SHALL BE TIED TO OCCUPANCY SENSOR WITHIN ROOM. FOR AN AIR VALVE SERVING ONE ROOM WITH MULTIPLE OCCUPANCY SENSOR, EACH OCCUPANCY SENSOR SHALL BE WIRED BACK TO AIR VALVE CONTROLLER IN SERIES. FOR AN AIR VALVE TO GO TO UNOCCUPIED MODE, ALL OCCUPANCY SENSORS SHALL BE UNOCCUPIED MODE.

2 LAB CONTROL DIAGRAM WITH SNORKEL
SCALE: NONE



CONTROLS CONTRACTOR GENERAL NOTES:

1. PROVIDE BUILDING STANDARD VAV CONTROL COMPONENTS, DIFFERENTIAL PRESSURE TRANSMITTER, CONTROL WIRING, AND LOW VOLTAGE POWER WIRING, TO INSTALL A COMPLETE FUNCTIONING SYSTEM WITHIN THE LABORATORY AREA. REFER TO SPECIFICATION 23 09 00.
2. COORDINATE WITH THE TEST AND BALANCE CONTRACTOR TO BALANCE ALL LABORATORY AIR DISTRIBUTION DEVICES, INCLUDING BUT NOT LIMITED TO SUPPLY, RETURN, VAV TERMINALS, DIFFUSERS, ROOM PRESSURE SETTINGS, AND SPACE TEMPERATURE SENSOR.
3. ROOM PRESSURIZATION CONTROLLER - THE FOLLOWING QUANTITIES ARE TYPICAL TO THE LABORATORY CONTROL DIAGRAMS:
4. MAXIMUM OF 4 SPACE TEMPERATURE SENSORS WITH HYDRONIC REHEAT CONTROLS
5. MINIMUM OF 1 SPACE PRESSURE SENSOR
6. ROOM PRESSURIZATION CONTROLLER SHALL SUM ALL SUPPLY, EXHAUST, AND LAB EXHAUST AIR QUANTITIES AND REPORT TO BAS.

VAV BOX WITH REHEAT CONTROL POINTS						
TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY AIR FLOW MEASURING STATION	X				CFM
3	AIR VALVE UNIT DAMPER		X			% OPEN
4	REHEAT COIL CONTROL VALVE		X			% OPEN
5	SPACE HUMIDITY	X				%RH
6	SUPPLY AIR TEMPERATURE	X				°F
7	EXHAUST AIR FLOW MEASURING STATION	X				CFM
8	AIR VALVE UNIT DAMPER		X			% OPEN
9	EXHAUST AIR FLOW MEASURING STATION - CANOPY	X				CFM
10	AIR VALVE UNIT DAMPER		X			% OPEN
11	SPACE OCCUPANCY SENSOR			X		OCC/UNOCC
12	WALL HUNG FCU SUPPLY FAN MOTOR STATUS			X		ON/OFF
13	WALL HUNG FCU SUPPLY FAN STARTER				X	ENABLE/DISABLE
14	WALL HUNG FCU DRAIN PAN LEVEL SWITCH			X		NORMAL/ALARM
15	COOLING COIL CONTROL VALVE		X			% OPEN

SEQUENCE OF OPERATIONS

GENERAL

THE SUPPLY AIR VALVE (SAV) TERMINAL UNIT APPLICATION SPECIFIC CONTROLLER (ASC) MONITORS THE AIRFLOW FEEDBACK SIGNAL AND THE ZONE TEMPERATURE SENSOR THROUGH THE PROPORTIONAL AND INTEGRAL ALGORITHM. THE TERMINAL UNIT AIRFLOW FEEDBACK SIGNAL IS BASED ON THE CALIBRATED POSITIONER STATE. THE ASC FOR THE AIR VALVES SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE AIR VALVE. SO LONG AS THE DIFFERENTIAL PRESSURE ACROSS A VALVE IS WITHIN 0.3" TO 3" WC RANGE, THE AIRFLOW POSITION FEEDBACK SHALL BE ACCEPTABLE AS THE ACTUAL AIRFLOW MEASUREMENT THROUGH THE AIR VALVE. DIFFERENTIAL PRESSURE SHALL BE MEASURED ACROSS THE SUPPLY AIR VALVE TO INFORM AHU DISCHARGE AIR STATIC PRESSURE RESET LOGIC.

OCCUPANCY MODE SHALL BE DETERMINED THROUGH A COMBINATION OF TIME OF DAY SCHEDULE COORDINATED WITH THE OWNER AND OCCUPANCY STATUS VIA AN OCCUPANCY SENSOR LOCATED IN THE ZONE AS PART OF THE LIGHTING CONTROLS SYSTEM. REFER TO THE ELECTRICAL DRAWINGS FOR LOCATION(S) AND TYPE OF OCCUPANCY SENSOR.

IF THE TIME OF DAY SCHEDULE INDICATES THAT THE BUILDING IS SCHEDULED TO BE OCCUPIED AND THE SPACE OCCUPANCY SENSOR SENSES OCCUPANCY, THE UNIT SHALL BE PLACED IN OCCUPIED MODE.

IF THE TIME OF DAY SCHEDULE INDICATES THAT THE BUILDING IS SCHEDULED TO BE OCCUPIED AND THE OCCUPANCY SENSOR DOES NOT SENSE OCCUPANCY FOR 15 MINUTES (ADJ), THE UNIT SHALL BE PLACED INTO STAND-BY MODE UNTIL OCCUPANCY IS SENSED.

UNOCCUPIED MODE SHALL OCCUR DURING THE TIME PERIODS OPPOSITE OF THE OCCUPIED TIME OF DAY SCHEDULE.

UNOCCUPIED MODE CFM IS INDICATED ON THE SCHEDULE AS SUPPLY AIRFLOW UNOCCUPIED.

WHEN THE COMMUNICATION IS LOST BETWEEN THE BMS AND THE ASC, THE ASC SHALL DEFAULT TO OCCUPIED MODE.

ALL SETPOINTS AND TIME OF DAY SCHEDULES SHALL BE COORDINATED WITH THE OWNER.

TEMPERATURE CONTROL OPERATION

TEMPERATURE: OCCUPIED CYCLE: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO FULL CFM SETTING. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

TEMPERATURE: STAND-BY CYCLE: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO SUPPLY AIRFLOW MINIMUM OCCUPIED. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

TEMPERATURE: UNOCCUPIED: THE SUPPLY AIR VAV TERMINAL UNIT SHALL MODULATE TO SUPPLY AIRFLOW MINIMUM UNOCCUPIED. REHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

GLASS WASH CONTROL

GLASS WASH CONTROL WHEN THE CONTAINMENT HOOD IS IN USE FROM THE OPERATOR INPUT, THE ASSOCIATED EXHAUST AIR VALVE SHALL MODULATE TO MAXIMUM EXHAUST AIRFLOW.

AIRFLOW / PRESSURE CONTROL

THE SUPPLY AND GENERAL EXHAUST AIR VALVE TERMINAL UNITS SHALL BE CONTROLLED WITHIN THE DEFINED MAXIMUM AND MINIMUM SUPPLY AIR VOLUMES AS SCHEDULED.

FIXED OFFSETS BETWEEN SUPPLY AND EXHAUST AIR VALVES SHALL BE VERIFIED AND ADJUSTED DURING TEST AND BALANCE TO MAINTAIN SPECIFIED CFM OFFSET.

THE EXHAUST AIR VAV SHALL MODULATE IN CONJUNCTION WITH THE SUPPLY AIR VAV MODULATION BY TRACKING SUPPLY AIR CFM. EXHAUST AIR TRACKING VAV SHALL MAINTAIN CFM DIFFERENTIAL AS REQUIRED TO MAINTAIN THE REQUIRED SPACE DIFFERENTIAL PRESSURE MINIMUM. SPACE DIFFERENTIAL PRESSURE REQUIREMENT SHALL BE PRE-DETERMINED BY SUMMING THE SPACE SUPPLY AIR FLOWS VS. EXHAUST VAV AIRFLOWS AND OFFSET CFM VALUE. OFFSET CFM VALUE SHALL BE FIELD DERIVED UNTIL DESIRED PRESSURIZATION IS ACHIEVED.

ADDITIONAL FCU

IF THE SPACE TEMPERATURE SET POINT IS MET, THEN THE WALL HUNG FAN COIL UNIT COOLING COIL CONTROL VALVE SHALL MODULATE CLOSED AND THE FAN SHALL DE-ENERGIZE.

A SECONDARY CONDENSATE DRAIN PAN LEVEL SWITCH SHALL PROVIDE ALARM TO BAS AND DISABLE COOLING.

PROVIDE ALARM TO THE BMS IF THE SPACE TEMP IS 10 DEGREE F ABOVE SET POINT.

HUMIDITY

HUMIDITY CONTROL (SINGLE ZONE LAB SPACE): COOLING MODE: ON A RISE IN HUMIDITY ABOVE 60% RELATIVE (ADJUSTABLE), THE SUPPLY AIR VALVE IS MODULATED TO 100%. ON A FALL IN SPACE TEMPERATURE AND CONTINUED RISE IN SPACE HUMIDITY, THE REHEAT COIL IS MODULATED "ON" TO MAINTAIN SPACE TEMPERATURE.

OCC SENSOR

AIR VALVE SHALL BE TIED TO OCCUPANCY SENSOR WITHIN ROOM. FOR AN AIR VALVE SERVING ONE ROOM WITH MULTIPLE OCCUPANCY SENSOR, EACH OCCUPANCY SENSOR SHALL BE WIRED BACK TO AIR VALVE CONTROLLER IN SERIES. FOR AN AIR VALVE TO GO TO UNOCCUPIED MODE, ALL OCCUPANCY SENSORS SHALL BE UNOCCUPIED MODE.

1 AUTOCLAVE CONTROL DIAGRAM
SCALE: NONE

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10/17/2025

1

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-616

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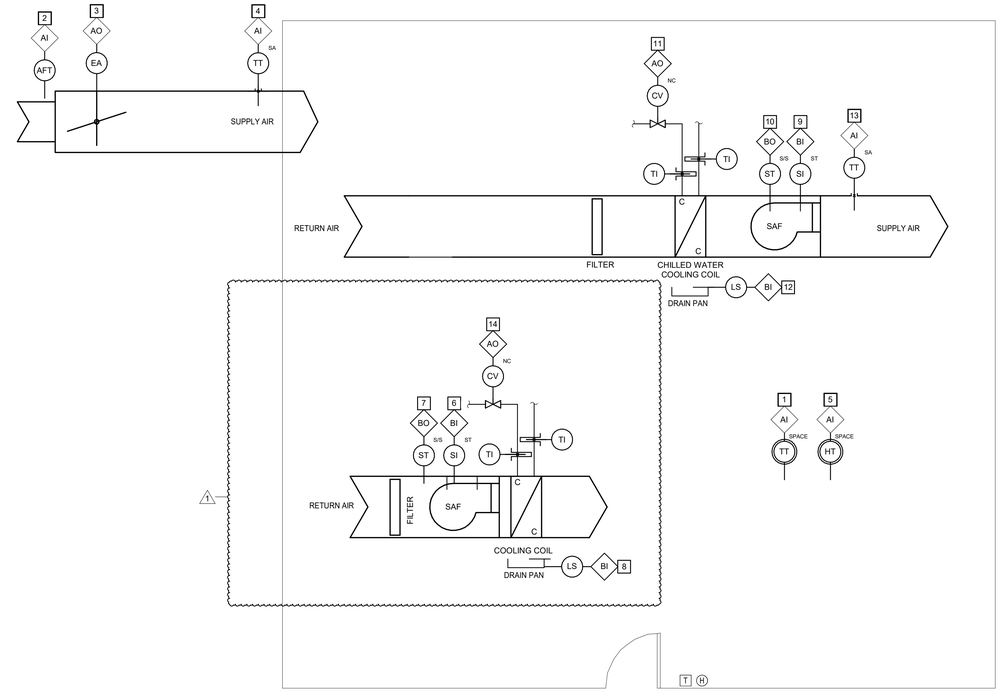

WALL HUNG AND CONCEALED FCU CONTROL POINTS

TAG	DESCRIPTION	AI	AO	BI	BO	UNITS
1	SPACE TEMPERATURE	X				°F
2	SUPPLY AIR FLOW MEASURING STATION	X				CFM
3	AIR VALVE UNIT DAMPER		X			% OPEN
4	SUPPLY AIR TEMPERATURE	X				°F
5	SPACE HUMIDITY	X				%RH
6	WALL HUNG FCU SUPPLY FAN MOTOR STATUS			X		ON/OFF
7	WALL HUNG FCU SUPPLY FAN STARTER				X	ENABLE/DISABLE
8	WALL HUNG FCU DRAIN PAN LEVEL SWITCH			X		NORMAL/ALARM
9	SUPPLY FAN STATUS			X		ON/OFF
10	SUPPLY FAN STARTER				X	ENABLE/DISABLE
11	COOLING COIL CONTROL VALVE		X			% OPEN
12	DRAIN PAN LEVEL SWITCH			X		NORMAL/ALARM
13	SUPPLY AIR TEMPERATURE	X				°F
14	COOLING COIL CONTROL VALVE		X			% OPEN

1

FAN COIL UNIT (CONSTANT VOLUME) WITH REDUNDANCY

THE CONSTANT VOLUME FAN COIL UNIT IS CONTROLLED BY AN APPLICATION SPECIFIC DDC CONTROLLER USING ELECTRIC ACTUATION. THE SPACE SERVED BY THE FAN COIL TERMINAL UNIT IS CONTROLLED BASED ON TEMPERATURE AS FOLLOWS:

THE CONCEALED DUCTED FAN COIL UNIT SUPPLY FAN IS ENERGIZED AND RUNS CONTINUOUSLY. FAN COIL UNIT COOLING COIL CONTROL VALVES SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT.

IF THE SPACE TEMPERATURE SET POINT IS MET, THEN THE COOLING COIL CONTROL VALVE SHALL MODULATE CLOSED AND THE FAN SHALL CONTINUE TO RUN. SPACE TEMPERATURE SET POINT DURING THIS MODE SHALL BE ADJUSTABLE WITH AN INITIAL DEFAULT VALUE EQUAL TO THE NORMAL OCCUPIED MODE SET POINT +/- 3°F. REFER TO HVAC EQUIPMENT SCHEDULE FOR ZONES TO HAVE OCCUPANCY SENSOR SET BACK.

SUPPLY AIR VALVE SHALL MODULATE OPEN WHILE THE BUILDING IS IN OCCUPIED MODE. SUPPLY AIR VALVE SHALL CLOSE WHILE THE BUILDING IS IN UNOCCUPIED MODE.

A SECONDARY CONDENSATE DRAIN PAN LEVEL SWITCH SHALL PROVIDE ALARM TO BAS AND DISABLE COOLING.

PROVIDE ALARM TO THE BMS IF THE SPACE TEMP IS 5 DEGREE F ABOVE SET POINT.

IF SPACE TEMP EXCEEDS 5°F FROM SET POINT, WALL HUNG FAN COIL UNIT SUPPLY FAN IS ENERGIZED. WALL HUNG FAN COIL UNIT COOLING COIL CONTROL VALVES SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT.

IF THE SPACE TEMPERATURE SET POINT IS MET, THEN THE WALL HUNG FAN COIL UNIT COOLING COIL CONTROL VALVE SHALL MODULATE CLOSED AND THE FAN SHALL DE-ENERGIZE.

A SECONDARY CONDENSATE DRAIN PAN LEVEL SWITCH SHALL PROVIDE ALARM TO BAS AND DISABLE COOLING.

PROVIDE ALARM TO THE BMS IF THE SPACE TEMP IS 10 DEGREE F ABOVE SET POINT.

NOTE: ALL SET POINTS AND SETTINGS ARE ADJUSTABLE. ALL CONTROL AND MONITORING POINTS SHALL BE AVAILABLE AT BAS OPERATOR WORKSTATION.

1 FREEZER FARM CONTROL DIAGRAM

SCALE: NONE

PLOT DATE: 10/16/2025 2:42:39 PM TEMPLATE VERSION: 23.0.4

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STATE OF MICHIGAN — NATHANIEL C. STALKER — ENGINEER — No. 61101 — PROFESSIONAL ENGINEER

10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL CONTROLS

SHEET NO.
M-617

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HVAC DESIGN CRITERIA

OUTDOOR DESIGN CONDITIONS - WAYNE STATE STANDARDS	
SUMMER	95°F DB / 75°F WB
WINTER	3°F DB
ADDRESS: 545 E. CANFIELD ST DETROIT, MI 48201 CLIMATE ZONE 5A	

INDOOR DESIGN CONDITIONS

	OCCUPIED SET POINTS		UNOCCUPIED SET POINTS	
ZONE	COOLING	HEATING	COOLING	HEATING
OFFICES	76°F DB / 50% RH	70°F DB	80°F DB	66°F DB
LABS	76°F DB / 50% RH	70°F DB / 40% RH	80°F DB / 50% RH	66°F DB / 40% RH
TOILET ROOMS	76°F DB / 50% RH	70°F DB	80°F DB	66°F DB
COMM / ELECTRICAL CLOSETS	78°F DB / 60% RH	FLOATING	78°F DB / 60% RH	FLOATING
MECHANICAL ROOMS	VENTILATION ONLY	FLOATING	VENTILATION ONLY	FLOATING

NOTES:
1. ALL TEMPERATURE SETTINGS ARE ADJUSTABLE.

1

DUCT CONSTRUCTION / INSULATION SCHEDULE

DUCT SYSTEM	DUCT MATERIAL	S.P. CONSTRUCTION	INTERNALLY LINED	EXTERNAL INSUALTION	NOT INSUALTED	NOTES
SUPPLY AIR DUCTWORK - UPSTREAM OF VAV BOXES (AHU-1 AND AHU-4)	G90	4"	-	X	-	-
SUPPLY AIR DUCTWORK - DOWNSTREAM OF VAV BOXES (AHU-1 AND AHU-4)	G90	2"	X	-	-	2
RETURN DUCTWORK (AHU-1 AND AHU-4)	G90	4"	-	-	X	-
OUTSIDE AIR DUCTWORK	G90	2"	-	X	-	-
SUPPLY AIR DUCTWORK - UPSTREAM OF SUPPLY AIR VALVES (AHU-2 AND AHU-3)	G90	6"	-	X	-	-
SUPPLY AIR DUCTWORK - DOWNSTREAM OF SUPPLY AIR VALVES (AHU-2 AND AHU-3)	G90	2"	-	X	-	-
EXHAUST AIR DUCTWORK - EXHAUST GRILLE THROUGH EXHAUST VALVE TO DUCT MAIN (AHU-2 AND AHU-3)	G90	2"	-	-	-	-
EXHAUST AIR DUCTWORK - DUCT MAIN TO AHU (AHU-2 AND AHU-3)	G90	4"	-	-	-	-
EXHAUST AIR DUCTWORK - AUTOCLAVE HOOD THROUGH EXHAUST VALVE TO DUCT MAIN (AHU-2 AND AHU-3)	STAINLESS STEEL	2"	-	-	-	-
FUME HOOD EXHAUST DUCTWORK - FUME HOOD TO HIGH PLUME EXHAUST FAN (LEF-1)	FULLY WELDED STAINLESS STEEL	6"	-	-	-	1
BSL-3 AND RADIOISOTOPE DUCTWORK - ROOM TO HIGH PLUME EXHAUST FAN (LEF-2 AND LEF-3)	FULLY WELDED STAINLESS STEEL	6"	-	-	-	1

NOTES:

1. PROVIDE 2HR FIRE WRAP ON DUCTWORK OUTSIDE OF CHASE.
2. IF DUCTWORK IS EXPOSED, FLEXIBLE DUCTWORK IS NOT ACCEPTABLE.

HOT WATER BOILER SCHEDULE

MARK NO.	FUEL TYPE	FUEL PRESSURE (IN W.C.)	INPUT (MBH)	OUTPUT (MBH)	HOT WATER INLET TEMP. (°F)	HOT WATER OUTLET TEMP. (°F)	FLOW (GPM)	BURNER TURNDOWN	FLUE SIZE (IN)	AIR INLET SIZE (IN)	ELECTRICAL FLA	ELECTRICAL VOLTAGE	ELECTRICAL PH.	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
B-1	GAS	10	3,000	2,889	110	150	145	15:1	8	10	12.0	460	3	FULTON	ENDURA +3000	1
B-2	GAS	10	3,000	2,889	110	150	145	15:1	8	10	12.0	460	3	FULTON	ENDURA +3000	1
B-3	GAS	10	3,000	2,889	110	150	145	15:1	8	10	12.0	460	3	FULTON	ENDURA +3000	1
B-4	GAS	10	3,000	2,889	110	150	145	15:1	8	10	12.0	460	3	FULTON	ENDURA +3000	1
B-5	GAS	10	3,000	2,889	110	150	145	15:1	8	10	12.0	460	3	FULTON	ENDURA +3000	1

NOTES:
1. PROVIDE ACID NEUTRALIZATION KIT.

1

PLATE FRAME HEAT EXCHANGER SCHEDULE

MARK	MANUFACTURER	MODEL	SERVICE	TOTAL MBH EXCHANGED	SIDE 1 DATA FLOW (GPM)	SIDE 1 DATA EWT (°F)	SIDE 1 DATA LWT(°F)	SIDE 1 DATA MAX. P.D. (PSI)	SIDE 1 DATA FLUID TYPE	SIDE 2 DATA FLOW (GPM)	SIDE 2 DATA EWT (°F)	SIDE 2 DATA LWT(°F)	SIDE 2 DATA MAX. P.D. (PSI)	SIDE 2 DATA FLUID TYPE	WEIGHT (LBS)	NOTES
HX-1	BELL AND GOSSETT	GPX	HEAT RECOVERY FROM CHILLER	505	71	115	100	9.5	30% PROPYLENE	67.7	98	113	9.5	100% WATER	2,400	A-F
HX-2	BELL AND GOSSETT	GPX	100% CHILLED WATER LOOP	4,601	611	59	44	9.5	100% WATER	651	42	57	9.5	30% PROPYLENE	8,800	A-F

NOTES:

A. BASIS OF DESIGN LISTED. REFER TO SPECIFICATIONS FOR APPROVED EQUIVALENT MANUFACTURERS.
B. PLATES SHALL BE AISC 304 STAINLESS STEEL.
C. FOULING FACTOR OF 0.00025.
D. PROVIDE WITH ASME STAMP.
E. PROVIDE WITH 6" HOUSEKEEPING PAD BELOW UNIT. PROVIDE ADEQUATE CLEARANCE FOR REMOVAL OF PLATES.
F. PROVIDE ISOLATION VALVES AT INLETS AND OUTLETS.

EXPANSION TANKS SCHEDULE

MARK NO.	SYSTEM SERVED	OPERATING WEIGHT (LBS)	SIZE CAPACITY (GAL)	SIZE DIA. (FT-IN)	SIZE HEIGHT (FT-IN	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
ET-1	HEATING WATER	2,300	211.0	2' - 8"	6' - 4"	BELL & GOSSETT	B800	1
ET-2	HEATING WATER	2,300	211.0	2' - 8"	6' - 4"	BELL & GOSSETT	B800	1
ET-3	CHILLED WATER	1,500	132.0	2' - 6"	4' - 9"	BELL & GOSSETT	B500	1
ET-4	CHILLED WATER	1,500	132.0	2' - 6"	4' - 9"	BELL & GOSSETT	B500	1
ET-5	CHILLED WATER	1,500	132.0	2' - 6"	4' - 9"	BELL & GOSSETT	B500	1
ET-6	HEATING WATER	650	53.0	2' - 0"	3' - 7"	BELL & GOSSETT	B200	1

NOTES:
1. INSTALL ON 4" HOUSEKEEPING PAD.

CHILLERS - AIR COOLED SCHEDULE

MARK NO.	NET CAPACITY (TONS)	REFRIGERANT	NUM OF REFRIGERANT CIRCUITS	LBS PER CIRCUIT	FLUID TYPE	CHILLED WATER DATA EWT (°F)	CHILLED WATER DATA LWT (°F)	CHILLED WATER DATA FLOW (GPM)	CHILLED WATER DATA EVAP. WPD (FT H2O)	EER	NPLV.IP	ELECTRICAL DATA VOLTAGE	ELECTRICAL DATA PH.	ELECTRICAL DATA MCA	ELECTRICAL DATA MAX FUSE (A)	# OF FANS	SOUND PRESSURE AT 30 FT	LENGTH (FT-IN)	WIDTH (FT-IN)	WEIGHT (LBS)	SELCTION BASED ON MANUFACTURER	SELCTION BASED ON MODEL	REMARKS
CH-1	250	R-513A	2	270	30% PROPYLENE	57	42	424	16.90	10.3	19	460	3	441	600	16	70	31' - 7"	7' - 2"	20,200	JOHNSON CONTROLS	YVAA0278	1,3,4,5,6
CH-2	250	R-513A	2	270	30% PROPYLENE	57	42	424	16.90	10.3	19	460	3	441	600	16	70	31' - 7"	7' - 2"	20,200	JOHNSON CONTROLS	YVAA0278	1,3,4,5,6
CH-3	250	R-513A	2	270	30% PROPYLENE	57	42	424	16.90	10.3	19	460	3	441	600	16	70	31' - 7"	7' - 2"	20,200	JOHNSON CONTROLS	YVAA0278	1,3,4,5,6
CH-4	250	R-513A	2	310	30% PROPYLENE	57	42	424	9.81	8.3	15.15	460	3	652	800	18	75	35' - 3"	7' - 4"	30,700	JOHNSON CONTROLS	YVFA0359	2,3,4,5,6

NOTES:
1. PROVIDE HEAT RECOVERY ON BOTH REFRIGERANT CIRCUITS.
2. PROVIDE FREE COOLING OPTION.
3. UNIT MOUNTED DISCONNECT.
4. SEPARATE 120V-1PH POWER CONNECTION, SAFETIES, AND DISCONNECT FOR INTERNAL HEAT TRACING.
5. PROVIDE SOUND ENCLOSURE KITS FOR THE COMPRESSORS.
6. INTERLOCK INTO CHILLER OPTIMIZATION CONTROL PANEL.

LABORATORY EXHAUST FAN SCHEDULE

TAG MARK	TYPE	LOCATION	INTERLOCK WITH	NUMBER OF FANS	PRIMARY AIRFLOW (CFM)	ESP. (IN. WC)	TOTAL AIRFLOW (CFM)	DILUTION RATIO (%)	MOTOR HP	MOTOR DATA OPERATING, BHP	SPEED (RPM)	MOTOR DATA DRIVE	MOTOR DATA VOLTAGE	MOTOR DATA PHASE	MOTOR DATA FLA, (A)	FREE FIELD SOUND @ 50 FT (SONES)	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	WEIGHT (LBS)	NOTES
LEF-1	MIXED FLOW HIGH PLUME	ROOF	FUME HOODS	2	30,260	4.0	53,814	178	25	23.95	1200	DIRECT	460	3	31	80	STROBIC	M48C40N250I6	5,200	1,2,3,4,6,7,8
LEF-2	MIXED FLOW HIGH PLUME	ROOF	BSL-3 EXHAUST VALVES	2	950	4.0	3,337	351	3	1.96	1800	DIRECT	460	3	4	55	STROBIC	M24A05N030I4	1,664	1,2,3,4,5,6,7,8
LEF-3	MIXED FLOW HIGH PLUME	ROOF	RADIOISOTOPE EXHAUST VALVES	2	1,520	6.0	7,453	584	10	9.48	1800	DIRECT	460	3	13	63	STROBIC	M33A10N100I4	4,010	1,2,3,4,5,6,7,8

NOTES:
1. PROVIDE BYPASS AIR PLENUM.
2. PROVIDE INTEGRAL DISCONNECT FROM FACTORY.
3. ELECTRICAL CONTRACTOR TO PROVIDE ALL NECESSARY EQUIPMENT TO INTERLOCK FAN WITH ASSOCIATED EQUIPMENT.
4. PROVIDE WITH 24" ROOF CURB.
5. FANS SELECTED AS N+1 CAPACITY.
6. PROVIDE CONTROLLER SYSTEM FROM EXHAUST FAN MANUFACTURER.
7. UNIT MOUNTED DISCONNECT.
8. PROVIDE INSULATED DOUBLE WALL PLENUM CABINET.

ROOF VENTILATOR SCHEDULE

MARK	AIRFLOW (CFM)	SP (IN. WG)	THROAT VELOCITY FT/MIN	THROAT AREA, S.F.	THROAT DIMENSIONS, IN.	SERVICE	WEIGHT	MANUFACTURER	MODEL	NOTES
GVR-1	23,000	0.1	784	31	56x80	RELIEF	326	GREENHECK	WRH-56x80	1,2,3,4
GVR-2	23,000	0.1	784	31	56x80	RELIEF	326	GREENHECK	WRH-56x80	1,2,3,4
GVR-3	22,000	0.08	707	31	56x80	RELIEF	326	GREENHECK	WRH-56x80	1,2,3,4
GVR-4	22,000	0.08	707	31	56x80	RELIEF	326	GREENHECK	WRH-56x80	1,2,3,4
GVR-5	31,000	0.06	620	50	60x120	RELIEF	470	GREENHECK	WRH-60x120	1,2,3,4
GVR-6	18,000	0.05	580	31	56x80	RELIEF	326	GREENHECK	WRH-56x80	1,2,3,4
GVR-7	5,000	0.1	800	6	30x30	RELIEF	95	GREENHECK	WRH-30x30	1,2,3,4
GVR-8	5,000	0.1	800	6	30x30	RELIEF	95	GREENHECK	WRH-30x30	1,2,3,4
GVR-9	2,500	0.05	540	5	26x26	RELIEF	82	GREENHECK	WRH-26x26	1,2,3,4
GVR-10	2,500	0.05	540	5	26x26	RELIEF	82	GREENHECK	WRH-26X26	1,2,3,4

NOTES:
1. PROVIDE WITH ALUMINUM BIRDSCREEN.
2. PROVIDE WITH 24" FACTORY FABRICATED ROOF CURB WITH 1" INSULATION. BASED ON GREENHECK MODEL GPF.
3. PROVIDE WITH PERMATECTOR PROTECTIVE COATING FROM FACTORY. CONFIM COLOR WITH ARCHITECT PRIOR TO PURCHASING.
4. PROVIDE WITH MOTORIZED DAMPER.

1

EXHAUST FAN SCHEDULE

TAG MARK	TYPE	LOCATION	DESIGN AIRFLOW (CFM)	ESP. (IN. WC)	SPPED (RPM)	MOTOR DATA DRIVE	MOTOR DATA POWER, HP	MOTOR DATA VOLTAGE	MOTOR DATA PHASE	MOTOR DATA FLA, AMPS	SOUND RATING (SONES)	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	WEIGHT (LBS)	NOTES
EF-1	CENTRIFUGAL UPBLAST	ROOF	1,200	0.6	1,232	DIRECT	1/2	115	1	6.6	11	GREENHECK	CUE-130-VG	80	1,2,3,4,5
EF-2	CENTRIFUGAL DOWNBLAST	ROOF	700	0.5	1,637	DIRECT	1/6	115	1	2.8	9.8	GREENHECK	G-095-VG	43	1,2,3,4,5
EF-3	CENTRIFUGAL DOWNBLAST	ROOF	150	0.3	1,376	DIRECT	1/15	115	1	1.3	3.2	GREENHECK	G-070-VG	36	1,2,3,4,5
EF-4	CENTRIFUGAL DOWNBLAST	ROOF	150	0.3	1,376	DIRECT	1/15	115	1	1.3	3.2	GREENHECK	G-070-VG	36	1,2,3,4,5
EF-5	CENTRIFUGAL DOWNBLAST	ROOF	150	0.3	1,376	DIRECT	1/15	115	1	1.3	3.2	GREENHECK	G-070-VG	36	1,2,3,4,5
EF-6	CENTRIFUGAL DOWNBLAST	ROOF	150	0.3	1,376	DIRECT	1/15	115	1	1.3	3.2	GREENHECK	G-070-VG	36	1,2,3,4,5
EF-7	CENTRIFUGAL UPBLAST	ROOF	1,000	0.6	1,211	DIRECT	1/2	115	1	6.6	8.8	GREENHECK	G-120-VG	64	1,2,3,4,5
EF-8	CENTRIFUGAL DOWNBLAST	ROOF	700	0.3	1,433	DIRECT	1/6	115	1	2.8	7.4	GREENHECK	G-095-VG	43	1,2,3,4,5

NOTES:
1. ALL ALUMINUM CONSTRUCTION.
2. PROVIDE GRAVITY BACKDRAFT DAMPER FROM FACTORY.
3. PROVIDE INTEGRAL DISCONNECT FROM FACTORY.
4. PROVIDE WITH 24" ROOF CURB BASED ON GREENHECK GPF.
5. PROVIDE HINGED CURB.

VFD SCHEDULE

MARK NO.	SERVICE	HORSEPOWER (HP)	VOLTAGE	PHASE	MANUFACTURER	NOTES
VFD-1	SHWP-1	15	460	3	ABB	2,3,4,5
VFD-2	SHWP-2	15	460	3	ABB	2,3,4,5
VFD-3	SHWP-3	15	460	3	ABB	2,3,4,5
VFD-4	HRWP-1	3	460	3	ABB	2,3,4,5
VFD-5	HRWP-2	2	460	3	ABB	2,3,4,5
VFD-6	CHWP-1	10	460	3	ABB	2,3,4,5
VFD-7	CHWP-2	10	460	3	ABB	2,3,4,5
VFD-8	CHWP-3	10	460	3	ABB	2,3,4,5
VFD-9	CHWP-4	10	460	3	ABB	2,3,4,5
VFD-10	CHWP-5	20	460	3	ABB	2,3,4,5
VFD-11	CHWP-6	20	460	3	ABB	2,3,4,5
VFD-12	CHWP-7	20	460	3	ABB	2,3,4,5
VFD-13	CHWP-8	20	460	3	ABB	2,3,4,5
VFD-14	CHWP-9	20	460	3	ABB	2,3,4,5
VFD-15	RETURN FAN AHU-1	7.5	460	3	ABB	1,3,4,5
VFD-16	RETURN FAN AHU-1	7.5	460	3	ABB	1,3,4,5
VFD-17	RETURN FAN AHU-1	7.5	460	3	ABB	1,3,4,5
VFD-18	RETURN FAN AHU-1	7.5	460	3	ABB	1,3,4,5
VFD-19	SUPPLY FAN AHU-1	15	460	3	ABB	1,3,4,5
VFD-20	SUPPLY FAN AHU-1	15	460	3	ABB	1,3,4,5
VFD-21	SUPPLY FAN AHU-1	15	460	3	ABB	1,3,4,5
VFD-22	SUPPLY FAN AHU-1	15	460	3	ABB	1,3,4,5
VFD-23	EXHAUST FAN AHU-2	15	460	3	ABB	1,3,4,5
VFD-24	EXHAUST FAN AHU-2	15	460	3	ABB	1,3,4,5
VFD-25	SUPPLY FAN AHU-2	40	460	3	ABB	1,3,4,5
VFD-26	SUPPLY FAN AHU-2	40	460	3	ABB	1,3,4,5
VFD-27	SUPPLY FAN AHU-2	40	460	3	ABB	1,3,4,5
VFD-28	SUPPLY FAN AHU-2	40	460	3	ABB	1,3,4,5
VFD-29	EXHAUST FAN AHU-2	15	460	3	ABB	1,3,4,5
VFD-30	EXHAUST FAN AHU-2	15	460	3	ABB	1,3,4,5
VFD-31	EXHAUST FAN AHU-3	15	460	3	ABB	1,3,4,5
VFD-32	EXHAUST FAN AHU-3	15	460	3	ABB	1,3,4,5
VFD-33	SUPPLY FAN AHU-3	30	460	3	ABB	1,3,4,5
VFD-34	SUPPLY FAN AHU-3	30	460	3	ABB	1,3,4,5
VFD-35	SUPPLY FAN AHU-3	30	460	3	ABB	1,3,4,5
VFD-36	SUPPLY FAN AHU-3	30	460	3	ABB	1,3,4,5
VFD-37	EXHAUST FAN AHU-3	15	460	3	ABB	1,3,4,5
VFD-38	EXHAUST FAN AHU-3	15	460	3	ABB	1,3,4,5
VFD-39	RETURN FAN AHU-4	5	460	3	ABB	1,3,4,5
VFD-40	RETURN FAN AHU-4	5	460	3	ABB	1,3,4,5
VFD-41	RETURN FAN AHU-4	5	460	3	ABB	1,3,4,5
VFD-42	RETURN FAN AHU-4	5	460	3	ABB	1,3,4,5
VFD-43	SUPPLY FAN AHU-4	10	460	3	ABB	1,3,4,5
VFD-44	SUPPLY FAN AHU-4	10	460	3	ABB	1,3,4,5
VFD-45	SUPPLY FAN AHU-4	10	460	3	ABB	1,3,4,5
VFD-46	SUPPLY FAN AHU-4	10	460	3	ABB	1,3,4,5
VFD-47	LEF-1	25	460	3	ABB	2,3,4,5
VFD-48	LEF-1	25	460	3	ABB	2,3,4,5
VFD-49	LEF-2	3	460	3	ABB	2,3,4,5
VFD-50	LEF-2	3	460	3	ABB	2,3,4,5
VFD-51	LEF-3	10	460	3	ABB	2,3,4,5
VFD-52	LEF-3	10	460	3	ABB	2,3,4,5
VFD-53	SFH-1	5	460	3	ABB	2,3,4,5
VFD-54	SFH-2	5	460	3	ABB	2,3,4,5
VFD-55	SFH-3	5	460	3	ABB	2,3,4,5
VFD-56	SFH-4	5	460	3	ABB	2,3,4,5

NOTES:

1 VFD SENT TO FACTORY OF AHU MANUFACTURER. VFD INSTALLED IN FACTORY.
2 VFD INSTALLED ON UNISTRUT WITHIN IN MECHANICAL ROOM.
3 PROVIDE WITH BACNET IP CARD.
4 PROVIDE WITH BYPASS.
5 VFD MANUFACTURER TO MATCH PER SPECIFICATION.

PUMP SCHEDULE

MARK NO.	SYSTEM SERVED	DESCRIPTION	FLUID TYPE	PIPE CONNECTIONS SUCT.	PIPE CONNECTIONS DISCH.	FLOW (GPM)	HORSEPOWER	BHP	TOTAL HEAD (FT)	SPEED (RPM)	DUTY POINT PUMP EFFICIENCY (%)	ELECTRICAL DATA VOLTAGE	ELECTRICAL DATA PH.	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON SERIES	REMARKS
CHWP-1	PRIMARY CHILLED WATER	BASE MOUNTED END SUCTION	30% PROPYLENE	4"	3"	424	10	8.48	60	1800	81.9	460	3	BELL & GOSSETT	1510 3DB	1
CHWP-2	PRIMARY CHILLED WATER	BASE MOUNTED END SUCTION	30% PROPYLENE	4"	3"	424	10	8.48	60	1800	81.9	460	3	BELL & GOSSETT	1510 3DB	1
CHWP-3	PRIMARY CHILLED WATER	BASE MOUNTED END SUCTION	30% PROPYLENE	4"	3"	424	10	8.48	60	1800	81.9	460	3	BELL & GOSSETT	1510 3DB	1
CHWP-4	PRIMARY CHILLED WATER	BASE MOUNTED END SUCTION	30% PROPYLENE	4"	3"	424	10	8.48	60	1800	81.9	460	3	BELL & GOSSETT	1510 3DB	1
CHWP-5	CHILLED WATER LOOP	BASE MOUNTED END SUCTION	WATER	4"	3"	375	20	14.1	110	1800	73.6	460	3	BELL & GOSSETT	1510 3GB	1
CHWP-6	CHILLED WATER LOOP	BASE MOUNTED END SUCTION	WATER	4"	3"	375	20	14.1	110	1800	73.6	460	3	BELL & GOSSETT	1510 3GB	1
CHWP-7	SECONDARY CHILLED WATER	BASE MOUNTED END SUCTION	30% PROPYLENE	4"	3"	525	20	14	85	3600	82	460	3	BELL & GOSSETT	1510 3AD	1
CHWP-8	SECONDARY CHILLED WATER	BASE MOUNTED END SUCTION	30% PROPYLENE	4"	3"	525	20	14	85	3600	82	460	3	BELL & GOSSETT	1510 3AD	1
CHWP-9	SECONDARY CHILLED WATER	BASE MOUNTED END SUCTION	30% PROPYLENE	4"	3"	525	20	14	85	3600	82	460	3	BELL & GOSSETT	1510 3AD	1
CP-1	HEATING COIL PUMP	INLINE	WATER	1 1/2"	1 1/2"	43	1	0.58	30	1800	56	460	3	BELL & GOSSETT	E-80 1.5x1.5x7C	-
CP-2	HEATING COIL PUMP	INLINE	WATER	1 1/2"	1 1/2"	43	1	0.58	30	1800	56	460	3	BELL & GOSSETT	E-80 1.5x1.5x7C	-
CP-3	HEATING COIL PUMP	INLINE	WATER	1 1/2"	1 1/2"	34	1	0.49	30	1800	55	460	3	BELL & GOSSETT	E-80 1.5x1.5x7C	-
CP-4	HEATING COIL PUMP	INLINE	WATER	1 1/2"	1 1/2"	34	1	0.49	30	1800	55	460	3	BELL & GOSSETT	E-80 1.5x1.5x7C	-
HRWP-1	HEAT RECOVERY THRU CHILLERS	BASE MOUNTED END SUCTION	30% PROPYLENE	1 1/2"	1 1/4"	72	3	2.19	70	1800	56.2	460	3	BELL & GOSSETT	1510 1.25BC	1
HRWP-2	HEAT RECOVERY	BASE MOUNTED END SUCTION	WATER	1 1/2"	1 1/4"	70	2	1.34	48	1800	62.5	460	3	BELL & GOSSETT	1510 1.25AD	1
PHWP-1	BOILER	INLINE	WATER	2 1/2"	2 1/2"	145	2	1.81	35	1800	70.5	460	3	BELL & GOSSETT	E-80 2.5x2.5x7B	-
PHWP-2	BOILER	INLINE	WATER	2 1/2"	2 1/2"	145	2	1.81	35	1800	70.5	460	3	BELL & GOSSETT	E-80 2.5x2.5x7B	-
PHWP-3	BOILER	INLINE	WATER	2 1/2"	2 1/2"	145	2	1.81	35	1800	70.5	460	3	BELL & GOSSETT	E-80 2.5x2.5x7B	-
PHWP-4	BOILER	INLINE	WATER	2 1/2"	2 1/2"	145	2	1.81	35	1800	70.5	460	3	BELL & GOSSETT	E-80 2.5x2.5x7B	-
PHWP-5	BOILER	INLINE	WATER	2 1/2"	2 1/2"	145	2	1.81	35	1800	70.5	460	3	BELL & GOSSETT	E-80 2.5x2.5x7B	-
SHWP-1	SECONDARY HEATING WATER	BASE MOUNTED END SUCTION	WATER	3"	2 1/2"	325	15	10.3	100	3600	79.3	460	3	BELL & GOSSETT	1510 2.5AC	1
SHWP-2	SECONDARY HEATING WATER	BASE MOUNTED END SUCTION	WATER	3"	2 1/2"	325	15	10.3	100	3600	79.3	460	3	BELL & GOSSETT	1510 2.5AC	1
SHWP-3	SECONDARY HEATING WATER	BASE MOUNTED END SUCTION	WATER	3"	2 1/2"	325	15	10.3	100	3600	79.3	460	3	BELL & GOSSETT	1510 2.5AC	1

NOTES:
1. PROVIDE PUMP WITH CONCRETE INERTIA BASE.

FIN TUBE RADIATION SCHEDULE

MARK	CAPACITY (BTU/FT)	TUBE DIAMETER (IN)	ROWS	FIN SIZE (IN)	FIN PER FOOT	ENTERING AIR TEMP (°F)	FLUIF FLOW (GPM)	ENTERING WATER TEMP (°F)	LEAVING WATER TEMP (°F)	PIPING RUNOUT (IN)	PRESSURE DROP (FT)	MANUFACTURER	NOTES
FT-1	684	3/4	2	2-3/4" X 4"	32	60	0.7	150	110	3/4	0.2	RITTLING	1,2,3,4
FT-2	684	3/4	2	2-3/4" X 4"	32	60	0.7	150	110	3/4	0.2	RITTLING	1,2,3,4
FT-3	684	3/4	2	2-3/4" X 4"	32	60	0.7	150	110	3/4	0.2	RITTLING	1,2,3,4
FT-4	684	3/4	2	2-3/4" X 4"	32	60	0.7	150	110	3/4	0.2	RITTLING	1,2,3,4
FT-5	342	3/4	1	2-3/4" X 4"	32	60	0.7	150	110	3/4	0.2	RITTLING	2,3,4,5
FT-6	342	3/4	1	2-3/4" X 4"	32	60	0.7	150	110	3/4	0.2	RITTLING	2,3,4,5
FT-7	342	3/4	1	2-3/4" X 4"	32	60	0.7	150	110	3/4	0.2	RITTLING	2,3,4,5
FT-8	342	3/4	1	2-3/4" X 4"	32	60	0.7	150	110	3/4	0.2	RITTLING	2,3,4,5

NOTES:

1 PROVIDE PEDESTAL 1006 2 COLUMN ADJUSTABLE BRACKET.
2 PROVIDE COPPER TUBE WITH ALUMINUM FIN.
3 ENCLOSURE BY ARCHITECT.
4 ELEMENT SHALL EXTEND WALL TO WALL, CONTRACTOR TO CONFIRM LENGTH.
5 PROVIDE PEDESTAL 506 1 COLUMN ADJUSTABLE BRACKET. ADJUSTED SO MAXIMUM HEIGHT TO TOP OF ELEMENT IS 7.5"

PLOT DATE: 10/16/2025 2:42:41 PM TEMPLATE VERSION: 23.0.4

HKS

ARCHITECT
HKS ARCHITECTS, PC
235 E. MAIN STREET, SUITE 102C
NORTHVILLE, MI 48167

STRUCTURAL ENGINEER
RESURGET ENGINEERING
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DETROIT, MI 48226

MEP ENGINEER
OSBORN ENGINEERING
1420 WASHINGTON BLVD, SUITE 301
DETROIT, MI 48226

CIVIL ENGINEER
SPALDING DeDECKER
119 STATE ST. SUITE 500
DETROIT, MI 48226

LANDSCAPE ARCHITECT
INSITE DESIGN STUDIO
412 LONGSHORE DRIVE
ANN ARBOR, MI 48105

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545 E. CANFIELD ST, DETROIT, MI 48201

WAYNE STATE UNIVERSITY

OWNER'S MANAGEMENT
KRAMER MANAGEMENT GROUP
1305 S. WASHINGTON AVE. SUITE 101
LANSING, MI 48910

CONSTRUCTION MANAGER
THE CHRISTMAN COMPANY
1265 WASHINGTON BLVD, SUITE 200
DETROIT, MI 48226

NATHANIEL C. STALKER — STATE OF MICHIGAN — 51101 — REGISTERED PROFESSIONAL ENGINEER

10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
**

AIR TERMINAL NECK SIZE

DIFFUSER NECK SIZE	AIRFLOW (CFM) SUPPLY DIFFUSER
6"	< 100
8"	100 - 210
10"	210 - 375
12"	375 - 600
SIZED BY:	0.08 IN. WG / 100 FT

AIR DISTRIBUTION SCHEDULE

MARK	TYPE	FRAME TYPE	DAMPER TYPE	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
EG-1	EXHAUST GRILLE	PER CEILING TYPE	NONE	PRICE	24x24 - 80	1,3,4,5,7,9
EG-2	EXHAUST GRILLE	PER CEILING TYPE	NONE	PRICE	12x12 - 80	1,3,4,5,7,9
EG-3	STEEL LOUVERED EXHAUST GRILLE	DRYWALL	NONE	PRICE	500	3,4,5
EG-4	STEEL LOUVERED EXHAUST GRILLE	PER CEILING TYPE	NONE	PRICE	535	1,3,4,5,7,9
EG-5	STEEL LOUVERED EXHAUST GRILLE	PER CEILING TYPE	NONE	PRICE	535	1,3,4,5,7,9
LDH-1	LAMINAR FLOW DIFFUSER WITH HEPA FILTER	PER CEILING TYPE	NONE	PRICE	12" LFDC	5
LF-1	LAMINAR FLOW DIFFUSER	PER CEILING TYPE	NONE	PRICE	12" LFD	5
LS-1	INSULATED PLENUM SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	48" SDS50 - 1 SLOT	1,3,4,5
LS-2	INSULATED PLENUM SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	72" CFP 1" - 2 SLOT	1,3,4,5
LS-3	INSULATED PLENUM SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	48" SDS50 - 2 SLOT	1,3,4,5
LS-4	SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	SDS50 - 1 SLOT	2,3,4,5,12
LS-5	INSULATED PLENUM SLOT DIFFUSER	METAL PANEL	NONE	PRICE	48" SDS50 - 2 SLOT	3,4,5,10,11
LS-6	INSULATED PLENUM SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	60" SDS50 - 2 SLOT	1,3,4,5
LS-7	SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	SDS50 - 2 SLOT	2,3,4,5,12
LS-8	INSULATED PLENUM SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	60" CFP 1" - 2 SLOT	1,3,4,5
RAT-1	24" X 24" RETURN AIR SILENCER	DRYWALL	NONE	PRICE	RAS-LP	
RAT-2	24" X 12" RETURN AIR SILENCER	DRYWALL	NONE	PRICE	RAS-LP	
RG-1	RETURN GRILLE	PER CEILING TYPE	NONE	PRICE	24x24 - 80	4,5,7,8
RG-2	RETURN GRILLE	PER CEILING TYPE	NONE	PRICE	12x24 - 80	4,5,7,8
RG-3	SIDEWALL RETURN GRILLE	DRYWAL	NONE	TITUS	25RS	4,5
RG-4	SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	48" CF50 - 2 SLOT	4,5,13
RG-5	SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	72" CF 1" - 2 SLOT	4,5,13
RG-6	SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	48" SDS50 - 2 SLOT	4,5,13
RG-7	SIDEWALL GRILLE, DOUBLE DEFLECTION, 3/4" BLADE SPACING	DRYWALL	NONE	TITUS	300RL	3,14
RG-8	SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	60" CF 1" - 2 SLOT	4,5,13
RG-9	STEEL LOUVERED RETURN GRILLE	PER CEILING TYPE	NONE	PRICE	535	4,5,7,8
RG-10	SLOT DIFFUSER	PER CEILING TYPE	NONE	PRICE	96" CF 1" - 2 SLOT	4,5,13
SA-1	SUPPLY SQUARE PLAQUE DIFFUSER	PER CEILING TYPE	NONE	PRICE	SPD	3,4,5
SG-1	SIDEWALL SUPPLY GRILLE, DOUBLE DEFLECTION, 3/4" BLADE SPACING	DRYWALL	NONE	TITUS	300RL	3,4,5,14

NOTES:
1. PROVIDE PLENUM ON TOP OF SLOT DIFFUSER. PROVIDE FIBRE FREE FOAM INSULATION.
2. CONTRACTOR TO CONFIRM DIMENSIONS BASED ON LENGTH.
3. BALANCING DAMPER SHALL BE PROVIDED IN THE DUCTWORK FOR EVERY AIR DISTRIBUTION DEVICE. AN OPPOSED BLADE DAMPER INTEGRATED INTO THE AIR TERMINAL DEVICE SHALL BE PROVIDED IN ANY INSTANCE WHERE SUFFICIENT SPACE IS NOT AVAILABLE TO INSTALL A DUCT BALANCING DAMPER.
4. COORDINATE COLOR WITH ARCHITECT FOR CUSTOM COLOR. BRANCH RUNOUT TO BE DAME SIZE AS DIFFUSER UNLESS OTHERWISE NOTED.
5. FRAME TYPE SHALL BE COMPATIBLE WITH CEILING TYPE WHERE APPLICABLE. VERIFY CEILING TYPE WITH ARCHITECTURAL DRAWINGS.
6. COORDINATE LOCATION WITH ARCHITECTURAL ELEVATIONS AND CEILING PLANS.
7. COORDINATE COLOR WITH ARCHITECT FOR CUSTOM COLOR WITH STEEL BORDER AND CORE.
8. PROVIDE RETURN AIR CANOPY (RAC) INSTALLED ON TOP OF RETURN GRILLE.
9. PROVIDE DUCT EXTENSION OFF TOP OF EXHAUST GRILLE PER DETAIL.
10. PROVIDE CUSTOM PLENUM BOX. CONTRACTOR TO COORDINATE HEIGHT.
11. AIRFLOW TO BE ANGLED DOWN ALONG WINDOW.
12. PROVIDE BLANK OFF ON TOP OF LINEAR SLOT.
13. LINEAR SLOT OPEN TO THE PLENUM.
14. PROVIDE VERTICAL DEFLECTION BARS IN FRONT WITH HORIZONTAL BEHIND THE VERTICAL.

AIR & DIRT SEPARATOR SCHEDULE

MARK	MANUFACTURER	MODEL	INLET/OUTLET SIZE (IN)	SERVICE	FLOW (GPM)	MAX. PRESSURE DROP (FT)	WEIGHT (LBS)	NOTES
AS-1	BELL & GOSSET	CRS-10F	10	CHILLED WATER	1,500	2.43	1,650	1,2,3,4
AS-2	BELL & GOSSET	CRS-8F	8	HEATING WATER	625	1	888	1,2,3,4
AS-3	BELL & GOSSET	CRS-8F	8	CHILLED WATER	625	1	888	1,2,3,4
AS-4	BELL & GOSSET	CRS-2-1/2F	2.5	REHEAT WATER	70	0.84	183	1,2,3,4

NOTES:
1 BASIS OF DESIGN LISTED. REFER TO SPECIFICATIONS FOR APPROVED EQUIVALENT MANUFACTURERS.
2 PROVIDE WITH INTEGRAL STRAINER.
3 PROVIDE WITH HIGH CAPACITY AUTOMATIC AIR VENT ON TOP OF SEPARATOR.
4 PROVIDE LINE-SIZE ISOLATION VALVES AT INLET AND OUTLET OF SEPARATOR.

PRESSURIZATION SUPPLY FAN SCHEDULE

MARK	DESCRIPTION	AIRFLOW (CFM)	ESP (IN WG)	FAN RPM	DRIVE	MOTOR HP	VOLTAGE	PHASE	FLA	SOUND RATING (SONES)	MANUFACTURER	MODEL	WEIGHT (LBS)	NOTES
SFH-1	HOODED TUBULAR AXIAL ROOF SUPPLY	10,000	1	1,800	DIRECT	5	460	3	7.6	58	GREENHECK	AX-90-275-0608	990	1
SFH-2	HOODED TUBULAR AXIAL ROOF SUPPLY	8,000	1	1,800	DIRECT	5	460	3	7.6	45	GREENHECK	AX-80-275-0609	840	1
SFH-3	HOODED TUBULAR AXIAL ROOF SUPPLY	8,000	1	1,800	DIRECT	5	460	3	7.6	45	GREENHECK	AX-80-275-0609	840	1
SFH-4	HOODED TUBULAR AXIAL ROOF SUPPLY	8,000	1	1,800	DIRECT	5	460	3	7.6	45	GREENHECK	AX-80-275-0609	840	1

NOTES:
1 VFD MOUNTED IN MECHANICAL ROOM.

RO WATER TREATMENT SKID SCHEDULE

MARK	COMMENTS - DESCRIPTION	HP	FLA	MCA	MOCP	VOLTAGE	PHASE	DISCONNECT	CONTROLLER / STARTER	MANUFACTURER	MODEL #	NOTES
RO-1A	DECHLORINATOR REVERSE OSMOSIS SYSTEM - 9 GPM - PUMP INCLUDED STORAGE TANK - 120 GALLON VOLUME TANK - 10 PSI PRECHARGE	3	8	10	15	460	3	MFR	MFR	NEPTRONIC	CARBON FILTER - WG1665ET-US RO SYSTEM - SKRON091AB SOFTNER - WS1665EMT-US STORAGE TANKS - WP FWRO-120	1,2,3

NOTES:
1 PROVIDE 1-1/4" DOMESTIC WATER PIPING TO SKID.
2 COMPONENTS PACKAGED ON SKID.
3 UNIT MOUNTED CONTROLLER AND DISPLAY.

CABINET UNIT HEATERS - HOT WATER SCHEDULE

MARK NO.	CAPACITY (MBH)	EAT (DB) (°F)	LAT (DB) (°F)	HOT WATER DATA EWT (°F)	HOT WATER DATA LWT (°F)	HOT WATER DATA FLOW (GPM)	HOT WATER DATA ROWS	FAN DATA AIRFLOW (CFM)	FAN DATA NO.	FAN DATA FLA	FAN DATA VOLTAGE	FAN DATA PH.	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
CUH-1	24.9	60	106.5	150	130.0	2.5	2	488	1	2.9	115	1	YORK	FWC04	1
CUH-2	24.9	60	106.5	150	130.0	2.5	2	488	1	2.9	115	1	YORK	FWC04	1
CUH-3	24.9	60	106.5	150	130.0	2.5	2	488	1	2.9	115	1	YORK	FWC04	1
CUH-4	32.4	60	112.6	150	130.1	3.2	2	553	1	4.8	115	1	YORK	FNP06	2
CUH-5	32.4	60	112.6	150	130.1	3.2	2	553	1	4.8	115	1	YORK	FNP06	2
CUH-6	24.9	60	106.5	150	130.0	2.5	2	488	1	2.9	115	1	YORK	FWC04	1

NOTES:
1. PROVIDE WALL RECESSING PANEL, INTEGRAL THERMOSTAT, DISCONNECT, STAMPED RETURN AIR AND SUPPLY AIR GRILLES ON FACE.
2. PROVIDE UNIT MOUNTED DISCONNECT.

GAS FIRED STEAM GENERATOR SCHEDULE

MARK NO.	LOCATION	CAPACITY (LBS/HR)	MAXIMUM AIRFLOW (CFM)	GAS INPUT (BTU/HR)	NO OF STEAM OUTLETS	NUMBER OF MODULES	VOLTAGE / CURRENT	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
H-2A	AHU-3	710	29,000	953,000	4	4	120/1	NEPTRONIC	SKG4N7104	-
H-2B	AHU-3	710	29,000	953,000	4	4	120/1	NEPTRONIC	SKG4N7104	-
H-3A	AHU-4	560	23,000	713,000	3	3	120/1	NEPTRONIC	SKG4N5603	-
H-3B	AHU-4	560	23,000	713,000	3	3	120/1	NEPTRONIC	SKG4N5603	-

AIR CURTAINS

MARK NO.	AIR VOLUME - HIGH (CFM)	ENTERING WATER TEMP (°F)	LEAVING WATER TEMP (°F)	GPM	WATER PRESSURE DROP (FT)	HEATING OUTPUT (BTU)	HEATING AIR TEMP. RISE (°F)	ELECTRICAL DATA VOLTAGE	ELECTRICAL DATA PH.	MCA (AMPS)	MOTOR QTY.	MOTOR HP	PIPING RUNOUT (IN.)	MANUFACTURER	MODEL NO.	REMARKS
AC-1	7,614	150	110	14.9	11.6	293,400	36	460	3	7.5	3	0.75	1.5	POWERED AIRE	THS-3-132	1,2,3,4
AC-2	7,614	150	110	14.9	11.6	293,400	36	460	3	7.5	3	0.75	1.5	POWERED AIRE	THS-3-132	1,2,3

NOTES:
1. PROVIDE INDUSTRIAL MAGNETIC DOOR SWITCH, 24V TRANSFORMER, BUILT-IN TIME DELAY RELAY.
2. PANEL MOUNTED HIGH/OFF/LOW SELECTOR SWITCH
3. DIGITAL THERMOSTAT.
4. PROVIDE 3-WAY VALVE ON HEATING COIL.

AIR HANDLING UNIT SCHEDULE

MARK NO.	WEIGHT (LBS)	SUPPLY FAN AIRFLOW (CFM)	OUTSIDE AIR(CFM)	SUPPLY FAN ESP ("W.G.)	SUPPLY FAN NUMBER OF SUPPLY FANS	SUPPLY FAN HP	SUPPLY FAN BHP	SUPPLY FAN VOLTAGE	SUPPLY FAN PH.	RETURN / EXHAUST FAN AIRFLOW (CFM)	RETURN / EXHAUST FAN ESP ("W.G.)	RETURN / EXHAUST FAN NUMBER OF FANS	RETURN / EXHAUST FAN HP	RETURN / EXHAUST FAN BHP	RETURN / EXHAUST FAN VOLTAGE	RETURN / EXHAUST FAN PH.	COOLING SENSIBLE COOLING CAPACITY (MBH)	COOLING TOTAL CAPACITY (MBH)	COOLING ENTERING DB (°F)	COOLING ENTERING WB (°F)	COOLING LEAVING DB (°F)	COOLING WB (°F)	CHILLED WATER EWT (°F)	CHILLED WATER LWT (°F)	CHILLED WATER GPM	COIL PRESSURE DROP (FT)	HEATING TOTAL CAPACITY (MBH)	HEATING ENTERING DB (°F)	HEATING LEAVING DB (°F)	HEATING WATER EWT (°F)	HEATING WATER LWT (°F)	HEATING WATER GPM	COIL PRESSURE DROP (FT)	HEAT WHEEL PRESENT	SELECTION BASED ON MANUFACTURER	REMARKS
AHU-1	37,000	35,000	8,000	2.25	4	15.00	10.50	460	3	30,000	1.00	4	7.50	4.20	460	3	1,829.0	2,699.0	77.4	64.8	52.0	52.0	42.0	57.0	212.1	23.20	755.6	40.0	60.0	150.0	125.0	61.9	0.80	Yes	HAAKON	1,2,4,5
AHU-2	84,000	58,000	58,000	3.50	4	40.00	23.80	460	3	46,000	2.50	4	15.00	11.60	460	3	1,829.0	2,699.0	80.2	66.7	51.0	51.0	42.0	57.0	381.9	27.50	1,252.2	40.0	60.0	150.0	120.0	85.5	2.00	Yes	HAAKON	1,2,3,4
AHU-3	76,000	46,000	46,000	3.50	4	30.00	18.50	460	3	44,000	2.50	4	15.00	12.20	460	3	1,351.0	1,919.0	78.2	65.3	51.0	51.0	42.0	57.0	271.5	21.00	993.1	40.0	60.0	150.0	120.0	67.8	3.40	Yes	HAAKON	1,2,3,4
AHU-4	25,000	18,000	6,000	2.25	4	10.00	5.90	460	3	15,500	1.00	4	5.00	2.70	460	3	563.9	747.5	81.0	66.0	52.0	52.0	42.0	57.0	105.7	16.30	388.6	40.0	60.0	150.0	125.0	31.9	4.10	Yes	HAAKON	1,2,4

NOTES:
1. INSTALL UNITS ON 8" HOUSEKEEPING PAD.
2. VFD'S ARE PROVIDED BY TCC AND PROVIDED TO THE MANUFACTURER FOR MOUNTING IN THE FACTORY.
3. CONTRACTOR TO FIELD VERIFY LOCATION OF STEEL AND PROVIDE FINAL COORDINATION OF OPENING WITH MANUFACTURER.
4. COOLING COIL FLUID IS 30% PROPYLENE GLYCOL.
5. PROVIDE 3-WAY COIL ON COOLING COIL.
6. SCCR RATING OF 65 kAIC AND ALL ASSOCIATED EQUIPMENT.

UNIT HEATERS - HOT WATER SCHEDULE

MARK NO.	CAPACITY (MBH)	EAT (DB) (°F)	LAT (DB) (°F)	HOT WATER DATA EWT (°F)	HOT WATER DATA LWT (°F)	HOT WATER DATA FLOW (GPM)	HOT WATER DATA PIPE RUNOUT (IN)	FAN DATA AIRFLOW (CFM)	FAN DATA NO.	FAN DATA VOLTAGE	FAN DATA PH.	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
UH-1	38.7	60	87.5	150	110.0	6.0	1	1,340	1	120	1	MODINE	HC86	1,2,3
UH-2	38.7	60	87.5	150	110.0	6.0	1	1,340	1	120	1	MODINE	HC86	1,2,3
UH-3	38.7	60	87.5	150	110.0	6.0	1	1,340	1	120	1	MODINE	HC86	1,2,3
UH-4	38.7	60	87.5	150	110.0	6.0	1	1,340	1	120	1	MODINE	HC86	1,2,3
UH-5	38.7	60	87.5	150	110.0	6.0	1	1,340	1	120	1	MODINE	HC86	1,2,3
UH-6	38.7	60	87.5	150	110.0	6.0	1	1,340	1	120	1	MODINE	HC86	1,2,3
UH-7	19.8	60	87.5	150	110.0	4.0	1	730	1	120	1	MODINE	HC47	1,2,3
UH-8	19.8	60	87.5	150	110.0	4.0	1	730	1	120	1	MODINE	HC47	1,2,3
UH-9	19.8	60	87.5	150	110.0	4.0	1	730	1	120	1	MODINE	HC47	1,2,3

NOTES:
1. PROVIDE FINGER PROOF FAN GUARD.
2. PROVIDE WALL MOUNTED THERMOSTAT.
3. PROVIDE UNIT MOUNTED DISCONNECTS.

ENERGY RECOVERY WHEEL SCHEDULE

MARK NO.	SERVICE	OPERATING SEASON	SUPPLY AIR SIDE SENSIBLE CAPACITY MBH	SUPPLY AIR SIDE TOTAL CAPACITY MBH	SUPPLY AIR SIDE AIRFLOW (CFM)	SUPPLY AIR SIDE ENTERING DB (°F)	SUPPLY AIR SIDE ENTERING WB (°F)	SUPPLY AIR SIDE LEAVING DB (°F)	SUPPLY AIR SIDE LEAVING WB (°F)	SUPPLY AIR SIDE MAX APD (IN WG)	EXHAUST AIR SIDE AIRFLOW (CFM)	EXHAUST AIR SIDE ENTERING DB (°F)	EXHAUST AIR SIDE ENTERING WB (°F)	EXHAUST AIR SIDE LEAVING DB (°F)	EXHAUST AIR SIDE LEAVING WB (°F)	EXHAUST AIR SIDE MAX APD (IN WG)	PURGE (CFM)	TOTAL EFFECTIVENESS	NOTES
WHEEL 1	AHU-1	SUMMER	89	198	8,000	95	76	84.5	69.6	0.64	4,000	72	60	94.2	75.1	0.37	506	0.9	1
		WINTER	238	344	8,000	3	3	32.3	27.5	0.64	4,000	68	51.5	5	3.3	0.37	506	0.88	
WHEEL 2A	AHU-2	SUMMER	460	1,015	29,000	95	76	80.2	66.7	0.78	23,000	72	60	90.8	73.1	0.75	901	0.79	1
		WINTER	1,234	1,784	29,000	3	3	44.4	39.1	0.78	23,000	68	54.2	15.4	16.7	0.75	901	0.78	
WHEEL 2B	AHU-2	SUMMER	460	1,015	29,000	95	76	80.2	66.7	0.78	23,000	72	60	90.8	73.1	0.75	901	0.79	1
		WINTER	1,234	1,784	29,000	3	3	44.4	39.1	0.78	23,000	68	54.2	15.4	16.7	0.75	901	0.78	
WHEEL 3A	AHU-3	SUMMER	415	914	23,000	95	76	78.2	65.3	0.78	22,000	72	60	89	71.9	0.91	722	0.74	1
		WINTER	1,118	1,582	23,000	3	3	49.9	42.8	0.78	22,000	68	54.2	21.3	0.91	722	0.73		
WHEEL 3B	AHU-3	SUMMER	415	914	23,000	95	76	78.2	65.3	0.78	22,000	72	60	89	71.9	0.91	722	0.74	1
		WINTER	1,118	1,582	23,000	3	3	49.9	42.8	0.78	22,000	68	54.2	20.4	21.3	0.91	722	0.73	
WHEEL 4	AHU-4	SUMMER	68	151	6,000	95	76	84.3	69.5	0.57	3,000	72	60	94.3	75.2	0.34	377	0.91	1
		WINTER	181	262	6,000	3	3	32.8	27.9	0.57	3,000	68	51.5	4.3	2.6	0.34	377	0.9	

NOTES:
1 VFD FOR THE HEAT RECOVERY WHEEL BY MANUFACTURER.

FILTER HOUSING SCHEDULE

MARK	AIRFLOW (CFM)	SERVICE	TOTAL INLET SP (IN WG)	DAMPER TYPE	DRAIN	SEAL	DECON PORTS	GUAGES	LIFTING	MOUNTING	TRANSITION	HOUSING	FILTER SECTIONS	STSTIC PRESSURE TAPS	TESTING	VOLTS	PHASE	HZ	GUAGES	TOTAL LENGTH (IN INCHES)	MANUFACTURER	MODEL	WEIGHT (LBS)	NOTES
FH-1	950	BSL-3	2.7	DBTE-FB-304-10-BTD	SST Ball Valve w/ plug	Fluid Seal	YES	PRE & HEPA	LIGTING LUGS	MOUNTING BASE	IN / OUT	T 304 SS, 14 GA SS	PRE / HEPA / POST	YES	ANSI/ASME NQA-1	120	1	60	PRE & HEPA	70.5	AFF / FLANDERS	BF1-1H1W-4GGF-304-D3	660	1,2,3
FH-2	950	BSL-3	2.7	DBTE-FB-304-10-BTD	SST Ball Valve w/ plug	Fluid Seal	YES	PRE & HEPA	LIGTING LUGS	MOUNTING BASE	IN / OUT	T 304 SS, 14 GA SS	PRE / HEPA / POST	YES	ANSI/ASME NQA-1	120	1	60	PRE & HEPA	70.5	AFF / FLANDERS	BF1-1H1W-4GGF-304-D3	660	1,2,3
FH-3	1,275	RADIOISOTOPE	4.5	DBTE-FB-304-16-BTD	SST Ball Valve w/ plug	Fluid Seal	YES	PRE & HEPA, CARBON & POST	LIGTING LUGS	MOUNTING BASE	IN / OUT	T 304 SS, 14 GA SS	PRE / HEPA, CARBON / POST	YES	ANSI/ASME NQA-1	120	1	60	PRE & HEPA, CARBON & POST	129.5	AFF / FLANDERS	BF1-1H2W-4GGF-304-D3	1,460	1,2,3
FH-4	1,275	RADIOISOTOPE	4.5	DBTE-FB-304-16-BTD	SST Ball Valve w/ plug	Fluid Seal	YES	PRE & HEPA, CARBON & POST	LIGTING LUGS	MOUNTING BASE	IN / OUT	T 304 SS, 14 GA SS	PRE / HEPA, CARBON / POST	YES	ANSI/ASME NQA-1	120	1	60	PRE & HEPA, CARBON & POST	129.5	AFF / FLANDERS	BF1-1H2W-4GGF-304-D3	1,460	1,2,3

NOTES:
1 INSTALLED ON SUPPORTS ON THE ROOF.
2 PROVIDE CONTROL BOX ON UNIT FOR ELECTRIC DAMPER ACTIVITATION.
3 PROVIDE ELECTRONIC BUBBLE TIGHT DAMPERS.

SUPPLY FAN SCHEDULE

MARK	TYPE	LOCATION	DESIGN AIRFLOW (CFM)	ESP. (IN. WC)	SPPED (RPM)	MOTOR DATA DRIVE	MOTOR DATA POWER, HP	MOTOR DATA VOLTAGE	MOTOR DATA PHASE	MOTOR DATA FLA, AMPS	SOUND RATING (SONES)	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	WEIGHT (LBS)	NOTES
SF-1	SUPPLY INLINE FAN	MECHANICAL ROOM	2,500	0.4	1,063	DIRECT	3/4	115	1	10	10.2	GREENHECK	SQ-160-VG	105	1,2,3
SF-2	SUPPLY INLINE FAN	MECHANICAL ROOM	2,500	0.4	1,063	DIRECT	3/4	115	1	10	10.2	GREENHECK	SQ-160-VG	105	1,2,3

NOTES:
1. PROVIDE MOTORIZED DAMPER.
2. PROVIDE UNIT MOUNTED DISCONNECT.
3. PROVIDE UNIT MOUNTED SPEED CONTROLLER.

PLOT DATE: 10/16/2025 2:42:44 PM TEMPLATE VERSION: 23.0.4

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10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M-702

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SUPPLY AIR VALVES

MARK			SUPPLY AIRFLOW OCCUPIED MINIMUM (CFM)	SUPPLY AIRFLOW UNOCCUPIED MINIMUM (CFM)											SELECTION BASED ON		
NO.	AIR VALVE DIAMETER (EACH)	SUPPLY AIRFLOW (CFM)			HEATING AIRFLOW (CFM)	HEATING CAPACITY (MBH)	FLOW (GPM)	EWT (°F)	LWT (°F)	WATER PRESSURE DROP (IN H20)	AIR PRESSURE DROP (IN)	EAT (DB) (°F)	LAT (DB) (°F)	HEATING COIL MODEL NUMBER	HEATING COIL DUCT SIZE (IN x IN)	PIPE RUNOUT SIZE (IN)	MANUFACTURER	MODEL	REMARKS
SAV-101	14	2,285	2,570	1,860	2,285	88.4	7.2	150	125	6.7	0.16	55	90.7	4WQ1002B	20x30	1.25"	PHOENIX AIR	MAVA114M-AMEHC	1,2,3,4
SAV-102	14	3,715	1,580	1,140	3,715	141.8	12.6	150	127	1.5	0.15	55	90.2	4WS1102B	27.5x38	1.5"	PHOENIX AIR	MAVA214M-AMEHC	1,2,4
SAV-103	8	225	160	100	225	8.6	0.5	150	112	1.6	0.10	55	90.1	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-104	8	225	160	100	225	8.6	0.5	150	112	1.6	0.10	55	90.1	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-105	8	300	300	150	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-106	8	225	160	100	225	8.6	0.5	150	112	1.6	0.10	55	90.1	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-107	8	225	160	100	225	8.6	0.5	150	112	1.6	0.10	55	90.1	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-108	8	225	160	100	225	8.6	0.5	150	112	1.6	0.10	55	90.1	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-109	8	225	160	100	225	8.6	0.5	150	112	1.6	0.10	55	90.1	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-110	10	775	750	375	775	29.6	2.2	150	123	1.7	0.14	55	90.2	4BD1002B	15x15	3/4"	PHOENIX AIR	MAVA110M-AMEHC	1,2,4
SAV-111	10	775	750	375	775	29.6	2.2	150	123	1.7	0.14	55	90.2	4BD1002B	15x15	3/4"	PHOENIX AIR	MAVA110M-AMEHC	1,2,4
SAV-112	10	1,550	1,450	750	1,550	59.4	4.0	150	120	2.1	0.12	55	90.4	4WQ1002B	20x24	1"	PHOENIX AIR	MAVA210M-AMEHC	1,2,4
SAV-113	8	50	50	0	0	0.0	0.0	0	0	0.0	0.02	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-114	10	800	675	350	800	32.2	2.2	150	120	1.8	0.10	55	92.1	4BD1002B	15x18	3/4"	PHOENIX AIR	TSVA110M-ALXHZ	1,2,4
SAV-115	8	525	450	225	525	20.0	1.4	150	122	0.7	0.11	55	90.1	4BD1002B	11.25x15	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-201	8	125	90	50	125	4.8	0.4	150	123	0.7	0.16	55	90.1	3BS1002B	6x6	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-202	8	500	500	425	500	19.1	1.3	150	121	0.6	0.10	55	90.3	4BD1002B	11.25x15	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-203	12	1,260	1,060	535	1,260	48.0	4.2	150	127	1.9	0.14	55	90.1	4WQ1002B	17.5x20	1"	PHOENIX AIR	TSVA112M-ALXHZ	1,2,3,4
SAV-204	12	1,260	1,060	535	1,260	48.0	4.1	150	127	1.9	0.14	55	90.1	4WQ1002B	17.5x20	1"	PHOENIX AIR	TSVA112M-ALXHZ	1,2,3,4
SAV-205	8	250	110	50	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-206	8	250	250	205	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-207	10	900	700	700	900	34.5	2.3	150	120	2.1	0.13	55	90.4	4BD1002B	15x18	3/4"	PHOENIX AIR	MAVA110M-AMEHC	1,2,4
SAV-208	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-209	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-210	8	250	250	205	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-211	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-212	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,3,4
SAV-213	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-214	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-215	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-216	10	900	700	700	900	34.5	2.3	150	120	2.1	0.13	55	90.4	4BD1002B	15x18	3/4"	PHOENIX AIR	MAVA110M-AMEHC	1,2,4
SAV-217	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-218	8	300	300	240	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-219	8	240	100	50	35	9.2	0.5	150	114	2.0	0.11	55	90.2	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-220	14	3,740	3,155	1,059	3,740	142.3	12.6	150	127	1.5	0.15	55	90.1	4WS1102B	27.5x38	1.5"	PHOENIX AIR	TSVA214M-ALXHZ	1,2,4
SAV-221	8	125	75	50	125	4.8	0.4	150	123	0.7	0.16	55	90.1	3BS1002B	6x6	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-222	8	50	50	0	0	0.0	0.0	0	0	0.0	0.00	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-223	8	325	200	100	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-224	10	1,800	1,500	1,500	1,800	68.7	4.6	150	119	2.7	0.13	55	90.2	4WQ1002B	20x27	1"	PHOENIX AIR	MAVA210M-AMEHC	1,2,4
SAV-225	8	325	200	150	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-226	8	325	200	150	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-227	8	325	200	150	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-228	8	300	300	100	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-229	10	780	400	175	780	29.6	2.2	150	123	1.7	0.14	55	90.2	4BD1002B	15x15	3/4"	PHOENIX AIR	TSVA110M-ALXHZ	1,2,3,4
SAV-230	8	400	400	325	400	15.2	1.0	150	121	1.4	0.13	55	90.1	3BD0902B	10x12	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-231	8	50	50	0	0	0.0	0.0	0	0	0.0	0.00	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-232	8	150	75	50	150	4.8	0.4	150	123	0.7	0.16	55	90.1	3BS1002B	6x6	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-233	8	330	200	100	330	12.7	0.9	150	123	1.1	0.13	55	90.4	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-234	8	300	200	100	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-235	8	50	50	0	0	0.0	0.0	0	0	0.0	0.00	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-236	8	350	200	100	350	13.3	1.0	150	124	1.3	0.15	55	90.1	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-237	8	385	250	150	385	14.7	1.0	150	120	1.3	0.13	55	90.3	3BD0902B	10x12	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-238	14	3,740	3,155	1,590	3,740	0.0	12.6	150	127	1.5	0.15	55	90.1	4WS1102B	27.5x38	1.5"	PHOENIX AIR	TSVA214M-ALXHZ	1,2,4
SAV-301	8	125	90	50	125	4.8	0.4	150	123	0.7	0.16	55	90.1	3BS1002B	6x6	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-302	8	500	500	425	500	19.1	1.3	150	121	0.6	0.10	55	90.3	4BD1002B	11.25x15	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-303	12	1,260	1,060	535	1,260	48.0	4.2	150	127	1.9	0.14	55	90.1	4WQ1002B	17.5x20	1"	PHOENIX AIR	TSVA112M-ALXHZ	1,2,4
SAV-304	12	1,260	1,060	535	1,260	48.0	4.1	150	127	1.9	0.14	55	90.1	4WQ1002B	17.5x20	1"	PHOENIX AIR	TSVA112M-ALXHZ	1,2,3,4
SAV-305	8	250	110	50	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-306	8	250	250	205	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-307	10	900	700	700	900	34.5	2.4	150	120	2.1	0.13	55	90.4	4BD1002B	15x18	3/4"	PHOENIX AIR	MAVA110M-AMEHC	1,2,4
SAV-308	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-309	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-310	8	250	250	205	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-311	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-312	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,3,4
SAV-313	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-314	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-315	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-316	10	900	700	700	900	34.5	2.3	150	1210	2.1	0.13	55	90.4	4BD1002B	15x18	3/4"	PHOENIX AIR	MAVA110M-AMEHC	1,2,4
SAV-317	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-318	8	300	300	240	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-319	8	240	110	50	240	9.2	0.5	150	114	2.0	0.11	55	90.2	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-320	14	3,740	3,155	1,590	3,740	142.3	12.6	150	127	1.5	0.15	55	90.1	4WS1102B	27.5x38	1.5"	PHOENIX AIR	TSVA214M-ALXHZ	1,2,4
SAV-321	8	125	75	50	125	4.8	0.4	150	123	0.7	0.16	55	90.1	3BS1002B	6x6	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-322	8	50	50	0	0	0.0	0.0	0	0	0.0	0.00	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-323	8	325	200	100	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-324	10	1,800	1,500	1,500	1,800	68.7	4.6	150	120	2.7	0.13	55	90.2	4WQ1002B	20x27	1"	PHOENIX AIR	MAVA210M-AMEHC	1,2,4
SAV-325	8	325	200	150	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-326	8	325	200	100	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-327	8	325	200	100	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-328	8	300	200	100	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-329	10	780	400	175	780	29.6	2.2	150	123	1.7	0.14	55	90.2	4BD1002B	15x15	3/4"	PHOENIX AIR	TSVA110M-ALXHZ	1,2,3,4
SAV-330	8	400	400	325	400	15.2	1.0	150	121	1.4	0.13	55	90.1	3BD0902B	10x12	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-331	8	50	50	0	0	0.0	0.0	0	0	0.0	0.00	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4

SUPPLY AIR VALVES

MARK			SUPPLY AIRFLOW OCCUPIED MINIMUM (CFM)	SUPPLY AIRFLOW UNOCCUPIED MINIMUM (CFM)											SELECTION BASED ON		
NO.	AIR VALVE DIAMETER (EACH)	SUPPLY AIRFLOW (CFM)			HEATING AIRFLOW (CFM)	HEATING CAPACITY (MBH)	FLOW (GPM)	EWT (°F)	LWT (°F)	WATER PRESSURE DROP (IN H20)	AIR PRESSURE DROP (IN)	EAT (DB) (°F)	LAT (DB) (°F)	HEATING COIL MODEL NUMBER	HEATING COIL DUCT SIZE (IN x IN)	PIPE RUNOUT SIZE (IN)	MANUFACTURER	MODEL	REMARKS
SAV-332	8	150	75	50	150	4.8	0.4	150	123	0.7	0.16	55	90.1	3BS1002B	6x6	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-333	8	330	200	100	330	12.7	0.9	150	123	1.1	0.13	55	90.4	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-334	8	300	200	100	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-335	8	50	50	0	0	0.0	0.0	0	0	0.0	0.00	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-336	8	350	200	100	350	13.3	1.0	150	124	1.3	0.00	55	90.1	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-337	8	385	250	100	385	14.7	1.0	150	120	1.3	0.00	55	90.3	3BD0902B	10x12	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-338	14	3,740	3,155	1,590	3,740	0.0	12.6	150	127	1.5	0.15	55	90.1	4WS1102B	27.5x38	1.5"	PHOENIX AIR	TSVA214M-ALXHZ	1,2,4
SAV-339	8	200	200	0	200	0.0	0.0	0	0	0.0	0.00	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-401	8	125	90	50	125	4.8	0.4	150	123	0.7	0.16	55	90.1	3BS1002B	6x6	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-402	8	500	500	425	500	19.1	1.3	150	121	0.6	0.10	55	90.3	4BD1002B	11.25x15	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-403	12	1,260	1,060	535	1,260	48.0	4.2	150	127	1.9	0.14	55	90.1	4WQ1002B	17.5x20	1"	PHOENIX AIR	TSVA112M-ALXHZ	1,2,3,4
SAV-404	12	1,260	1,060	535	1,260	48.0	4.1	150	127	1.9	0.14	55	90.1	4WQ1002B	17.5x20	1"	PHOENIX AIR	TSVA112M-ALXHZ	1,2,3,4
SAV-405	8	250	110	50	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-406	8	250	250	205	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-407	10	900	700	700	900	34.5	2.3	150	120	2.1	0.13	55	90.4	4BD1002B	15x18	3/4"	PHOENIX AIR	MAVA110M-AMEHC	1,2,4
SAV-408	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-409	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-410	8	250	250	205	250	9.5	0.6	150	119	0.4	0.13	55	90.2	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-411	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-412	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,3,4
SAV-413	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-414	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-415	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-416	10	900	700	700	900	34.5	2.3	150	120	2.1	0.13	55	90.4	4BD1002B	15x18	3/4"	PHOENIX AIR	MAVA110M-AMEHC	1,2,4
SAV-417	8	200	100	50	200	7.7	0.4	150	114	1.5	0.08	55	90.3	3BS0802B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-418	8	300	300	240	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-419	8	240	110	50	35	9.2	0.5	150	114	2.0	0.11	55	90.2	3BS0902B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-420	14	3,740	3,155	1,590	3,740	142.3	12.6	150	127	1.5	0.15	55	90.1	4WS1102B	27.5x38	1.5"	PHOENIX AIR	TSVA214M-ALXHZ	1,2,4
SAV-421	8	125	75	50	125	4.8	0.4	150	123	0.7	0.16	55	90.1	3BS1002B	6x6	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-422	8	50	50	0	0	0.0	0.0	0	0	0.0	0.00	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-423	8	325	200	100	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-424	10	1,800	1,500	1,500	1,800	68.7	4.6	150	120	2.8	0.13	55	90.2	4WQ1002B	20x27	1"	PHOENIX AIR	MAVA210M-AMEHC	1,2,4
SAV-425	8	325	200	100	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-426	8	325	200	100	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-427	8	325	200	100	325	12.4	0.9	150	122	1.0	0.13	55	90.2	3BD0902B	10x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-428	8	300	200	100	300	11.4	0.9	150	124	0.8	0.18	55	90.1	3BD1002B	8x10	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-429	10	780	400	175	780	29.6	2.2	150	123	1.7	0.14	55	90.2	4BD1002B	15x15	3/4"	PHOENIX AIR	TSVA110M-ALXHZ	1,2,3,4
SAV-430	8	400	400	325	400	15.2	1.0	150	121	1.4	0.13	55	90.1	3BD0902B	10x12	3/4"	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-431	8	50	50	0	0	0.0	0.0	0	0	0.0	0.02	0	0.0	0	0	0	PHOENIX AIR	TSVA108M-ALXHZ	1,2,4
SAV-432

EXHAUST AIR VALVES

MARK NO.	ROOM EXHAUST	HOOD EXHAUST	AIR VALVE INLET / OUTLET (IN)	MAXIMUM EXHAUST AIRFLOW (CFM)	MINIMUM OCCUPIED EXHAUST AIRFLOW (CFM)	MINIMUM UNOCCUPIED EXHAUST (CFM)	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
EAV-101	X		8	575	575	450	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-102	X		12	1,300	1300	1,300	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-103	X		14	1,775	850	275	PHOENIX AIR	EXVA114M-AMEHO	1,2,3
EAV-104	X		14	1,775	850	275	PHOENIX AIR	EXVA114M-AMEHO	1,2,3
EAV-105		X	12	1,295	800	800	PHOENIX AIR	EXVB112M-AMHHO	1,3
EAV-106		X	12	1,295	800	800	PHOENIX AIR	EXVB112M-AMHHO	1,3
EAV-107		X	12	1,295	800	800	PHOENIX AIR	EXVB112M-AMHHO	1,3
EAV-108		X	12	1,295	800	800	PHOENIX AIR	EXVB112M-AMHHO	1,3
EAV-109	X		12	1,375	1325	575	PHOENIX AIR	EXVA112M-AMEHO	1,2,3
EAV-110	X		8	325	325	325	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-111	X		8	480	400	175	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-112	X		8	100	100	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-113	X		8	750	625	300	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-114	X		8	250	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-115	X		12	1,375	1325	575	PHOENIX AIR	EXVA112M-AMEHO	1,2,3
EAV-116	X		8	175	110	50	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-117	X		8	175	110	50	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-118	X		8	175	110	50	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-119	X		8	175	110	50	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-120	X		8	175	110	50	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-121	X		8	175	110	50	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-201	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-202	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-203	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-204	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-205	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-206	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-207	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-208	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-209	X		8	275	275	275	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-210	X		8	300	160	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-211	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-212	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-213	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-214	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-215	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-216	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-217	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-218	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-219	X		8	290	160	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-220	X		8	100	100	25	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-221	X		8	175	140	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-222	X		8	300	0	0	PHOENIX AIR	EXVA108M-AMEHO	1,2,3
EAV-223	X		8	150	0	0	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-224	X		8	175	125	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-225	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-226		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-227		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-228		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-229	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-230	X		8	525	525	525	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-231	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-232	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-233	X		10	600	225	0	PHOENIX AIR	EXVA110M-AMEHO	1,2,3
EAV-234	X		10	625	675	475	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-235	X		8	350	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-236	X		8	200	125	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-237	X		8	330	250	125	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-238	X		8	350	250	125	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-239		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-240	X		8	400	250	125	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-241	X		8	435	300	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-242	X		8	300	300	225	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-243	X		8	275	275	275	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-301	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-302	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-303	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-304	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-305	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-306	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-307	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-308	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-309	X		8	275	275	275	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-310	X		8	300	160	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-311	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-312	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-313	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-314	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-315	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-316	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-317	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-318	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-319	X		8	290	160	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-320	X		8	100	100	25	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-321	X		8	175	140	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-322	X		8	300	0	0	PHOENIX AIR	EXVA108M-AMEHO	1,2,3
EAV-323	X		8	150	0	0	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-324	X		8	175	125	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-325	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-326		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-327		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-328		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-329	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-330	X		8	550	550	550	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-331	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-332	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3

EXHAUST AIR VALVES

MARK NO.	ROOM EXHAUST	HOOD EXHAUST	AIR VALVE INLET / OUTLET (IN)	MAXIMUM EXHAUST AIRFLOW (CFM)	MINIMUM OCCUPIED EXHAUST AIRFLOW (CFM)	MINIMUM UNOCCUPIED EXHAUST (CFM)	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
EAV-333	X		10	600	225	0	PHOENIX AIR	EXVA110M-AMEHO	1,2,3
EAV-334	X		10	625	625	475	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-335	X		8	350	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-336	X		8	200	125	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-337	X		8	230	250	125	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-338	X		8	350	250	125	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-339		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-340	X		8	400	250	125	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-341	X		8	435	300	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-342	X		8	300	300	225	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-343	X		8	275	275	275	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-401	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-402	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-403	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-404	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-405	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-406	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-407	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-408	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-409	X		8	275	275	275	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-410	X		8	300	160	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-411	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-412	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-413	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-414	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-415	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-416	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-417	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-418	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-419	X		8	290	160	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-420	X		8	100	100	25	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-421	X		8	175	140	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-422	X		8	300	0	0	PHOENIX AIR	EXVA108M-AMEHO	1,2,3
EAV-423	X		8	300	300	225	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-424	X		8	175	125	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-425	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-426		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-427		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-428		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-429	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-430	X		8	525	525	525	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-431	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-432	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-433	X		10	600	225	0	PHOENIX AIR	EXVA110M-AMEHO	1,2,3
EAV-434	X		10	625	625	475	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-435	X		8	350	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-436	X		8	200	125	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-437		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-438	X		8	400	250	125	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-439	X		8	435	300	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-440	X		8	275	275	275	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-501	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-502	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-503	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-504	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-505	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-506	X		12	1,190	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-507	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-508	X		12	1,185	995	465	PHOENIX AIR	TEVA112M-ALNHZ	1,2,3
EAV-509	X		8	275	275	275	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-510	X		8	300	160	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-511	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-512	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-513	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-514	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-515	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-516	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-517	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-518	X		8	250	150	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-519	X		8	290	160	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-520	X		8	100	100	25	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-521	X		8	175	140	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-522	X		8	300	0	0	PHOENIX AIR	EXVA108M-AMEHO	1,2,3
EAV-523	X		8	300	300	225	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-524	X		8	175	125	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-525	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-526		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-527		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-528		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-529	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-530	X		8	525	525	525	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-531	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-532	X		8	375	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-533	X		10	600	225	0	PHOENIX AIR	EXVA110M-AMEHO	1,2,3
EAV-534	X		10	625	625	475	PHOENIX AIR	TEVA110M-ALNHZ	1,2,3
EAV-535	X		8	350	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-536	X		8	200	125	100	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-537		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-538	X		8	400	250	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-539	X		8	435	300	150	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-540	X		8	275	275	275	PHOENIX AIR	TEVA108M-ALNHZ	1,2,3
EAV-601	X		8	475	475	475	PHOENIX AIR	EXVB108M-AMHHO	1,2,3
EAV-602	X		8	475	475	475	PHOENIX AIR	EXVB108M-AMHHO	1,2,3
EAV-603		X	10	1,045	800	800	PHOENIX AIR	EXVB110M-AMHHO	1,3
EAV-604	X		8	475	475	475	PHOENIX AIR	EXVB108M-AMHHO	1,2,3
EAV-605	X		8	475	0	475	PHOENIX AIR	EXVB108M-AMHHO	1,2,3

NOTES:

1. THIS VALVE WILL BE USED TO BALANCE BUILDING AND ENSURE BUILDING PRESSURE DIFFERENCES ARE MAINTAINED.
2. PROVIDE AIR VOLUME CONTROL VALVE WITH MULTIPOINT CROSSFLOW FLOW MEASUREMENT SENSOR AND GASKET DAMPER. PROVIDE CONTROLS NECESSARY FOR COMMUNICATION WITH AND CONTROL BY BAS.
3. POWER PROVIDED FROM UPS.

ARCHITECT
HKS ARCHITECTS, PC
235 E. MAIN STREET, SUITE 102C
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STRUCTURAL ENGINEER
RESURGET ENGINEERING
28 W ADAMS AVE, SUITE 1710
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WAYNE STATE UNIVERSITY

OWNER'S MANAGEMENT
KRAMER MANAGEMENT GROUP
1305 S. WASHINGTON AVE. SUITE 101
LANSING, MI 48910

CONSTRUCTION MANAGER
THE CHRISTMAN COMPANY
1265 WASHINGTON BLVD, SUITE 200
DETROIT, MI 48226

NATHANIEL C. STALKER — STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER — No. 51101

9/25/2025

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M-704

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:42:46 PM TEMPLATE VERSION: 23.0.4

VAV BOXES - HOT WATER REHEAT

MARK NO.	BOX INLET (IN)	SUPPLY AIRFLOW (CFM)	MIMIMUM AIRFLOW (CFM)	HEATING AIRFLOW (CFM)	MAX NC	HEATING CAP. (MBH)	FLOW (GPM)	EWT (°F)	LWT (°F)	NUMBER OF ROWS	EAT (DB) (°F)	LAT (DB) (°F)	PIPE RUNOUT SIZE (IN)	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	REMARKS
VAV-101	16	1,600	700	1,340	-	53.1	2.88	150.0	112.4	2	55	90.0	1"	PRICE	SDV	1,2,4
VAV-102	10	1,125	225	900	-	22.9	1.38	150.0	116.3	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-103	8	500	500	500	20	19.0	1.40	150.0	122.3	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-104	6	350	105	280	24	10.8	0.64	150.0	115.8	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-105	8	450	135	360	-	13.7	0.77	150.0	113.7	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-106	6	250	250	250	24	9.6	0.53	150.0	113.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-107	6	200	80	160	20	6.2	0.29	150.0	106.0	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-108	6	150	80	145	22	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-109	6	150	80	145	22	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-110	12	850	300	680	-	25.9	1.37	150.0	111.3	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-111	8	550	165	440	21	16.7	1.09	150.0	118.6	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-112	14	1,400	500	1,120	-	42.5	2.29	150.0	112.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-113	6	150	80	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-114	10	600	600	600	-	22.9	1.38	150.0	116.3	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-115	8	500	150	400	20	15.3	0.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-116	10	625	225	500	-	19.0	1.01	150.0	111.8	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-117	6	150	80	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-118	16	1,800	700	1,440	-	4.7	3.01	150.0	113.0	2	55	90.0	1"	PRICE	SDV	1,2
VAV-119	6	380	115	305	25	11.6	0.73	150.0	117.7	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-120	6	225	70	180	22	6.9	0.33	150.0	106.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-121	6	400	120	320	26	12.3	0.81	150.0	119.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-122	6	150	80	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-123	6	385	120	310	25	11.8	0.75	150.0	118.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-124	6	180	80	145	-	5.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-125	6	180	80	145	-	5.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-126	6	200	80	160	20	6.2	0.29	150.0	106.0	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-127	6	175	175	175	-	6.6	0.31	150.0	106.0	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-128	6	450	135	360	28	13.8	1.01	150.0	122.3	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-129	6	350	350	350	24	13.4	0.96	150.0	121.5	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-130	24X16	2,200	1,200	1,760	24	66.8	2.97	150.0	104.2	2	55	90.0	1"	PRICE	SDV	1,2
VAV-131	12	950	950	950	-	28.9	1.62	150.0	113.8	2	55	90.0	1"	PRICE	SDV	1,2
VAV-132	10	750	750	750	-	22.9	1.38	150.0	116.3	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-133	6	75	75	75	-	4.6	0.25	150.0	110.0	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-134	6	150	80	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-135	6	150	80	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,3,4
VAV-201	12	1,050	315	840	-	31.9	1.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-202	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-203	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-204	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-205	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-206	6	300	300	300	22	11.5	0.72	150.0	117.3	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-207	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-208	8	510	155	410	20	15.6	0.96	150.0	116.8	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-209	10	700	210	560	-	21.3	1.23	150.0	114.6	2	55	90.0	3/4"	PRICE	SDV	1,2,3
VAV-210	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-211	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-212	12	1,050	315	840	-	31.9	0.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-213	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-214	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-215	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-216	10	720	220	580	-	22.0	1.29	150.0	115.3	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-217	12	1,050	315	840	-	31.9	1.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-218	12	960	315	770	-	29.1	1.64	150.0	113.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-301	12	1,050	315	840	-	31.9	1.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-302	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-303	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-304	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-305	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-306	6	300	300	300	22	11.5	0.72	150.0	117.3	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-307	6	75	75	75	-	4.6	0.20	150.0	110.0	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-308	8	510	155	410	20	15.6	0.96	150.0	116.8	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-309	10	700	210	560	-	21.3	1.23	150.0	114.6	2	55	90.0	3/4"	PRICE	SDV	1,2,3
VAV-310	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-311	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-312	12	1,050	315	840	-	31.9	0.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-313	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-314	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-315	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-316	10	720	220	580	-	22.0	1.29	150.0	115.3	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-317	12	1,050	315	840	-	31.9	1.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-318	12	960	315	770	-	29.1	1.64	150.0	113.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-401	12	1,050	315	840	-	31.9	1.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-402	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-403	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-404	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-405	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-406	6	300	300	300	22	11.5	0.72	150.0	117.3	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-407	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-408	8	510	155	410	20	15.6	0.96	150.0	116.8	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-409	10	700	210	560	-	21.3	1.23	150.0	114.6	2	55	90.0	3/4"	PRICE	SDV	1,2,3
VAV-410	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-411	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-412	12	1,050	315	840	-	31.9	0.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-413	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-414	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-415	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-416	10	720	220	580	-	22.0	1.29	150.0	115.3	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-417	12	1,050	315	840	-	31.9	1.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-418	12	960	315	770	-	29.1	1.64	150.0	113.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-501	12	1,050	315	840	-	31.9	1.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-502	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-503	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-504	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-505	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-506	6	300	300	300	22	11.5	0.72	150.0	117.3	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-507	6	150	70	120	-	4.6	0.20	150.0	101.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-508	8	510	155	410	20	15.6	0.96	150.0	116.8	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-509	10	700	210	560	-	21.3	1.23	150.0	114.6	2	55	90.0	3/4"	PRICE	SDV	1,2,3
VAV-510	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-511	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-512	12	1,050	315	840	-	31.9	0.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2
VAV-513	6	150	70	145	-	4.6	0.25	150.0	104.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-514	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-515	6	300	90	240	22	9.2	0.49	150.0	112.1	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-516	10	720	220	580	-	22.0	1.29	150.0	115.3	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-517	12	1,050	315	840	-	31.9	1.92	150.0	116.2	2	55	90.0	3/4"	PRICE	SDV	1,2,4
VAV-518	12	960	315	770	-	29.1	1.64	150.0	113.9	2	55	90.0	3/4"	PRICE	SDV	1,2,4

NOTES:

1. 0.3" MAX S.P. DROP THRU UNIT & COIL AT MAX. CFM.
2. MAX. WATER PRESSURE DROP OF 5 FT. W.P.D.
3. ~~PROVIDE 3-WAY VALVE ON COIL.~~
4. VAV BOX CONNECTED TO OCCUPANCY SENSOR(S) IN SPACE(S) IT SERVES.

1

PLOT DATE: 10/16/2025 2:42:48 PM TEMPLATE VERSION: 23.0.4

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OWNER'S MANAGEMENT
KRAMER MANAGEMENT GROUP
1305 S. WASHINGTON AVE. SUITE 101
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CONSTRUCTION MANAGER
THE CHRISTMAN COMPANY
1265 WASHINGTON BLVD, SUITE 200
DETROIT, MI 48226

STATE OF MICHIGAN — NATHANIEL C. STALKER — 61101 — REGISTERED PROFESSIONAL ENGINEER

10/17/2025

REVISION NO. | DESCRIPTION | DATE

1 | ADDENDUM No. 1 | 10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M-705

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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FAN COIL UNITS

MARK		SUPPLY FAN				COOLING										HEATING							SELECTION BASED ON			
NO.	CONFIGURATION	AIRFLOW (CFM)	ESP (IN WC)	HP	FLA	SENSIBLE CAPACITY (BTU)	TOTAL CAPACITY (BTU)	EAT (DB) (°F)	EAT (WB) (°F)	LAT (DB) (°F)	LAT (WB) (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	PRESSURE DROP (FT WG)	SENSIBLE CAPACITY (BTU)	EAT (DB) (°F)	LAT (DB) (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	PRESSURE DROP (FT WG)	VOLTAGE	PH.	FILTER	MANUFACTURER	MODEL	REMARKS
FCU-101	HORIZONTAL CONCEALED	500	0.25	0.25	2.90	12,140.0	15,260.0	75.0	63.0	53.4	52.6	42	57	2.1	2.3	15,555.0	70	98	150	110	0.8	2.30	115	1	MERV 8	JOHNSON CONTROLS	FHP-06	1,2,3
FCU-102	HORIZONTAL CONCEALED	400	0.25	0.25	2.90	9,830.0	12,830.0	75.0	63.0	52.5	51.7	42	57	1.7	6.6	11,780.0	70	97	150	110	0.6	1.06	115	1	MERV 8	JOHNSON CONTROLS	FHP-04	3
FCU-103	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	3
FCU-104	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,268.0	36,535.0	76.0	63.0	52.9	52.9	42	57	4.9	4.5	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-105	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-106	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-107	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-108	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-109	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-110	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-111	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-112	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-113	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-114	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-115	EXPOSED WALL MOUNTED	436	0.00	0.05	0.40	9,078.0	12,487.0	80.0	67.0	55.0	55.0	42	57	2.0	7.6	14,701.0	70	90	150	100	1.0	7.40	115	1	WASHABLE	MULTIAQUA	MHCFC4W-04-1	3
FCU-116	EXPOSED WALL MOUNTED	436	0.00	0.05	0.40	9,078.0	12,487.0	80.0	67.0	55.0	55.0	42	57	2.0	7.6	14,701.0	70	90	150	110	1.0	7.40	115	1	WASHABLE	MULTIAQUA	MHCFC4W-04-1	1,2,3
FCU-117	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-118	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-119	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-120	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-121	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-122	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-123	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-124	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-125	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	3
FCU-201	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-202	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-203	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-204	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-205	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-206	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-207	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	3
FCU-208	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	1,3
FCU-209	HORIZONTAL CONCEALED	400	0.25	0.25	2.90	9,830.0	12,830.0	75.0	63.0	52.5	51.7	42	57	1.7	6.6	11,780.0	70	97	150	110	0.6	1.06	115	1	MERV 8	JOHNSON CONTROLS	FHP-04	3
FCU-210	HORIZONTAL CONCEALED	500	0.25	0.25	2.90	12,140.0	15,260.0	75.0	63.0	53.4	52.6	42	57	2.1	2.3	15,555.0	70	98	150	110	0.8	2.30	115	1	MERV 8	JOHNSON CONTROLS	FHP-06	1,2,3
FCU-211	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-212	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	1,3
FCU-301	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-302	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-303	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-304	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-305	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-306	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-307	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	3
FCU-308	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	1,3
FCU-309	HORIZONTAL CONCEALED	400	0.25	0.25	2.90	9,830.0	12,830.0	75.0	63.0	52.5	51.7	42	57	1.7	6.6	11,780.0	70	97	150	110	0.6	1.06	115	1	MERV 8	JOHNSON CONTROLS	FHP-04	3
FCU-310	HORIZONTAL CONCEALED	500	0.25	0.25	2.90	12,140.0	15,260.0	75.0	63.0	53.4	52.6	42	57	2.1	2.3	15,555.0	70	98	150	110	0.8	2.30	115	1	MERV 8	JOHNSON CONTROLS	FHP-06	1,2,3
FCU-311	HORIZONTAL CONCEALED	1,500	0.40	0.00	10.00	42,410.0	54,190.0	76.0	63.0	51.4	50.8	42	57	7.4	5.7	65,600.0	70	108	150	110	3.2	1.95	115	1	MERV 8	JOHNSON CONTROLS	FNP18	3
FCU-312	HORIZONTAL CONCEALED	1,500	0.40	0.00	7.70	42,410.0	54,190.0	76.0	63.0	51.4	50.8	42	57	7.4	5.7	65,600.0	70	108	150	110	3.2	1.95	115	1	MERV 8	JOHNSON CONTROLS	FNP18	3
FCU-313	HORIZONTAL CONCEALED	1,500	0.40	0.00	7.70	42,410.0	54,190.0	76.0	63.0	51.4	50.8	42	57	7.4	5.7	65,600.0	70	108	150	110	3.2	1.95	115	1	MERV 8	JOHNSON CONTROLS	FNP18	1,2,3
FCU-314	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-315	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	1,3
FCU-401	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-402	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-403	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-404	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-405	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-406	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-407	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	3
FCU-408	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	1,3
FCU-409	HORIZONTAL CONCEALED	400	0.25	0.25	2.90	9,830.0	12,830.0	75.0	63.0	52.5	51.7	42	57	1.7	6.6	11,780.0	70	97	150	110	0.6	1.06	115	1	MERV 8	JOHNSON CONTROLS	FHP-04	3
FCU-410	HORIZONTAL CONCEALED	500	0.25	0.25	2.90	12,140.0	15,260.0	75.0	63.0	53.4	52.6	42	57	2.1	2.3	15,555.0	70	98	150	110	0.8	2.30	115	1	MERV 8	JOHNSON CONTROLS	FHP-06	1,2,3
FCU-411	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-412	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	1,3
FCU-501	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-502	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-503	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-504	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-505	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	3
FCU-506	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	3
FCU-507	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	3
FCU-508	EXPOSED WALL MOUNTED	850	0.00	0.08	0.88	25,156.0	37,523.0	80.0	67.0	55.0	55.0	42	57	8.0	17.9	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-36-H-3	1,3
FCU-509	HORIZONTAL CONCEALED	400	0.25	0.25	2.90	9,830.0	12,830.0	75.0	63.0	52.5	51.7	42	57	1.7	6.6	11,780.0	70	97	150	110	0.6	1.06	115	1	MERV 8	JOHNSON CONTROLS	FHP-04	3
FCU-510	HORIZONTAL CONCEALED	500	0.25	0.25	2.90	12,140.0	15,260.0	75.0	63.0	53.4	52.6	42	57	2.1	2.3	15,555.0	70	98	150	110	0.8	2.30	115	1	MERV 8	JOHNSON CONTROLS	FHP-06	1,2,3
FCU-511	EXPOSED WALL MOUNTED	600	0.00	0.05	0.77	17,789.0	26,588.0	80.0	67.0	55.0	55.0	42	57	6.0	14.5	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-24-H-3	1,3
FCU-512	EXPOSED WALL MOUNTED	480	0.00	0.05	0.72	13,220.0	19,633.0	80.0	67.0	55.0	55.0	42	57	4.8	14.6	0.0	0	0	0	0	0.0	0.00	115	1	WASHABLE	MULTIAQUA	MHQWW-18-H-3	1,3
FCU-601	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3
FCU-602	HORIZONTAL CONCEALED	1,200	0.40	0.00	7.70	30,865.0	38,045.0	76.0	63.0	52.5	51.7	42	57	5.3	4.4	0.0	0	0	0	0	0.0	0.00	115	1	MERV 8	JOHNSON CONTROLS	FNP12	3

NOTES:

1. PROVIDE 3-WAY VALVE ON COOLING COIL.
2. PROVIDE 3-WAY VALVE ON HEATING COIL.
3. PROVIDE CONDENSATE PUMP.

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STATE OF MICHIGAN — NATHANIEL C. METALKER — ENGINEER — No. 61101 — REGISTERED PROFESSIONAL

9/25/2025

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M-706

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OUTSIDE AIR / ASHRAE STANDARD 62.1 SUMMARY

	Rp cfm/person	Pz People	Ra cfm/ft²	Az (ft²)	Voz (cfm)	Cooling Ez	Cooling Voz (cfm)	Heating Ez	Heating Voz (cfm)
AHU-1	0.00236	529.097724	0.000308	35,814	4,815		4,815		6,018
Zone 01-13	0.00236	18.000000	0.000305	898	144	1.00	144	0.80	180
Zone 01-14	0.00236	2.000000	0.000305	276	27	1.00	27	0.80	33
Zone 01-15	0.00236	2.000000	0.000305	601	46	1.00	46	0.80	58
Zone 01-18	0.00236	1.000000	0.000061	614	12	1.00	12	0.80	15
Zone 01-19	0.00236	2.000000	0.000305	244	25	1.00	25	0.80	31
Zone 01-20	0.00236	2.274431	0.000305	992	71	1.00	71	0.80	89
Zone 01-21	0.00236	10.000000	0.000305	435	76	1.00	76	0.80	95
Zone 01-22	0.00236	14.000000	0.000305	378	93	1.00	93	0.80	116
Zone 01-23	0.00236	11.000000	0.000536	804	140	1.00	140	0.80	175
Zone 01-24	0.00236	2.000000	0.000305	253	25	1.00	25	0.80	31
Zone 01-27	0.00236	24.000000	0.000305	767	166	1.00	166	0.80	207
Zone 01-28	0.00236	2.000000	0.000305	244	25	1.00	25	0.80	31
Zone 01-29	0.00236	1.000000	0.000305	117	12	1.00	12	0.80	15
Zone 01-30	0.00236	4.000000	0.000305	118	27	1.00	27	0.80	34
Zone 01-31	0.00236	2.000000	0.000305	254	25	1.00	25	0.80	32
Zone 01-32	0.00236	2.000000	0.000305	121	17	1.00	17	0.80	22
Zone 01-33	0.00236	20.000000	0.000305	749	145	1.00	145	0.80	181
Zone 01-34	0.00236	13.000000	0.000305	883	118	1.00	118	0.80	147
Zone 02-14	0.00236	20.000000	0.000305	749	145	1.00	145	0.80	181
Zone 02-15	0.00236	2.000000	0.000305	276	27	1.00	27	0.80	33
Zone 02-16	0.00236	2.000000	0.000305	601	46	1.00	46	0.80	58
Zone 02-17	0.00236	1.000000	0.000061	614	12	1.00	12	0.80	15
Zone 02-20	0.00236	2.000000	0.000305	244	25	1.00	25	0.80	31
Zone 02-21	0.00236	2.274431	0.000305	992	71	1.00	71	0.80	89
Zone 02-23	0.00236	10.000000	0.000305	435	76	1.00	76	0.80	95
Zone 02-24	0.00236	11.000000	0.000536	804	140	1.00	140	0.80	175
Zone 02-27	0.00236	2.000000	0.000305	121	17	1.00	17	0.80	22
Zone 02-28	0.00236	13.000000	0.000305	883	118	1.00	118	0.80	147
Zone 02-29	0.00236	2.000000	0.000305	244	25	1.00	25	0.80	31
Zone 02-30	0.00236	1.000000	0.000305	117	12	1.00	12	0.80	15
Zone 02-31	0.00236	4.000000	0.000305	118	27	1.00	27	0.80	34
Zone 02-32	0.00236	14.000000	0.000305	378	93	1.00	93	0.80	116
Zone 02-34	0.00236	2.000000	0.000305	253	25	1.00	25	0.80	31
Zone 02-35	0.00236	18.000000	0.000305	898	144	1.00	144	0.80	180
Zone 02-36	0.00236	24.000000	0.000305	767	166	1.00	166	0.80	207
Zone 02-56	0.00236	2.000000	0.000305	254	25	1.00	25	0.80	32
Zone 03-13	0.00236	18.000000	0.000305	898	144	1.00	144	0.80	180
Zone 03-14	0.00236	2.000000	0.000305	276	27	1.00	27	0.80	33
Zone 03-15	0.00236	2.000000	0.000305	601	46	1.00	46	0.80	58
Zone 03-18	0.00236	1.000000	0.000061	614	12	1.00	12	0.80	15
Zone 03-19	0.00236	10.000000	0.000305	435	76	1.00	76	0.80	95
Zone 03-20	0.00236	2.274431	0.000305	992	71	1.00	71	0.80	89
Zone 03-21	0.00236	2.000000	0.000305	244	25	1.00	25	0.80	31
Zone 03-23	0.00236	11.000000	0.000536	804	140	1.00	140	0.80	175
Zone 03-26	0.00236	2.000000	0.000305	121	17	1.00	17	0.80	22
Zone 03-27	0.00236	13.000000	0.000305	883	118	1.00	118	0.80	147
Zone 03-30	0.00236	2.000000	0.000305	244	25	1.00	25	0.80	31
Zone 03-31	0.00236	1.000000	0.000305	117	12	1.00	12	0.80	15
Zone 03-32	0.00236	4.000000	0.000305	118	27	1.00	27	0.80	34
Zone 03-33	0.00236	14.000000	0.000305	378	93	1.00	93	0.80	116
Zone 03-35	0.00236	2.000000	0.000305	253	25	1.00	25	0.80	31
Zone 03-36	0.00236	20.000000	0.000305	749	145	1.00	145	0.80	181
Zone 03-37	0.00236	24.000000	0.000305	767	166	1.00	166	0.80	207
Zone 03-55	0.00236	2.000000	0.000305	254	25	1.00	25	0.80	32
Zone 04-13	0	0.000000	0.000254	824	41	1.00	41	0.80	52
Zone 04-14	0.00236	20.000000	0.000305	749	145	1.00	145	0.80	181
Zone 04-15	0.00236	2.000000	0.000305	276	27	1.00	27	0.80	33
Zone 04-16	0.00236	2.000000	0.000305	601	46	1.00	46	0.80	58
Zone 04-19	0.00236	1.000000	0.000061	614	12	1.00	12	0.80	15
Zone 04-20	0.00236	2.000000	0.000305	244	25	1.00	25	0.80	31
Zone 04-21	0.00236	10.000000	0.000305	435	76	1.00	76	0.80	95
Zone 04-22	0.00236	2.274431	0.000305	992	71	1.00	71	0.80	89
Zone 04-24	0.00236	11.000000	0.000536	804	140	1.00	140	0.80	175
Zone 04-25	0.00236	2.000000	0.000305	121	17	1.00	17	0.80	22
Zone 04-28	0.00236	24.000000	0.000305	767	166	1.00	166	0.80	207
Zone 04-29	0.00236	2.000000	0.000305	244	25	1.00	25	0.80	31
Zone 04-30	0.00236	1.000000	0.000305	117	12	1.00	12	0.80	15
Zone 04-31	0.00236	4.000000	0.000305	118	27	1.00	27	0.80	34
Zone 04-32	0.00236	14.000000	0.000305	378	93	1.00	93	0.80	116
Zone 04-34	0.00236	2.000000	0.000305	253	25	1.00	25	0.80	31
Zone 04-35	0.00236	18.000000	0.000305	898	144	1.00	144	0.80	180
Zone 04-36	0.00236	13.000000	0.000305	883	118	1.00	118	0.80	147
Zone 04-55	0.00236	2.000000	0.000305	254	25	1.00	25	0.80	32
AHU-4	0.002631	240.969515	0.000328	18,130	2,514		2,514		3,143
Zone 00-00	0.00236	2.000000	0.000305	292	27	1.00	27	0.80	34
Zone 00-01	0.00236	2.000000	0.000305	208	22	1.00	22	0.80	28
Zone 00-02	0.00236	3.000000	0.000305	631	53	1.00	53	0.80	66
Zone 00-03	0	0.000000	0.000305	920	55	1.00	55	0.80	69
Zone 00-08	0	0.000000	0	1,130	0	1.00	0	0.80	0
Zone 00-16	0.00236	26.291123	0.000298	2,688	289	1.00	289	0.80	362
Zone 00-17	0.004719	22.000000	0.00061	1,055	347	1.00	347	0.80	433
Zone 00-18	0.00236	12.000000	0.000305	382	83	1.00	83	0.80	104
Zone 00-19	0.00236	12.000000	0.000305	440	86	1.00	86	0.80	108
Zone 00-20	0.00236	62.000000	0.000305	1,652	409	1.00	409	0.80	511
Zone 00-21	0.00236	7.000000	0.00061	407	84	1.00	84	0.80	105
Zone 00-22	0.00236	2.000000	0.000305	464	38	1.00	38	0.80	47
Zone 00-23	0.00236	4.000000	0.000305	163	30	1.00	30	0.80	37
Zone 00-24	0.00236	2.000000	0.00061	161	29	1.00	29	0.80	37
Zone 00-25	0	0.000000	0	790	0	1.00	0	0.80	0
Zone 00-26	0	0.000000	0	200	0	1.00	0	0.80	0
Zone 00-27	0	0.000000	0.000305	391	23	1.00	23	0.80	29
Zone 00-28	0.00236	22.000000	0.00037	645	157	1.00	157	0.80	196
Zone 00-32	0.00236	4.000000	0.000462	297	47	1.00	47	0.80	59
Zone 00-35	0.00236	2.000000	0.000305	113	17	1.00	17	0.80	21
Zone 00-36	0.00236	2.000000	0.000305	107	16	1.00	16	0.80	21
Zone 00-37	0.00236	2.000000	0.000305	193	22	1.00	22	0.80	27
Zone 00-38	0.00236	1.000000	0.000305	134	13	1.00	13	0.80	16
Zone 00-39	0.00236	6.000000	0.000305	119	37	1.00	37	0.80	46
Zone 00-40	0.00236	8.000000	0.000305	713	83	1.00	83	0.80	103
Zone 00-47	0.004719	5.678392	0.00061	1,704	261	1.00	261	0.80	327
Zone 00-50	0	0.000000	0.000305	965	58	1.00	58	0.80	72
Zone 00-51	0	0.000000	0.000305	344	21	1.00	21	0.80	26
Zone 00-52	0.00236	30.000000	0.000305	631	188	1.00	188	0.80	235
Zone 00-54	0	0.000000	0	50	0	1.00	0	0.80	0
Zone 00-55	0.00236	2.000000	0.000305	142	19	1.00	19	0.80	23

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STATE OF MICHIGAN
NATHANIEL C. STALKER
ENGINEER
No. 51101
REGISTERED PROFESSIONAL
9/25/2025

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M-707

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1 LEVEL 1 MECHANICAL AIR BALANCE
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/15/2025 2:43:11 PM TEMPLATE VERSION: 23.0.4

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NATHANIEL C. STALKER — STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER — No. 51101
9/25/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION

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26234.000
DATE
29 SEPTEMBER 2025
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CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 1 MECHANICAL AIR BALANCE
SHEET NO.
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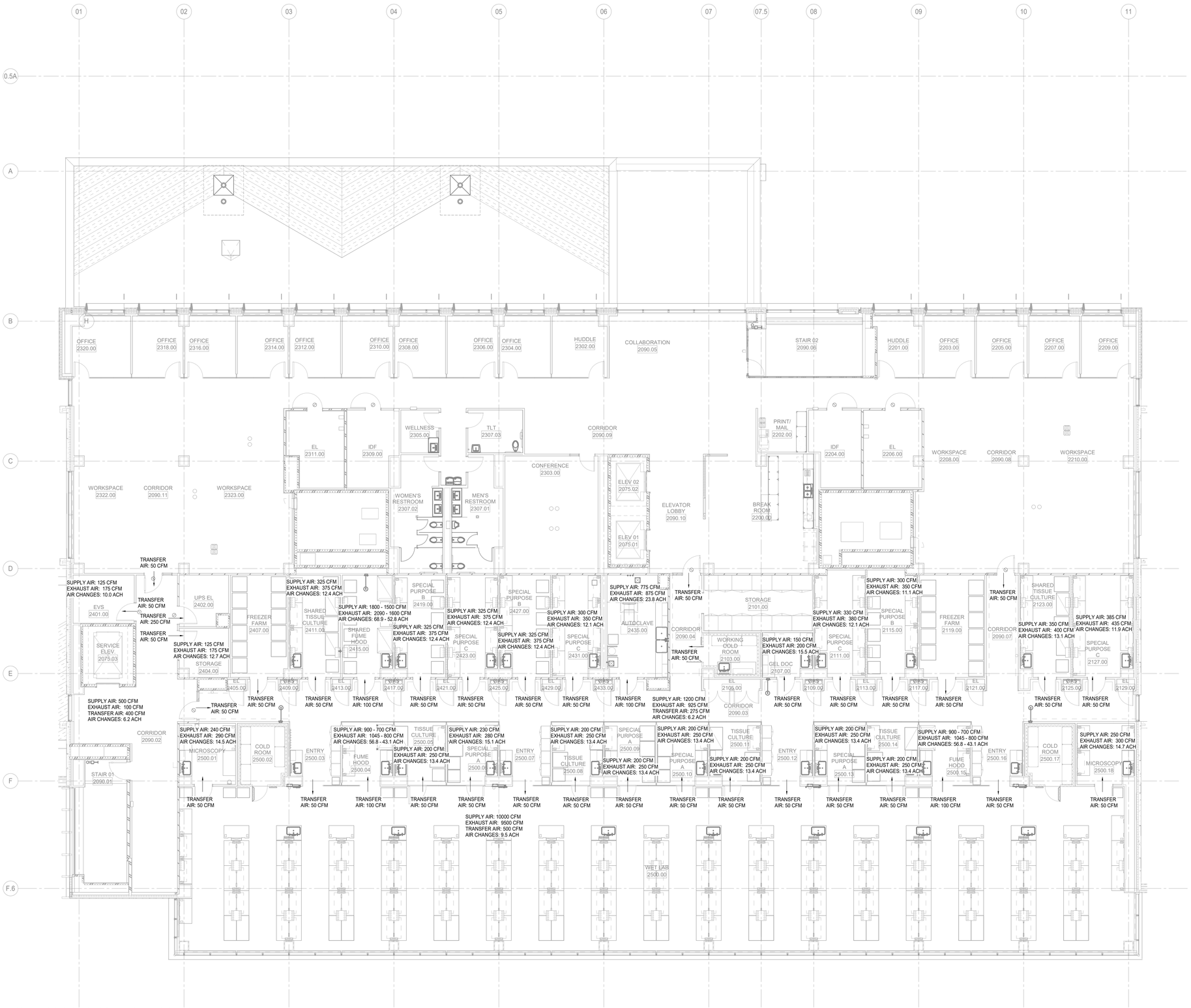

1 LEVEL 2 MECHANICAL AIR BALANCE
SCALE: 1/8" = 1'-0"

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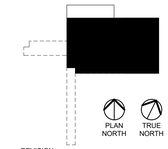
STATE OF MICHIGAN — NATHANIEL C. STALKER — ENGINEER — No. 61101 — PROFESSIONAL ENGINEER
9/25/2025

KEY PLAN



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SHEET TITLE
LEVEL 2 MECHANCIAL AIR BALANCE

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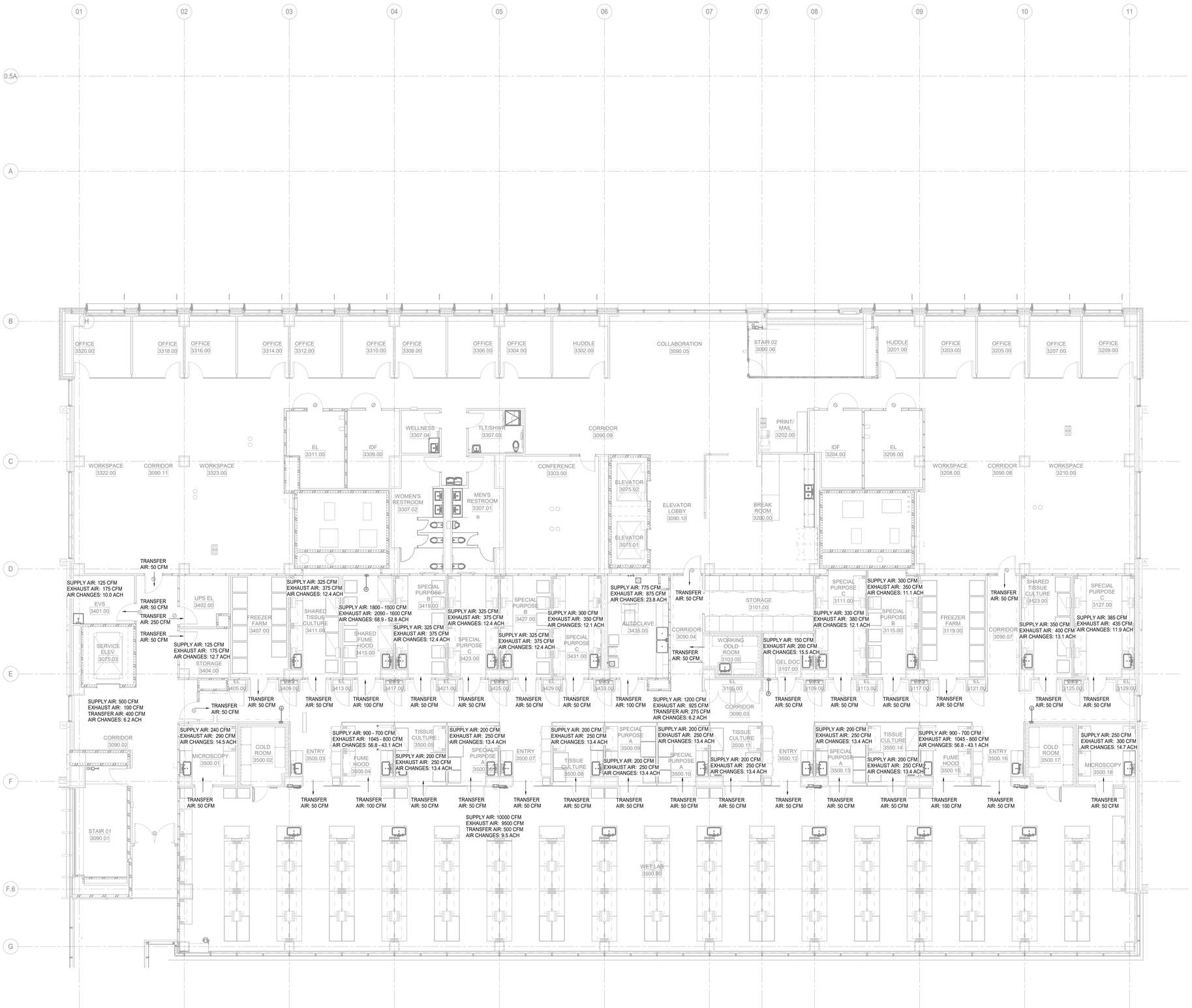

1 LEVEL 3 MECHANICAL AIR BALANCE

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

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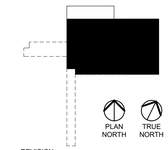
NATHANIEL C. STALKER — No. 51101 — PROFESSIONAL ENGINEER — STATE OF MICHIGAN

9/25/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
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DATE
29 SEPTEMBER 2025

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SHEET TITLE
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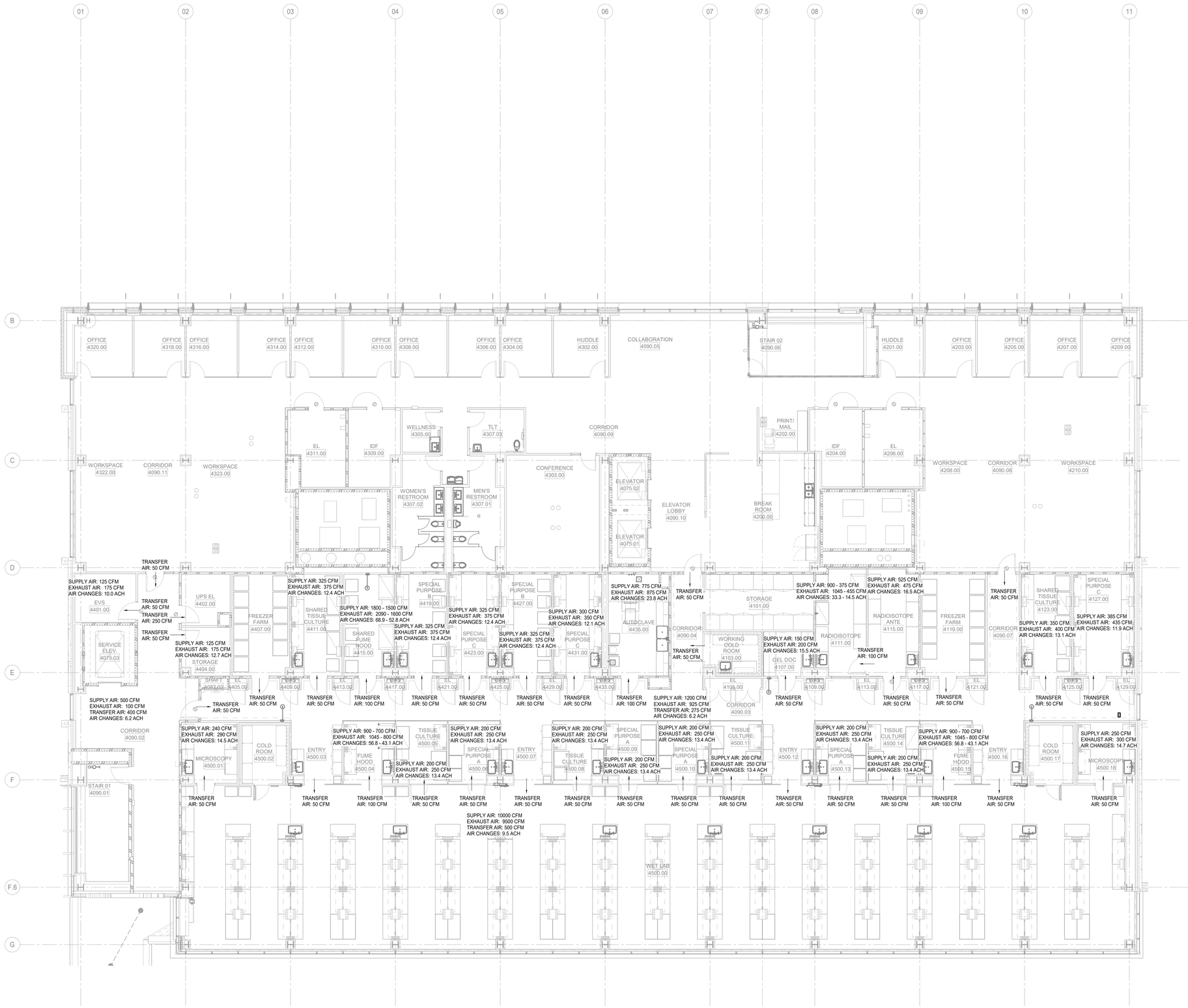

1 LEVEL 4 MECHANICAL AIR BALANCE
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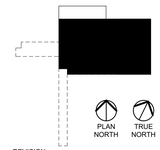

PLAN NORTH
TRUE NORTH

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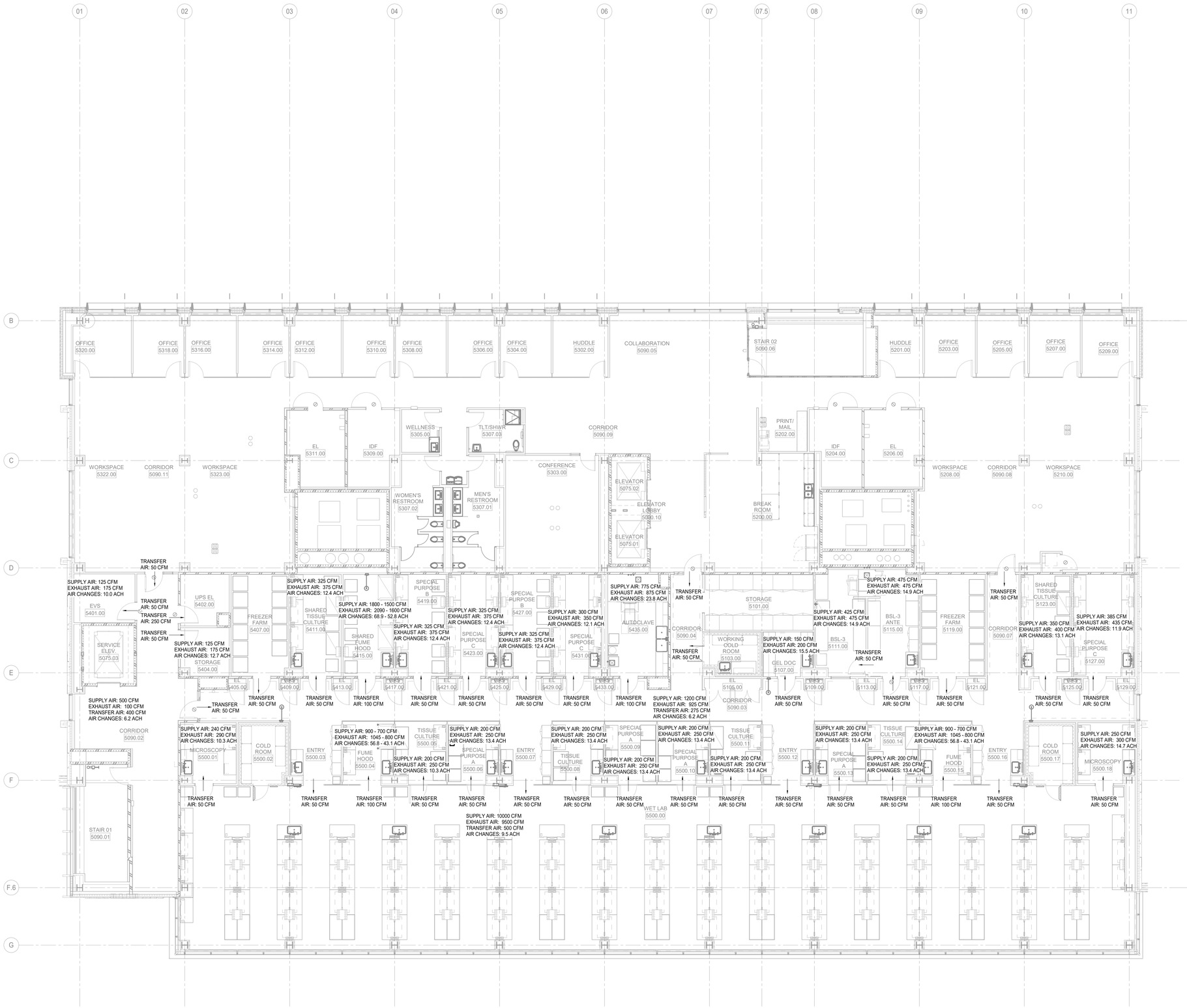

1 LEVEL 5 MECHANICAL AIR BALANCE
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9/25/2025

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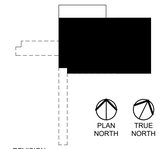

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SPRINKLER ZONE SCHEDULE

MARK	LOCATION	APPROX. COVERAGE AREA	SYSTEM TYPE	MIN. PRESSURE LISTING	MIN. HAZARD CLASSIFICATION	NOTES
ZONE 1	LEVEL 1	30,870 FT²	WET	175 PSI	HC-1	CONTAINS LEVEL 1 SERVICE DOCK. ZONE CONTROL LOCATED IN STAIR 1.
ZONE 2	LEVEL 2	27,037 FT²	WET	175 PSI	HC-1	ZONE CONTROL LOCATED IN STAIR 1.
ZONE 3	LEVEL 3	29,761 FT²	WET	175 PSI	HC-1	CONTAINS BRIDGE. ZONE CONTROL LOCATED IN STAIR 1.
ZONE 4	LEVEL 4	27,048 FT²	WET	175 PSI	HC-1	ZONE CONTROL LOCATED IN STAIR 1.
ZONE 5	LEVEL 5	27,048 FT²	WET	175 PSI	HC-1	ZONE CONTROL LOCATED IN STAIR 1.
ZONE 6	PENTHOUSE	21,888 FT²	WET	175 PSI	HC-1	ZONE CONTROL LOCATED IN STAIR 1.

SPRINKLER PIPING HANGER SCHEDULE (MAX DISTANCE BETWEEN HANGERS)

	NOMINAL PIPE SIZE (INCHES)											
	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"	6"	8"
STEEL PIPE EXCEPT THREADED LIGHTWALL	N/A	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0
CPVC	5-6	6-0	6-6	7-0	8-0	9-0	10-0	N/A	N/A	N/A	N/A	N/A

HANGER ROD SIZES
3/8" DIAMETER FOR PIPE 4" AND SMALLER
1/2" DIAMETER FOR PIPE 5"-8"
5/8" DIAMETER FOR PIPE 10" AND LARGER

HAZARD OCCUPANCY IDENTIFICATION SCHEDULE

SYMBOL	OCCUPANCY	MINIMUM WATER DENSITY	MINIMUM REMOTE AREA	MAXIMUM SPRINKLER COVERAGE AREA		MAXIMUM SPRINKLER SPACING	
				STANDARD COVERAGE	EXTENDED COVERAGE	STANDARD COVERAGE	EXTENDED COVERAGE
	HC-1	.10 GPM/FT²	1,500 FT²	225 FT²	400 FT²	15'-0"	20'-0"
	HC-2	.20 GPM/FT²	2,500 FT²	130 FT²	400 FT²	15'-0"	20'-0"
	HC-3	.30 GPM/FT²	2,500 FT²	100 FT²	400 FT²	12'-0"	20'-0"

NOTES
1. MAXIMUM SPRINKLER COVERAGE AREA AND SPRINKLER SPACING BASED ON NONCOMBUSTIBLE, UNOBSTRUCTED CONSTRUCTION WITH A HYDRAULICALLY CALCULATED SYSTEM TYPE. VALUES MAY BE ALTERED IF THE CONSTRUCTION TYPE DIFFERS FROM THE ASSUMED. REFER TO FM DATA SHEETS 2-0 AND 3-26.
2. MAXIMUM SPRINKLER COVERAGE AREA AND SPRINKLER SPACING ARE FOR PENDENT AND UPRIGHT SPRINKLERS ONLY. FOR VALUES APPLICABLE TO SIDEWALL, RESIDENTIAL, CMSA, AND ESFR SPRINKLER, REFER TO FM DATA SHEET 2-0 SECTION 2.5.2.3.1.
3. A REDUCTION IN DESIGN AREA FOR HC-2 AND HC-3 OCCUPANCIES IS PERMITTED PER FMDS 3-26 TABLE 2.3.1.10.
4. MINIMUM REMOTE AREAS ASSUME FLAT CEILINGS AND WET PIPE CONFIGURATIONS. DESIGNER SHALL REFER TO FM DATA SHEET 2-0 FOR REQUIREMENTS OF ALTERNATE CONFIGURATIONS.

FIRE PUMP SCHEDULE

MARK	SERVICE	PUMP TYPE	CAPACITY	TOTAL BOOST	MAX PUMP RPM	PUMP MAX BREAK HP	MOTOR HP	MOTOR VOLTAGE	SELECTION BASED ON
FP-1	FIRE PUMP	HORIZONTAL SPLIT CASE	750 GPM	140 PSI	1,785	106	100	480/3/60	AC FIRE PUMP 8200 SERIES 8x6x18F
JP-1	JOCKEY PUMP	VERTICAL INLINE	8 GPM	150 PSI	3,500		3	208/3/60	AC FIRE PUMP e-SV SERIES 3SV

NOTES:

1. FIRE PUMP CONTROLLER TO BE DIGITAL SOFT-START/SOFT-STOP WITH AUTOMATIC TRANSFER SWITCH.
2. PUMP CAPACITIES TO BE CONFIRMED THROUGH HYDRAULIC CALCULATIONS. DESIGNER MAY ELECT TO ADJUST PUMP CAPACITIES AND/OR TOTAL BOOST AS REQUIRED PENDING VERIFICATION WITH ELECTRICAL ENGINEER.
3. RESIDUAL PRESSURE AT PUMP SECTION SHALL BE RESIDUAL CITY WATER PRESSURE AT 150% OF PUMP CAPACITY AND SHALL INCLUDE A SAFETY FACTOR OF 10% OR 10 PSI, WHICHEVER IS LESS FOR SYSTEM PRESSURE.

PIPING AND VALVE LEGEND

	ELBOW - TURNED DOWN
	ELBOW - TURNED UP
	TEE - DOWN
	TEE - UP
	TOP CONNECTION
	BOTTOM CONNECTION
	REDUCER
	UNION
	FLANGED CONNECTION
	BLIND FLANGE
	CAP OR PLUG
	PIPE BREAK
	VALVE (GENERIC)
	OS&Y VALVE
	BALL VALVE
	INDICATING TYPE BUTTERFLY VALVE
	CHECK VALVE
	POST-INDICATOR VALVE
	BACKFLOW PREVENTER - DOUBLE CHECK
	FIRE DEPARTMENT HOSE VALVE
	PRESSURE REDUCING FIRE DEPT. HOSE VALVE
	PRESSURE REDUCING VALVE
	PRESSURE RELIEF VALVE
VS	VALVE SUPERVISORY/ TAMPER SWITCH
WF	WATERFLOW SWITCH
	PRESSURE GAUGE
	FIRE PUMP SUCTION CONTROL VALVE
	FIRE PUMP WITH DRIVER
	RISER/STANDPIPE
	WET SYSTEM RISER
	WALL-MOUNTED TEST HEADER - NUMBER OF OUTLETS AS INDICATED ON PLANS
	FLUSH MOUNT 3-WAY FIRE DEPARTMENT CONNECTION
	FREESTANDING 3-WAY FIRE DEPARTMENT CONNECTION
	DIRECTION OF FLOW
	DIRECTION OF SLOPE (DOWN)
[0-0]	CENTERLINE OF PIPE ABOVE FINISHED FLOOR

ABBREVIATIONS

ABD	AUTOMATIC BALL DRIP
AFF	ABOVE FINISHED FLOOR
AVV	AIR VENTING VALVE
BFP	BACKFLOW PREVENTER
BV	BUTTERFLY VALVE
CLG	CEILING
CONT	CONTINUATION
CTE	CONNECT TO EXISTING
DRY	DRY PIPE SPRINKLER SYSTEM
DN	DOWN
(E)	EXISTING
EC	ELECTRICAL CONTRACTOR
ELEV	ELEVATION
F	FIRE SERVICE SUPPLY PIPING
FM	FACTORY MUTUAL
FAC	FIRE ALARM CONTRACTOR
FDC	FIRE DEPARTMENT CONNECTION
FFE	FINISHED FLOOR ELEVATION
FHC	FIRE DEPARTMENT HOSE VALVE CABINET
FHV	FIRE DEPARTMENT HOSE VALVE
FP	FIRE PUMP
FPC	FIRE PUMP CONTROLLER
FSC	FIRE SUPPRESSION CONTRACTOR
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
JP	JOCKEY PUMP
JPC	JOCKEY PUMP CONTOLLER
MC	MECHANICAL CONTRACTOR
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
OS&Y	OUTSIDE STEM AND YOLK
PC	PLUMBING CONTRACTOR
PIV	POST INDICATOR VALVE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
SP	STANDPIPE
TH	TEST HEADER
TYP	TYPICAL
VS	TAMPER SWITCH/VALVE SUPERVISORY
WF	WATERFLOW SWITCH
WPIV	WALL INDICATOR VALVE

WATER SUPPLY TEST DATA

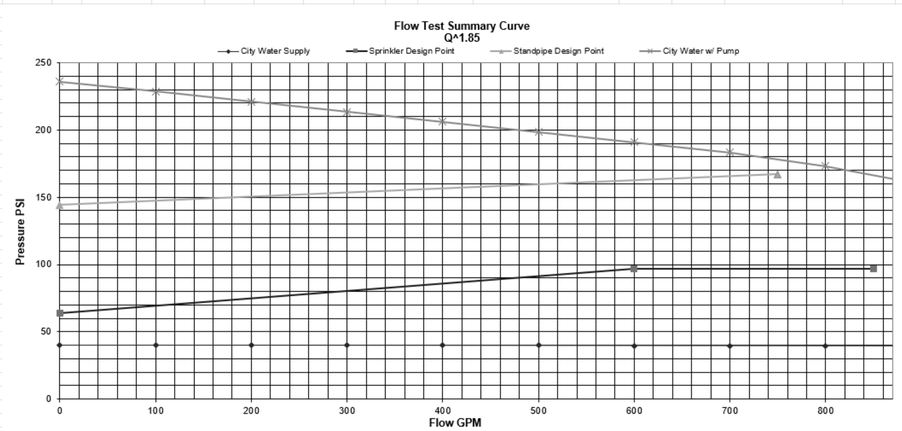
TEST ID	456480
DATE	02/26/2024
TEST LOCATION	545 E. CANFIELD RD.
WATER DISTRICT	DETROIT WATER & SEWAGE DEPARTMENT

TEST SUMMARY

STATIC PRESSURE	40 PSI
RESIDUAL PRESSURE	38 PSI
MEASURED FLOW	1,850 GPM
PROJECTED FLOW	6,413 GPM @ 20 PSI
OUTLET SIZE	3 3/4"
COEFFICIENT	0.9

Project: Science Research Building

Test Date:	4/20/2024			**Design Basis:**	0.2 GPM/SF over 2500 SF	**Balancing Factor:**	1.2
Static Hydrant:	0			**Sprinkler Design:**	850 GPM / 96.6 PSI	**Sprinkler K-factor:**	5.6
Flow Hydrant:	0			**Sprinkler Riser/Tie-in Size:**	6 in / 6 in	**Total Hose Demand:**	250 GPM
Ps	40.0 PSI	**Test Static Pressure Reading**		**Standpipe Design:**	750 GPM / 167 PSI	**Est. Floor Pressure Loss:**	15.0 PSI
Pr	38.0 PSI	**Test Residual Pressure Reading**		**Standpipe Riser/Tie-in Size:**	6 in / 6 in	**Est. Fixed Pressure Losses:**	8.0 PSI
GPMr	1925 GPM	**Test Flow at Residual Pressure**		**Fire Pump Rating:**	750 GPM / 140 PSI	**Dry Pipe/Pitched Roof:**	N / N
				PSI Headroom Sprinkler:	69.9 PSI 42%	**PSI Headroom Standpipe:**	12.61329 7%
				GPM Headroom Sprinkler:	600 GPM 71%	**GPM Headroom Standpipe:**	95.85419 13%



FIRE SUPPRESSION GENERAL NOTES:

1. DO NOT SCALE DRAWINGS.
2. THE FIRE SUPPRESSION SYSTEM(S) AND SPECIFICATION ARE DIAGRAMMATIC ONLY AND ARE INTENDED FOR USE BY THE LICENSED SYSTEM DESIGNER AS A REFERENCE OF THE DESIGN CRITERIA ONLY.
3. THE FOLLOWING CODES AND STANDARDS SHALL GOVERN THE DESIGN OF THE FIRE SUPPRESSION SYSTEM:
   A. MICHIGAN BUILDING CODE (MBC), 2021 EDITION
   B. INTERNATIONAL FIRE CODE (IFC), 2021 EDITION
   C. NFPA 13 – STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, 2019 EDITION
   D. NFPA 14 - STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS, 2019 EDITION
   E. NFPA 20 – STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION, 2019 EDITION
   F. CITY OF DETROIT LOCAL CODES AND ORDINANCES
   G. FACTORY MUTAL INSURANCE COMPANY (FM)
4. THE FIRE SUPPRESSION CONTRACTOR'S SCOPE OF WORK SHALL INCLUDE, BUT IS NOT LIMITED TO THE FOLLOWING:
   A. PRODUCTION OF COMPLETE WORKING PLANS AND HYDRAULIC CALCULATIONS IN ACCORDANCE WITH NFPA 13 AND THE DESIGN CRITERIA DRAWINGS FOR ALL FLOORS OF THE ENTIRE BUILDING.
   B. PERFORM REQUIRED FLOW TEST IN ACCORDANCE WITH NFPA 291.
   C. DESIGN AND INSTALLATION OF A COMPLETE AND FULLY OPERATIONAL AUTOMATIC FIRE PUMP COMPLIANT WITH NFPA 20 AND WITH ALL GOVERNING CODES AND STANDARDS TO SUPPLY WATER TO THE AUTOMATIC SPRINKLER SYSTEMS.
   D. DESIGN AND INSTALLATION OF A COMPLETE AND FULLY OPERATIONAL AUTOMATIC WET STANDPIPE SYSTEM COMPLIANT WITH NFPA 14 AND WITH ALL GOVERNING CODES AND STANDARDS.
   E. INSTALLATION OF A COMPLETE AND FULLY OPERATIONAL AUTOMATIC SPRINKLER SYSTEM THROUGHOUT AS SHOWN WITHIN THESE DRAWINGS COMPLIANT WITH NFPA 13 AND WITH ALL GOVERNING CODES AND STANDARDS.
   F. OBTAINING ALL LOCALLY REQUIRED PERMITS AND APPROVALS FROM THE AUTHORITY HAVING JURISDICTION AND, WHEN REQUIRED, APPROVAL OF THE OWNER'S INSURANCE CARRIER (FM INSURANCE COMPANY).
5. PRIOR TO COMMENCING INSTALLATION, THE CONTRACTOR SHALL SUBMIT ALL WORKING PLANS, HYDRAULIC CALCULATIONS, AND PRODUCT SUBMITTALS TO THE ARCHITECT/ENGINEER, AUTHORITY HAVING JURISDICTION, AND OWNER'S INSURANCE CARRIER FOR APPROVAL.
6. WORKING PLANS SHALL INCLUDE ALL APPLICABLE ITEMS AS OUTLINED IN FM DATA SHEET 2-0 SECTION 2.6.2 AND BEAR THE SEAL OF THE STATE LICENSED SPRINKLER DESIGNER RESPONSIBLE FOR THEIR PREPARATION.
7. HYDRAULIC CALCULATIONS SHALL INCLUDE ALL APPLICABLE ITEMS AS OUTLINED IN FM DATA SHEET 2-0 SECTION 2.6.3 AND BEAR THE SEAL OF THE STATE LICENSED SPRINKLER DESIGNER RESPONSIBLE FOR THEIR PREPARATION.
8. THE INDIVIDUAL RESPONSIBLE FOR THE PREPARATION OF ALL WORKING PLANS AND HYDRAULIC CALCULATIONS SHALL BE A LICENSED SPRINKLER DESIGNER, IN GOOD STANDING WITH THE STATE.
9. ALL SPRINKLER LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, HVAC DIFFUSERS, AND ALL OTHER CEILING MOUNTED EQUIPMENT. SPRINKLERS INSTALLED IN CEILINGS OF FINISHED AREAS SHALL BE SYMMETRICAL IN RELATION TO THE CEILING SYSTEM AND CEILING MOUNTED COMPONENTS AND BE LOCATED ALONG THE CENTERLINE OF THE LONG DIMENSION OF CEILING TILES.
10. ALL SPRINKLERS SHALL BE OF QUICK RESPONSE TYPE AND BE OF ORDINARY TEMPERATURE CLASSIFICATION UNLESS SPECIFICALLY REQUIRED TO BE OF A HIGHER TEMPERATURE CLASSIFICATION WITHIN THESE DOCUMENTS, NFPA 13 OR FM.
11. IN AREAS OF EXPOSED STRUCTURE, PROVIDE ADDITIONAL SPRINKLERS BELOW OBSTRUCTIONS GREATER THAN 4'-0" IN WIDTH SUCH AS DUCT WORK, OVERHEAD GARAGE DOORS, OR OTHER ARCHITECTURAL FEATURES.
12. WHERE SPRINKLERS ARE REQUIRED IN LIMITED AREAS SUBJECT TO TEMPERATURES LESS THAN 40° F SUCH AS WALK-IN COOLERS AND FREEZERS, VESTIBULES, OR EXTERIOR PROJECTIONS, DRY BARREL SPRINKLERS SUPPLIED FROM A WET PIPE SYSTEM MAY BE UTILIZED IN ACCORDANCE WITH THEIR LISTINGS AND IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
13. ALL WORK SHALL BE COMPLETED IN A WORKMANLIKE MANNER AND WORKPLACE PRACTICES SHALL CONFORM TO OSHA AND OTHER LOCALLY ENFORCED SAFETY STANDARDS. HOT WORK PERFORMED ON THE PREMISES SHALL BE AVOIDED, USING SHOP FABRICATION WHEREVER POSSIBLE.
14. ALL SPRINKLER SYSTEM PENETRATIONS REQUIRED THROUGH FIRE RATED CONSTRUCTION SHALL BE PROTECTED AS REQUIRED BY MBC 714. FIRESTOPPING SHALL BE DONE USING APPROVED METHODS AND SHALL BE USED TO MAINTAIN FIRE SEPARATION RESISTANCE RATINGS. REFER TO ARCHITECTURAL LIFE SAFETY PLANS AND SPECIFICATIONS FOR WALL RATINGS, LOCATIONS, AND CONSTRUCTION TYPE. FIRESTOPPING METHOD SHALL BE INSTALLED PER SPECIFICATION 07 84 00 TO CONFORM TO WALL RATING AND CONSTRUCTION.
15. FIRE PROTECTION PIPING SHALL BE ROUTED CONCEALED IN FINISHED AREAS WHEREVER POSSIBLE AND SHALL NOT BE ROUTED THROUGH OR ABOVE ELECTRICAL SWITCHGEAR OR ROOMS, ELEVATOR SHAFTS, ELEVATOR MACHINE ROOMS, PIPING/DUCT SHAFTS, OR TECHNOLOGY ROOMS UNLESS SUPPLYING THAT SPECIFIC AREA.
16. DRAINS ASSOCIATED WITH FIRE PROTECTION SYSTEMS SHALL BE EXTENDED FULL SIZE TO BUILDING EXTERIOR 6" ABOVE GRADE WITH SPLASH BLOCK UNLESS OTHERWISE INDICATED. DISCHARGE MUST BE IN NON-PEDESTRIAN OR NON-PUBLIC ACCESS AREAS.
17. PROVIDE INSPECTOR'S TEST CONNECTION DOWNSTREAM OF THE WATERFLOW OR INSPECTOR'S TEST AND DRAIN AT THE RISER. INSPECTOR'S TEST CONNECTION CAN BE COUPLED WITH THE AIR VENT ON A WET SPRINKLER SYSTEM.
18. FOR DRY AND PREACTION SYSTEMS, PROVIDE INSPECTOR'S TEST CONNECTION WITH DRUM DRIP LEG LOCATED ON THE END OF THE MOST DISTANT SPRINKLER PIPE FOR EACH SYSTEM
19. ALL PIPING SHALL BE HUNG AND/OR SUPPORTED IN ACCORDANCE WITH CHAPTER 9 OF NFPA 13 WITH ALL APPURTENANCES SELECTED AND LOCATED BY THE SPRINKLER DESIGNER. THE SPRINKLER DESIGNER SHALL INFORM THE STRUCTURAL ENGINEER, IN WRITING, OF ANY SUSPENDED LOAD IN EXCESS OF 400 LBS.
20. ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. SEE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR REQUIRED PRODUCTS AND INSTALLATION OF HANGARS AND SUPPORTS. FIRE PROTECTION EQUIPMENT AND PIPING SHALL NOT BE SUPPORTED FROM METAL DECK.
21. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL ITEMS NEEDED TO ELECTRONICALLY MONITOR AND SUPERVISE THE AUTOMATIC SPRINKLER SYSTEMS INSTALLED UNDER THIS PROJECT INCLUDING ALL SUPERVISORY SWITCHES AND FLOW SWITCHES. ALL SHUT OFF VALVES CAPABLE OF PREVENTING FLOW TO ONE OR MORE SPRINKLERS AND/OR FIRE DEPARTMENT HOSE VALVE SHALL BE AN INDICATING TYPE VALVE AND BE INSTALLED WITH A SUPERVISORY SWITCH MONITORED BY THE FIRE ALARM CONTROL PANEL. COORDINATE WIRING OF ELECTRICAL FIRE PROTECTION DEVICES AND EQUIPMENT WITH THE ELECTRICAL AND/OR FIRE ALARM CONTRACTOR AS APPLICABLE.
22. TEMPORARY ISOLATION VALVES SHALL BE PROVIDED AS REQUIRED DURING CONSTRUCTION FOR PRESSURE TESTING.
23. THE COMPLETE FIRE SUPPRESSION SYSTEM SHALL BE TESTED IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS. ALL TESTING SHALL BE COORDINATED WITH THE OWNER, GENERAL CONTRACTOR, AND AUTHORITY HAVING JURISDICTION NO LESS THAN 48 HOURS PRIOR TO PLANNED TESTING.
24. THE CONTRACTOR SHALL PROVIDE AND INSTALL HYDRAULIC DESIGN INFORMATION SIGNS AND GENERAL INFORMATION SIGNS IN ACCORDANCE WITH FM.
25. THE CONTRACTOR SHALL PROVIDE AND INSTALL A SUPPLY OF SPARE SPRINKLERS IN ACCORDANCE WITH FM DATA SHEET 2-0 SECTION 2.5.1.14.

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Date: 2025.09.25 14:24:29-04'00'

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
FIRE PROTECTION SYMBOL LEGEND AND NOTES
SHEET NO.
FP-001

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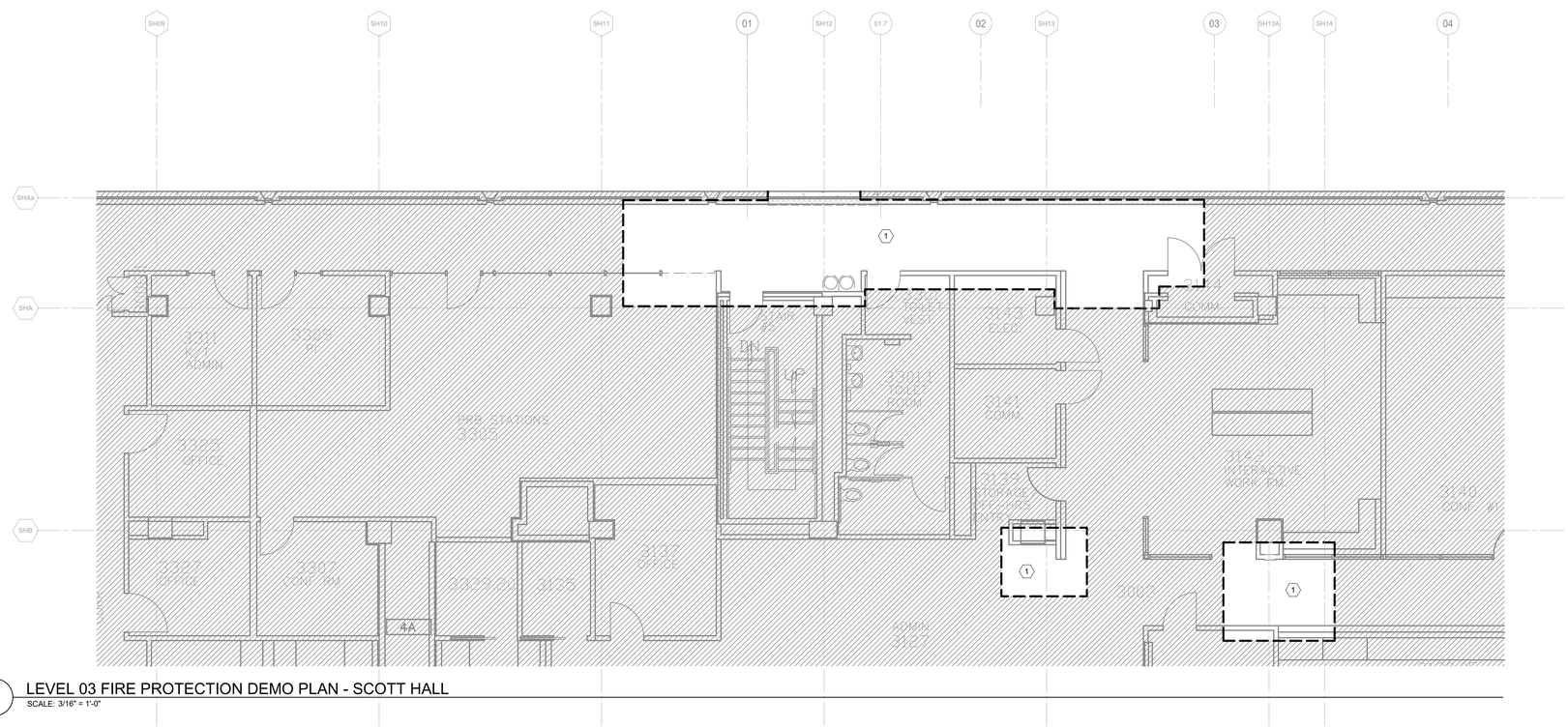

1 LEVEL 03 FIRE PROTECTION DEMO PLAN - SCOTT HALL
SCALE: 3/16" = 1'-0"

SHEET KEY NOTES:

1. RELOCATE SPRINKLER DROPS FOR NEW CEILING TILES, NEW WALLS AND NEW BRIDGE. SEE FP-103.4 FOR NEW LAYOUT.

HKS

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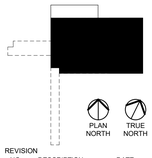
KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 3 FIRE PROTECTION DEMOLITION PLAN
SHEET NO.
FPD-103

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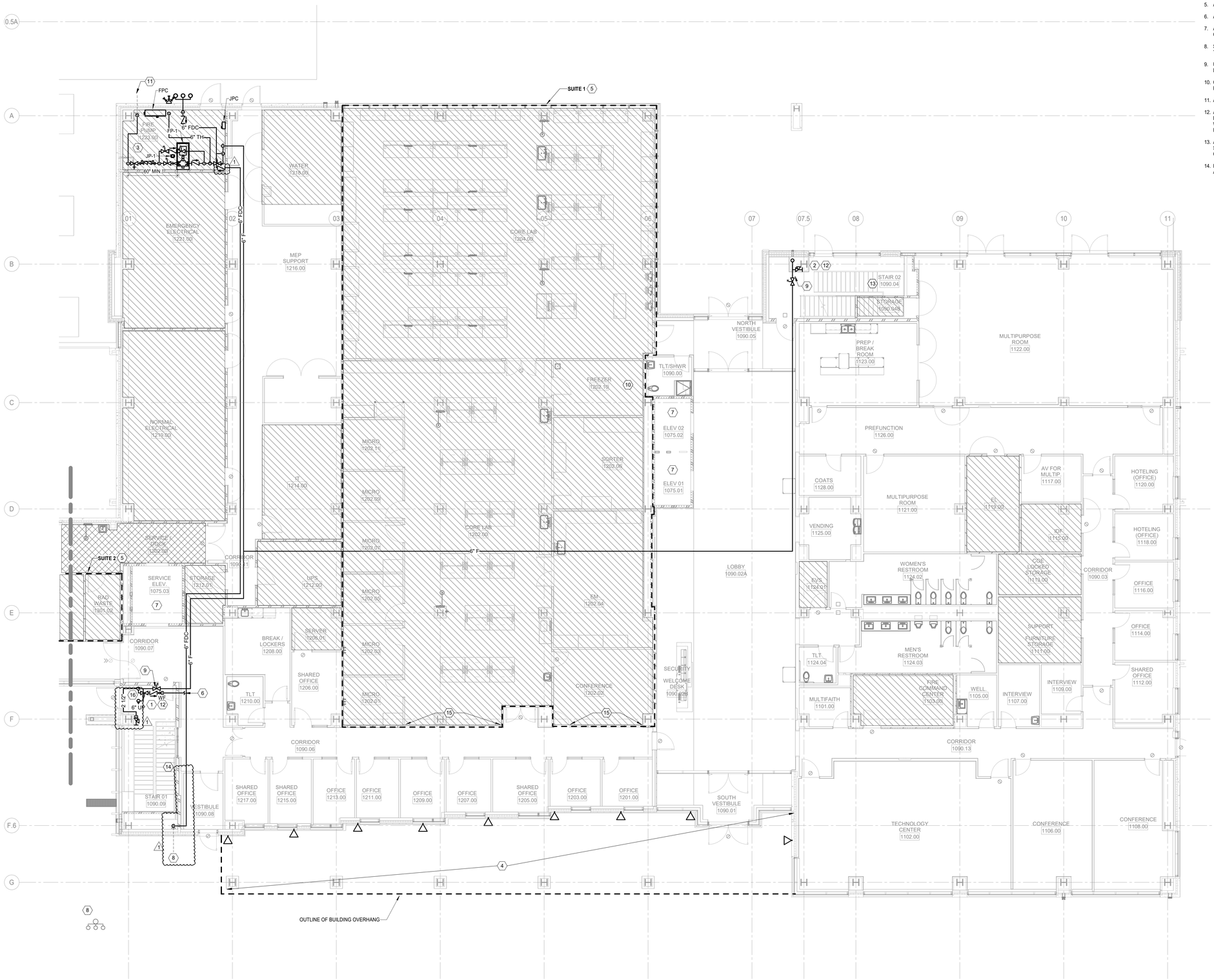

1 LEVEL 01 FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.

(#) **SHEET KEY NOTES:**

1. PROVIDE 6" COMBINATION STANDPIPE SPRINKLER RISER. PRESSURE REDUCING VALVES AND PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. SEE DETAIL 1 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
2. PROVIDE 6" STANDPIPE. FIRE DEPARTMENT HOSE VALVES SHALL BE INSTALLED IN RECESSED CABINETS. PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. CABINETS SHALL BE FIRE RATED IN FIRE RATED WALLS. SEE DETAIL 6 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
3. PROVIDE 750 GPM 140 PSI FIRE PUMP. FIRE PUMP CALCULATION IS BASED ON AN AUTOMATIC STANDPIPE SYSTEM WITH A DEMAND OF 100 PSI AT THE MOST REMOTE STANDPIPE PER NFPA 14 7.8.1 AND 500 GPM AT THE MOST REMOTE STANDPIPE WITH AN ADDITIONAL 250 GPM PER EACH ADDITIONAL STANDPIPE PER NFPA 14 7.10.1. SEE DETAIL 8 FOR A SCHEMATIC LAYOUT OF THE FIRE PUMP SYSTEM.
4. PROVIDE DRY SIDEWALL SPRINKLERS CONNECTED TO THE WET SYSTEM TO PROTECT CANOPY. INSTALL IN THE CENTER OF THE PANELS ON THE EXTERIOR WALL. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURERS' INSTALLATION MANUAL. CANOPY IS PART OF THE BUILDING FOOTPRINT OF LEVELS 2-5. SEE DETAIL 11 ON FP-501.
5. SEE ARCHITECTURAL PLANS ALS.10 AND ALS.11 FOR MORE INFORMATION ON THE MAXIMUM ALLOWABLE QUANTITIES (MAQ) OF WHAT IS TO BE STORED IN EACH INDIVIDUAL SUITE / CONTROL AREA. THESE SUITES ARE PROTECTED BY 1-HR FIRE RATINGS. THE MAQ COME FROM MBC TABLE 307.1 AND TABLE 428.3.
6. TO HYDRAULICALLY CALCULATED FIRST FLOOR SPRINKLER ZONE.
7. SPRINKLER IS NOT REQUIRED IN THE ELEVATOR PIT PER FMDS 2-0 2.5.1.8.2.1.
8. PROVIDE PIPING FOR FREESTANDING FDC. FIRE PROTECTION CONTRACTOR TO ROUTE PIPE 5'-0" OUTSIDE OF THE BUILDING. CIVIL CONTRACTOR TO INSTALL AND CONNECT 3-WAY FDC WITH AUTOMATIC BALL DRIP VALVE TO BACKFILL. LOCATION ON DRAWING IS APPROXIMATE. SEE CIVIL UTILITY PLAN C-130 FOR EXACT LOCATION. SEE DETAIL 9 FOR FREESTANDING FDC DETAIL. PROVIDE CHECK VALVE FOR THIS FDC IN FIRE PUMP ROOM. (1)
9. PROVIDE STANDPIPE ISOLATION VALVES WITH SUPERVISORY SWITCHES.
10. PROVIDE DRY TYPE PENDENT SPRINKLER HEADS IN AREAS SUBJECT TO FREEZING. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURERS' INSTALLATION MANUAL. SEE DETAIL 12 ON FP-501.
11. 6" INCOMING UNDERGROUND. FIRE PROTECTION CONTRACTOR TO CONNECT WITHIN 5'-0" FROM THE BUILDING.
12. PROVIDE A MEANS OF TESTING DOWNSTREAM OF THE PRESSURE REDUCING VALVES PER NFPA 13 16.9.8.5.
13. PROVIDE CONCEALED SIDEWALL SPRINKLER FROM STORAGE ROOM TO PROVIDE PROTECTION UNDER LOWEST LANDING OF STAIRS.
14. PROVIDE CONCEALED SIDEWALL SPRINKLER IN FURRED WALL FOR PROTECTION UNDER LOWEST LANDING OF STAIRS.
15. PROVIDE CONCEALED PENDENT VERTICAL SIDEWALL WINDOW SPRINKLERS TYCO MODEL CWS OR APPROVED EQUAL. WINDOW SPRINKLERS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS' INSTALLATION MANUAL. SPRINKLERS SHALL BE INSTALLED ON BOTH SIDES OF THE GLASS. DOOR TO CONFERENCE ROOM SHALL BE 2-HOUR RATED.
16. PROVIDE 3" EXPRESS DRAIN FROM RISER TO FIRE PUMP ROOM TO DRAIN LEVELS PH THROUGH LEVEL 2. PROVIDE DRAIN CONNECTION ON LEVEL 1 FOR TESTING OF THE PRHV. PROVIDE AUXILIARY DRAINS ON LEVEL 1 FOR DRAINING OF THE SPRINKLER SYSTEM. (1)

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KEY PLAN

PLAN NORTH / TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 FIRE PROTECTION PLAN

SHEET NO.
FP-101

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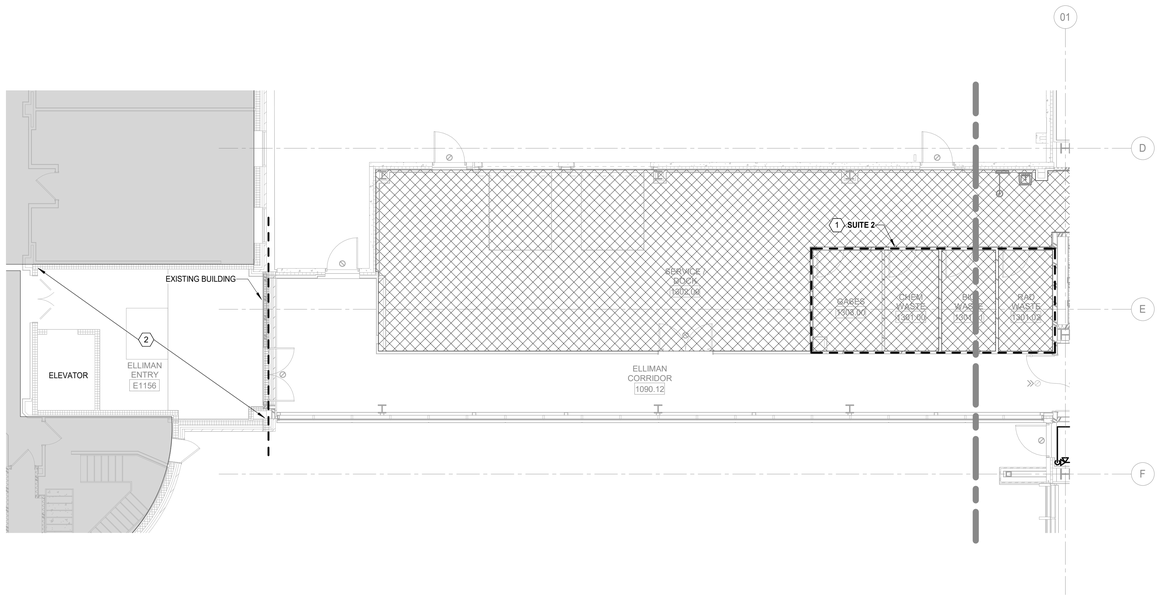
GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.



1 LEVEL 01 FIRE PROTECTION PLAN - SERVICE DOCK
SCALE: 1/8" = 1'-0"

(#) **SHEET KEY NOTES:**

1. SEE ARCHITECTURAL PLANS ALS.10 AND ALS.11 FOR MORE INFORMATION ON THE MAXIMUM ALLOWABLE QUANTITIES (MAQ) OF WHAT IS TO BE STORED IN EACH INDIVIDUAL SUITE / CONTROL AREA. THESE SUITES ARE PROTECTED BY 1-HR FIRE RATINGS. THE MAQ COME FROM MBC TABLE 307.1 AND TABLE 428.3.
2. NEW CEILING WILL BE INSTALLED IN THIS ROOM. REMOVE AND RELOCATE EXISTING SPRINKLER DROPS TO FIT WITH NEW CEILING GRID AND NEW CEILING MOUNTED EQUIPMENT. PROVIDE NEW SPRINKLERS ON THE DROPS. ELLIMAN ENTRY ELEVATOR LOBBY IS PART OF THE EXISTING SPRINKLER SYSTEM IN ELLIMAN.

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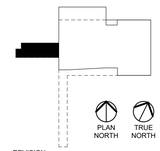
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 1 FIRE PROTECTION PLAN - SERVICE DOCK
SHEET NO.
FP-101.2

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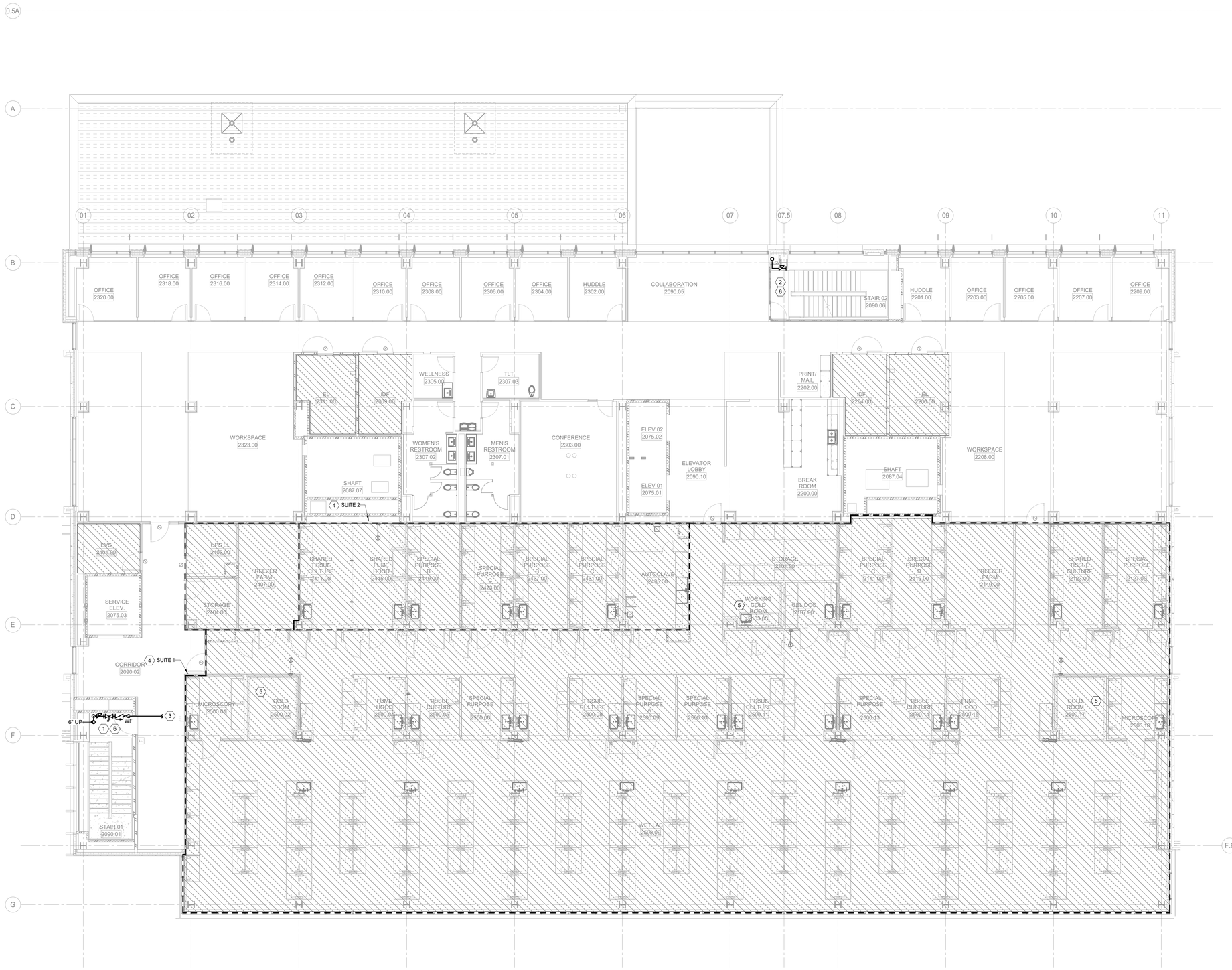

1 LEVEL 02 FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"

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GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.

(#) SHEET KEY NOTES:

1. PROVIDE 6" COMBINATION STANDPIPE SPRINKLER RISER. PRESSURE REDUCING VALVES AND PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. SEE DETAIL 1 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
2. PROVIDE 6" STANDPIPE. FIRE DEPARTMENT HOSE VALVES SHALL BE INSTALLED IN RECESSED CABINETS. PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. CABINETS SHALL BE FIRE RATED IN FIRE RATED WALLS. SEE DETAIL 6 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
3. TO HYDRAULICALLY CALCULATED SECOND FLOOR SPRINKLER ZONE.
4. SEE ARCHITECTURAL PLANS ALS.10 AND ALS.11 FOR MORE INFORMATION ON THE MAXIMUM ALLOWABLE QUANTITIES (MAQ) OF WHAT IS TO BE STORED IN EACH INDIVIDUAL SUITE / CONTROL AREA. THESE SUITES ARE PROTECTED BY 1-HR FIRE RATINGS. THE MAQ COME FROM MBC TABLE 307.1 AND TABLE 428.3.
5. PROVIDE DRY TYPE PENDENT SPRINKLER HEADS IN AREAS SUBJECT TO FREEZING. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURERS' INSTALLATION MANUAL. SEE DETAIL 12 ON FP-501.
6. PROVIDE A MEANS OF TESTING DOWNSTREAM OF THE PRESSURE REDUCING VALVES PER NFPA 13 16.9.8.5.

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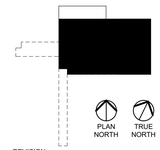
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

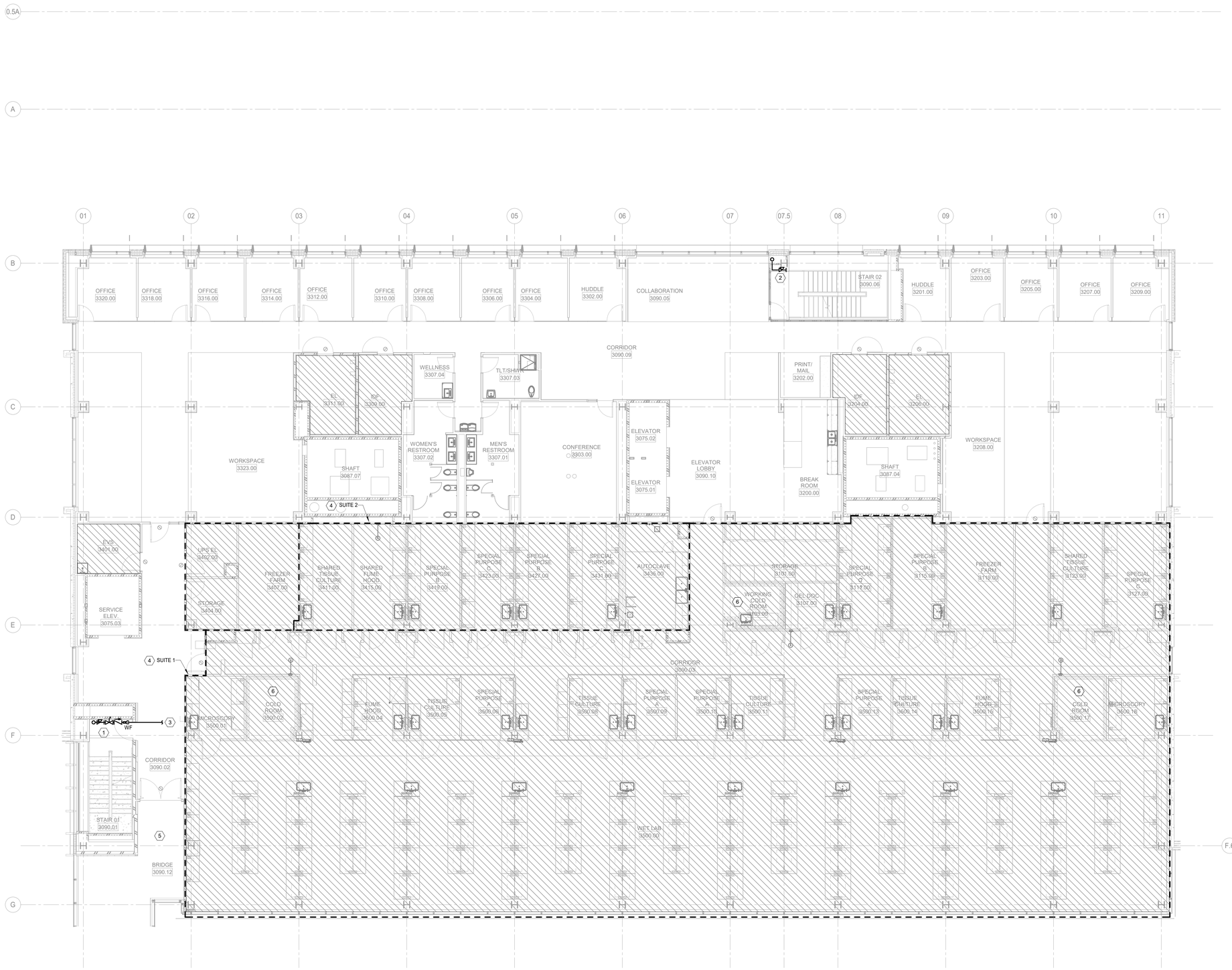
ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 2 FIRE PROTECTION PLAN

SHEET NO.
FP-102

GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.



1 LEVEL 03 FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"

SHEET KEY NOTES:

1. PROVIDE 6" COMBINATION STANDPIPE SPRINKLER RISER. PRESSURE REDUCING VALVES AND PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. SEE DETAIL 2 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
2. PROVIDE 6" STANDPIPE. FIRE DEPARTMENT HOSE VALVES SHALL BE INSTALLED IN RECESSED CABINETS. PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. CABINETS SHALL BE FIRE RATED IN FIRE RATED WALLS. SEE DETAIL 7 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
3. TO HYDRAULICALLY CALCULATED THIRD FLOOR SPRINKLER ZONE.
4. SEE ARCHITECTURAL PLANS ALS.10 AND ALS.11 FOR MORE INFORMATION ON THE MAXIMUM ALLOWABLE QUANTITIES (MAQ) OF WHAT IS TO BE STORED IN EACH INDIVIDUAL SUITE / CONTROL AREA. THESE SUITES ARE PROTECTED BY 1-HR FIRE RATINGS. THE MAQ COME FROM MBC TABLE 307.1 AND TABLE 428.3.
5. SPRINKLER SYSTEM FROM NEW BUILDING SHALL PROTECT NEW BRIDGE CONNECTING TO SCOTT HALL BUILDING.
6. PROVIDE DRY TYPE PENDENT SPRINKLER HEADS IN AREAS SUBJECT TO FREEZING. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURERS' INSTALLATION MANUAL. SEE DETAIL 12 ON FP-501.

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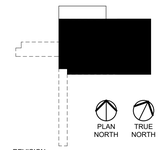
KEY PLAN



PLAN NORTH
TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 FIRE PROTECTION PLAN

SHEET NO.
FP-103

OSBORN ENGINEERING
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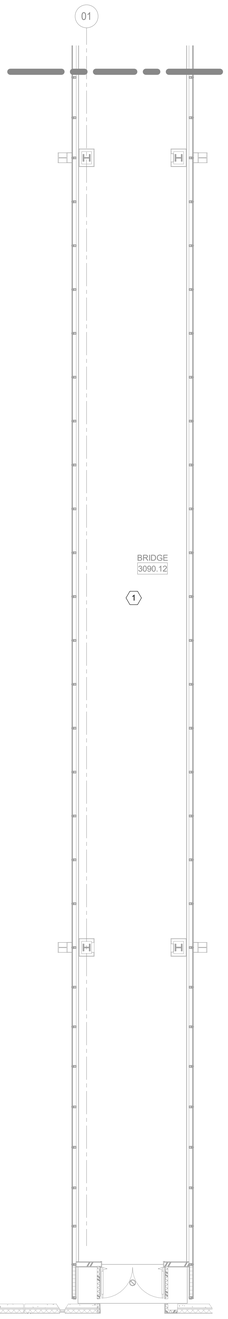

1 LEVEL 03 FIRE PROTECTION PLAN - BRIDGE
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.

(#) **SHEET KEY NOTES:**

1. PROVIDE SPRINKLER COVERAGE FROM THIRD FLOOR ZONE.

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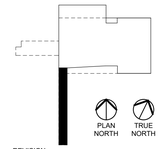
Date: 2025.09.25 14:24:35-04'00'

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 FIRE PROTECTION PLAN - BRIDGE

SHEET NO.
FP-103.3

OSBORN ENGINEERING
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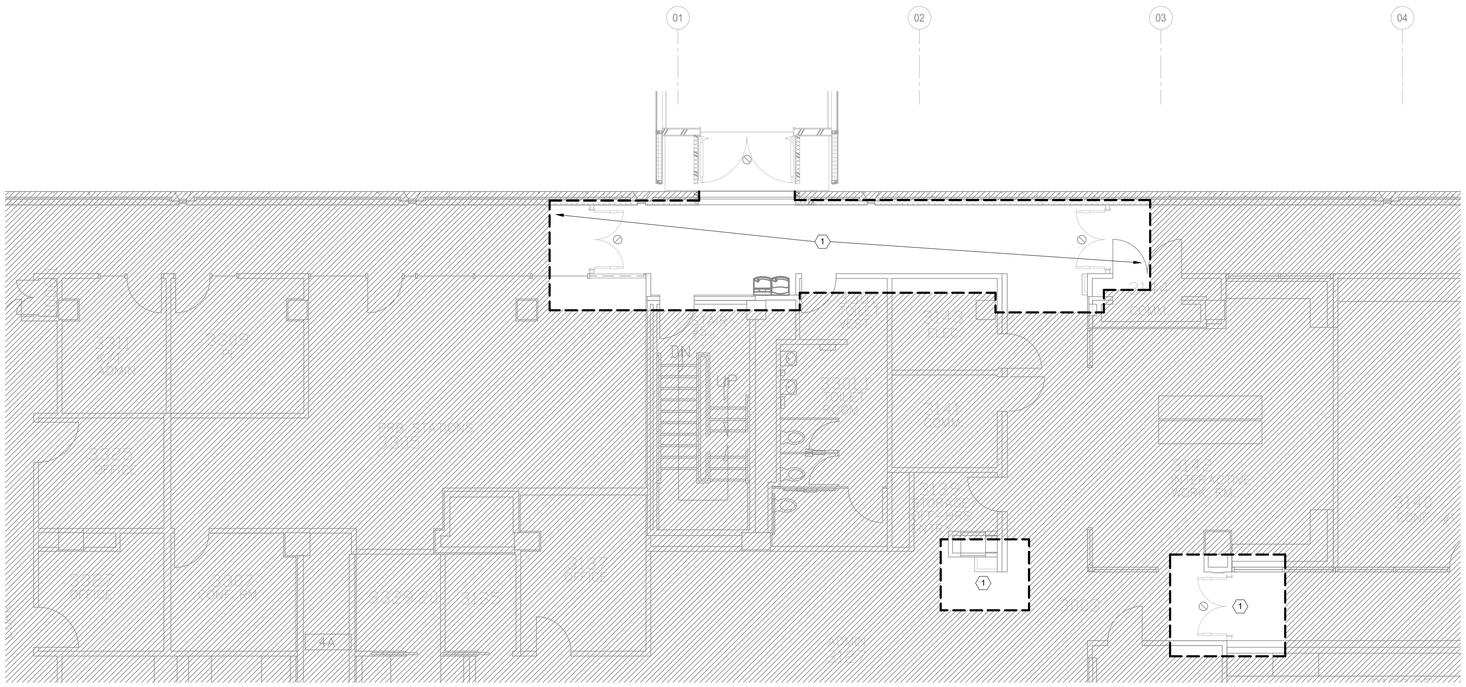
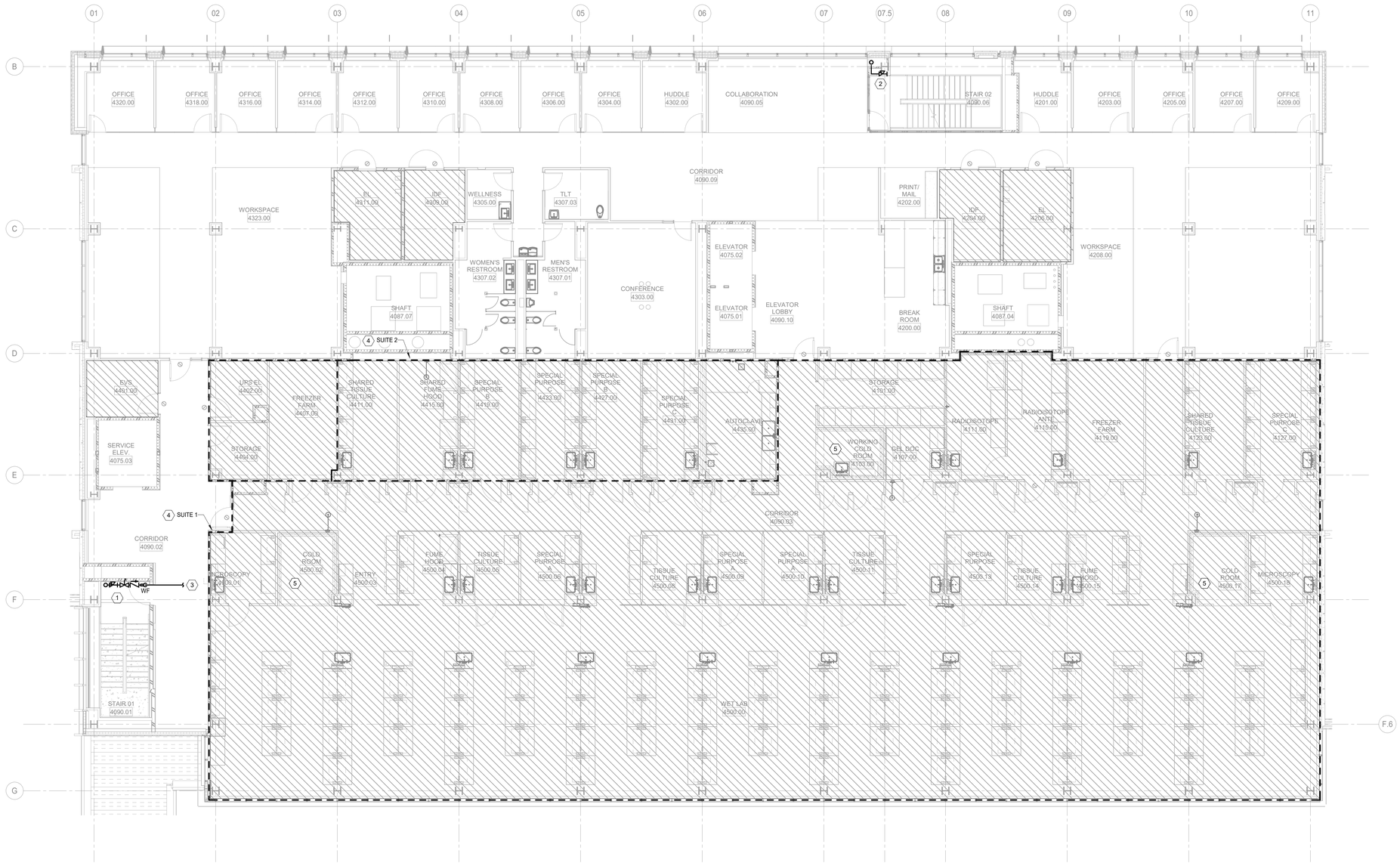
GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.

(#) **SHEET KEY NOTES:**

1. RELOCATE SPRINKLER DROPS FOR NEW CEILING TILES, NEW WALLS AND NEW BRIDGE. EXTEND OFF EXISTING SPRINKLER SYSTEM IN SCOTT HALL BUILDING. PROVIDE NEW SPRINKLER HEADS THAT MATCH THE EXISTING SPRINKLERS. IF EXISTING SPRINKLERS ARE NOT AVAILABLE, MATCH NEW SPRINKLERS TEMPERATURE AND RESPONSE TIME OF THE EXISTING SPRINKLERS.





1 LEVEL 04 FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/24/2025 10:47:19 AM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.

(#) **SHEET KEY NOTES:**

1. PROVIDE 6" COMBINATION STANDPIPE SPRINKLER RISER. PRESSURE REDUCING VALVES AND PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. SEE DETAIL 2 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
2. PROVIDE 6" STANDPIPE. FIRE DEPARTMENT HOSE VALVES SHALL BE INSTALLED IN RECESSED CABINETS. PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. CABINETS SHALL BE FIRE RATED IN FIRE RATED WALLS. SEE DETAIL 7 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
3. TO HYDRAULICALLY CALCULATED FOURTH FLOOR SPRINKLER ZONE.
4. SEE ARCHITECTURAL PLANS ALS.10 AND ALS.11 FOR MORE INFORMATION ON THE MAXIMUM ALLOWABLE QUANTITIES (MAQ) OF WHAT IS TO BE STORED IN EACH INDIVIDUAL SUITE / CONTROL AREA. THESE SUITES ARE PROTECTED BY 1-HR FIRE RATINGS. THE MAQ COME FROM MBC TABLE 307.1 AND TABLE 428.3.
5. PROVIDE DRY TYPE PENDENT SPRINKLER HEADS IN AREAS SUBJECT TO FREEZING. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURERS' INSTALLATION MANUAL. SEE DETAIL 12 ON FP-501.

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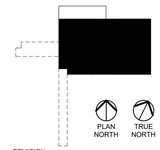
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 4 FIRE PROTECTION PLAN

SHEET NO.
FP-104

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GENERAL SHEET NOTES:

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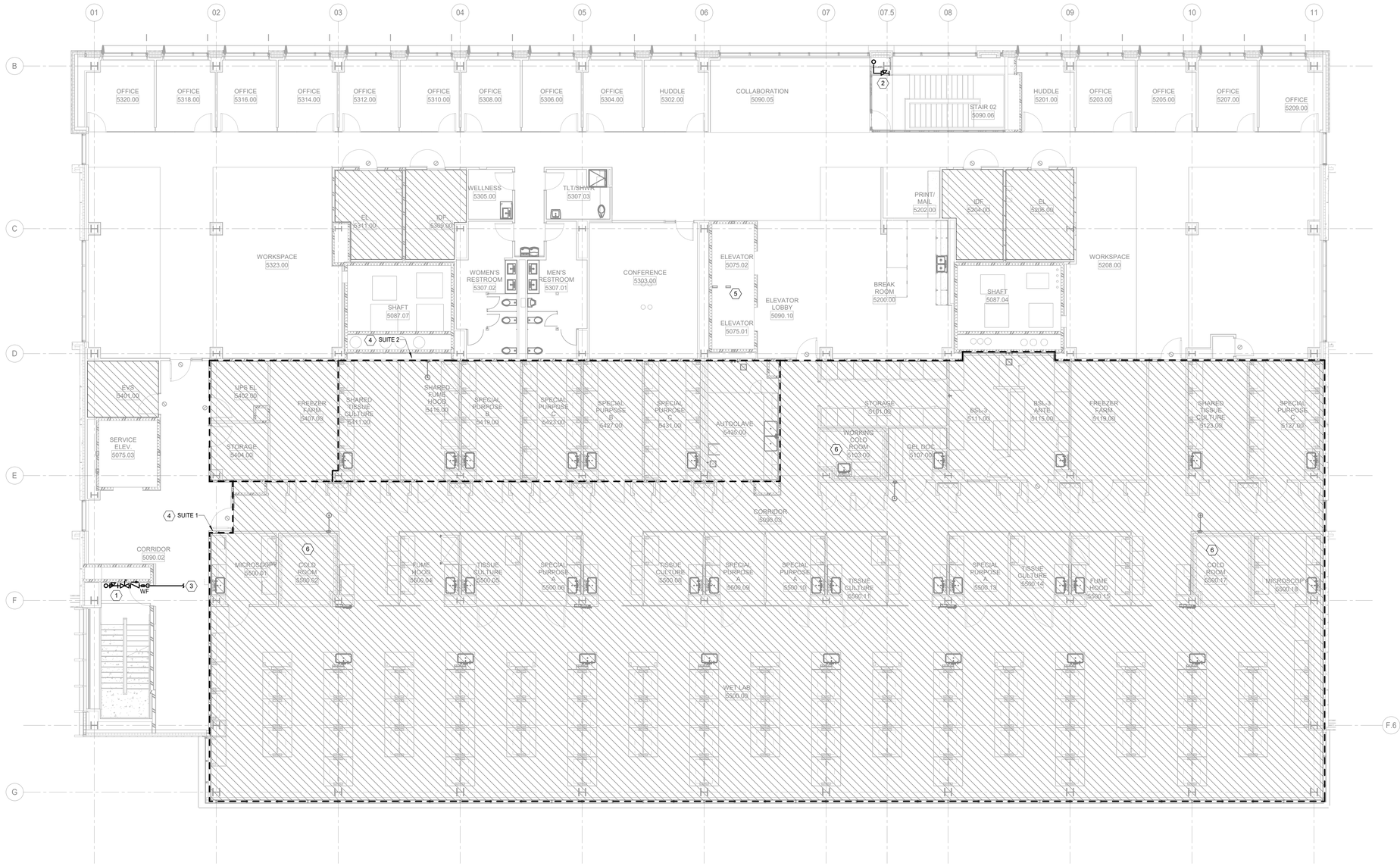
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.



1 LEVEL 05 FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"

SHEET KEY NOTES:

1. PROVIDE 6" COMBINATION STANDPIPE SPRINKLER RISER. PRESSURE REDUCING VALVES AND PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. SEE DETAIL 2 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
2. PROVIDE 6" STANDPIPE. FIRE DEPARTMENT HOSE VALVES SHALL BE INSTALLED IN RECESSED CABINETS. PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. CABINETS SHALL BE FIRE RATED IN FIRE RATED WALLS. SEE DETAIL 7 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
3. TO HYDRAULICALLY CALCULATED FIFTH FLOOR SPRINKLER ZONE.
4. SEE ARCHITECTURAL PLANS ALS.10 AND ALS.11 FOR MORE INFORMATION ON THE MAXIMUM ALLOWABLE QUANTITIES (MAQ) OF WHAT IS TO BE STORED IN EACH INDIVIDUAL SUITE / CONTROL AREA. THESE SUITES ARE PROTECTED BY 1-HR FIRE RATINGS. THE MAQ COME FROM MBC TABLE 307.1 AND TABLE 428.3.
5. SPRINKLER IS NOT REQUIRED AT THE TOP OF THE SHAFT FOR PASSENGER ELEVATOR PER FMDS 2-0 2.5.1.8.2.3.
6. PROVIDE DRY TYPE PENDENT SPRINKLER HEADS IN AREAS SUBJECT TO FREEZING. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURERS' INSTALLATION MANUAL. SEE DETAIL 12 ON FP-501.

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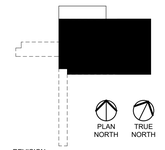
KEY PLAN



PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

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DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 5 FIRE PROTECTION PLAN

SHEET NO.
FP-105

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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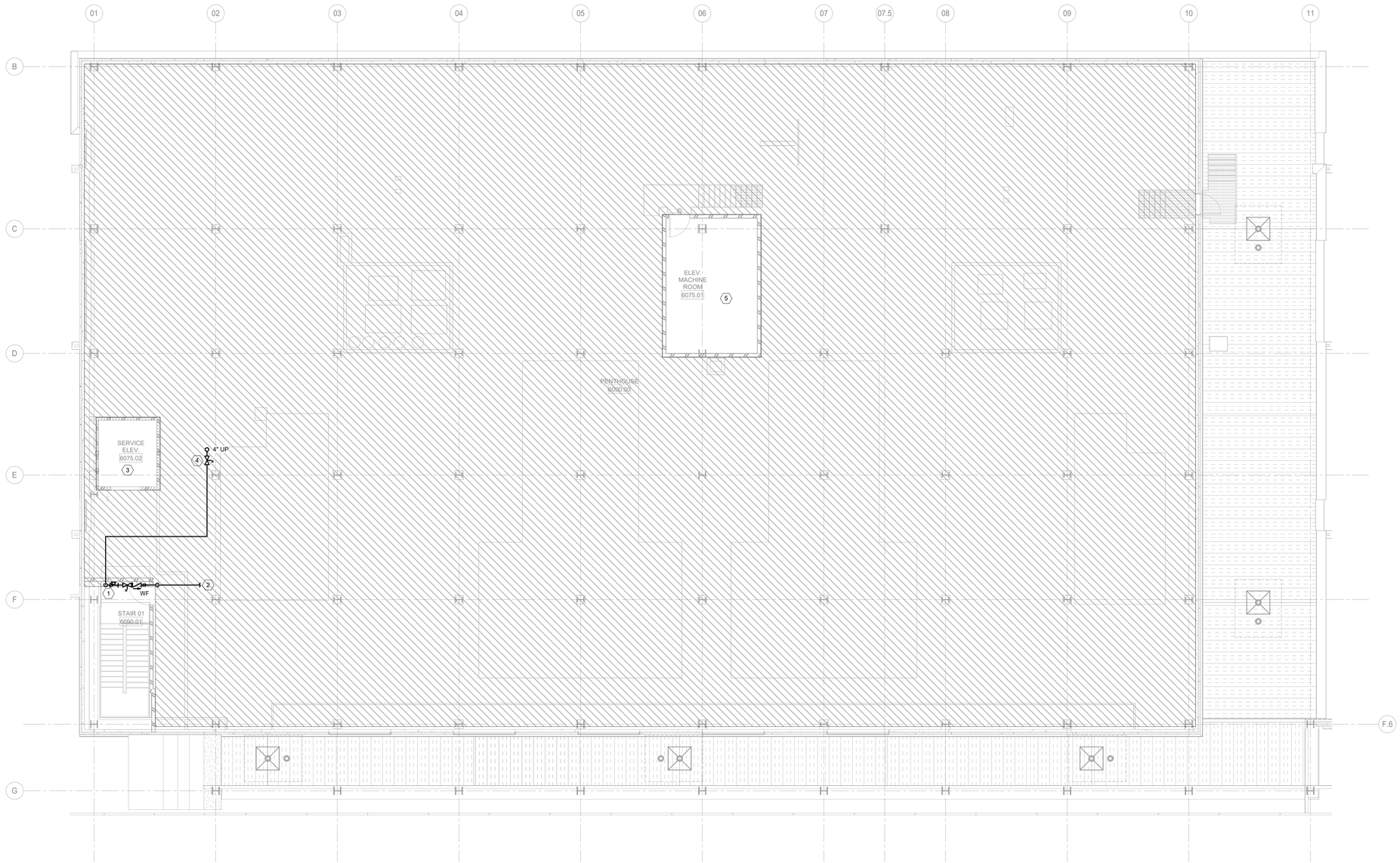
PLOT DATE: 9/26/2025 10:47:24 AM TEMPLATE VERSION: 23.0.4

GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
7. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING OF 160°F UNLESS OTHERWISE INDICATED OR IF THE INSTALLATION LOCATION DICTATES A HIGHER RATING.
8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
10. CONCEALED TYPE SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITH CEILINGS. COVER PLATES TO MATCH ADJACENT CEILING FINISH AS SHOWN IN ARCHITECTURAL DRAWINGS.
11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
13. ALL LAB SUITES, STORAGE ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS AND IT ROOMS SHALL BE DESIGNED TO HAZARD CATEGORY 2 (HC-2) AS DEFINED BY FM. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.



1 PENTHOUSE FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"

(#) **SHEET KEY NOTES:**

1. PROVIDE 6" COMBINATION STANDPIPE SPRINKLER RISER. PRESSURE REDUCING VALVES AND PRESSURE REDUCING HOSE VALVES ARE REQUIRED WHEN PRESSURE EXCEEDS 175 PSI. LOCATE AT 8'-0" AFF FOR MAINTENANCE. SEE DETAIL 2 ON SHEET FP-501. FIRE PROTECTION CONTRACTOR SHALL PROVIDE STANDPIPE CALCULATIONS WITH NOTES TO WHICH LEVELS RECEIVE PRESSURE REDUCING VALVES.
2. TO HYDRAULICALLY CALCULATED PENTHOUSE SPRINKLER ZONE. PROVIDE UL LISTED WIRE GUARDS ON SPRINKLERS LOWER THAN 7'-0" AFF AND ON SPRINKLERS SUBJECT TO DAMAGE.
3. PROVIDE SPRINKLER TO TOP OF ELEVATOR SHAFT FOR SERVICE ELEVATOR PER FMDS 2-0 2.5.1.8.2.4. SPRINKLER SHALL BE RATED 212°F WITH A MINIMUM K-FACTOR OF 5.6. COORDINATE WITH FIRE ALARM CONTRACTOR FOR HEAT DETECTOR LOCATED WITHIN 24" OF SPRINKLER.
4. PROVIDE NORMALLY CLOSED BUTTERFLY VALVE WITH TAMPER SWITCH CONNECTED TO THE FIRE ALARM SYSTEM WITH STEM EXTENDING THROUGH THE ROOF WITH WHEEL ON ROOF. PROVIDE HARD PIPED DRAIN TO STANDPIPE DRAIN. SEE DETAIL 13 ON FP-501.
5. SPRINKLER IS NOT REQUIRED AT THE TOP OF THE SHAFT FOR PASSENGER ELEVATOR PER FMDS 2-0 2.5.1.8.2.3.

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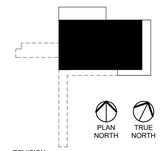
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
PENTHOUSE FIRE PROTECTION PLAN

SHEET NO.
FP-106

PLOT DATE: 9/24/2025 10:47:27 AM TEMPLATE VERSION: 25.0.4

GENERAL SHEET NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL FIRE PROTECTION SYSTEMS.
2. REFER TO SHEET FP-001 FOR FIRE PROTECTION GENERAL NOTES AND LEGENDS.
3. REFER TO ARCHITECTURAL PLANS FOR REFLECTED CEILING PLAN.
4. SPRINKLER SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH FM DATA SHEETS AND NFPA 13, 14 AND 20.
5. ALL SPRINKLERS SHALL HAVE A MINIMUM K-FACTOR OF 5.6.
6. ALL SPRINKLERS LOCATED IN THE LABORATORY SHALL BE QUICK RESPONSE.
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8. SPRINKLERS IN ELECTRICAL/TECHNOLOGY ROOMS SHALL HAVE AN INTERMEDIATE TEMPERATURE RATING OF 175°F.
9. UPRIGHT SPRINKLERS SHALL BE INSTALLED IN ALL AREAS WITHOUT CEILINGS WITH DEFLECTORS PARALLEL TO AND WITHIN 12" OF NEW STRUCTURE ABOVE.
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11. ALL SPRINKLERS AND SYSTEM COMPONENTS SHALL BE LISTED FOR 175 PSI.
12. ALL AREAS SHALL BE DESIGNED TO HAZARD CATEGORY 1 (HC-1) REQUIREMENTS AS DEFINED BY FM, UNLESS OTHERWISE DIRECTED WITHIN THESE NOTES OR GRAPHICALLY DEPICTED WITHIN THE FLOOR PLANS. SEE HAZARD OCCUPANCY IDENTIFICATION SCHEDULE, SHEET FP-001, FOR ADDITIONAL INFORMATION.
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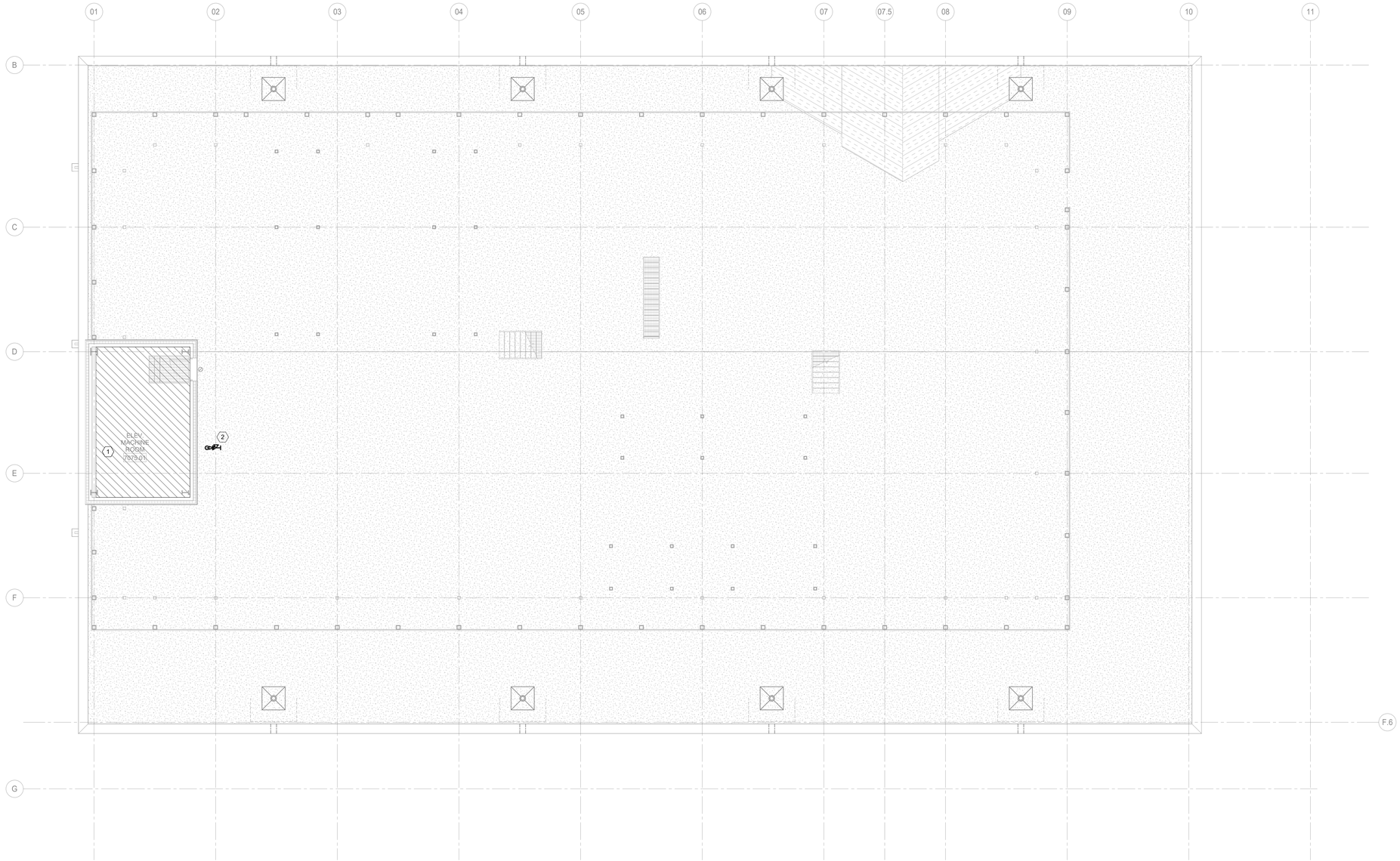
14. HAZARD CATEGORY 3 (HC-3) DESIGN AREAS SHALL HAVE STANDARD RESPONSE SPRINKLERS AND BE OF ORDINARY TEMPERATURE RATING.



1 ROOF FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"

SHEET KEY NOTES:

1. PROVIDE SPRINKLER IN ELEVATOR MACHINE ROOM FOR SERVICE ELEVATOR PER FMDS 2-0 2.5.1.8.2.4. SPRINKLER SHALL BE RATED 212°F WITH A MINIMUM K-FACTOR OF 5.6. COORDINATE WITH FIRE ALARM CONTRACTOR FOR HEAT DETECTOR LOCATED WITHIN 24" OF SPRINKLER.
2. PROVIDE FIRE DEPARTMENT HOSE VALVE LOCATED ON ROOF WITH DETROIT STANDARD THREADS. PROVIDE NORMALLY CLOSED BUTTERFLY VALVE WITH TAMPER SWITCH CONNECTED TO THE FIRE ALARM SYSTEM WITH VALVE WHEEL ACCESS LOCATED ON THE ROOF. SEE DETAIL 13 ON FP-501.

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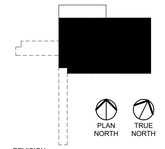
KEY PLAN



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ROOF FIRE PROTECTION PLAN

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FP-107

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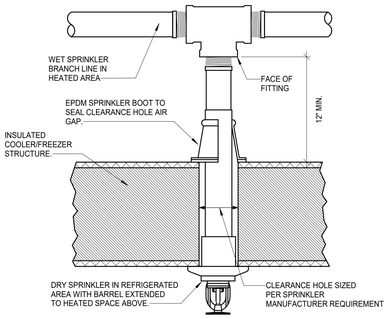
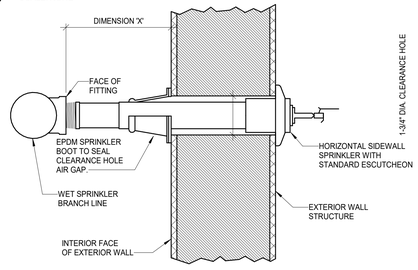


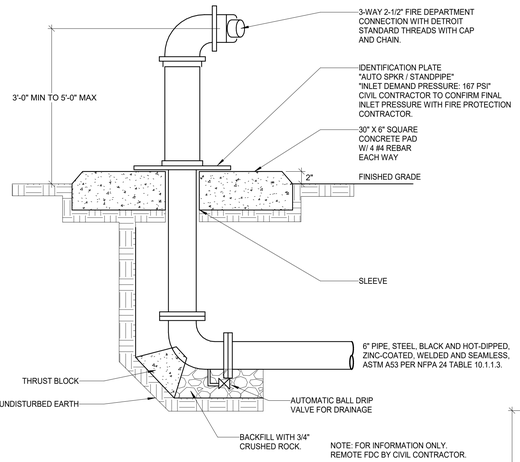
12 DRY PENDENT SPRINKLER DETAIL
SCALE: NONE



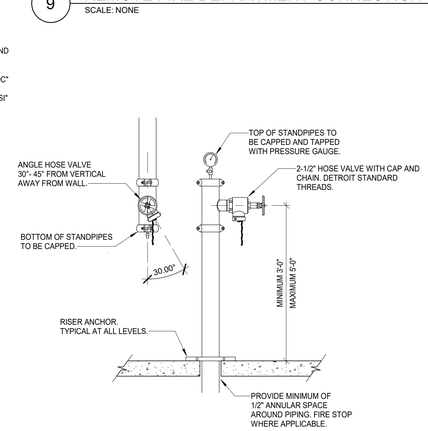
MINIMUM DIMENSION OF 'X'											
AMBIENT TEMP EXPOSED TO BARREL	AMBIENT TEMPERATURE EXPOSED TO DISCHARGE END OF SPRINKLER										
	40° F	30° F	20° F	10° F	0° F	-10° F	-20° F	-30° F	-40° F	-50° F	-60° F
40° F	0"	0"	4"	8"	12"	14"	14"	16"	18"	20"	20"
50° F	0"	0"	0"	1"	3"	4"	6"	8"	8"	10"	10"
60° F	0"	0"	0"	0"	0"	1"	3"	4"	4"	6"	6"

11 DRY-TYPE SIDEWALL SPRINKLER DETAIL
SCALE: NONE

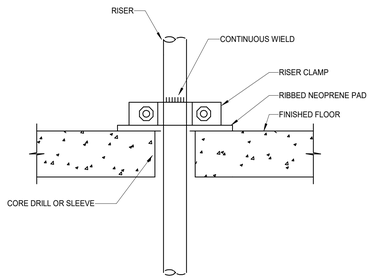
10 WALL MOUNT FIRE DEPARTMENT CONNECTION DETAIL
SCALE: NONE



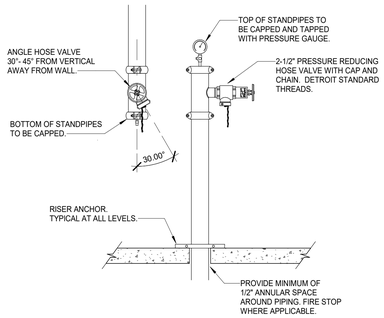
9 REMOTE FIRE DEPARTMENT CONNECTION DETAIL
SCALE: NONE



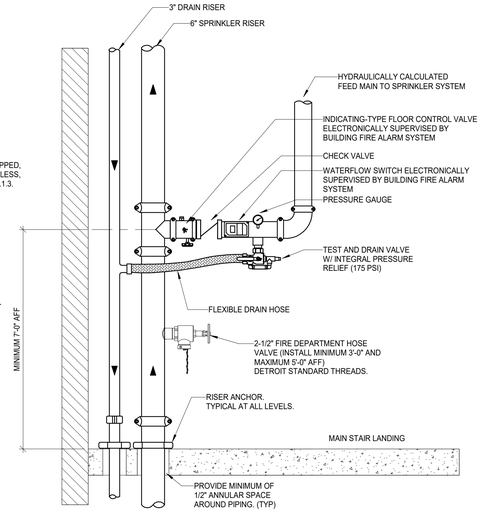
4 STANDPIPE HOSE VALVE DETAIL
SCALE: NONE



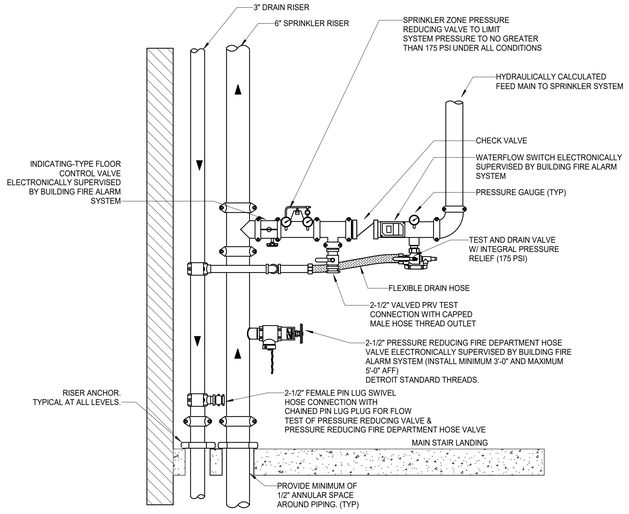
5 PIPE RISER ANCHOR DETAIL
SCALE: NONE



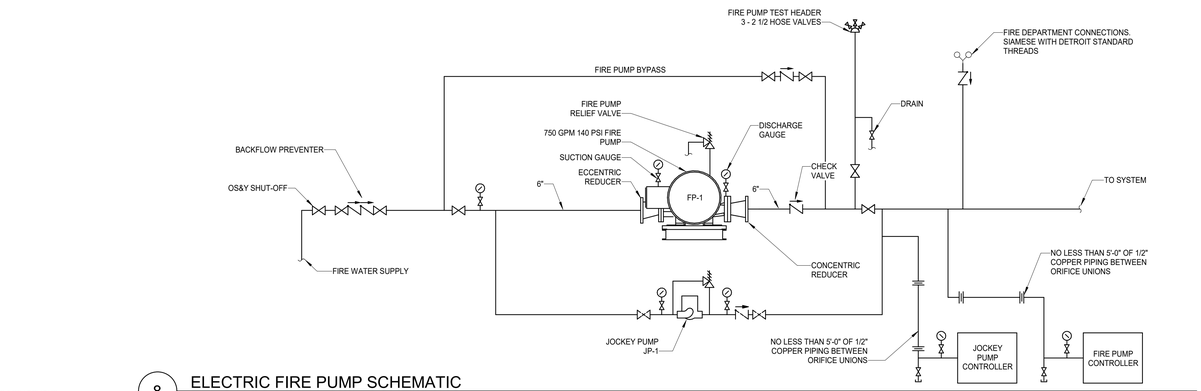
3 STANDPIPE HOSE VALVE DETAIL PRESSURE GREATER THAN 175 PSI
SCALE: NONE



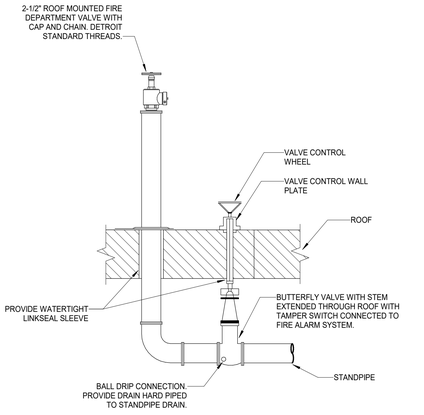
2 COMBINATION STANDPIPE-RISER PIPING DETAIL PRESSURE LESS THAN 175 PSI
SCALE: NONE



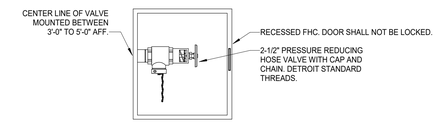
1 COMBINATION STANDPIPE-RISER PIPING DETAIL PRESSURE GREATER THAN 175 PSI
SCALE: NONE



8 ELECTRIC FIRE PUMP SCHEMATIC
SCALE: NONE

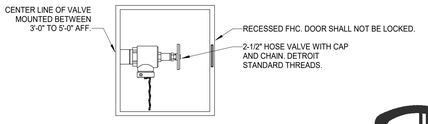


13 FIRE PROTECTION ROOF MANIFOLD DETAIL
SCALE: NONE



FIRE DEPARTMENT VALVE CABINET DETAIL PRESSURE GREATER THAN 175 PSI
SCALE: NONE

6



7 FIRE DEPARTMENT VALVE CABINET DETAIL
SCALE: NONE

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CERTAIN ABBREVIATIONS LISTED BELOW MAY NOT APPLY TO THIS PROJECT.

PLUMBING ABBREVIATIONS

AAV	AIR ADMITTANCE VALVE	FS	FLOOR SINK	PFD	PERFORATED FOUNDATION DRAIN
AD	AREA DRAIN	FW	FILTERED WATER	PRV	PRESSURE REDUCING VALVE
AFF	ABOVE FINISHED FLOOR	FV	FLUSH VALVE	PSI	POUNDS PER SQUARE INCH
AFG	ABOVE FINISHED GRADE	G	NATURAL GAS	RD	ROOF DRAIN
AG	AIR GAP	GAL	GALLON	RP	HOT WATER RECIRCULATION PUMP
AHU	AIR HANDLING UNIT	GC	GENERAL CONTRACTOR	RPBFP	REDUCED PRESSURE BACKFLOW PREVENTER
AW	ACID WASTE	GCO	GRADE CLEANOUT	RPDA	REDUCED PRESSURE DETECTOR ASSEMBLY
AV	ACID VENT	GD	GARBAGE DISPOSAL	RTU	ROOFTOP UNIT
AT	ACID NEUTRALIZATION TANK	GI	GREASE INTERCEPTOR	SAN	SANITARY
B	BOILER	GPD	GALLONS PER DAY	SCO	STACK CLEAN OUT
BF	BOTTLE FILLER	GPH	GALLONS PER HOUR	SD	SHOWER DRAIN
BFF	BELOW FINISHED FLOOR	GPM	GALLONS PER MINUTE	SH	SHOWER FAUCET
BFG	BELOW FINISHED GRADE	GPP	GREASE PUMP OUT PORT	SI	SEDIMENT/SOLIDS INTERCEPTOR
BFP	BACKFLOW PREVENTER	GPR	GAS PRESSURE REGULATOR	SK	SINK
BOP	BOTTOM OF PIPE	GT	GREASE TRAP	SP	SUMP PUMP
BPP	BOOSTER PUMP PACKAGE	GWH	GAS WATER HEATER	SS	SERVICE SINK
BT	BATHTUB	HB	HOSE BIBB	ST	STORM
CA	COMPRESSED AIR	HCO	HORIZONTAL CLEANOUT	SV	STACK VENT
CB	CATCH BASIN	HP	HORSE POWER	TD	TRENCH DRAIN
COND	CONDENSATE	HST	HOT WATER STORAGE TANK	TEP	TEMPERATURE AND PRESSURE RELIEF
CW	COLD WATER (DOMESTIC)	HW	HOT WATER (DOMESTIC)		
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY	HWR	HOT WATER RECIRC.	TMV	THERMOSTATIC MIXING VALVE
DD	DECK DRAIN	I.E.	INVERT ELEVATION	TP	TRAP PRIMER
DF	DRINKING FOUNTAIN	IMB	ICE MAKER BOX	TYP	TYPICAL
DFU	DRAINAGE FIXTURE UNIT	IN-WC	INCHES WATER COLUMN	TW	TEMPERED WATER
DN	DOWN	IW	INDIRECT WASTE	UG	UNDERGROUND
DS	DOWNSPOUT	IWH	INSTANTANEOUS WATER HEATER (TANKLESS)	UH	UNIT HEATER
DWG	DRAWING	KEC	KITCHEN EQUIPMENT CONTRACTOR	UR	URINAL
DWH	DOMESTIC WATER HEATER	KS	KITCHEN SINK	UT	UTILITY TUB
(E)	EXISTING	L	LAVATORY	V	VENT
EDS	EMERGENCY DOWNSPOUT	LS	LAB SINK	VA	VALVE
EEW	EMERGENCY EYEWASH	MAU	MAKEUP AIR UNIT	VB	VACUUM BREAKER
ERD	EMERGENCY ROOF DRAIN	MF	MOP SINK FAUCET	VS	VENT STACK
ES	EMERGENCY STORM LINE	MS	MOP SINK	VTR	VENT THROUGH ROOF
ESH	EMERGENCY SHOWER	NGVD	NATIONAL GEODETIC VERTICAL DATUM	W	WASTE
ESP	ELEVATOR SUMP PUMP	NC	NORMALLY CLOSED	WC	WATER CLOSET
ET	EXPANSION TANK	NO	NORMALLY OPEN	WCO	WALL CLEANOUT
EWC	ELECTRIC WATER COOLER	ON	OVERFLOW NOZZLE	WH	WALL HYDRANT (FREEZEPROOF)
FCO	FLOOR CLEANOUT	ORD	OVERFLOW ROOF DRAIN	WS	WASTE STACK
FD	FLOOR DRAIN	OW	OILY WASTE DRAINAGE	WSFU	WATER SUPPLY FIXTURE UNITS
FF	FINISHED FLOOR	OWS	OIL WATER SEPARATOR	WUB	WALL UTILITY BOX
FFD	FUNNEL FLOOR DRAIN	PC	PLUMBING CONTRACTOR	RO	REVERSE OSMOSIS
FG	FINISHED GRADE	PD	PUMP DISCHARGE	LV	LAB VACUUM
SG	SPECIALTY GAS	CO2	CARBON DIOXIDE	N2	NITROGEN

1

PLUMBING SYSTEM LEGEND

SYMBOL	DESCRIPTION
#" SAN	SANITARY
#" SAN	UNDERGROUND SANITARY
#" V	SANITARY VENT
#" OW	UNDERGROUND OIL WASTE DRAINAGE
#" ST	STORM
#" ST	UNDERGROUND STORM
#" ES	EMERGENCY STORM
#" CW	DOMESTIC COLD WATER
#" HW	DOMESTIC HOT WATER (140 °F)
#" HWR	DOMESTIC HOT WATER RECIRC. (140 °F)
#" TW	TEMPERED WATER (X °F)
#" G	NATURAL GAS
	PIPE WITH HEAT TRACE
	FLOOR DRAIN W/ TRAP
	FLOOR SINK W/ TRAP
	BALL VALVE
	GATE VALVE
	GLOBE VALVE
	CHECK VALVE
	PRESSURE REDUCING VALVE
	CAP
	CONNECTION - TOP
	CONNECTION - BOTTOM
	ELBOW - TURNED DOWN
	ELBOW - TURNED UP
	VENT THROUGH ROOF
	PIPE WITH HEAT TRACE

IN TO MM CONVERSION

1 INCH = 25.4 MM
2 INCH = 50.8 MM
3 INCH = 76.2 MM
4 INCH = 101.6 MM

1

GENERAL PLUMBING NOTES:

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY STATE AND LOCAL CODES.
2. ANY EXISTING CONDITIONS SHOWN ON DRAWINGS REFLECT INFORMATION FURNISHED BY THE OWNER AND ARE ACCURATE TO THE BEST KNOWLEDGE OF THE ENGINEER. FIELD CONDITIONS MAY VARY FROM THOSE SHOWN ON DRAWINGS. THE CONTRACTOR IS TO MAKE ARCHITECT/OWNER'S REPRESENTATIVE AWARE OF ANY DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO COMMENCING WORK.
3. PRIOR TO COMMENCING WORK, PLUMBING CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF SERVICES, INVERT ELEVATIONS OF UNDERFLOOR SANITARY LINES, AND SIZES OF PIPING TO BE RE-USED.
4. CONTRACT DOCUMENT DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
5. INSTALL ALL PLUMBING FIXTURES, EQUIPMENT, AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
6. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
7. COORDINATE CONSTRUCTION OF ALL PLUMBING WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
8. COORDINATE EXACT LOCATIONS OF ALL GAS, COLD WATER, AND MAKE-UP WATER CONNECTIONS TO HVAC EQUIPMENT AND EXACT LOCATIONS OF FLOOR AND HUB DRAINS FOR HVAC EQUIPMENT WITH THE HVAC CONTRACTOR PRIOR TO INSTALLATION.
9. ALL PLUMBING WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO OWNER.
10. VERIFY EXACT LOCATIONS OF ALL FLOOR AND ROOF DRAINS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR PROPER PLACEMENT WITH RESPECT TO SLOPES. COORDINATE THE INSTALLATION WITH THE APPROPRIATE CONTRACTOR.
11. UNLESS OTHERWISE INDICATED, PLUMBING WORK STOPS AT A POINT 5'-0" OUTSIDE THE BUILDING. COORDINATE EXACT LOCATION INCLUDING INVERT ELEVATION WITH SITE UTILITY CONTRACTOR.
12. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE TO UNDERSIDE OF PIPES AND SUSPENDED EQUIPMENT THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
13. ALL TESTS SHALL BE COMPLETED BEFORE ANY PLUMBING EQUIPMENT OR PIPING INSULATION IS APPLIED.
14. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
15. CONCRETE HOUSEKEEPING PADS TO SUIT PLUMBING EQUIPMENT SHALL BE SIZED AND LOCATED BY THE PLUMBING CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 4 INCHES. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4 INCHES ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO COORDINATE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS WITH GENERAL CONTRACTOR & WITH APPROVAL OF THE OWNER'S REPRESENTATIVE.
16. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR.
17. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS. WHERE REQUIRED, TO SERVICE VALVES AND OTHER CONCEALED PLUMBING EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO GENERAL CONTRACTOR FOR INSTALLATION.
18. ALL EQUIPMENT, PIPING, ETC. SHALL BE SUPPORTED AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
19. PROVIDE FLEXIBLE CONNECTIONS IN ALL PIPING SYSTEMS CONNECTED TO PUMPS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AS CLOSE TO THE EQUIPMENT AS POSSIBLE OR AS INDICATED ON THE DRAWINGS.
20. ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. SEE STRUCTURAL DRAWINGS AND SPECIFICATION SECTION 22 05 29 FOR REQUIRED PRODUCTS AND INSTALLATION OF HANGERS AND SUPPORTS. PLUMBING EQUIPMENT AND PIPING SHALL NOT BE SUPPORTED FROM METAL DECK.
21. CONTRACTOR TO INFORM THE STRUCTURAL ENGINEER IN WRITING OF ANY SINGLE SUSPENDED LOAD IN EXCESS OF 400 LBS.
22. RUN ALL SANITARY AND STORM PIPING WITH 1% MINIMUM GRADE UNLESS OTHERWISE NOTED. HORIZONTAL VENT PIPING SHALL BE GRADED TO DRIP BACK TO SOIL OR WASTE PIPE BY GRAVITY. 2" PIPING SHALL BE RUN AT 2% MINIMUM SLOPE.
23. ELEVATIONS AS SHOWN ON THE DRAWINGS ARE TO THE CENTERLINE OF ALL PRESSURE PIPING AND TO THE INVERT OF ALL GRAVITY PIPING.
24. ADJUST SEWER INVERTS TO KEEP TOPS OF PIPE IN LINE WHERE PIPE SIZE CHANGES.
25. MAINTAIN A MINIMUM OF 4'-6" OF GROUND COVER OVER ALL UNDERGROUND WATER MAINS AND A MINIMUM OF 3'-0" OF GROUND COVER OVER ALL UNDERGROUND SEWERS AND DRAINS OUTSIDE OF BUILDING.
26. PROVIDE SHUTOFF VALVES IN ALL DOMESTIC HOT AND COLD WATER PIPING SYSTEM BRANCHES.
27. INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
28. WHERE DOMESTIC COLD AND HOT WATER PIPING DROPS INTO A CHASE, THE SIZE SHOWN FOR THE PIPE DROPS SHALL BE USED TO THE LAST FIXTURE.
29. INSTALL ALL PIPING WITHOUT FORCING OR SPRINGING AND CLEAR OF DOORS AND WINDOWS.
30. ALL ABOVE GROUND PIPING SHALL GRADE TO LOW POINTS. PROVIDE HOSE END DRAIN VALVES AT THE BOTTOM OF ALL RISERS AND LOW POINTS.
31. ALL VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE FULL SIZE (FULL PORT) OF PIPE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT AND CONTROLS AND SHALL BE ADJUSTED FOR SMOOTH AND EASY OPERATION.
32. PROVIDE ALL PLUMBING FIXTURES AND EQUIPMENT WITH ACCESSIBLE STOPS.
33. PROVIDE CLEANOUTS IN SANITARY AND STORM DRAINAGE SYSTEMS AT ENDS OF RUNS, AT CHANGES IN DIRECTION, NEAR THE BASE OF STACKS, EVERY 100 FEET IN HORIZONTAL RUNS AND ELSEWHERE AS INDICATED. ALL CLEANOUTS SHALL BE FULL SIZE OF PIPE FOR PIPE SIZES 4 INCHES AND SMALLER AND SHALL BE 4 INCHES FOR PIPE SIZES LARGER THAN 4 INCHES.
34. ALL BALANCING VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM ADJUSTABLE STOPS (MEMORY STOPS).
35. TRAP SEALS SUBJECT TO EVAPORATION SHALL BE PROTECTED IN ACCORDANCE WITH THE LOCAL PLUMBING CODE. THE PLUMBING CONTRACTOR SHALL PROVIDE TRAP SEAL PRIMERS/PROTECTION TO ALL FLOOR DRAIN/FLOOR SINK P-TRAPS THAT ARE SUBJECT TO EVAPORATION. REFER TO THE PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
36. WATER AND DRAIN PIPING SHALL NOT BE RUN THROUGH OR ABOVE ELECTRICAL SWITCH GEAR OR ROOMS, ELEVATOR SHAFTS, ELEVATOR MACHINE ROOMS, OR TELEPHONE ROOMS.
37. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COMPONENTS, ADAPTERS, AND FITTINGS TO MAKE FINAL CONNECTIONS TO ALL PLUMBING FIXTURES AS WELL AS FIXTURES PROVIDED BY OTHER CONTRACTORS.
38. THE DRAWINGS AND SPECIFICATIONS ARE COMPLIMENTARY; WHATEVER IS CALLED FOR IN ONE SHALL BE REQUIRED AS IF CALLED FOR IN BOTH. WHERE CONFLICTS BETWEEN THE SPECIFICATIONS AND DRAWINGS MAY OCCUR, THE MOST COSTLY OF THE TWO OPTIONS SHALL TAKE PRECEDENCE.

PLUMBING BUILDING CODE DATA

CURRENTLY APPLICABLE CODES & STANDARDS

2021 MICHIGAN BUILDING CODE
2021 MICHIGAN PLUMBING CODE
2021 INTERNATIONAL FUEL GAS CODE
2021 MICHIGAN ENERGY CODE
ASHRAE STANDARD 90.1 - 2019

PIPING AND VALVE LEGEND

	ELBOW - TURNED DOWN	FZ	FLOOR/ZONE CONTROL VALVE ASSEMBLY
	ELBOW - TURNED UP	R	RISER CHECK VALVE
	TEE - DOWN	A	ALARM CHECK VALVE
	TEE - UP		DRY PIPE VALVE
	TOP CONNECTION	DO	DRY PIPE VALVE W/QUICK OPENING DEVICE
	BOTTOM CONNECTION	DN	DRY PIPE VALVE - NITROGEN CHARGED
	REDUCER		DELUGE VALVE
	UNION		PREACTION VALVE
	FLANGED CONNECTION	PN	PREACTION VALVE - NITROGEN CHARGED
	BLIND FLANGE		FIRE PUMP SUCTION CONTROL VALVE
	CAP OR PLUG		FIRE PUMP WITH DRIVER
	PIPE BREAK		RISER/STANDPIPE
	VALVE (GENERIC)		WET SYSTEM RISER
	OS&Y VALVE		DRY SYSTEM RISER
	BALL VALVE		PREACTION SYSTEM RISER
	INDICATING TYPE BUTTERFLY VALVE	N	DRY SYSTEM RISER - NITROGEN FILLED
	CHECK VALVE	N	PREACTION SYSTEM RISER - NITROGEN FILLED
	WYE STRAINER		FREESTANDING TEST HEADER - NUMBER OF OUTLETS AS INDICATED ON PLANS
	BASKET STRAINER		WALL-MOUNTED TEST HEADER - NUMBER OF OUTLETS AS INDICATED ON PLANS
	POST-INDICATOR VALVE		SINGLE FIRE DEPARTMENT CONNECTION
	BACKFLOW PREVENTER - DOUBLE CHECK		SIAMESE FIRE DEPARTMENT CONNECTION
	BACKFLOW PREVENTER - REDUCED PRESSURE		FLUSH MOUNT 2-WAY FIRE DEPARTMENT CONNECTION
	FIRE DEPARTMENT HOSE VALVE		FLUSH MOUNT 3-WAY FIRE DEPARTMENT CONNECTION
	PRESSURE REDUCING FIRE DEPT. HOSE VALVE		FLUSH MOUNT 4-WAY FIRE DEPARTMENT CONNECTION
	PRESSURE REDUCING VALVE		FREESTANDING SIAMESE FIRE DEPARTMENT CONEECTION
	PRESSURE RELIEF VALVE		FREESTANDING 3-WAY FIRE DEPARTMENT CONNECTION
TS	VALVE TAMPER (SUPERVISORY) SWITCH		FREESTANDING 4-WAY FIRE DEPARTMENT CONNECTION
FS	FLOW SWITCH		DIRECTION OF FLOW
	PRESSURE GAUGE		DIRECTION OF SLOPE (DOWN)
	SHUT OFF VALVE IN VERTICAL		PIPE SLEEVE
	CHECK VALVE IN VERTICAL		CONNECT TO EXISTING
	MECHANICAL COUPLING		LIMIT OF DEMOLITION
	PIPE HANGER	[0 - 0]	CENTERLINE OF PIPE ABOVE FINISHED FLOOR
	LATERAL BRACE	[0 - 0 Bts]	CENTERLINE OF PIPE BELOW TOP OF STEEL/BOTTOM OF DECK
	LONGITUDINAL BRACE		HYDRAULIC REFERENCE POINT
	FOUR-WAY BRACE	10-0	CEILING HEIGHT ABOVE FINISHED FLOOR
	PRESSURE REGULATING VALVE		

PLUMBING SHEET LIST

SHEET NUMBER	SHEET NAME
P-001	PLUMBING SYMBOL LEGEND AND NOTES
P-010	SITE PLUMBING PLAN
P-100	UNDERGROUND GRAVITY PLAN
P-101	LEVEL 1 GRAVITY PLAN
P-102	LEVEL 2 GRAVITY PLAN
P-103	LEVEL 3 GRAVITY PLAN
P-104	LEVEL 4 GRAVITY PLAN
P-105	LEVEL 5 GRAVITY PLAN
P-106	PENTHOUSE GRAVITY PLAN
P-107	ROOF PLUMBING PLAN
P-201	LEVEL 1 PRESSURE PLAN
P-202	LEVEL 2 PRESSURE PLAN
P-203	LEVEL 3 PRESSURE PLAN
P-204	LEVEL 4 PRESSURE PLAN
P-205	LEVEL 5 PRESSURE PLAN
P-206	PENTHOUSE PRESSURE PLAN
P-301	LEVEL 1 TREATED WATER & LAB GAS PLAN
P-302	LEVEL 2 TREATED WATER & LAB GAS PLAN
P-303	LEVEL 3 TREATED WATER & LAB GAS PLAN
P-304	LEVEL 4 TREATED WATER & LAB GAS PLAN
P-305	LEVEL 5 TREATED WATER & LAB GAS PLAN
P-306	PENTHOUSE TREATED WATER & LAB GAS PLAN
P-401	ENLARGED PLUMBING PLANS
P-500	APPENDAGE AREAS PLUMBING PLANS
P-501	APPENDAGE AREAS PLUMBING PLANS
P-502	LEVEL 3 - SCOTT HALL RENOVATION - PLUMBING PLANS
P-601	PLUMBING DETAILS
P-602	PLUMBING DETAILS
P-603	PLUMBING DETAILS
P-701	PLUMBING SCHEDULES
P-702	PLUMBING SCHEDULES
P-901	ISOMETRICS - LEVEL 1 GRAVITY
P-902	ISOMETRICS - LEVEL 1 PRESSURE
P-903	ISOMETRICS - LEVEL 2 GRAVITY
P-904	ISOMETRICS - LEVEL 2 PRESSURE
P-905	ISOMETRICS - LEVEL 3 GRAVITY
P-906	ISOMETRICS - LEVEL 3 PRESSURE
P-907	ISOMETRICS - LEVEL 4 GRAVITY
P-908	ISOMETRICS - LEVEL 4 PRESSURE
P-909	ISOMETRICS - LEVEL 5 GRAVITY
P-910	ISOMETRICS - LEVEL 5 PRESSURE
P-911	ISOMETRICS - PENTHOUSE & ROOF GRAVITY
P-912	ISOMETRICS - PENTHOUSE PRESSURE
P-913	ISOMETRICS - LEVEL 1 & 2 TREATED WATER
P-914	ISOMETRICS - LEVEL 3 & 4 TREATED WATER
P-915	ISOMETRICS - LEVEL 5 & PENTHOUSE TREATED WATER
P-916	ISOMETRICS - NATURAL GAS

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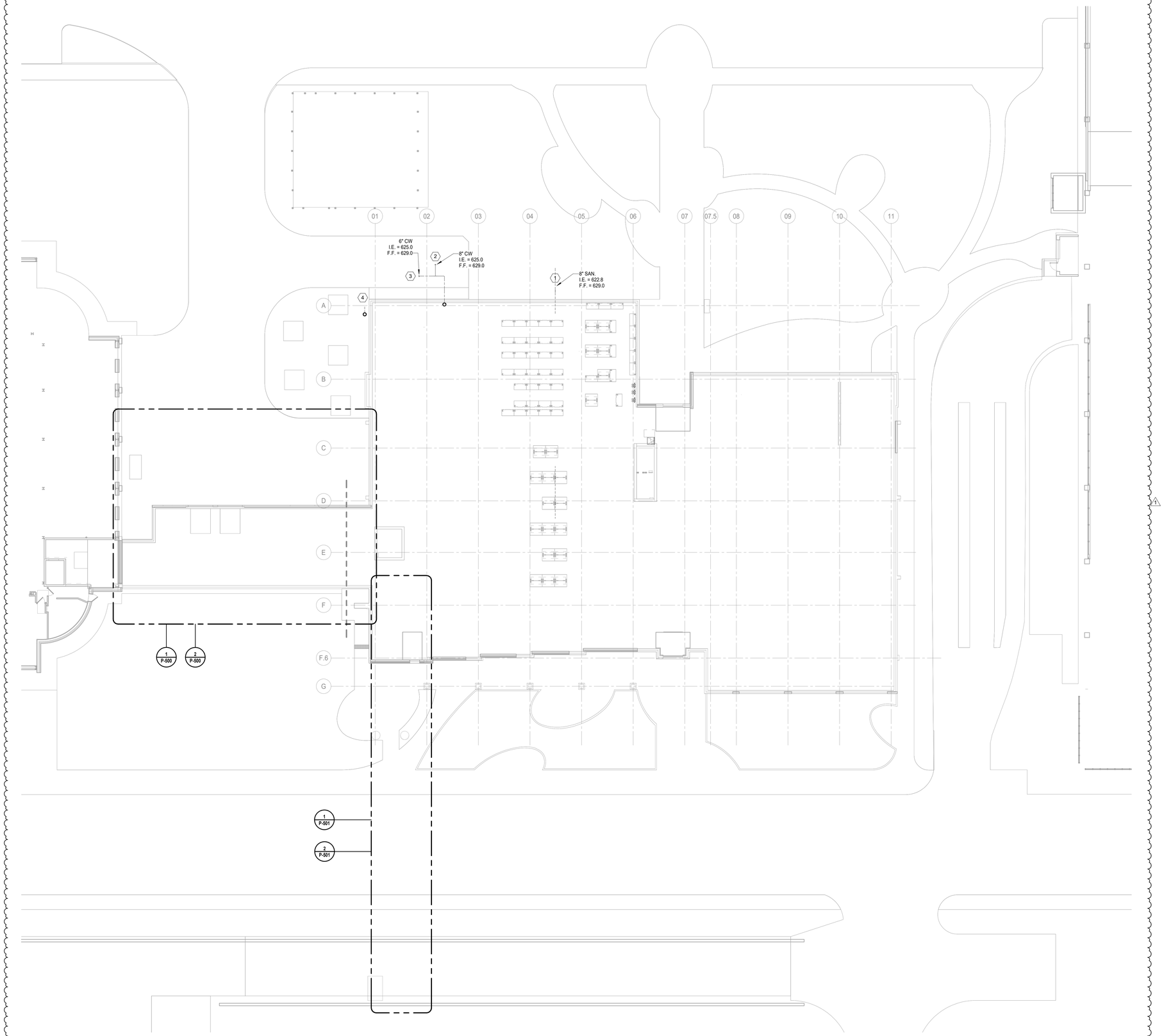
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PLUMBING SYMBOL LEGEND AND NOTES

SHEET NO.
P-001



2 SITE PLAN - PLUMBING
SCALE: 1/16" = 1'-0"

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEY NOTES:

1. 8" SANITARY BUILDING DRAIN. SEE CIVIL PLANS FOR CONTINUATION.
2. 8" CW FOR DOMESTIC WATER SERVICE. SEE CIVIL PLANS FOR CONTINUATION.
3. 6" CW FOR FIRE PROTECTION SERVICE. REFER TO FIRE PROTECTION DRAWINGS FOR CONTINUATION.
4. 10" NATURAL GAS PIPING @ 1.0 PSI, ROUTED BELOW GRADE TO GAS METER (19,632 CFH TOTAL) BY UTILITY COMPANY.

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10/17/2025

KEY PLAN

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SITE PLUMBING PLAN

SHEET NO.
P-010

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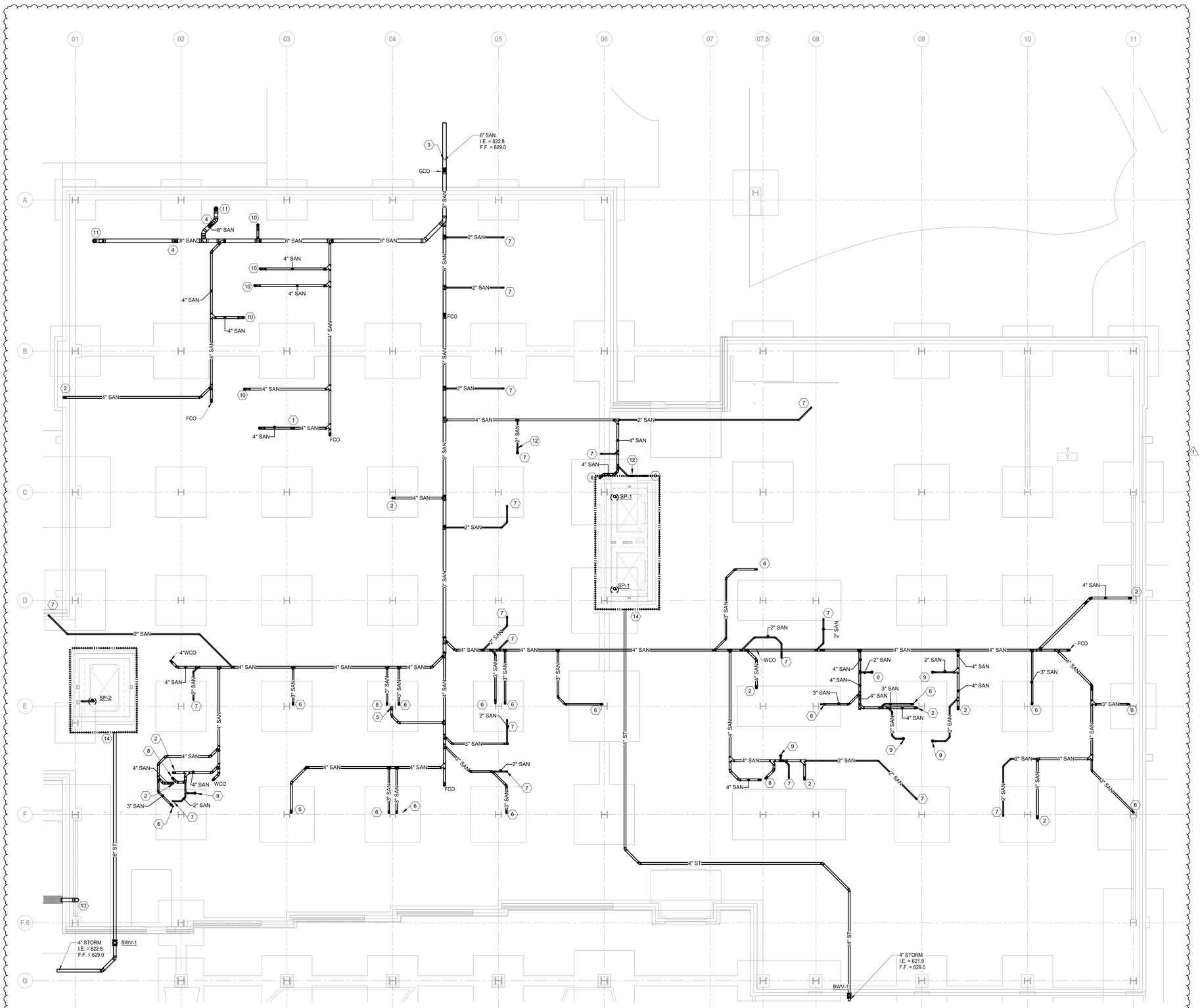

1 LEVEL 00 UNDERGROUND WASTE, VENT & STORM PLAN

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

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEY NOTES:

1. 3" VENT STACK.
2. 4" SANITARY STACK FROM ABOVE.
3. SEE P-010 SITE PLUMBING PLAN FOR CONTINUATION.
4. 3" VENT UP IN WALL.
5. 4" SANITARY STACK.
6. 3" SANITARY STACK FROM ABOVE.
7. 2" SANITARY STACK FROM PLUMBING FIXTURE ABOVE.
8. 4" SANITARY STACK FROM PLUMBING FIXTURE ABOVE.
9. 2" SANITARY DRAIN PIPE FROM FLOOR DRAIN ABOVE.
10. 4" SANITARY DRAIN PIPE FROM FLOOR DRAIN ABOVE.
11. 8" SANITARY DRAIN PIPE FROM FLOOR DRAIN ABOVE.
12. 2" VENT STACK UP.
13. 8" STORM DRAIN FROM ABOVE TO TRENCH DRAIN.
14. 4" PERFORATED PIPE FOR FOUNDATION DRAINAGE. REFER TO CIVIL FOR EXACT DEPTH OF PERFORATED PIPE. RUN 4" CAST-IRON PIPE CONNECT TO PERFORATED PIPE AS SHOWN TO BUILDING EXTERIOR.

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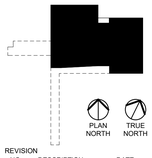
KEY PLAN



REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
UNDERGROUND GRAVITY PLAN

SHEET NO.
P-100

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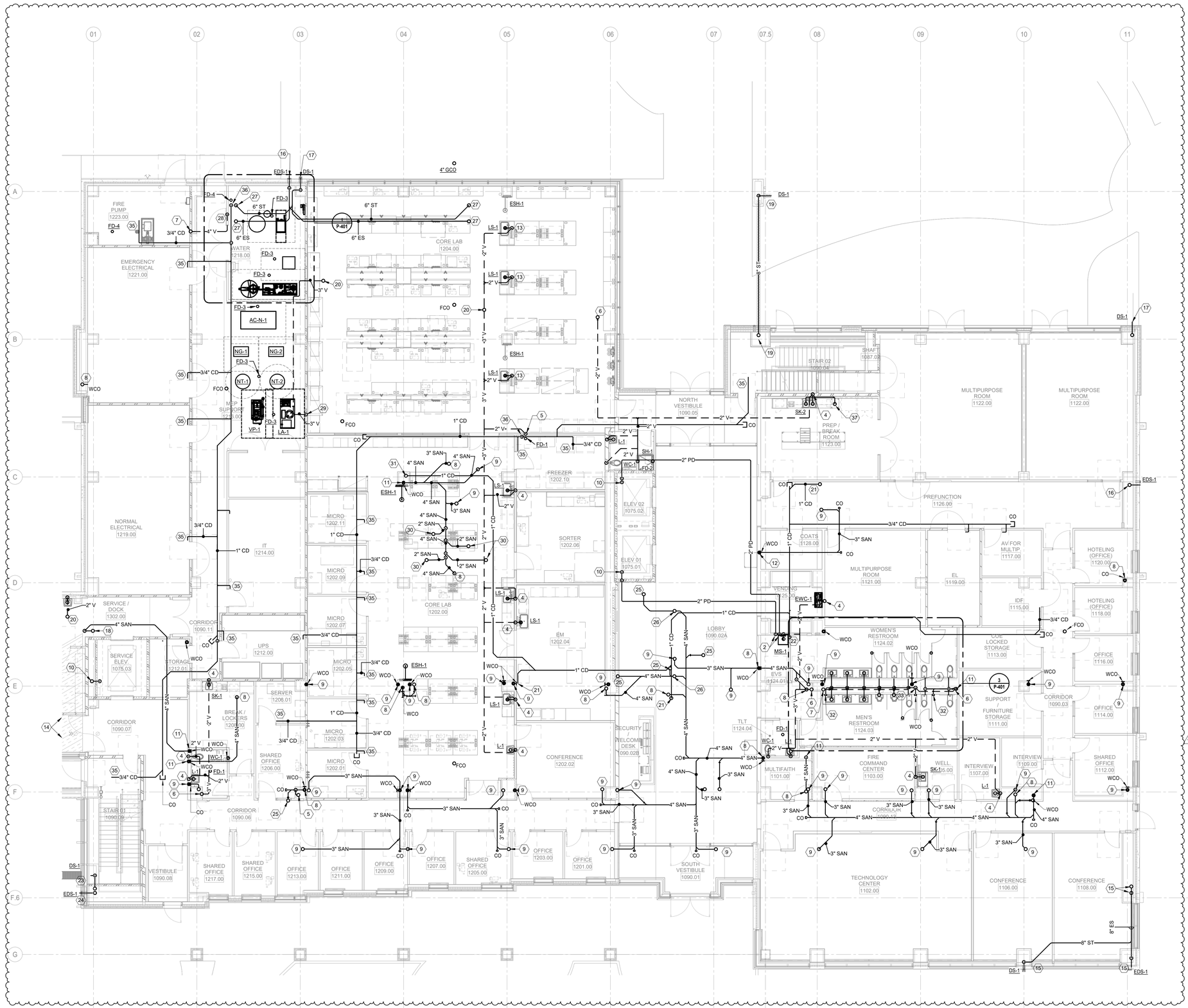

1 LEVEL 01 WASTE, VENT & STORM PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEY NOTES:

1. 3" WASTE STACK VENT.
2. 2" SUMP PUMP DISCHARGE. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE. LOCATE SUMP PUMP ALARM IN EVS ROOM.
3. 6" STORM & EMERGENCY ROOF DRAIN STACK.
4. 2" SANITARY DRAIN DOWN.
5. 2" VENT STACK.
6. 3" VENT STACK.
7. 4" VENT THRU ROOF.
8. 4" SANITARY STACK.
9. 3" SANITARY STACK.
10. 2" SUMP PUMP DISCHARGE UP.
11. 4" SANITARY DOWN.
12. 3" SANITARY DOWN.
13. 2" SANITARY DRAIN AND VENT. ROUTE VENT THRU EQUIPMENT CHASE TO CEILING SPACE.
14. 4" STORM AND STORM OVERFLOW DRAINS. SEE SHEET P-500 FOR CONTINUATION.
15. 8" STORM RISER AND 8" STORM OVERFLOW SPILL TO GRADE.
16. 4" STORM OVERFLOW SPILL TO GRADE.
17. 4" STORM SPILL TO GRADE.
18. 4" SANITARY FROM MOP SINK ABOVE.
19. 8" STORM TO BE OFFSET AND SPILL TO GRADE. HEAT TRACE TO BE INSTALLED ON 8" STORM PIPE. SEE SCHEDULE ON SHEET P-702.
20. 3" VENT THRU ROOF.
21. 3/4" CONDENSATE DRAIN PUMP UP TO ROOF AND SPILL TO NEAREST ROOF DRAIN.
22. ROUTE 1" CONDENSATE TO MOP SINK. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE.
23. 8" STORM DRAIN DOWN TO BELOW GRADE AND TERMINATE IN TRENCH DRAIN.
24. 8" STORM OVERFLOW SPILL TO GRADE.
25. 4" SANITARY FROM FLOOR SINK ABOVE.
26. 2" VENT SERVING FLOOR SINK DRAIN.
27. 6" STORM AND STORM OVERFLOW DRAINS FROM ROOF DRAIN ABOVE.
28. 4" VENT FROM FLOOR DRAIN BELOW.
29. 3" VENT FROM FLOOR DRAIN BELOW.
30. 2" SANITARY DRAIN FROM PLUMBING FIXTURE ABOVE.
31. 1" CONDENSATE RISER FROM ABOVE.
32. 4" WALL CLEANOUT.
33. 3" VENT STACK TO BE OFFSET AS SHOWN.
34. NOT USED.
35. 3/4" CONDENSATE DRAINAGE FROM FCU.
36. ROUTE 1" CONDENSATE DOWN TO FLOOR RECEPTACLE. TERMINATE OVER RECEPTACLE WITH AIR GAP PER CODE.
37. 2" SANITARY WASTE TO SERVE TABLE TOP ICE MAKER. PROVIDE MINI AIR GAP WITH AIR GAP FITTING.

HKS

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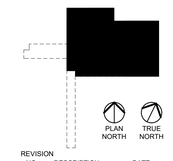
NATHANIEL C. OSTRANDER — STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER — No. 61101
10/17/2025

KEY PLAN



PLAN NORTH | TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 GRAVITY PLAN

SHEET NO.
P-101

OSBORN ENGINEERING
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(313) 915-4014 www.osborn-eng.com

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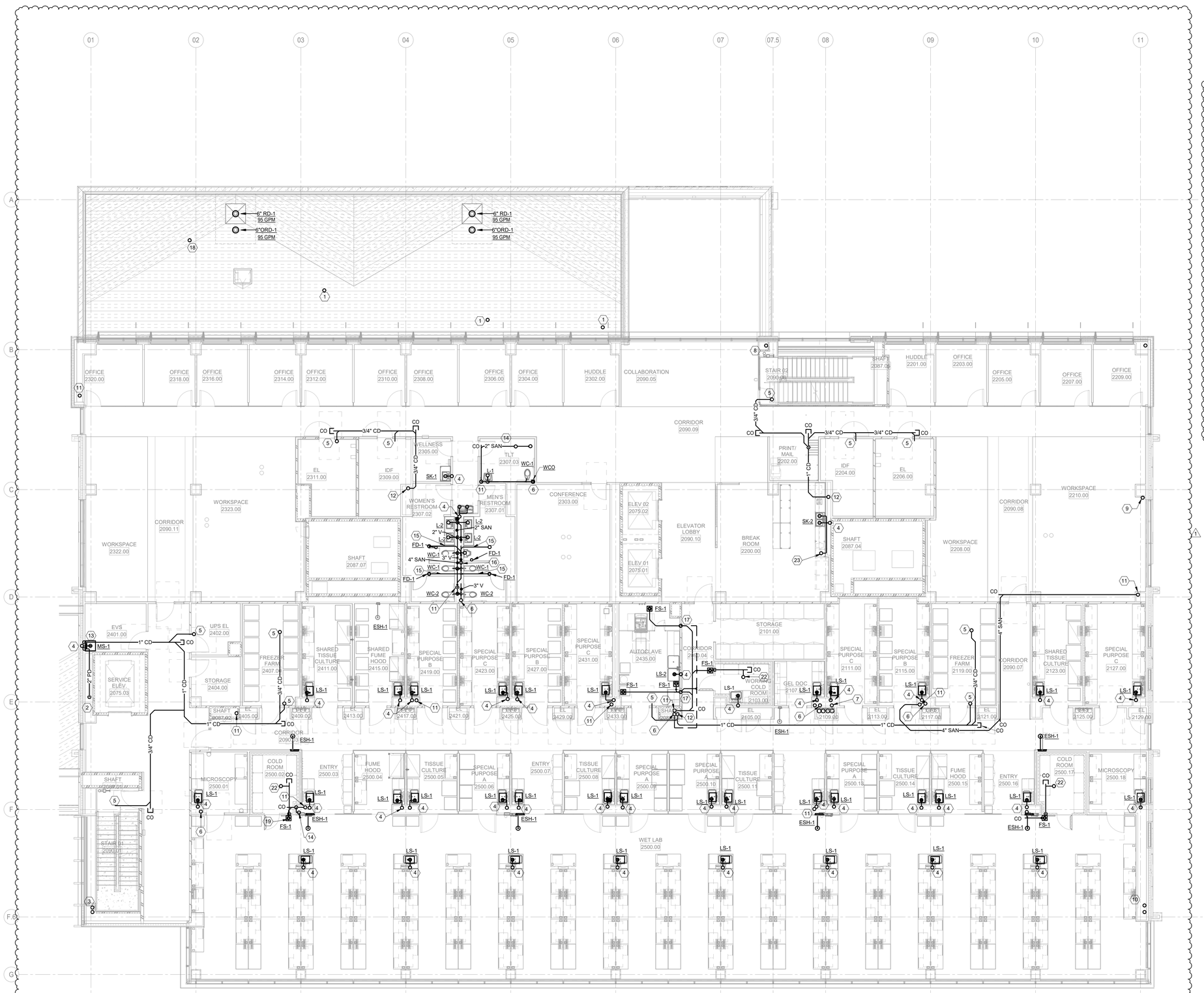
PLOT DATE: 10/16/2025 16:26:18 TEMPLATE VERSION: 23.0.4



1 LEVEL 02 WASTE, VENT & STORM PLAN

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

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
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3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEY NOTES:

1. 3" VENT THRU ROOF.
2. 2" PUMP DISCHARGE FROM SUMP PUMP. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE. REFER TO SHEET P-101 FOR CONTINUATION.
3. 6" STORM & EMERGENCY ROOF DRAIN RISER.
4. 3" WASTE STACK VENT.
5. 3/4" CONDENSATE DRAIN FROM FCU.
6. 3" VENT STACK.
7. 4" VENT STACK.
8. 8" STORM DRAIN.
9. 4" STORM OVERFLOW DRAIN.
10. 8" ROOF DRAIN AND OVERFLOW DRAIN.
11. 4" SANITARY STACK.
12. 1" CONDENSATE RISER.
13. ROUTE 1" CONDENSATE TO MOP SINK. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE.
14. 2" VENT PIPE UP.
15. FLOOR DRAIN SERVING LEVEL ABOVE.
16. 2" VENT PIPING.
17. 2" VENT SERVING FLOOR SINK DRAIN PIPE BELOW.
18. 4" VENT THRU ROOF.
19. 4" SANITARY DRAIN PIPE SERVING FLOOR SINK.
20. 4" STORM DRAIN PIPING.
21. 8" STORM DRAIN PIPING.
22. 3/4" CONDENSATE DRAIN FROM COLD ROOM EVAPORATOR UNIT. SPILL TO FLOOR DRAIN/SINK.
23. 2" SANITARY WASTE TO SERVE TABLE TOP ICE MAKER. PROVIDE MINI AIR GAP WITH AIR GAP FITTING.

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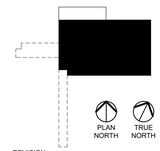
10/17/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 2 GRAVITY PLAN

SHEET NO.
P-102

OSBORN ENGINEERING
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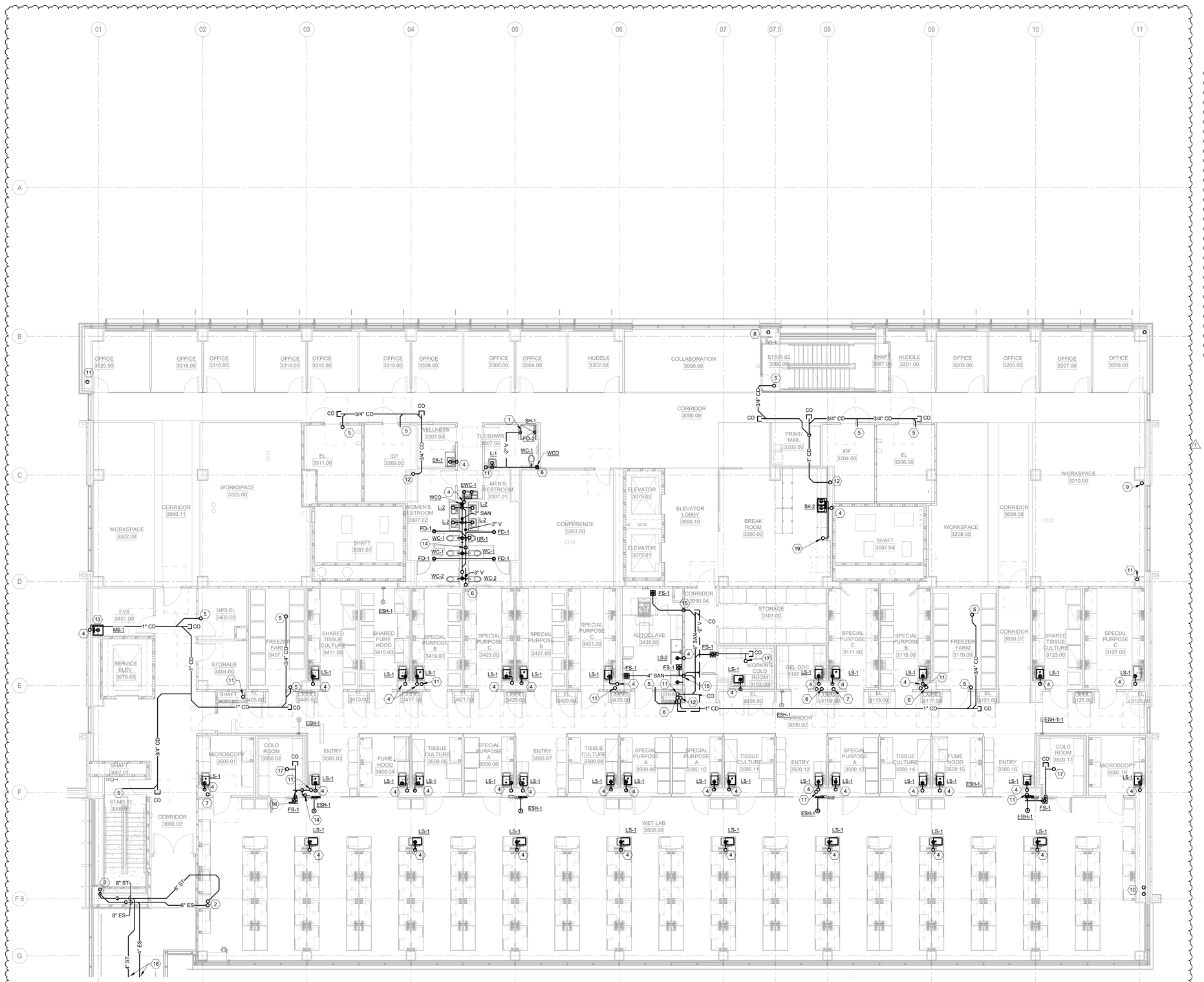
TEMPLATE VERSION: 23.0.4



1 LEVEL 03 WASTE, VENT & STORM PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEY NOTES:

1. 2" VENT SERVING SHOWER DRAIN, SH-1.
2. 6" STORM & EMERGENCY PIPING TO BE OFFSET.
3. 8" STORM & EMERGENCY ROOF DRAIN UP/DN.
4. 3" WASTE STACK VENT.
5. 3/4" CONDENSATE DRAIN FROM FCU.
6. 3" VENT STACK.
7. 4" VENT STACK
8. 8" STORM DRAIN STACK.
9. 4" STORM OVERFLOW DRAIN PIPING.
10. 8" ROOF DRAIN AND OVERFLOW DRAIN PIPING.
11. 4" SANITARY STACK.
12. 1" CONDENSATE.
13. ROUTE 1" CONDENSATE TO MOP SINK. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE.
14. 2" VENT SERVING FLOOR DRAIN SANITARY LINE BELOW.
15. 2" VENT SERVING FLOOR SINK DRAIN PIPE BELOW.
16. 4" SANITARY DRAIN PIPE SERVING FLOOR SINK.
17. 3/4" CONDENSATE DRAIN FROM COLD ROOM EVAPORATOR UNIT. SPILL TO FLOOR DRAIN/SINK.
18. REFER TO APPENDAGE AREA ON SHEET P-501 FOR CONTINUATION.
19. 2" SANITARY WASTE TO SERVE TABLE TOP ICE MAKER. PROVIDE MINI AIR GAP WITH AIR GAP FITTING.

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ANTHANEL C. STALKER
ENGINEER
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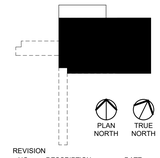
PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 GRAVITY PLAN

SHEET NO.
P-103

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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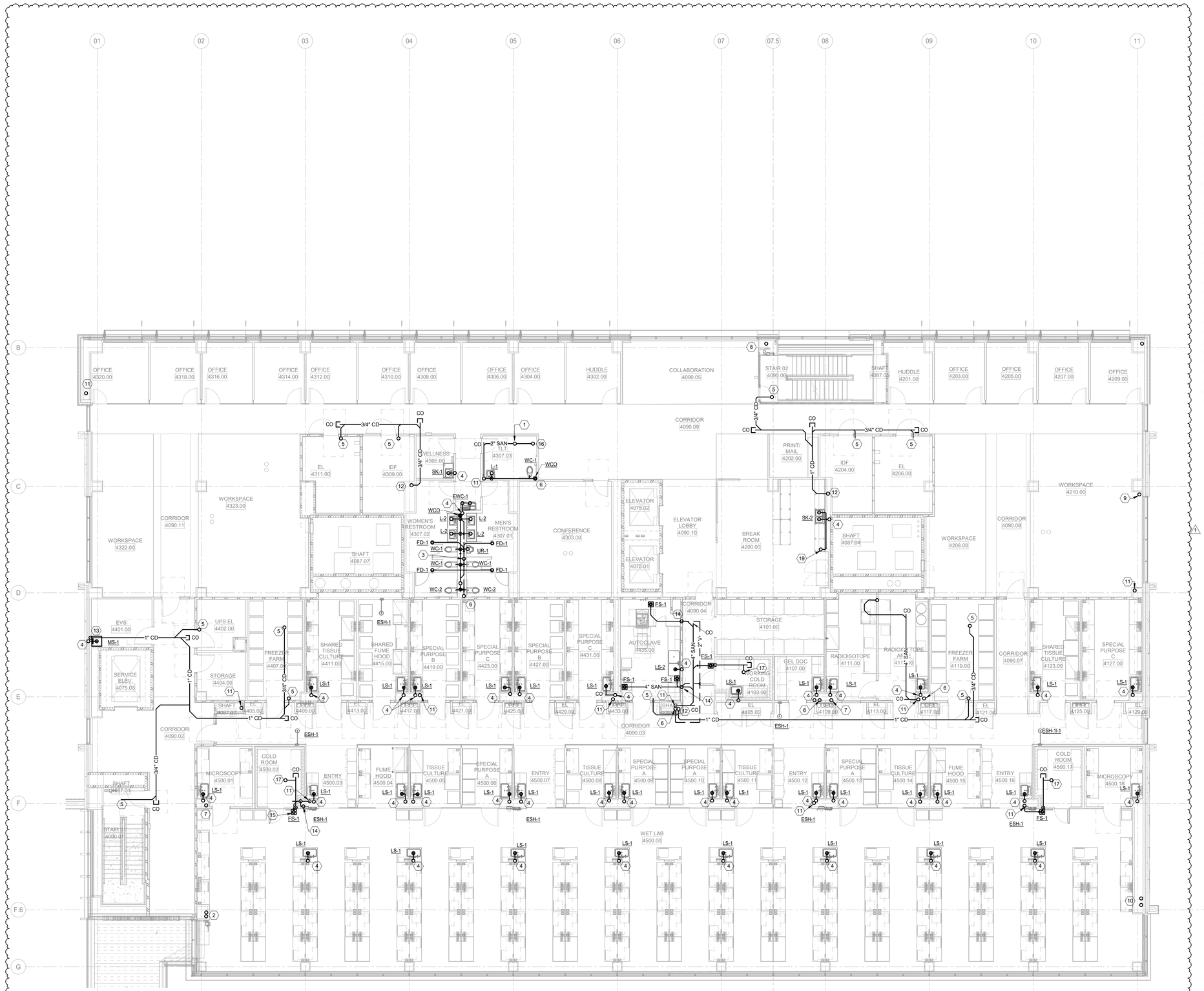

1 LEVEL 04 WASTE, VENT & STORM PLAN

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

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
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4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEY NOTES:

1. 2" VENT SERVING SHOWER DRAIN ABOVE, SH-1.
2. 6" STORM & EMERGENCY STACKS.
3. 2" VENT SERVING FLOOR DRAIN SANITARY LINE BELOW.
4. 3" WASTE STACK VENT.
5. 3/4" CONDENSATE DRAIN FROM FCU.
6. 3" VENT STACK.
7. 4" VENT STACK.
8. 8" STORM DRAIN STACK..
9. 4" STORM OVERFLOW DRAIN UP/DN.
10. 8" ROOF AND OVERFLOW DRAIN.
11. 4" SANITARY STACK.
12. 1" CONDENSATE RISER.
13. ROUTE 1" CONDENSATE TO MOP SINK. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE.
14. 2" VENT SERVING FLOOR SINK DRAIN PIPE BELOW.
15. 4" SANITARY DRAIN PIPE SERVING FLOOR SINK.
16. 2" SANITARY DRAIN SERVING SHOWER DRAIN ABOVE.
17. 3/4" CONDENSATE DRAIN FROM COLD ROOM EVAPORATOR UNIT. SPILL TO FLOOR DRAIN/SINK.
18. 2" SANITARY WASTE TO SERVE TABLE TOP ICE MAKER. PROVIDE MINI AIR GAP WITH AIR GAP FITTING.
19. 2" SANITARY WASTE TO SERVE TABLE TOP ICE MAKER. PROVIDE MINI AIR GAP WITH AIR GAP FITTING.

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STATE OF MICHIGAN
NATHANIEL C. STRUKER
ENGINEER
No. 61101
PROFESSIONAL
10/17/2025

KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 4 GRAVITY PLAN

SHEET NO.
P-104

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GENERAL SHEET NOTES

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4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES

1. 2" VENT SERVING SHOWER DRAIN, SH-1.
2. 3" VENT OFFSET AND UP THRU ROOF.
3. UP TO ROOF DRAIN.
4. 6" ROOF DRAIN AND OVERFLOW ROOF DRAIN RISER.
5. 8" ROOF DRAIN AND OVERFLOW ROOF DRAIN RISER.
6. 3/4" CONDENSATE DRAIN FROM FCU.
7. 3" VENT STACK.
8. 4" SANITARY STACK.
9. 4" SANITARY DRAIN FROM FLOOR DRAIN ABOVE.
10. 4" STORM OVERFLOW DRAIN RISER.
11. 1" CONDENSATE RISER DOWN.
12. ROUTE 1" CONDENSATE TO MOP SINK. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE.
13. 2" VENT SERVING FLOOR DRAIN SANITARY LINE BELOW.
14. 4" STORM AND 4" OVERFLOW STORM UP TO ROOF DRAINS.
15. 8" ROOF DRAIN UP/DN.
16. 2" VENT SERVING FLOOR SINK DRAIN PIPE BELOW.
17. 4" SANITARY DRAIN PIPE SERVING FLOOR SINK.
18. 3/4" CONDENSATE DRAIN FROM COLD ROOM EVAPORATOR UNIT. SPILL TO FLOOR DRAIN/SINK.
19. 4" VENT UP.
20. 2" SANITARY WASTE TO SERVE TABLE TOP ICE MAKER. PROVIDE MINI AIR GAP WITH AIR GAP FITTING.
21. 4" STORM DRAIN RISER.
22. 3" WASTE AND VENT STACK SERVING ELECTRIC WATER COOLER.

1

1 LEVEL 05 WASTE, VENT & STORM PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 16:28:51
TEMPLATE VERSION: 23.0.4

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NATHANIEL C. STALKER — STATE OF MICHIGAN — No. 61101 — REGISTERED PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 5 GRAVITY PLAN

SHEET NO.
P-105

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GENERAL SHEET NOTES

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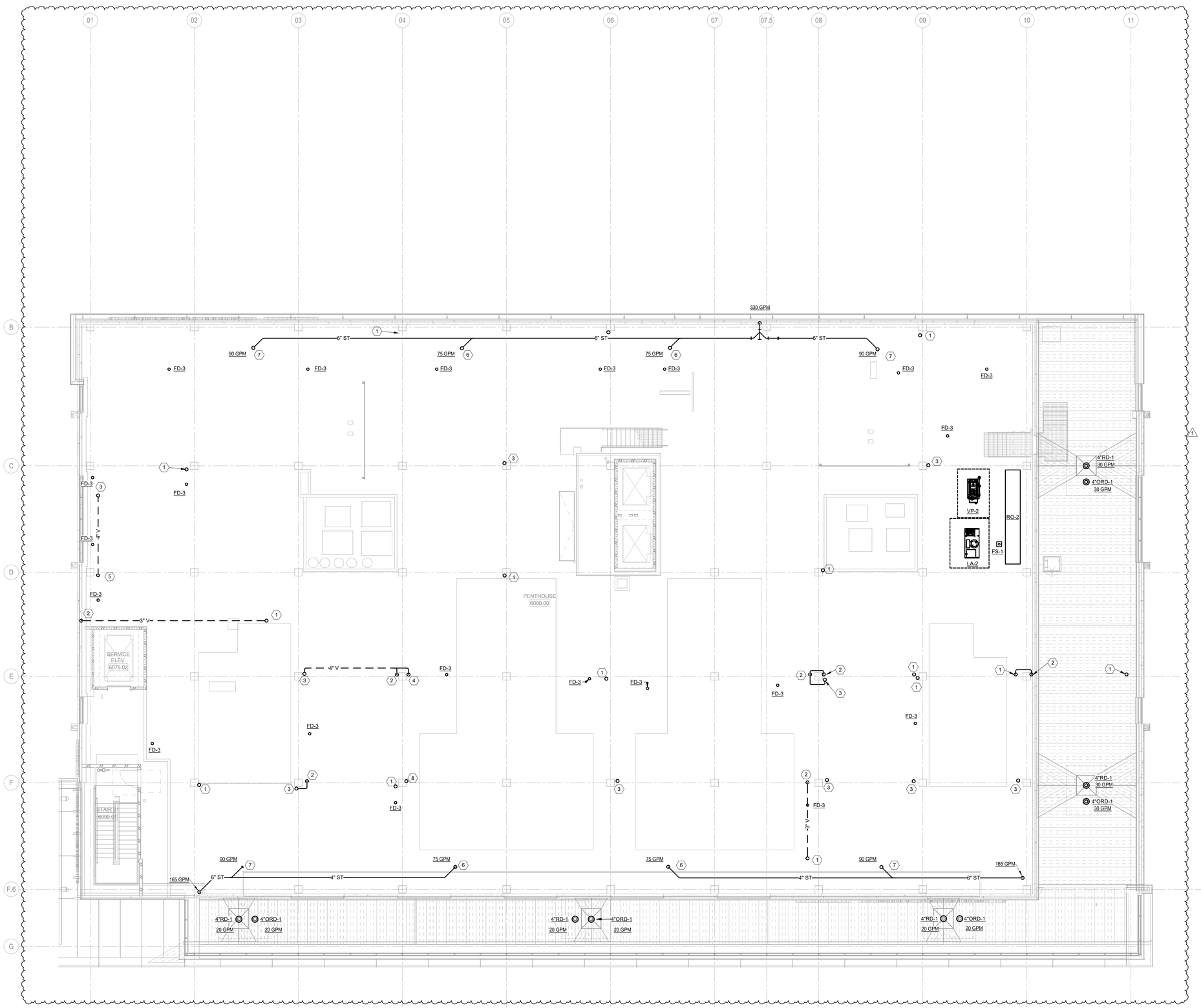
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES

1. 3" VENT THRU ROOF.
2. 3" VENT FROM BELOW. OFFSET PRIOR TO PENETRATING ROOF WITH 3" VTR
3. 4" VENT THRU ROOF.
4. 4" VENT UP FROM BELOW.
5. 4" VENT FROM BELOW. OFFSET PRIOR TO PENETRATING ROOF WITH 4" VTR.
6. 4" STORM DRAIN FROM ROOF DRAIN ABOVE.
7. 6"STORM DRAIN FROM ROOF DRAIN ABOVE.
8. 4" VTR.



1 PENTHOUSE WASTE, VENT & STORM PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/17/2025 10:28:56 TEMPLATE VERSION: 23.0.4

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STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER — NATHANIEL C. STALKER — 61101

10/17/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION

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HKS PROJECT NUMBER
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29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
PENTHOUSE GRAVITY PLAN

SHEET NO.
P-106

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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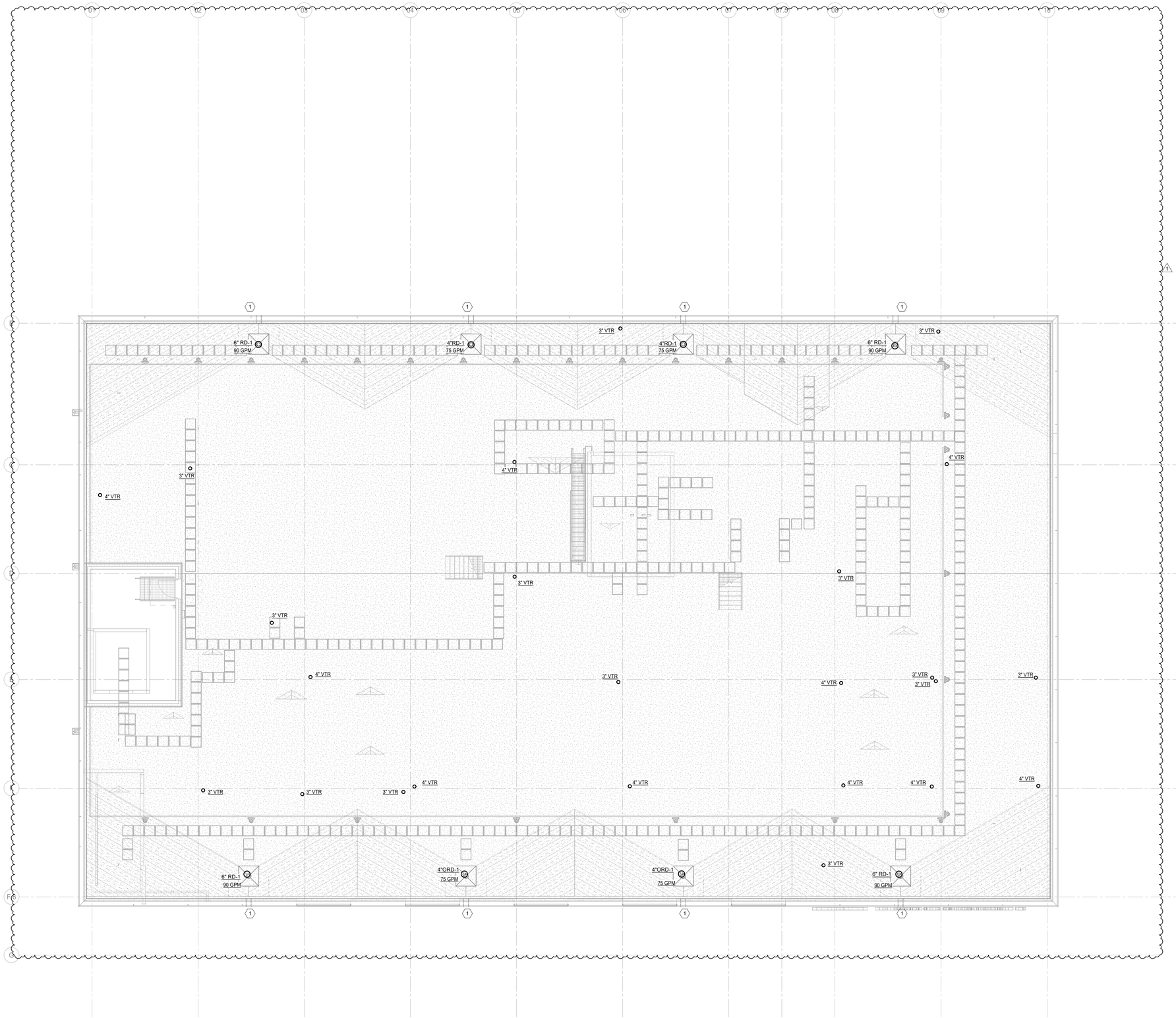

1 ROOF PLUMBING PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEYNOTES

1. OVERFLOW SCUPPER. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

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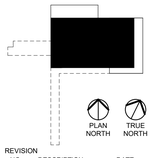
STATE OF MICHIGAN
NATHANIEL C. STALKER
No. 51101
LICENSED PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN



REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ROOF PLUMBING PLAN

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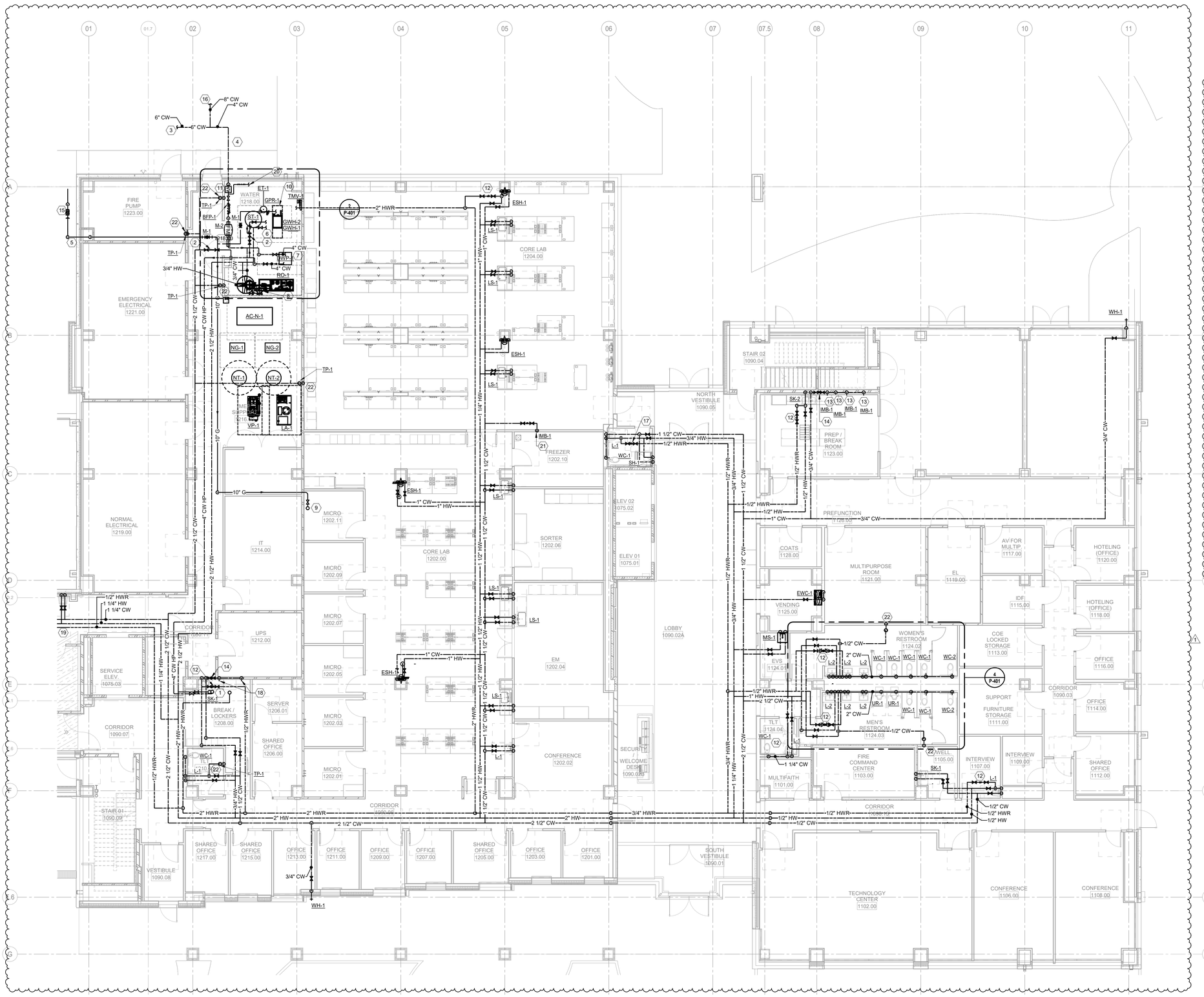
SHEET NO.
P-107

PLOT DATE: 10/16/2025 16:29:00 TEMPLATE VERSION: 23.0.4



1 LEVEL 01 DOMESTIC WATER & NATURAL GAS PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEYNOTES - DOMESTIC WATER & NATURAL GAS

1. 3" CW, 2" HW & 2" HWR RISERS.
2. PRESSURE REDUCING VALVE, PRV-1.
3. 6" WATER LINE FOR FIRE PROTECTION SERVICE. REFER TO FIRE PROTECTION DRAWINGS FOR CONTINUATION.
4. 4" DOMESTIC WATER INCOMING SERVICE.
5. 10" NATURAL GAS PIPE @ 1 PSI FROM GAS METER. INCOMING SERVICE BY OTHERS (19,632 CFH TOTAL). ROUTE PIPE IN SOFFIT LOCATED IN FIRE PUMP ROOM. REFER TO DETAIL ON SHEET P-601 FOR ADDITIONAL INFORMATION.
6. 2-1/2"CW TO GAS WATER HEATERS. 2-1/2"HW FROM GAS WATER HEATERS. REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION.
7. 4"CW TO DOMESTIC WATER TO BOOSTER PUMP. 4"CW PIPE TO SERVE PLUMBING FIXTURES. REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION.
8. 3/4"CW&HW TO REVERSE OSMOSIS SYSTEM. REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION.
9. 10" NATURAL GAS PIPE UP TO SERVE MECHANICAL SYSTEMS IN PENTHOUSE(18,332 CFH @ 653 TOTAL EQUIVALENT LENGTH).
10. 1-1/2" NATURAL GAS LINE TO SERVE GWH-1 AND GWH-2 (650 MBH EACH).
11. WATER METER BY UTILITY COMPANY.
12. 0.5 GPM BALANCING VALVE. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.(TYP.).
13. 1/2"CW TO ICE MAKER, COFFEE MAKER, REFRIGERATOR. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
14. PROVIDE ASSE 1024 COMPLIANT BACKFLOW PREVENTER ASSEMBLY. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
15. 10" NATURAL GAS PIPING @ 1.0 PSI, ROUTED BELOW GRADE TO GAS METER (19,632 CFH TOTAL). BY UTILITY COMPANY.
16. 8" WATER LINE TO SERVE BUILDING. REFER TO CIVIL PLAN FOR CONTINUATION.
17. BALANCING VALVE SET TO 1.0 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
18. ROUTE 1/2" CW TO ICE MAKER BOX SERVING REFRIGERATOR AND 1/2" CW TO COFFEE MAKER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
19. REFER TO SHEET P-500 FOR CONTINUATION.
20. PROVIDE 2" DOMESTIC CW WITH REDUCED PRESSURE ZONE BACKFLOW PREVENTER FOR IRRIGATION CONNECTION.
21. 1/2"CW TO ICE MAKER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
22. 1/2"CW FROM TRAP PRIMER DOWN TO SERVE FLOOR DRAINS. TRAP PRIMER SERVES UP TO 4 FLOOR DRAINS.

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STATE OF MICHIGAN — NATHANIEL C. OSBORN — REGISTERED PROFESSIONAL ENGINEER — No. 61101
10/17/2025

KEY PLAN

PLAN NORTH / TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 1 PRESSURE PLAN

SHEET NO.
P-201

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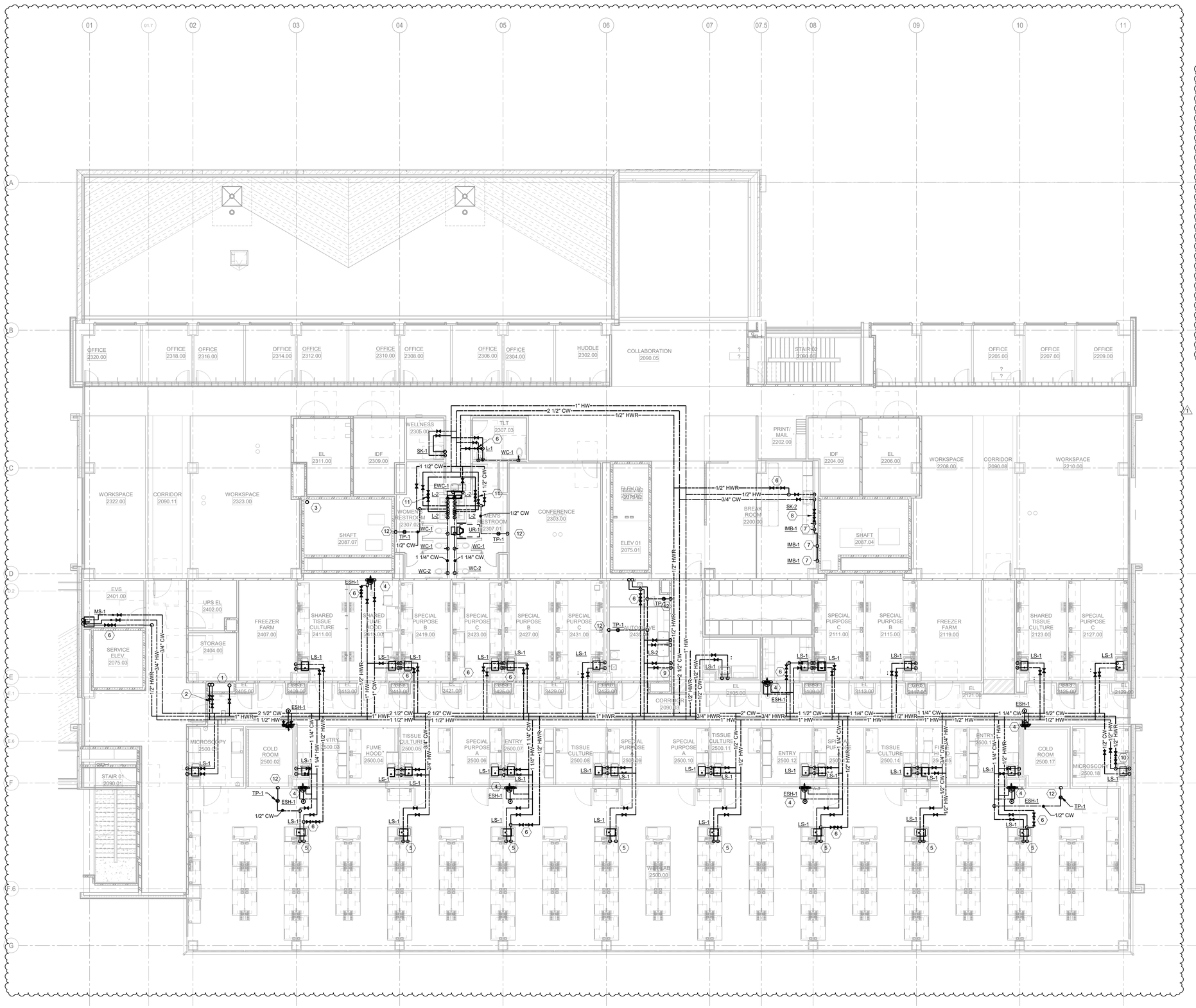

1 LEVEL 02 DOMESTIC WATER & NATURAL GAS PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEYNOTES

1. 3" CW, 1-1/2"HW & 1-1/2" HWR RISERS. PROVIDE SHUT-OFF VALVES TO SERVE ASSOCIATED LEVEL.
2. PROVIDE PRV-1 ON LEVEL 2.
3. 4" NATURAL GAS RISER @ 1 PSI.
4. EMERGENCY SHOWER WITH THERMOSTATIC MIXING VALVE(TYPICAL OF ALL ESH-1 ON LEVELS 2 - 5).
5. ROUTE 1/2" CW & HW DOWN EQUIPMENT CHASE TO SERVE LAB SINK.
6. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
7. 1/2"CW TO ICE MAKER BOX, IMB-1, TO SERVE REFRIGERATORS AND ICE MAKERS.
8. PROVIDE ASSE 1024 COMPLIANT BACKFLOW PREVENTER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
9. ROUTE 1/2"CW & 1/2"HW TO GLASS WASHER AND PROVIDE ASSE 1024 COMPLIANT BACKFLOW PREVENTER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
10. BALANCING VALVE SET TO 1.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
11. BALANCING VALVE SET TO 2.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
12. 1/2"CW FROM TRAP PRIMER DOWN TO SERVE FLOOR DRAINS. TRAP PRIMER SERVES UP TO 4 FLOOR DRAINS.

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STATE OF MICHIGAN — NATHANIEL C. STALKER — 61101 — REGISTERED PROFESSIONAL ENGINEER

10/17/2025

KEY PLAN

PLAN NORTH / TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 2 PRESSURE PLAN

SHEET NO.
P-202

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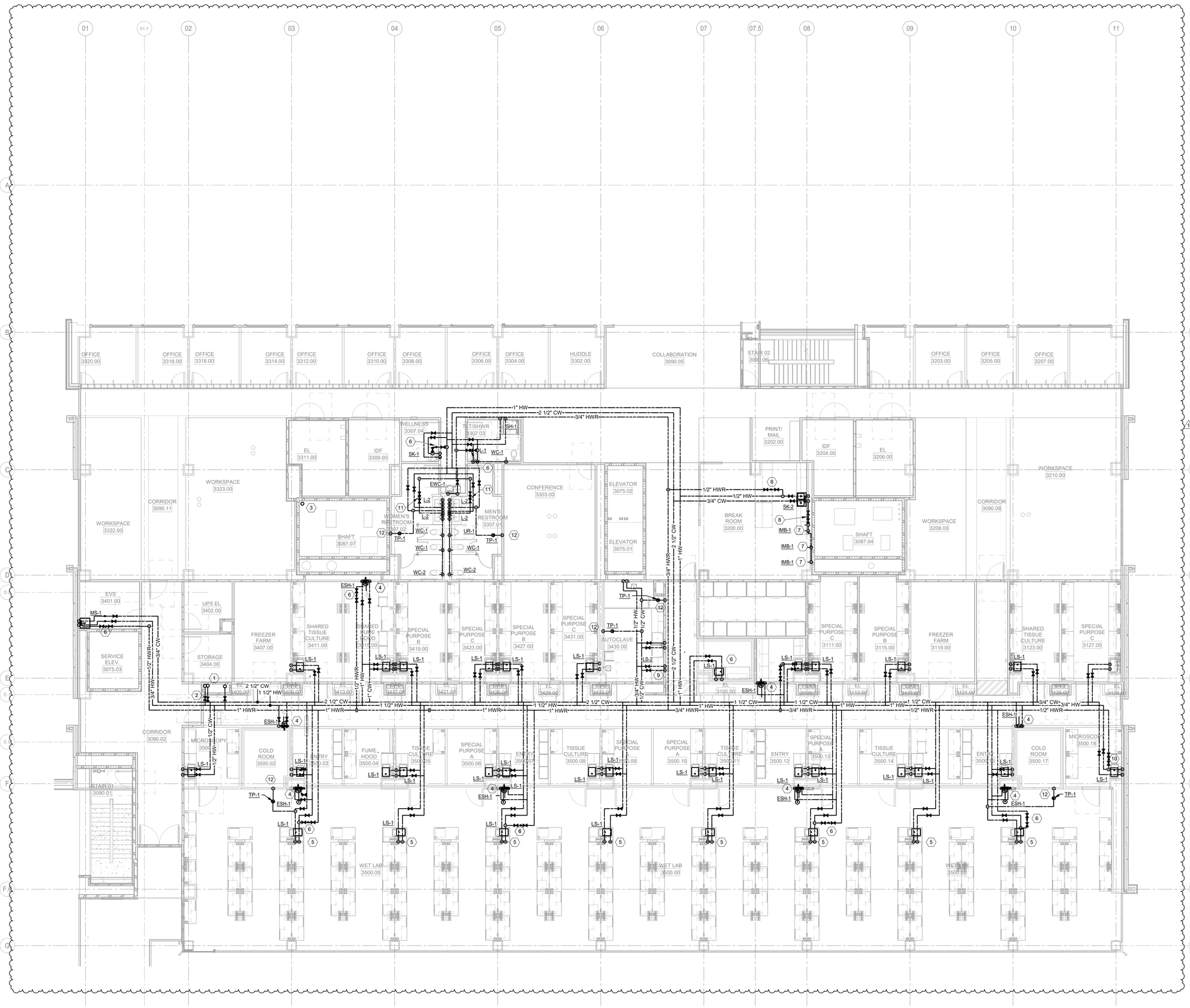

1 LEVEL 03 DOMESTIC WATER & NATURAL GAS PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES

1. 2-1/2" CW, 1-1/2"HW & 1-1/2" HWR RISERS.
2. PROVIDE SHUT-OFF VALVES TO SERVE ASSOCIATED LEVEL
3. 4" NATURAL GAS RISER @ 1 PSI.
4. EMERGENCY SHOWER WITH THERMOSTATIC MIXING VALVE(TYPICAL OF ALL ESH-1).
5. ROUTE 1/2" CW & HW DOWN EQUIPMENT CHASE TO SERVE LAB SINK.
6. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
7. 1/2"CW TO ICE MAKER BOX, IMB-1, TO SERVE REFRIGERATORS AND ICE MAKERS.
8. PROVIDE ASSE 1024 COMPLIANT BACKFLOW PREVENTER, REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
9. ROUTE 1/2"CW & 1/2"HW TO GLASS WASHER. PROVIDE ASSE 1024 COMPLIANT BACKFLOW PREVENTER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
10. BALANCING VALVE SET TO 1.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
11. BALANCING VALVE SET TO 2.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
12. 1/2"CW FROM TRAP PRIMER DOWN TO SERVE FLOOR DRAINS. TRAP PRIMER SERVES UP TO 4 FLOOR DRAINS.

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ANTHANEL C. STRAUSER — No. 61101 — LICENSED PROFESSIONAL ENGINEER — STATE OF MICHIGAN
10/17/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 3 PRESSURE PLAN

SHEET NO.
P-203

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5. ROUTE 1/2" CW & HW DOWN EQUIPMENT CHASE TO SERVE LAB SINK.
6. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
7. 1/2"CW TO ICE MAKER BOX, IMB-1, TO SERVE REFRIGERATORS AND ICE MAKERS.
8. PROVIDE ASSE 1024 COMPLIANT BACKFLOW PREVENTER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
9. BALANCING VALVE SET TO 2.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
10. ROUTE 1/2"CW & 1/2"HW TO GLASS WASHER. PROVIDE ASSE 1024 COMPLIANT BACKFLOW PREVENTER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
11. BALANCING VALVE SET TO 1.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
12. 1/2"CW FROM TRAP PRIMER DOWN TO SERVE FLOOR DRAINS. TRAP PRIMER SERVES UP TO 4 FLOOR DRAINS.

1 LEVEL 04 DOMESTIC WATER & NATURAL GAS PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 16:30:16 TEMPLATE VERSION: 23.0.4

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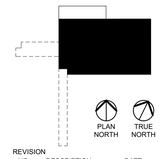
STATE OF MICHIGAN — NATHANIEL C. STRAKER — ENGINEER — No. 51101 — PROFESSIONAL ENGINEER

10/17/2025

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 4 PRESSURE PLAN

SHEET NO.
P-204

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SHEET KEYNOTES

1. 2-1/2" CW, 1-1/2"HW & 1-1/4" HWR RISERS.
2. PROVIDE SHUT-OFF VALVES TO SERVE ASSOCIATED LEVEL.
3. 4" NATURAL GAS RISER.
4. EMERGENCY SHOWER WITH THERMOSTATIC MIXING VALVE(TYPICAL OF ALL ESH-1).
5. 2" CW SUPPLY UP TO PENTHOUSE TO SERVE MECHANICAL SYSTEMS. SEE HVAC PLANS FOR EXACT LOCATION OF EQUIPMENT.
6. ROUTE 1/2" CW & HW DOWN EQUIPMENT CHASE TO SERVE LAB SINK.
7. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
8. 1/2"CW TO ICE MAKER BOX, IMB-1, TO SERVE REFRIGERATORS AND ICE MAKERS.
9. PROVIDE WATTS LF007-LF DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY.
10. BALANCING VALVE SET TO 2.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
11. BALANCING VALVE SET TO 1.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
12. ROUTE 1/2"CW & 1/2"HW TO GLASS WASHER. PROVIDE WATTS LF007 DOUBLE DETECTOR CHECK VALVE ASSEMBLY.
13. 2"CW & 3/4"HW UP TO PENTHOUSE TO SERVE PLUMBING AND HVAC SYSTEMS.
14. 1/2"CW FROM TRAP PRIMER DOWN TO SERVE FLOOR DRAINS. TRAP PRIMER SERVES UP TO 4 FLOOR DRAINS.

1 LEVEL 05 DOMESTIC WATER & NATURAL GAS PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 16:30:34 TEMPLATE VERSION: 23.0.4

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STATE OF MICHIGAN — ANTHANIEL C. STALKER — ENGINEER — No. 61101 — PROFESSIONAL
10/17/2025

KEY PLAN

PLAN NORTH / TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 5 PRESSURE PLAN

SHEET NO.
P-205

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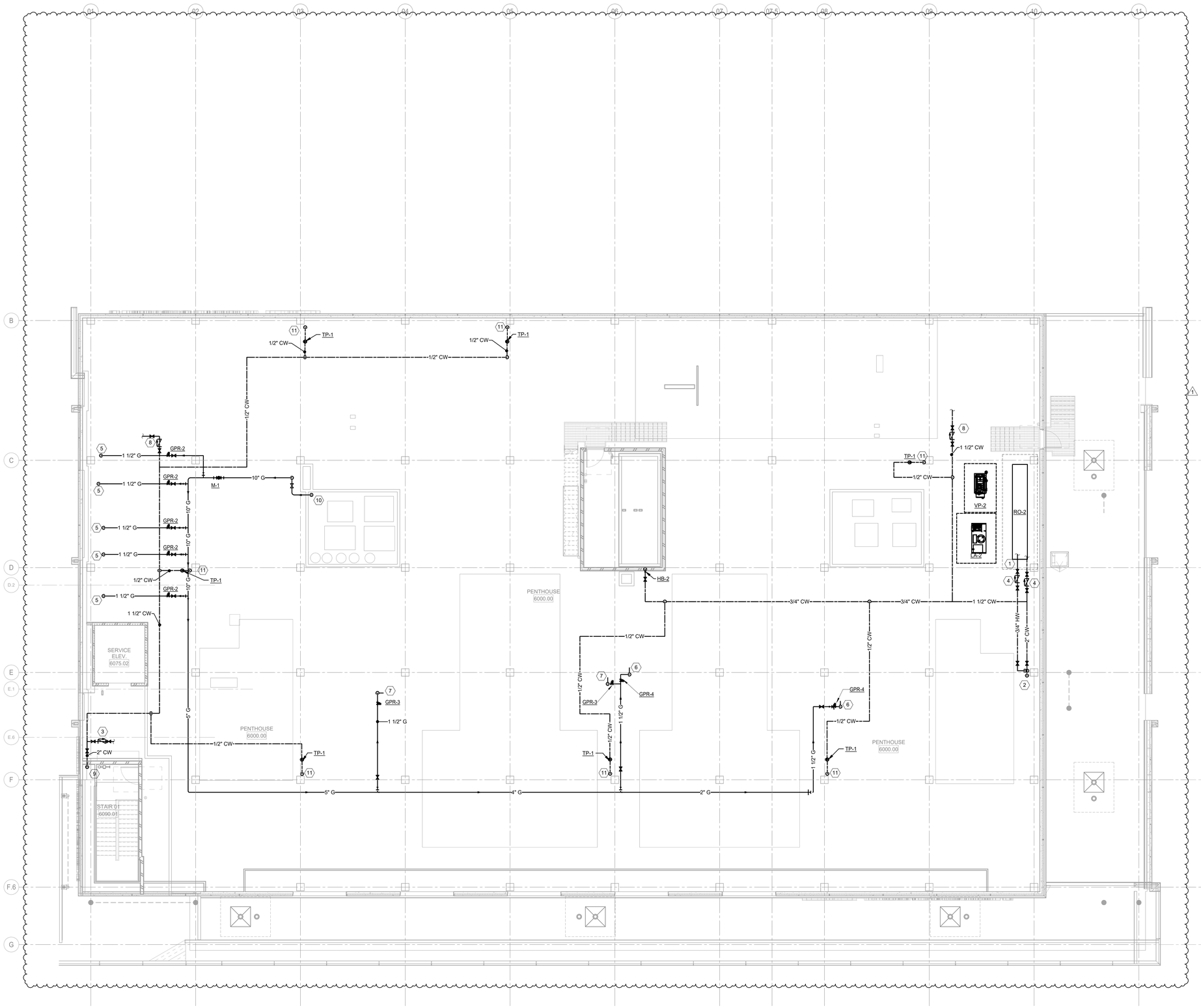
GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEYNOTES

1. 3/4" CW & 3/4" HW SUPPLY TO REVERSE OSMOSIS SYSTEM.
2. 2" CW & 3/4" HW FROM BELOW.
3. 1-1/4" MAKEUP WATER. SUPPLY TO HVAC REVERSE OSMOSIS SYSTEM. PROVIDE ZURN 950XL3 DOUBLE CHECK VALVE ASSEMBLY. SEE HVAC PLANS FOR EXACT LOCATION OF EQUIPMENT.
4. 3/4" CW & 3/4" HW WATER SUPPLY TO PLUMBING REVERSE OSMOSIS SYSTEM. PROVIDE ZURN 950XL3 DOUBLE CHECK VALVE ASSEMBLY.
5. 1-1/2" GAS PIPE TO BOILER, 3000 CFH.
6. 1-1/2" GAS PIPE TO HUMIDIFIER, 713 CFH.
7. 1-1/2" GAS PIPE TO HUMIDIFIER, 953 CFH.
8. 1-1/2" MAKEUP WATER. SUPPLY TO HVAC PIPING SYSTEM. PROVIDE ZURN 950XL3 DOUBLE CHECK VALVE ASSEMBLY. SEE HVAC PLANS FOR EXACT LOCATION OF EQUIPMENT.
9. 2" CW FROM BELOW.
10. 10" GAS RISER @1 PSI.
11. 1/2"CW FROM TRAP PRIMER DOWN TO SERVE FLOOR DRAINS. TRAP PRIMER SERVES UP TO 4 FLOOR DRAINS.



1 PENTHOUSE DOMESTIC WATER & NATURAL GAS PLAN

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

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10/17/2025

KEY PLAN

PLAN NORTH / TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

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ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
PENTHOUSE PRESSURE PLAN

SHEET NO.
P-206

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PLOT DATE: 10/16/2025 16:36:51
TEMPLATE VERSION: 23.0.4

1 LEVEL 01 TREATED WATER AND LAB GAS PIPING PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
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4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEY NOTES:

1. NOT USED.
2. RO SUPPLY AND RETURN PIPE SERVING THE PLUMBING FIXTURES ABOVE.
3. PROVIDE SHUT-OFF VALVE ON LAB GAS PIPING SERVING LAB EQUIPMENTS.
4. PROVIDE LAB GAS PIPING TO POINT OF CONNECTION 2" ABOVE FUME HOOD.
5. ROUTE 1/2" SG-1, 1/2" SG-2, 1/2" SG-3, 1/2" N2, 3/4" LA & 3/4" LV GASES DOWN IN EQUIPMENT CHASE AND CONNECT TO EQUIPMENT OUTLETS(TYP.)
6. 3" LAB VACUUM EXHAUST UP THRU ROOF.
7. 3" LAB AIR INTAKE UP THRU ROOF.
8. LAB GAS PIPE DOWN TO SERVE LAB EQUIPMENT.
9. PROVIDE LAB VACUUM TO CEILING SERVICE PANEL OUTLETS(2) (TYPICAL OF ALL CEILING SERVICE PANELS, CP-1A ON LEVEL 1).

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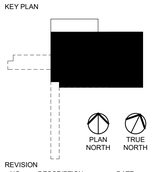
KEY PLAN



REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 TREATED WATER & LAB GAS PLAN

SHEET NO.
P-301

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GENERAL SHEET NOTES

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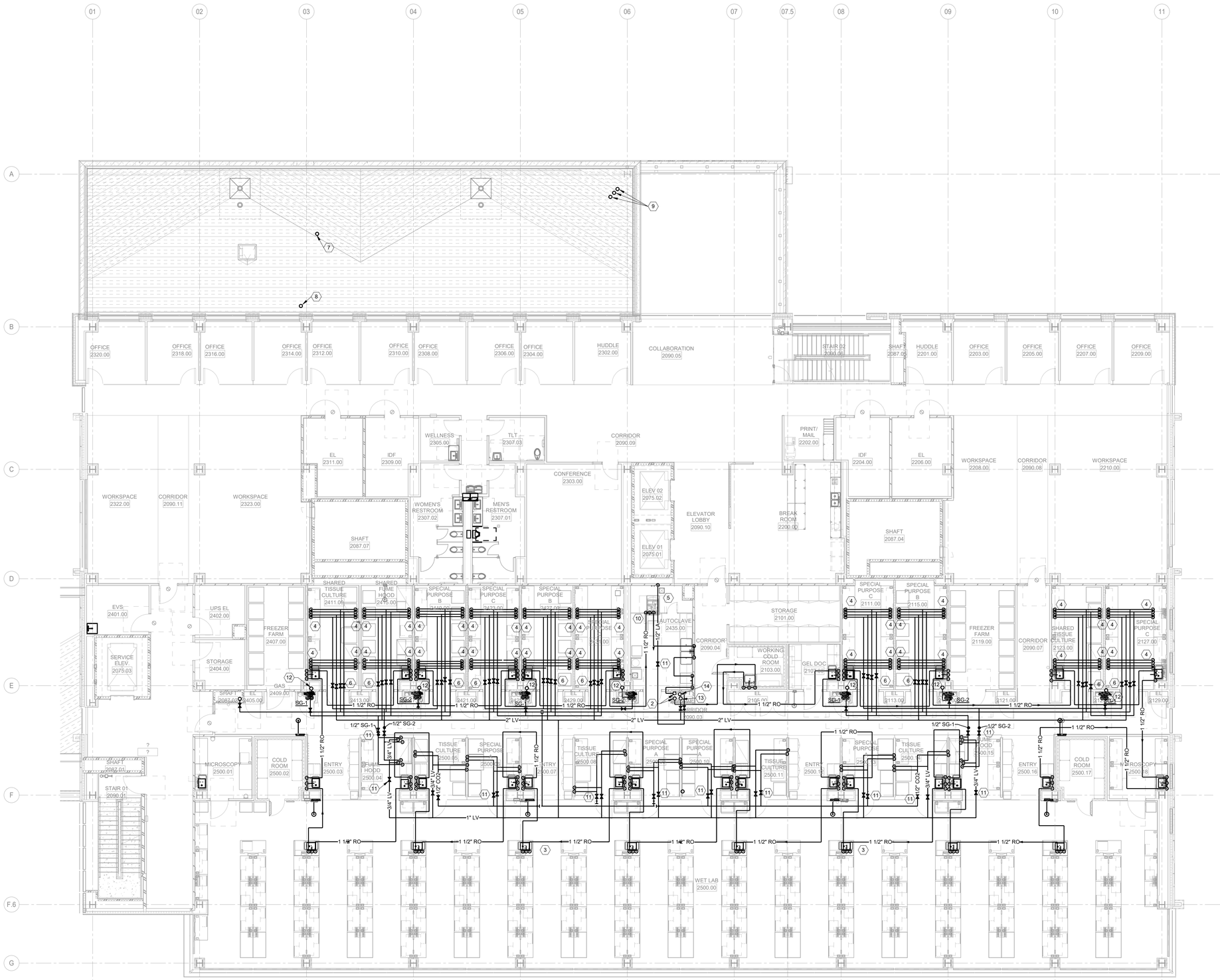
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES - LAB GAS

1. NOT USED.
2. 1-1/2" REVERSE OSMOSIS SUPPLY AND RETURN RISER.
3. REVERSE OSMOSIS LOOP DOWN TO SERVE LAB SINK(TYPICAL)
4. PROVIDE LAB GASES TO CEILING PANELS, VACUUM, CO2, 9SI & SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
5. PROVIDE LAB AIR TO ALCOVE (TYPICAL OF ALL, LEVEL 2 - 5).
6. PROVIDE SHUT-OFF VALVE TO SERVE LAB (TYPICAL OF ALL, LEVEL 2 - 5).
7. 3" LAB VACUUM EXHAUST, MAINTAIN 10 FEET FROM OPENINGS AND AIR INTAKES.
8. 3" LAB AIR INTAKE. MAINTAIN 10 FEET FROM ALL EXHAUST EQUIPMENTS.
9. 3/4" RELIEF PIPE FROM SPECIALTY GAS MANIFOLD. PIPE SHALL BE TURNED DOWN AND SCREENED.
10. ROUTE 1/2" REVERSE OSMOSIS PIPE TO STERILIZER.
11. PROVIDE SHUT-OFF VALVE TO SERVE LAB EQUIPMENT (TYPICAL OF ALL, LEVEL 2 - 5).
12. 3/4" MANIFOLD RELIEF VENT PIPE RISER.
13. 2" LAB VACUUM RISER UP.
14. 1/2" LAB AIR RISER UP.



1 LEVEL 02 TREATED WATER AND LAB GAS PIPING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/7/2025 10:02:18
TEMPLATE VERSION: 23.0.4

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NATHANIEL C. STALKER — STATE OF MICHIGAN — No. 61101 — REGISTERED PROFESSIONAL ENGINEER
9/25/2025

KEY PLAN

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REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 2 TREATED WATER & LAB GAS PLAN
SHEET NO.
P-302

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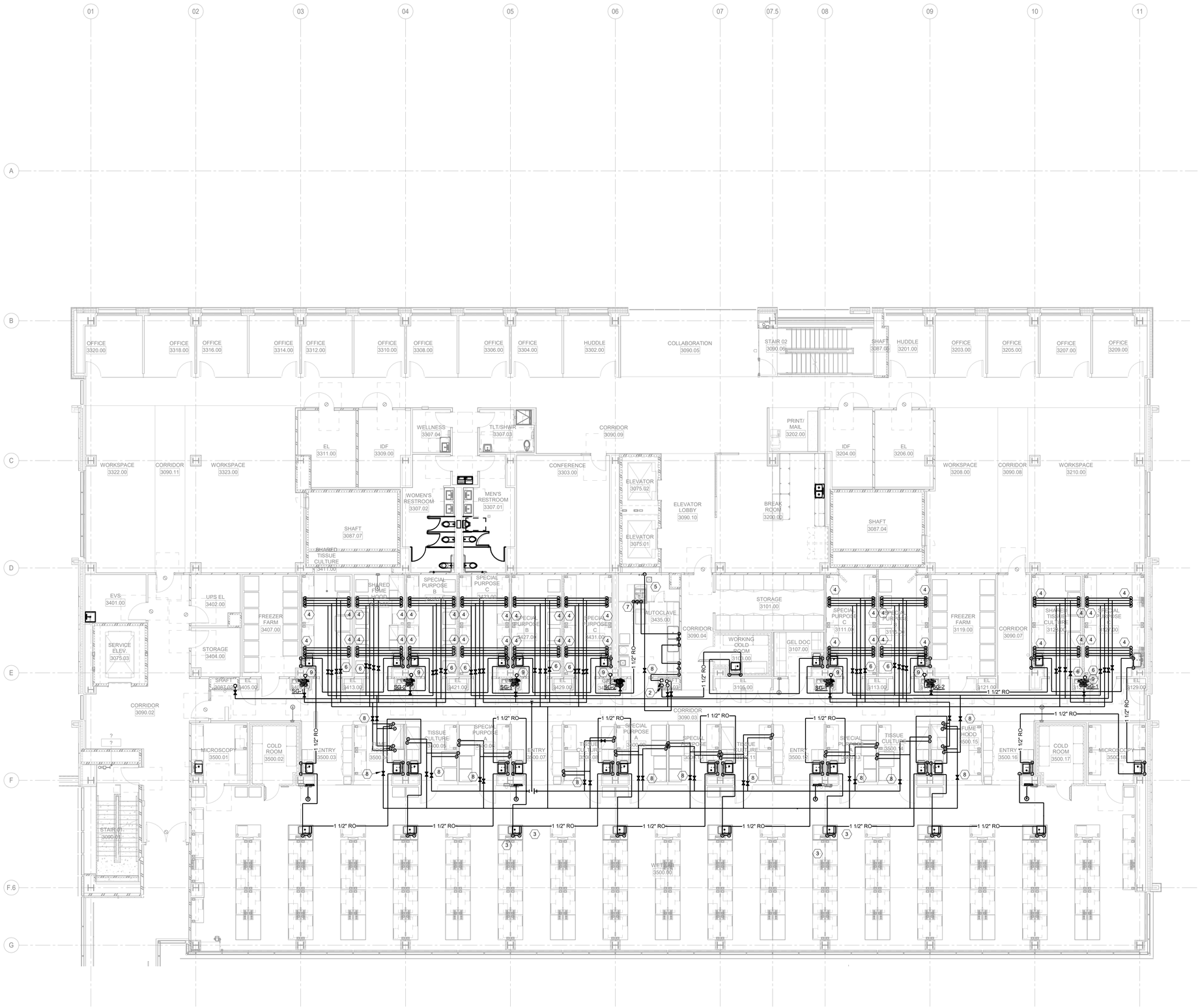
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES - LAB GAS

1. 1-1/4" LV, 1" LA.
2. 1-1/2" REVERSE OSMOSIS SUPPLY AND RETURN RISER.
3. REVERSE OSMOSIS LOOP DOWN TO SERVE LAB SINK(TYPICAL)
4. PROVIDE LAB GASES TO CEILING PANELS, VACUUM, CO2, SG1 & SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
5. PROVIDE LAB AIR TO ALCOVE (TYPICAL OF ALL, LEVEL 2 - 5).
6. PROVIDE LAB GASES TO CEILING PANELS, 3/4" VACUUM, 1/2" CO2, 1/2" SG1 & 1/2" SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
7. ROUTE 1/2" REVERSE OSMOSIS PIPE TO STERILIZER.
8. PROVIDE SHUT-OFF VALVE TO SERVE LAB EQUIPMENT (TYPICAL OF ALL, LEVEL 2 - 5).
9. 3/4" LAB GAS MANIFOLD RELIEF VENT RISER.



1 LEVEL 03 TREATED WATER AND LAB GAS PIPING PLAN
SCALE: 1/8" = 1'-0"

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KEY PLAN

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CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 TREATED WATER & LAB GAS PLAN

SHEET NO.
P-303

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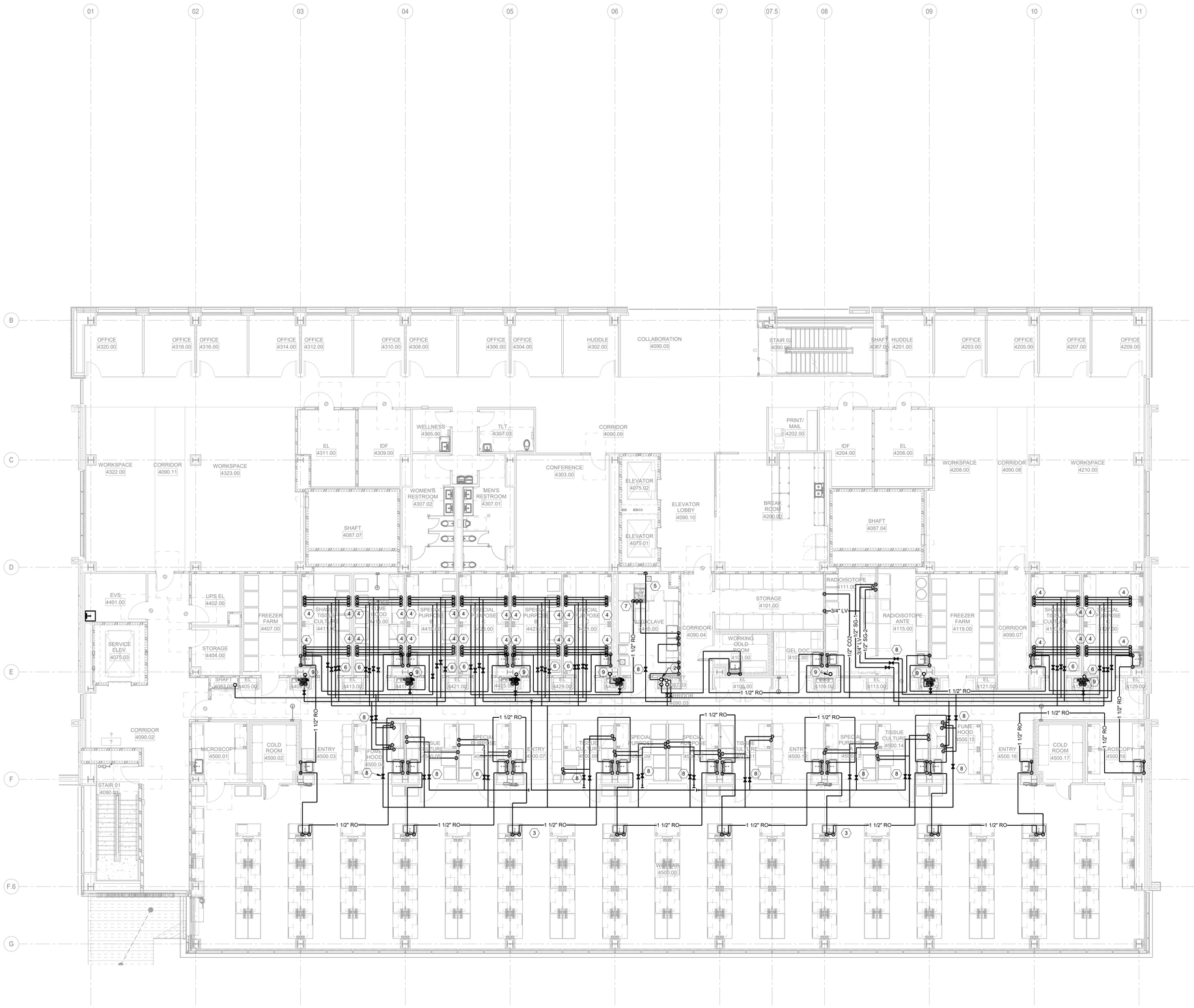
SHEET KEYNOTES - LAB GAS

1. 1-1/4" LV, 1" LA.
2. 1-1/2" REVERSE OSMOSIS SUPPLY AND RETURN RISER.
3. REVERSE OSMOSIS LOOP DOWN TO SERVE LAB SINK(TYPICAL)
4. PROVIDE LAB GASES TO CEILING PANELS, VACUUM, CO2, SG1 & SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
5. PROVIDE LAB AIR TO ALCOVE (TYPICAL OF ALL, LEVEL 2 - 5).
6. PROVIDE LAB GASES TO CEILING PANELS, 3/4" VACUUM, 1/2" CO2, 1/2" SG1 & 1/2" SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
7. ROUTE 1/2" REVERSE OSMOSIS PIPE TO STERILIZER.
8. PROVIDE SHUT-OFF VALVE TO SERVE LAB EQUIPMENT (TYPICAL OF ALL, LEVEL 2 - 5).
9. 3/4" LAB GAS MANIFOLD RELIEF VENT RISER FROM BELOW, 1" LAB GAS MANIFOLD RELIEF VENT RISER UP.



1 LEVEL 04 TREATED WATER AND LAB GAS PIPING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/17/2025 13:02:29 TEMPLATE VERSION: 23.0.4

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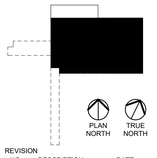
KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 4 TREATED WATER & LAB GAS PLAN

SHEET NO.
P-304

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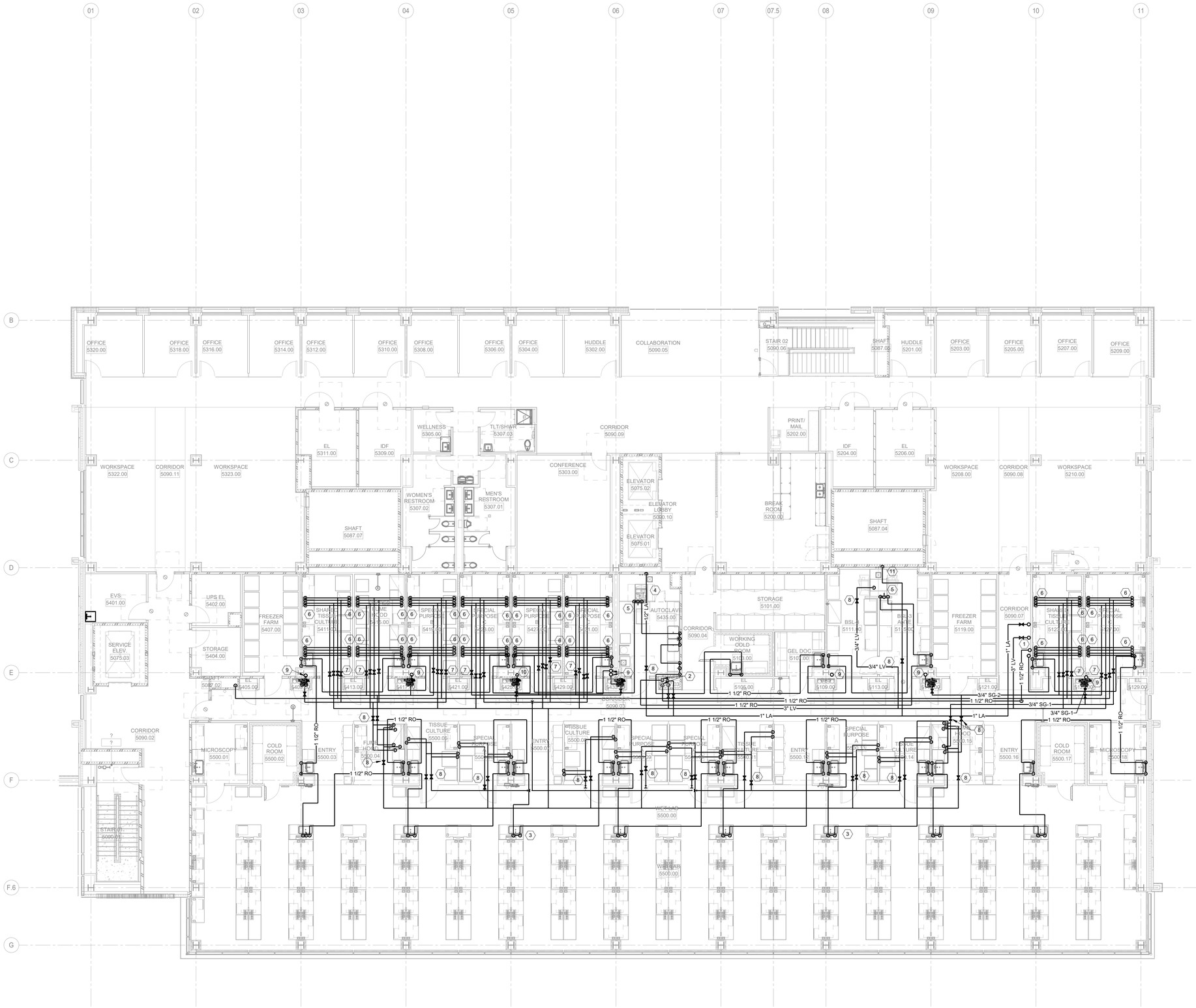

1 LEVEL 05 TREATED WATER AND LAB GAS PIPING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/17/2025 13:02:34
TEMPLATE VERSION: 23.0.4

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(#) SHEET KEY NOTES:

1. 1-1/2" R.O. SUPPLY AND RETURN RISER FROM R.O. SKID IN PENTHOUSE. 1-1/2" LA & 4" LV FROM PENTHOUSE.
2. 1-1/2" R.O. SUPPLY AND RETURN RISER.
3. R.O. LOOP DOWN TO SERVE LAB SINK(TYPICAL).
4. PROVIDE LAB AIR TO ALCOVE (TYPICAL OF ALL, LEVEL 2 - 5).
5. ROUTE 1/2" RO PIPE TO STERILIZER.
6. PROVIDE LAB GASES TO CEILING PANELS, VACUUM, CO2, SG1 & SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
7. PROVIDE SHUT-OFF VALVE TO SERVE LAB (TYPICAL OF ALL, LEVEL 2 - 5).
8. PROVIDE SHUT-OFF VALVE TO SERVE LAB EQUIPMENT (TYPICAL OF ALL, LEVEL 2 - 5).
9. 1" LAB GAS MANIFOLD RELIEF VENT RISER.
10. 1" LAB GAS MANIFOLD RELIEF VENT RISER FROM BELOW. OFFSET AS SHOWN.
11. PROVIDE LAB AIR TO BSL-3 ALCOVE.

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9/25/2025

KEY PLAN

PLAN NORTH | TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 5 TREATED WATER & LAB GAS PLAN

SHEET NO.
P-305

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
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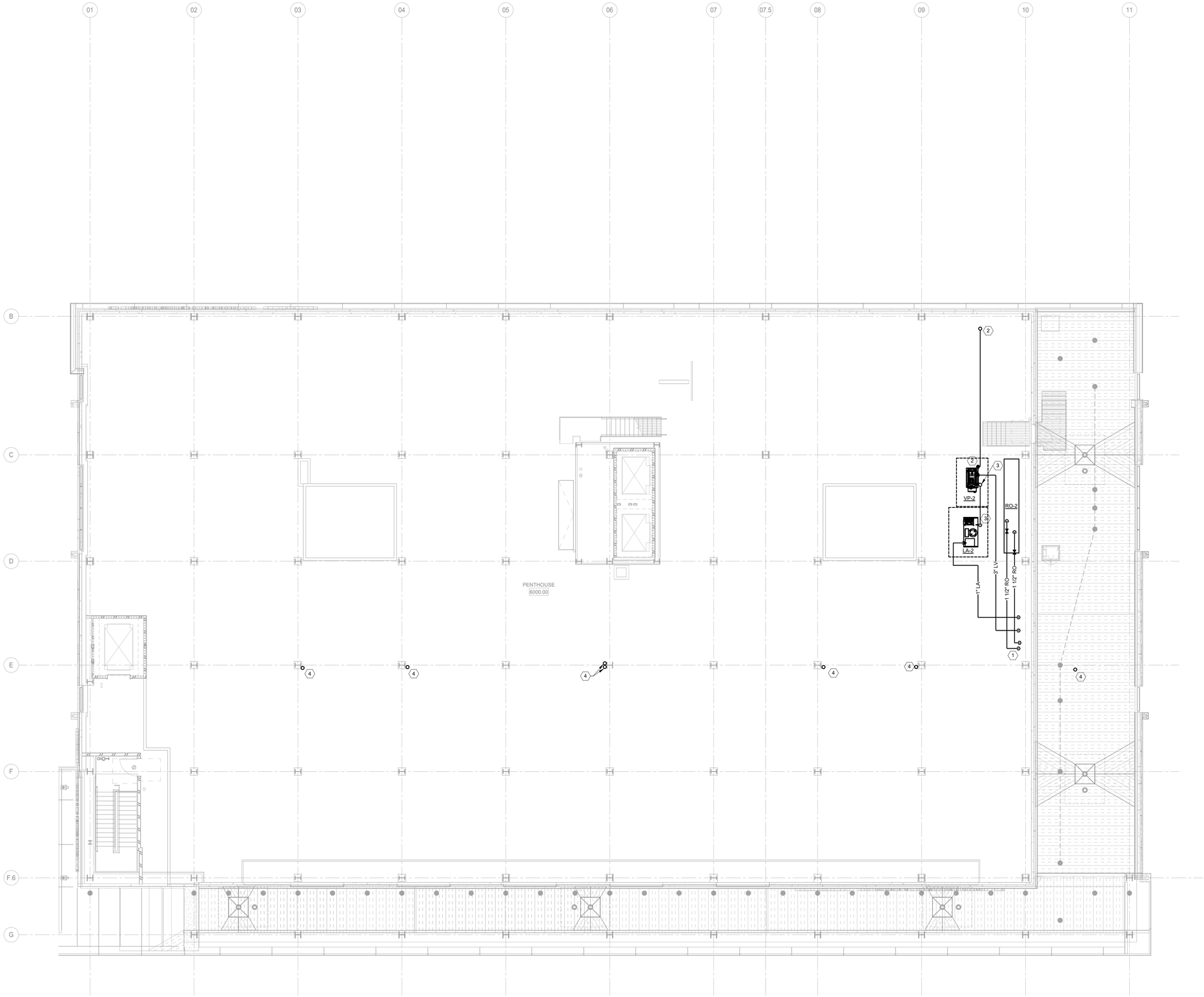

1 PENTHOUSE TREATED WATER AND LAB GAS PIPING PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEY NOTES:

1. 1-1/2" LA, 3" LV, 1-1/2" RO SUPPLY AND RETURN RISERS.
2. 2" VACUUM PUMP VENT PIPE EXHAUST UP THRU ROOF. MAINTAIN 25 FOOT CLEARANCE FROM ALL OPENINGS AND MECHANICAL EQUIPMENT INTAKE.
3. 2" LAB AIR INTAKE FROM LAB AIR COMPRESSOR UP THRU ROOF.
4. 1" LAB GAS MANIFOLD RELIEF VENT RISER UP THRU ROOF.

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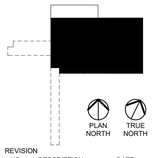
STATE OF MICHIGAN
NATHANIEL C. STALKER
No. 51101
LICENSED PROFESSIONAL ENGINEER
9/25/2025

KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
PENTHOUSE TREATED WATER & LAB GAS PLAN

SHEET NO.
P-306

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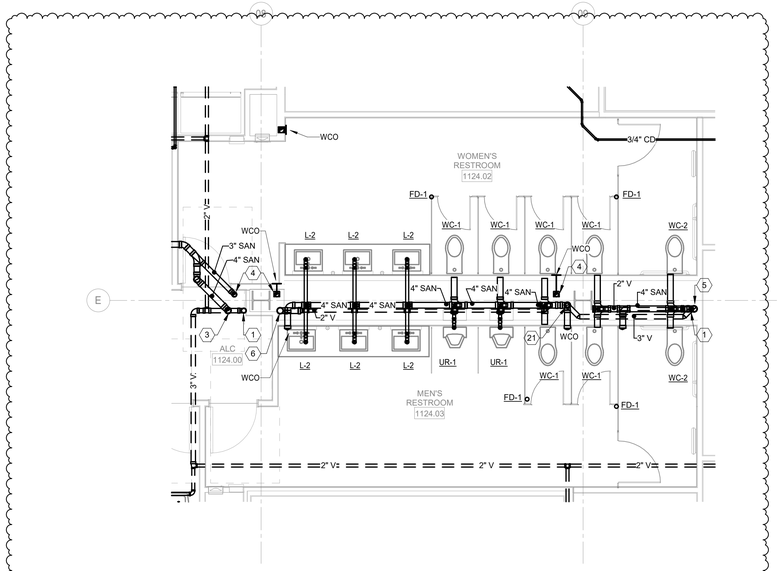
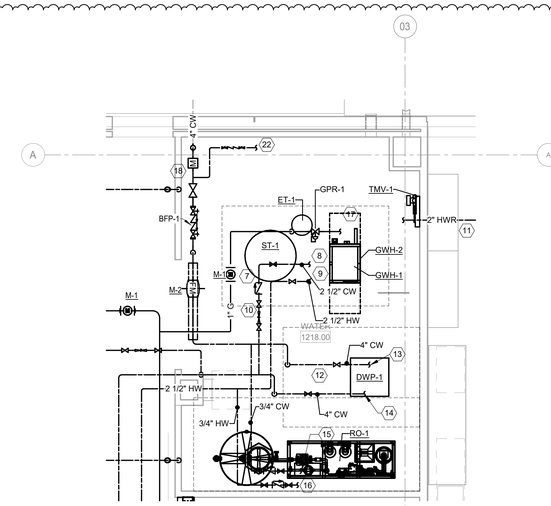
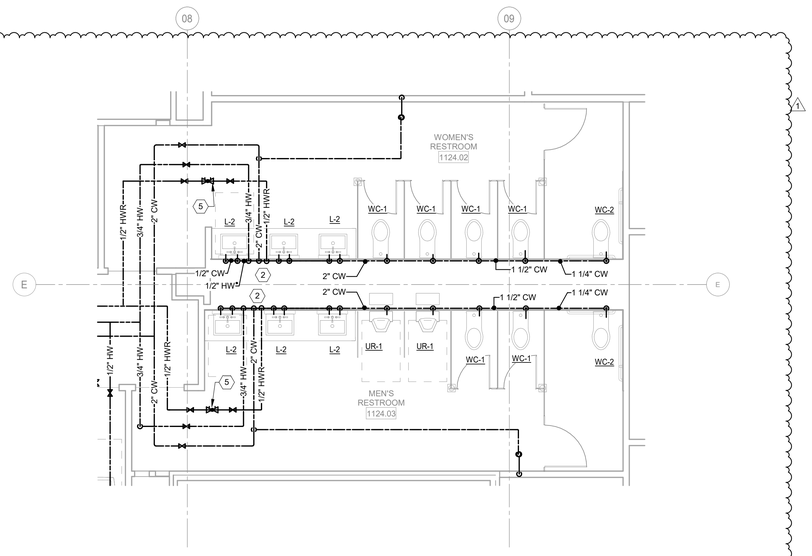


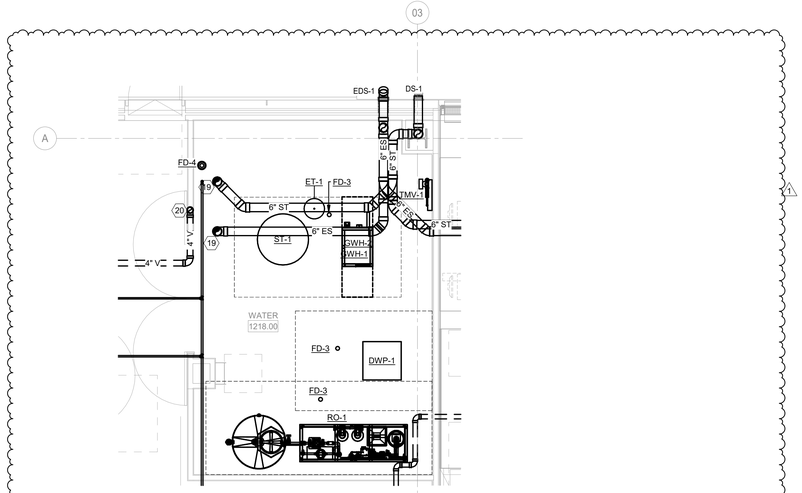
3 LEVEL 01 WASTE, VENT & STORM PLAN - LEVEL 1 RESTROOMS - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



2 LEVEL 01 DOMESTIC WATER & NATURAL GAS PLAN - WATER ROOM - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



4 LEVEL 01 DOMESTIC WATER & NATURAL GAS PLAN - LEVEL 1 RESTROOMS - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



1 LEVEL 01 WASTE, VENT & STORM PLAN - WATER ROOM - ENLARGED VIEW
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

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2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEY NOTES:

1. 3" VENT STACK.
2. 2"CW, 3/4"HW & 1/2"HWR DOWN IN WALL CHASE TO SERVE PLUMBING FIXTURES
3. 4" SANITARY STACK..
4. 3" SANITARY STACK.
5. 0.5 GPM BALANCING VALVE. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.(TYP.).
6. 4" VENT UP THRU ROOF.
7. 2-1/2" DOMESTIC COLD WATER SUPPLY TO GAS WATER HEATERS. PROVIDE ZURN 950XL3 DOUBLE CHECK VALVE ASSEMBLY.
8. ROUTE 2-1/2" DOMESTIC COLD WATER TO GWH-1 AND 2-1/2" DOMESTIC COLD WATER TO GWH-2. SEE GAS WATER HEATER DETAIL ON SHEET P-602 FOR PIPE ROUTING.
9. 2-1/2" HW FROM GAS WATER HEATERS TO SUPPLY BUILDING. SEE GAS WATER HEATER DETAIL ON SHEET P-602 FOR PIPE ROUTING.
10. PRESSURE REDUCING VALVE, PRV-1.
11. 2" HWR TO TMV-1. SEE GAS WATER HEATER DETAIL ON SHEET P-602 FOR CONNECTIONS.
12. 4" DOMESTIC COLD WATER TO SUPPLY DOMESTIC WATER BOOSTER PUMP.
13. 4" DOMESTIC COLD WATER TO DOMESTIC WATER BOOSTER PUMP.
14. 4" DOMESTIC COLD WATER FROM DOMESTIC WATER BOOSTER PUMP TO SERVE BUILDING.
15. 3/4" CW TO REVERSE OSMOSIS SYSTEM, RO-1. CONNECT TO MIXING VALVE ON REVERSE OSMOSIS SYSTEM. REFER TO DETAIL SHEET FOR ADDITIONAL INFORMATION.
16. 3/4" HW TO REVERSE OSMOSIS SYSTEM, RO-1. CONNECT TO MIXING VALVE ON REVERSE OSMOSIS SYSTEM. REFER TO DETAIL SHEET FOR ADDITIONAL INFORMATION.
17. 1-1/2" NATURAL GAS LINE TO SERVE GWH-1 AND GWH-2(650 MBH EACH).
18. WATER METER BY UTILITY COMPANY.
19. 4" STORM AND STORM OVERFLOW DRAINS FROM ROOF DRAIN ABOVE.
20. 4" VENT FROM FLOOR DRAIN BELOW.
21. 3" VENT RISER TO BE OFFSET AS SHOWN.
22. PROVIDE 2" DOMESTIC CW WITH REDUCED PRESSURE ZONE BACKFLOW PREVENTER FOR IRRIGATION CONNECTION.

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STATE OF MICHIGAN — ANTHANIEL C. STRAUSER — No. 61101 — REGISTERED PROFESSIONAL ENGINEER

10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ENLARGED PLUMBING PLANS

SHEET NO.
P-401

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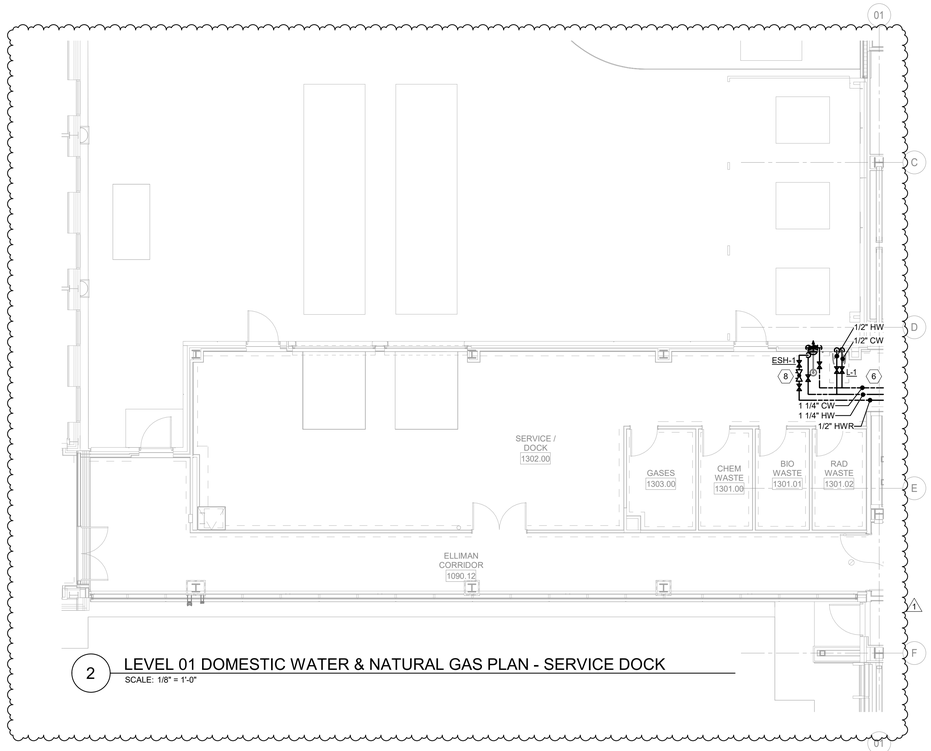

2 LEVEL 01 DOMESTIC WATER & NATURAL GAS PLAN - SERVICE DOCK
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

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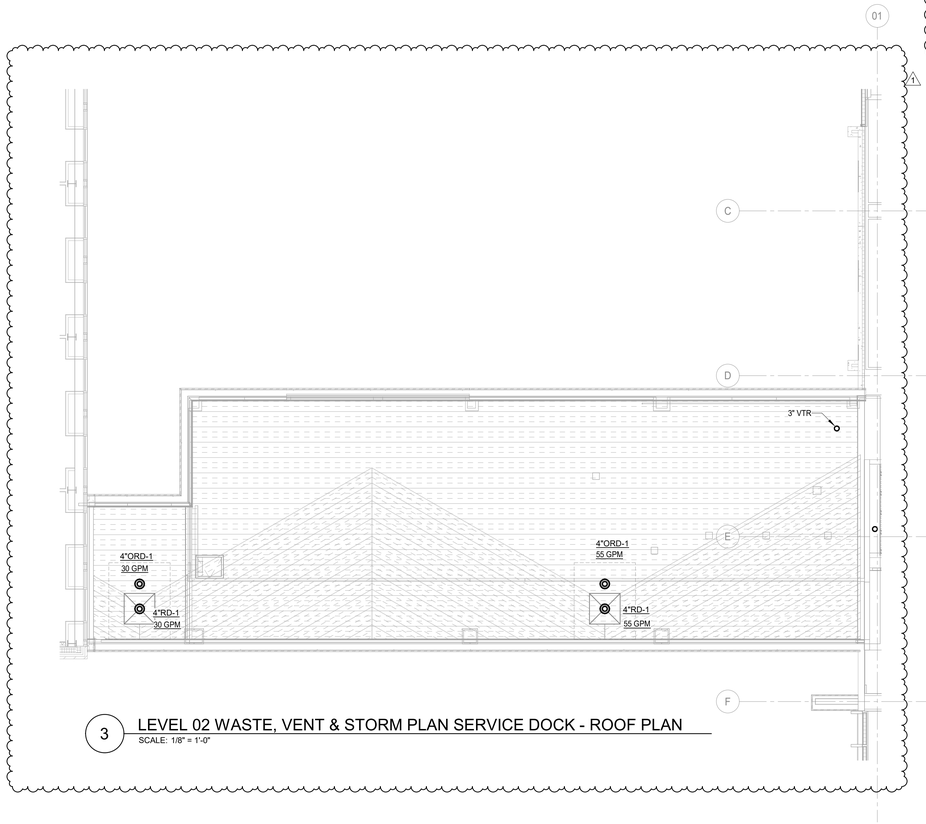
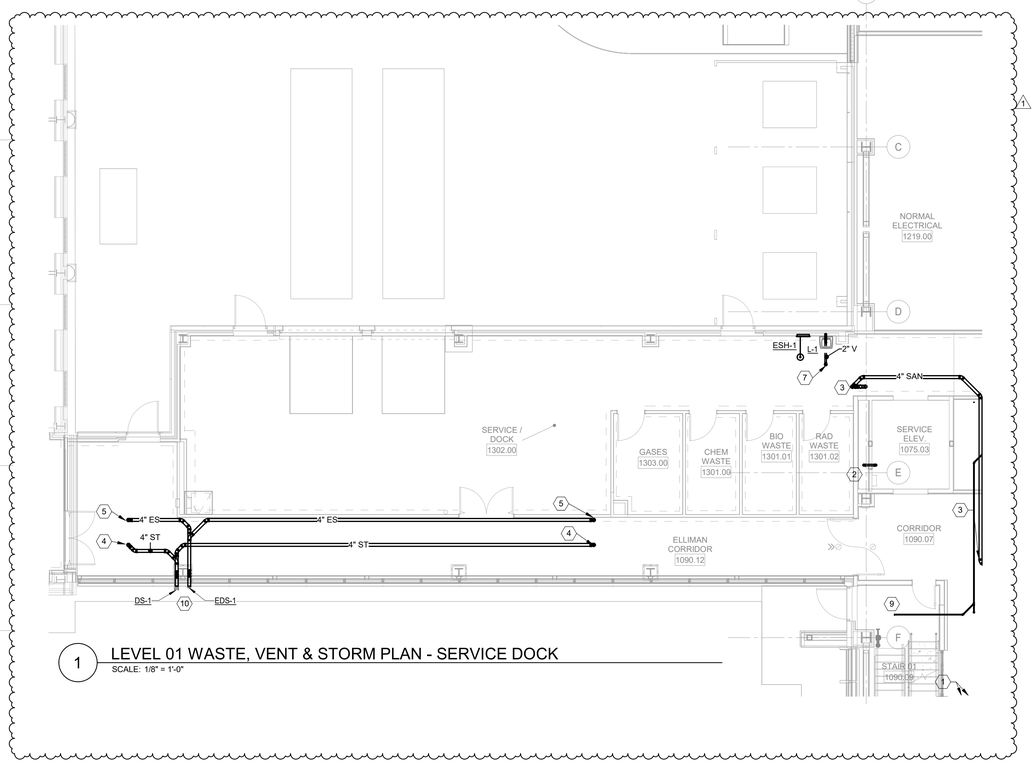
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEY NOTES:

1. 4" ST & 4" ES PIPING. REFER TO SHEET P-101 FOR CONTINUATION.
2. 2" SUMP PUMP DISCHARGE LINE UP TO MOP SINK. SEE SHEET P-102 FOR CONTINUATION.
3. 4" SANITARY FROM MOP SINK ABOVE. REFER TO SHEET P-101 FOR CONTINUATION.
4. 4" ST UP TO ROOF DRAIN, RD-1. REFER TO SERVICE DOCK ROOF PLAN.
5. 4" ES UP TO EMERGENCY ROOF DRAIN, OD-1. REFER TO SERVICE DOCK ROOF PLAN.
6. REFER TO SHEET P-201 FOR CONTINUATION.
7. 3" VENT THRU ROOF.
8. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
9. 3/4" CONDENSATE DRAINAGE FROM FCU. SEE P-101 FOR CONTINUATION.
10. 4" STORM & 4" STORM OVERFLOW DRAIN SPILL TO GRADE.



3 LEVEL 02 WASTE, VENT & STORM PLAN SERVICE DOCK - ROOF PLAN
SCALE: 1/8" = 1'-0"



1 LEVEL 01 WASTE, VENT & STORM PLAN - SERVICE DOCK
SCALE: 1/8" = 1'-0"

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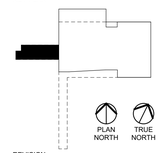
KEY PLAN



REVISION

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1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
APPENDAGE AREAS PLUMBING PLANS

SHEET NO.
P-500

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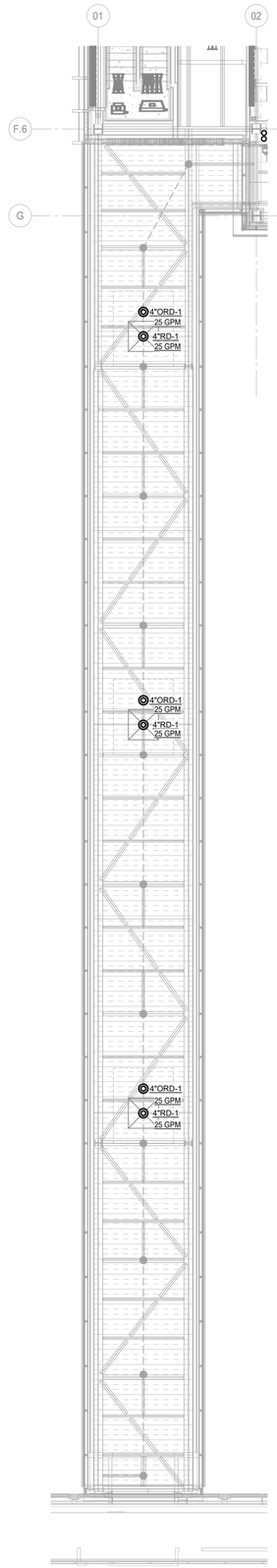
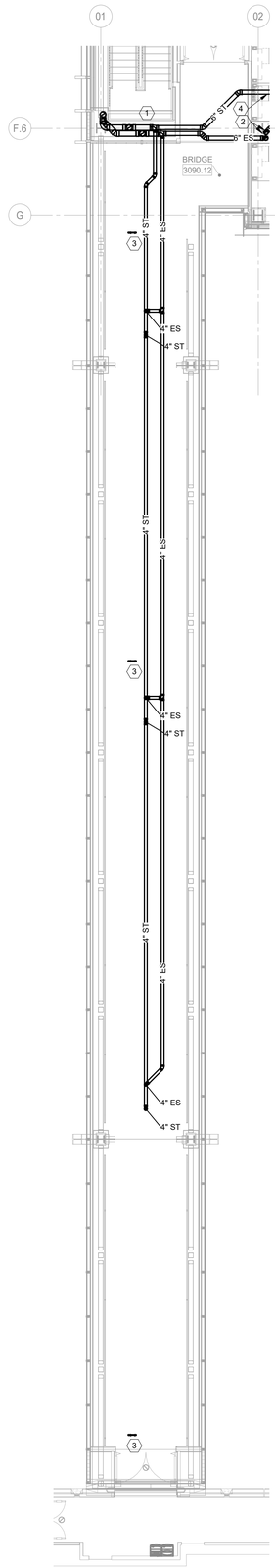


2 LEVEL 04 WASTE, VENT & STORM PLAN - BRIDGE
SCALE: 1/8" = 1'-0"



1 LEVEL 03 WASTE, VENT & STORM PLAN - BRIDGE
SCALE: 1/8" = 1'-0"

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SHEET KEY NOTES:

1. 8" STORM RISER (275 GPM). CONNECT 4" STORM (75 GPM) SERVING BRIDGE TO 8" STORM RISER. REFER TO SHEET P-103 FOR CONTINUATION.
2. 6" STORM & EMERGENCY STORM RISERS FROM ABOVE (205 GPM). OFFSET AT LEVEL 3 CEILING.
3. 3/4" CONDENSATE FROM FAN COIL UNIT PUMP UP TO ROOF. ROUTE TO ROOF AND SPILL TO NEAREST ROOF DRAIN.
4. 6" ST. REFER TO P-103 FOR CONTINUATION.

1

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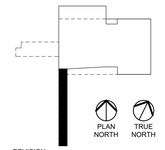
NATHANIEL C. STALKER
No. 51101
LICENSED PROFESSIONAL ENGINEER
10/17/2025

KEY PLAN



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HKS PROJECT NUMBER
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DATE
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ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
APPENDAGE AREAS PLUMBING PLANS

SHEET NO.
P-501

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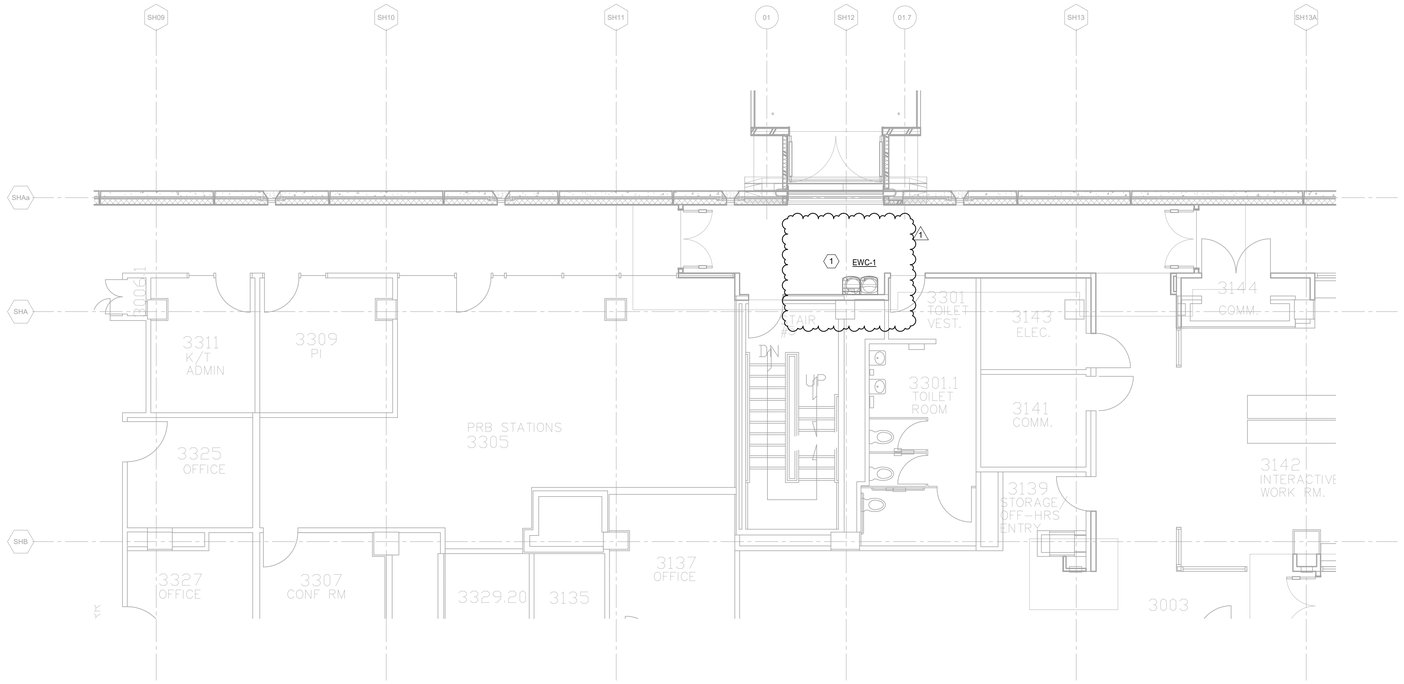
1. NEW WATER COOLER TO BE INSTALLED, EWC-1. CONNECT TO EXISTING 1/2"CW AND EXISTING SANITARY DRAIN.



1 LEVEL 03 PLUMBING DW NEW WORK PLAN - SCOTT HALL
SCALE: 3/16" = 1'-0"

PLOT DATE: 10/16/2025 16:31:43 TEMPLATE VERSION: 23.0.4

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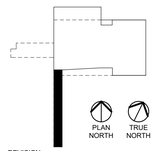
10/17/2025

KEY PLAN



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1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 - SCOTT HALL RENOVATION - PLUMBING PLANS

SHEET NO.
P-502

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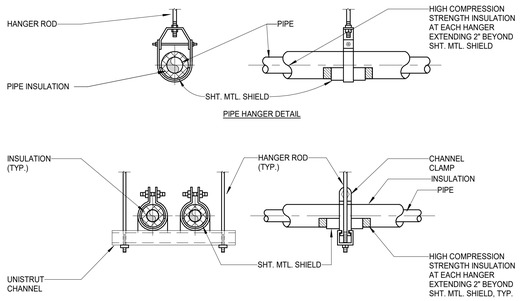
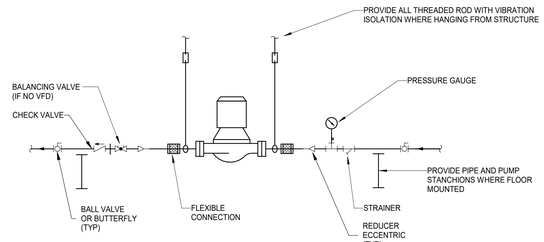
NOTES:
1. INSULATION SHOWN IN THIS DETAIL IS AS REQURIED PER PLUMBING SPECIFICATIONS
2. PROVIDE EPOXY, RUBBER, OR PLASTIC COATED HANGERS/SUPPORTS FOR COPPER PIPING.

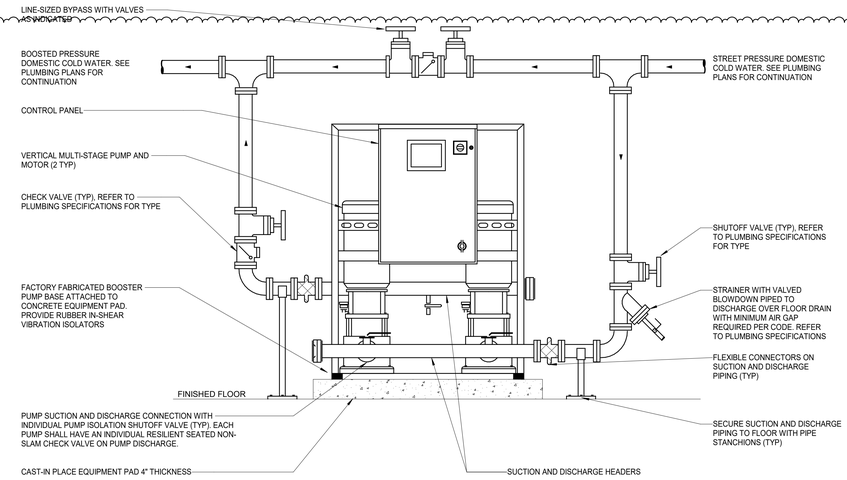


9 PIPE HANGER
SCALE: NONE



NOTES:
1. SUPPORT PUMP FROM PIPING ONLY. DO NOT SUPPORT PUMP FROM MOTOR.
2. PROVIDE VIBRATION ISOLATION PER PUMP MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.

6 IN-LINE PUMP
SCALE: NONE



NOTES:
1. PIPING ARRANGEMENT IS SCHEMATIC. REFER TO PLUMBING PLANS FOR EQUIPMENT LOCATIONS AND ADDITIONAL INFORMATION. INSTALL DOMESTIC WATER BOOSTER PUMP SYSTEM IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
2. MAINTAIN MINIMUM SERVICE CLEARANCES AROUND THE PUMP SYSTEM AS REQUIRED/RECOMMENDED BY THE MANUFACTURER. COORDINATE WITH THE PUMP SYSTEM MANUFACTURER FOR MINIMUM REQUIRED SERVICE CLEARANCES PRIOR TO INSTALLATION.
3. TERMINATE PUMP DRAIN VALVES/PURGE VALVES, CASING THERMAL RELIEF PIPING, ETC. OVER FLOOR DRAIN WITH MINIMUM AIR GAP PER CODE.
4. WHERE NOT INCLUDED WITH DOMESTIC WATER PUMP SYSTEM, THE PLUMBING CONTRACTOR SHALL PROVIDE AND INSTALL ALL VALVES AND FLEXIBLE CONNECTIONS AS INDICATED ON THIS DETAIL.

3 DOMESTIC WATER BOOSTER PUMP - DUPLEX
SCALE: NONE

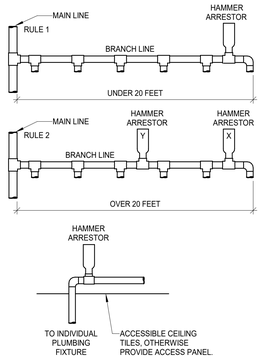
WATER HAMMER ARRESTOR SCHEDULE

MARK	FIXTURE UNIT RANGE	PDI SIZE	INLET CONNECTION SIZE
WHA	1-11	A	1/2"
WHA	12-32	B	3/4"
WHA	33-60	C	1"
WHA	61-113	D	1"
WHA	114-154	E	1"
WHA	155-330	F	1"

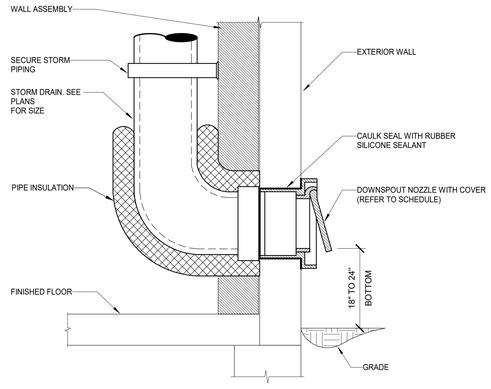
NOTES:
1. PDI REFERS TO THE PLUMBING AND DRAINAGE INSTITUE.
2. WATER HAMMER ARRESTORS SHALL BE CERTIFIED AS LEAD- FREE MEETING NSF 61/372.
3. ACCEPTABLE MANUFACTURERS ARE ZURN, JAY R. SMITH, MIFAB.
4. INSTALL WATER HAMMER ARRESTORS ON HOT AND COLD WATER SUPPLIES TO DISHWASHERS, CLOTHES WASHING MACHINES, SHOWERS, SINKS, LAVATORIES UTILIZING SENSOR OPERATED FAUCETS, FLUSH VALVE WATER CLOSETS, URINALS AND ELSEWHERE THAT QUICK-CLOSING VALVES (QUARTER- TURN OR LESS) ARE UTILIZED.
5. WATER HAMMER ARRESTORS SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH PDI WH-201 AND THE MANUFACTURERS REQUIREMENTS AND RECOMMENDATIONS. SERVICE ACCESS SHALL BE PROVIDED TO ALL WATER HAMMER ARRESTORS.

RULE 1: BRANCH LINES OF 20 FEET OR LESS. THE HAMMER ARRESTOR SHOULD BE PLACED AT THE END OF THE BRANCH LINE BETWEEN THE LAST TWO FIXTURES.

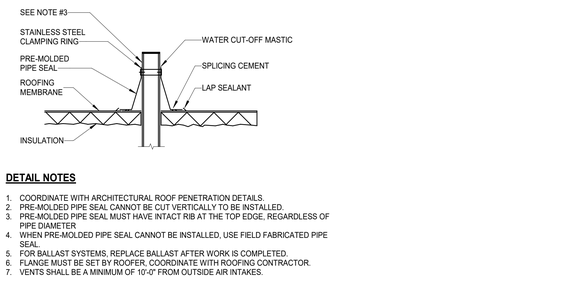
RULE 2: BRANCH LINES OVER 20 FEET. AN ADDITIONAL HAMMER ARRESTOR (Y) SHOULD BE PLACED AS SHOWN (BELOW). THE ADDITIONAL UNIT PLACED AT THE MIDPOINT OF THE RUN LONGER THAN 20 FEET. THE SUM OF THE FIXTURE UNIT RATINGS OF (X) AND (Y) COMBINED, SHOULD BE EQUAL TO OR GREATER THAN THE DEMAND OF ALL BRANCHES. INSTALL IN A ACCESSIBLE AREA



8 WATER HAMMER ARRESTOR
SCALE: NONE

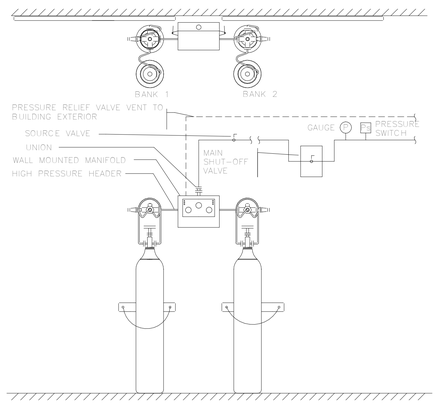


5 STORM DRAIN OUTLET WITH COVER
SCALE: NONE

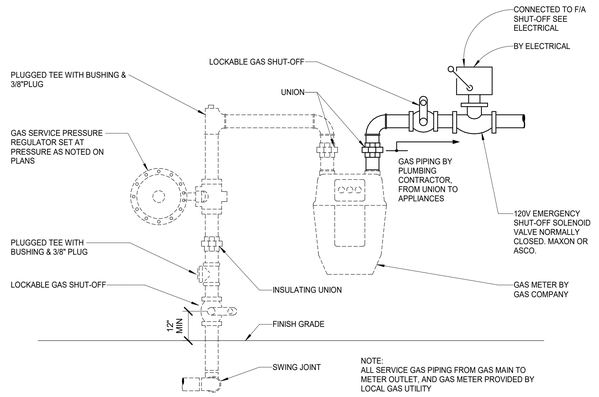


DETAIL NOTES
1. COORDINATE WITH ARCHITECTURAL ROOF PENETRATION DETAILS.
2. PRE-MOLDED PIPE SEAL CANNOT BE CUT VERTICALLY TO BE INSTALLED.
3. PRE-MOLDED PIPE SEAL MUST HAVE INTACT RIB AT THE TOP EDGE, REGARDLESS OF PIPE DIAMETER.
4. WHEN PRE-MOLDED PIPE SEAL CANNOT BE INSTALLED, USE FIELD FABRICATED PIPE SEAL.
5. FOR BALLAST SYSTEMS, REPLACE BALLAST AFTER WORK IS COMPLETED.
6. FLANGE MUST BE SET BY ROOFER. COORDINATE WITH ROOFING CONTRACTOR.
7. VENTS SHALL BE A MINIMUM OF 10'-0" FROM OUTSIDE AIR INTAKES.

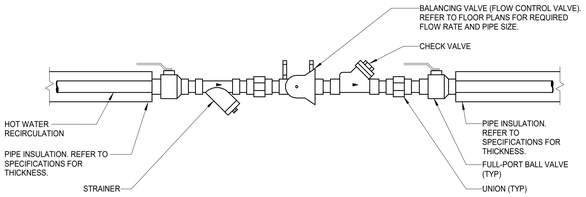
2 PIPE THROUGH ROOF
SCALE: NONE



7 MANIFOLD SCHEMATIC DETAIL
SCALE: NONE



4 GAS METER REGULATOR ASSEMBLY W EMERGENCY SHUTOFF
SCALE: NONE



NOTES:
1. REFER TO SPECIFICATIONS AND PLAN NOTES FOR ADDITIONAL INFORMATION.
2. INSTALL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
3. PROVIDE REDUCERS AND ADAPTERS AS REQUIRED.

1 HOT WATER RETURN BALANCING VALVE ASSEMBLY
SCALE: NONE

HKS

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STATE OF MICHIGAN
NATHANIEL C. STILWELL
6201053101
REGISTERED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P-601

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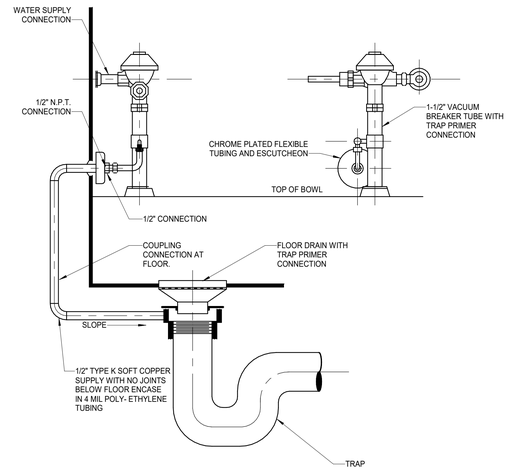
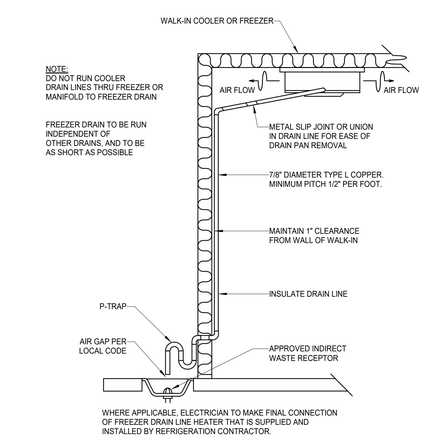


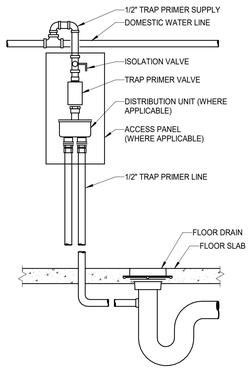
NOTE:
INSTALL TRAP PRIMER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

9 TRAP PRIMER - FLUSH VALVE
SCALE: NONE

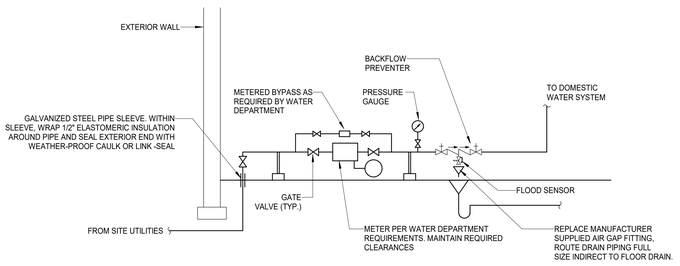


WHERE APPLICABLE, ELECTRICIAN TO MAKE FINAL CONNECTION OF FREEZER DRAIN LINE HEATER THAT IS SUPPLIED AND INSTALLED BY REFRIGERATION CONTRACTOR.

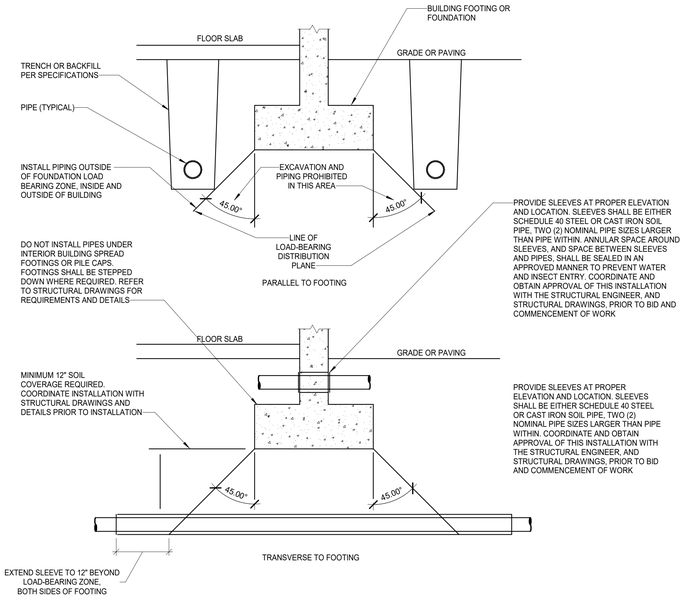
6 COOLER/FREEZER DRAIN DETAIL
SCALE: NONE



4 TRAP PRIMER - PRESSURE DROP ACTIVATED
SCALE: NONE

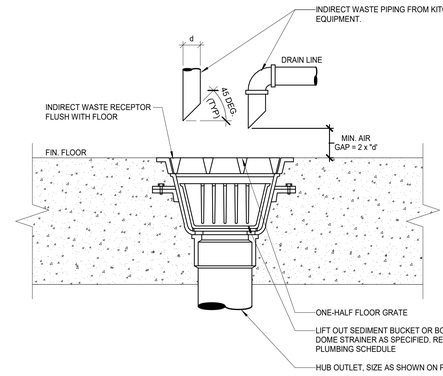


3 DOMESTIC COLD WATER SERVICE
SCALE: NONE

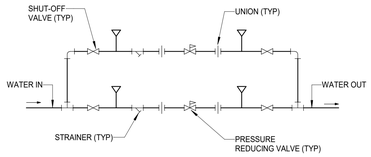


NOTES:
1. VERIFY EXCAVATION CONDITIONS (SOIL/ROCK) WITH GEOTECHNICAL REPORT AND/OR SITE INVESTIGATIONS.
2. COORDINATE WITH AFFECTED CONTRACTORS PRIOR TO COMMENCEMENT OF WORK. REFER TO STRUCTURAL DRAWINGS AND DETAILS FOR REQUIREMENTS REGARDING PIPES PASSING THROUGH FOUNDATIONS.

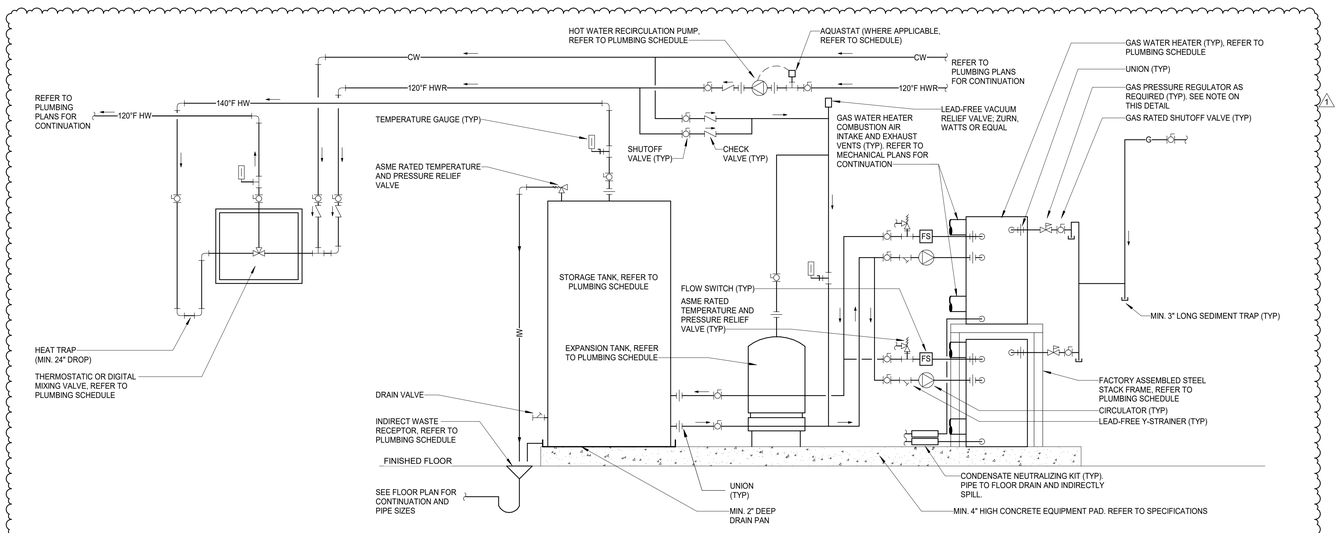
2 PIPE AND TRENCH LOCATION
SCALE: NONE



8 INDIRECT WASTE TO WASTE RECEPTOR
SCALE: NONE

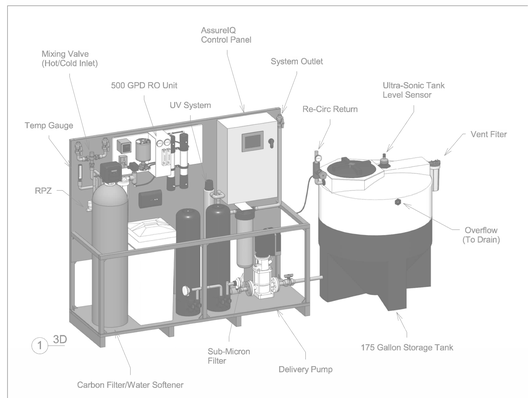


5 PRESSURE REDUCING VALVE
SCALE: NONE



NOTES:
1. LOCATION AND ARRANGEMENT OF EQUIPMENT AND PIPING SHOWN IS DIAGRAMMATIC ONLY. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS. REFER TO PLUMBING PLANS FOR EQUIPMENT LOCATIONS.
2. HOT WATER AND HOT WATER RETURN TEMPERATURES INDICATED ARE ILLUSTRATIVE ONLY. REFER TO PLUMBING DRAWINGS FOR ACTUAL TEMPERATURES.
3. MAINTAIN MINIMUM WORKING AND SERVICE CLEARANCES AROUND ALL EQUIPMENT AS RECOMMENDED AND/OR REQUIRED BY THE MANUFACTURER. COORDINATE REQUIREMENTS WITH THE MANUFACTURER PRIOR TO COMMENCEMENT OF WORK.
4. TERMINATE T&P RELIEF VALVE PIPING, DRAIN PAN PIPING, AND EXHAUST VENT CONDENSATE PIPING OVER INDIRECT WASTE RECEPTOR, OR WHERE INDICATED ON THE PLUMBING PLANS.
5. WHERE NOT FURNISHED WITH THE GAS WATER HEATER, AND WHERE REQUIRED BY THE WATER HEATER MANUFACTURER, THE PLUMBING CONTRACTOR SHALL PROVIDE APPLIANCE GAS PRESSURE REGULATORS TO REDUCE GAS SUPPLY PRESSURE DOWN TO THE MANUFACTURER'S REQUIRED APPLIANCE OPERATING PRESSURES. APPLIANCE GAS PRESSURE REGULATORS SHALL COMPLY WITH AND BE LISTED IN ACCORDANCE WITH THE LOCAL FUEL GAS CODE. WHERE APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ), GAS PRESSURE REGULATORS SHALL BE EQUIPPED WITH AND LABELED FOR UTILIZATION WITH AN APPROVED FACTORY INSTALLED VENT-LIMITING DEVICE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE LOCAL FUEL GAS CODE. WHERE THE AUTHORITY HAVING JURISDICTION DOES NOT APPROVE THE USE OF VENT LIMITING DEVICES, REGULATORS SHALL BE VENTED INDEPENDENTLY THROUGH THE ROOF IN ACCORDANCE WITH THE REGULATOR MANUFACTURER'S SIZING AND INSTALLATION REQUIREMENTS. APPROVED MANUFACTURERS ARE MAXITROL AND PIETRO FIORENTINI.

7 GAS WATER HEATER DETAIL w/ SEPARATE STORAGE TANK AND MASTER MIXING VALVE
SCALE: NONE



Electrical Connection
480V/3 Phase Single Point

Plumbing Connections
Hot Water Inlet- 3/4" FNPT
Cold Water Inlet - 3/4" FNPT
RPZ Air Gap - 1/2" FNPT
Carbon Filter/Softener Drain - 3/4" FNPT
Brine Tank Overflow - 5/8" OD Tube

Carbon Filter/Water Softener
10" x 54" resin tank
14" x 14" brine tank
32,000 grains softening capacity
0.5 cubic foot catalytic carbon
3.5 gpm backwash

RO System
500 gpd (0.35 gpm) at 77F

UV System
40 mJ/cm2 at 10 gpm
Monitored

Storage Tanks
175 Gallon Cone Bottom

Delivery Pump
1 HP
10 gpm at up to 70 psi

1 REVERSE OSMOSIS SYSTEM SCHEMATIC
SCALE: NONE

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NATHANIEL C. STALKER — LICENSED — No. 61101 — PROFESSIONAL ENGINEER — STATE OF MICHIGAN
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P-602

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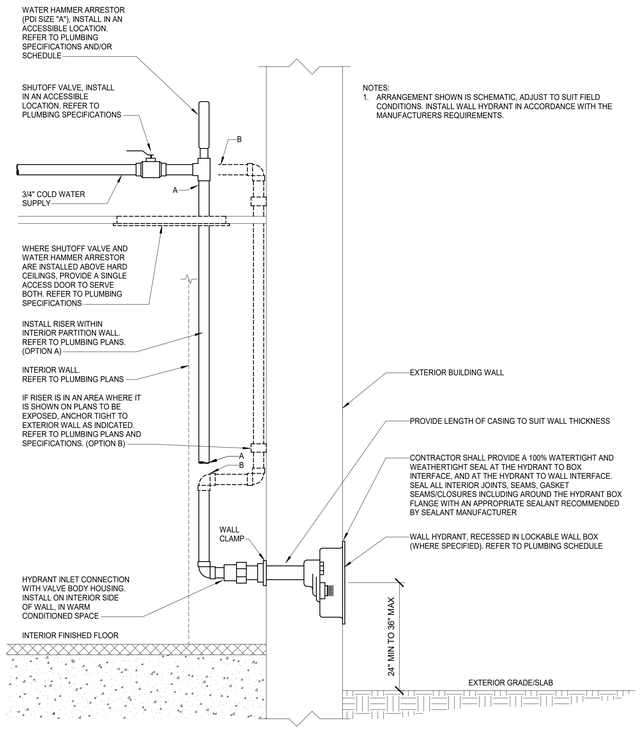
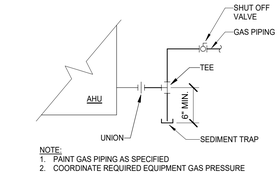


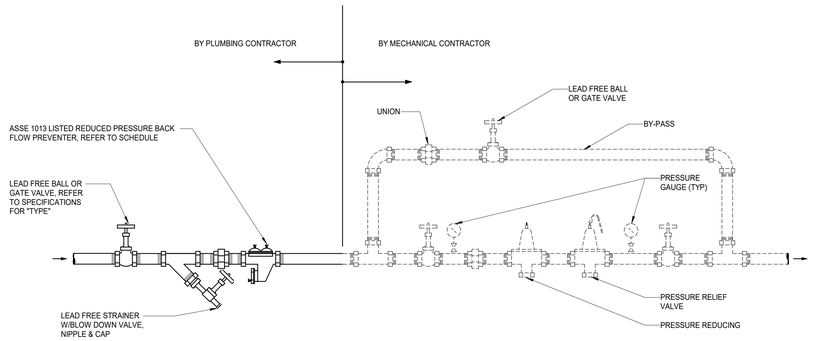
NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS. INSTALL WALL HYDRANT IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS.

10 WALL HYDRANT
SCALE: NONE



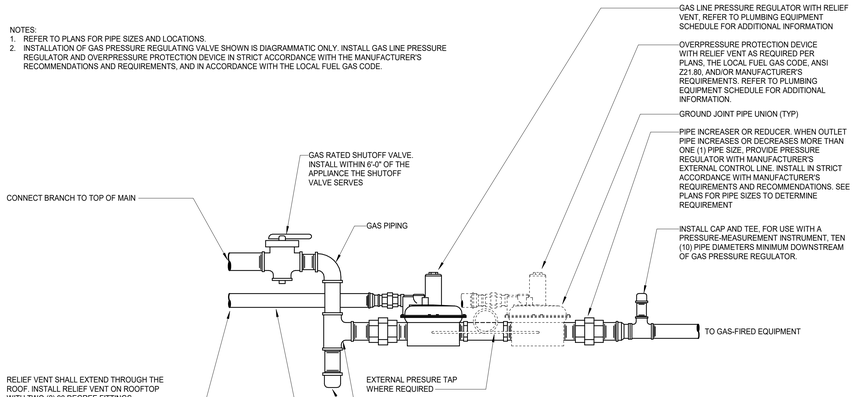
NOTE:
1. PAINT GAS PIPING AS SPECIFIED
2. COORDINATE REQUIRED EQUIPMENT GAS PRESSURE

7 GAS EQUIPMENT CONNECTION
SCALE: NONE

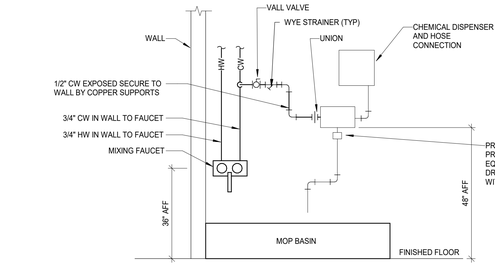


4 MECHANICAL MAKE-UP WATER ASSEMBLY
SCALE: NONE

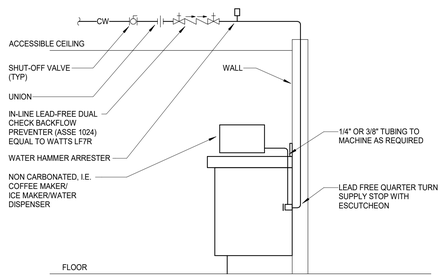
NOTES:
1. REFER TO PLANS FOR PIPE SIZES AND LOCATIONS.
2. INSTALLATION OF GAS PRESSURE REGULATING VALVE SHOWN IS DIAGRAMMATIC ONLY. INSTALL GAS LINE PRESSURE REGULATOR AND OVERPRESSURE PROTECTION DEVICE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS, AND IN ACCORDANCE WITH THE LOCAL FUEL GAS CODE.



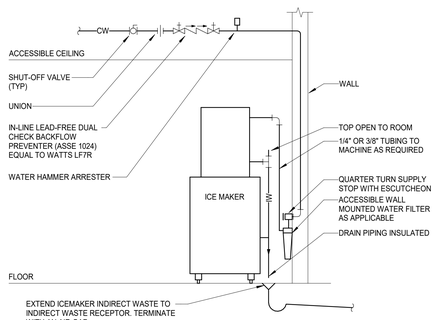
6 GAS PRESSURE REGULATOR WITH RELIEF VENT
SCALE: NONE



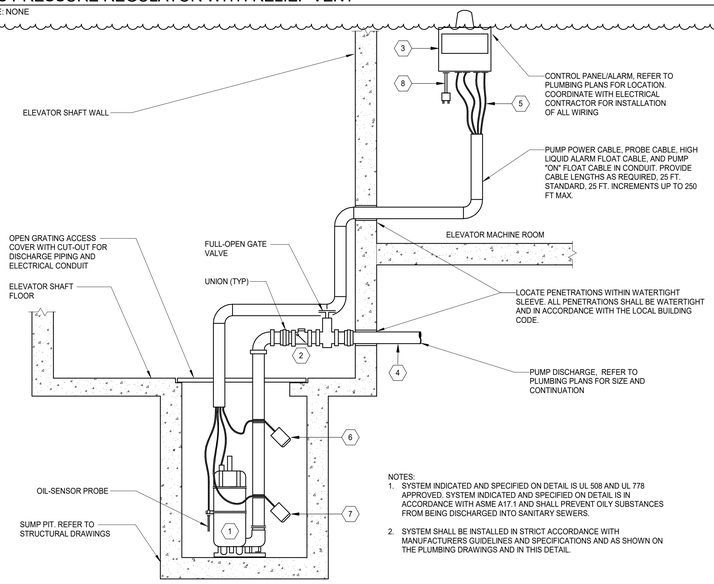
3 MOP SINK CHEMICAL FEED SYSTEM
SCALE: NONE



9 COUNTERTOP EQUIPMENT PIPING DIAGRAM
SCALE: NONE



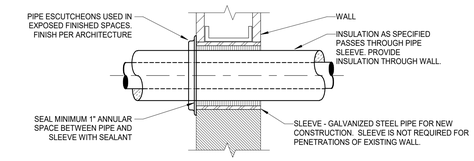
8 ICE MACHINE PIPING DIAGRAM
SCALE: NONE



NOTES:
1. SYSTEM INDICATED AND SPECIFIED ON DETAIL IS UL 508 AND UL 778 APPROVED. SYSTEM INDICATED AND SPECIFIED ON DETAIL IS IN ACCORDANCE WITH ASME A17.1 AND SHALL PREVENT OILY SUBSTANCES FROM BEING DISCHARGED INTO SANITARY SEWERS.
2. SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS GUIDELINES AND SPECIFICATIONS AND AS SHOWN ON THE PLUMBING DRAWINGS AND IN THIS DETAIL.

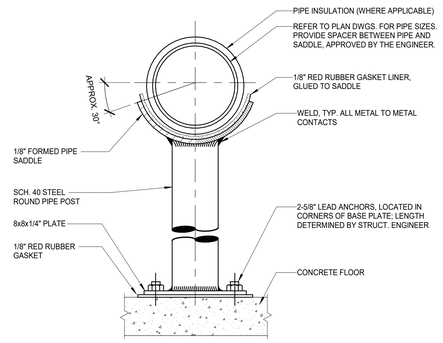
1. SUBMERSIBLE EFFLUENT PUMP. REFER TO EQUIPMENT SCHEDULE.
2. FULL-FLOW CHECK VALVE.
3. OIL-SENSING CONTROL PANEL WITH ALARM. REFER TO EQUIPMENT SCHEDULE
4. ALL BURIED PUMP PRESSURE DISCHARGE PIPING SHALL BE PROTECTED WITH A TAPECOAT CT CORROSION PROTECTION TAPE.
5. PUMP CABLE, PROBE CABLE, HIGH LIQUID ALARM FLOAT CABLE, AND PUMP "ON" FLOAT CABLE.
6. HIGH LIQUID ALARM FLOAT WITH CLAMP DEVICE TO MOUNT TO PUMP DISCHARGE PIPING.
7. PUMP ON FLOAT.
8. POWER CORD AND MOLDED GROUND PLUG.

5 ELEVATOR SUMP PUMP FOR HYDRAULIC ELEVATORS
SCALE: NONE



NOTES:
1. FOR UNINSULATED PIPING ALL OTHER ELEMENTS OF THIS DETAIL APPLY.
2. FOR PENETRATION THROUGH RATED SLAB FOLLOW MANUFACTURERS UL LISTED DETAIL. 3M, TREMCO, HILTI OR EQUAL.

2 PIPE WALL SLEEVE
SCALE: NONE



NOTES:
1. PAINT ALL EXPOSED METAL SURFACES WITH TWO COATS OF GRAY RUST INHIBITING PAINT.
2. ALL HARDWARE SHALL BE STAINLESS STEEL.
3. PROVIDE EPOXY, RUBBER, OR PLASTIC COATED HANGERS/SUPPORTS FOR COPPER PIPING.

1 INDOOR PIPE STANCHION
SCALE: NONE

PLOT DATE: 10/17/2025 12:31:57 TEMPLATE VERSION: 23.0.4

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STATE OF MICHIGAN — NATHANIEL C. OSBORN — 47014 — ENGINEER — REGISTERED PROFESSIONAL ENGINEER

10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P-603

OSBORN ENGINEERING
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PLUMBING EQUIPMENT SCHEDULE

MARK	FIXTURE	MFR.	MODEL	INFORMATION AND ACCESSORIES
RPZ-1	REDUCED PRESSURE ZONE ASSEMBLY	WATTS	LF009-QT-S-AG	WATTS REDUCED PRESSURE ZONE ASSEMBLY SHALL BE LEAD FREE. FUSED EPOXY COATED CAST IRON BODY, BALL VALVED TEST COCKS.
BFP-1	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER	ZURN	375	ZURN MODEL 375, 4" REDUCED PRESSURE BACKFLOW PREVENTER. SHALL BE NSF/ANSI 372, ASSE CERTIFIED AND FULL PORTGATE VALVES. EPOXY COATED DUCTILE IRON MAIN BODY AND ACCESS COVER.
BWV-1	INLINE BACKWATER VALVE	ZURN	Z1095-BV	FLAPPER-STYLE BACKWATER VALVE WITH COATED CAST IRON BODY, HUB INLET AND OFFSET SPIGOT OUTLET, BRONZE THREADED COVER, BRONZE FLAPPER VALVE WITH O-RING. INSTALL BACKWATER VALVE IN AN ACCESSIBLE LOCATION AND WITHIN A CAST IRON VALVE BOX WITH COVER FLUSH WITH FINISHED GRADE/SLAB.
PRV-1	PRESSURE REDUCING CONTROL VALVE	ZURN	500XL3-Y	ZURN WATER PRESSURE REDUCING VALVE WITH LEAD FREE BRONZE Y-STRAINER HHFOR INSTALLATION ON POTABLE WATER LINE. LOW LEAD CAST BRONZE BODY, ANSI/NSF-61 CERTIFIED. PROVIDE WITH PRESSURE GAUGE.
ORD-1	EMERGENCY ROOF DRAIN	ZURN	ZA-100-W3-DR	15" DIAMETER ROOF DRAIN. DURA-COATED CAST IRON BODY WITH COMBINATION MEMBRANE FLASHING UNDERDECK CLAMP/GRAVEL GUARD, ALUMINUM DOME AND TOP SET.
RD-1	ROOF DRAIN	ZURN	ZA-100-DR	15" DIAMETER ROOF DRAIN. DURA-COATED CAST IRON BODY WITH COMBINATION MEMBRANE FLASHING UNDERDECK CLAMP/GRAVEL GUARD, ALUMINUM DOME AND TOP SET.
DS-1	STORM DOWNSPOUT	ZURN	ZANB199-IP-SS	DOWNSPOUT NOZZLE, ALL NICKEL BRONZE BODY, THREADED INLET AND DECORATIVE FACE OF WALL FLANGE AND OUTLET NOZZLE, WITH REMOVABLE STAINLESS SCREEN.
EDS-1	EMERGENCY STORM DOWNSPOUT NOZZLE	ZURN	ZARB199-IP-SS	DOWNSPOUT NOZZLE, ALL PLAIN BRONZE BODY, THREADED INLET AND DECORATIVE FACE OF WALL FLANGE AND OUTLET NOZZLE, WITH REMOVABLE STAINLESS SCREEN.
FCO	FLOOR CLEANOUT	ZURN	ZN1400	ADJUSTABLE FLOOR CLEANOUT WITH COATED CAST IRON BODY WITH GAS AND WATERTIGHT TAPERED THREAD PLUG AND ROUND SCORIATED POLISHED NICKEL BRONZE HEAVY-DUTY TOP
GCO	GRADE CLEANOUT	ZURN	Z1400	ADJUSTABLE EXTERIOR CLEANOUT WITH COATED CAST IRON BODY WITH GAS AND WATERTIGHT TAPERED THREAD PLUG AND ROUND SCORIATED EXTRA-HEAVY-DUTY SECURED TOP. INSTALL IN 12" X 12" X 4" THICK CONCRETE PAD.
FD-1	FLOOR DRAIN	ZURN	ZS415-P-Y	FLOOR DRAIN, DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET AND TRAP PRIMER CONNECTION, COMBINATION INVERTIBLE MEMBRANE CLAMP, ADJUSTABLE COLLAR WITH SEEPAGE SLOTS, "TYPE B" POLISHED NCKEL BRONZE STRAINER AND SEDIMENT BUCKET. TYPE-BS ROUND ADJUSTABLE MEDIUM DUTY STRAINER TOP WITH HEEL-PROOF GRATE.
FD-2	FLOOR DRAIN	ZURN	ZS415SS-P-Y	ZURN CAST-IRON ADJUSTABLE FLOOR DRAIN WITH 6x6 STAINLESS STEEL TOP AND TRAP PRIME CONNECTION.PUSH ON OR NO HUB BOTTOM OUTLET AND CLAMP COLLAR FOR USE WITH A WATERPROOF MEMBRANE.
FD-3	MECHANICAL ROOM FLOOR DRAIN	ZURN	ZN541-AR-HP	12" DIAMETER TOP DRAIN. DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, SEEPAGE PAN AND COMBINATION MEMBRANE FLASHING CLAMP AND FRAME WITH INTEGRATED TRAP PRIMER AND PLUG WITH ANTI-TILT HEAVY-DUTY SLOTTED DURESIST GRATE AND SUSPENDED POLYPROPYLENE SEDIMENT BUCKET.
FD-4	MECHANICAL ROOM FLOOR DRAIN	ZURN	Z541-WS-YC	12" DIAMETER TOP DRAIN. DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, SEEPAGE PAN AND COMBINATION MEMBRANE FLASHING CLAMP AND FRAME WITH INTEGRATED TRAP PRIMER AND PLUG WITH ANTI-TILT HEAVY-DUTY SLOTTED DURESIST GRATE AND SUSPENDED POLYPROPYLENE SEDIMENT BUCKET.
FS-1	FLOOR SINK	ZURN	Z1750	12" x 12" x 6" DEEP, 16 GAGE All TYPE 304 STAINLESS STEEL LIGHT-DUTY SANI-FLOR RECEPTOR NON-TILT, LOOSE SET FULL GRATE WITH 1/2" SQUARE OPENINGS AND ANT-SPLASH STAINLESS STEEL INTERIOR DOME STRAINER.
TP-1	TRAP PRIMER	PPP	PR-500 PRIME-RITE	PRESSURE DROP ACTIVATED TRAP PRIMER VALVE. PRIME UP TO 2 FLOOR DRAIN. OPERATING PRESSURE RANGE 20 PSI MINIMUM TO 80 PSI MAXIMUM
WCO	WALL CLEANOUT	ZURN	Z1446	CLEANOUT TEE, DURA-COATED CAST IRON BODY, GAS AND WATERTIGHT ABS TAPERED THREAD PLUG, AND ROUND, SMOOTH STAINLESS STEEL WALL ACCESS COVER WITH SECURING SCREW.
WH-1	WALL HYDRANT	ZURN	Z1320XL	ECOLOTROL CERAMIC DISK HYDRANT, ENCASED, NON-FREEZE, ANTI-SIPHON, AUTOMATIC DRAINING WALL HYDRANT.
IMB-1	ICEMAKER BOX	OATEY	OATEY I2K	OATEY ICEMAKER BOX, LOW-LEAD WITH WATER HAMMER ARRESTOR VALVE.

GENERAL NOTES:

A. REFERENCE PLUMBING SPECIFICATIONS FOR EQUAL LISTED MANUFACTURES FOR ALL SCHEDULED FIXTURES.
B. UNLESS INDICATED OTHERWISE, THE ARCHITECT SHALL SELECT THE FIXTURE COLOR/FINISH FROM THE MANUFACTURER'S FULL RANGE OF STANDARD OPTIONS.
C. UNLESS INDICATED OTHERWISE, ALL EXPOSED METALLIC COMPONENTS TO BE FURNISHED WITH POLISHED CHROME FINISH, INCLUDING FAUCETS, TRAPS, STOPS, PIPING, ETC.
D. UNLESS INDICATED OTHERWISE, ALL EXPOSED PIPING SHALL BE FURNISHED WITH POLISHED CHROME FINISH BRASS ESCUTCHEONS AT ALL WALL/CABINET PENETRATIONS AND FIXTURE CONNECTIONS.
E. PIPE SIZES SHOWN ARE MINIMUM. REFER TO FLOOR PLANS FOR ADDITIONAL PIPE SIZES.

PUMP SCHEDULE

MARK	SERVICE	PUMP TYPE	SELECTION BASED ON	GPM	SUCTION PRESSURE	PUMP HEAD	DISCHARGE PRESSURE	MAX RPM	QTY OF PUMPS	QTY OF PUMPS RUNNING SIMULTANEOUSLY	MOTOR HP EACH	MOTOR HP TOTAL	ELECTRICAL (V/Ø/Hz)	NOTES
DWP-1	DOMESTIC WATER	BOOSTER PUMP	QUANTUMFLO - PRODIGY DUPLEX	98 EACH	25 PSI	165 TDH	91.43 PSI	3450	2	2	7.5	15	208/3/60	1, 3-8
SP-1	ELEVATOR SUMP	SUBMERSIBLE	STANCOR SE-50	50	N/A	19 TDH	N/A	3450	1	1	0.5	0.5	115/1/60	2
SP-2	ELEVATOR SUMP	SUBMERSIBLE	STANCOR SE-100	100	N/A	32 TDH	N/A	3450	1	1	1	1	115/1/60	2
RP-1	HOT WATER RECIRCULATION...	IN-LINE, BRONZE BODY	BELL & GOSSETT E-60 ECIRC XL	25 GPM	N/A	32 TDH	N/A	2956	1	1	1	1	208/1/60	8, 9, 10

NOTES:

1. FURNISH PRE-FABRICATED VARIABLE SPEED PUMP PACKAGE. PACKAGE TO BE A STANDARD PRODUCT OF SINGLE PUMP MANUFACTURER COMPLETE WITH PUMPS, MOTORS, VFD CONTROLLER, AND MANIFOLDS.
2. OIL SMART SUBMERSIBLE SUMP PUMP, 2" OUTLET, PIGGYBACKED PLUG, MERCURY ON/OFF FLOAT SWITCH, SUCTION STRAINER, ALARM SWITCH WITH ALARM LIGHT AND DRY CONTACTS, DISCHARGE LINE WITH CHECK VALVE AND SHUTOFF VALVE
3. SYSTEM SUBMITTALS SHALL INCLUDE CERTIFICATE NUMBER FOR NSF61 CERTIFICATION, UL508A AND QCZJ 3RD PARTY COMPLIANCE.
4. SYSTEM CONTROLS MUST COMPLY WITH AND PROVIDE FOR CONTROL LOGIC IN ACCORDANCE WITH ANSI/ASHRAE/IES STANDARD 90.1 ENERGY STANDARD
5. SYSTEM SHALL BE PRE-SET TO SYSTEM SITE CONDITIONS BY SIMULATING SUCTION PRESSURE. HYDROSTATIC-ONLY TESTING IS NOT ACCEPTABLE.
6. THE INDUSTRIAL CONTROLLER SHALL BE IN COMPLIANCE WITH CURRENT NEC, SECTION 409.110 HAVING A MAXIMUM 100K AVAILABLE FAULT CURRENT.
7. PROVIDE ALL STANDARD FEATURES, AND SEAL FAIL INDICATOR W/RELAY AND THERMAL CUTOUT CIRCUIT 61HD. DUPLEX PANEL.
8. INTERLOCK PUMP WITH BAS.
9. SET TO "CONSTANT TEMPERATURE" MODE USING THE PUMPS' INTEGRAL SENSOR AND MAINTAIN A 10F TEMPERATURE DIFFERENTIAL.
10. PROVIDE WITH BELL AND GOSSETT TC-1 CLOCK TIMER, COORDINATE TIMER SETTINGS WITH OWNER. CLOCK TIMER SHALL BE RATED FOR 120V/SINGLE PHASE SERVICE.

LAB GAS AND VACUUM SOURCE SCHEDULE

MARK	DESCRIPTION	LOCATION	MANUFACTURER	MODEL #	RATED CAPACITY (SCFM)	INLET	OUTLET	HP	VOLTS	PHASE	AMPS	REMARKS
LA-1	LABORATORY AIR PUMP	LEVEL 1 - MEP SUPPORT	BEACON MEDAES	LAS07D-080V-D	34.0 @ 145PSI	1"	1"	7.5	460	3	18.0	1
LA-2	LABORATORY AIR PUMP	PENTHOUSE	BEACON MEDAES	LAS03D-080V-D	14.5 @ 145PSI	1"	1"	3	460	3	8.4	1
VP-1	VACUUM PUMP	LEVEL 1 - MEP SUPPORT	BEACON MEDAES	LVHV04D-060H-D	58.0 @ 19 HgV	2"	2"	4.6	460	3	12.4	1
VP-2	VACUUM PUMP	PENTHOUSE	BEACON MEDAES	LVHV05D-060H-D	76.0 @ 19 HgV	2"	2"	5.4	460	3	15.6	1
NG-1	NITROGEN PUMP - HIGH PURITY 99%	LEVEL 1 - MEP SUPPORT	NOVAIR	NITROSWING PSA # NS-7	166 SCFH @ 116 PSI	1"	1"	-	115	1	-	1
NG-2	NITROGEN PUMP - ULTRA HIGH PURITY 99.999%	LEVEL 1 - MEP SUPPORT	NOVAIR	NITROSWING PSA # NS-14	130 SCFH @ 117 PSI	1"	1"	-	115	1	-	1
AC-N-1	LABORATORY AIR COMPRESSOR	LEVEL 1 - MEP SUPPORT	NOVAIR	AP-15	150PSI	1"	1"	15	460	3	19.2	1

NOTES:

1. ALL REGULATOR TO BE INSTALLED WITH ISOLATION PLUG VALVES INSTALLED BOTH UPSTREAM AND DOWNSTREAM OF REGULATOR.
2. INTERLOCK LAB AIR PUMP AND VACUUM PUMP WITH BAS.

WATER HEATER SYSTEM SCHEDULE

MARK	SERVICE	LOCATION	TYPE	SELECTION BASED ON	SUPPLY TEMP (F)	AHRI T.E. %	DESIGN TEMP RISE (F)	MBH	RECOVERY @ 100 F RISE	HEATING SOURCE	HP	ELECTRICAL (V/Ø/Hz)	NOTES
GWH-1	DOMESTIC HOT WATER	LEVEL 1 - WATER ROOM	PACKAGE - STACKED	LOCHINVAR AWH0650NPM	140	98	103	650	772	NATURAL GAS	3/4	120/1/60	1, 3
GWH-2	DOMESTIC HOT WATER	LEVEL 1 - WATER ROOM	PACKAGE - STACKED	LOCHINVAR AWH0650NPM	140	98	103	650	772	NATURAL GAS	3/4	120/1/60	1, 3

STORAGE TANKS

MARK	SERVICE	LOCATION	TYPE	SELECTION BASED ON	SIZE	CAPACITY (GAL.)
ST-1	DOMESTIC HOT WATER	LEVEL 1 - WATER ROOM	FIBER METAL JACKETED	LOCHINVAR: LOCHINVAR LOCK-TEMP ROUND JACKETED RGA0318	80" x 40"	318

THERMOSTATIC MIXING VALVES

MARK	SERVICE	LOCATION	TYPE	SELECTION BASED ON	INPUT TEMP (F)	OUTPUT TEMP (F)	INLET PIPE SIZE	OUTLET PIPE SIZE
TMV-1	DOMESTIC HOT WATER	LEVEL 1 - WATER ROOM	MAIN VALVE (DIGITAL)	WATTS INTELLI-STATION 2S - MODEL IS2S200FOSLP-H PRE-PIPED DIGITAL WATER MIXING SYSTEM 120V PLUG IN POWER SUPPLY	140	120	2-1/2"	4"
TMV-2	DOMESTIC HOT WATER	LEVELS 1 - 5	POINT OF USE	WATTS LFUSG-B UNDER SINK GUARDIAN	120	105	1/2"	1/2"

NOTES:

1. PROVIDE WITH FACTORY OPTIONAL CONDENSATE NEUTRALIZATION KIT.
2. WATER HEATERS TO ALTERNATE IN SEQUENCE OF OPERATIONS.
3. PROVIDE WITH MANUFACTURERS STACK FRAME KIT 100341329

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	ADA	MFR.	MODEL	DESCRIPTION	DISTRIBUTION PIPE SIZE (IN) CW	HW	VENT	FIXTURE BRANCH SIZE
EEW-1	EMERGENCY EYE/FACE WASH	NO	BY VENDOR	BY VENDOR	WATERSAVER EW849LH, AUTOFLOW EMERGENCY EYE WASH, COUNTER MOUNT, SPRAY HEAD SWING DOWN FROM STORAGE TO OPERATIONAL POSITION, TWO GS-PLUS SPRAY HEADS. EACH SPRAY HEAD HAS A "FLIP TOP" DUST COVER, INTERNAL FLOW CONTROL AND FILTER TO REMOVE IMPURITIES FROM THE WATER FLOW. CONSTRUCTED OF POLISHED CHROME PLATED BRASS. 1/2" SUPPLY. PROVIDE WITH TM6020 THERMOSTATIC MXING VALVE.	1/2"	1/2"	1-1/2"	2"
ESH-1	EMERGENCY SHOWER, EYEWASH, AND FACE WASH	YES	BY VENDOR	BY VENDOR	RECESSED BARRIER-FREE EYE/FACE WASH ANDSHOWER SAFETY STATION WITH WALL MOUNTED EXPOSED SHOWER HEAD. PROVIDE GUARDIAN MODEL G6040 THERMOSTATIC MIXING VALVE COMPLYING WITH ASSE 1071.	1"	1"	-	-
EWC-1	BI-LEVEL ELECTRIC WATER COOLER AND BOTTLE FILLING STATION	YES	OASIS	PGV8FSVBFSL-BRB-FPF	BI-LEVEL VANDAL RESISTANT FOUNTAIN, WITH VANDAL RESISTANT BUBBLER, REFRIGERATED & VANDAL RESISTANT ELECTRO-MECHANICAL BOTTLE FILLER, TOTAL PFAS FILTER. PROVIDE WITH HI-LO WALL-HUNG PLATE CARRIER, MIFAB MC-33-2. 115V/60Hz/5.5A	1/2"	-	1-1/2"	2"
M-1	GAS METER	-	ONICON	FT-5500	THERMAL MASS FLOW METER PROVIDE DIRECT STANDARD VOLUMETRIC FLOW MEASUREMENT OF NATURAL GAS. PROVIDE WITH A D-100 SERIES DISPLAY MODULE FOR LOCAL OR REMOTE INDICATION OF FLOW RATE AND TOTAL. INTERLOCK WITH BAS SYSTEM.				
M-2	DOMESTIC WATER METER	-	ONICON	FT-3500	INSERTION ELECTROMAGNETIC FLOW METER AND THERMAL ENERGY MEASUREMENT SYSTEM. METER FEATURES A REMOTE TOUCH SCREEN. INTERLOCK WITH BAS SYSTEM.				
L-1	LAVATORY	YES	SLOAN	SS-3103 (3873103)	VITREOUS CHINA WALL MOUNTED, 20-3/4" x 18-1/4" LAVATORY WITH FRONT OVERFLOW AND BACKSPLASH. MEETS ADA GUIDELINES, ANSI A117.1 AND ASME A112.19.2 STANDARDS REQUIREMENTS WHEN INSTALLED ACCORDINGLY. DECK-MOUNTED MID AND LOW BODY FAUCETS SUGGESTED PAIRING. PROVIDE WITH MIFAB MC-41 CONCEALED ARM CARRIER, SLOAN EAF-300, 0.5 GPM OPTIMA MID BODY HARDWIRED-POWERED DECK-MOUNTED FAUCET. COMMERCIAL GRADE, SENSOR ACTIVATED AND ADA COMPLIANT. BI-STABLE MAGNETIC SOLENOID VALVE WITH FLEXIBLE HIGH-PRESSURE HOSE AND STRAINER. VALVES SHALL BE IN COMPLIANCE TO APPLICABLE SECTIONS OF ASME A112.18.1. 6 VOLT DC PLUG-IN ADAPTER.110V/60Hz/15A GFCI OUTLET. PROVIDE WITH WATTS POINT-OF-USE MIXING VALVE, TMV-2. PROVIDE WITH LAV-GUARD PIPE COVERS	1/2"	1/2"	1-1/2"	2"
L-2	LAVATORY	YES	WILSONART	AV1513	15-1/4" x 13-7/8" x 5-1/4" ADA RAMP BOWL SOLID SURFACE SINGLE STATION UNDERMOUNT SINK. ONE-PIECE MOLDED DESIGN, MEETS ADA STANDARD. PROVIDE WITH SLOAN EFX 200, BASYS MID BODY HARDWIRED DECK FAUCET, 0.5 GPM, 6 VOLT PLUG-IN ADAPTER. 110V/60Hz/15A GFCI OUTLET. PROVIDE WITH WATTS POINT-OF-USE MIXING VALVE, TMV-2	1/2"	1/2"	1-1/2"	2"
SH-1	SHOWER	YES	WATTS	E710G2R1BW	WATTS HYDROGUARD SHOWER VALVE AND TRIM: ADA COMPLIANT, SINGLE HANDLE COMBINATION THERMOSTSTIC/PRESSURE BALANCING MIXING SHOWER UNIT, THE SERIES E700 HYDROGUARD® T/P AUTOMATICALLY MIXES HOT AND COLD WATER TO DELIVER BLENDED WATER WITHIN A SPECIFIED RANGE. USING AN ADVANCED THERMAL ACTUATOR, THE SERIES E700 QUICKLY COMPENSATES FOR TEMPERATURE FLUCTUATIONS INDUCED BY WATER TEMPERATURE AND PRESSURE CHANGES. IN THE EVENT OF COLD WATER FAILURE, THE THERMOSTATIC MOTOR VIRTUALLY SHUTS OFF THE FLOW OF HOT WATER. HYDROGUARD T/P MEETS THE MOST STRINGENT PERFORMANCE CRITERIA FOR TEMPERATURE AND PRESSURE CHANGES, DEFINED BY ASSE 1016 (TYPE T/P).	1/2"	1/2"	1-1/2"	2"
LS-1	LABORATORY SINK	NO	BY VENDOR	BY VENDOR	EPOXY RESIN 24"x16"x10" INSIDE DIMENSION UNDERMOUNT LAB SINK. PROVIDE WITH WATERSAVER CT414VB-BH, WHITE POWDER COATED, DECK MOUNTED FAUCET. PROVIDE T&S PVC SINGLE LEDGE FAUCET, BL-9505-01, FOR R.O. WATER. PROVIDE STRIEM POINT-OF-USE ACID NEUTRALIZATION SYSTEM, LB-2. SYSTEM USES LS-50 LIMESTONE. PROVIDE WITH WATTS POINT-OF-USE MIXING VALVE, LFMMV	1/2"	1/2"	1-1/2"	2"
LS-2	LABORATORY SINK	NO	BY VENDOR	BY VENDOR	STAINLESS STEEL 24"x16"x10" INTERIOR DIMENSION UNDERMAOUNT LAB SINK. PROVIDE WITH WATERSAVER CTPR1711WSA, WHITE POWDER COATED, WALL MOUNTED FAUCET. PROVIDE T&S PVC SINGLE LEDGE FAUCET, BL-9505-01, FOR R.O. WATER. PROVIDE STRIEM POINT-OF-USE ACID NEUTRALIZATION SYSTEM, LB-2. SYSTEM USES LS-50 LIMESTONE. PROVIDE WITH WATTS POINT-OF-USE MIXING VALVE, LFMMV	1/2"	1/2"	1-1/2"	2"
MS-1	MOP SINK	NO	FIAT	MSB2424	ONE-PIECE MOLDED STONE. SIZE 24" X 24" X 10". COMPLETE WITH DRAIN SEAL FOR INSTALLATION OF 3" PIPE. REMOVABLE STAINLESS STEEL STRAINER. FAUCET: FIAT 830AA HEAVY DUTY, CHROME PLATED BRASS DUAL HANDLE SINK FAUCET WITH TOP REINFORCING BAR, VACUUM BREAKER, AND 3/4" HOSE END SPOUT WITH PAIL HOOK. ACCESSORIES: FIAT 832AA HOSE AND HOSE HOLDER, FIAT 869CC MOP HANGER, FIAT MSG2424 STAINLESS STEEL WALL PANELS.	3/4"	3/4"	2"	3"
SK-1	SINK	NO	JUST	SL-1921-A-GR	304 STAINLESS STEEL 22" x 19-1/2" x 7-5/8" SINGLE DROP-IN BOWL. 4" FAUCET CENTERS, PROFLO/BRASS CRAFT # PFGD100 GRID DRAIN, BOCR19C SUPPLY, #PFPTB401 CHROME FINISH 17 GAUGE TRAP, CHICAGO #895-317GN2AFCABCP 5-1/4" RIGID GOOSENECK, LAMINAR FLOW CONTROL, MANUALLY OPERATED. PROVIDE WITH WATTS POINT-OF-USE MIXING VALVE, LFMMV.	1/2"	1/2"	1-1/2"	2"
SK-2	SINK	YES	JUST	DLADA1933A65-J	304 STAINLESS STEEL 33" x 19" x 6-1/2" EQUAL DOUBLE BOWL DROP-IN ADA SINK. 18 GA. 4" FAUCET CENTERS, PROFLO/BRASS CRAFT # PFGD100 GRID DRAIN, BOCR19C SUPPLY, #PFPTB401 CHROME FINISH 17 GAUGE TRAP, CHICAGO #895-317GN2AFCABCP 5-1/4" RIGID GOOSENECK, LAMINAR FLOW CONTROL, MANUALLY OPERATED. PROVIDE WITH WATTS POINT-OF-USE MIXING VALVE, LFMMV.	1/2"	1/2"	1-1/2"	2"
UR-1	URINAL	NO	SLOAN	SU-1009 (1101009)	0.125-1.0 GPF VOLUME VITREOUS CHINA WASHDOWN URINAL WITH 3/4" TOP SPUD INLET. 2" NPT OUTLET FLANGE WITH INTEGRAL FLUSHING RIM. SHALL COMPLY WITH ADA cUPC, CALGREEN AND LEED. MIFAB MC-31 CARRIER RECOMMENDED FOR GENERAL WASHDOWN URINAL INSTALLATION.	3/4"	-	1-1/2"	2"
UR-2	URINAL	YES	SLOAN	SU-1009 (1101009)	0.125-1.0 GPF VOLUME VITREOUS CHINA WASHDOWN URINAL WITH 3/4" TOP SPUD INLET. 2" NPT OUTLET FLANGE WITH INTEGRAL FLUSHING RIM. SHALL COMPLY WITH ADA cUPC, CALGREEN AND LEED. PROVIDE WITH MIFAB MC-31 CARRIER	3/4"	-	1-1/2"	2"
WC-1	WATER CLOSET	NO	SLOAN	ST-2459 (2102459)	1.28 GPF VOLUME VITREOUS CHINA ELONGATED BOWL. WALL MOUNTED, WALL OUTLET WITH 10-1/8" x 9-3/8" WATER SPOT AREA AND FULLY GLAZED TRAPWAY. SIPHON JET ACTION WITH 1-1/2" I.P.S. TOP SPUD INLET, 13-1/4" - 17" RIM HEIGHT AND STATIC LOAD RATING OF 750 LBS. SHALL COMPLY WITH ADA, CALGREEN, CEC AND LEED. PROVIDE WITH MIFAB MC-10 CARRIER WITH SLOAN ROYAL SENSOR HARDWIRED FLUSHOMETER WITH TRANSFORMER BOX, ROYAL 111 ESS. PROVIDE POWER 24 VAC, 50 VA.H	1-1/4"	-	2"	4"
WC-2	WATER CLOSET (ADA)	YES	SLOAN	ST-2459 (2102459)	1.28 GPF VOLUME VITREOUS CHINA ELONGATED BOWL. WALL MOUNTED, WALL OUTLET WITH 10-1/8" x 9-3/8" WATER SPOT AREA AND FULLY GLAZED TRAPWAY. SIPHON JET ACTION WITH 1-1/2" I.P.S. TOP SPUD INLET, 13-1/4" - 17" RIM HEIGHT AND STATIC LOAD RATING OF 750 LBS. SHALL COMPLY WITH ADA, CALGREEN. CEC AND LEED. PROVIDE WITH MIFAB MC-10 CARRIER WITH SLOAN ROYAL SENSOR HARDWIRED FLUSHOMETER WITH TRANSFORMER BOX, ROYAL 111 ESS. PROVIDE POWER 24 VAC, 50 VA.	1-1/4"	-	2"	4"

GENERAL NOTES:

A. REFERENCE ARCHITECTURAL DRAWINGS FOR REQUIRED ADA WATER CLOSET, URINAL AND LAVTORY/SINK LOCATIONS AND MOUNTING HEIGHTS.
B. REFERENCE PLUMBING SPECIFICATIONS FOR EQUAL LISTED MANUFACTURES FOR ALL SCHEDULED FIXTURES.
C. UNLESS INDICATED OTHERWISE, THE ARCHITECT SHALL SELECT THE FIXTURE COLOR/FINISH FROM THE MANUFACTURER'S FULL RANGE OF STANDARD OPTIONS.
D. UNLESS INDICATED OTHERWISE, ALL EXPOSED METALLIC COMPONENTS TO BE FURNISHED WITH POLISHED CHROME FINISH, INCLUDING FAUCETS, TRAPS, STOPS, PIPING, ETC.
E. UNLESS INDICATED OTHERWISE, ALL EXPOSED PIPING SHALL BE FURNISHED WITH POLISHED CHROME FINISH BRASS ESCUTCHEONS AT ALL WALL/CABINET PENETRATIONS AND FIXTURE CONNECTIONS.
F. PIPE SIZES SHOWN ARE MINIMUM. REFER TO FLOOR PLANS FOR ADDITIONAL PIPE SIZES.

Assembly Code

REVERSE OSMOSIS/DEIONIZED WATER SYSTEM SCHEDULE

MARK	SERVICE	LOCATION	CAPACITY GPM	STORAGE	INLET	OUTLET	SELECTION BASED ON	DESCRIPTION	REMARKS
RO-1	REVERSE OSMOSIS	LEVEL 1 WATER ROOM	0.35	175	3/4"	3/4"	WATER CONTROL	WATER CONTROL #R-500SA-175 RO SYSTEM. 3/4" INLET/OUTLET.	1, 3, 5
RO-2	REVERSE OSMOSIS	PENTHOUSE	1.4	310	3/4"	3/4"	WATER CONTROL	WATER CONTROL #R-2000SA-310 RO SYSTEM. 3/4" INLET/OUTLET.	1, 4, 5

NOTES:

1. PROVIDE BAS CONNECTIVITY WITH TYPICAL MAINTENANCE AND ALARM POINTS
2. PROVIDE WITH BLEND VALVE ASSEMBLY TO MAINTAIN WATER TEMPERATURE AT 77 DEG F
3. POWER REQUIREMENTS: (1)460V/3PH/60HZ HARDWIRED PANEL
4. POWER REQUIREMENTS: (1)208V/3PH/60HZ HARDWIRED PANEL
5. TYPE II @ 1 MEGA OHM RESISTIVITY.

LABORATORY GAS EQUIPMENT SCHEDULE

DESCRIPTION	SPECIFICATIONS
CO2 MANIFOLD	AMICO MODEL: M2HD-D-LL-U-CO2(MANIFOLD CABINET) M2-HBLQ-04U-CO2(HEADER-BAR ASSEMBLY)
SG-1 MANIFOLD	AMICO MODEL: M3A-DL-HH-U-XXX(MANIFOLD CABINET) M2-HBXC-04U-XXX(HEADER-BAR ASSEMBLY) PROVIDE WITH PRESSURE SWITCH: M-PRSW-GA-XXX
SG-2 MANIFOLD	AMICO MODEL: M3A-DL-HH-U-XXX(MANIFOLD CABINET) M2-HBXC-04U-XXX(HEADER-BAR ASSEMBLY) PROVIDE WITH PRESSURE SWITCH: M-PRSW-GA-XXX
SG-3 MANIFOLD	AMICO MODEL: M3A-DL-HH-U-XXX(MANIFOLD CABINET) M2-HBXC-04U-XXX(HEADER-BAR ASSEMBLY) PROVIDE WITH PRESSURE SWITCH: M-PRSW-GA-XXX
MA-1	MASTER ALARM, AMICO ALERT-2: A2M-E-60

1. CONTRACTOR SHALL LABEL AT MANIFOLD BOXES IDENTIFIED ABOVE IN SCHEDULE, TO INDICATE SPECIFIC ROOMS SERVED. COORDINATED LABELING WITH FINAL ROOM NAMES AND NUMBERS, AND AREA SERVED WITH WAYNE STATE UNIVERSITY.
2. COORDINATE ALL ELECTRICAL POWER REQUIREMENTS WITH ELECTRICAL CONTRACTOR. POWER REQUIREMENTS: (1)110V/3PH/60HZ HARDWIRED PANEL

EXPANSION TANK SCHEDULE

MARK	SERVICE	TYPE	TANK VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	HEIGHT (IN)	DIAMETER (IN)	SELECTION BASED ON MANUFACTURER	SELECTION BASED ON MODEL	NOTES
ET-1	DOMESTIC HOT WATER	DIAPHRAGM	22	14.5	31	16	LOCHINVAR	LTCPA42	1
-	-	-	-	-	-	-	-	-	-

1. ASME SECTION VIII CERTIFIED.

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STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER — MICHAEL C. STRAUSER — 61101 — 10/17/2025

1

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PLUMBING SCHEDULES
SHEET NO.
P-701

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NATURAL GAS PRESSURE REGULATOR SCHEDULE

MARK	EQUIPMENT SERVED	CAPACITY (MBH/CFH)	VALVE BODY SIZE (IN)	INLET PRESSURE (PSI)	OUTLET PRESSURE (IN.WC.)	SELECTION BASED ON		NOTES
						MANUFACTURER	MODEL	
GPR-1	WATER HEATER	650	2"	1	10	MAXITROL	325-11L	1,2,3,4,5,6
GPR-2	BOILER	3000	2"	1	10	MAXITROL	325-11L	1,2,3,4,5,6
GPR-3	HUMIDIFIERS	953	2"	1	10	MAXITROL	325-11L	1,2,3,4,5,6
GPR-4	HUMIDIFIERS	713	2"	1	10	MAXITROL	325-11L	1,2,3,4,5,6

NOTES:
1. ALL REGULATORS TO BE INSTALLED WITH ISOLATION PLUG VALVES INSTALLED BOTH UPSTREAM AND DOWNSTREAM OF REGULATOR
2. ALL VENTS FROM GAS PRESSURE REGULATORS SHALL EXTEND THROUGH THE ROOF TO THE OUTDOORS, INDEPENDENTLY FROM EACH OTHER AND SERVE ONLY A SINGLE DEVICE, AND TERMINATE WITH A TURNDOWN WITH INSECT SCREEN/VENT PROTECTION. SIZING OF GAS PRESSURE REGULATORS SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS, AND SHALL BE BASED ON THE TOTAL DEVELOPED LENGTH OF THE VENT PIPING BEING INSTALLED. THE CONTRACTOR SHALL COORDINATE REQUIREMENTS WITH THE MANUFACTURER PRIOR TO THE COMMENCEMENT OF WORK. CERTIFIED FOR USE WITH 1 PSI SYSTEMS.
3. INSTALL GAS PRESSURE REGULATORS WITH MINIMUM 10 PIPE DIAMETERS OF STRAIGHT PIPE BEFORE ANY CHANGE OF DIRECTION, AND MINIMUM 5 FEET FROM BOILERS. REFER TO MANUFACTURERS INSTALLATION...
4. PROVIDE FACTORY ASSEMBLED AND TESTED SECONDARY MONITORING REGULATOR OVERPRESSURE PROTECTION DEVICE (OPD) IN COMPLIANCE WITH THE LOCAL FUEL GAS CODE AND ANSI Z21.80.
5. PROVIDE WITH APPROPRIATE FACTORY SPRING SELECTIONS FOR WORKER AND MONITOR GAS PRESSURE REGULATORS.
7. WHEN GAS PRESSURE REGULATOR OUTLET PIPE SIZE INCREASE OR DECREASES MORE THAN ONE (1) PIPE SIZE, PROVIDE WITH MANUFACTURERS EXTERNAL CONTROL LINE, AS REQUIRED PER THE MANUFACTURER. COORDINATE REQUIREMENTS WITH THE MANUFACTURER PRIOR TO COMMENCEMENT OF WORK.

HEAT TRACE CONNECTION SCHEDULE

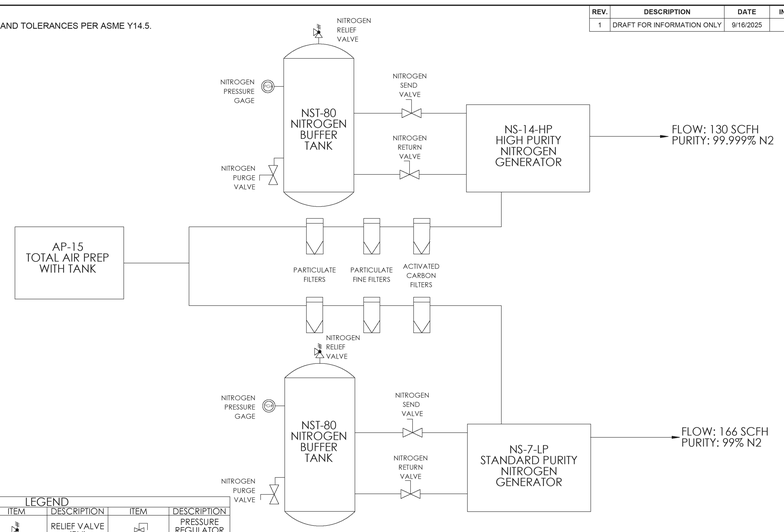
MARK	POWER CONNECTION POINT	POWER END POINT	SERVICE	APPROXIMATE LENGTH (FT)	MAX CIRCUIT LENGTH (FT)	WATTS PER FT	ELECTRICAL			MAX BREAKER SIZE	SELECTION BASED ON		NOTES
							V	PH	A		MANUFACTURER	MODEL	
P-01	P-01	E-01	FREEZE PROTECTION	107	107	6.7	208	1	4.4	20	NVENT RAYCHEM	8XLE2-CR	2, 3, 4, 5
-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:
1. ELECTRICAL CONTRACTOR SHALL PROVIDE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION ON THE CIRCUIT BREAKER.
2. SCHEDULED TYPE BASED UPON RAYCHEM, APPROVED ALTERNATE MANUFACTURERS: THERMON OR CHROMALOX.
3. PROVIDE INSULATION ABOVE AND BELOW GRADE PER PLUMBING SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS.
4. LINE-SENSING THERMOSTAT. ENERGIZED WHEN TEMPERATURE FALLS BELOW 40°F PIPE WALL TEMPERATURE. NEMA 4X ENCLOSURE, UL LISTED.
5. HEAT TRACE TEMPERATURE SHALL BE SET TO 40°F.
6. HEAT TRACE TEMPERATURE SHALL BE SET TO 120°F.

1

NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5.

REV.	DESCRIPTION	DATE	INITIALS	ECN
1	DRAFT FOR INFORMATION ONLY	9/16/2025	LCW	N/A



LEGEND

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
	MANUAL VALVE (MV)		RELIEF VALVE (RV)		PRESSURE REGULATOR (PR)
	SOLENOID OPERATED VALVE (SV)		PRESSURE GUAGE (PG)		FLOW CONTROL ORIFICE (FCO)
	CHECK VALVE (CV)		FILTER	PS	PRESSURE SWITCH (PS)

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DRAWN: L. WELDY	DATE: 09/16/2025	PART NO: PROP2509630155	DRAWING TITLE: P&ID, NITROGEN SYSTEM, WAYNE STATE UNIVERSITY
CHKD: N/A	DATE: N/A		
UNLESS OTHERWISE SPECIFIED: DECIMALS: .XXX +/- .005, .XX +/- .02; FRACTIONS: +/- 1/16; ANGLES: +/- 1°		REVISION: 1	DESCRIPTION: N/A; MATERIAL: N/A
		REMOVE ALL BURRS AND BREAK SHARP EDGES 1/16" MAX	DO NOT SCALE DRAWING
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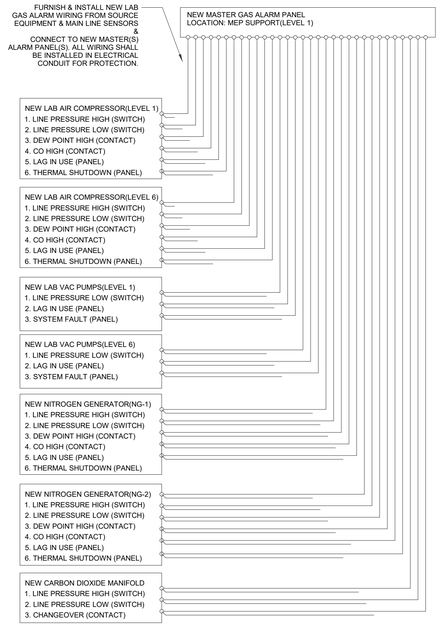
2 NITROGEN PIPING DIAGRAM
SCALE: NONE



NOTES:
1. ALL MASTER GAS ALARM WIRING AND CONDUIT SHALL BE BY THIS SUB-CONTRACTOR. WIRING SHALL BE INSTALLED IN ELECTRICAL CONDUIT. ELECTRICAL CONDUIT WITH PULL STRING SHALL BE FURNISHED AND INSTALLED BY THISL SUB-CONTRACTOR. REFER TO SPECIFICATION 260530, ELECTRICAL, FOR SPECIFICATION OF ELECTRICAL CONDUIT.
2. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 99.
3. ALL NEW WORK SHOWN AND NOTED SHALL BE INSTALLED BY THIS SUB-CONTRACTOR UNLESS NOTED OTHERWISE.

1 MASTER LABORATORY GAS ALARM SIGNAL SCHEMATIC DIAGRAM
SCALE: NONE

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HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PLUMBING SCHEDULES

SHEET NO.
P-702

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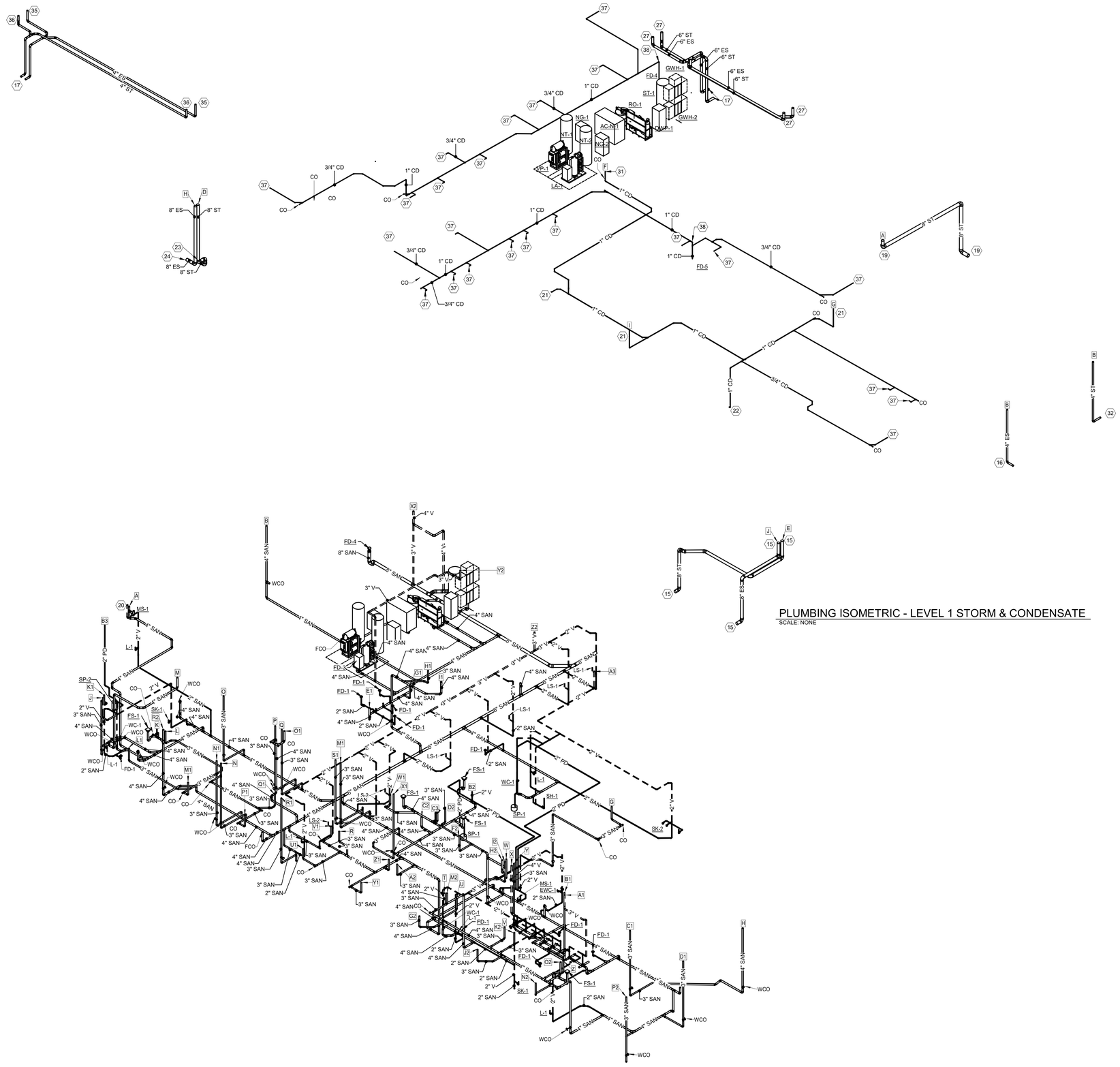
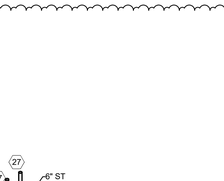


PLUMBING ISOMETRIC - LEVEL 1 & UNDERGROUND SANITARY WASTE & VENT

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 1 STORM & CONDENSATE

SCALE: NONE

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEY NOTES:

1. 3" WASTE STACK VENT.
2. 3" SUMP PUMP DISCHARGE. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE. LOCATE SUMP PUMP ALARM IN EVS ROOM.
3. 8" STORM & EMERGENCY ROOF DRAIN RISER.
4. 2" SANITARY DRAIN DOWN.
5. 2" VENT RISER.
6. 3" VENT RISER.
7. 4" VENT THRU ROOF.
8. 4" SANITARY RISER.
9. 3" SANITARY RISER.
10. 2" SUMP PUMP DISCHARGE UP. SEE SHEET P-102 FOR CONTINUATION.
11. 4" SANITARY DOWN.
12. 2" SANITARY DOWN.
13. 2" SANITARY DRAIN AND VENT. ROUTE VENT THRU EQUIPMENT CHASE TO CEILING SPACE.
14. 4" STORM AND STORM OVERFLOW DRAINS. SEE SHEET P-500 FOR CONTINUATION.
15. 8" STORM RISER AND 8" STORM OVERFLOW SPILL TO GRADE.
16. 4" STORM OVERFLOW SPILL TO GRADE.
17. 4" STORM RISER & 4" STORM OVERFLOW SPILL TO GRADE.
18. 4" SANITARY FROM MOP SINK ABOVE.
19. 8" STORM RISER TO BE OFFSET AND SPILL TO GRADE. HEAT TRACE TO BE INSTALLED ON 8" STORM PIPE. SEE SCHEDULE ON SHEET P-702.
20. 3" VENT THRU ROOF.
21. 3/4" CONDENSATE DRAIN PUMP UP TO ROOF AND SPILL TO NEAREST ROOF DRAIN.
22. ROUTE 1" CONDENSATE TO MOP SINK. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE.
23. 8" STORM DRAIN DOWN TO BELOW GRADE AND TERMINATE IN TRENCH DRAIN.
24. 8" STORM OVERFLOW SPILL TO GRADE.
25. 4" SANITARY FROM FLOOR SINK ABOVE.
26. 2" VENT SERVING FLOOR SINK DRAIN PIPE UP.
27. 4" STORM AND STORM OVERFLOW DRAINS FROM ROOF DRAIN ABOVE.
28. 4" VENT FROM FLOOR DRAIN BELOW.
29. 3" VENT FROM FLOOR DRAIN BELOW.
30. 2" SANITARY DRAIN FROM PLUMBING FIXTURE ABOVE.
31. 1" CONDENSATE RISER FROM ABOVE.
32. 4" STORM SPILL TO GRADE.
33. 3" VENT RISER TO BE OFFSET AS SHOWN.
34. PROVIDE ZURN, Z1090 BACKWATER VALVE, FLAPPER TYPE.
35. 4" ES UP TO EMERGENCY ROOF DRAIN, OD-1. REFER TO SERVICE DOCK ROOF PLAN.
36. 4" ST UP TO ROOF DRAIN, RD-1. REFER TO SERVICE DOCK ROOF PLAN.
37. 3/4" CONDENSATE DRAINAGE FROM FCU.
38. ROUTE 1" CONDENSATE DOWN TO FLOOR RECEPTACLE. TERMINATE OVER RECEPTACLE WITH AIR GAP PER CODE.

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HKS PROJECT NUMBER
26234.000

DATE
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ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 1 GRAVITY

SHEET NO.
P-901

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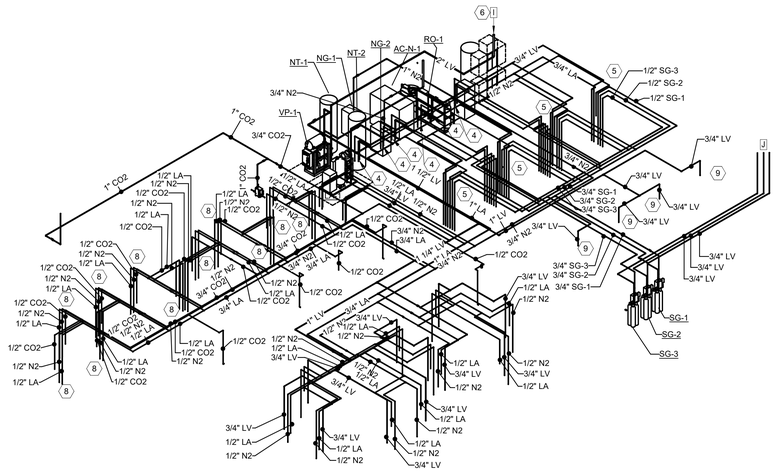
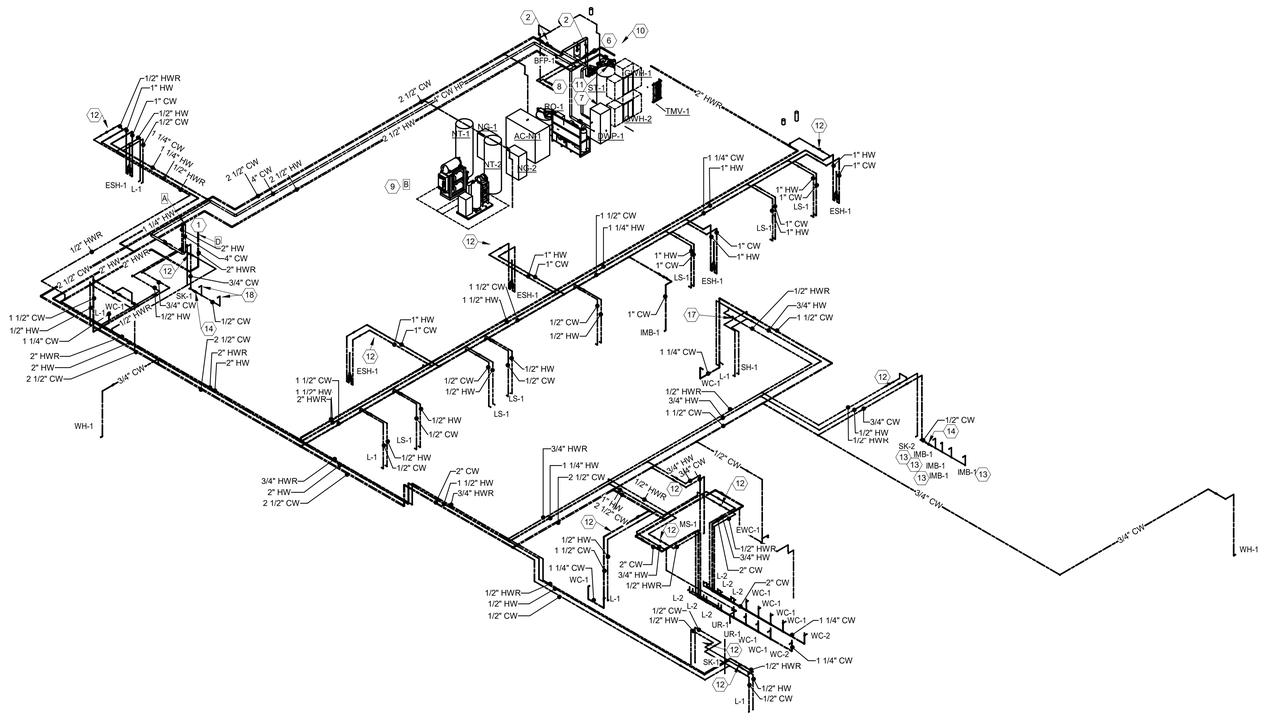


PLUMBING ISOMETRIC - LEVEL 1 LAB GAS

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 1 DOMESTIC WATER & NATURAL GAS

SCALE: NONE

GENERAL SHEET NOTES

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2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES - DOMESTIC WATER & NATURAL GAS

1. 3" CW, 2" HW & 2" HWR RISERS.
2. PRESSURE REDUCING VALVE, PRV-1.
3. 6" WATER LINE FOR FIRE PROTECTION SERVICE. REFER TO FIRE PROTECTION DRAWINGS FOR CONTINUATION.
4. 4" DOMESTIC WATER INCOMING SERVICE.
5. 10" NATURAL GAS PIPE @ 1 PSI FROM GAS METER, INCOMING SERVICE BY OTHERS (19,632 CFH TOTAL). ROUTE PIPE IN SOFFIT LOCATED IN FIRE PUMP ROOM. REFER TO DETAIL ON SHEET P-601 FOR ADDITIONAL INFORMATION.
6. 2-1/2"CW TO GAS WATER HEATERS. 2-1/2"HW FROM GAS WATER HEATERS. REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION.
7. 4"CW TO DOMESTIC WATER TO BOOSTER PUMP. 4"CW PIPE TO SERVE PLUMBING FIXTURES. REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION.
8. 3/4"CW&HW TO REVERSE OSMOSIS SYSTEM. REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION.
9. 10" NATURAL GAS PIPE UP TO SERVE MECHANICAL SYSTEMS IN PENTHOUSE(18,332 CFH @ 653 TOTAL EQUIVALENT LENGTH).
10. 1-1/2" NATURAL GAS LINE TO SERVE GWH-1 AND GWH-2 (650 MBH EACH).
11. WATER METER BY UTILITY COMPANY.
12. 0.5 GPM BALANCING VALVE. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.(TYP.).
13. 1/2"CW TO ICE MAKER, COFFEE MAKER, REFRIGERATOR. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
14. PROVIDE ASSE 1024 COMPLIANT BACKFLOW PREVENTER ASSEMBLY. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
15. 10" NATURAL GAS PIPING @ 1.0 PSI, ROUTED BELOW GRADE TO GAS METER (19,632 CFH TOTAL). BY UTILITY COMPANY.
16. 8" WATER LINE TO SERVE BUILDING. REFER TO CIVIL PLAN FOR CONTINUATION.
17. BALANCING VALVE SET TO 1.0 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
18. ROUTE 1/2" CW TO ICE MAKER BOX SERVING REFRIGERATOR AND 1/2" CW TO COFFEE MAKER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
19. REFER TO SHEET P-500 FOR CONTINUATION.
20. PROVIDE 2" DOMESTIC CW WITH REDUCED PRESSURE ZONE BACKFLOW PREVENTER FOR IRRIGATION CONNECTION.
21. 1/2"CW TO ICE MAKER. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
22. 1/2"CW FROM TRAP PRIMER DOWN TO SERVE FLOOR DRAINS. TRAP PRIMER SERVES UP TO 4 FLOOR DRAINS.

(#) SHEET KEY NOTES - LEVEL 1 LAB GAS

1. 1-1/2" RO SUPPLY AND RECIRC LOOP RISER.
2. RO SUPPLY AND RETURN PIPE SERVING THE PLUMBING FIXTURES ABOVE.
3. PROVIDE SHUT-OFF VALVE ON LAB GAS PIPING SERVING LAB EQUIPMENTS.
4. PROVIDE LAB GAS PIPING TO POINT OF CONNECTION 2" ABOVE FUME HOOD.
5. ROUTE 1/2" SG-1, 1/2" SG-2, 1/2" SG-3, 1/2" N2, 3/4" LA & 3/4" LV GASES DOWN IN EQUIPMENT CHASE AND CONNECT TO EQUIPMENT OUTLETS(TYP.)
6. 3" LAB VACUUM EXHAUST UP THRU ROOF.
7. 3" LAB AIR INTAKE UP THRU ROOF.
8. LAB GAS PIPE DOWN TO SERVE LAB EQUIPMENT.
9. PROVIDE LAB VACUUM TO CEILING SERVICE PANEL OUTLETS(2) (TYPICAL OF ALL CEILING SERVICE PANELS, CP-1A ON LEVEL 1).

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10/17/2025

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 1 PRESSURE

SHEET NO.
P-902

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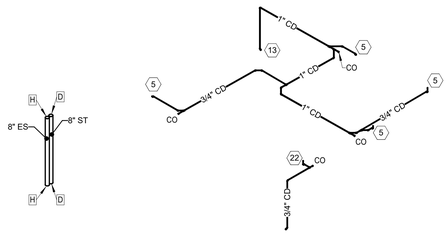
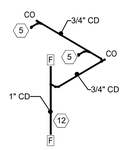
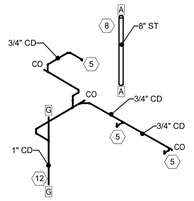
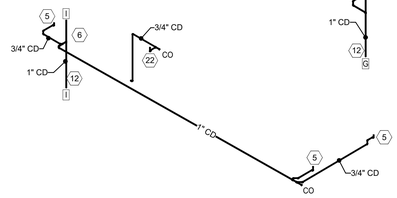
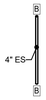
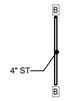


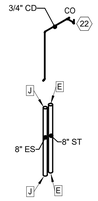




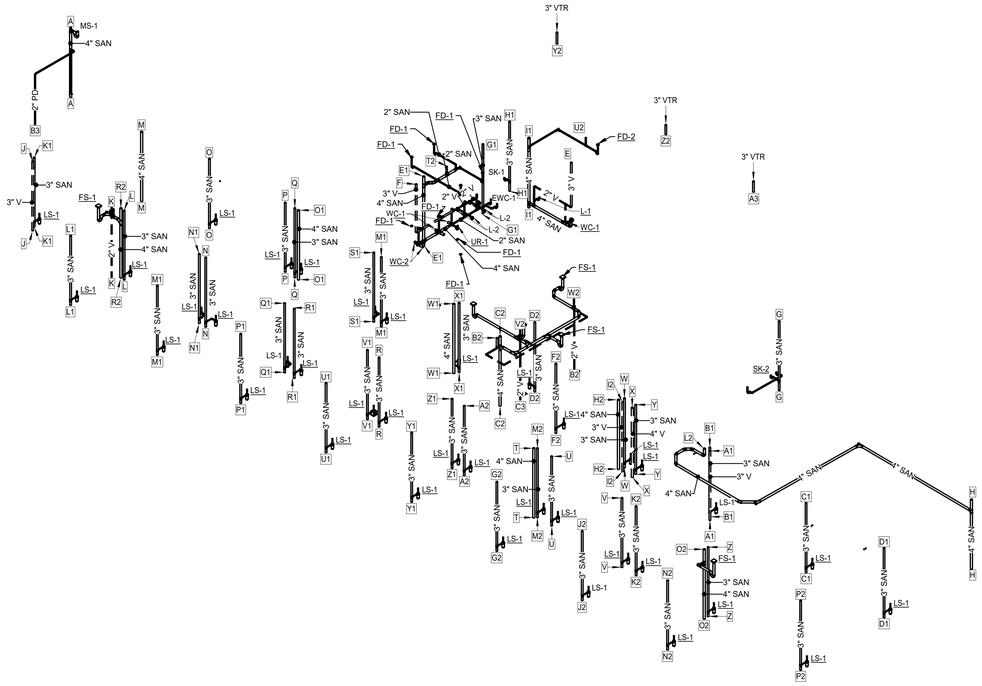








PLUMBING ISOMETRIC - LEVEL 2 STORM & CONDENSATE
SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 2 SANITARY WASTE & VENT
SCALE: NONE

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEY NOTES:

1. 3" VENT THRU ROOF.
2. 2" PUMP DISCHARGE FROM SUMP PUMP. TERMINATE OVER MOP SINK WITH AIR GAP PER CODE. REFER TO SHEET P-101 FOR CONTINUATION.
3. 6" STORM & EMERGENCY ROOF DRAIN RISER.
4. 3" WASTE STACK VENT.
5. 3/4" CONDENSATE DRAIN FROM FCU.
6. 3" VENT RISER.
7. 4" VENT RISER
8. 8" STORM DRAIN RISER.
9. 4" STORM OVERFLOW DRAIN RISER.
10. 8" ROOF DRAIN AND OVERFLOW ROOF RISER.
11. 4" SANITARY RISER.
12. 1" CONDENSATE RISER.
13. ROUTE 1" CONDENSATE TO MOP SINK AND SPILL.
14. 2" VENT PIPE UP.
15. FLOOR DRAIN SERVING LEVEL ABOVE.
16. 2" VENT PIPING SERVING FLOOR DRAIN SANITARY LINE.
17. 2" VENT SERVING FLOOR SINK DRAIN PIPE BELOW.
18. 4" VENT THRU ROOF.
19. 4" SANITARY DRAIN PIPE SERVING FLOOR SINK.
20. 4" STORM RISER.
21. 8" STORM DRAIN RISER.
22. 3/4" CONDENSATE DRAIN FROM FCU. SPILL TO FLOOR DRAIN/SINK.

1

1

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NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 2 GRAVITY

SHEET NO.
P-903

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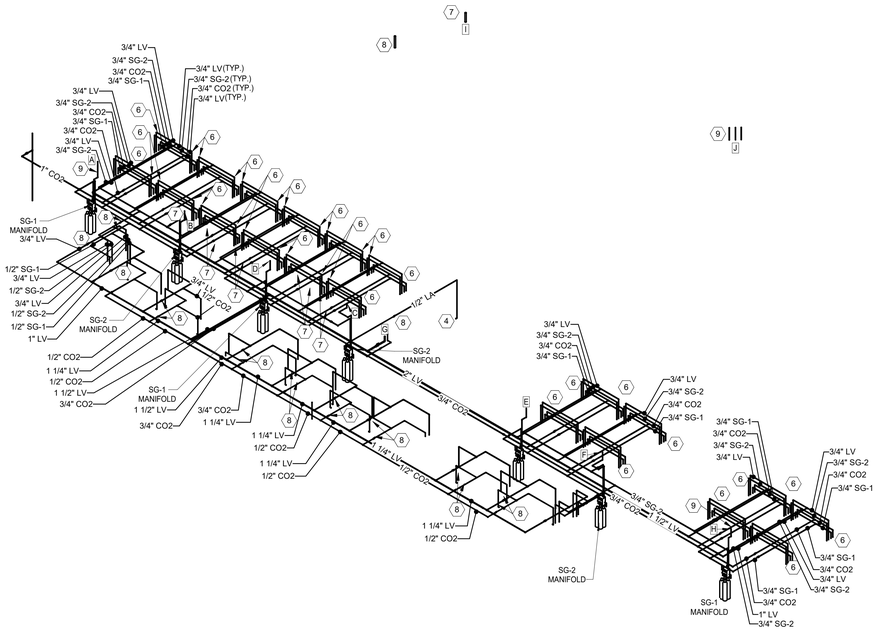
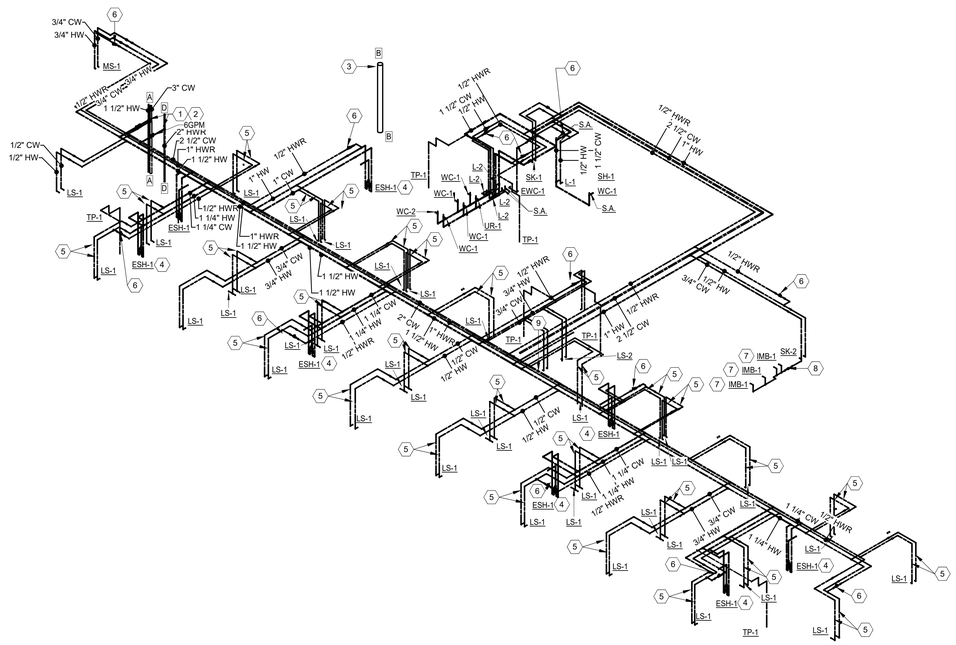


PLUMBING ISOMETRIC - LEVEL 2 LAB GAS
SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 2 DOMESTIC WATER & NATURAL GAS
SCALE: NONE

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

SHEET KEYNOTES - DOMESTIC WATER & NATURAL GAS

1. 3" CW, 1-1/2"HW & 1-1/2" HWR RISERS. PROVIDE SHUT-OFF VALVES TO SERVE ASSOCIATED LEVEL.
2. PROVIDE PRV-1 ON LEVEL 2.
3. 10" NATURAL GAS RISER.
4. EMERGENCY SHOWER WITH THERMOSTATIC MIXING VALVE(TYPICAL OF ALL ESH-1 ON LEVELS 2 - 5).
5. ROUTE 1/2" CW & HW DOWN EQUIPMENT CHASE TO SERVE LAB SINK.
6. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
7. 1/2"CW TO ICEMAKER BOX, IMB-1, TO SERVE REFRIGERATORS AND ICEMAKERS.
8. PROVIDE WATTS LF007-LF DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY.
9. ROUTE 1/2"CW TO GLASS WASHER. PROVIDE WATTS LF007 DOUBLE DETECTOR CHECK VALVE ASSEMBLY.

SHEET KEYNOTES - LAB GAS

1. NOT USED.
2. 1-1/2" REVERSE OSMOSIS SUPPLY AND RETURN RISER.
3. REVERSE OSMOSIS LOOP DOWN TO SERVE LAB SINK(TYPICAL)
4. PROVIDE LAB GASES TO CEILING PANELS, VACUUM, CO2, SG1 & SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
5. PROVIDE LAB AIR TO ALCOVE (TYPICAL OF ALL, LEVEL 2 - 5).
6. PROVIDE SHUT-OFF VALVE TO SERVE LAB (TYPICAL OF ALL, LEVEL 2 - 5).
7. 3" LAB VACUUM EXHAUST, MAINTAIN 10 FEET FROM OPENINGS AND AIR INTAKES.
8. 3" LAB AIR INTAKE. MAINTAIN 10 FEET FROM ALL EXHAUST EQUIPMENTS.
9. 3/4" RELIEF PIPE FROM SPECIALTY GAS MANIFOLD. PIPE SHALL BE TURNED DOWN AND SCREENED.
10. ROUTE 1/2" REVERSE OSMOSIS PIPE TO STERILIZER.
11. PROVIDE SHUT-OFF VALVE TO SERVE LAB EQUIPMENT (TYPICAL OF ALL, LEVEL 2 - 5).
12. 3/4" MANIFOLD RELIEF VENT PIPE RISER.
13. 2" LAB VACUUM RISER UP.
14. 1/2" LAB AIR RISER UP.

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NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ISOMETRICS - LEVEL 2 PRESSURE

SHEET NO.
P-904

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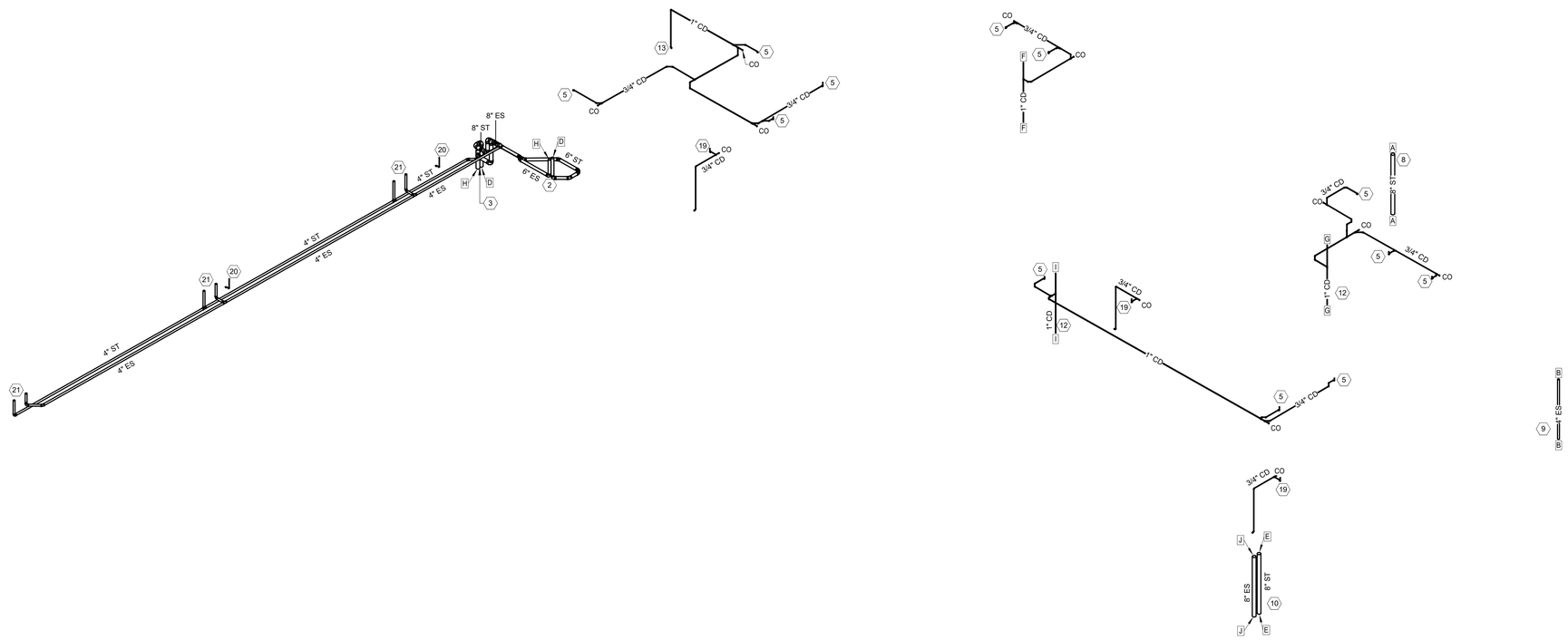
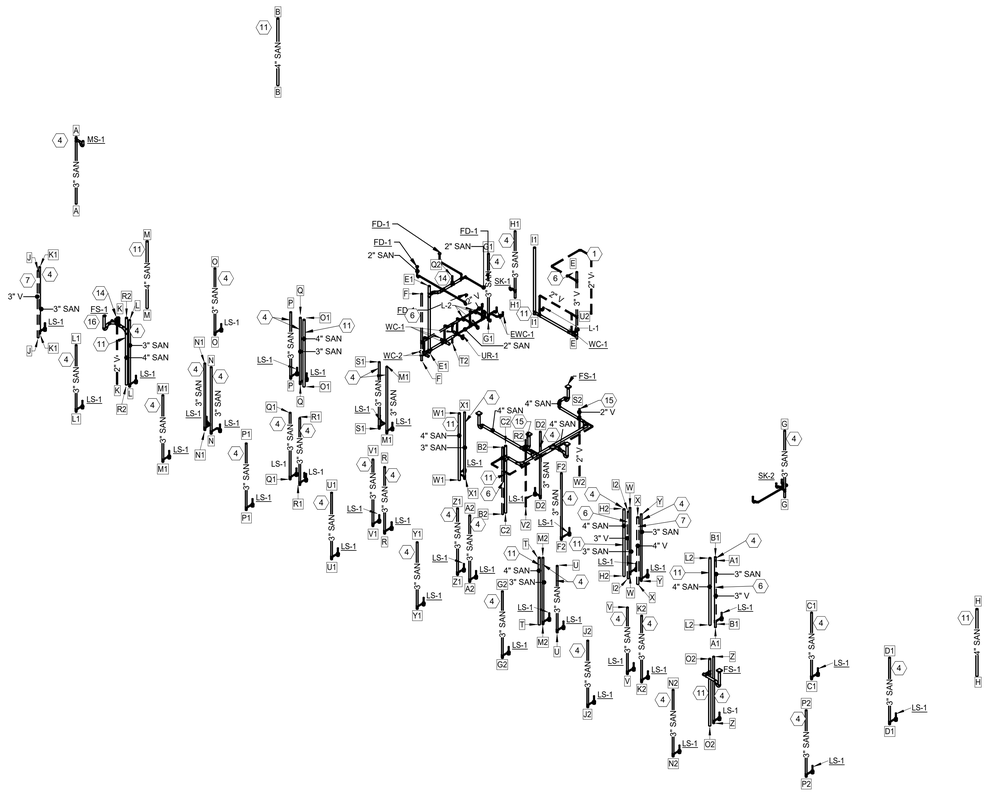


PLUMBING ISOMETRIC - LEVEL 3 STORM & CONDENSATE

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 3 SANITARY WASTE & VENT

SCALE: NONE

GENERAL SHEET NOTES

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2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.
3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEY NOTES:

1. 2" VENT SERVING SHOWER DRAIN, SH-1.
2. 6" STORM & EMERGENCY RISER TO BE OFFSET.
3. 8" STORM & EMERGENCY ROOF DRAIN RISER.
4. 3" WASTE STACK VENT.
5. 3/4" CONDENSATE DRAIN FROM FCU.
6. 3" VENT RISER.
7. 4" VENT RISER
8. 8" STORM DRAIN RISER.
9. 4" STORM OVERFLOW DRAIN RISER.
10. 8" ROOF DRAIN AND OVERFLOW ROOF RISER.
11. 4" SANITARY RISER.
12. 1" CONDENSATE RISER.
13. ROUTE 1" CONDENSATE TO MOP SINK AND SPILL.
14. 2" VENT SERVING FLOOR DRAIN SANITARY LINE BELOW.
15. 2" VENT SERVING FLOOR SINK DRAIN PIPE BELOW.
16. 4" SANITARY DRAIN PIPE SERVING FLOOR SINK.
17. NOT USED.
18. REFER TO APPENDAGE AREA ON SHEET P-501 FOR CONTINUATION.
19. 3/4" CONDENSATE DRAIN FROM FCU. SPILL TO FLOOR DRAIN/SINK.
20. 3/4" CONDENSATE FROM FAN COIL UNIT PUMP UP TO ROOF. ROUTE TO NEAREST ROOF DRAIN AND SPILL.
21. 4" STORM DRAIN AND 4" OVERFLOW DRAIN FROM ABOVE(25 GPM).

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No. 61101
REGISTERED PROFESSIONAL ENGINEER
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NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 3 GRAVITY

SHEET NO.
P-905

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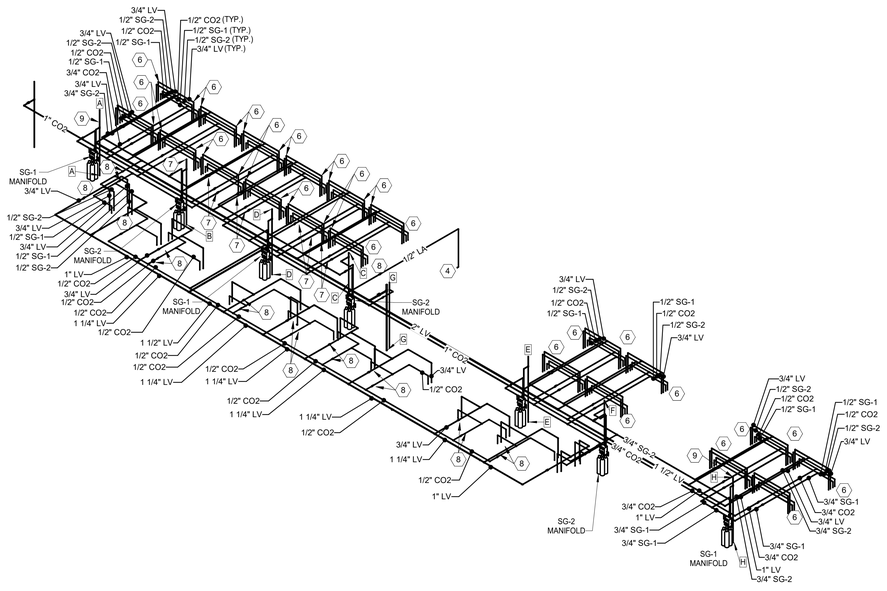
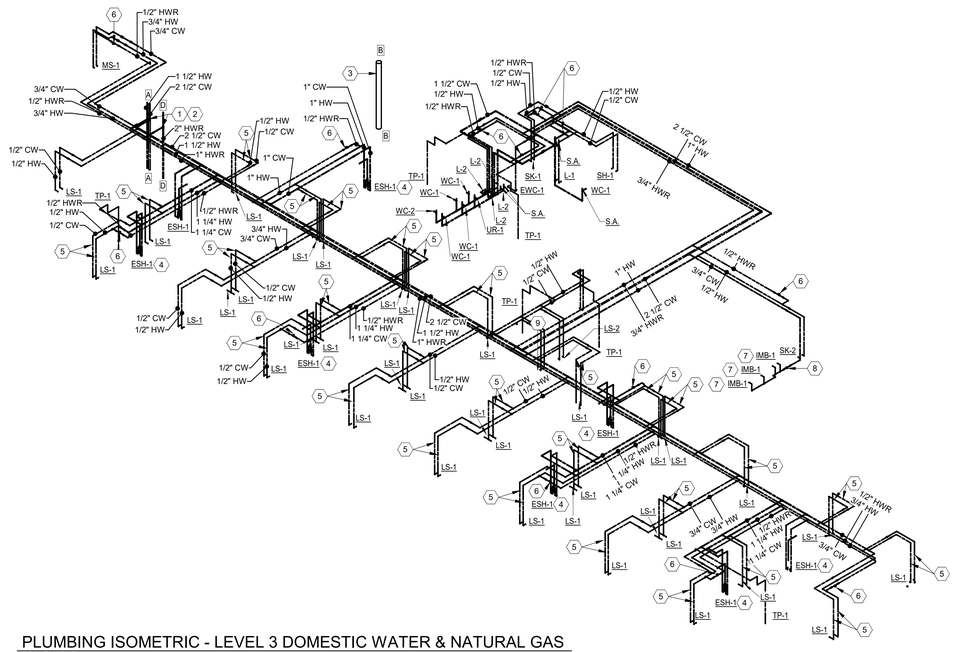


PLUMBING ISOMETRIC - LEVEL 3 LAB GAS

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 3 DOMESTIC WATER & NATURAL GAS

SCALE: NONE

GENERAL SHEET NOTES

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4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES - DOMESTIC WATER & NATURAL GAS

1. 2-1/2" CW, 1-1/2"HW & 1-1/2" HWR RISERS.
2. PROVIDE SHUT-OFF VALVES TO SERVE ASSOCIATED LEVEL
3. 4" NATURAL GAS RISER.
4. EMERGENCY SHOWER WITH THERMOSTATIC MIXING VALVE(TYPICAL OF ALL ESH-1).
5. ROUTE 1/2" CW & HW DOWN EQUIPMENT CHASE TO SERVE LAB SINK.
6. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
7. 1/2"CW TO ICEMAKER BOX, IMB-1, TO SERVE REFRIGERATORS AND ICEMAKERS.
8. PROVIDE WATTS LF007-LF DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY.
9. ROUTE 1/2"CW TO GLASS WASHER. PROVIDE WATTS LF007 DOUBLE DETECTOR CHECK VALVE ASSEMBLY.

(#) SHEET KEYNOTES - LAB GAS

1. 1-1/4" LV, 1" LA.
2. 1-1/2" REVERSE OSMOSIS SUPPLY AND RETURN RISER.
3. REVERSE OSMOSIS LOOP DOWN TO SERVE LAB SINK(TYPICAL)
4. PROVIDE LAB GASES TO CEILING PANELS, VACUUM, CO2, SG1 & SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
5. PROVIDE LAB AIR TO ALCOVE (TYPICAL OF ALL, LEVEL 2 - 5).
6. PROVIDE LAB GASES TO CEILING PANELS, 3/4" VACUUM, 1/2" CO2, 1/2" SG1 & 1/2" SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
7. ROUTE 1/2" REVERSE OSMOSIS PIPE TO STERILIZER.
8. PROVIDE SHUT-OFF VALVE TO SERVE LAB EQUIPMENT (TYPICAL OF ALL, LEVEL 2 - 5).
9. 3/4" LAB GAS MANIFOLD RELIEF VENT RISER.

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10/17/2025

REVISION

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1	ADDENDUM No.1	10/17/2025

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DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 3 PRESSURE

SHEET NO.
P-906

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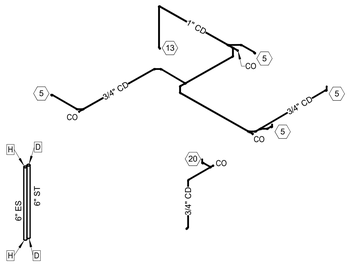
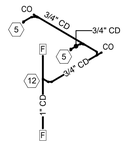
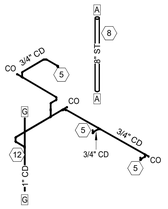
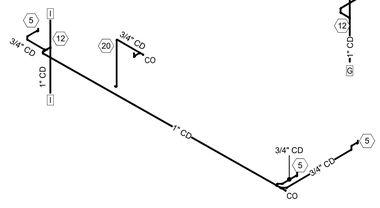
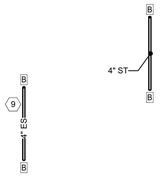
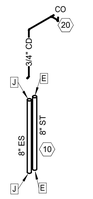






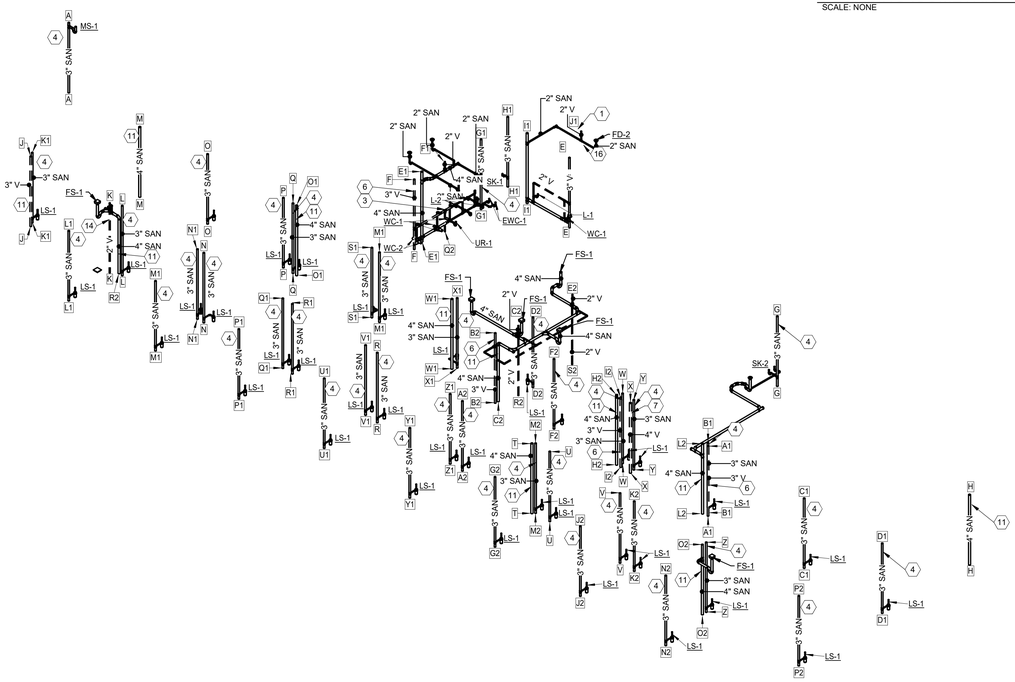






PLUMBING ISOMETRIC - LEVEL 4 STORM & CONDENSATE

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 4 SANITARY WASTE & VENT

SCALE: NONE

GENERAL SHEET NOTES

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3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

1. 2" VENT SERVING SHOWER DRAIN ABOVE, SH-1.
2. 6" STORM & EMERGENCY RISER TO BE OFFSET.
3. 2" VENT SERVING FLOOR DRAIN SANITARY LINE BELOW.
4. 3" WASTE STACK VENT.
5. 3/4" CONDENSATE DRAIN FROM FCU.
6. 3" VENT RISER.
7. 4" VENT RISER
8. 8" STORM DRAIN RISER.
9. 4" STORM OVERFLOW DRAIN RISER.
10. 8" ROOF DRAIN AND OVERFLOW ROOF RISER.
11. 4" SANITARY RISER.
12. 1" CONDENSATE RISER.
13. ROUTE 1" CONDENSATE TO MOP SINK AND SPILL.
14. 2" VENT SERVING FLOOR SINK DRAIN PIPE BELOW.
15. 4" SANITARY DRAIN PIPE SERVING FLOOR SINK.
16. 2" SANITARY DRAIN SERVING SHOWER DRAIN ABOVE.
17. NOT USED.

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STATE OF MICHIGAN — NATHANIEL C. STALKER — LICENSED — No. 61101 — PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 4 GRAVITY

SHEET NO.
P-907

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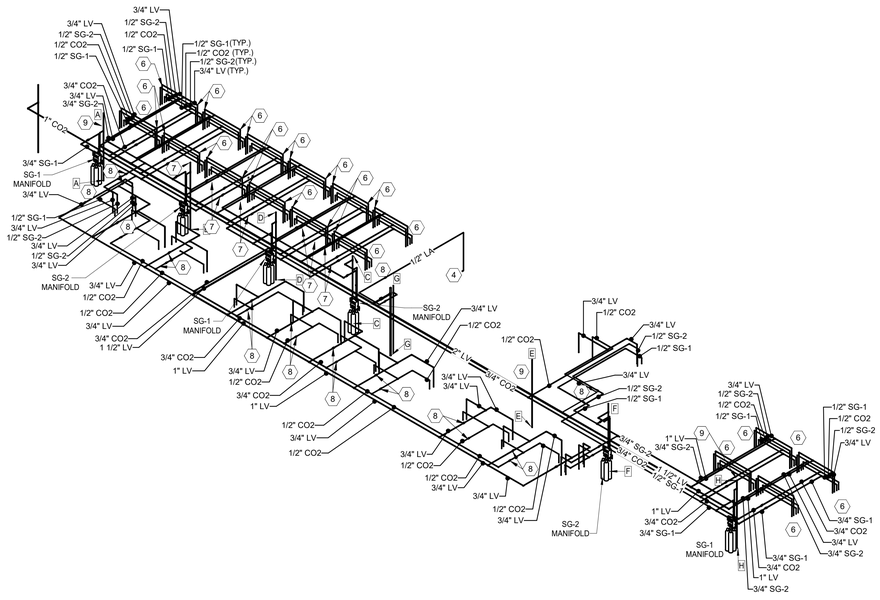
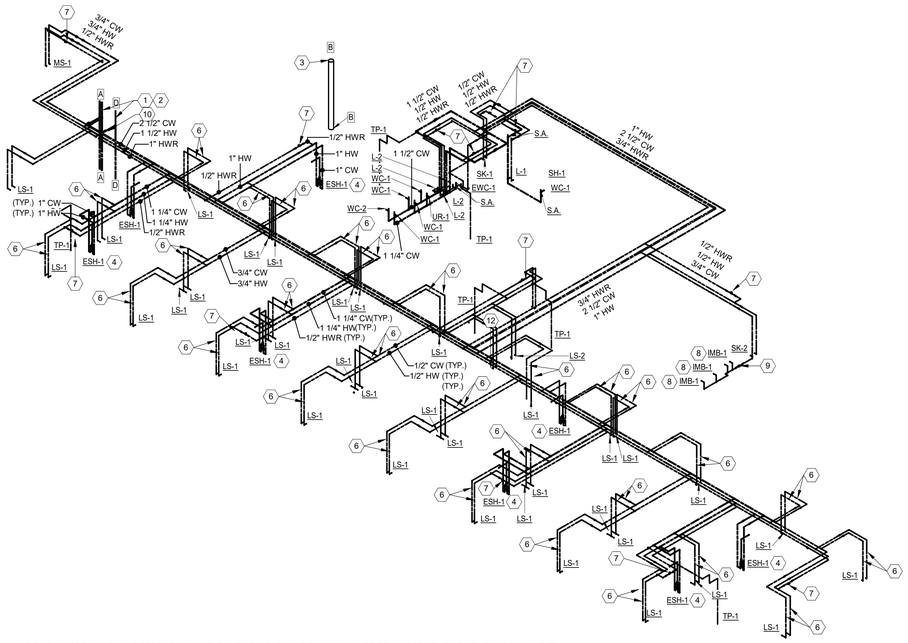


PLUMBING ISOMETRIC - LEVEL 4 LAB GAS

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 4 DOMESTIC WATER & NATURAL GAS

SCALE: NONE

GENERAL SHEET NOTES

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3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES - DOMESTIC WATER & NATURAL GAS

1. 2-1/2" CW, 1-1/2"HW & 1-1/4" HWR RISERS.
2. PROVIDE SHUT-OFF VALVES TO SERVE ASSOCIATED LEVEL.
3. 4" NATURAL GAS RISER.
4. EMERGENCY SHOWER WITH THERMOSTATIC MIXING VALVE(TYPICAL OF ALL ESH-1).
5. NOT USED.
6. ROUTE 1/2" CW & HW DOWN EQUIPMENT CHASE TO SERVE LAB SINK.
7. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
8. 1/2"CW TO ICEMAKER BOX, IMB-1, TO SERVE REFRIGERATORS AND ICEMAKERS.
9. PROVIDE WATTS LF007-LF DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY.
10. FLOOR BALANCING VALVE SET TO 5 GPM. TYPICAL PER FLOOR.
11. ROUTE 1/2"CW TO GLASS WASHER. PROVIDE WATTS LF007 DOUBLE DETECTOR CHECK VALVE ASSEMBLY.

(#) SHEET KEYNOTES - LAB GAS

1. 1-1/4" LV, 1" LA.
2. 1-1/2" REVERSE OSMOSIS SUPPLY AND RETURN RISER.
3. REVERSE OSMOSIS LOOP DOWN TO SERVE LAB SINK(TYPICAL)
4. PROVIDE LAB GASES TO CEILING PANELS, VACUUM, CO2, SG1 & SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
5. PROVIDE LAB AIR TO ALCOVE (TYPICAL OF ALL, LEVEL 2 - 5).
6. PROVIDE LAB GASES TO CEILING PANELS, 3/4" VACUUM, 1/2" CO2, 1/2" SG1 & 1/2" SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
7. ROUTE 1/2" REVERSE OSMOSIS PIPE TO STERILIZER.
8. PROVIDE SHUT-OFF VALVE TO SERVE LAB EQUIPMENT (TYPICAL OF ALL, LEVEL 2 - 5).
9. 3/4" LAB GAS MANIFOLD RELIEF VENT RISER FROM BELOW, 1" LAB GAS MANIFOLD RELIEF VENT RISER UP.

1

1

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26234.000

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29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 4 PRESSURE

SHEET NO.
P-908

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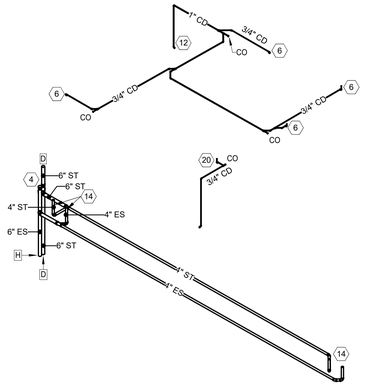
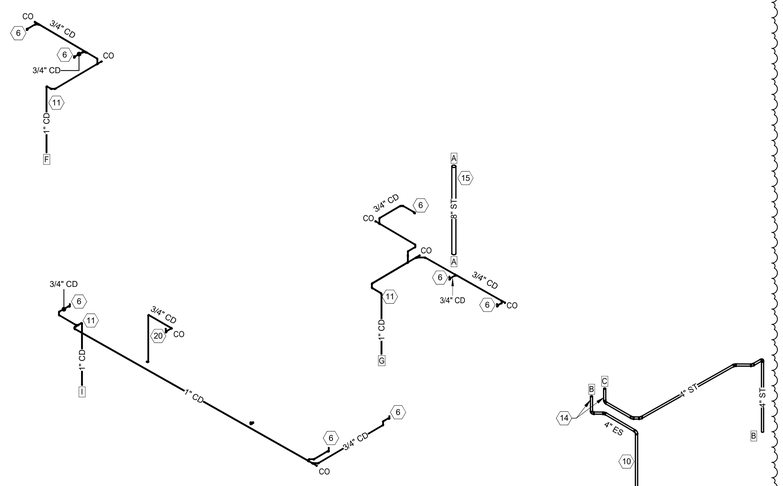
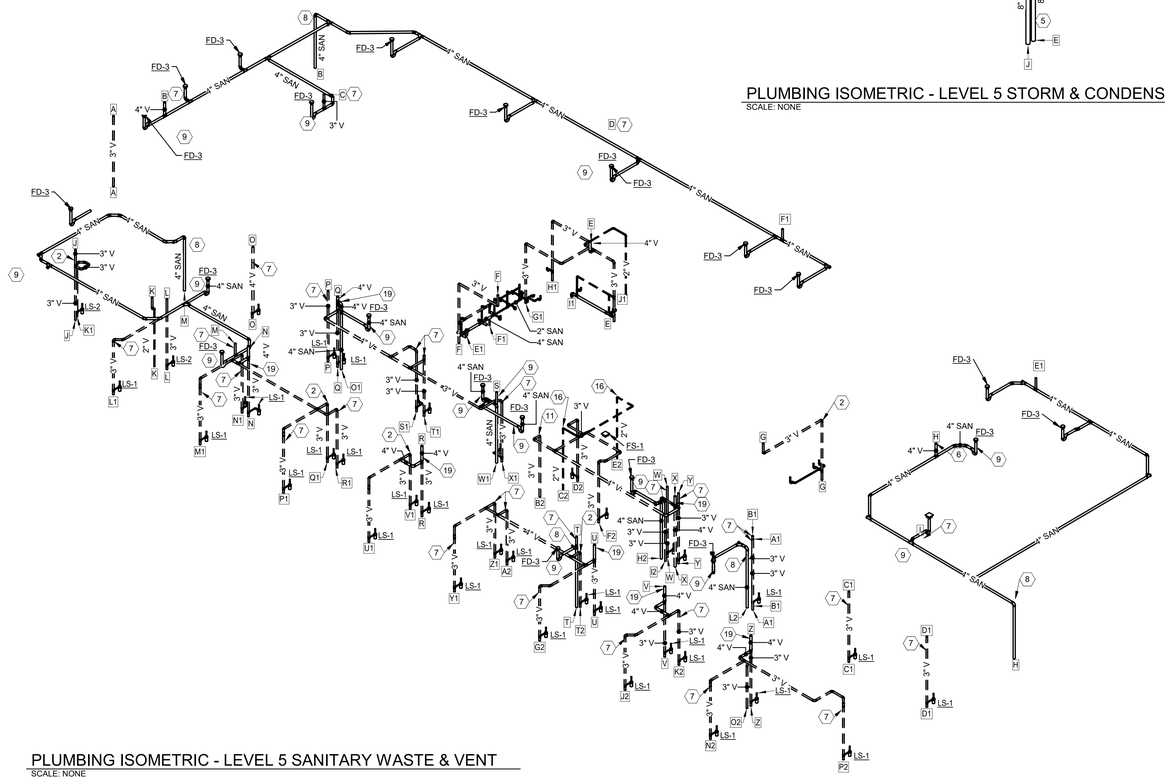




PLUMBING ISOMETRIC - LEVEL 5 STORM & CONDENSATE

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 5 SANITARY WASTE & VENT

SCALE: NONE

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SHEET KEYNOTES

1. 2" VENT SERVING SHOWER DRAIN, SH-1.
2. 3" VENT UP TO 4" VTR.
3. UP TO ROOF DRAIN.
4. 6" ROOF DRAIN AND OVERFLOW ROOF DRAIN RISER.
5. 8" ROOF DRAIN AND OVERFLOW ROOF DRAIN RISER.
6. 3/4" CONDENSATE DRAIN FROM FCU..
7. 3" VENT RISER.
8. 4" SANITARY RISER.
9. 4" SANITARY DRAIN FROM FLOOR DRAIN ABOVE.
10. 4" STORM OVERFLOW DRAIN RISER.
11. 1" CONDENSATE RISER DOWN.
12. ROUTE 1" CONDENSATE TO MOP SINK AND SPILL.
13. 2" VENT SERVING FLOOR DRAIN SANITARY LINE BELOW.
14. 4" ROOF DRAIN AND OVERFLOW ROOF DRAIN RISER.
15. 8" ROOF DRAIN RISER.
16. 2" VENT SERVING FLOOR SINK DRAIN PIPE BELOW.
17. 4" SANITARY DRAIN PIPE SERVING FLOOR SINK.
18. NOT USED.
19. 4" VENT UP.
20. 3/4" CONDENSATE DRAIN FROM EVAPORATOR. PROVIDE CLEANOUT NEAR EVAPORATOR AND ROUTE PIPING DOWN WALL AND SPILL TO FLOOR SINK.

1

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STATE OF MICHIGAN
REGISTERED PROFESSIONAL ENGINEER
MATTHANIEL C. OSTALKIEWICZ
ENGINEER
No. 61101

10/17/2025

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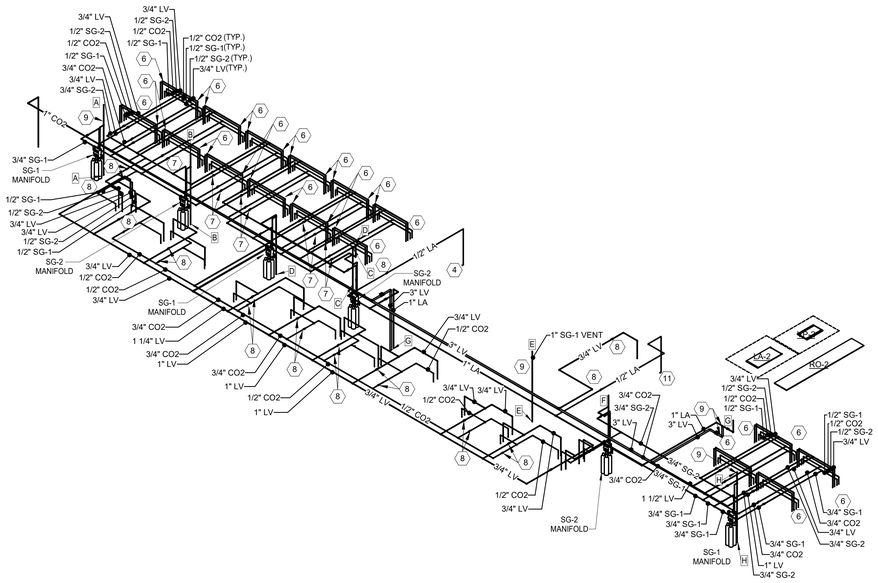
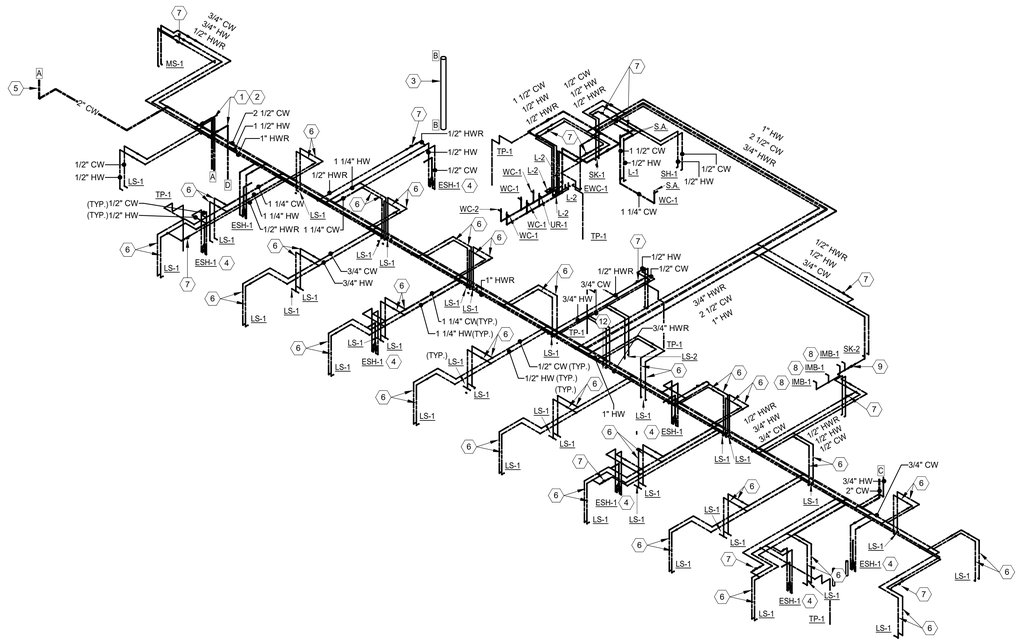
1. 2-1/2" CW, 1-1/2"HW & 1-1/4" HWR RISERS.
2. PROVIDE SHUT-OFF VALVES TO SERVE ASSOCIATED LEVEL.
3. 4" NATURAL GAS RISER.
4. EMERGENCY SHOWER WITH THERMOSTATIC MIXING VALVE(TYPICAL OF ALL ESH-1).
5. 2" CW SUPPLY UP TO PENTHOUSE TO SERVE MECHANICAL SYSTEMS. SEE HVAC PLANS FOR EXACT LOCATION OF EQUIPMENT.
6. ROUTE 1/2" CW & HW DOWN EQUIPMENT CHASE TO SERVE LAB SINK.
7. BALANCING VALVE SET TO 0.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
8. 1/2"CW TO ICEMAKER BOX, IMB-1, TO SERVE REFRIGERATORS AND ICEMAKERS.
9. PROVIDE WATTS LF007-LF DOUBLE CHECK VALVE BACKFLOW PREVENTER ASSEMBLY.
10. BALANCING VALVE SET TO 2.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
11. BALANCING VALVE SET TO 1.5 GPM. REFER TO DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
12. ROUTE 1/2"CW TO GLASS WASHER. PROVIDE WATTS LF007 DOUBLE DETECTOR CHECK VALVE ASSEMBLY.

(#) SHEET KEYNOTES - PLUMBING ISOMETRIC - LEVEL 5 LAB

1. 1-1/2" R.O. SUPPLY AND RETURN RISER FROM R.O. SKID IN PENTHOUSE. 1-1/2" LA & 4" LV FROM PENTHOUSE.
2. 1-1/2" R.O. SUPPLY AND RETURN RISER.
3. R.O. LOOP DOWN TO SERVE LAB SINK(TYPICAL).
4. PROVIDE LAB AIR TO ALCOVE (TYPICAL OF ALL, LEVEL 2 - 5).
5. ROUTE 1/2" RO PIPE TO STERILIZER.
6. PROVIDE LAB GASES TO CEILING PANELS, 3/4" VACUUM, 1/2" CO2, 1/2" SG1 & 1/2" SG2(TYPICAL OF ALL CEILING PANELS, CP-01, ON LEVELS 2 - 5).
7. PROVIDE SHUT-OFF VALVE TO SERVE LAB (TYPICAL OF ALL, LEVEL 2 - 5).
8. PROVIDE SHUT-OFF VALVE TO SERVE LAB EQUIPMENT (TYPICAL OF ALL, LEVEL 2 - 5).
9. 1" LAB GAS MANIFOLD RELIEF VENT RISER.
10. 1" LAB GAS MANIFOLD RELIEF VENT RISER FROM BELOW. OFFSET AS SHOWN.
11. PROVIDE LAB AIR TO BSL-3 ALCOVE.



PLUMBING ISOMETRIC - LEVEL 5 LAB GAS
SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 5 DOMESTIC WATER & NATURAL GAS
SCALE: NONE

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STATE OF MICHIGAN — NATHANIEL C. OSTHAVER — ENGINEER — 54043 — REGISTERED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

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29 SEPTEMBER 2025

ISSUE
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SHEET TITLE
ISOMETRICS - LEVEL 5 PRESSURE

SHEET NO.
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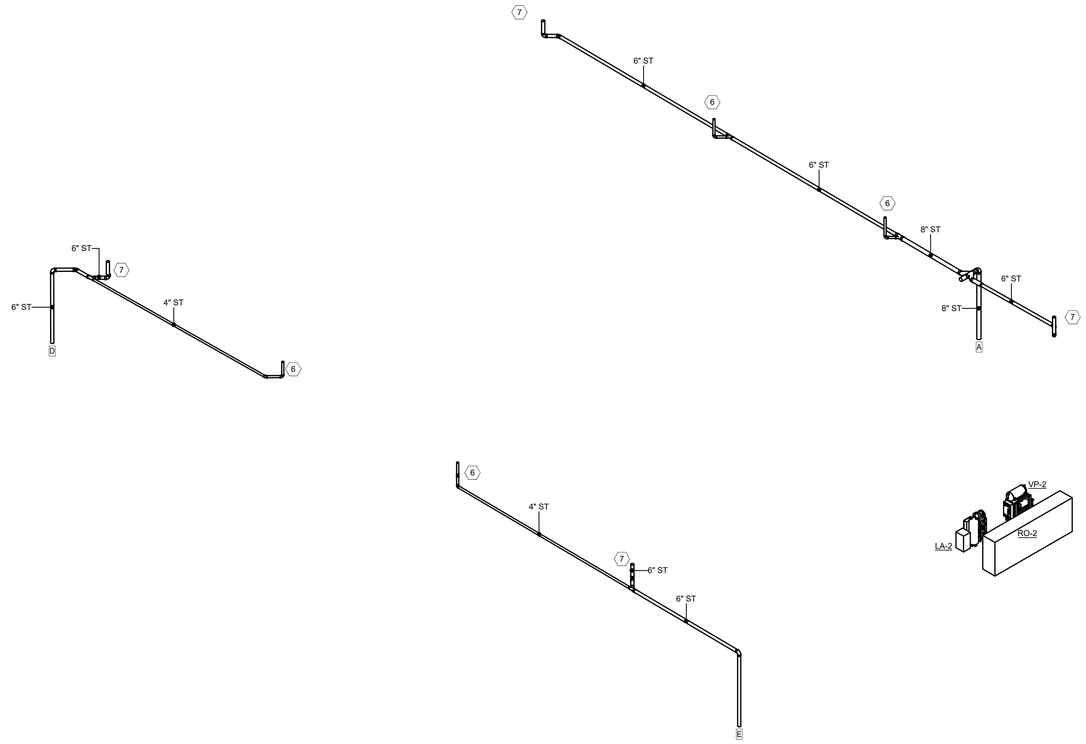
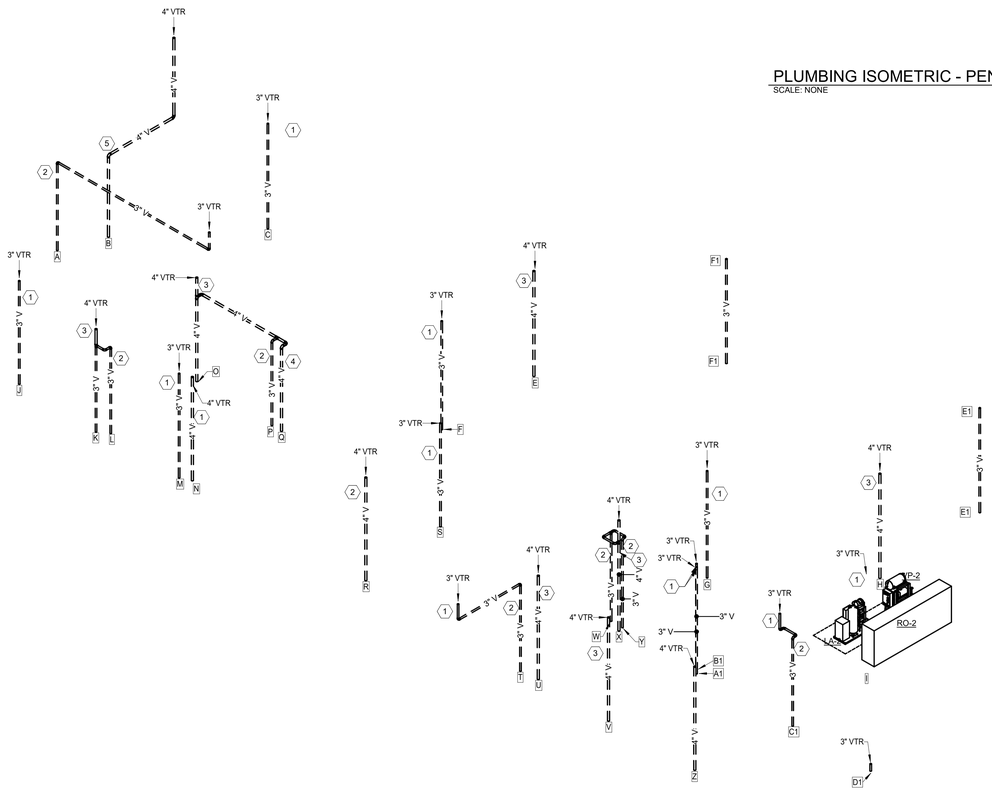


PLUMBING ISOMETRIC - PENTHOUSE & ROOF STORM & CONDENSATE

SCALE: NONE



PLUMBING ISOMETRIC - PENTHOUSE & ROOF SANITARY WASTE & VENT

SCALE: NONE

GENERAL SHEET NOTES

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3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. VENTS SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES

1. 3" VENT THRU ROOF.
2. 3" VENT FROM BELOW. OFFSET THEN PENETRATE ROOF. 3" VTR
3. 4" VENT THRU ROOF.
4. 4" VENT RISER FROM BELOW.
5. 4" VENT FROM BELOW. OFFSET THEN PENETRATE ROOF. 3" VTR.
6. 4" STORM DRAIN FROM ROOF DRAIN ABOVE.
7. 6"STORM DRAIN FROM ROOF DRAIN ABOVE.

1

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STATE OF MICHIGAN — NATHANIEL C. STRAUSER — ENGINEER — No. 61101 — PROFESSIONAL ENGINEER

10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - PENTHOUSE & ROOF GRAVITY

SHEET NO.
P-911

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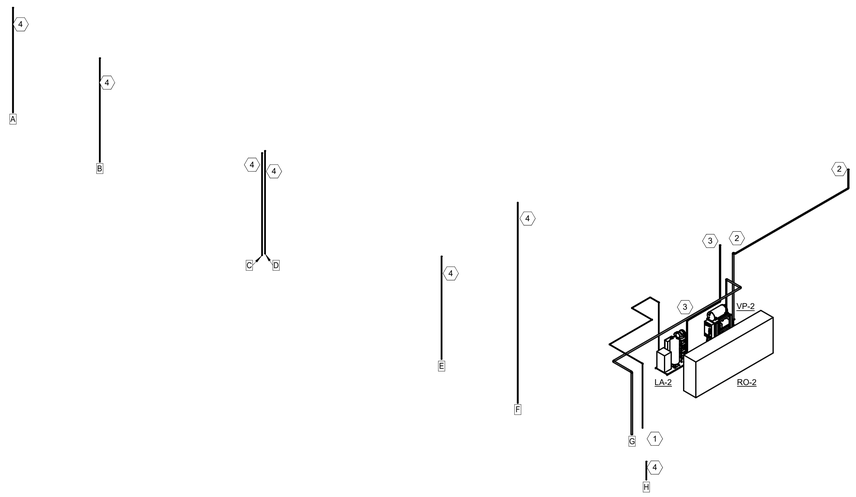
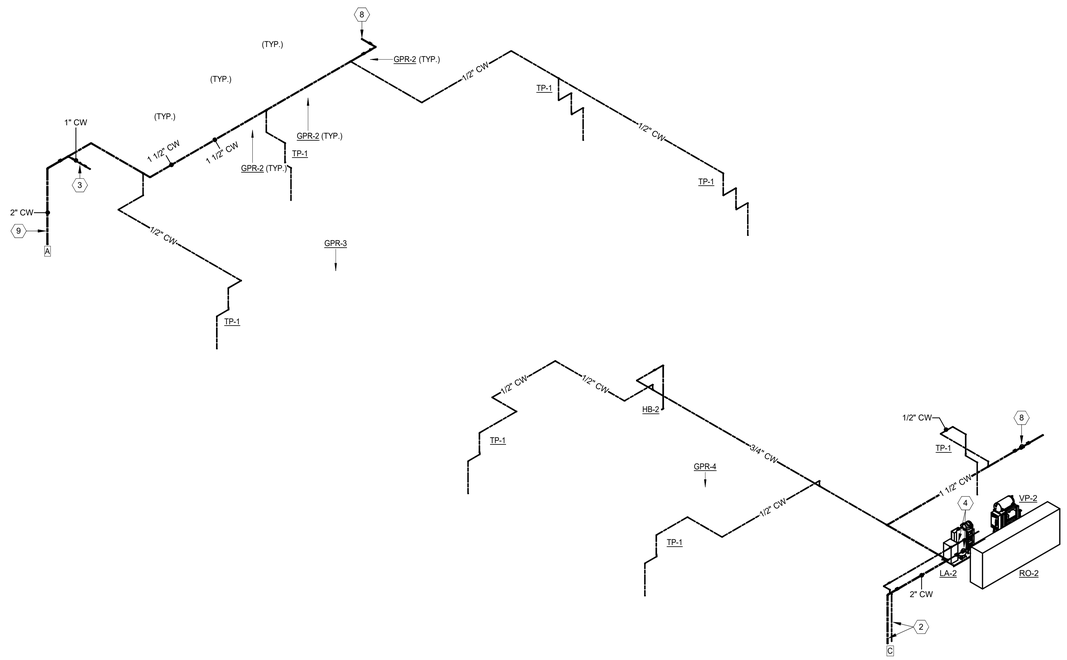


PLUMBING ISOMETRIC - PENTHOUSE & ROOF LAB GAS
SCALE: NONE



PLUMBING ISOMETRIC - PENTHOUSE & ROOF DOMESTIC WATER & NATURAL GAS
SCALE: NONE

GENERAL SHEET NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
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4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) SHEET KEYNOTES - PLUMBING ISOMETRIC - PENTHOUSE & ROOF DOMESTIC WATER & NATURAL GAS

1. 3/4" CW & 3/4" HW SUPPLY TO REVERSE OSMOSIS SYSTEM.
2. 2" CW & 3/4" HW FROM BELOW.
3. 1-1/4" MAKEUP WATER SUPPLY TO HVAC REVERSE OSMOSIS SYSTEM. PROVIDE ZURN 950XL3 DOUBLE CHECK VALVE ASSEMBLY. SEE HVAC PLANS FOR EXACT LOCATION OF EQUIPMENT.
4. 3/4" CW & 3/4" HW WATER SUPPLY TO PLUMBING REVERSE OSMOSIS SYSTEM. PROVIDE ZURN 950XL3 DOUBLE CHECK VALVE ASSEMBLY.
5. 1-1/2" GAS PIPE TO BOILER, 3000 CFH.
6. 1-1/2" GAS PIPE TO HUMIDIFIER, 713 CFH.
7. 1-1/2" GAS PIPE TO HUMIDIFIER, 953 CFH.
8. 1-1/2" MAKEUP WATER SUPPLY TO HVAC PIPING SYSTEM. PROVIDE ZURN 950XL3 DOUBLE CHECK VALVE ASSEMBLY. SEE HVAC PLANS FOR EXACT LOCATION OF EQUIPMENT.
9. 2" CW FROM BELOW.

(#) SHEET KEY NOTES - PLUMBING ISOMETRIC - PENTHOUSE & ROOF LAB GAS

1. 1-1/2" LA, 3" LV RISERS.
2. 2" VACUUM PUMP VENT PIPE EXHAUST UP THRU ROOF. MAINTAIN 25 FOOT CLEARANCE FROM ALL OPENINGS AND MECHANICAL EQUIPMENT INTAKE.
3. 2" LAB AIR INTAKE FROM LAB AIR COMPRESSOR UP THRU ROOF.
4. 1" LAB GAS MANIFOLD RELIEF VENT RISER UP THRU ROOF.

1

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10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No.1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ISOMETRICS - PENTHOUSE PRESSURE
SHEET NO.
P-912

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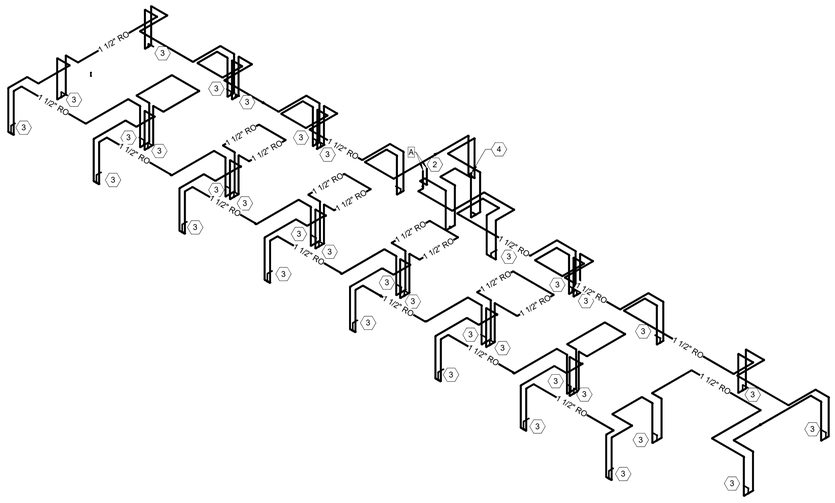
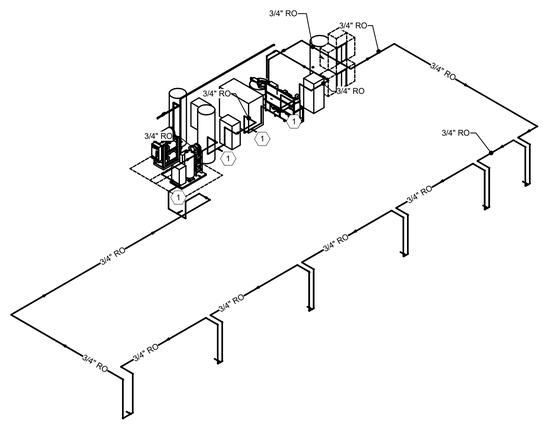


PLUMBING ISOMETRIC - LEVEL 2 RO WATER

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 1 RO WATER

SCALE: NONE

GENERAL SHEET NOTES

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3. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. PIPING SHALL NOT BE LOCATED ABOVE ANY ELECTRICAL PANELS OR EQUIPMENT.

(#) **SHEET KEY NOTES:**

1. PROVIDE LAB GAS PIPING TO POINT OF CONNECTION 2" ABOVE FUME HOOD.
2. 1-1/2" REVERSE OSMOSIS SUPPLY AND RETURN RISER.
3. REVERSE OSMOSIS LOOP DOWN TO SERVE LAB SINK(TYPICAL)
4. ROUTE 1/2" REVERSE OSMOSIS PIPE TO STERILIZER.

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9/25/2025

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 1 & 2 TREATED WATER

SHEET NO.
P-913

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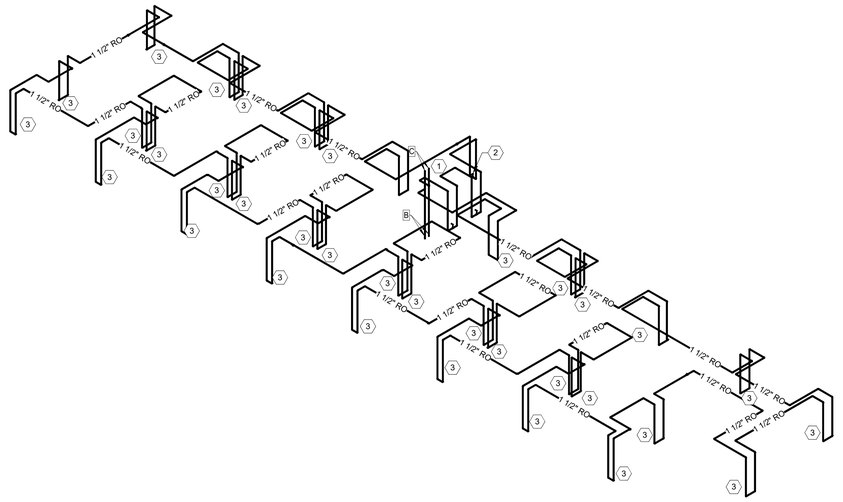
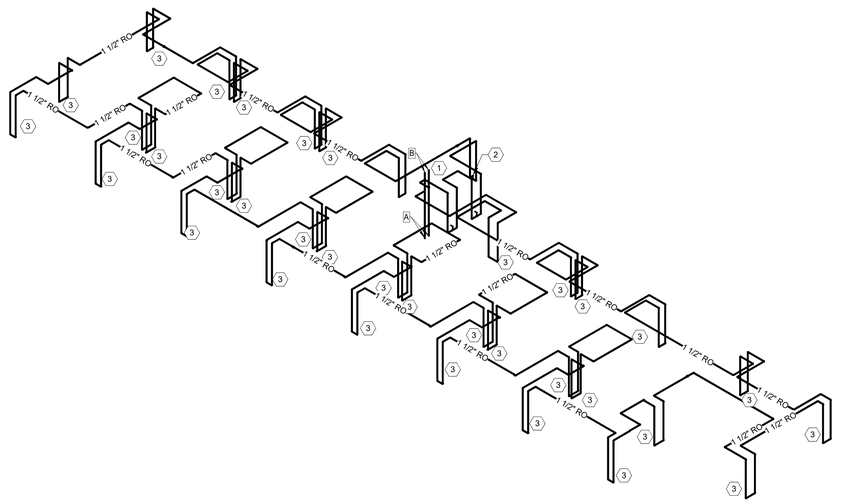


PLUMBING ISOMETRIC - LEVEL 4 RO WATER

SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 3 RO WATER

SCALE: NONE

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3. REVERSE OSMOSIS LOOP DOWN TO SERVE LAB SINK(TYPICAL)

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REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 3 & 4 TREATED WATER

SHEET NO.
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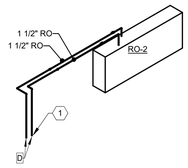
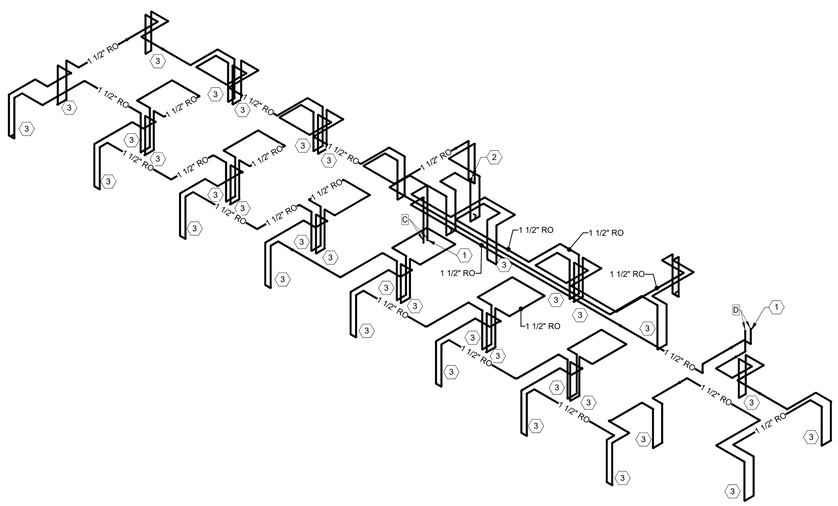


PLUMBING ISOMETRIC - PENTHOUSE & ROOF RO WATER
SCALE: NONE



PLUMBING ISOMETRIC - LEVEL 5 RO WATER
SCALE: NONE

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REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ISOMETRICS - LEVEL 5 & PENTHOUSE TREATED WATER

SHEET NO.
P-915

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19632	CFH/MBH Total		
"X" To Exclude	Description	CFH/MBTU	CFH/MBTU
	(5) BOILERS	15000	**15000**
	(2) HUMIDIFIERS	1906	**1906**
	(2) HUMIDIFIERS	1426	**1426**
	(2) WATER HEATERS	1300	**1300**
			0
			0
			**0

POWER & EQUIPMENT SYMBOL LEGEND

SYMBOL	DESCRIPTION
HALF TONE LINES	DENOTES BACKGROUND OR EXISTING TO REMAIN (E).
THIN SOLID LINES	DENOTES DEVICES, EQUIPMENT, ETC. EXISTING TO REMAIN (E).
HEAVY SOLID LINES	DENOTES NEW (N) OR RELOCATED (R) DEVICES, EQUIPMENT, ETC.
DASHED LINES	DENOTES DEVICES, EQUIPMENT, ETC. TO BE DISCONNECTED AND REMOVED (D&R).
HEAVY PHANTOM LINES	DENOTES NEW (N) OR RELOCATED (R) CONDUIT, EQUIPMENT, ETC.UNDERGROUND OR BELOW GRADE.
	BRANCH CKT TURNING UP. BRANCH CKT TURNING DOWN. BRANCH CKT TURNING UP AND DOWN.
UE UT	UNDERGROUND, UNDER FLOOR/SLAB DUCTBANK, DIRECT BURIED CABLE, CONDUIT/CONDUCTOR: UT = TELECOM; UE = ELECTRICAL
H G N #AWG	HOME RUN. HASH MARKS INDICATE CONDUCTOR QUANTITY. HASH MARKS DEFINED AS SHOWN. "#" INDICATES SIZE OF CONDUCTORS OTHER THAN 12-AWG. ALL UNMARKED HOMERUNS SHALL CONTAIN (2) #12 AWG & (1) #12 AWG GND IN 3/4" CONDUIT, UNLESS OTHERWISE NOTED.
ZZZ / #,#,#	BRANCH CIRCUITING. "ZZZ" INDICATES PANEL DESIGNATION. "#,#,#," INDICATES CIRCUIT NUMBER(S).
	480Y/277 VOLT, 3-PHASE, 4-WIRE ELECTRICAL DISTRIBUTION TYPE PANELBOARD.
	208Y/120 VOLT, 3-PHASE, 4-WIRE ELECTRICAL DISTRIBUTION TYPE PANELBOARD.
	480Y/277 VOLT, 3-PHASE, 4-WIRE, SURFACE MOUNTED ELECTRICAL PANELBOARD.
	208Y/120 VOLT, 3-PHASE, 4-WIRE, SURFACE MOUNTED ELECTRICAL PANELBOARD.
	DRY-TYPE DISTRIBUTION TRANSFORMER.
AS WP	NON-FUSED DISCONNECT SWITCH. "AS" INDICATES SWITCH SIZE. "WP" INDICATES WEATHERPROOF (NEMA 3R) ENCLOSURE.
AF AS WP	FUSED DISCONNECT SWITCH. "AF" INDICATES FUSE SIZE. "AS" INDICATES SWITCH SIZE. "WP" INDICATES WEATHERPROOF (NEMA 3R) ENCLOSURE.
AT AS WP	FUSED CIRCUIT BREAKER SWITCH. "AT" INDICATES CIRCUIT BREAKER TRIP RATING. "AF" INDICATES FRAME SIZE. "WP" INDICATES WEATHERPROOF (NEMA 3R) ENCLOSURE.
# WP	MAGNETIC MOTOR STARTER MOUNTED IN A NEMA ENCLOSURE. "#" INDICATES STARTER SIZE. "WP" INDICATES WEATHERPROOF (NEMA 3R) ENCLOSURE.
AF AS #,WP	COMBINATION STARTER & FUSED DISCONNECT SWITCH. "#" INDICATES STARTER SIZE. "AF" INDICATES FUSE SIZE. "AS" INDICATES SWITCH SIZE. "WP" INDICATES WEATHERPROOF (NEMA 3R) ENCLOSURE.
WP	COMBINATION VFD STARTER AND DISCONNECT SWITCH. "WP" INDICATES WEATHERPROOF (NEMA 3R) ENCLOSURE.
XXXX-##	EQUIPMENT PROVIDED BY OTHER DIVISIONS REQUIRING ELECTRICAL CONNECTION(S). COORDINATE EQUIPMENT LOCATION, CONNECTION POINT(S), AND OTHER REQUIREMENTS WITH RESPECTIVE DIVISION'S DRAWINGS, SPECIFICATIONS, AND SHOP DRAWINGS. REFER TO EQUIPMENT CONNECTION SCHEDULES FOR ADDITIONAL REQUIREMENTS. EXAMPLES OF EQUIPMENT REQUIRING ELECTRICAL CONNECTION(S) AS FOLLOWS: "XXXX-##" INDICATES MECHANICAL / PLUMBING / FIRE PROTECTION EQUIPMENT DESIGNATIONS, MATCHING LABELS USED IN THOSE DIVISIONS' CONSTRUCTION DOCUMENTS. "FS-##" INDICATES FOOD SERVICE EQUIPMENT, MATCHING ITEM NUMBER (##) AS SHOWN ON FOOD SERVICE CONSTRUCTION DOCUMENTS. "ELEV-##" INDICATES ELEVATOR, MATCHING DESIGNATION AS SHOWN ON ARCHITECTURAL CONSTRUCTION DOCUMENTS.

OUTLET SYMBOL LEGEND

SYMBOL	DESCRIPTION
+XX" ZZ/##	DUPLEX RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R, MOUNTED 18"A.F.F. UNLESS OTHERWISE NOTED. "+XX" INDICATES MOUNTING HEIGHT OTHER THAN 18". "ZZ / ##" INDICATES BRANCH CIRCUITING.
+XX" ZZ/##	DOUBLE DUPLEX (QUAD) RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R, MOUNTED 18"A.F.F. UNLESS OTHERWISE NOTED. REFER TO ABOVE FOR MOUNTING HEIGHT AND CIRCUITING INFORMATION.
+XX" ZZ/##	SINGLE RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R, MOUNTED 18"A.F.F. UNLESS OTHERWISE NOTED. REFER TO ABOVE FOR MOUNTING HEIGHT AND CIRCUITING INFORMATION.
+XX" ZZ/## X	SPECIAL PURPOSE RECEPTACLE. REFER TO ABOVE FOR MOUNTING HEIGHT AND CIRCUITING INFORMATION. "X" INDICATES THE FOLLOWING: A 125V, 20A SINGLE PHASE, LOCKING RECEPTACLE, 2 POLE 3 WIRE (NEMA L5-20R) B 250V, 20A SINGLE PHASE RECEPTACLE, 2 POLE 3 WIRE (NEMA 6-20R) C 250V, 30A SINGLE PHASE, LOCKING RECEPTACLE, 2 POLE, 3 WIRE (NEMA L6-30R) D 208Y, 120V, 20A THREE PHASE LOCKING RECEPTACLE, 4 POLE, 5 WIRE (NEMA L21-20R) E 208Y, 120V, 30A THREE PHASE, LOCKING RECEPTACLE, 3 POLE, 4 WIRE (NEMA L14-30R) COORDINATE EXACT NEMA CONFIGURATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
ZZ/##	CEILING MOUNTED DUPLEX RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R. REFER TO ABOVE FOR CIRCUITING INFORMATION.
ZZ/## X	FLOOR MOUNTED RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R. REFER TO ABOVE FOR CIRCUITING INFORMATION. "X" INDICATES THE FOLLOWING: A1 SINGLE GANG WITH SINGLE DUPLEX. SEE DETAIL FOR ADDITIONAL INFORMATION. A2 2-GANG WITH DOUBLE DUPLEX. SEE DETAIL FOR ADDITIONAL INFORMATION.
ZZ/## X ZZ/## X	FLOOR BOX OR POKE-THROUGH POWER AND TELECOM DEVICE. REFER TO ABOVE FOR CIRCUITING INFORMATION. "X" INDICATES THE FOLLOWING: B 2-GANG FLOOR BOX WITH ONE DUPLEX RECEPTACLE AND SINGLE GANG FOR TELECOM. SEE DETAIL FOR ADDITIONAL INFORMATION. C 3-GANG FLOOR BOX WITH ONE DUPLEX RECEPTACLE AND 2-GANGS FOR TELECOM. SEE DETAIL FOR ADDITIONAL INFORMATION. D 5-GANG FLOOR BOX WITH TWO DUPLEX RECEPTACLES AND 3-GANGS FOR TELECOM AND/OR AUDIO-VISUAL. SEE DETAIL FOR ADDITIONAL INFORMATION. E FIRE RATED POKE-THROUGH. SEE DETAIL FOR ADDITIONAL INFORMATION. F FLOOR MOUNTED FURNITURE FEED POWER WHIP. COORDINATE INSTALLATION OF POWER WHIP TO FURNITURE PER MANUFACTURER REQUIREMENTS. G FLOOR MOUNTED FIRE RATED FURNITURE FEED WHIP. COORDINATE INSTALLATION OF POWER WHIP TO FURNITURE PER MANUFACTURER REQUIREMENTS. H FLOOR MOUNTED ON-GRADE FLOOR BOX. REFER TO DETAIL 6 ON DRAWING E-511.1
	DEVICE MOUNTED 8" ABOVE COUNTER. REFER TO ABOVE FOR TYPE AND CIRCUITING INFORMATION.
	DEVICE ON EMERGENCY POWER. REFER TO ABOVE FOR TYPE AND CIRCUITING INFORMATION.
	AUTOMATICALLY CONTROLLED DEVICE, SWITCHED RECEPTACLE SHALL BE IDENTIFIED PER N.E.C. ARTICLE 460.3 (E) AND MARKED AS "CONTROLLED", REFER TO ABOVE FOR TYPE AND CIRCUITING INFORMATION. REFER TO LIGHTING CONTROL WIRING DIAGRAM(S) FOR WIRING.
	RECEPTACLES WITH ADDITIONAL SUBSCRIPT DESIGNATES TYPE OR SPECIFIC REQUIREMENTS AS FOLLOWS: G GROUND FAULT CIRCUIT INTERRUPTER TYPE. AC DEVICE MOUNTED 8" ABOVE COUNTER. AV DEVICE MOUNTED ADJACENT TO TELECOMMUNICATION DEVICE. EWC ELECTRIC WATER COOLER (GFCI TYPE, COORDINATE WITH WATER COOLER). E CIRCUITED TO EMERGENCY POWER. IG ISOLATED GROUND. PL PLUG LOAD CONTROLLED RECEPTACLE TR TAMPER RESISTANT TYPE. TV DEVICE MOUNTED AT 60" ABOVE FLOOR. UCG UNDERCOUNTER RECEPTACLE FOR GLASSWASH WP WEATHERPROOF "WHILE-IN-USE" (HUBBELL #WP26E) COVER.
J	JUNCTION BOX (SIZED AS REQUIRED PER N.E.C. ARTICLE 314).
m $	FRACTIONAL HORSEPOWER MOTOR STARTER - 120 VOLT, 20 AMP, 1 POLE, PILOT LIGHT, UNLESS OTHERWISE NOTED.
	ALUMINUM SURFACE RACEWAY AL5200 OR EQUAL. FINAL MOUNTING HEIGHTS TO BE DETERMINED TO ALIGN WITH FURNITURE AND EQUIPMENT PLANS.
J	WALL MOUNTED FURNITURE POWER WHIP. COORDINATE INSTALLATION OF CONDUCTORS TO THE FURNITURE PER THE MANUFACTURERS REQUIREMENT PRIOR TO ROUGH-IN.

1

LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION
ZZZ / #,#,#	ROOM LIGHTING CIRCUIT TAG. ALL FIXTURES IN ROOM/SPACE TO BE CIRCUITED TO PANEL "ZZZ" / CIRCUIT NUMBER(S) "#,#,#" AS INDICATED, UNLESS OTHERWISE NOTED.
X y #	RECESSED LUMINAIRE. "X" INDICATES TYPE; "y" INDICATES SWITCHING; "#" BRANCH CIRCUITING. SEE LUMINAIRE SCHEDULE.
X y #	SURFACE MOUNTED LUMINAIRE. "X" INDICATES TYPE; "y" INDICATES SWITCHING; "#" BRANCH CIRCUITING. SEE LUMINAIRE SCHEDULE.
NL	LUMINAIRE WITH INTEGRAL EMERGENCY BATTERY PACK OR WIRED TO EMERGENCY CIRCUIT (LIFE SAFETY). "NL" DENOTES NIGHT LIGHT WITH 24/7 OPERATION. SEE LUMINAIRE SCHEDULE.
NL	LUMINAIRE WITH INTEGRAL EMERGENCY BATTERY PACK OR WIRED TO EMERGENCY CIRCUIT (CRITICAL BRANCH). "NL" DENOTES NIGHT LIGHT WITH 24/7 OPERATION. SEE LUMINAIRE SCHEDULE.
	RECESSED DOWN LIGHT OR WALL WASH. SEE LUMINAIRE SCHEDULE.
	RECESSED ADJUSTABLE DOWNLIGHT OR WALL WASH. SEE LUMINAIRE SCHEDULE.
	LINEAR PENDANT MOUNTED LUMINAIRE. SEE LUMINAIRE SCHEDULE.
	ROUND PENDANT MOUNTED LUMINAIRE. SEE LUMINAIRE SCHEDULE.
	WALL MOUNTED LUMINAIRE. SEE LUMINAIRE SCHEDULE.
	ILLUMINATED EXIT SIGNAGE LUMINAIRE - CEILING MOUNTED. REFER TO PLANS FOR FACING AND CHEVRON CONFIGURATION. SEE LUMINAIRE SCHEDULE.
	ILLUMINATED EXIT SIGNAGE LUMINAIRE - WALL MOUNTED. REFER TO PLANS FOR FACING AND CHEVRON CONFIGURATION. SEE LUMINAIRE SCHEDULE.
	WALL MOUNTED LUMINAIRE. SEE LUMINAIRE SCHEDULE.
	LINE VOLTAGE TOGGLE SWITCH. 1-POLE, 120V/277V, UNLESS OTHERWISE INDICATED.
	LINE VOLTAGE DIMMER SWITCH, COMPATIBLE WITH LUMINAIRE DIMMING TYPE. 1-POLE, 120V/277V, UNLESS OTHERWISE INDICATED.
EXAMPLE: $ X	LINE VOLTAGE CONTROL DEVICES WITH ADDITIONAL CAPITALIZED ANNOTATION INDICATES THE FOLLOWING TYPE OR ADDITIONAL REQUIREMENT(S): 3 = 3-WAY 4 = 4-WAY D = DUAL TECHNOLOGY OCCUPANCY/VACANCY SENSOR E = CONTROLS EMERGENCY LIGHTING CIRCUIT, RED IN COLOR K = KEY SWITCH L = LIGHTED HANDLE MS = MOMENTARY CONTACT P = PASSIVE INFRARED OCCUPANCY/VACANCY SENSOR PL = PILOT LIGHT T = TIMER SWITCH, 12-HOUR PROGRAMMABLE WITH FLASH WARNING U = ULTRASONIC OCCUPANCY/VACANCY SENSOR
S	LOW VOLTAGE DIGITAL SWITCH FOR LOAD CONTROLLER / RELAY CONTROL. REFER TO LIGHTING CONTROL DETAILS.
D	LOW VOLTAGE DIGITAL DIMMER SWITCH FOR LOAD CONTROLLER / RELAY CONTROL. REFER TO LIGHTING CONTROL DETAILS.
EXAMPLE: X# S X# D	LOW VOLTAGE DIGITAL CONTROL DEVICES WITH ADDITIONAL CAPITALIZED ANNOTATION INDICATES THE FOLLOWING TYPE OR ADDITIONAL REQUIREMENT(S): X: D = DUAL TECHNOLOGY OCCUPANCY/VACANCY SENSOR E = CONTROLS EMERGENCY LIGHTING CIRCUIT, RED IN COLOR G = TOUCH SCREEN OR GRAPHIC DISPLAY K = KEY SWITCH P = PASSIVE INFRARED OCCUPANCY/VACANCY SENSOR R = MASTER 2-HOUR OVERRIDE SWITCH S = SCENE CONTROL PUSHBUTTON STATION T = TIMER SWITCH, 12-HOUR PROGRAMMABLE WITH FLASH WARNING U = ULTRASONIC OCCUPANCY/VACANCY SENSOR #: 2, 3, 4, ... = QUANTITY OF ZONES / GROUPS CONTROLLED
EXAMPLE: z# $ z# z# S z# D	CONTROL DEVICES WITH ADDITIONAL LOWERCASE ANNOTATION INDICATES CONTROL ZONE(S) / GROUP(S): a, d, c, ... = LOCAL / STAND-ALONE ZONE IN ROOM / SPACE n# = NETWORKED ZONE / RELAY ON NORMAL SOURCE e# = NETWORKED ZONE / RELAY ON EMERGENCY SOURCE
"X"	CEILING MOUNTED OCCUPANCY/VACANCY SENSOR WITH 20 AMP RATED POWER PACK. "X" DENOTES THE FOLLOWING: DT DUAL TECHNOLOGY. PI PASSIVE INFRARED.
PC	PHOTOCELL
GTD	EMERGENCY GENERATOR TRANSFER DEVICE. SEE DETAILS FOR ADDITIONAL INFORMATION.
LCP	SURFACE MOUNTED LIGHTING CONTROL RELAY PANEL. REFER TO DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

ONE-LINE DIAGRAM SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
HEAVY SOLID LINES	DENOTES NEW (N) OR RELOCATED (R) BUSSING, FEEDER, ETC.	MCP STARTER	COMBINATION STARTER AND MOTOR CIRCUIT PROTECTOR. STARTER AND MOTOR CIRCUIT PROTECTOR SIZES AS NOTED.
	AUTOMATIC TRANSFER SWITCH. NUMBER OF POLES AND AMPERAGE RATING AS NOTED OR SCHEDULED.	SWITCH FUSE STARTER	COMBINATION STARTER AND FUSED DISCONNECT SWITCH. STARTER, FUSE, AND SWITCH SIZES AS NOTED.
	DRY TYPE TRANSFORMER. kVA, PHASE, PRIMARY AND SECONDARY RATING AS NOTED OR SCHEDULED.	G	THREE PHASE GENERATOR. SIZE AS NOTED OR SCHEDULED.
NAME	PANELBOARD. DESIGNATION AS NOTED. SEE PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION.	M XX	THREE PHASE MOTOR. HORSEPOWER AS NOTED OR SCHEDULED. 'XX' INDICATES MOTOR DESIGNATION.
TRIP FRAME	MOLDED CASE CIRCUIT BREAKER. FRAME AND TRIP SIZES AS NOTED.	SPACE	SPACE IN CIRCUIT BREAKER OR FUSED SWITCH DISTRIBUTION PANELBOARD. FRAME SIZE AS NOTED.
TRIP FRAME ST	MOLDED CASE CIRCUIT BREAKER WITH SHUNT TRIP OPERATOR. FRAME AND TRIP SIZES AS NOTED.		DELTA TO WYE CONNECTED WIRING
SWITCH FUSE	LOW VOLTAGE FUSED DISCONNECT SWITCH. FUSE AND DISCONNECT SWITCH SIZES AS NOTED.		CONTROL POWER TRANSFORMER (CPT).OR POTENTIAL TRANSFORMER (PT).
SWITCH	LOW VOLTAGE DISCONNECT SWITCH. DISCONNECT SWITCH SIZE AS NOTED.		CURRENT TRANSFORMER. SIZE AS REQUIRED.
FUSE	LOW VOLTAGE FUSE. SIZE AS NOTED.	N G	NEUTRAL BUS TO GROUND BUS BONDING.
XX	SPECIALTY EQUIPMENT/DEVICES. "XX" STANDS FOR THE FOLLOWING: SPD SURGE PROTECTIVE DEVICE. GFP GROUND FAULT PROTECTION. C CONTACTOR. M METERING. EPO EMERGENCY POWER OFF PUSHBUTTON. VFD VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 23. EC ELEVATOR CONTROLLER PROVIDED BY DIVISON 14.	FUSE	MEDIUM VOLTAGE FUSED DISCONNECT SWITCH. FUSE SIZE AS NOTED.
	HAND/OFF/AUTO SWITCH.	FUSE	MEDIUM VOLTAGE FUSE. SIZE AS NOTED.
###X	FEEDER DESIGNATION. REFER TO FEEDER SCHEDULE(S) FOR FEEDER SIZE.	SWITCH FUSE	LOW VOLTAGE BOLTED PRESSURE FUSED SWITCH. FUSE AND DISCONNECT SWITCH SIZES AS NOTED.
ATO	AUTOMATIC TRANSFER OPERATOR		CLOSED TRANSITION AUTOMATIC TRANSFER SWITCH. NUMBER OF POLES AND AMPERAGE RATING AS NOTED OR SCHEDULED.
LA	LIGHTNING ARRESTER		

ABBREVIATIONS

GENERAL

AC	ABOVE COUNTER
ACP	ACCESS CONTROL PANEL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
CB	CIRCUIT BREAKER
CKT	CIRCUIT
COF	COFFEE MAKER
CP	CONTROL PANEL
CR	CRITICAL BRANCH
CT	CURRENT TRANSFORMER
CU	COPPER
EG	EQUIPMENT GROUND
ELEV	ELEVATOR
EM	EMERGENCY
FCC	FIRE COMMAND CENTER
GAP	GENERATOR ANNUNCIATOR PANEL
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
ICE	ICE MACHINE
IG	ISOLATED GROUND
IPP	ISOLATED PPOWER PANEL
LCP	LIGHTING CONTROL PANEL
LS	LIFE SAFETY
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MEGB	MAIN ELECTRIC GROUND BUS
MLO	MAIN LUG ONLY
MTGB	MAIN TECHNOLOGY GROUND BUS
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
(N.I.C.)	NOT IN CONTRACT
NL	NIGHT LIGHT
OS	OCCUPANCY SENSOR
PNL	PANEL
REC	RECEPTACLE
REF	REFRIGERATOR
SB	OPTIONAL STAND-BY
SE	SERVICE ENTRANCE
SW	SWITCH
SWBD	SWITCHBOARD
TV	TELEVISION
UC	UNDER COUNTER
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
VEND	VENDING MACHINE
VFD	VARIABLE FREQUENCY DRIVE
VP	VANDAL PROOF
VT	VOLTAGE TRANSFORMER
WIU	WHILE IN USE
WP	WEATHERPROOF
WSU	WAYNE STATE UNIVERSITY

RACEWAY TYPES

AC	ARMORED CABLE
C	CONDUIT
EMT	ELECTRIC METALIC TUBING
MC	METAL CLAD
PVC	POLYVINYL CHLORIDE
RGS	RIGID GALVANIZED STEEL

MECHANICAL EQUIPMENT

AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CHILLER
AHU	AIR HANDLING UNIT
B	BOILER
BMS	BUILDING MANAGEMENT SYSTEM
BFP	BACKFLOW PREVENTER
CH	CHILLER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
DDC	DIGITAL DIRECT CONTROL
EF	EXHAUST FAN
EUH	ELECTRIC UNIT HEATER
ERRCS	EMERGENCY RESPONDER RADIO COMMUNICATION SYSTEM
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
F	FURNACE
FCU	FAN COIL UNIT
FP	FIRE PUMP
FPC	FIRE PUMP CONTROLLER
FP/AV	FAN-POWERED VARIABLE AIR VOLUME
HP	HEAT PUMP
JP	JOCKEY PUMP
JPC	JOCKEY PUMP CONTROLLER
MAU	MAKE-UP AIR UNIT
P	PUMP
RTU	ROOFTOP UNIT
SAHU	SPLIT SYSTEM AIR HANDLING UNIT
UH	UNIT HEATER
UST	UNDERGROUND STORAGE TANK
VAV	VARIABLE AIR VOLUME
VS	VALVE SUPERVISORY SWITCH / TAMPER SWITCH
WF	WATERFLOW SWITCH

SCOPE OF WORK

(D&R)	**DISCONNECT AND REMOVE**
(E)	**EXISTING (TO REMAIN)**
(NIC)	**NOT IN CONTRACT**
(R)	**RELOCATED**
(R&R)	**REMOVE AND RELOCATE**
(REP)	**REPLACE**
EC	**ELECTRICAL CONTRACTOR**
GC	**GENERAL CONTRACTOR**
MC	**MECHANICAL CONTRACTOR**
TC	**TECHNOLOGY CONTRACTOR**

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NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ELECTRICAL SYMBOL LEGEND

SHEET NO.
E-001

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PLOT DATE:
10/10/2025 1:09:23 PM TEMPLATE VERSION: 23.0.4

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ELECTRICAL SHEET LIST

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E-713	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 1
E-714	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 2
E-715	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 2
E-716	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 2
E-717	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 3
E-718	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 3
E-719	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 3
E-720	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 4
E-721	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 4
E-722	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 4
E-723	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 5
E-724	ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 5
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E-731	ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
E-732	ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
E-733	ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
E-734	ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
E-735	ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
E-736	ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
E-737	ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
E-738	ELECTRICAL PANEL SCHEDULES - STANDBY LEVEL 1
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EG-101	LVL 1 ROOF & LVL 3 BRIDGE LIGHTNING PROTECTION PLAN
EG-102	ROOF LIGHTNING PROTECTION PLAN
EG-103	SITE LIGHTING PLAN
EG-104	SITE LIGHTING CALCULATION PLAN

GENERAL GROUNDING NOTES:

1. GROUNDING INSTALLATION SHALL COMPLY WITH OSHA AND THE NATIONAL ELECTRICAL CODE, EXCEPT WHERE LOCAL CODE PREVAILS.
2. GROUNDING TO BE SUFFICIENT TO PROVIDE AN EFFECTIVE GROUND PATH BETWEEN THE EQUIPMENT AND THE GROUND, OF NOT MORE THAN 5 OHMS FOR THE FOLLOWING:
   - **A. NEUTRAL OF 120/208V AND 277/480V LIGHTING SYSTEMS**
   - **B. DATA/TELEPHONE SYSTEMS.**
   - **C. SMALL TRANSFORMER HOUSINGS (LOW VOLTAGE).**
   - **D. MOTOR FRAMES.**
   - **E. STEEL FABRICATED ELECTRICAL EQUIPMENT RACK ASSEMBLIES.**
   - **F. AT TWO POINTS FOR THE FOLLOWING EQUIPMENT:**
     - **a. ALL TRANSFORMERS**
     - **b. MAIN SWITCH GEAR**
     - **c. GENERATOR**
   - G. **STRUCTURAL STEEL COLUMN OF BUILDING.**
3. COMPONENTS WHICH ARE INTRINSIC TO THE ELECTRICAL CONTROL AND/OR EQUIPMENT PANEL SHALL BE CONSIDERED GROUNDED WHEN THE ENCLOSURE IS GROUNDED.
4. MINIMUM OF #12 COPPER GROUND WIRE TO BE RUN THROUGH ALL LIGHTING/POWER AND SYSTEM DISTRIBUTION CONDUITS.
5. ALL SURFACES TO BE GROUNDED SHALL BE THOROUGHLY CLEANED TO BARE METAL BEFORE ATTACHING GROUND CONNECTIONS.
6. WHEN STUBBING-UP GROUND WIRES AT BUILDING COLUMNS, MOTOR, FRAMES, ETC. STUB-UP 3'-0" PIGTAIL MINIMUM ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED. PROVIDE MINIMUM OF 15'-0" PIGTAILS TO MISCELLANEOUS EQUIPMENT FROM BUILDING COLUMNS.
7. ALL GROUND CONNECTIONS SHALL BE EXOTHERMIC-WELD UNLESS OTHERWISE NOTED.
8. **SEE DWG. E-521 FOR GROUNDING RISER, DETAILS, AND ADDITIONAL NOTES.**
9. ALL EQUIPMENT GROUNDS SHALL BE TERMINATED WITH COMPRESSION FITTINGS AND STAINLESS STEEL BOLTS OR IN PANEL GROUND BAR.

ELECTRICAL DEFINITIONS:

WHERE THE FOLLOWING WORDS / PHRASES ARE INDICATED ON THE ELECTRICAL DOCUMENTS, THEY SHALL HAVE THE FOLLOWING MEANING:

- FURNISH - TO PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT.
- INSTALL - TO UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY FOR PROPER INSTALLATION PER CODES AND MANUFACTURERS REQUIREMENTS, TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT.
- PROVIDE - FURNISH AND INSTALL.
- BY OTHERS / BY OTHER DIVISION / BY DIVISION ## CONTRACTOR - EQUIPMENT, DEVICE, ETC. PROVIDED UNDER THE SCOPE OF THIS CONTRACT AND IS SHOWN ON DRAWINGS OTHER THAN ELECTRICAL.
- NOT IN CONTRACT / N.I.C. - EQUIPMENT, DEVICE, ETC. NOT PROVIDED UNDER THE SCOPE OF THIS CONTRACT, INCLUDING BUT NOT LIMITED TO A PREVIOUS OR CONCURRENT PHASE OF WORK.

GENERAL ELECTRICAL NOTES:

1. ELECTRICAL DRAWINGS ARE GENERALLY DIAGRAMMATIC, ARE INTENDED TO CONVEY THE SCOPE OF WORK, AND INDICATE GENERAL ARRANGEMENT OF LIGHTING FIXTURES, DEVICES, CONTROLS, ELECTRICAL FIXTURES, MOTORS, PANELBOARDS, EQUIPMENT, ETC. THE LOCATIONS OF ALL ITEMS SHOWN ON ELECTRICAL DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT EXPLICITLY FIXED BY DIMENSIONS ARE APPROXIMATE. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED AT THE PROJECT. ALL LOCATIONS OF WORK EXPOSED TO VIEW ARE SUBJECT TO APPROVAL OF THE ARCHITECT PRIOR TO ROUGH-INS.
2. THE ELECTRICAL CONTRACTOR SHALL LAYOUT ALL EQUIPMENT ROOMS TO MAKE SURE THE EQUIPMENT, AS PURCHASED, FITS IN THE ROOM OR SPACE SHOWN. EXACT LOCATION OF ALL EQUIPMENT SHALL BE VERIFIED IN THE FIELD AND ROUTING OF CONDUITS SHALL SUITE FIELD CONDITIONS.
3. THE CONTRACTOR SHALL VISIT THE SITE OF THE WORK TO FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND HIS PROPOSAL SHALL INCLUDE ALL CONTINGENCIES NECESSARY FOR THE COMPLETION OF HIS WORK REGARDING SUCH EXISTING CONDITIONS. THE ELECTRICAL CONTRACTOR SHALL VERIFY EXISTING CONDITIONS TO INSURE THAT ALL NEW WORK WILL FIT INTO THE EXISTING STRUCTURE AND CONDITIONS IN THE MANNER INTENDED AND AS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/OWNERS REPRESENTATIVE PRIOR TO ANY ROUGH-INS, FABRICATIONS, OR PERFORMING ANY WORK IN THE AREA INVOLVING DIFFERENCES. NOTIFICATION SHALL BE IN THE FORM OF A DRAWING OR SKETCH INDICATING FIELD MEASUREMENTS AND NOTES RELATED TO THE AREA.
4. ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS SHALL BE PROMPTLY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION DURING THE BIDDING PERIOD. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE TO THE CONTRACTOR BY REASON OF HIS FAILURE TO HAVE BROUGHT SAID DISCREPANCIES TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PERIOD OR OF ANY ERROR ON THE CONTRACTOR'S PART.
5. THERE SHALL BE NO SUBSTITUTIONS UNLESS THE CONTRACTOR HAS OBTAINED WRITTEN APPROVAL FROM THE OWNER AFTER HAVING SUBMITTED AN ALTERNATIVE PROPOSAL COMPLETE WITH A DESCRIPTION OF DEVIATION FROM THE SPECIFICATIONS AND A STATEMENT OF BENEFITS TO BE DERIVED SHOULD SUCH A PROPOSED SUBSTITUTE BE ACCEPTED.
6. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT, PROFESSIONAL AND WORKMANLIKE MANNER, RECTILINEAR TO FINISHES AND BUILDING STRUCTURE.
7. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE, OSHA REQUIREMENTS, AND LOCAL REQUIREMENTS, ALL AS INTERPRETED BY THOSE HAVING JURISDICTION.
8. REFER TO ARCHITECTURAL ELEVATIONS TO DERIVE EXACT LOCATIONS OF ALL RECEPTACLES, OUTLETS/JACKS, SWITCHES, WALL AND PENDANT/CABLE MOUNTED LUMINAIRES, ETC. LUMINAIRES AND CEILING MOUNTED EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
9. BEFORE DOING ANY WORK WHICH MIGHT ENTAIL A FULL OR PARTIAL SHUTDOWN, THE ELECTRICAL CONTRACTOR SHALL INFORM THE OWNER SO THAT A SCHEDULED SHUTDOWN ARRANGEMENT CAN BE MADE, TAKING EVERY PRECAUTION THAT THE ELECTRICAL SYSTEM IS OPERATING SATISFACTORILY.
10. THE ELECTRICAL CONTRACTOR SHALL SECURE ALL PERMITS AND PAY ALL FEES THAT ARE REQUIRED BY THE APPLICABLE LOCAL AND STATE LAWS.
11. CONDUIT HOME RUNS SHOWN ON THE DRAWING WITH MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGRAMMATICALLY. THIS CONTRACTOR SHALL NOT INSTALL MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS IN A RACEWAY UNLESS NATIONAL ELECTRIC CODE (N.E.C), ARTICLE 310.15 DERATING FACTORS ARE APPLIED.
12. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ACCEPTABLE CONDUIT TYPES/LOCATIONS. ALL CONDUIT SIZES ON THE DRAWINGS ARE BASED ON THE LATEST EDITION OF THE N.E.C. CONDUIT FILL TABLES FOR ELECTRICAL METALLIC TUBING (E.M.T). CONDUIT SIZES SHALL BE REVISED TO THE SIZE REQUIRED, RELATIVE TO THE ACTUAL CONDUIT TYPE TO BE INSTALLED.
13. ALL COMPONENTS SHOWN ON THE RISER/ONE-LINE DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
14. IT IS NOT INTENDED THAT THE PLANS INDICATE ALL OBSTRUCTIONS, NECESSARY BENDS, OFFSETS, AND PULL BOXES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL HIS WORK TO CONFORM TO N.E.C. REQUIREMENTS, THE STRUCTURE, MAINTAIN HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS AS REQUIRED.
15. IT IS NOT INTENDED THAT THE PLANS INDICATE ALL CONDUIT ROUTES, PULL BOXES, JUNCTION BOXES, ETC. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ACTUAL CONDUIT ROUTING, QUANTITY AND LOCATION OF PULL BOXES WITHIN ACCESSIBLE LOCATIONS.
16. PROVIDE SCREW-COVER PULL BOXES IN CONDUIT RUNS AS REQUIRED TO LIMIT THE NUMBER OF BENDS TO NO MORE THAN FOUR (4) 90° OR 360° TOTAL. SIZE PULL BOXES IN ACCORDANCE WITH NEC, ARTICLE 314.28. DOCUMENT ON RECORD DRAWINGS, SIZE AND LOCATION OF PULL BOXES USED IN FEEDER CONDUIT RUNS.
17. WHERE MULTIPLE DEVICES OF THE SAME TYPE/STYLE ARE SHOWN NEXT TO EACH OTHER, GANG INTO A SINGLE COVER PLATE.
18. ALL RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH APPROPRIATE EXPANSION FITTINGS.
19. IDENTIFY WITH LEGIBLE AND DURABLE MARKING, EACH DISCONNECTING MEANS INDICATING ITS PURPOSE.
20. ALL RECEPTACLES, SWITCHES AND DEVICES SHALL HAVE PANEL AND CIRCUIT NUMBER IDENTIFY WITH LEGIBLE AND DURABLE MARKING ON COVER PLATE. OWNER WILL INDICATE IF MARKINGS ARE ON THE FRONT OR BACK OF COVER.
21. ALL LABOR AND MATERIAL FURNISHED BY THE CONTRACTOR AS PART OF THIS CONTRACT SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE BY THE OWNER, ANY DEFECTS WHICH APPEAR WITHIN THE GUARANTEE PERIOD SHALL BE PROMPTLY REPAIRED OR REPLACED AT THE OWNER'S DISCRETION, WITHOUT ADDITIONAL COST TO THE OWNER.
22. ALL EQUIPMENT GROUNDS SHALL BE TERMINATED WITH COMPRESSION FITTINGS AND STAINLESS STEEL BOLTS OR IN PANEL GROUND BAR.
23. BEFORE DRILLING ANY HOLES IN WALLS OR FLOORS THE AREA MUST BE CHECKED FOR EXISTING EMBEDDED CONDUITS AND WIRE. IF ANY EXISTING CONDUITS OR WIRING ARE DAMAGED BY THIS CONTRACTOR IT IS THIS CONTRACTORS RESPONSIBILITY TO MAKE ALL REPAIRS TO CONDUITS, WIRE, FLOORS AND BUILDING FINISHES IN KIND AT NO COST TO OWNER.
24. PROVIDE UL LISTED FIRE STOP ASSEMBLY AT ALL PENETRATIONS IN FIRE RATED STRUCTURES.
25. ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE RECEPTACLE OUTLETS USED BY THE WORKMEN SHALL BE PROTECTED BY A "GROUND FAULT INTERRUPTER".

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10/17/2025

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NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL GENERAL NOTES
SHEET NO.
E-002

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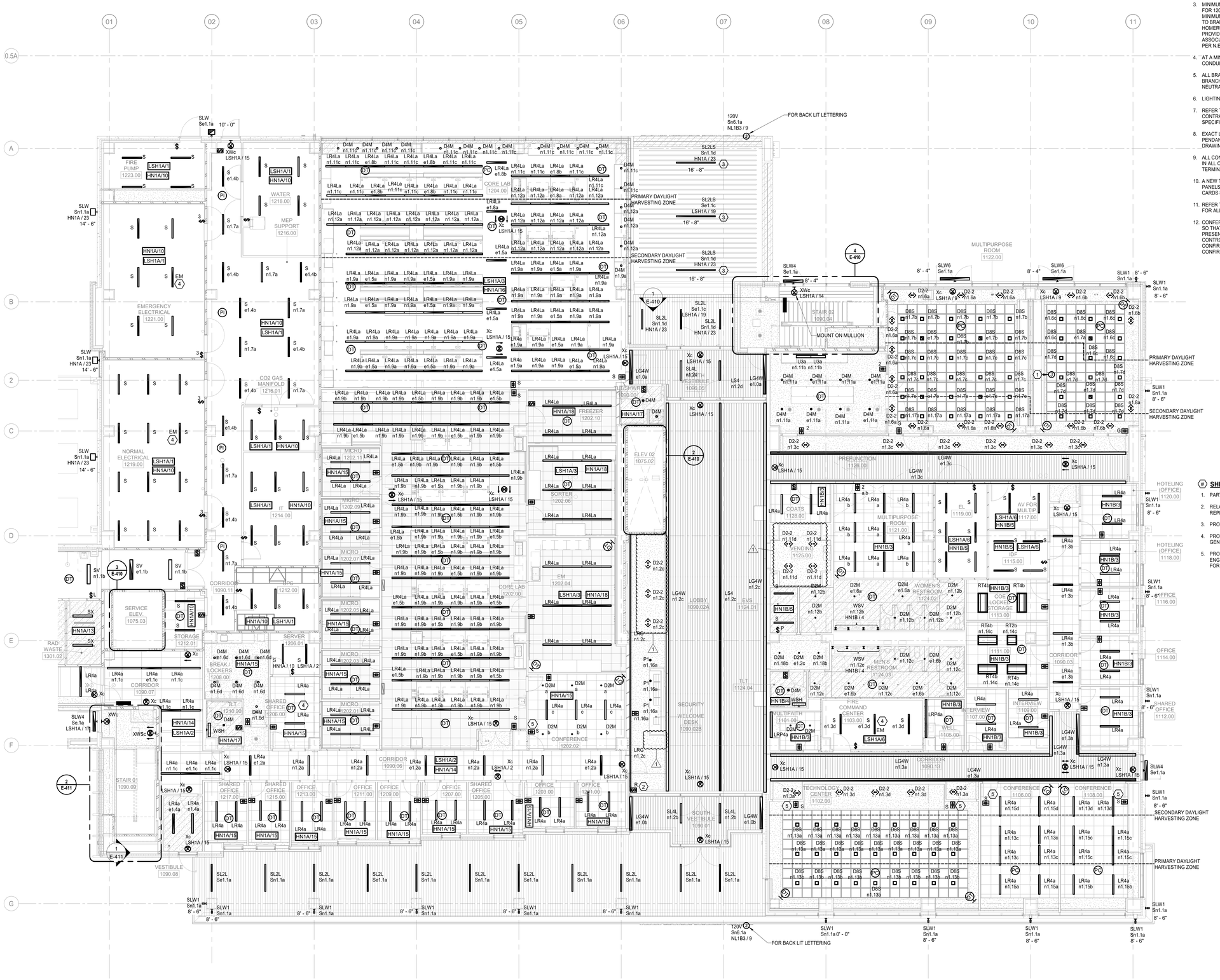

LIGHTING SHEET GENERAL NOTES:

1. ALL EXIT SIGNS, AND EMERGENCY LUMINAIRES ON GENERATOR SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
2. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE #12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
3. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
5. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES. PER N.E.C. 404.2(C) THE NEUTRAL WIRE SHALL BE EXTENDED TO ALL SWITCHING LOCATIONS.
6. LIGHTING BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
7. REFER TO E-500's SERIES FOR LIGHTING CONTROL WIRING DIAGRAMS. CONTRACTOR TO VERIFY ALL SENSOR LOCATIONS PER MANUFACTURERS SPECIFICATIONS.
8. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
9. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
10. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
11. REFER TO LIGHTING ZONE SCHEDULES ON SHEET E-701 FOR CIRCUIT NUMBERS FOR ALL NETWORKED LUMINAIRES.
12. CONFERENCE ROOMS WITH PRESENTATION ON SCREEN SHALL BE PROGRAMMED SO THAT THE LIGHTING ABOVE THE SCREEN(S) CAN BE TURNED OFF WHEN IN PRESENTATION MODE TO COMPLY WITH LEED REQUIREMENTS. PROVIDE SCENE CONTROL PUSHBUTTON STATION WITH BACKLIT ENGRAVED LETTERS AND CONFIRM SCENES AND LETTERING IN SUBMITTALS. FINISH TYPE SHALL BE CONFIRMED BY ARCHITECT.

SHEET KEY NOTES:

1. PARTITION AUTOMATION SENSOR.
2. RELAY MASTER OVERRIDE. COORDINATE FINAL LOCATION WITH OWNERS REPRESENTATIVE PRIOR TO ROUGH-IN.
3. PROVIDE MOUNTING HARDWARE TO SIDE OF CANOPY STRUCTURE.
4. PROVIDE BATTERY PACK FOR LUMINAIRE LABELED "EM". REFER TO GENERAL NOTE 1 ON THIS SHEET.
5. PROVIDE CRESTRON HORIZON KEYPAD WITH CUSTOM BACKLIT ENGRAVED LABELING. SUBMIT ENGRAVING LETTERING IN SUBMITTALS FOR APPROVALS.

1 LEVEL 1 LIGHTING PLAN
SCALE: 1/8" = 1'-0"

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PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 LIGHTING PLAN

SHEET NO.
E-101

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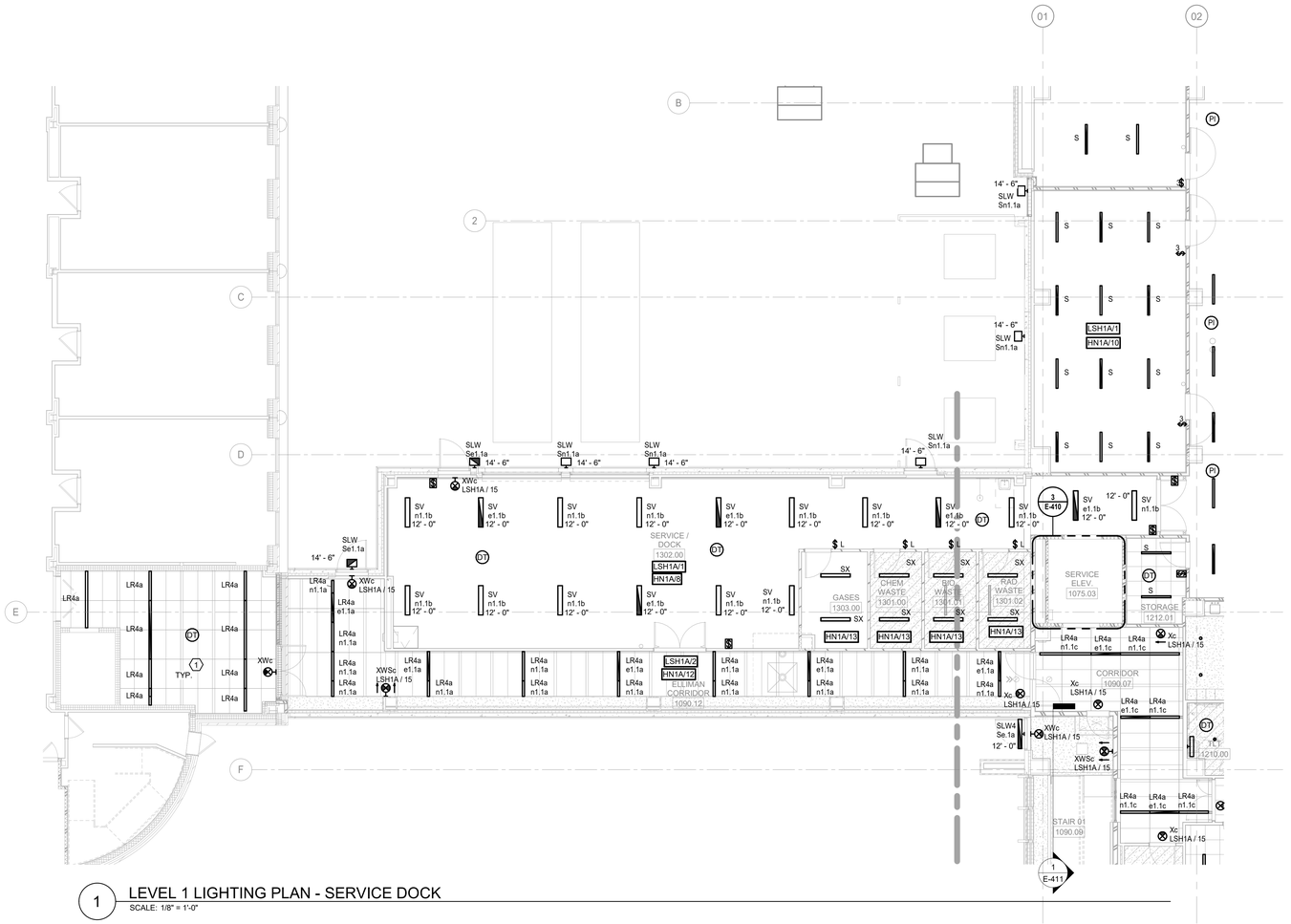

1 LEVEL 1 LIGHTING PLAN - SERVICE DOCK
SCALE: 1/8" = 1'-0"

LIGHTING SHEET GENERAL NOTES:

1. ALL EXIT SIGNS, AND EMERGENCY LUMINAIRES ON GENERATOR SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
2. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE #12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
3. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
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10. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
11. REFER TO LIGHTING ZONE SCHEDULES ON SHEET E-701 FOR CIRCUIT NUMBERS FOR ALL NETWORKED LUMINAIRES.
12. CONFERENCE ROOMS WITH PRESENTATION ON SCREEN SHALL BE PROGRAMMED SO THAT THE LIGHTING ABOVE THE SCREEN(S) CAN BE TURNED OFF WHEN IN PRESENTATION MODE TO COMPLY WITH LEED REQUIREMENTS. PROVIDE SCENE CONTROL PUSHBUTTON STATION WITH BACKLIT ENGRAVED LETTERS AND CONFIRM SCENES AND LETTERING IN SUBMITTALS. FINISH TYPE SHALL BE CONFIRMED BY ARCHITECT.

(#) SHEET KEY NOTES:

1. EXISTING NORMAL AND EMERGENCY CIRCUITS FEEDING AREA IN ELLIMAN BUILDING SHALL FEED NEWLY INSTALLED LIGHTING.

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 47945
09-29-25
LICENSED PROFESSIONAL ENGINEER

PLAN NORTH
TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 1 LIGHTING PLAN - SERVICE DOCK
SHEET NO.
E-101.2

OSBORN ENGINEERING
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(313) 915-4014 www.osborn-eng.com

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PLOT DATE:
9/29/2025 1:40:01 PM
TEMPLATE VERSION: 23.0.4

1 LEVEL 2 LIGHTING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 1:08:38 PM TEMPLATE VERSION: 23.0.4

LIGHTING SHEET GENERAL NOTES:

1. ALL EXIT SIGNS, AND EMERGENCY LUMINAIRES ON GENERATOR SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
2. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE #12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
3. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
5. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES. PER N.E.C. 404.2(C) THE NEUTRAL WIRE SHALL BE EXTENDED TO ALL SWITCHING LOCATIONS.
6. LIGHTING BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
7. REFER TO E-500's SERIES FOR LIGHTING CONTROL WIRING DIAGRAMS. CONTRACTOR TO VERIFY ALL SENSOR LOCATIONS PER MANUFACTURERS SPECIFICATIONS.
8. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
9. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
10. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
11. REFER TO LIGHTING ZONE SCHEDULES ON SHEET E-701 FOR CIRCUIT NUMBERS FOR ALL NETWORKED LUMINAIRES.
12. CONFERENCE ROOMS WITH PRESENTATION ON SCREEN SHALL BE PROGRAMMED SO THAT THE LIGHTING ABOVE THE SCREEN(S) CAN BE TURNED OFF WHEN IN PRESENTATION MODE TO COMPLY WITH LEED REQUIREMENTS. PROVIDE SCENE CONTROL PUSHBUTTON STATION WITH BACKLIT ENGRAVED LETTERS AND CONFIRM SCENES AND LETTERING IN SUBMITTALS. FINISH TYPE SHALL BE CONFIRMED BY ARCHITECT.

(#) SHEET KEY NOTES:

1. POWER FOR INTEGRAL COLD ROOM LIGHTING SHALL BE LISTED ON ELECTRICAL POWER PLANS.
2. RELAY MASTER 2-HOUR OVERRIDE. SEE SEQUENCE OF OPERATIONS ON E-501 FOR MORE DETAILS.
3. SWITCHES CONTROL GROUPS OF LIGHTING ZONES. PROVIDE HORIZON KEYPADS WITH DIMMING CAPABILITIES FOR EACH ZONE GROUP.
   A. "LAB-1" - n2.8c, n2.1a, n2.9a, e2.1a
   B. "LAB-2" - n2.8d, n2.1b, n2.8b, e2.1b
   C. "LAB-3" - n2.9b, n2.1c, n2.7c, e2.1c
   D. "LAB-4" - n2.9c, n2.1d, n2.7d, e2.1d
   E. "LAB-5" - n2.9d, n2.2b, n2.7b, e2.2b
   F. "LAB-6" - n2.10a, n2.2b, n2.7b, e2.2b

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ENGINEER
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LICENSED PROFESSIONAL ENGINEER
10/17/2025

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 2 LIGHTING PLAN

SHEET NO.
E-102

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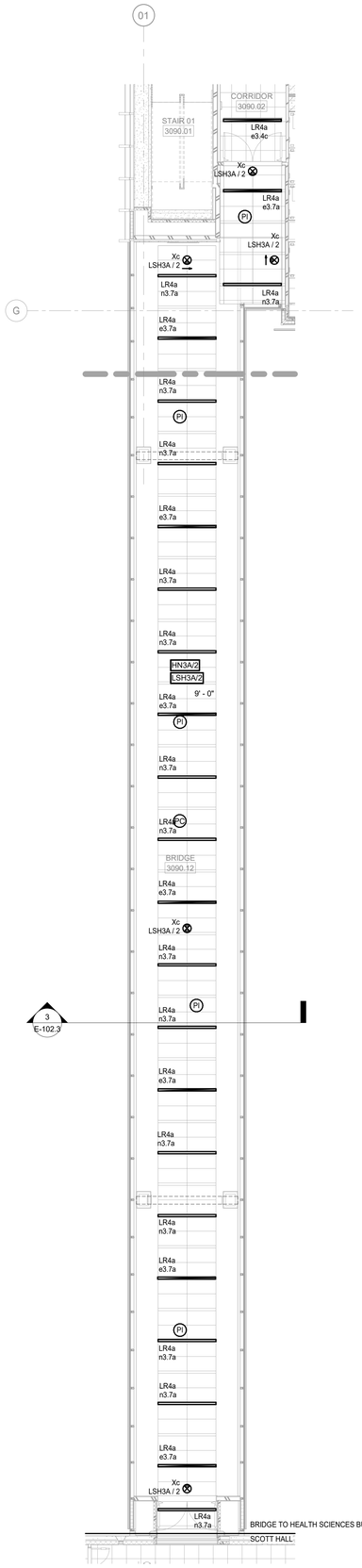

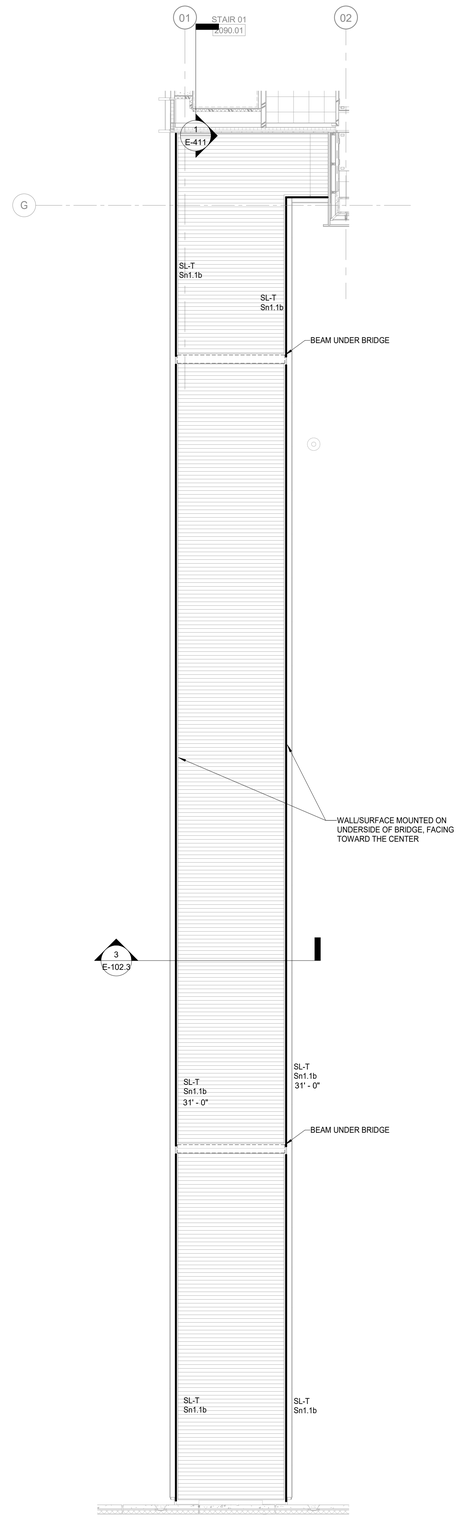

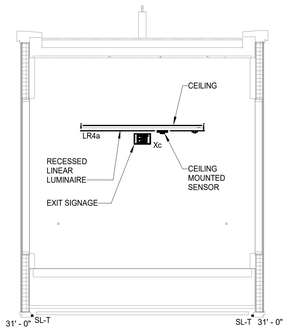

3 BRIDGE SECTION
SCALE: 1/4" = 1'-0"

2 LEVEL 3 LIGHTING PLAN - BRIDGE
SCALE: 1/8" = 1'-0"

1 LEVEL 2 LIGHTING PLAN - BRIDGE
SCALE: 1/8" = 1'-0"

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1. ALL EXIT SIGNS, AND EMERGENCY LUMINAIRES ON GENERATOR SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
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(#) SHEET KEY NOTES:

1. PROVIDE NEW EXIT SIGNS AT NEW DOOR LOCATIONS. CONNECT TO LIFE SAFETY CIRCUIT FEEDING AREA.

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PLAN NORTH
TRUE NORTH

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 2, 3 LIGHTING PLAN - BRIDGE

SHEET NO.
E-102.3

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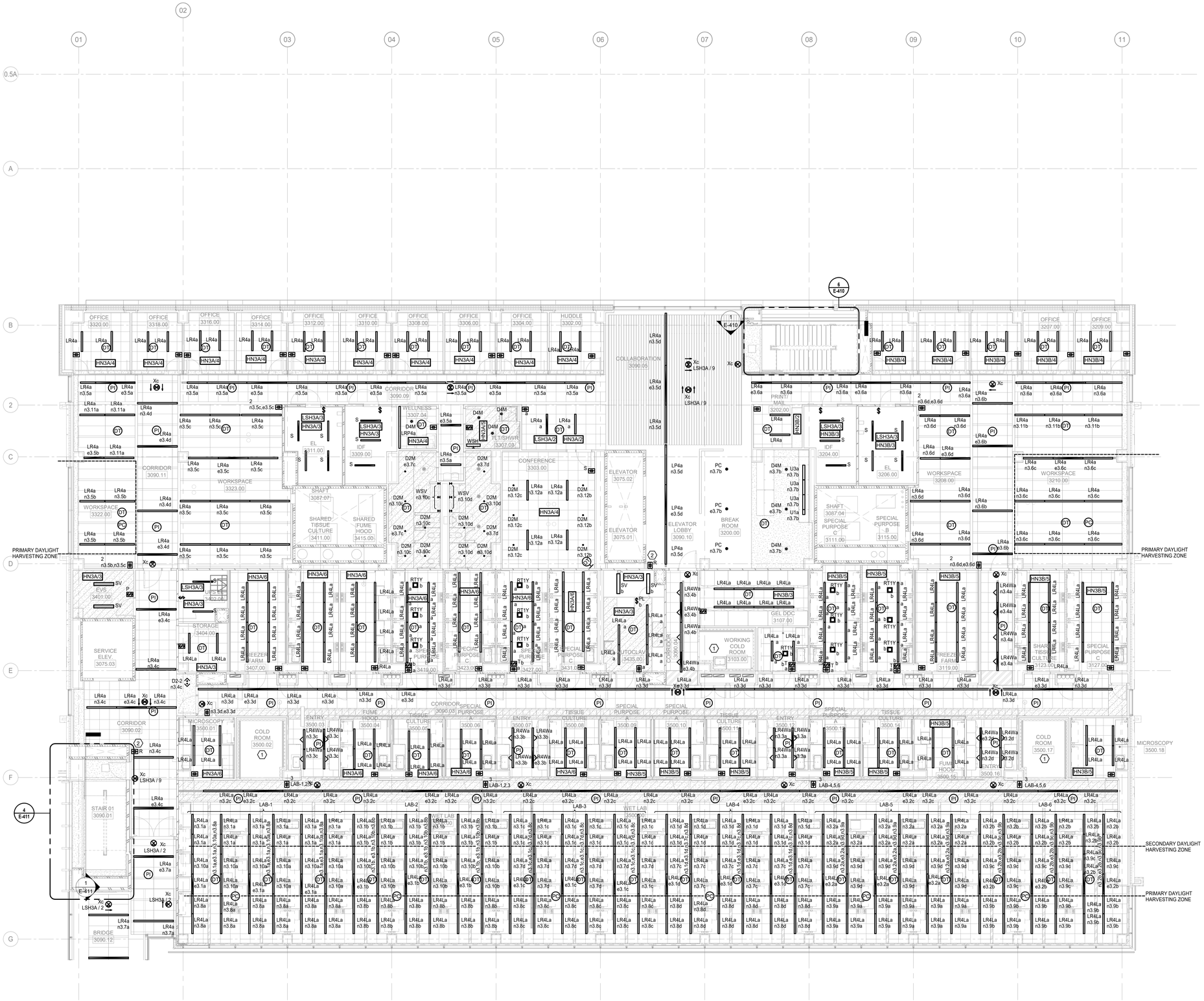

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(#) SHEET KEY NOTES:

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2. RELAY MASTER 2-HOUR OVERRIDE. SEE SEQUENCE OF OPERATIONS ON E-501 FOR MORE DETAILS.
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   A. "LAB-1" - n3.1a, n3.10a, n3.6a, e3.1a
   B. "LAB-2" - n3.1b, n3.10b, n3.8b, e3.1b
   C. "LAB-3" - n3.1c, n3.7c, n3.8d, e3.1c
   D. "LAB-4" - n3.1d, n3.9d, n3.9a, e3.1d
   E. "LAB-5" - n3.2a, n3.9d, n3.9a, e3.2b
   F. "LAB-6" - n3.2b, n3.9c, n3.9b, e3.2b

1 LEVEL 3 LIGHTING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/29/2025 1:41:08 PM TEMPLATE VERSION: 23.0.4

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PLAN NORTH
TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
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29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 LIGHTING PLAN

SHEET NO.
E-103

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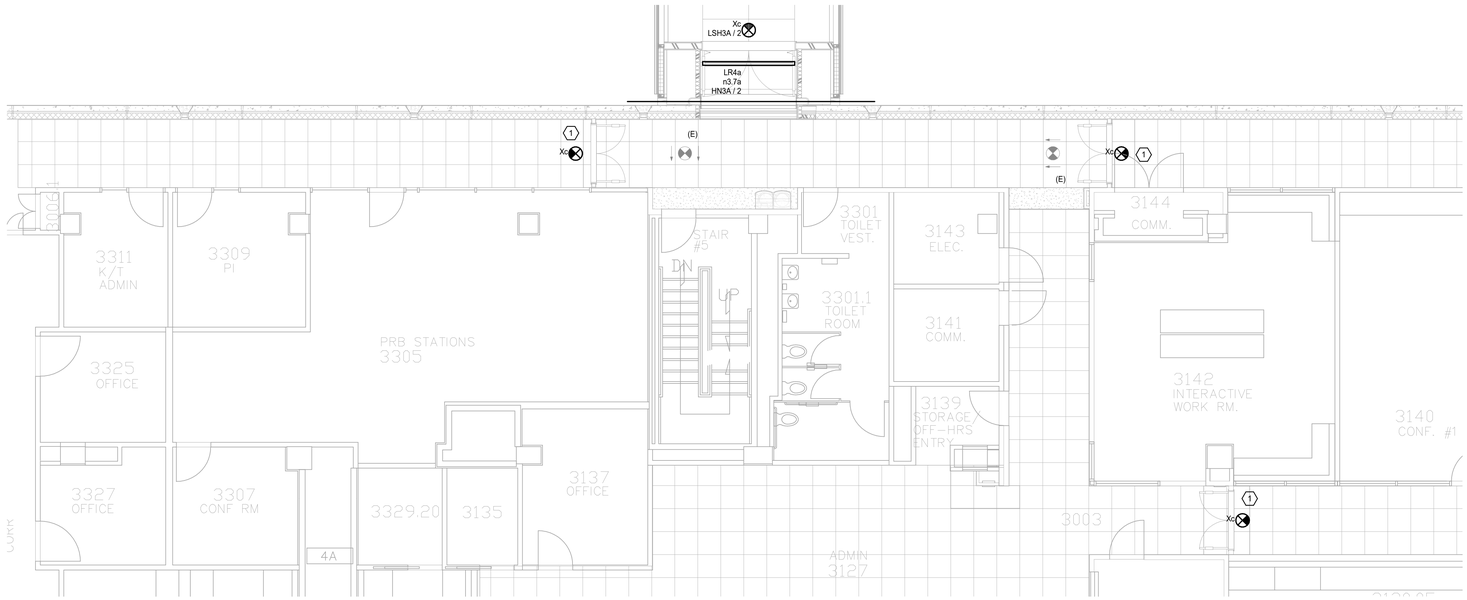

1 LEVEL 3 LIGHTING PLAN - SCOTT HALL
SCALE: 3/16" = 1'-0"

PLOT DATE: 9/29/2025 1:41:14 PM TEMPLATE VERSION: 23.0.4

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SHEET TITLE
LEVEL 3 LIGHTING PLAN - SCOTT HALL

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1 LEVEL 4 LIGHTING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/26/2025 1:41:42 PM TEMPLATE VERSION: 23.0.4

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1. ALL EXIT SIGNS, AND EMERGENCY LUMINAIRES ON GENERATOR SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
2. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE #12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
3. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
5. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES. PER N.E.C. 404.2(C) THE NEUTRAL WIRE SHALL BE EXTENDED TO ALL SWITCHING LOCATIONS.
6. LIGHTING BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
7. REFER TO E-500's SERIES FOR LIGHTING CONTROL WIRING DIAGRAMS. CONTRACTOR TO VERIFY ALL SENSOR LOCATIONS PER MANUFACTURERS SPECIFICATIONS.
8. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
9. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
10. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
11. REFER TO LIGHTING ZONE SCHEDULES ON SHEET E-701 FOR CIRCUIT NUMBERS FOR ALL NETWORKED LUMINAIRES.
12. CONFERENCE ROOMS WITH PRESENTATION ON SCREEN SHALL BE PROGRAMMED SO THAT THE LIGHTING ABOVE THE SCREEN(S) CAN BE TURNED OFF WHEN IN PRESENTATION MODE TO COMPLY WITH LEED REQUIREMENTS. PROVIDE SCENE CONTROL PUSHBUTTON STATION WITH BACKLIT ENGRAVED LETTERS AND CONFIRM SCENES AND LETTERING IN SUBMITTALS. FINISH TYPE SHALL BE CONFIRMED BY ARCHITECT.

(#) SHEET KEY NOTES:

1. POWER SUPPLY FOR INTEGRAL COLD ROOM LIGHTING.
2. RELAY MASTER 2-HOUR OVERRIDE. SEE SEQUENCE OF OPERATIONS ON E-501 FOR MORE DETAILS.
3. SWITCHES CONTROL GROUPS OF LIGHTING ZONES. PROVIDE HORIZON KEYPADS WITH DIMMING CAPABILITIES FOR EACH ZONE GROUP.
   A. "LAB-1" - n4.1a, n4.10a, n4.8a, e4.1a
   B. "LAB-2" - n4.1b, n4.7d, n4.8b, e4.1b
   C. "LAB-3" - n4.1c, n4.7c, n4.8c, e4.1c
   D. "LAB-4" - n4.1d, n4.7b, n4.8d, e4.1d
   E. "LAB-5" - n4.2a, n4.9d, n4.9a, e4.2b
   F. "LAB-6" - n4.2b, n4.9c, n4.9b, e4.2b

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PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 4 LIGHTING PLAN

SHEET NO.
E-104

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1 LEVEL 5 LIGHTING PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/29/2025 1:42:13 PM TEMPLATE VERSION: 23.0.4

LIGHTING SHEET GENERAL NOTES:

1. ALL EXIT SIGNS, AND EMERGENCY LUMINAIRES ON GENERATOR SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
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12. CONFERENCE ROOMS WITH PRESENTATION ON SCREEN SHALL BE PROGRAMMED SO THAT THE LIGHTING ABOVE THE SCREEN(S) CAN BE TURNED OFF WHEN IN PRESENTATION MODE TO COMPLY WITH LEED REQUIREMENTS. PROVIDE SCENE CONTROL PUSHBUTTON STATION WITH BACKLIT ENGRAVED LETTERS AND CONFIRM SCENES AND LETTERING IN SUBMITTALS. FINISH TYPE SHALL BE CONFIRMED BY ARCHITECT.

(#) SHEET KEY NOTES:

1. POWER SUPPLY FOR INTEGRAL COLD ROOM LIGHTING.
2. RELAY MASTER 2-HOUR OVERRIDE. SEE SEQUENCE OF OPERATIONS ON E-501 FOR MORE DETAILS.
3. SWITCHES CONTROL GROUPS OF LIGHTING ZONES. PROVIDE HORIZON KEYPADS WITH DIMMING CAPABILITIES FOR EACH ZONE GROUP.
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   B. "LAB-2" - n5.1b, n5.7d, n5.8b, e5.1b
   C. "LAB-3" - n5.1c, n5.7c, n5.8c, e5.1c
   D. "LAB-4" - n5.1d, n5.7b, n5.8d, e5.1d
   E. "LAB-5" - n5.2a, n5.9d, n5.9a, e5.2a
   F. "LAB-6" - n5.2b, n5.9c, n5.9b, e5.2b

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TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 5 LIGHTING PLAN

SHEET NO.
E-105

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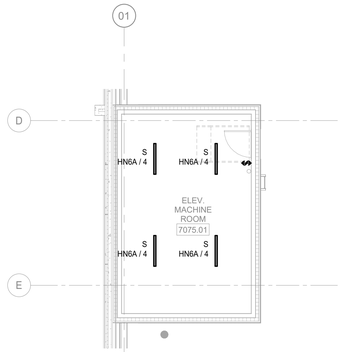
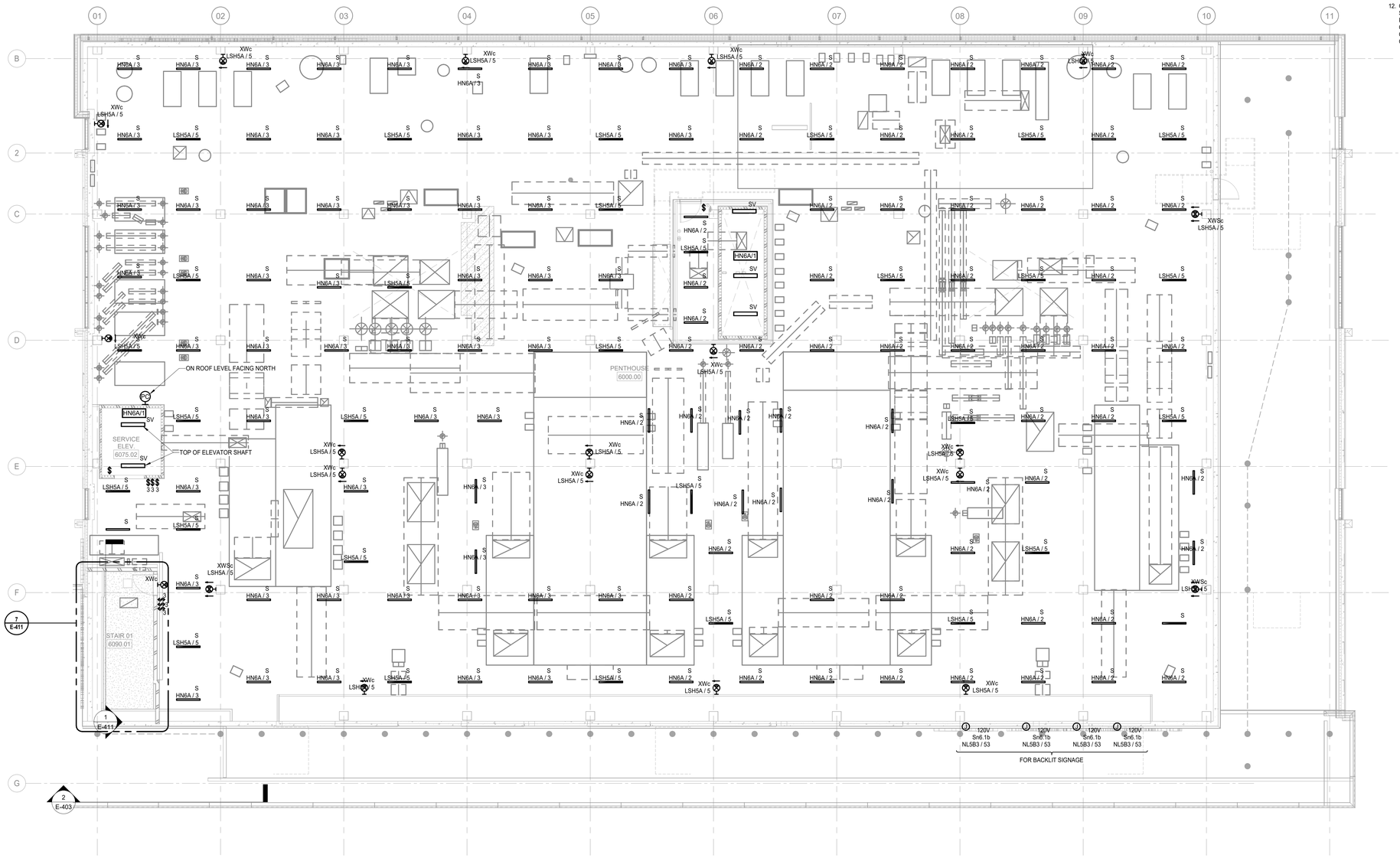


2 PARTIAL ROOF LIGHTING PLAN
SCALE: 1/8" = 1'-0"



1 PENTHOUSE LIGHTING PLAN
SCALE: 1/8" = 1'-0"

LIGHTING SHEET GENERAL NOTES:

1. ALL EXIT SIGNS, AND EMERGENCY LUMINAIRES ON GENERATOR SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
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3. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
5. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES. PER N.E.C. 404.2(C) THE NEUTRAL WIRE SHALL BE EXTENDED TO ALL SWITCHING LOCATIONS.
6. LIGHTING BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
7. REFER TO E-500's SERIES FOR LIGHTING CONTROL WIRING DIAGRAMS. CONTRACTOR TO VERIFY ALL SENSOR LOCATIONS PER MANUFACTURERS SPECIFICATIONS.
8. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
9. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
10. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
11. REFER TO LIGHTING ZONE SCHEDULES ON SHEET E-701 FOR CIRCUIT NUMBERS FOR ALL NETWORKED LUMINAIRES.
12. CONFERENCE ROOMS WITH PRESENTATION ON SCREEN SHALL BE PROGRAMMED SO THAT THE LIGHTING ABOVE THE SCREEN(S) CAN BE TURNED OFF WHEN IN PRESENTATION MODE TO COMPLY WITH LEED REQUIREMENTS. PROVIDE SCENE CONTROL PUSHBUTTON STATION WITH BACKLIT ENGRAVED LETTERS AND CONFIRM SCENES AND LETTERING IN SUBMITTALS. FINISH TYPE SHALL BE CONFIRMED BY ARCHITECT.

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PLAN NORTH
TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PENTHOUSE LIGHTING PLAN

SHEET NO.
E-106

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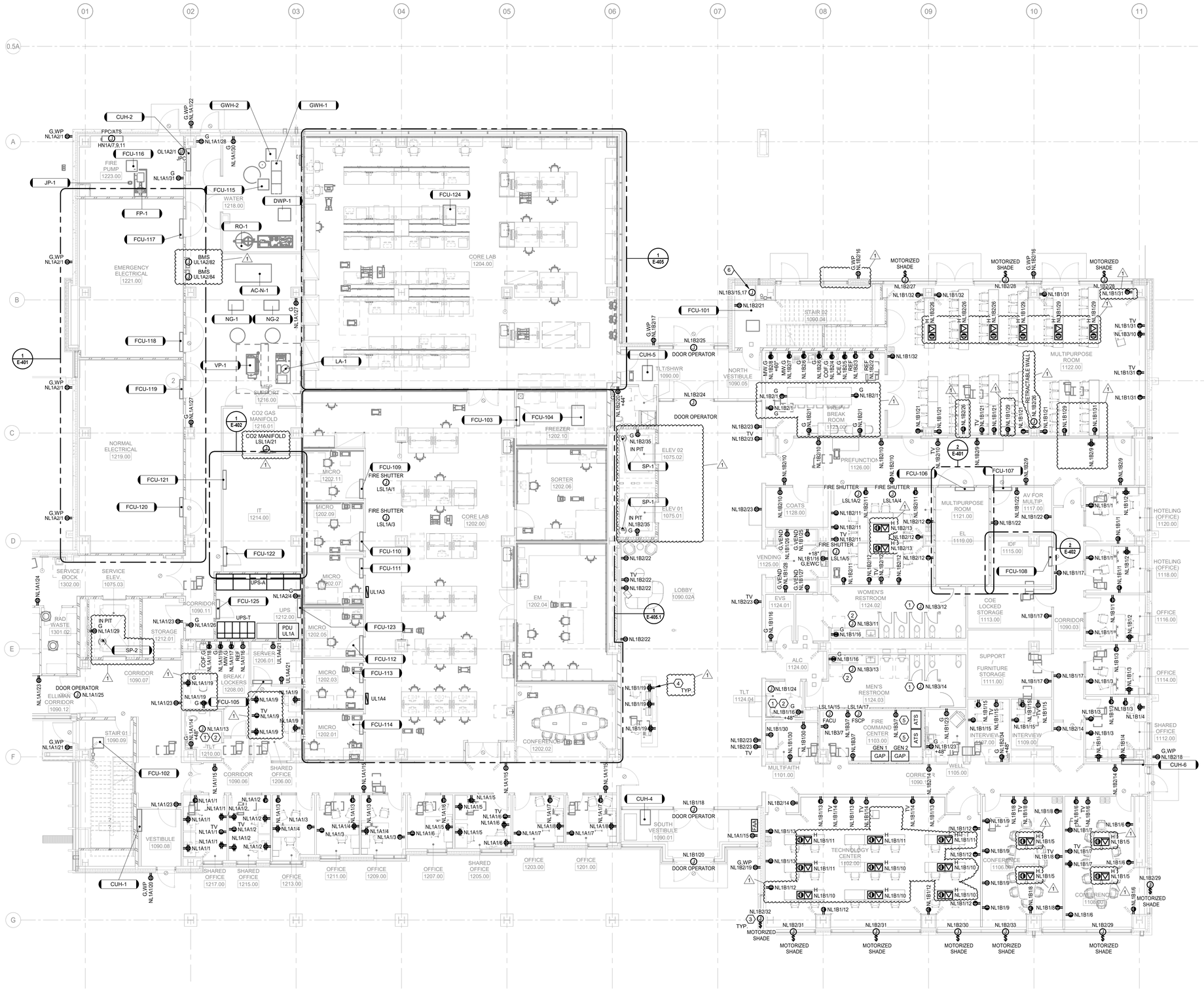
PLOT DATE: 9/29/2025 1:42:29 PM TEMPLATE VERSION: 23.0.4



1 LEVEL 1 POWER PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 1:59:11 PM TEMPLATE VERSION: 23.0.4

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
2. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
3. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE # 12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
8. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
9. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
10. REFER TO ALL EQUIPMENT AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
11. AT LEAST 50% OF THE RECEPTACLES IN PRIVATE OFFICES, CONFERENCE ROOMS, BREAK ROOMS, CLASS ROOMS, OR AT INDIVIDUAL WORKSTATIONS MUST BE CONTROLLED WITH OCCUPANCY CONTROLS PER MICHIGAN ENERGY CODE.
12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

1. CONTRACTOR TO PROVIDE LOW-VOLTAGE TRANSFORMER WITHIN ACCESSIBLE CEILING SPACE FOR AUTOMATED FLUSH VALVES. COORDINATE FINAL. REFER TO MANUFACTURER REQUIREMENTS FOR TOTAL AVAILABLE CONNECTIONS. COORDINATE FINAL LOCATION OF TRANSFORMER IN THE FIELD PRIOR TO ROUGH-IN.
2. CONTRACTOR TO PROVIDE LOW-VOLTAGE TRANSFORMER WITHIN ACCESSIBLE CEILING SPACE FOR AUTOMATED SINKS. COORDINATE FINAL. REFER TO MANUFACTURER REQUIREMENTS FOR TOTAL AVAILABLE CONNECTIONS. COORDINATE FINAL LOCATION OF TRANSFORMER IN THE FIELD PRIOR TO ROUGH-IN.
3. MOTOR OPERATED SHADE. 120V JUNCTION BOX POWER. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS PRIOR TO ROUGH-IN. COORDINATE CONTROL REQUIREMENTS AND FINAL LOCATION OF CONTROLS WITH MANUFACTURER DRAWINGS AND OWNER PRIOR TO INSTALLATION.
4. CONDUIT AND WIRE IS BE ROUTED UNDERGROUND FROM NEAREST WALL TO DESK. PROVIDE STUB-IN AT DESK FOR RECEPTACLES. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO ROUGH-IN.
5. REMOTE TRANSFER SWITCH ANNUNCIATOR PANELS FOR ALERT STATUS INDICATION AT LOSS OF POWER. COORDINATE INSTALLATION WITH ATS' IN EMERGENCY ELECTRICAL ROOM 1221.00 AND MAIN ELECTRICAL ROOM 1219.00.
6. PROVIDE 208V/1PH CONNECTION TO HEAT TRACE. COORDINATE INSTALLATION OF HEAT TRACE WITH PIPING TO THE EXTERIOR WITH PLUMBING DRAWINGS PRIOR TO INSTALLATION.

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T.P. GASSER
No. 43945
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10/17/2025

[redacted]

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 1 POWER PLAN

SHEET NO.
E-201

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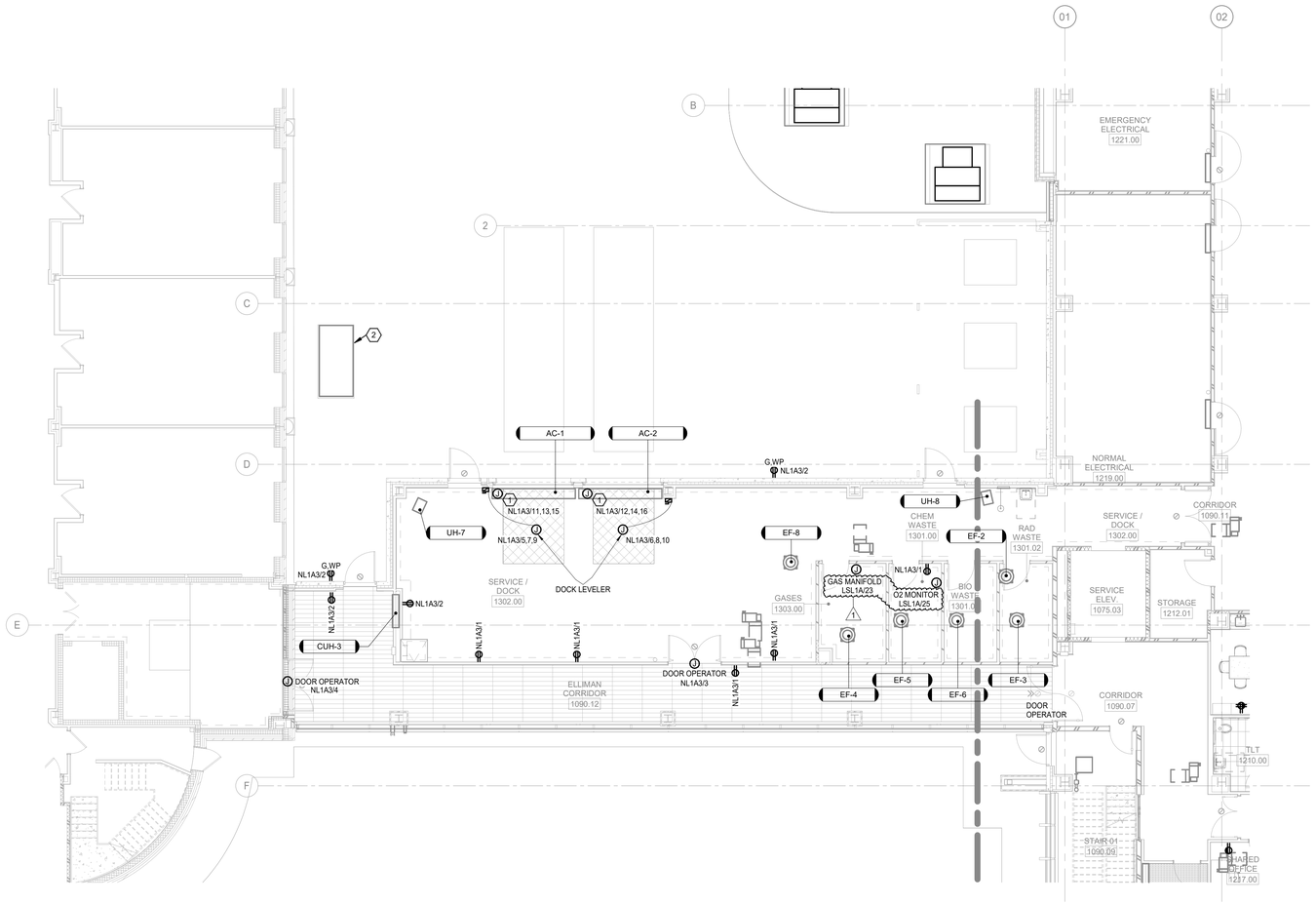

1 LEVEL 1 POWER PLAN - SERVICE DOCK
SCALE: 1/8" = 1'-0"

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
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4. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
8. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
9. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
10. REFER TO ALL EQUIPMENT AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
11. AT LEAST 50% OF THE RECEPTACLES IN PRIVATE OFFICES, CONFERENCE ROOMS, BREAK ROOMS, CLASS ROOMS, OR AT INDIVIDUAL WORKSTATIONS MUST BE CONTROLLED WITH OCCUPANCY CONTROLS PER MICHIGAN ENERGY CODE.
12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

1. PROVIDE POWER FOR OVERHEAD DOOR OPERATOR. LOCATE LOCAL CONTROLLER IN THE FIELD AND PROVIDE CONNECTIONS BETWEEN DOOR POWER AND CONTROLLER. COORDINATE FINAL LOCATION IN THE FIELD PRIOR TO ROUGH-IN.
2. EXTEND EXISTING CONDENSING UNIT CIRCUIT TO NEW LOCATION. PROVIDE ADDITIONAL CONDUIT AND WIRE AS REQUIRED.

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PLAN NORTH
TRUE NORTH

REVISION NO. | DESCRIPTION | DATE
1 | ADDENDUM No. 1 | 10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 1 POWER PLAN - SERVICE DOCK
SHEET NO.
E-201.2

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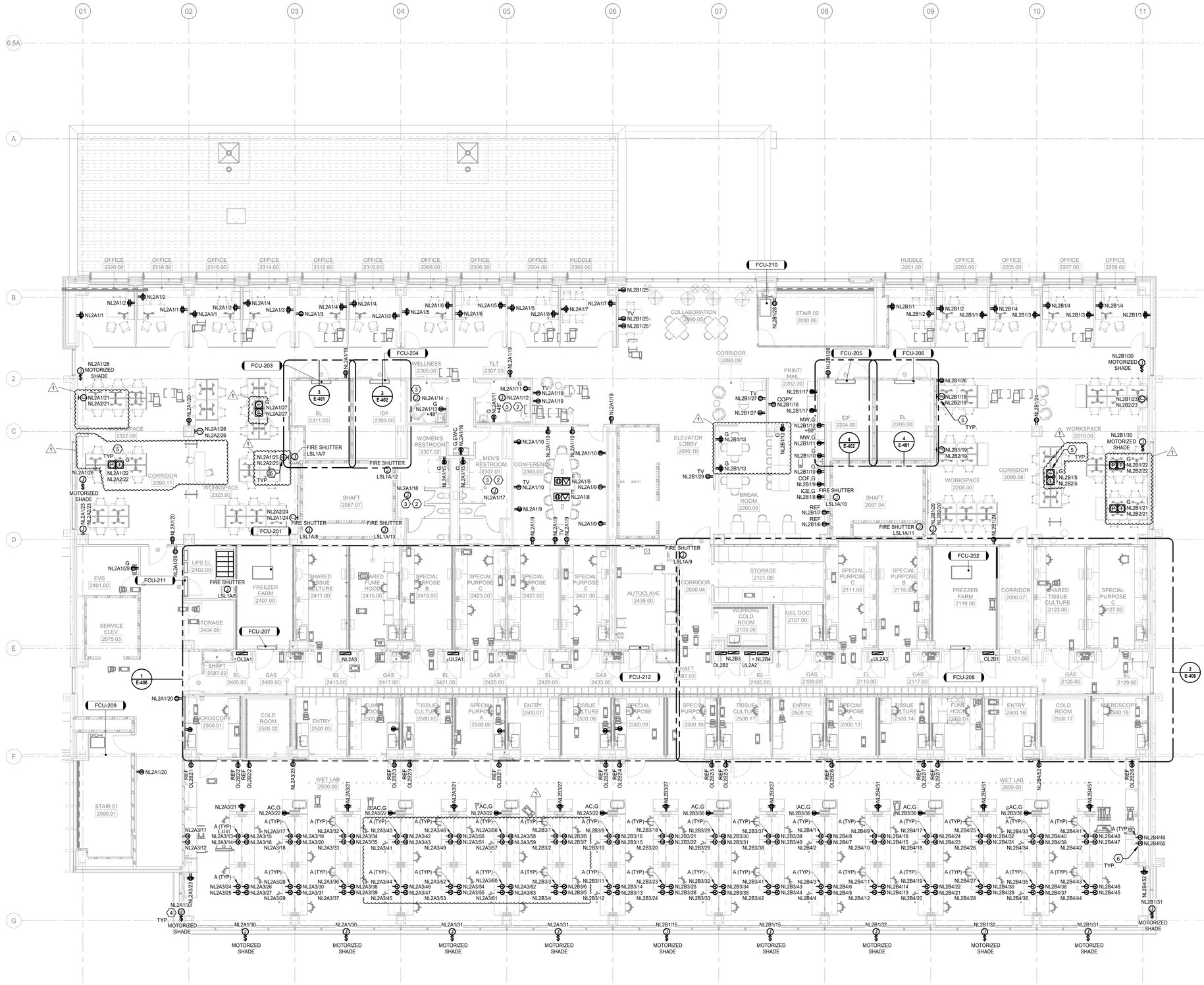

1 LEVEL 2 POWER PLAN

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

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
2. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
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5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
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10. REFER TO ALL EQUIPMENT AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
11. AT LEAST 50% OF THE RECEPTACLES IN PRIVATE OFFICES, CONFERENCE ROOMS, BREAK ROOMS, CLASS ROOMS, OR AT INDIVIDUAL WORKSTATIONS MUST BE CONTROLLED WITH OCCUPANCY CONTROLS PER MICHIGAN ENERGY CODE.
12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

1. RECEPTACLES IN WIREWAY SECTION ARE TO BE GFCI RATED, COORDINATE WIRING REQUIREMENTS AND SELECTION PRIOR TO ROUGH-IN.
2. CONTRACTOR TO PROVIDE LOW-VOLTAGE TRANSFORMER WITHIN ACCESSIBLE CEILING SPACE FOR AUTOMATED FLUSH VALVES. COORDINATE FINAL. REFER TO MANUFACTURER REQUIREMENTS FOR TOTAL AVAILABLE CONNECTIONS. COORDINATE FINAL LOCATION OF TRANSFORMER IN THE FIELD PRIOR TO ROUGH-IN.
3. CONTRACTOR TO PROVIDE LOW-VOLTAGE TRANSFORMER WITHIN ACCESSIBLE CEILING SPACE FOR AUTOMATED SINKS. COORDINATE FINAL. REFER TO MANUFACTURER REQUIREMENTS FOR TOTAL AVAILABLE CONNECTIONS. COORDINATE FINAL LOCATION OF TRANSFORMER IN THE FIELD PRIOR TO ROUGH-IN.
4. MOTOR OPERATED SHADE. 120V JUNCTION BOX POWER. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS PRIOR TO ROUGH-IN. COORDINATE CONTROL REQUIREMENTS AND FINAL LOCATION OF CONTROLS WITH MANUFACTURER DRAWINGS AND OWNER PRIOR TO INSTALLATION.
5. 25% OF RECEPTACLES WITHIN FURNITURE POWER WHIPS TO BE CONTROLLED BY THE LIGHTING CONTROL SYSTEM. COORDINATE CONTROL INSTALLATION REQUIREMENTS WITH LIGHTING CONTROL SYSTEM OF OPERATIONS PRIOR TO INSTALLATION.
6. RECEPTACLE 'A' ARE TO BE LOCATED IN CEILING. COORDINATE FINAL LOCATION IN THE FIELD PRIOR TO ROUGH-IN.

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REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 2 POWER PLAN

SHEET NO.
E-202

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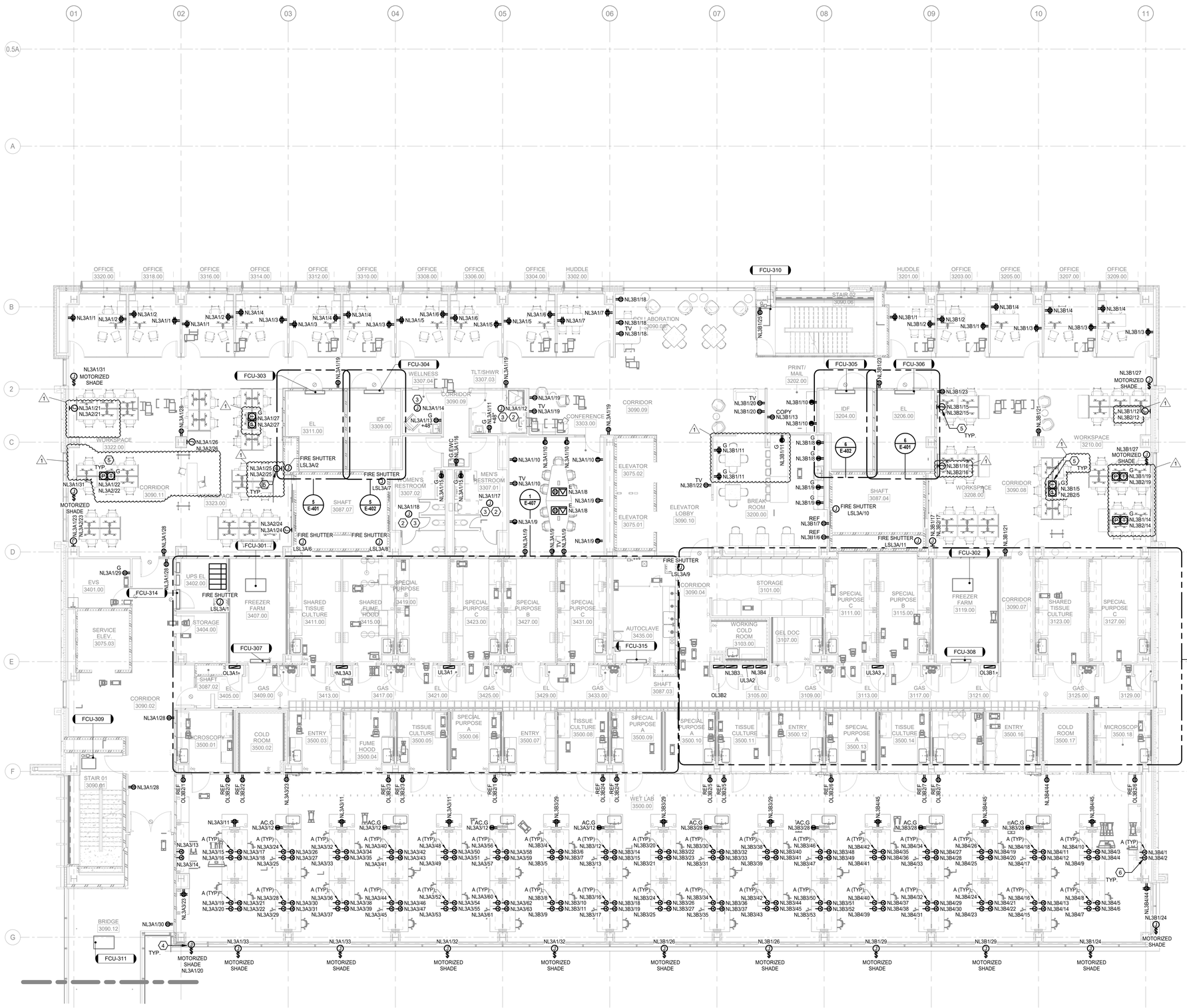

1 LEVEL 3 POWER PLAN

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

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
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5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
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3. *PROVIDE LOW-VOLTAGE TRANSFORMER WITHIN ACCESSIBLE CEILING SPACE FOR AUTOMATED SINKS. COORDINATE FINAL. REFER TO MANUFACTURER REQUIREMENTS FOR TOTAL AVAILABLE CONNECTIONS. COORDINATE FINAL LOCATION OF TRANSFORMER IN THE FIELD PRIOR TO ROUGH-IN.*
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6. RECEPTACLE 'A' ARE TO BE LOCATED IN CEILING. COORDINATE FINAL LOCATION IN THE FIELD PRIOR TO ROUGH-IN

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REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 POWER PLAN

SHEET NO.
E-203

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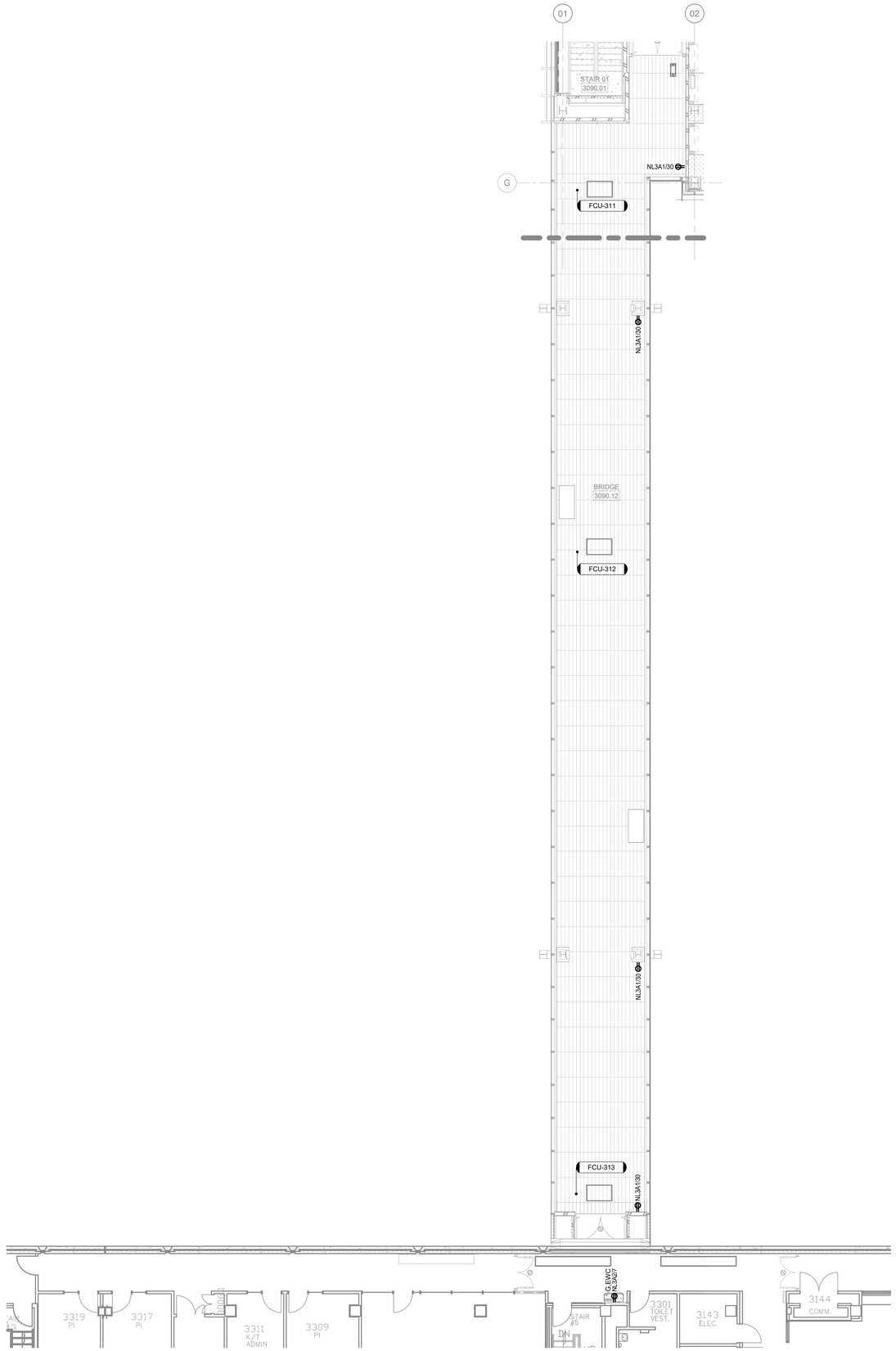

1 LEVEL 3 POWER PLAN - BRIDGE CONNECTION
SCALE: 1/8" = 1'-0"

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
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REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
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DATE
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ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 POWER PLAN - BRIDGE

SHEET NO.
E-203.3

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POWER SHEET GENERAL NOTES:

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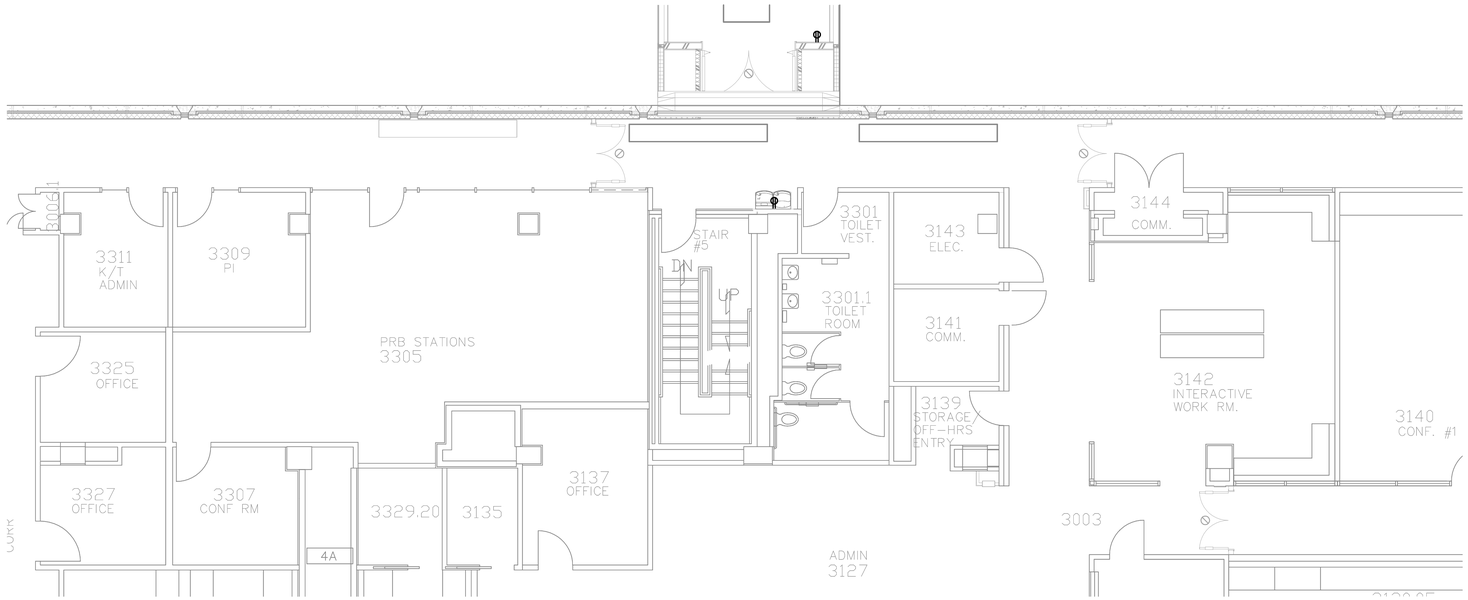

1 LEVEL 3 POWER PLAN - SCOTT HALL
SCALE: 3/16" = 1'-0"

PLOT DATE:
9/25/2025 1:47:47 PM
TEMPLATE VERSION: 23.0.4

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T.P. GASSER
ENGINEER
No. 43945
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LICENSED PROFESSIONAL ENGINEER

PLAN NORTH
TRUE NORTH

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 3 POWER PLAN - SCOTT HALL

SHEET NO.
E-203.4

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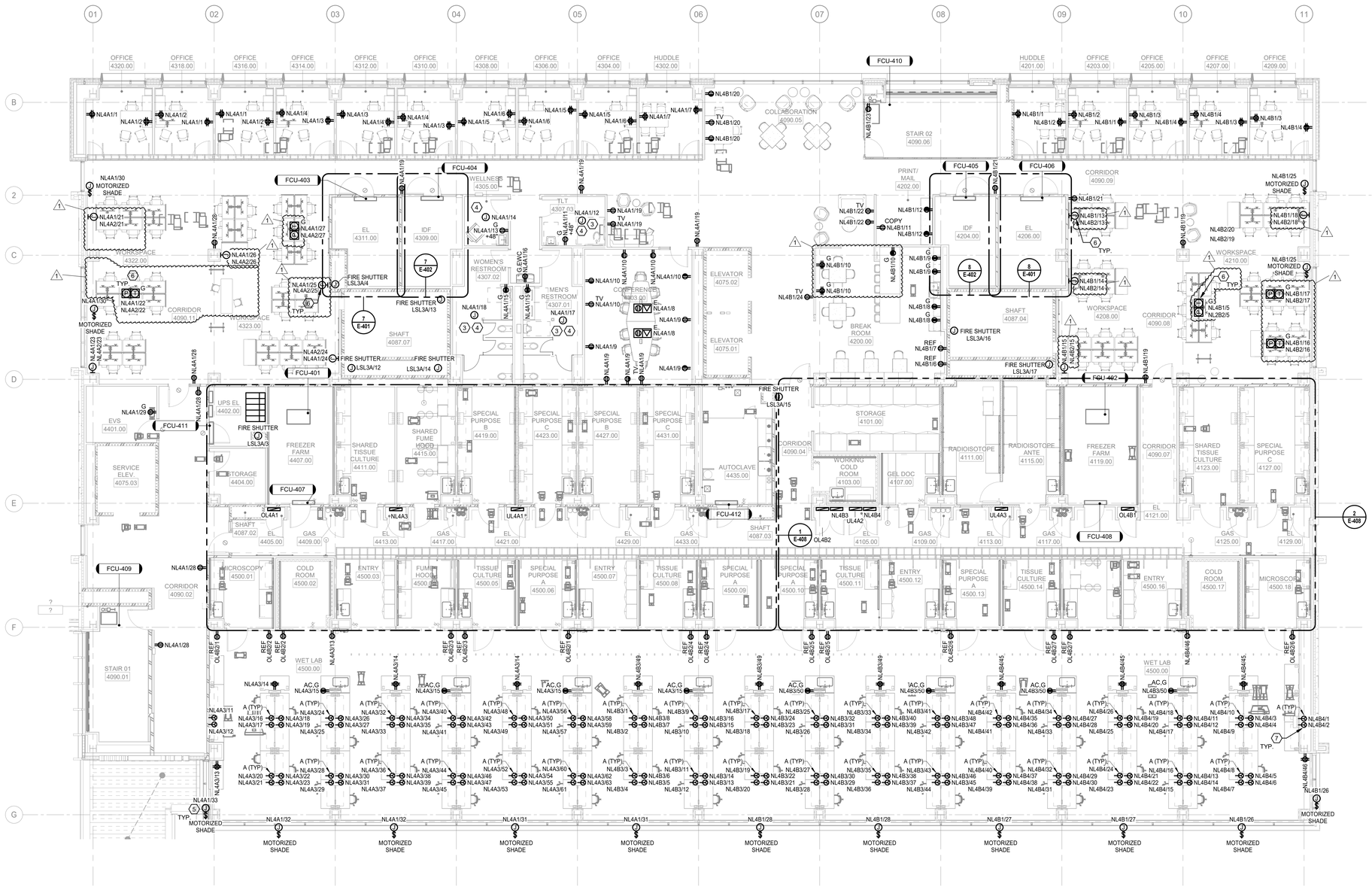

1 LEVEL 4 POWER PLAN

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

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
2. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
3. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE # 12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
8. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
9. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
10. REFER TO ALL EQUIPMENT AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
11. AT LEAST 50% OF THE RECEPTACLES IN PRIVATE OFFICES, CONFERENCE ROOMS, BREAK ROOMS, CLASS ROOMS, OR AT INDIVIDUAL WORKSTATIONS MUST BE CONTROLLED WITH OCCUPANCY CONTROLS PER MICHIGAN ENERGY CODE.
12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

1. RECEPTACLES IN WIREWAY SECTION ARE TO BE GFCI RATED, COORDINATE WIRING REQUIREMENTS AND SELECTION PRIOR TO ROUGH-IN.
2. ALL CONDUITS, FITTINGS, AND BOXES SHALL BE IN ACCORDANCE WITH RADIOISOTOPE LAB REQUIREMENTS.
3. CONTRACTOR TO PROVIDE LOW-VOLTAGE TRANSFORMER WITHIN ACCESSIBLE CEILING SPACE FOR AUTOMATED FLUSH VALVES. COORDINATE FINAL. REFER TO MANUFACTURER REQUIREMENTS FOR TOTAL AVAILABLE CONNECTIONS. COORDINATE FINAL LOCATION OF TRANSFORMER IN THE FIELD PRIOR TO ROUGH-IN.*
4. CONTRACTOR TO PROVIDE LOW-VOLTAGE TRANSFORMER WITHIN ACCESSIBLE CEILING SPACE FOR AUTOMATED SINKS. COORDINATE FINAL. REFER TO MANUFACTURER REQUIREMENTS FOR TOTAL AVAILABLE CONNECTIONS. COORDINATE FINAL LOCATION OF TRANSFORMER IN THE FIELD PRIOR TO ROUGH-IN.*
5. MOTOR OPERATED SHADE. 120V JUNCTION BOX POWER. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS PRIOR TO ROUGH-IN. COORDINATE CONTROL REQUIREMENTS AND FINAL LOCATION OF CONTROLS WITH MANUFACTURER DRAWINGS AND OWNER PRIOR TO INSTALLATION.
6. 25% OF RECEPTACLES WITHIN FURNITURE POWER WHIPS TO BE CONTROLLED BY THE LIGHTING CONTROL SYSTEM. COORDINATE CONTROL INSTALLATION REQUIREMENTS WITH LIGHTING CONTROL SYSTEM OF OPERATIONS PRIOR TO INSTALLATION.
7. RECEPTACLE 'A' ARE TO BE LOCATED IN CEILING. COORDINATE FINAL LOCATION IN THE FIELD PRIOR TO ROUGH-IN

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ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

[redacted]

PLAN NORTH | TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 4 POWER PLAN

SHEET NO.
E-204

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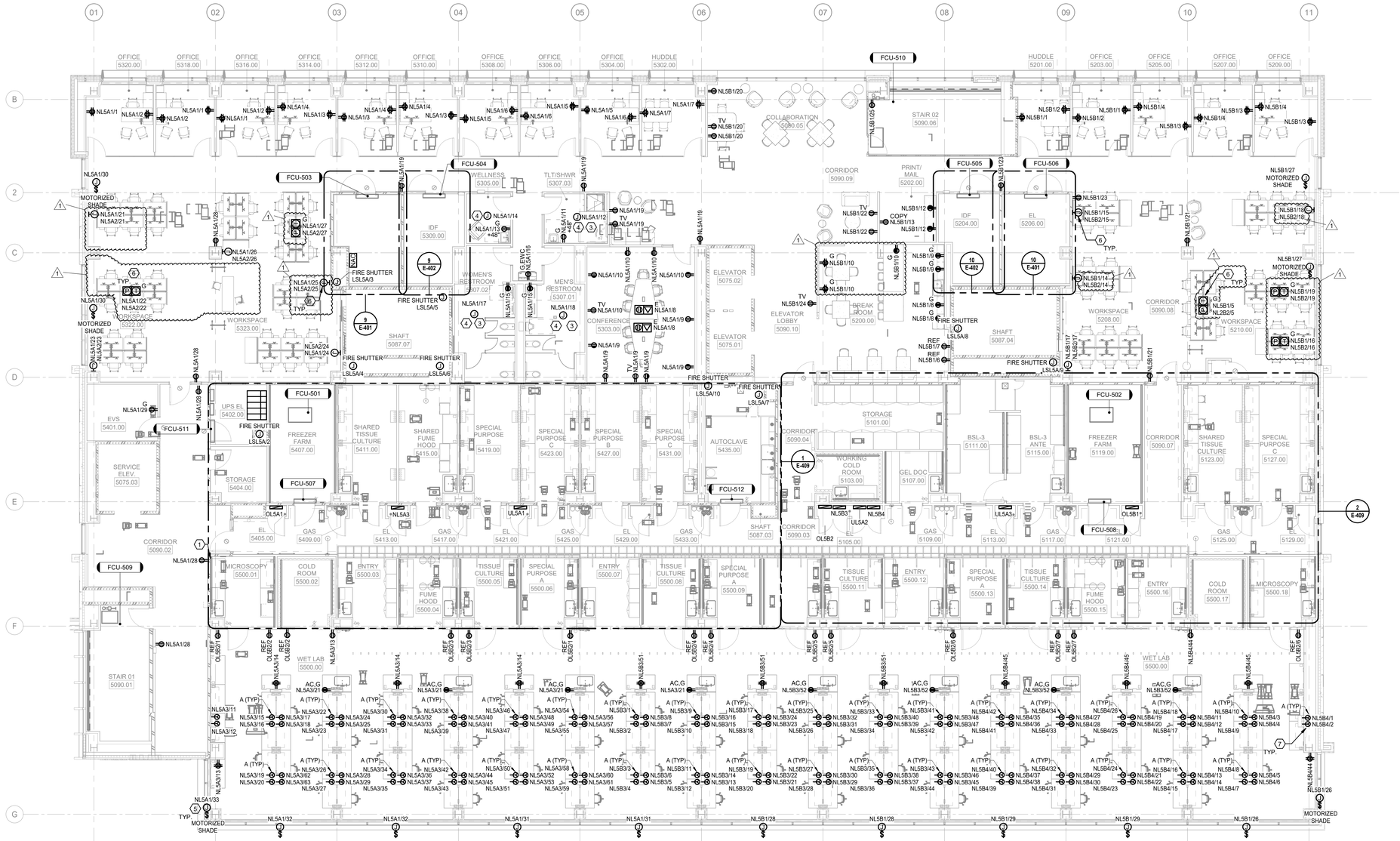
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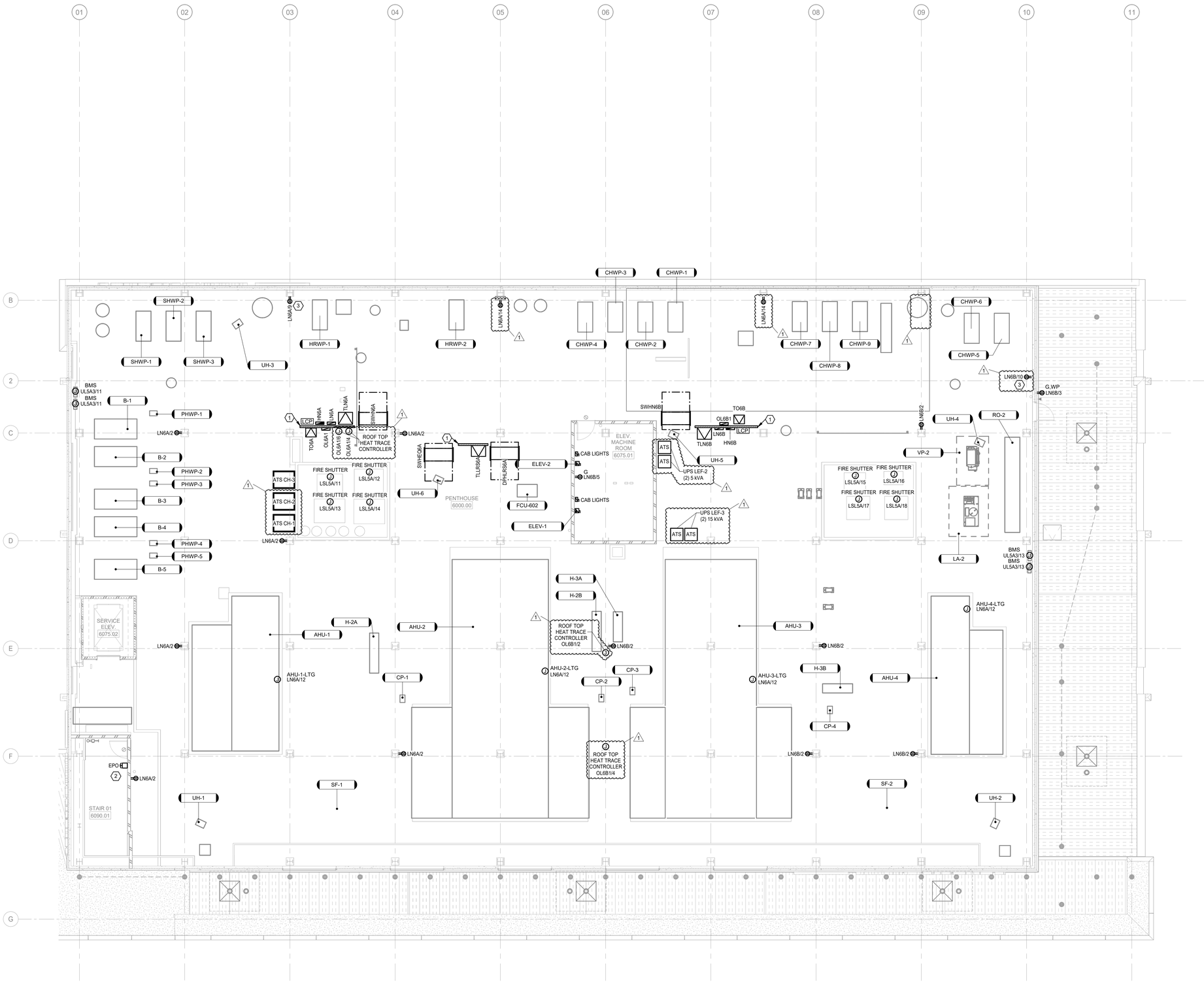

1 PENTHOUSE POWER PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/16/2025 2:01:06 PM TEMPLATE VERSION: 23.0.4

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
2. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
3. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE # 12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
8. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
9. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
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12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

SHEET KEY NOTES:

1. PROVIDE UNISTRUT FOR EQUIPMENT MOUNTING.
2. EMERGENCY SHUT OFF BUTTON FOR BOILERS. COORDINATE INSTALLATION AND REQUIREMENTS FOR BOILER CONTROL PRIOR TO INSTALLATION.
3. RECEPTACLE FOR GLYCOL FILL SYSTEM (GF). COORDINATE CORD AND PLUG CONNECTION TO RECEPTACLE SHOWN WITH FINAL LOCATION OF 'GF'.

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
PENTHOUSE POWER PLAN

SHEET NO.
E-206

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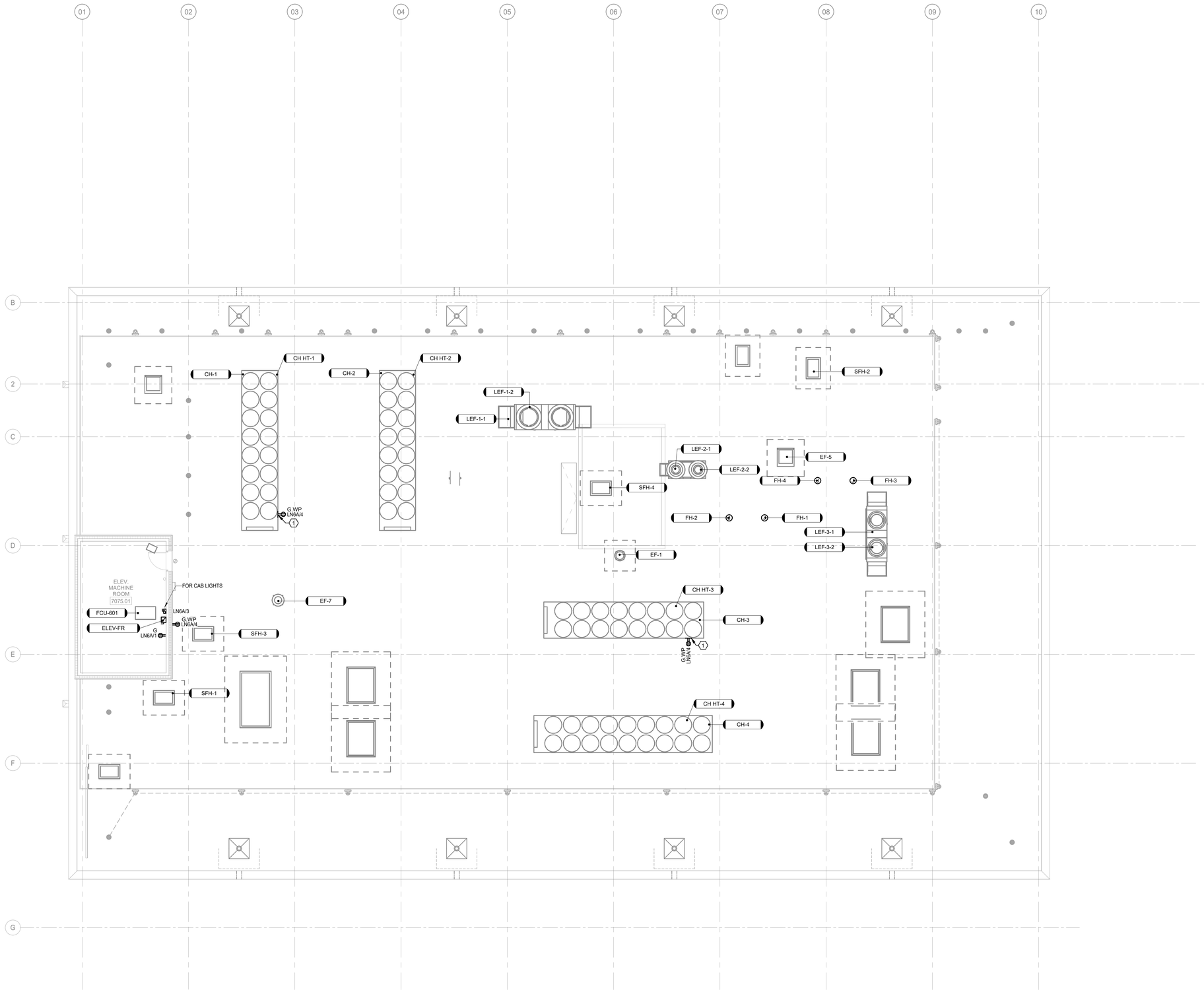

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
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5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
8. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
9. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
10. REFER TO ALL EQUIPMENT AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
11. AT LEAST 50% OF THE RECEPTACLES IN PRIVATE OFFICES, CONFERENCE ROOMS, BREAK ROOMS, CLASS ROOMS, OR AT INDIVIDUAL WORKSTATIONS MUST BE CONTROLLED WITH OCCUPANCY CONTROLS PER MICHIGAN ENERGY CODE.
12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

1. UNISTRUT MOUNT RECEPTACLE, COORDINATE EXACT LOCATION IN THE FIELD PRIOR TO ROUGH-IN.

1 ROOF POWER PLAN
SCALE: 1/8" = 1'-0"

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PLAN NORTH
TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ROOF POWER PLAN

SHEET NO.
E-207

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FIRE ALARM SYMBOL LEGEND

SYMBOL	DESCRIPTION
HALF TONE LINES	DENOTES BACKGROUND.
HEAVY SOLID LINES	DENOTES NEW (N) OR RELOCATED (R) DEVICES, EQUIPMENT, ETC.
FACU	FIRE ALARM CONTROL UNIT
FAA	FIRE ALARM ANNUNCIATOR PANEL.
NAC	NOTIFICATION ALARM CIRCUIT EXTENDER PANEL.
DACT	DIGITAL ALARM COMMUNICATION TRANSMITTER.
AMP	FIRE ALARM AMPLIFIER PANEL.
FSCP	FIRE FIGHTER'S SMOKE CONTROL PANEL.
ERRCS	EMERGENCY RESPONDER RADIO COMMUNICATION SYSTEM.
SURGE	SURGE PROTECTION DEVICE.
F	MANUAL PULL STATION.
S	CEILING MOUNTED SMOKE DETECTOR.
S	DUCT DETECTOR.
SB	CARBON MONOXIDE DETECTOR WITH SOUNDER BASE.
H	HEAT DETECTOR.
S_X	OTHER TYPES OF DETECTORS, "X" INDICATES: E ELEVATOR RECALL AND ELEVATOR PRESSURIZATION P STAIR PRESSURIZATION
XX cd	FIRE ALARM SPEAKER STROBE. "XX" INDICATES CANDELA RATING. "C" INDICATES CEILING MOUNTED.
	FIRE ALARM SPEAKER. "C" INDICATES CEILING MOUNTED.
	FIRE ALARM STROBE.
DH	DOOR HOLDER.
AIM / AOM / IM	ADDRESSABLE INPUT MODULE. ADDRESSABLE OUTPUT MODULE. ISOLATION MODULE.
	REMOTE ALARM INDICATING TEST SWITCH.
WF PS VS AS	WATER FLOW SWITCH, PRESSURE SWITCH, VALVE SUPERVISORY SWITCH, AND LOW AIR SWITCH.
ARCM / ARCR	AREA OF REFUGE COMMUNICATION MASTER UNIT. AREA OF REFUGE COMMUNICATION REMOTE UNIT.
EOL	END OF LINE RESISTOR.

ABBREVIATIONS

GENERAL

AC	ABOVE COUNTER
ACP	ACCESS CONTROL PANEL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
CB	CIRCUIT BREAKER
CKT	CIRCUIT
COF	COFFEE MAKER
CP	CONTROL PANEL
CR	CRITICAL BRANCH
CT	CURRENT TRANSFORMER
CU	COPPER
EG	EQUIPMENT GROUND
ELEV	ELEVATOR
EM	EMERGENCY
FCC	FIRE COMMAND CENTER
GAP	GENERATOR ANNUNCIATOR PANEL
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
ICE	ICE MACHINE
IG	ISOLATED GROUND
IPP	ISOLATED PPOWER PANEL
LCP	LIGHTING CONTROL PANEL
LS	LIFE SAFETY
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MEGB	MAIN ELECTRIC GROUND BUS
MLO	MAIN LUG ONLY
MTGB	MAIN TECHNOLOGY GROUND BUS
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
(N.I.C.)	NOT IN CONTRACT
NL	NIGHT LIGHT
OS	OCCUPANCY SENSOR
PNL	PANEL
REC	RECEPTACLE
REF	REFRIGERATOR
SB	OPTIONAL STAND-BY
SE	SERVICE ENTRANCE
SW	SWITCH
SWBD	SWITCHBOARD
TV	TELEVISION
UC	UNDER COUNTER
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
VEND	VENDING MACHINE
VFD	VARIABLE FREQUENCY DRIVE
VP	VANDAL PROOF
VT	VOLTAGE TRANSFORMER
WIU	WHILE IN USE
WP	WEATHERPROOF
WSU	WAYNE STATE UNIVERSITY

RACEWAY TYPES

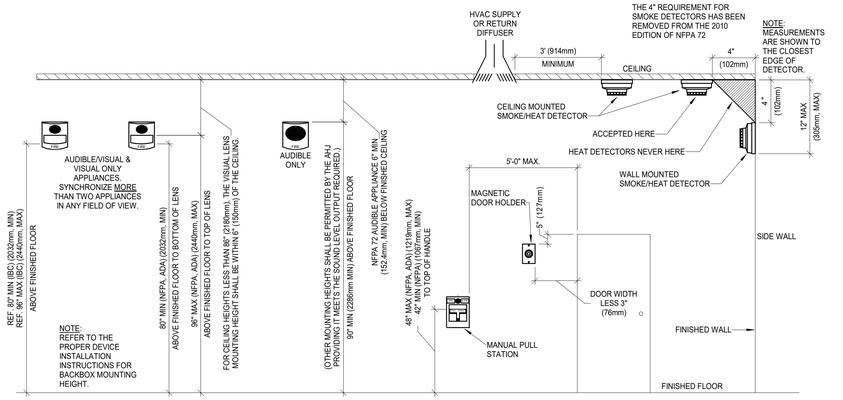
AC	ARMORED CABLE
C	CONDUIT
EMT	ELECTRIC METALIC TUBING
MC	METAL CLAD
PVC	POLYVINYL CHLORIDE
RGS	RIGID GALVANIZED STEEL

MECHANICAL EQUIPMENT

AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CHILLER
AHU	AIR HANDLING UNIT
B	BOILER
BMS	BUILDING MANAGEMENT SYSTEM
BFP	BACKFLOW PREVENTER
CH	CHILLER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
DDC	DIGITAL DIRECT CONTROL
EF	EXHAUST FAN
EUH	ELECTRIC UNIT HEATER
ERRCS	EMERGENCY RESPONDER RADIO COMMUNICATION SYSTEM
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
F	FURNACE
FCU	FAN COIL UNIT
FP	FIRE PUMP
FPC	FIRE PUMP CONTROLLER
FP/VAV	FAN-POWERED VARIABLE AIR VOLUME
HP	HEAT PUMP
JP	JOCKEY PUMP
JPC	JOCKEY PUMP CONTROLLER
MAU	MAKE-UP AIR UNIT
P	PUMP
RTU	ROOFTOP UNIT
SAHU	SPLIT SYSTEM AIR HANDLING UNIT
UH	UNIT HEATER
UST	UNDERGROUND STORAGE TANK
VAV	VARIABLE AIR VOLUME
VS	VALVE SUPERVISORY SWITCH / TAMPER SWITCH
WF	WATERFLOW SWITCH

SCOPE OF WORK

(D&R)	**DISCONNECT AND REMOVE**
(E)	**EXISTING (TO REMAIN)**
(NIC)	**NOT IN CONTRACT**
(R)	**RELOCATED**
(R&R)	**REMOVE AND RELOCATE**
(REP)	**REPLACE**
EC	**ELECTRICAL CONTRACTOR**
GC	**GENERAL CONTRACTOR**
MC	**MECHANICAL CONTRACTOR**
TC	**TECHNOLOGY CONTRACTOR**



1 DEVICE MOUNTING HEIGHTS PER NFPA 72 DETAIL
SCALE: NONE

GENERAL SHEET NOTES:

1. FIRE ALARM DEVICE LOCATIONS ARE DIAGRAMMATIC ONLY. THE FIRE ALARM SYSTEM CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ALL DEVICE LOCATIONS AND CHARACTERISTICS, BASED ON THEIR SYSTEM DEVICE SPECIFICATIONS.
2. THE FOLLOWING CODE AND STANDARDS SHALL GOVERN THE DESIGN OF THE FIRE ALARM SYSTEM.
   A. MICHIGAN BUILDING CODE (MBC), 2021 EDITION
   B. INTERNATIONAL FIRE CODE (IFC), 2021 EDITION
   C. NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE, 2019 EDITION
   D. NFPA 70 - NATIONAL ELECTRICAL CODE, 2020 EDITION
   E. CITY OF DETROIT LOCAL CODES AND ORDINANCES
   F. WAYNE STATE UNIVERSITY STANDARDS (WSU)
3. THE BUILDING IS A MIXED USED OCCUPANCY
   A. A - ASSEMBLY
   B. B - BUSINESS
   C. S-2 - MODERATE HAZARD STORAGE
4. THE BUILDING IS FULLY SPRINKLERED AND THE FIRE ALARM SYSTEM IS REQUIRED TO ELECTRONICALLY MONITOR THE SPRINKLER SYSTEM IN ACCORDANCE WITH MBC 901.6 AND 903.4.
5. THE INTENTION OF THE FIRE ALARM SYSTEM DESIGN IN THESE DRAWINGS PROVIDES THE FOLLOWING CAPABILITIES:
   A. PROVIDE A VOICE FIRE ALARM SYSTEM WITH OCCUPANT NOTIFICATION IN THE AREA OF WORK BOUNDARIES AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH MBC 907.2.13.
   B. MONITOR THE FIRE ALARM SYSTEMS OFF THE CONNECTING BUILDINGS ON THE NEW FIRE ALARM SYSTEM.
   C. PROVIDE FIRE DETECTION SYSTEM FOR THE ACTIVATION OF THE STAIR PRESSURIZATION AND ELEVATOR PRESSURIZATION SMOKE CONTROL SYSTEMS AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH MBC 900.20.7 AND 900.21.6.
6. THE FIRE ALARM SYSTEM VENDOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS RELATING TO THE SYSTEM INSTALLATION. THIS SHALL INCLUDE PAYING ALL FEES AND SCHEDULING INSPECTIONS.
7. THE CONTRACTOR AND FIRE ALARM SYSTEM VENDOR SHALL BE RESPONSIBLE TO PROVIDE ALL SERVICES REQUIRED TO PROVIDE A "COMPLETE AND OPERATIONAL SYSTEM" PER CODE REQUIREMENTS. THE FINAL FIRE ALARM AS-BUILT INSTALLATION DOCUMENTS SHALL INCLUDE ALL EQUIPMENT REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
8. THE FIRE ALARM CONTRACTOR SHALL PREPARE AND SUBMIT FIRE ALARM SHOP DRAWINGS (INCLUDING ALL TECHNICAL DATA SHEETS) TO THE BUILDING OFFICIAL AND THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO THE START OF WORK. SHOP DRAWINGS SHALL BE PREPARED IN ACCORDANCE WITH MBC 907 AND NFPA 72.
9. THE FIRE ALARM SYSTEM PROGRAMMING SHALL BE PERFORMED BY A QUALIFIED, FACTORY TRAINED FIRE ALARM TECHNICIAN AS DEFINED BY THE STATE OF MICHIGAN.
10. WORK SHALL BE SCHEDULED IN COORDINATION WITH THE OWNER. IF EXISTING EQUIPMENT OR SERVICES ARE REQUIRED TO BE IMPAIRED TO PERFORM THIS SCOPE OF SERVICES, THE CONTRACTOR SHALL NOTIFY THE OWNER DIRECTLY 48 HOURS PRIOR TO THE START OF WORK.
11. ALL WORK SHALL BE COMPLETED IN A WORKMANLIKE MANNER AND WORKPLACE PRACTICES SHALL CONFORM TO OSHA AND OTHER LOCALLY ENFORCED SAFETY STANDARDS.
12. ALL WIRING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE (NFPA 70).
13. ALL SLC AND NAC CIRCUITS SHALL BE CLASS A AND BE SURVIVABILITY LEVEL 3 AND SHALL BE WIRED FOR PROPER SUPERVISON IN ACCORDANCE WITH NFPA 72 AND THE MANUFACTURERS REQUIREMENTS. THE CONTRACTOR SHALL FOLLOW THE SPECIFIC SITE REQUIREMENTS FOR CONDUIT. WSU STANDARDS REQUIRED ALL FIRE ALARM CABLE TO BE INSTALLED IN RED METAL CONDUIT.
14. EQUIPMENT, CONTROL WIRING AND POWER WIRING FOR THE SMOKE CONTROL SYSTEM SHALL BE LOCATED WITHIN A 2-HR RATED ROOM OR FOR CONTROL AND POWER WIRING LOCATED OUTSIDE OF A 2-HR RATED ENCLOSURE, THE CABLES SHALL BE UL 2196 LISTED AND HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 2 HOURS.
15. ALL NEW JUNCTION BOXES, COVERPLATES, AND FITTINGS FOR FIRE ALARM SYSTEM WIRING SHALL BE RED, COATED BY MANUFACTURER. THE INSIDE COVER OF ALL COVERPLATES SHALL BE PERMANENTLY MARKED TO INDICATE THE PANEL AND CIRCUIT NUMBER. THE OUTSIDE OF THE COVERPLATES FOR ALL JUNCTION BOXES SHALL BE PERMANENTLY MARKED TO INDICATE "FIRE ALARM". IDENTIFICATION SHALL BE ON THE INSIDE OF COVERPLATES FOR ALL JUNCTION BOXES IF THEY ARE LOCATED IN FINISHED AREAS.
16. THE CONTRACTOR SHALL PROVIDE ANY NEW FIRE ALARM CONTROL UNITS AND POWER SUPPLIES WITH 120-VOLT AC POWER FROM DEDICATED CIRCUIT. THE PRIMARY DISCONNECTS SHALL HAVE A RED BREAKER LOCK. ALL CIRCUITS SHALL BE PERMANENTLY IDENTIFIED AT THE DISCONNECTING MEANS AND AT THE FIRE ALARM CONTROL UNIT. ALL POWER CIRCUITS SHALL BE IN ACCORDANCE WITH NFPA 72 AND THE NATIONAL ELECTRIC CODE.
17. ALL FIRE ALARM SYSTEM WIRING SHALL COMPLY WITH NFPA 70 AND NFPA 72. PROVIDE AND INSTALL ALL NECESSARY WIRING AND SUPPORTING COMPONENTS INCLUDING BUT NOT LIMITED TO END-OF-LINE RESISTORS, ADDRESSABLE RELAYS, MODULES, DRIVERS, ETC.
18. ALL WIRING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE (NFPA 70) USING FPL, FPLR OR FPLP TYPE CABLE OF THE AWG SIZE SPECIFIED OR LARGER. CONDUIT SHALL BE RED IN BACK OF HOUSE AREAS AND SHALL BE PAINTED TO MATCH THE CEILING OR WALL IN ALL OTHER AREAS.
19. ALL FIRE ALARM PENETRATIONS REQUIRED THROUGH FIRE RATED CONSTRUCTION SHALL BE PROTECTED AS REQUIRED BY MBC 714. FIRE STOPPING SHALL BE PERFORMED USING APPROVED METHODS AND SHALL BE USED TO MAINTAIN FIRE SEPARATION RESISTANCE RATINGS. REFER TO ARCHITECTURAL LIFE SAFETY PLANS AND SPECIFICATIONS FOR WALL RATINGS, LOCATIONS, AND CONSTUCTION TYPE. FIRE STOPPING METHOD SHALL BE INSTALLED TO CONFORM TO WALL RATING AND CONSTRUCTION.
20. WHERE GROUNDING AND BONDING OF CONDUIT AND BOXES IS REQUIRED, GROUNDING AND BONDING SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH THE NFPA 70 ARTICLE 250.
21. ALL CONTROL AND POWER SUPPLY PANELS TO BE MOUNTED 6' - 0" TO THE TOP OF THE PANEL A.F.F.
22. THE CONTRACTOR SHALL INSTALL ALL FIRE ALARM DEVICES INCLUDING INITIATING AND INDICATING DEVICES, MAIN CONTROL PANEL, POWER SUPPLIES, TRANSPONDERS, ANNUNCIATORS AND ALL ASSOCIATED EQUIPMENT. NO DIVERSION PERMITTED UNLESS DISCUSSED WITH THE ENGINEER PRIOR TO ROUGH-IN. SYSTEM SHALL COMPLY WITH THE APPLICABLE MBC AND NFPA REQUIREMENTS. EXTERIOR DEVICES SHALL BE EXTERIOR RATED.
23. FINAL LOCATIONS AND QUANTITY OF REMOTE POWER SUPPLY PANELS SHALL BE DETERMINED BY THE FIRE ALARM SYSTEM SUPPLIER DURING THE SHOP DRAWING STAGE AND PRIOR TO INSTALLATION. THE SHOP DRAWINGS SHALL INDICATE FINAL QUANTITY REQUIRED AND PROPOSED LOCATIONS FOR REVIEW AND APPROVAL BY THE ARCHITECT / ENGINEER. LOCATIONS SHALL BE 2-HOUR RATED AND THEY SHALL BE INSTALLED IN ELECTRICAL ROOMS.
24. COORDINATE INSTALLATION AND EXACT LOCATION WITH OTHER CEILING MOUNTED EQUIPMENT AND DEVICES.
25. ALL CEILING MOUNTED DEVICES SHALL BE INSTALLED IN THE CENTER OF THE CEILING TILE.
26. DETECTORS SHALL NOT BE MOUNTED IN DIRECT AIR STREAM OF AIR SUPPLY OUTLETS (MINIMUM DISTANCE OF 3' - 0").
27. A SMOKE DETECTOR SHALL BE INSTALLED ABOVE EACH FIRE ALARM CONTROL PANEL, REMOTE POWER SUPPLY PANELS, AND TRANSMITTING EQUIPMENT.
28. MANUAL PULL STATIONS SHALL BE INSTALLED AT 48" MAX ABOVE FINISHED FLOOR TO THE ACTIVATING HANDLE. MANUAL PULL STATIONS SHALL BE INSTALLED AT EXITS AND ADDITIONAL PULL STATIONS SHALL BE INSTALLED SO THAT TRAVEL DISTANCE TO THE NEAREST STATION DOES NOT EXCEED 200 FEET.
28. DUCT TYPE SMOKE DETECTORS INSTALLED IN CONCEALED LOCATIONS MORE THAN 10' - 0" A.F.F., FIRE ALARM CONTROL PANELS, AND FIRE ALARM ANNUNCIATOR PANELS SHALL HAVE KEYED REMOTE STATUS LED STATIONS AS PER NFPA 72. COORDINATE FINAL LOCATIONS IN FIELD WITH THE HVAC CONTRACTOR, EQUIPMENT AND THE ARCHITECT/ENGINEER. DUCT DETECTORS FOR HVAC EQUIPMENT SHALL BE PROVIDED ON THE RETURN AIR SYSTEM PER MICHIGAN MECHANICAL CODE (MMC) SECTION 606. DUCT DETECTORS SHALL BE PROVIDED FOR COMBINATION FIRE SMOKE DAMPERS.
29. COORDINATE THE INSTALLATION OF FLOW AND TAMPER SWITCH ASSEMBLIES WITH THE FIRE PROTECTION CONTRACTOR.
30. PROVIDE PRIMARY AND ALTERNATE ELEVATOR RECALL AND FIRE FIGHTERES HAT. PROVIDE SHUT TRIP AND POWER SUPERVISION. SMOKE DETECTORS SHALL BE LOCATED WITHIN 5'-0" OF ELEVATOR DOORS FOR RECALL. IF SPRINKLER HEADS ARE LOCATED IN THE ELEVATOR SHAFT OR PIT, A HEAT DETECTOR SHALL BE LOCATED WITHIN 2'-0" OF SPRINKLER HEAD FOR SHUNT TRIP. PROVIDE A SMOKE DETECTOR IN THE ELEVATOR MACHINE ROOM FOR FIREFIGHTER'S HAT. COORDINATE WITH FIRE PROTECTION CONTRACTOR.
31. CONTRACTOR TO PROVIDE CONTROL RELAYS AS NECESSARY FOR THE PROPER OPERATION DURING A FIRE EVACUATION FOR ALL DOOR HOLDERS OR FIRE ACCORDION DOORS.
32. CONTRACTOR TO PROVIDE CONTROL RELAYS AS NECESSARY FOR HVAC FAN SHUTDOWN BY THE BUILDING MANAGEMENT SYSTEM (BMS) UPON DETECTION OF THE SERVING AIR HANDLER. CONTRACTOR TO PROVIDE CONTROL RELAYS AS NECESSARY FOR THE CLOSING OF SMOKE DAMPERS UPON DETECTION OF THE ASSOCIATED DUCT DETECTOR.
33. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR IDENTIFYING ANY ACCESS CONTROLLED DOORS THAT EMPLOY MAGNETIC OR OTHER LOCKING FEATURES THAT COULD HINDER BUILDING EGRESS. THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH EACH PARTY TO ENSURE THAT ALL THE ACCESS CONTROLLED DOORS ARE CONFIGURED TO RELEASE UPON AN ACTIVE FIRE ALARM TO COMPLY WITH MBC 1010.2.11.
34. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER ALL DOORS THAT WILL REQUIRE UL LISTED MAGNETIC DOOR HOLDERS TO BE SYNCHRONIZED WITH THE FIRE ALARM CONTROL UNIT. DOOR HOLDERS SHALL RELEASE ONLY ON ACTIVATION OF ADJACENT SMOKE DETECTORS.
35. ALL SPEAKER/STROBE AND STROBE DEVICES SHALL BE MOUNTED AT A HEIGHT OF 80" A.F.F. OR 6" BELOW DROPPED CEILING, WHICHEVER IS LESS. ALL DEVICES AT OR BELOW 80" A.F.F. SHALL NOT EXTEND MORE THAN 4" FROM THE VERTICAL MOUNTING SURFACE INCLUDING BOX, RACEWAY, AND MOUNTING ACCESSORY.
36. ALL STROBES SHALL BE SYNCHRONIZED.
37. FIRE ALARM NOTIFICATION APPLIANCES SHALL BE WHITE WITH RED LETTERING "FIRE".
38. FIRE PROTECTION CONTRACTOR SHALL COORDINATE FINAL DEVICE LOCATIONS WITH INTERIORS TO AVOID PLACEMENT ON FEATURE WALLS.
39. THE EMERGENCY VOICE ALARM SYSTEM SHALL HAVE PRE-RECORDED MESSAGES FOR EACH EMERGENCY SITUATION, INCLUDING BUT NOT LIMITED TO, SEVERE WEATHER WARNING. CONTRACTOR SHALL COORDINATE WITH OWNER PRIOR TO PROGRAMMING REGARDING THE NUMBER AND NATURE OF REQUIRED AUDIO.
40. CONTRACTOR SHALL FOLLOW OWNER STANDARDS FOR LABELING INCLUDING LOCATION OF LABEL OF DEVICE CIRCUIT / ADDRESS OF DEVICE.
41. OWNER TO OBTAIN NEW MONITORING ACCOUNT WITH A SUPERVISING STATION MONITORING SERVICE AS REQUIRED BY NFPA 72. MONITORING ACCOUNT SHALL BE A PROPRIETARY SERVICE TO WAYNE STATE UNIVERSITY POLICE DEPARTMENT.
42. THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE FINAL TEST AND INSPECTIONS WITH THE CITY OF DETROIT AND MUST NOTIFY THE OWNER'S DESIGNATED AGENT 48 HOURS PRIOR TO ANY INSPECTIONS OR TESTS.
43. INSTALLATION AND PROGRAMMING SHALL NOT BE CONSIDERED COMPLETE UNTIL THE INSTALLING CONTRACTOR HAS TESTED AND EVALUATED EVERY ALARM INITIATING DEVICE FOR PROPER RESPONSE AND INDICATION AND ALL NOTIFICATION APPLIANCES FOR EFFECTIVENESS IN ACCORDANCE WITH NFPA 72 REQUIREMENTS. THE ENGINEER OF RECORD SHALL BE GIVEN ADVANCE NOTICE OF THESE TESTS TO PERMIT THEM TO BE WITNESSED IF DESIRED. THE COMPLETED SYSTEM MUST OPERATE FOR AT LEAST TWO DAYS PRIOR TO THE FINAL ACCEPTANCE TEST WITH THE FIRE MARSHAL.
44. THE FIRE ALARM CONTRACTOR SHALL FURNISH TO THE OWNER OR OWNER'S AGENT DOCUMENTATION OF PRE-TESTING EACH DEVICE AND TWO CORRECTED SETS OF AS-BUILT DRAWINGS, INCLUDING DETAILED MAINTENANCE REQUIREMENTS AND A RECORD COPY OF THE SITE-SPECIFIC SOFTWARE, IN ACCORDANCE WITH MBC AND NFPA 72 AT THE TIME OF THE FINAL ACCEPTANCE TEST.
45. A COMPLETE SET OF OPERATING AND INSTRUCTION MANUALS SHALL BE DELIVERED TO THE OWNER PRIOR TO COMPLETION OF THE FINAL ACCEPTANCE TEST.
46. PRIOR TO PERFORMING ACCEPTANCE TESTING, COPIES OF THE ACCEPTANCE TESTING PROCEDURES, SHALL BE PROVIDED TO THE OWNER OR OWNER'S AGENT, THE ENGINEER OF RECORD AND THE CITY OF DETROIT FIRE MARSHAL. THE TESTING PROCEDURE SHALL INCLUDE A CHECKLIST LISTING EACH COMPONENT, INITIATING DEVICE, AND NOTIFICATION APPLIANCE INDIVIDUALLY WITH ZONE AND POINT IDENTIFICATIONS FOR FINAL ACCEPTANCE TESTING.
47. WHEN THE ACCEPTANCE TESTS HAVE BEEN COMPLETED TO THE SATISFACTION OF THE CONTRACTOR'S JOB PROJECT MANAGER, FIRE MARSHAL, AND THE OWNER OR OWNER'S AGENT, A COMPLETED RECORD OF COMPLETION, IN ACCORDANCE WITH NFPA 72 AND MBC, COSIGNED BY EACH ATTESTING TO THE SATISFACTORY COMPLETION OF SAID TESTING SHALL BE FORWARDED TO THE OWNER OR OWNER'S AGENT, THE ENGINEER OF RECORD AND OWNER.
48. THE FIRE ALARM CONTRACTOR SHALL THOROUGHLY AND COMPETENTLY INSTRUCT THE OWNER'S DESIGNATED EMPLOYEES IN THE PROPER OPERATION OF THE SYSTEM AND ALL REQUIRED MAINTENANCE.
49. CONTRACTOR SHALL WARRANTY THE FIRE ALARM SYSTEM FOR A PERIOD OF NOT LESS THAN 1 YEAR FROM THE DATE THE SYSTEM IS ACCEPTED INTO SERVICE BY THE FIRE MARSHAL. THE CONTRACTOR SHALL REPAIR OR REPLACE FIRE-ALARM SYSTEM EQUIPMENT AND COMPONENTS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN THIS WARRANTY PERIOD AT NO ADDITIONAL COST TO THE OWNER.
50. CONTRACTOR SHALL INCLUDE IN THE BASE BID COST FOR INSTALLATION OF UP TO ONE (1) ADDITIONAL FIRE ALARM NOTIFICATION APPLIANCE PER FLOOR THAT MAY BE REQUIRED OR REQUESTED BY THE OWNER'S ENGINEER AND/OR AHJ DURING FIRE ALARM TESTING AND INSPECTIONS. COSTS MUST INCLUDE INSTALLATION OF STROBES, SPEAKERS, OR ANY COMBINATION THEREOF, AND INCLUDE ALL DEVICE INSTALLATION, CONDUIT, WIRING, PROGRAMMING, AND TESTING.

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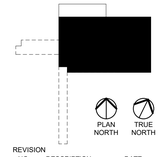
KEY PLAN



REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
FIRE ALARM NOTES, LEGEND, AND DETAILS

SHEET NO.
E-300

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PLOT DATE: 9/26/2025 12:24:25 PM TEMPLATE VERSION: 23.0.4

1 LEVEL 01 FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

PLOT DATE: 10/15/2025 1:32:18 PM TEMPLATE VERSION: 23.0.4

FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.

(#) SHEET KEY NOTES:

1. THE FIRE COMMAND CENTER SHALL COMPLY WITH MBC SECTION 911. THE FCC SHALL COMPLY WITH NFPA 72 AND CONTAIN THE FOLLOWING FEATURES:
   a. THE EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM CONTROL UNIT. FACU SHALL COMPLY WITH UL 864 AND LISTED AS SMOKE CONTROL EQUIPMENT PER MBC 909.12.
   b. THE FIRE DEPARTMENT COMMUNICATIONS SYSTEM.
   c. FIRE DETECTION AND ALARM SYSTEM.
   d. ANNUNCIATOR UNIT VISUALLY INDICATING THE LOCATION OF THE ELEVATORS AND WHETHER THEY ARE OPERATIONAL.
   e. STATUS INDICATORS AND CONTROLS FOR AIR DISTRIBUTION SYSTEMS. (PROVIDED BY OTHERS)
   f. THE FIRE FIGHTER'S CONTROL PANEL REQUIRED BY MBC SECTION 909.16 FOR SMOKE CONTROL SYSTEMS INSTALLED IN THE BUILDING. SEE M-516 FOR PANEL DIAGRAM AND SMOKE CONTROL SEQUENCE OF OPERATIONS.
   g. CONTROLS FOR UNLOCKING INTERIOR EXIT STAIRWAY DOORS SIMULTANEOUSLY.
   h. SPRINKLER VALVE AND WATERFLOW DETECTOR DISPLAY PANELS.
   i. EMERGENCY AND STANDBY POWER STATUS INDICATORS. (PROVIDED BY OTHERS)
   j. A TELEPHONE FOR FIRE DEPARTMENT USE WITH CONTROLLED ACCESS TO THE PUBLIC TELEPHONE SYSTEM. (PROVIDED BY OTHERS)
   k. FIRE PUMP STATUS INDICATORS.
   l. SCHEMATIC BUILDING PLANS INDICATING THE TYPICAL FLOOR PLAN AND DETAILING THE BUILDING CORE, MEANS OF EGRESS, FIRE PROTECTION SYSTEMS, FIRE FIGHTER AIR REPLENISHMENT SYSTEM, FIRE-FIGHTING EQUIPMENT AND FIRE DEPARTMENT ACCESS AND LOCATION OF FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITIONS. (PROVIDED BY OTHERS)
   m. APPROVED BUILDING INFORMATION CARD THAT CONTAINS INFORMATION REQUIRED IN MBC SECTION 911.1.6(13). (PROVIDED BY OTHERS)
   n. A WORK TABLE. (PROVIDED BY OTHERS)
   o. GENERATOR SUPERVISION DEVICES, MANUAL START AND TRANSFER FEATURES. (PROVIDED BY OTHERS)
   p. PUBLIC ADDRESS SYSTEM, WHERE SPECIFICALLY REQUIRED BY OTHER SECTIONS OF THE MBC. (PROVIDED BY OTHERS)
   q. ELEVATOR FIRE RECALL SWITCH IN ACCORDANCE WITH ASME A17.1/CSA B44. (PROVIDED BY OTHERS)
   r. ELEVATOR EMERGENCY OR STANDBY POWER SELECTOR SWITCHES, WHERE EMERGENCY OR STANDBY POWER IS PROVIDED. (PROVIDED BY OTHERS)
2. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR THE FIRE PUMP SYSTEM. COORDINATE EXACT QUANTITIES WITH THE FIRE PROTECTION CONTRACTOR.
3. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR THE FIRE PUMP CONTROLLER.
   a. FIRE PUMP RUNNING.
   b. FIRE PUMP PHASE REVERSAL.
   c. FIRE PUMP POWER AVAILABLE.
   d. FIRE PUMP PHASE LOSS.
   e. FIRE PUMP IN ALTERNATE POWER SOURCE.
4. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR MONITORING OF THE TWO GENERATORS. PROVIDE SURGE PROTECTION DEVICES FOR WIRING THAT LEAVES THE BUILDING. MODULES ARE TO BE LOCATED IN THE WEATHERPROOF HOUSING OF THE GENERATOR.
5. PROVIDE WEATHERPROOF SPEAKER STROBE ONLY TO ALARM ON WATER FLOW. LOCATE NEAR FIRE DEPARTMENT CONNECTIONS.
6. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULE FOR STANDPIPE ISOLATION VALVE. COORDINATE EXACT LOCATION WITH THE FIRE PROTECTION CONTRACTOR.
7. PROVIDE SMOKE DETECTOR OUTSIDE OF SMOKE PROOF ENCLOSURE, LOCATED IN AN APPROVED LOCATION PER MBC 909.20.7. ALL WIRING FOR SMOKE CONTROL SYSTEMS SHALL MEET THE REQUIREMENTS OF NFPA 70 AND BE FULLY ENCLOSED WITHIN CONTINUOUS RACEWAYS PER MBC 909.12.2.
8. PROVIDE HEAT DETECTOR IN ELEVATOR PIT FOR ELEVATOR SHUNT TRIP. LOCATE WITHIN 24" OF SPRINKLER PER NFPA 72 21.3.8 AND 21.4.2. COORDINATE LOCATION OF ELEVATOR CONTROLS WITH ELEVATOR CONTRACTOR. HEAT DETECTOR SHALL BE OF A LOWER TEMPERATURE AND LOWER RESPONSE TIME INDEX THAN THE SPRINKLER PER NFPA 72 21.4.1.
9. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR THE FIRE SPRINKLER SYSTEM. PROVIDE ADDITIONAL MODULE FOR STANDPIPE ISOLATION VALVE. COORDINATE EXACT QUANTITIES AND LOCATIONS WITH THE FIRE PROTECTION CONTRACTOR.
10. PROVIDE DUCT DETECTORS FOR THE FIRE SMOKE DAMPERS AT THE CEILING. PROVIDE CEILING MOUNTED REMOTE TEST SWITCHES.
11. LOCATE PULL STATION ON MULLION.
12. PROVIDE ADDRESSABLE OUTPUT MODULE FOR DOOR CONTROL PANELS.

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KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 1 FIRE ALARM PLAN

SHEET NO.
E-301

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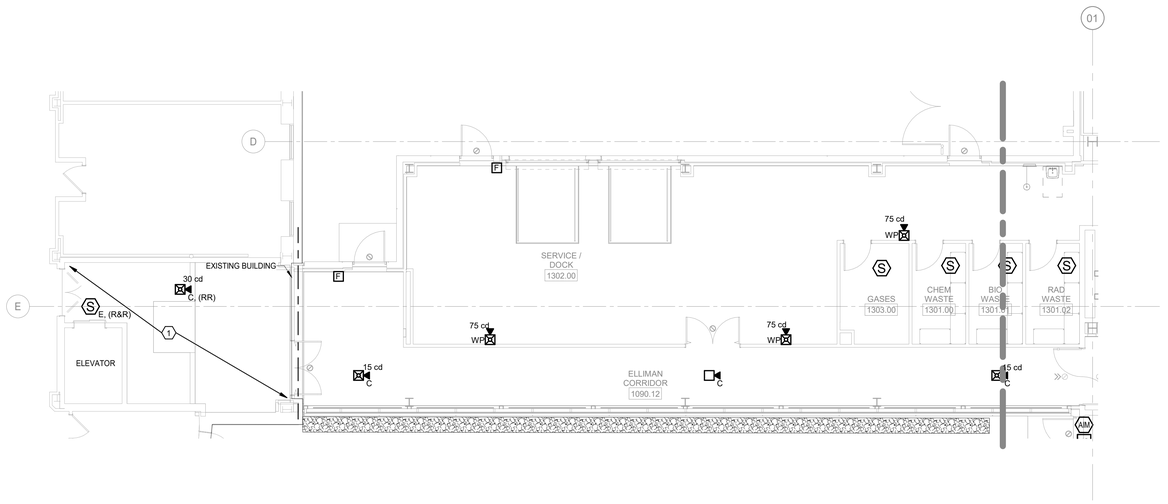
FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.

(#) SHEET KEY NOTES:

1. DEVICES IN THE EXISTING SERVICE DOCK SHALL REMAIN ON THE ELLIMAN BUILDING FIRE ALARM SYSTEM.



1 LEVEL 01 FIRE ALARM PLAN - SERVICE DOCK
SCALE: 1/8" = 1'-0"

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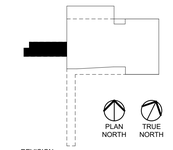
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 FIRE ALARM PLAN - SERVICE DOCK

SHEET NO.
E-301.2

OSBORN ENGINEERING
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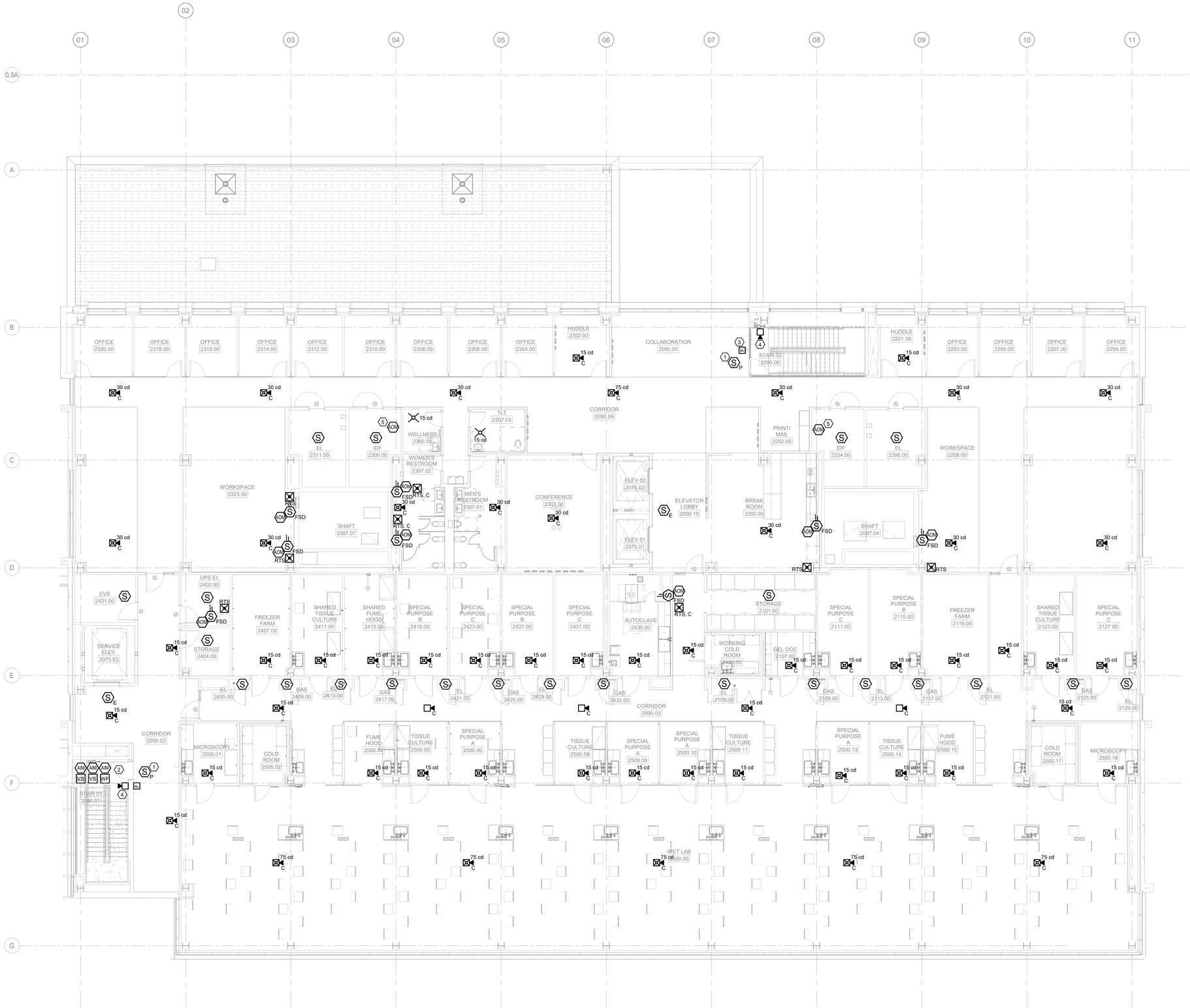

1 LEVEL 02 FIRE ALARM PLAN

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

FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.

(#) SHEET KEY NOTES:

1. PROVIDE SMOKE DETECTOR OUTSIDE OF SMOKE PROOF ENCLOSURE. LOCATED IN AN APPROVED LOCATION PER MBC 909.20.7. ALL WIRING FOR SMOKE CONTROL SYSTEMS SHALL MEET THE REQUIREMENTS OF NFPA 70 AND BE FULLY ENCLOSED WITHIN CONTINUOUS RACEWAYS PER MBC 909.12.2.
2. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR THE FIRE SPRINKLER SYSTEM. COORDINATE EXACT QUANTITIES AND LOCATIONS WITH THE FIRE PROTECTION CONTRACTOR.
3. ATTACH PULL STATION TO PODIUM LOCATION IN FRONT OF GLASS STAIR.
4. SPEAKERS LOCATED IN THE STAIRS SHALL BE ON A SEPARATE CIRCUIT FROM THE OTHER NOTIFICATION APPLIANCES.
5. PROVIDE ADDRESSABLE OUTPUT MODULE FOR DOOR CONTROL PANELS.

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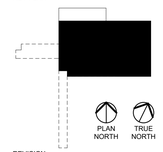
KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 2 FIRE ALARM PLAN

SHEET NO.
E-302

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FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
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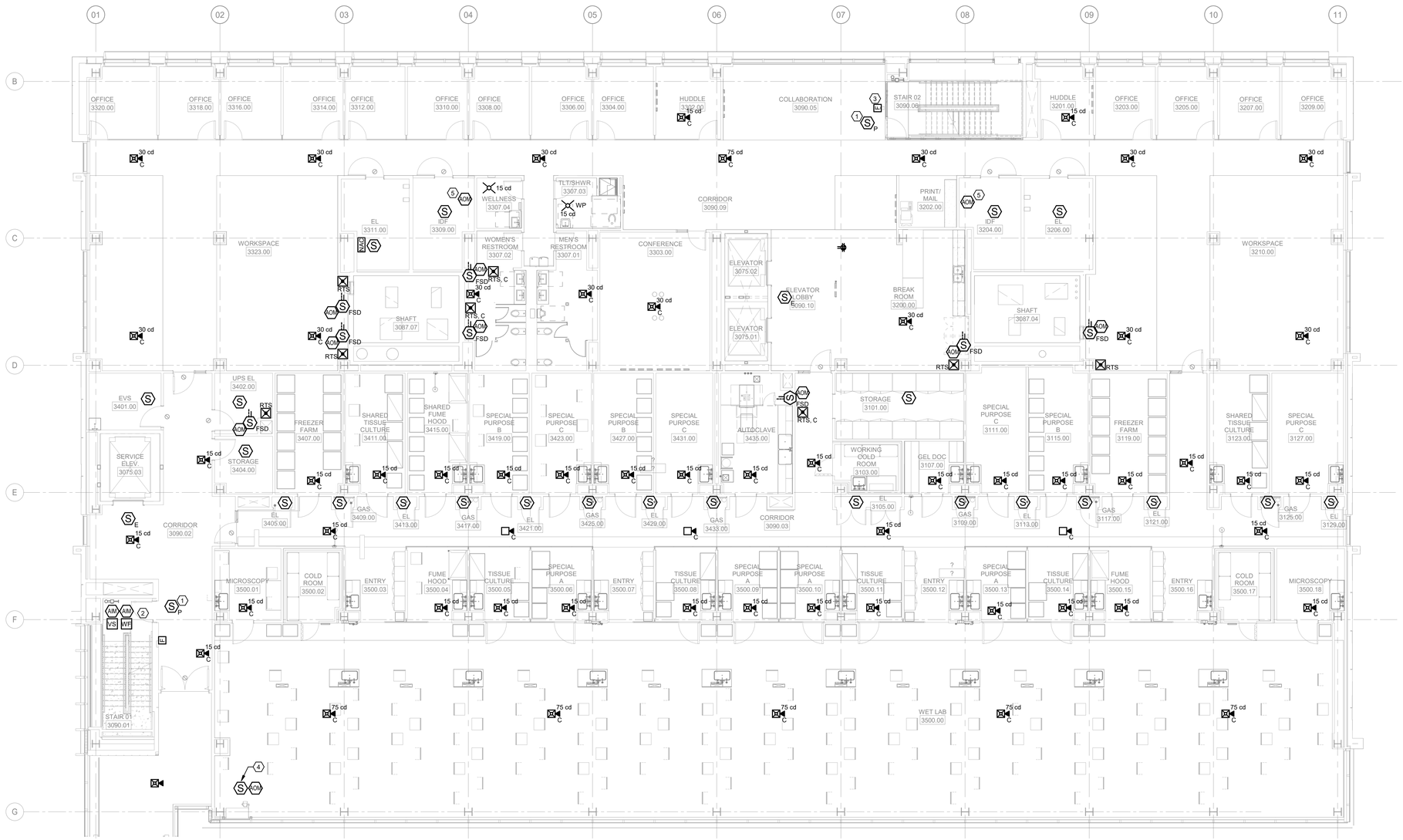

1 LEVEL 03 FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

(#) SHEET KEY NOTES:

1. PROVIDE SMOKE DETECTOR OUTSIDE OF SMOKE PROOF ENCLOSURE. LOCATED IN AN APPROVED LOCATION PER MBC 909.20.7. ALL WIRING FOR SMOKE CONTROL SYSTEMS SHALL MEET THE REQUIREMENTS OF NFPA 70 AND BE FULLY ENCLOSED WITHIN CONTINUOUS RACEWAYS PER MBC 909.12.2.
2. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR THE FIRE SPRINKLER SYSTEM. COORDINATE EXACT QUANTITIES AND LOCATIONS WITH THE FIRE PROTECTION CONTRACTOR.
3. ATTACH PULL STATION TO PODIUM LOCATION IN FRONT OF GLASS STAIR.
4. FOR ROLLING FIRE SHUTTER SHUTDOWN. SHUTTER SHALL CLOSE ON SMOKE DETECTOR ALARM AND ON FUSIBLE LINK DISCONNECTING.
5. PROVIDE ADDRESSABLE OUTPUT MODULE FOR DOOR CONTROL PANELS.

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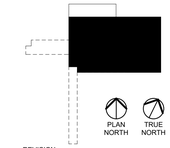
KEY PLAN



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 FIRE ALARM PLAN

SHEET NO.
E-303

OSBORN ENGINEERING
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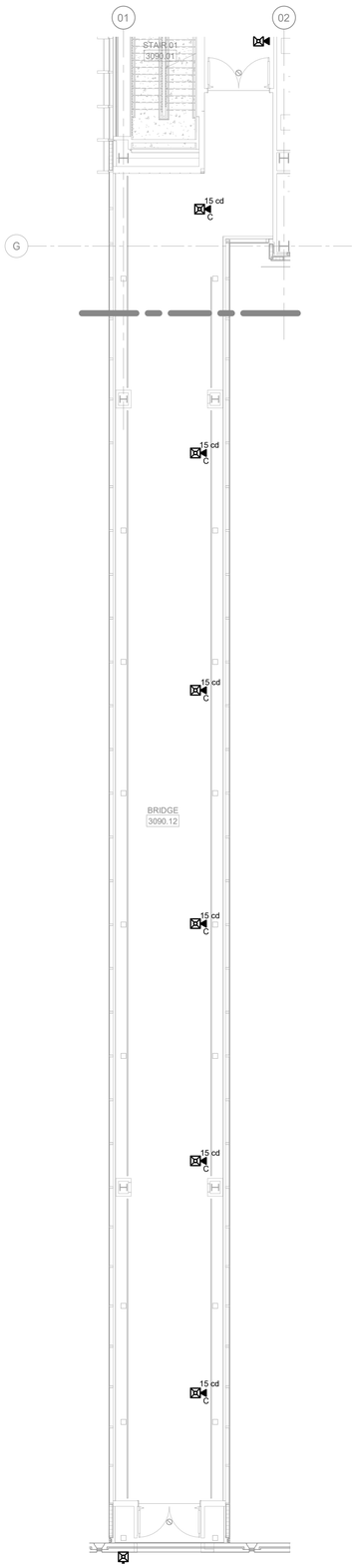

1 LEVEL 03 FIRE ALARM PLAN - BRIDGE
SCALE: 1/8" = 1'-0"

FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.

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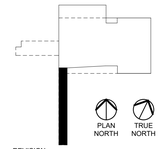
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 FIRE ALARM PLAN - BRIDGE

SHEET NO.
E-303.3

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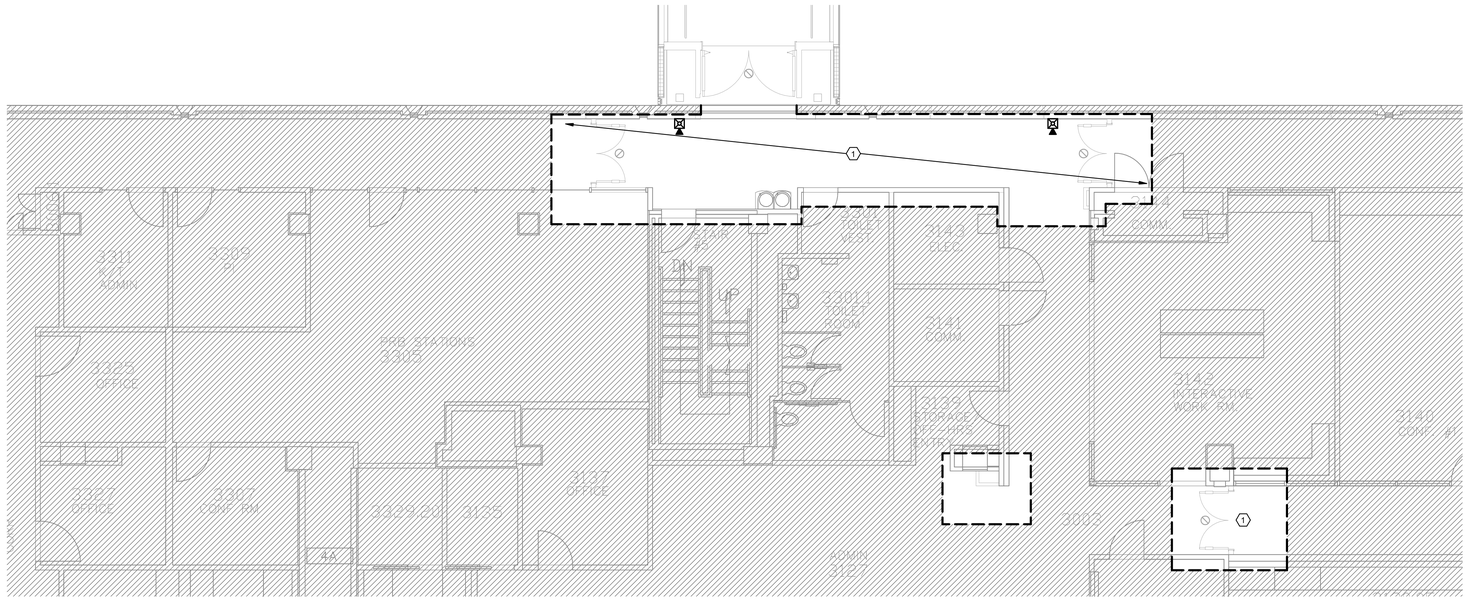
FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.

(#) SHEET KEY NOTES:

1. RELOCATE EXISTING FIRE ALARM DEVICES FOR NEW WALLS. PROVIDE NEW NOTIFICATION APPLIANCES IF REQUIRED. FIRE ALARM CONTRACTOR TO SURVEY EXISTING SCOTT HALL TO REVIEW WHAT IS CURRENTLY INSTALLED. SIMPLEX SPEAKER STROBES ARE CURRENTLY INSTALLED IN THE BUILDING. SPEAKER STROBE DEVICES SHALL BE INSTALLED PER NFPA 72.



1 LEVEL 03 FIRE ALARM PLAN - SCOTT HALL
SCALE: 3/16" = 1'-0"

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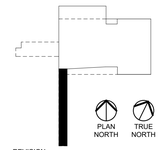
Date: 2025.09.25 14:24:22-04'00'

KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 3 FIRE ALARM PLAN - SCOTT HALL

SHEET NO.
E-303.4

OSBORN ENGINEERING
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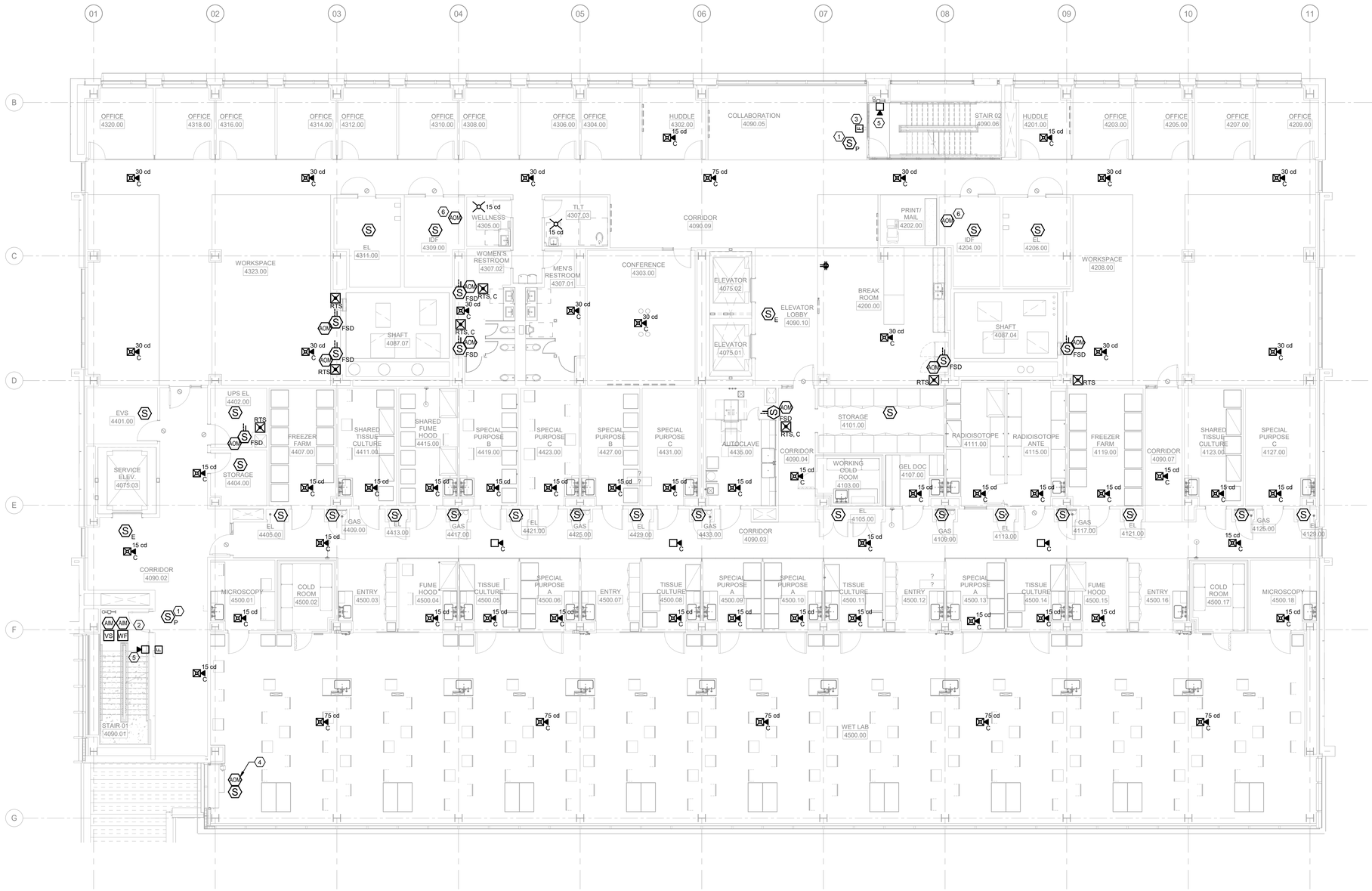

1 LEVEL 04 FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.

(#) SHEET KEY NOTES:

1. PROVIDE SMOKE DETECTOR OUTSIDE OF SMOKE PROOF ENCLOSURE. LOCATED IN AN APPROVED LOCATION PER MBC 909.20.7. ALL WIRING FOR SMOKE CONTROL SYSTEMS SHALL MEET THE REQUIREMENTS OF NFPA 70 AND BE FULLY ENCLOSED WITHIN CONTINUOUS RACEWAYS PER MBC 909.12.2.
2. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR THE FIRE SPRINKLER SYSTEM. COORDINATE EXACT QUANTITIES AND LOCATIONS WITH THE FIRE PROTECTION CONTRACTOR.
3. ATTACH PULL STATION TO PODIUM LOCATION IN FRONT OF GLASS STAIR.
4. FOR ROLLING FIRE SHUTTER SHUTDOWN. SHUTTER SHALL CLOSE ON SMOKE DETECTOR ALARM AND ON FUSIBLE LINK DISCONNECTING.
5. SPEAKERS LOCATED IN THE STAIRS SHALL BE ON A SEPARATE CIRCUIT FROM THE OTHER NOTIFICATION APPLIANCES.
6. PROVIDE ADDRESSABLE OUTPUT MODULE FOR DOOR CONTROL PANELS.

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Digitally signed by Jonathan D Cantwell
Location: Orlando, FL
Contact Info: jcantwell@osborn-eng.com
Date: 2025.09.25 14:24:24-04'00'

KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 4 FIRE ALARM PLAN

SHEET NO.
E-304

OSBORN ENGINEERING
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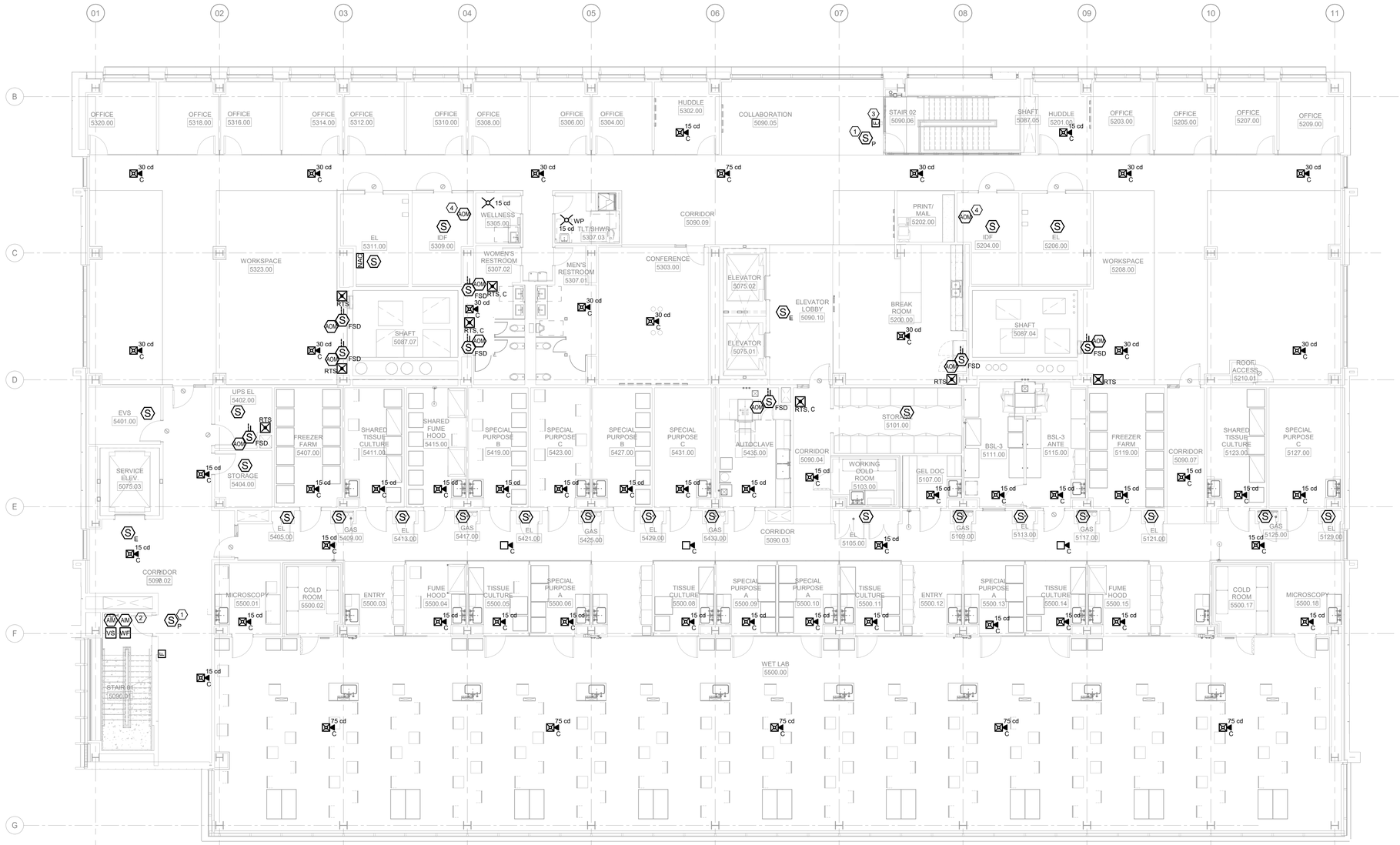
FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.



1 LEVEL 05 FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

SHEET KEY NOTES:

1. PROVIDE SMOKE DETECTOR OUTSIDE OF SMOKE PROOF ENCLOSURE, LOCATED IN AN APPROVED LOCATION PER MBC 909.20.7. ALL WIRING FOR SMOKE CONTROL SYSTEMS SHALL MEET THE REQUIREMENTS OF NFPA 70 AND BE FULLY ENCLOSED WITHIN CONTINUOUS RACEWAYS PER MBC 909.12.2.
2. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR THE FIRE SPRINKLER SYSTEM. COORDINATE EXACT QUANTITIES AND LOCATIONS WITH THE FIRE PROTECTION CONTRACTOR.
3. ATTACH PULL STATION TO PODIUM LOCATION IN FRONT OF GLASS STAIR.
4. PROVIDE ADDRESSABLE OUTPUT MODULE FOR DOOR CONTROL PANELS.

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KEY PLAN

PLAN NORTH
TRUE NORTH

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HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 5 FIRE ALARM PLAN

SHEET NO.
E-305

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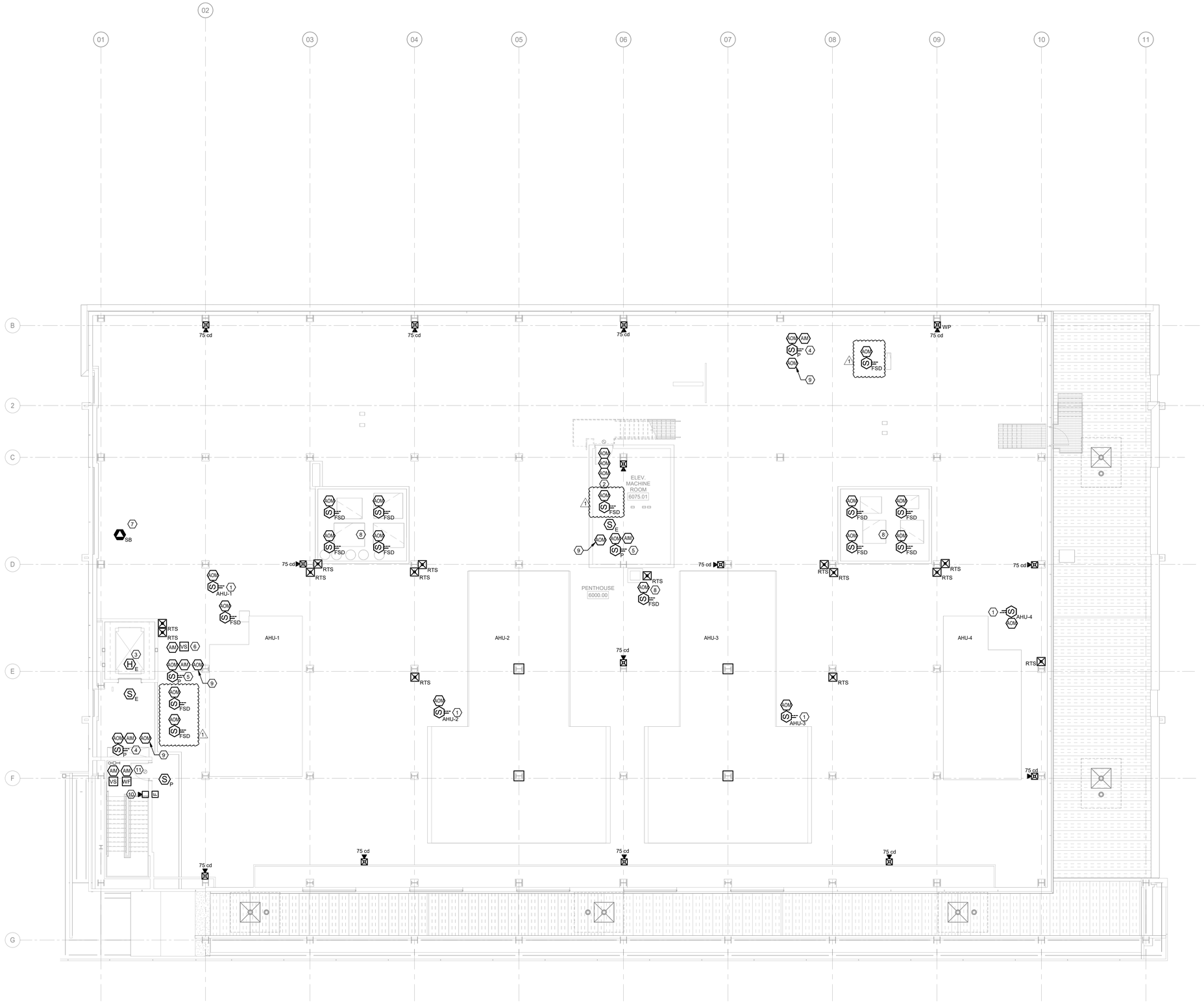

1 PENTHOUSE FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.

(#) SHEET KEY NOTES:

1. PROVIDE DUCT SMOKE DETECTORS IN RETURN AIR SYSTEMS WITH A DESIGN CAPACITY GREATER THAN 2,000 CFM PER MICHIGAN MECHANICAL CODE (MMC) 606.2.1.
2. PROVIDE ADDRESSABLE OUTPUT MODULES FOR ELEVATOR PRIMARY RECALL, ALTERNATE RECALL AND FIRE FIGHTER'S HAT. NO SHUNT TRIP FOR PASSENGER ELEVATOR. PROVIDE SMOKE DETECTOR AT THE TOP OF SHAFT FOR FOR MACHINE ROOM LESS ELEVATOR PER NFPA 72 21.3.6. COORDINATE LOCATION OF ELEVATOR CONTROLS WITH ELEVATOR CONTRACTOR.
3. PROVIDE HEAT DETECTOR AT THE TOP OF SHAFT FOR ELEVATOR SHUNT TRIP. LOCATE WITHIN 24" OF SPRINKLER PER NFPA 72 21.4.2. HEAT DETECTOR SHALL BE OF A LOWER TEMPERATURE AND LOWER RESPONSE TIME INDEX THAN THE SPRINKLER PER NFPA 72 21.4.1.
4. PROVIDE DUCT DETECTOR WITH ADDRESSABLE OUTPUT MODULE FOR SHUTDOWN OF STAIR PRESSURIZATION FAN. PROVIDE ADDRESSABLE INPUT MODULE TO MONITOR FAN STATUS. COORDINATE EXACT LOCATIONS WITH MECHANICAL CONTRACTORS.
5. PROVIDE DUCT DETECTOR WITH ADDRESSABLE OUTPUT MODULE FOR SHUTDOWN OF ELEVATOR PRESSURIZATION FAN. PROVIDE ADDRESSABLE INPUT MODULE TO MONITOR FAN STATUS.
6. PROVIDE FIRE ALARM TIE IN FOR VALVE SUPERVISORY SWITCH FOR ROOF FIRE DEPARTMENT HOSE VALVE. COORDINATE EXACT LOCATION WITH FIRE PROTECTION CONTRACTOR.
7. PROVIDE CARBON MONOXIDE DETECTOR WITH SOUNDER BASE NEAR FUEL FIRED BOILERS.
8. PROVIDE DUCT DETECTORS FOR FIRE SMOKE DAMPERS LOCATED IN THE FLOOR ENTERING THE SHAFT.
9. PROVIDE ADDRESSABLE OUTPUT MODULE AT THE MOTOR STARTER FOR FANS FOR STAIR AND ELEVATOR PRESSURIZATION. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR. CONTROL AND POWER WIRING SHALL BE LOCATED WITHIN A 2-HOUR RATED ENCLOSURE OR SHALL BE LISTED IN ACCORDANCE WITH UL 2196 AND SHALL HAVE A FIRE RESISTANCE RATING OF NOT LESS THAN 2-HR PER MBC 909.20.7.1.
10. SPEAKERS LOCATED IN THE STAIRS SHALL BE ON A SEPARATE CIRCUIT FROM THE OTHER NOTIFICATION APPLIANCES.
11. PROVIDE FIRE ALARM ADDRESSABLE INPUT MODULES FOR THE FIRE SPRINKLER SYSTEM. COORDINATE EXACT QUANTITIES AND LOCATIONS WITH THE FIRE PROTECTION CONTRACTOR.

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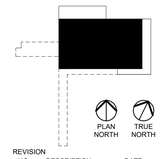
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/25

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
PENTHOUSE FIRE ALARM PLAN

SHEET NO.
E-306

OSBORN ENGINEERING
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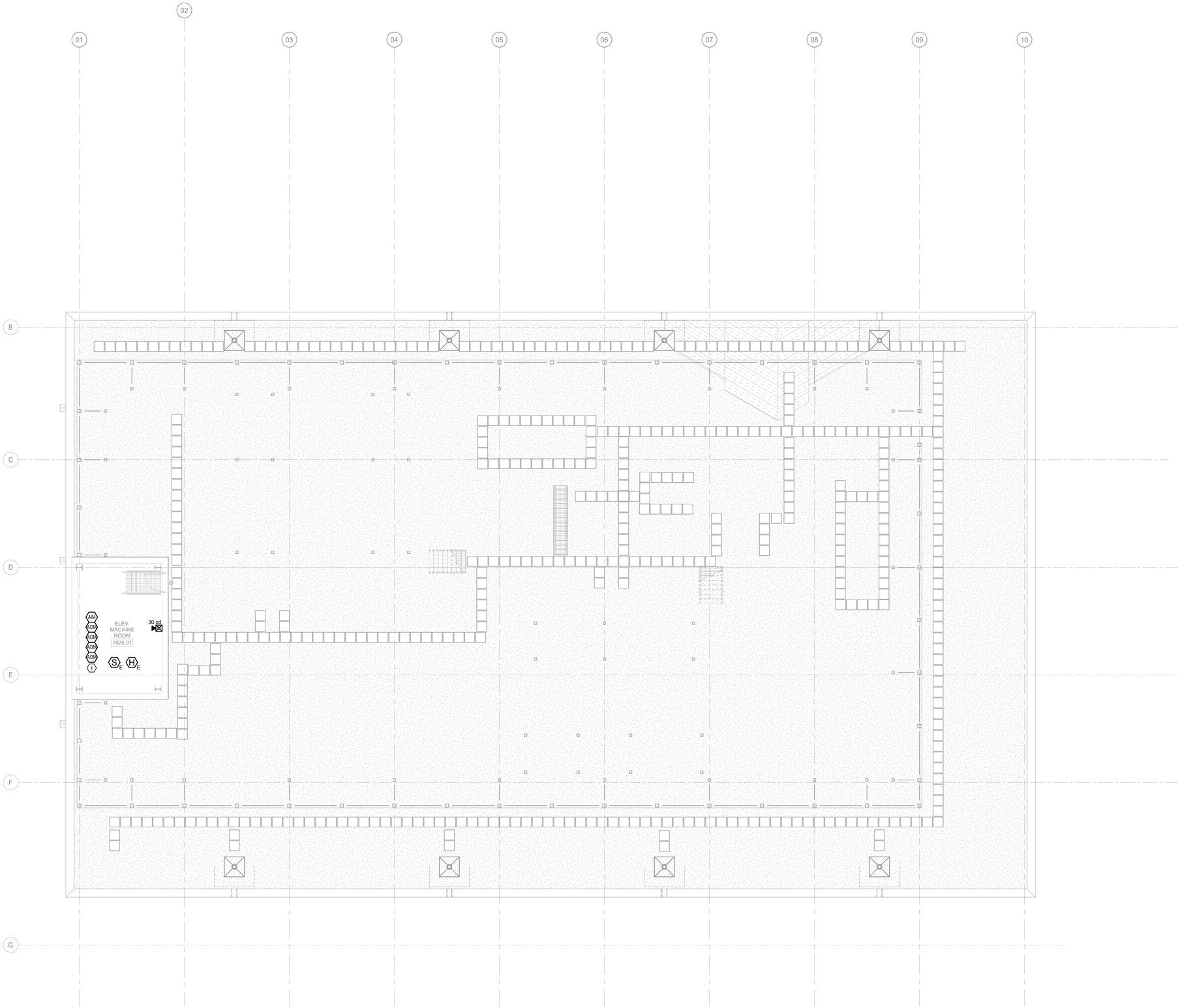
FIRE ALARM SHEET GENERAL NOTES:

1. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND GENERAL NOTES: DWG. E-300 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. WAYNE STATE UNIVERSITY (WSU) STANDARDS REQUIRE SMOKE DETECTION WITHIN ALL MECHANICAL, ELECTRICAL, STORAGE, JANITORIAL, IDF/MDF AND HAZARDOUS MATERIAL ROOMS.
3. ELECTRICAL ROOM EL X311.00 IS 2-HOUR FIRE RATED. X REFERENCES FLOOR NUMBER. ADDITIONAL NAC AND AMP PANELS SHALL BE LOCATED IN THIS ROOM FOR SURVIVABILITY. LOCATE SMOKE DETECTORS WITHIN 5'-0" OF THE PANELS.



1 ROOF FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

SHEET KEY NOTES:

1. PROVIDE ADDRESSABLE OUTPUT MODULES FOR ELEVATOR PRIMARY RECALL, ALTERNATE RECALL, FIRE FIGHTER'S HAT, AND SHUNT TRIP. PROVIDE ADDRESSABLE INPUT MODULE FOR SHUNT TRIP POWER SUPERVISION FOR SERVICE ELEVATOR. PROVIDE HEAT DETECTOR IN ELEVATOR MACHINE ROOM FOR ELEVATOR SHUNT TRIP. LOCATE WITHIN 24" OF SPRINKLER PER NFPA 72 21.4.2. HEAT DETECTOR SHALL BE OF A LOWER TEMPERATURE AND LOWER RESPONSE TIME INDEX THAN THE SPRINKLER PER NFPA 72 21.4.1. COORDINATE LOCATION OF ELEVATOR CONTROLS WITH ELEVATOR CONTRACTOR.

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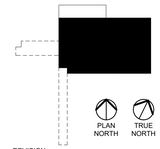
KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ROOF FIRE ALARM PLAN

SHEET NO.
E-307

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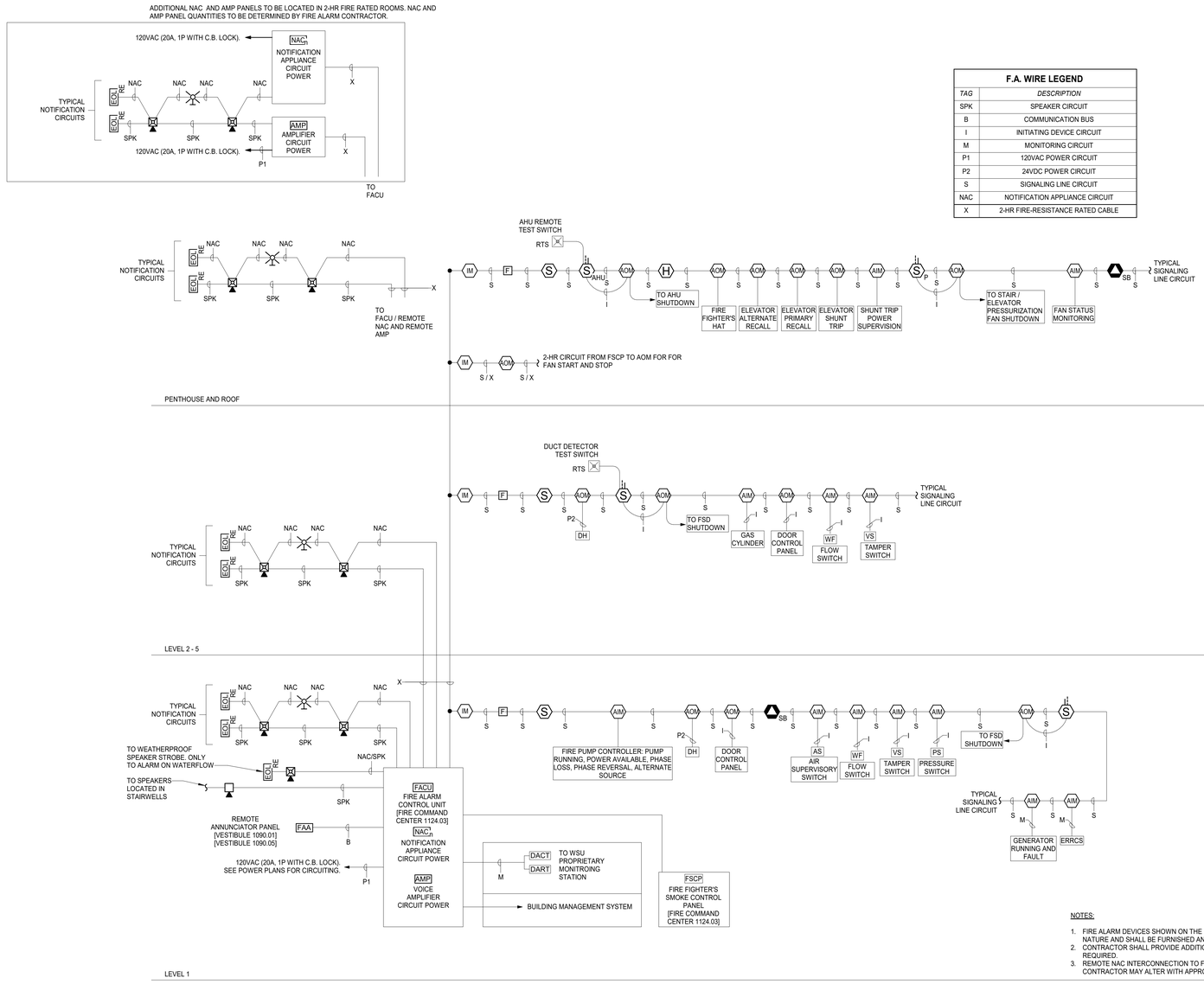

NOTES:

1. FIRE ALARM DEVICES SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND SHALL BE FURNISHED AND INSTALLED PER CODES.
2. CONTRACTOR SHALL PROVIDE ADDITIONAL DEVICES AND PANELS AS REQUIRED.
3. REMOTE NAC INTERCONNECTION TO FACU IS REPRESENTED. CONTRACTOR MAY ALTER WITH APPROVAL FROM ENGINEER OF RECORD.

1 FIRE ALARM RISER - VOICE EVACUATION SYSTEM

SCALE: NONE

PLOT DATE: 9/25/2025 12:26:20 PM TEMPLATE VERSION: 23.0.4

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HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
FIRE ALARM RISER

SHEET NO.
E-308

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FIRE ALARM SEQUENCE OF OPERATIONS

SYSTEM INPUTS	A: INITIATE GENERAL ALARM CONDITION* CONTINUOUSLY OPERATE AUDIO AND VISUAL BUILDING ALARM.	B: INITIATE GENERAL ALARM SIGNAL AT FACU AND TRANSMIT TO A SUPERVISING STATION	C: INITIATE DISTINCT TEMPORAL 4 TONE OR EMERGENCY MESSAGE	D: INITIATE SUPERVISORY SIGNAL AT FACU AND TRANSMIT TO A SUPERVISING STATION	E: INITIATE TROUBLE SIGNAL AT FACU AND TRANSMIT TO A SUPERVISING STATION	F: INITIATE ELEVATOR SHAFT PRESSURIZATION SYSTEM IN ZONE OF ALARM. REFER TO M-516	G: INITIATE STAIR PRESSURIZATION SYSTEM IN ZONE OF ALARM. REFER TO M-516	H: CLOSE LOCAL FIRE SHUTTER OR FIRE DOOR.	I: RELEASE MAGNETIC DOOR HOLDERS AND CLOSE FIRE AND SMOKE DOORS.	J: CLOSE LOCAL DAMPER	K: SHUT DOWN LOCAL AIR HANDLING UNIT	L: SHUT DOWN LOCAL STAIR PRESSURIZATION FAN.	M: SHUT DOWN LOCAL ELEVATOR PRESSURIZATION FAN.	N: RECALL ELEVATOR TO PRIMARY RECALL FLOOR, LEVEL 1	O: RECALL ELEVATOR TO ALTERNATE FLOOR, LEVEL 2	P: ACTIVATE FIREFIGHTERS' HAT FOR ELEVATOR.	Q: INITIATE ASSOCIATED ELEVATOR SHUTDOWN AND DISCONNECT ELEVATOR POWER.	R: ACTIVATE AUDIBLE AND VISIBLE LOCAL ALARM SIGNALS OUTSIDE OF HAZARDOUS MATERIALS STORAGE ROOM.	S: ACTIVATE ONLY FOR LIVE EMERGENCY VOICE MESSAGES. DO NOT SOUND ALARM IN STAIRWELLS AND ELEVATORS.
MANUAL PULL STATION	●	●																	
LOCAL EMERGENCY ALARM STATION FOR HAZARDOUS MATERIALS STORAGE ROOMS			●	●														●	
SMOKE DETECTOR	●	●																	
SMOKE DETECTOR AT FIRE RATED SHUTTER (ACCORIDAN OR COILING)	●	●						●											
SMOKE DETECTOR AT CORRIDOR FIRE AND SMOKE DOORS	●	●							●										
SMOKE DETECTOR OUTSIDE STAIRWELLS	●	●					●												
CARBON MONOXIDE DETECTOR			●	●															
MAIN LEVEL ELEVATOR LOBBY SMOKE DETECTOR (LEVEL 1)	●	●				●										●			
ELEVATOR LOBBY SMOKE DETECTOR OTHER THAN PRIMARY RECALL FLOOR	●	●				●									●				
ELEVATOR HOISTWAY AND MACHINE ROOM SMOKE DETECTOR				●											●		●		
ELEVATOR PIT SMOKE/HEAT DETECTOR				●											●			●	
ELEVATOR SHAFT AND MACHINE ROOM HEAT DETECTOR	●	●																●	
DUCT SMOKE DETECTOR (DAMPER)				●						●									
DUCT SMOKE DETECTOR (AHU RETURN)				●							●								
DUCT SMOKE DETECTOR (STAIR PRESS. FAN)				●								●							
DUCT SMOKE DETECTOR (ELEVATOR PRESS. FAN)				●									●						
SPRINKLER WATER FLOW SWITCH	●	●				●	●												
WATER CONTROL VALVE TAMPER SWITCH				●															
FIRE ALARM SPEAKERS IN STAIRWELLS																			●
LOSS OF VOLTAGE TO ELEVATOR SHUNT TRIP CIRCUIT				●															
FIRE ALARM SYSTEM AC POWER FAIL					●														
FIRE ALARM SYSTEM OPEN CIRCUIT					●														
FIRE ALARM SYSTEM GROUND FAULT					●														
SLC/INITIATING DEVICE CIRCUIT FAIL					●														
NOTIFICATION APPLIANCE CIRCUIT SHORT					●														
BATTERY CHARGE FAILURE					●														
FACU OR ANNUNCIATOR ABNORMAL SWITCH POSITION					●														
ABNORMAL AC VOLTAGE AT FACU					●														
FIRE PUMP RUNNING				●															
FIRE PUMP POWER FAILURE				●															
FIRE PUMP PHASE LOSS				●															
FIRE PUMP PHASE REVERSAL				●															
FIRE PUMP CONNECTED TO ALTERNATE POWER SOURCE				●															
GENERATOR RUNNING				●															
GENERATOR FAULT				●															
FIRE FIGHTER'S SMOKE CONTROL PANEL MANUAL CONTROLS				●		●	●						●	●					

**GENERAL BUILDING ALARM SHALL CONSIST OF THE FOLLOWING. ACTIONS:

1. CONTINUOUSLY OPERATE FIRE ALARM NOTIFICATION APPLIANCES.
2. IDENTIFY AND TRANSMIT ALARM TO FIRE ALARM CONTROL UNIT (FACU).
3. TRANSMIT AN ALARM SIGNAL TO THE SUPERVISING STATION.
4. RECORD EVENTS IN SYSTEM MEMORY.
5. UNLOCK DOORS IN DESIGNATED EGRESS PATHS.
6. A MEANS FOR DEACTIVATING NOTIFICATION APPLIANCES IS PERMITTED IN ACCORDANCE WITH NFPA 72 10.12. EXCEPT NOTIFICATION APPLIANCES INSTALLED ON THE EXTERIOR SHALL NOT BE INCLUDED. BOTH VISUAL AND AUDIBLE NOTIFICATION SHALL BE EFFECTED. SUBSEQUENT ALARMS SHALL REACTIVATE NOTIFICATION APPLIANCES.
7. THE FIRE ALARM ACTIVATION SHALL BE ZONED AS FOLLOWS:
   A. NOTIFICATION ON THE FLOOR OF ALARM.
   B. NOTIFICATION AND THE FLOORS ABOVE AND BELOW THE FLOOR OF ALARM.

NOTE: DO NOT ACTIVATE FIRE ALARM SPEAKERS IN EXIT STAIRWELLS AND ELEVATORS FOR AUTOMATIC EMERGENCY VOICE MESSAGES. SPEAKERS IN STAIRWELLS AND ELEVATORS FOR EMERGENCY LIVE VOICE MESSAGES ONLY.

NOTE: SEE MECHANICAL SHEET M-516 FOR SMOKE CONTROL

S FIRE ALARM SEQUENCE OF OPERATIONS

PLOT DATE: 9/25/2025 12:06:21 PM TEMPLATE VERSION: 23.0.4

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Location: Orlando, FL
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Date: 2025.09.25 14:54:29-04'00'

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
FIRE ALARM SEQUENCE OF OPERATIONS

SHEET NO.
E-309

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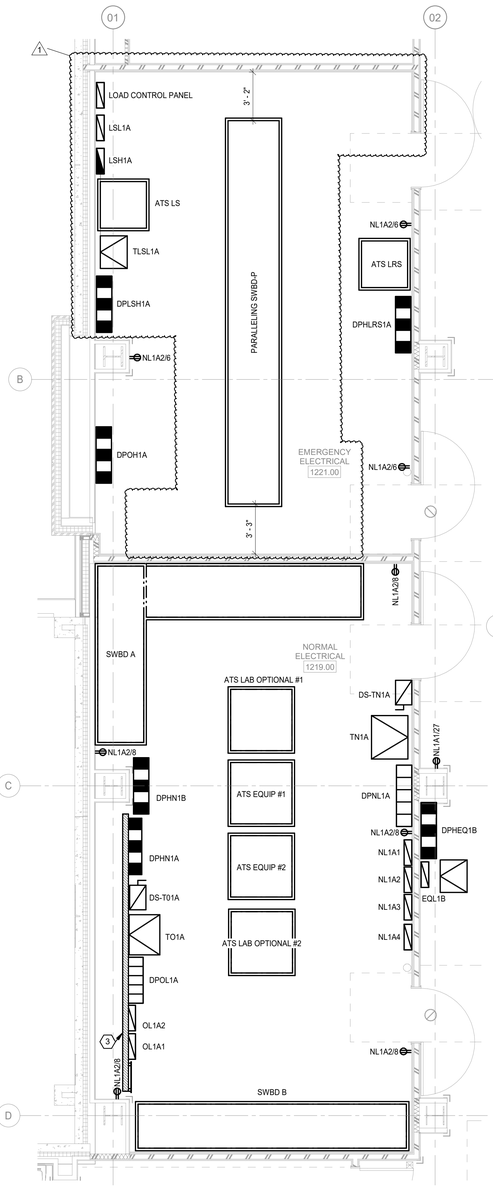
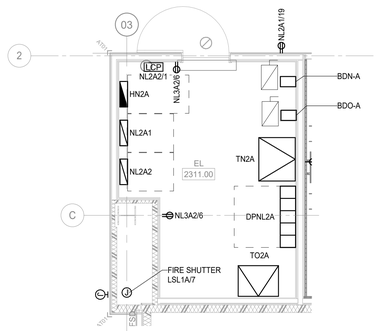
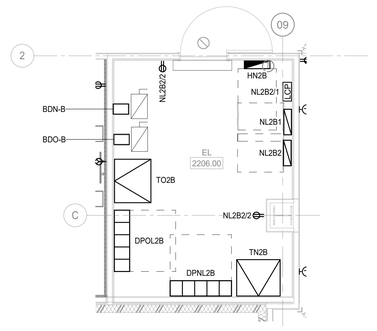


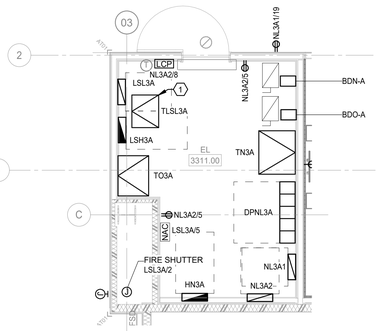
1 ENLARGED LEVEL 1 NORMAL AND EMERGENCY ELECTRICAL ROOMS POWER PLAN
SCALE: 1/4" = 1'-0"



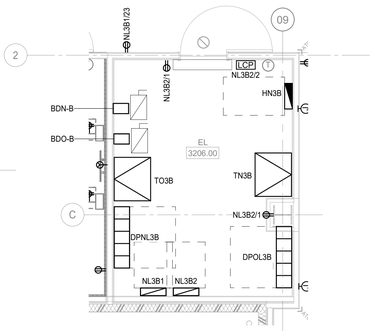
3 ENLARGED LEVEL 2 WEST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



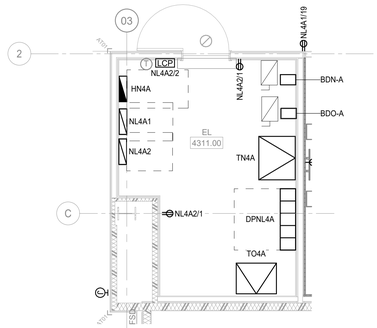
4 ENLARGED LEVEL 2 EAST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



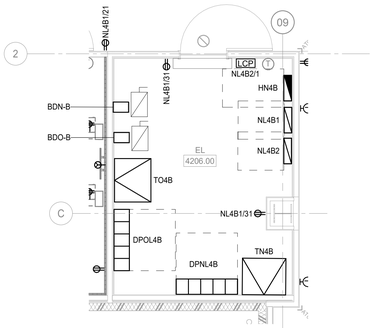
5 ENLARGED LEVEL 3 WEST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



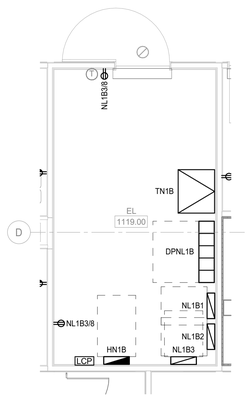
6 ENLARGED LEVEL 3 EAST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



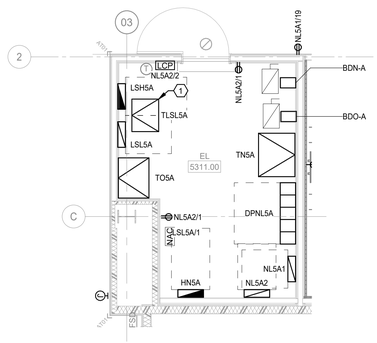
7 ENLARGED LEVEL 4 WEST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



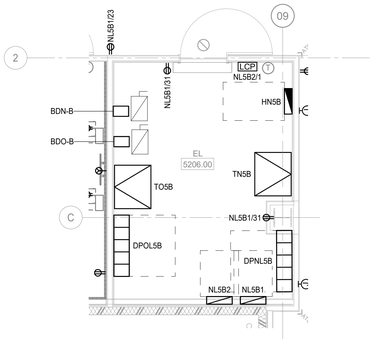
8 ENLARGED LEVEL 4 EAST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



2 ENLARGED LEVEL 1 EAST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



9 ENLARGED LEVEL 5 WEST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"



10 ENLARGED LEVEL 5 EAST ELECTRICAL ROOM POWER PLAN
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES:

1. ALL EXIT SIGNS, EMERGENCY LIGHTING BATTERY PACKS, EMERGENCY LUMINAIRES (ON GENERATOR OR EMERGENCY LIGHTING BATTERY PACKS INTEGRAL TO LUMINAIRE), AND NIGHT LIGHTS (DENOTED 'NL') SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
2. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
3. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
4. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE #12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
6. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, 1#12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
7. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
8. LIGHTING BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
9. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
10. REFER TO E-500's SERIES FOR OCCUPANCY SENSOR WIRING DIAGRAMS. CONTRACTOR TO VERIFY OCCUPANCY SENSOR LOCATION PER MANUFACTURERS SPECIFICATIONS.
11. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
12. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
13. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.

(#) SHEET KEY NOTES:

1. TRAPEZE MOUNT TRANSFORMER ABOVE PANELS, REFER TO DETAIL ON PAGE E-511 FOR MORE INFORMATION.
2. EQUIPMENT SHALL BE MOVED OFF OF WALL AND MOUNTED ON UNI-STRUT. COORDINATE EXACT LOCATION IN THE FIELD PRIOR TO ROUGH-IN.
3. PROVIDE UNISTRUT FOR EQUIPMENT TO MOUNT TO. VERIFY FINAL LOCATION AND MOUNTING WITHIN ROOM PRIOR TO INSTALLATION.

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T.P. GASSER
ENGINEER
No. 47045
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10/17/2025

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PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ENLARGED ELECTRICAL ROOMS PLANS
SHEET NO.
E-401

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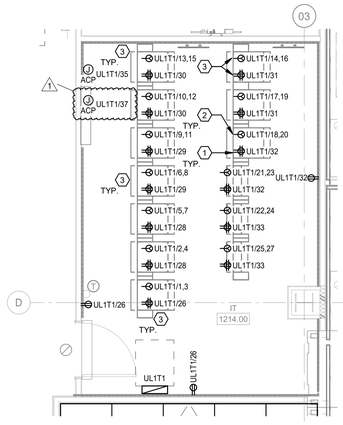
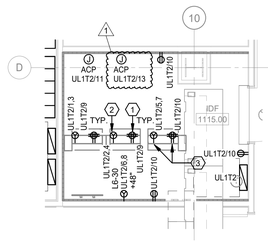


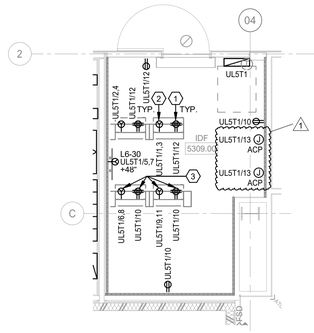
1 ENLARGED LEVEL 1 WEST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



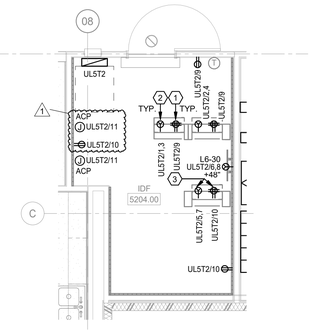
2 ENLARGED LEVEL 1 EAST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



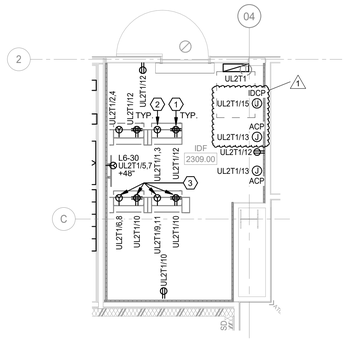
9 ENLARGED LEVEL 5 WEST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



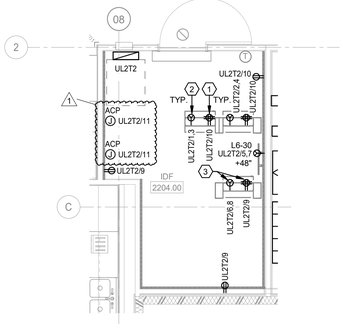
10 ENLARGED LEVEL 5 EAST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



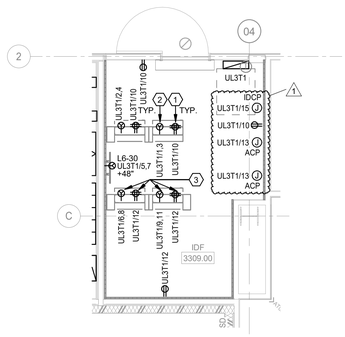
3 ENLARGED LEVEL 2 WEST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



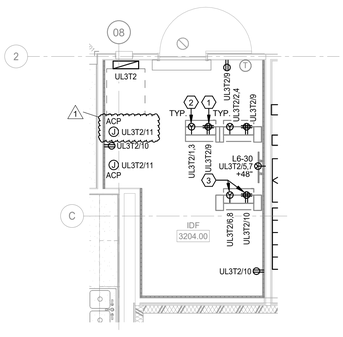
4 ENLARGED LEVEL 2 EAST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



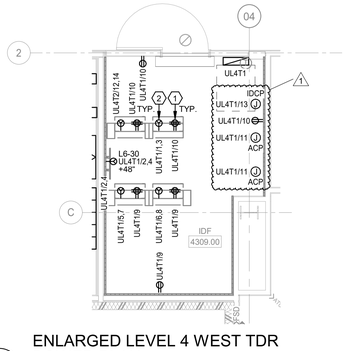
5 ENLARGED LEVEL 3 WEST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



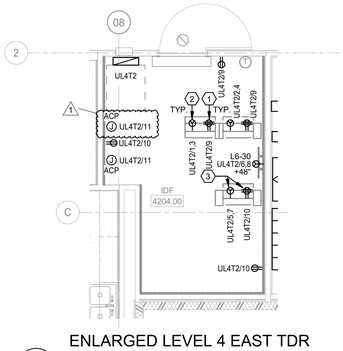
6 ENLARGED LEVEL 3 EAST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



7 ENLARGED LEVEL 4 WEST TDR POWER PLAN

SCALE: 1/4" = 1'-0"



8 ENLARGED LEVEL 4 EAST TDR POWER PLAN

SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES:

1. ALL EXIT SIGNS, EMERGENCY LIGHTING BATTERY PACKS, EMERGENCY LUMINAIRES (ON GENERATOR OR EMERGENCY LIGHTING BATTERY PACKS INTEGRAL TO LUMINAIRE), AND NIGHT LIGHTS (DENOTED 'NL') SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
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13. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.

(#) SHEET KEY NOTES:

1. PROVIDE 120V, 20A QUAD RECEPTACLE (RACK MOUNTED). COORDINATE FINAL LOCATION WITH TECHNOLOGY CONTRACTOR PRIOR TO ROUGH-IN.
2. PROVIDE 208V, NEMA L6-30 TYPE RECEPTACLE 2#10, 1#10 EG-3/4"C. TO BE MOUNTED UP HIGH FOR RACK MOUNTING. COORDINATE FINAL LOCATION WITH TECHNOLOGY CONTRACTOR PRIOR TO ROUGH-IN.
3. RECEPTACLE DEDICATED FOR FUTURE IT RACK.

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T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

PLAN NORTH
TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

1 ADDENDUM No. 1 10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ENLARGED ELECTRICAL TDR PLANS

SHEET NO.
E-402

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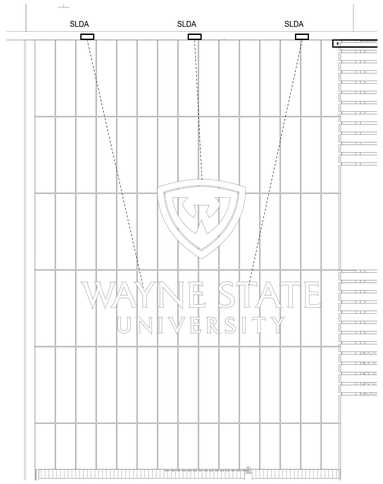
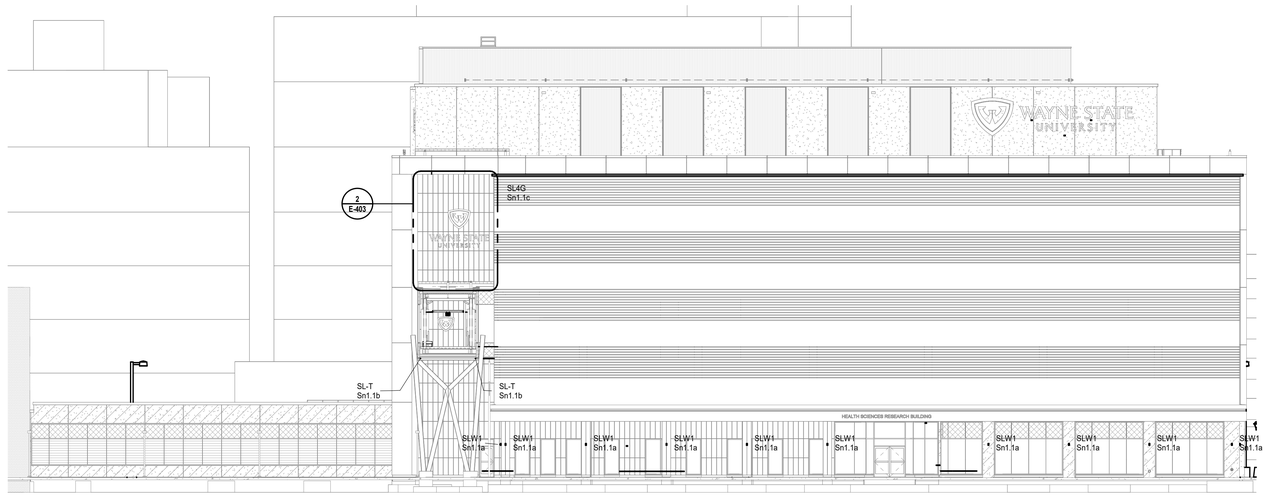


2 WSU SIGN LIGHTING
SCALE: 1/4" = 1'-0"



1 SOUTH BUILDING ELEVATION
SCALE: 1/16" = 1'-0"

GENERAL SHEET NOTES:

1. ALL EXIT SIGNS, EMERGENCY LIGHTING BATTERY PACKS, EMERGENCY LUMINAIRES (ON GENERATOR OR EMERGENCY LIGHTING BATTERY PACKS INTEGRAL TO LUMINAIRE), AND NIGHT LIGHTS (DENOTED 'NL') SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
2. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
3. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
4. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE #12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
6. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, 1#12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
7. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
8. LIGHTING BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
9. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
10. REFER TO E-500's SERIES FOR OCCUPANCY SENSOR WIRING DIAGRAMS. CONTRACTOR TO VERIFY OCCUPANCY SENSOR LOCATION PER MANUFACTURERS SPECIFICATIONS.
11. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
12. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
13. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.

(#) SHEET KEY NOTES:

1. NOT USED.

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LICENSED PROFESSIONAL ENGINEER

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
BUILDING ELEVATIONS

SHEET NO.
E-403

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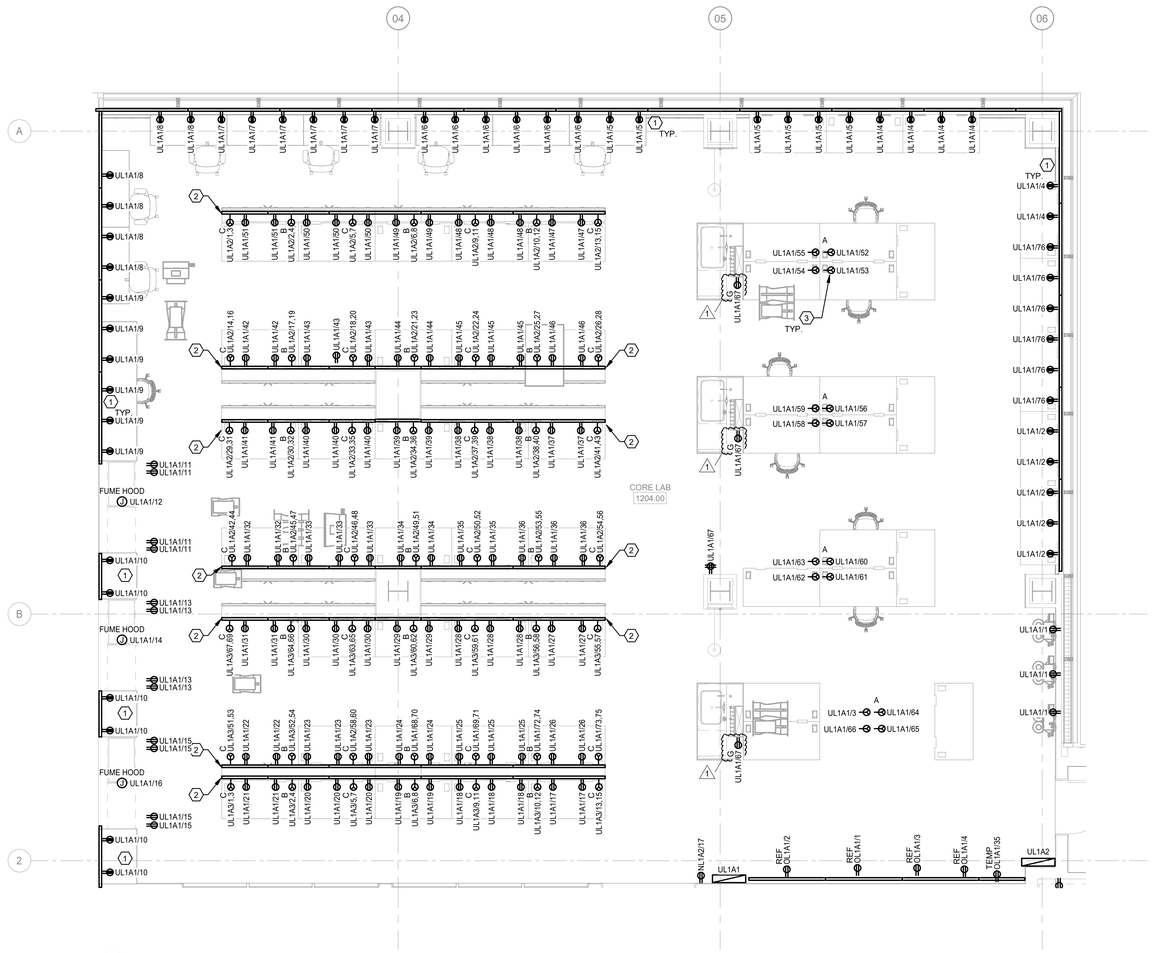

1 LEVEL 1 POWER PLAN - ENLARGED CORE LAB

SCALE: 1/4" = 1'-0"

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
2. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
3. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE # 12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
8. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
9. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
10. REFER TO ALL EQUIPMENT AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
11. AT LEAST 50% OF THE RECEPTACLES IN PRIVATE OFFICES, CONFERENCE ROOMS, BREAK ROOMS, CLASS ROOMS, OR AT INDIVIDUAL WORKSTATIONS MUST BE CONTROLLED WITH OCCUPANCY CONTROLS PER MICHIGAN ENERGY CODE.
12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

1. 2 CHANNEL RACEWAY ABOVE COUNTERTOP BACKSPLASH. (120V 2FT OC, DATA DUPLEX 4FT OC). RISER CONDUITS TO SUPPLY POWER TO SURFACE RACEWAY TO BE CONCEALED IN WALL. PROVIDE NUMBER OF CONDUIT RISER LOCATIONS AS REQUIRED.
2. PROVIDE TWO ROWS OF SURFACE RACEWAYS TO BE INSTALLED ON HALF WALL. ONE RACEWAY IS DEDICATED FOR 120V RECEPTACLES (120V RECEPTACLES 2FT OC). SECOND RACEWAY IS DEDICATED FOR 208V RECEPTACLES (208V RECEPTACLES 4FT OC). COORDINATE FINAL RECEPTACLE AND RACEWAY MOUNTING HEIGHT WITH ARCHITECTURAL DETAILS ACCORDING TO LF7.01 PRIOR TO INSTALLATION.
3. RECEPTACLE 'A' ARE TO BE LOCATED IN CEILING. COORDINATE FINAL LOCATION IN THE FIELD PRIOR TO ROUGH-IN.

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T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

PLAN NORTH
TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

1 ADDENDUM No. 1 10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 1 ENLARGED CORE LAB NORTH

SHEET NO.
E-405

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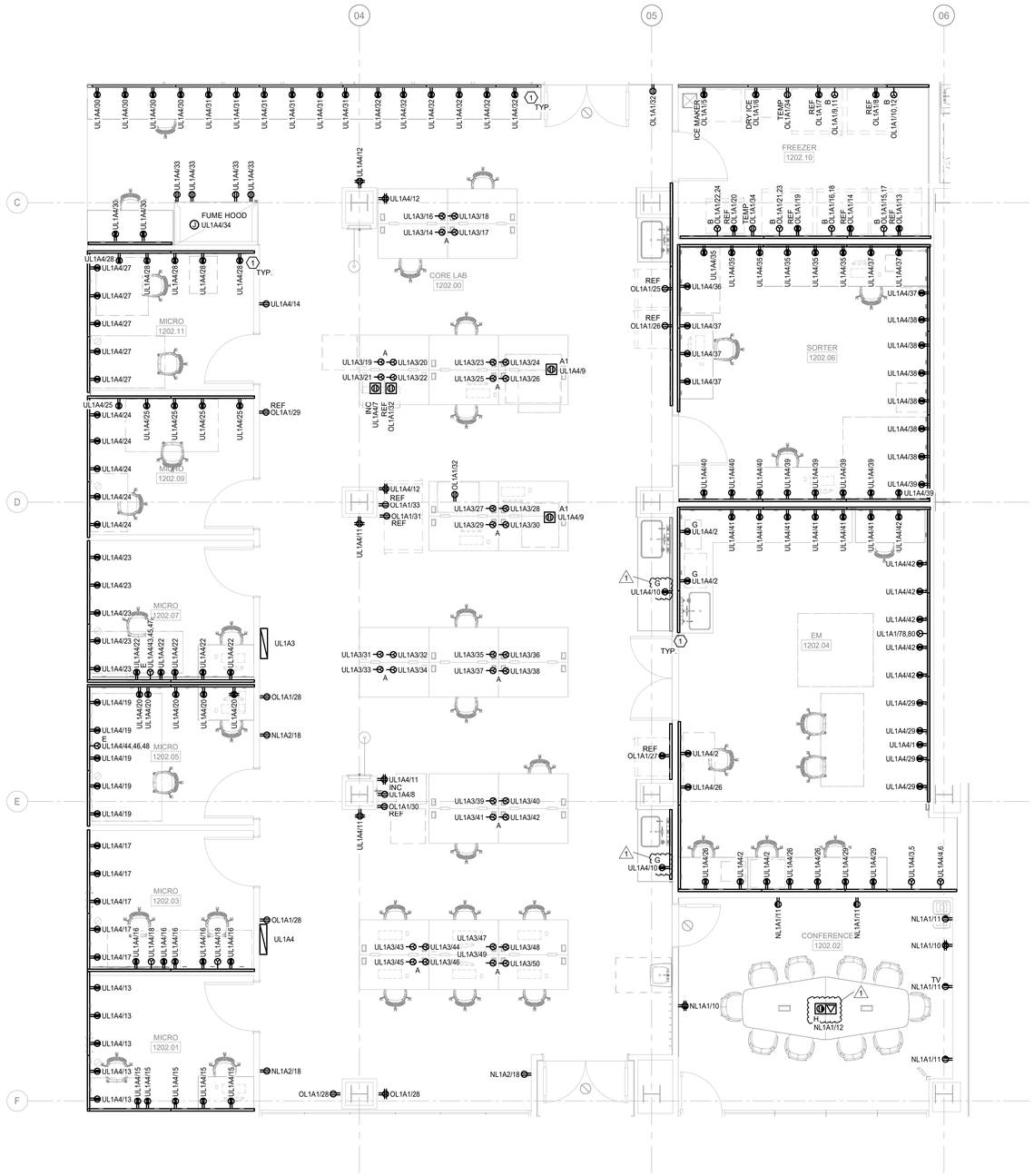
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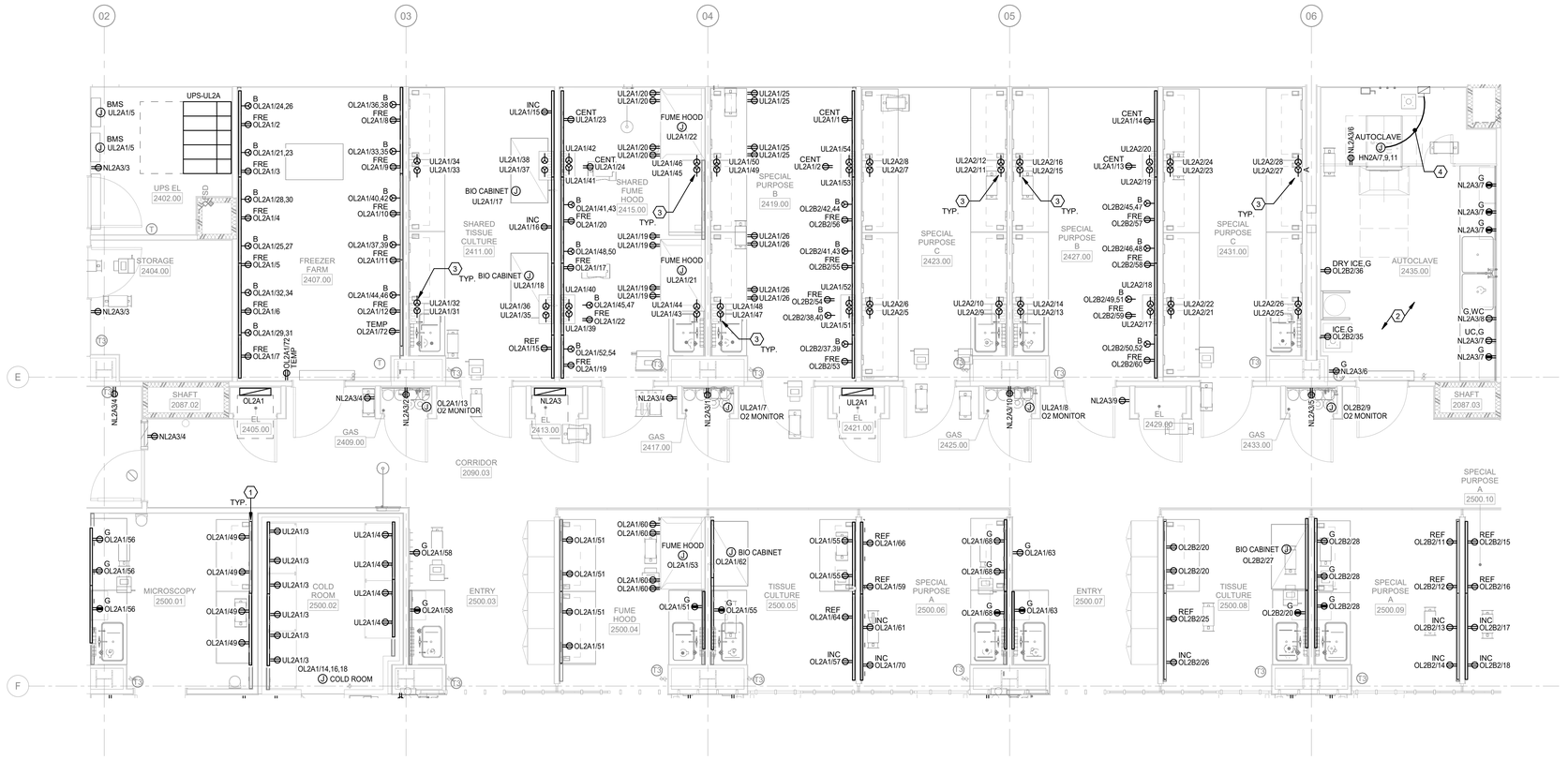
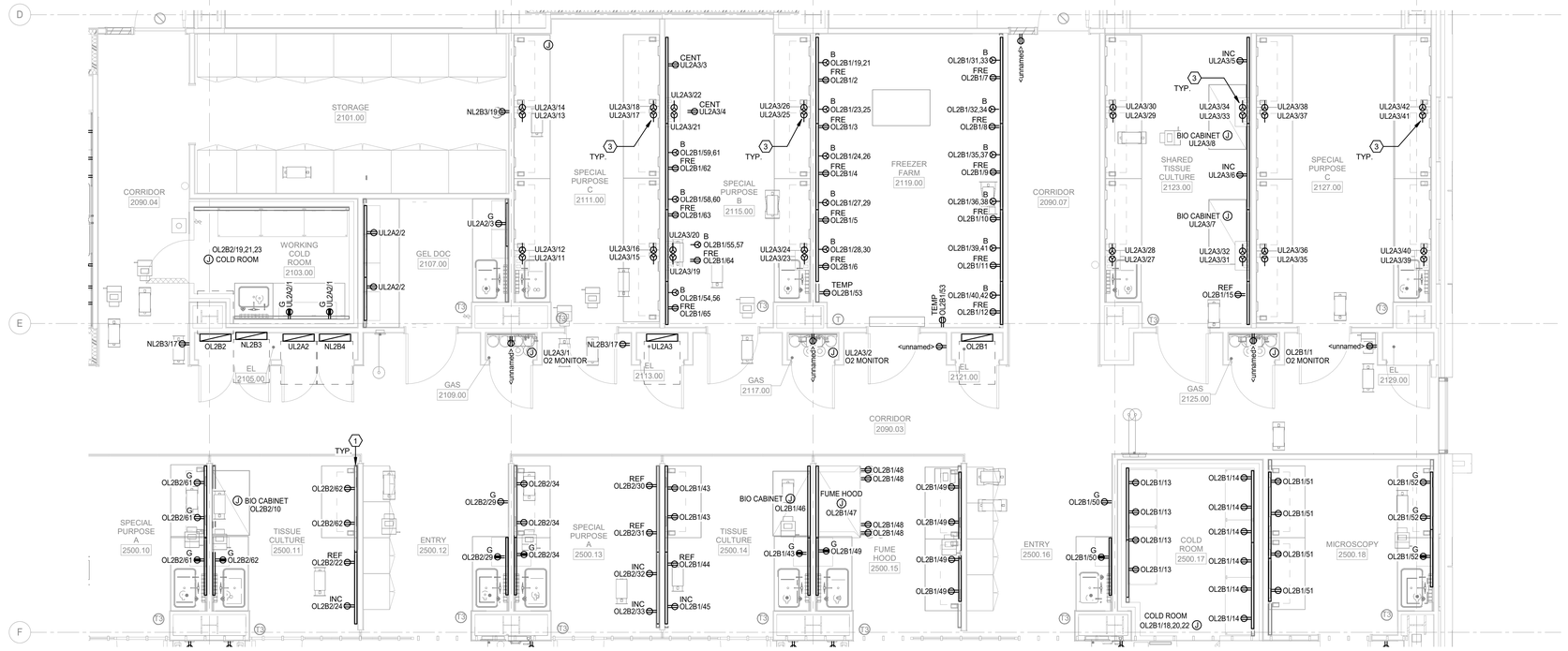


1 LEVEL 2 POWER PLAN - SPECIALTY LAB 1

SCALE: 1/4" = 1'-0"



2 LEVEL 2 POWER PLAN - SPECIALTY LAB 2

SCALE: 1/4" = 1'-0"

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
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4. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
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6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
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12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

1. RECEPTACLES IN WIREWAY SECTION ARE TO BE GFCI RATED, COORDINATE WIRING REQUIREMENTS AND SELECTION PRIOR TO ROUGH-IN.
2. ALL RECEPTACLES IN AUTOCLAVE TO BE GFCI RATED WITH WATERPROOF COVERS.
3. RECEPTACLE 'A' ARE TO BE LOCATED IN CEILING, COORDINATE FINAL LOCATION IN THE FIELD PRIOR TO ROUGH-IN.
4. ELECTRICAL CONTRACTOR TO PROVIDE 3#8 1#10EG - 1"C BETWEEN AUTOCLAVE AND 60A AT 480/3Ø DISCONNECT.

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[redacted]

PLAN NORTH
TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LEVEL 2 ENLARGED SPECIALTY LABS

SHEET NO.
E-406

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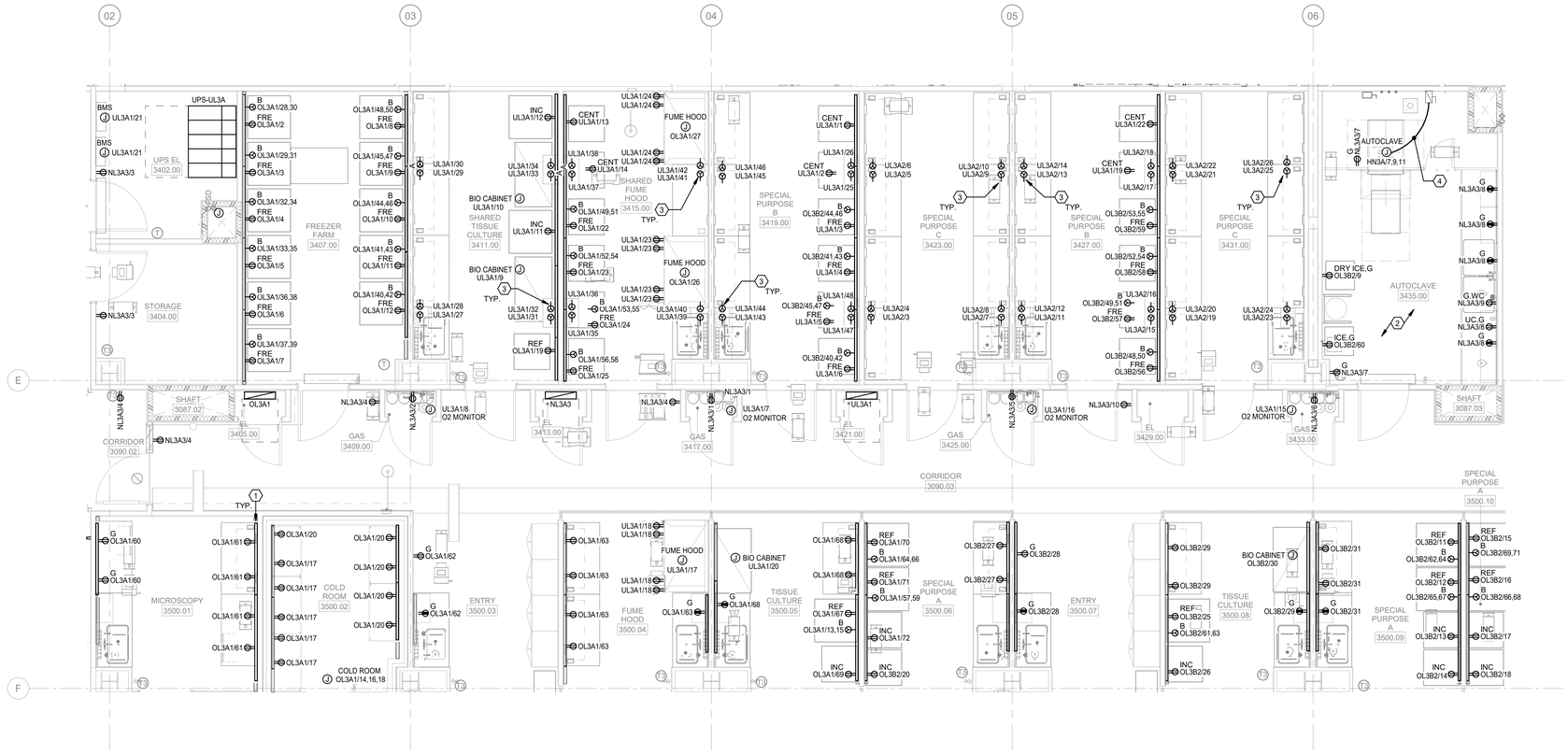
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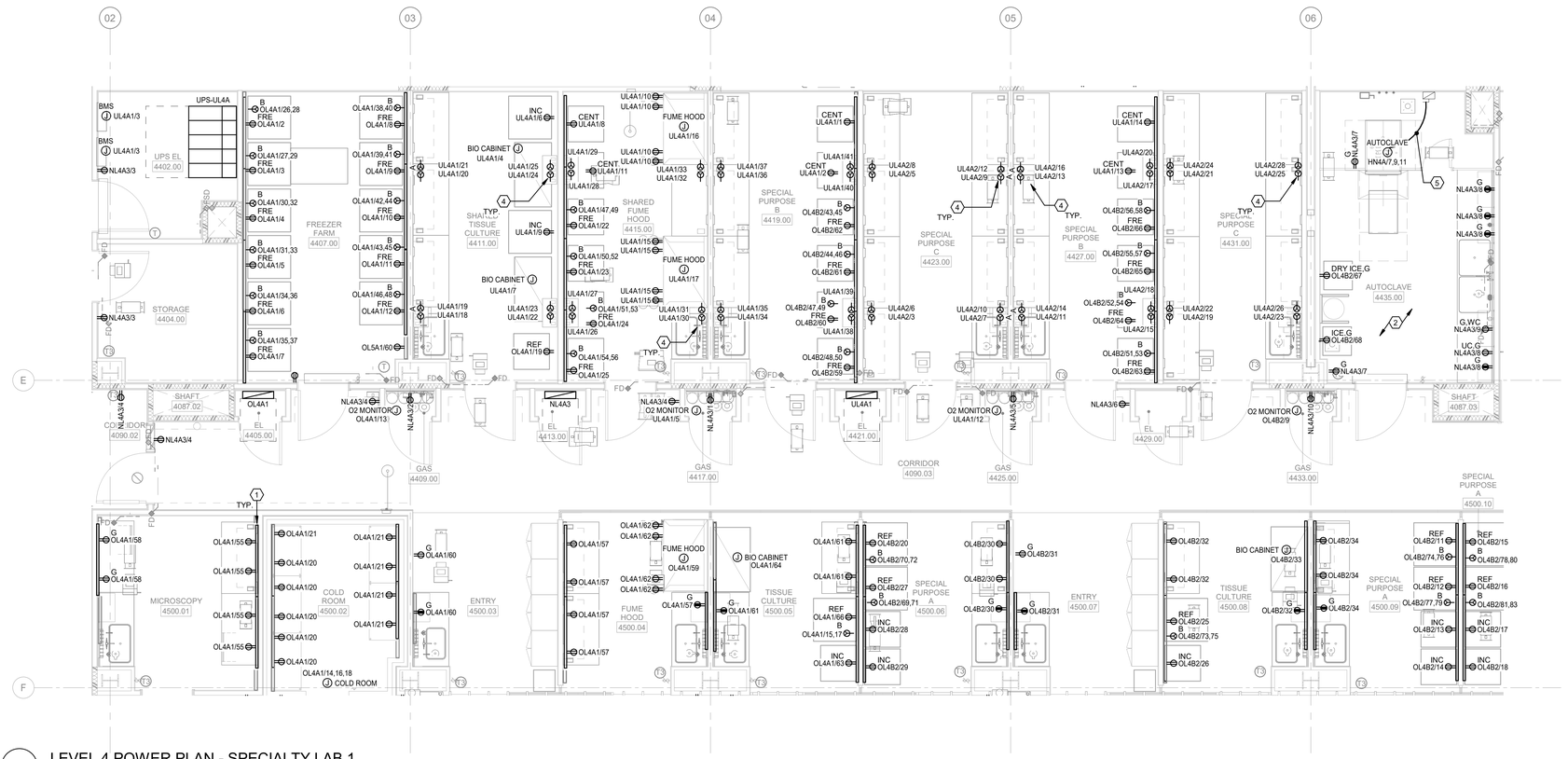
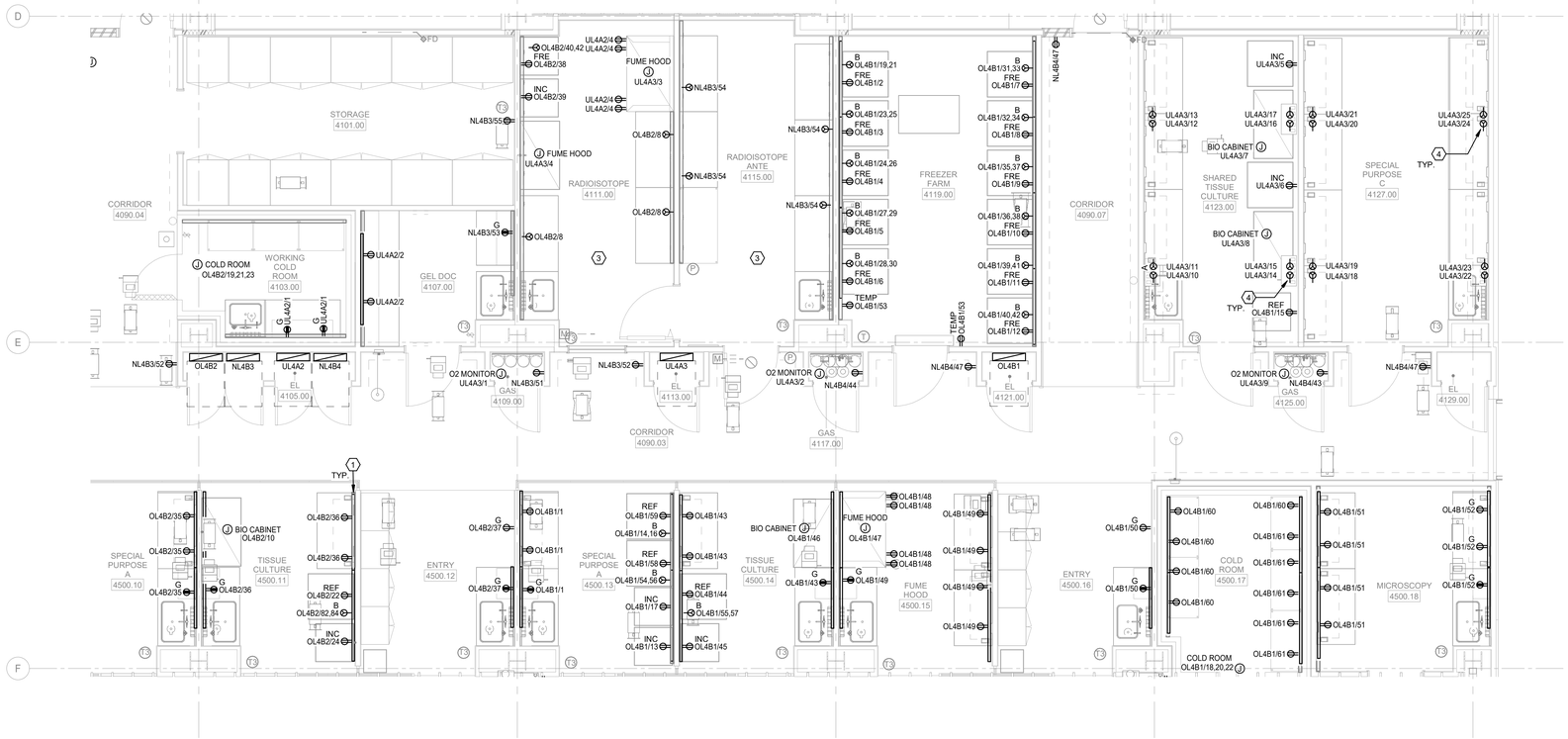
OL3A2/38
OL3A2/39
OL3A2/40



1 LEVEL 4 POWER PLAN - SPECIALTY LAB 1
SCALE: 1/4" = 1'-0"



2 LEVEL 4 POWER PLAN - SPECIALTY LAB 2
SCALE: 1/4" = 1'-0"

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
2. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
3. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE # 12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
8. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
9. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
10. REFER TO ALL EQUIPMENT AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
11. AT LEAST 50% OF THE RECEPTACLES IN PRIVATE OFFICES, CONFERENCE ROOMS, BREAK ROOMS, CLASS ROOMS, OR AT INDIVIDUAL WORKSTATIONS MUST BE CONTROLLED WITH OCCUPANCY CONTROLS PER MICHIGAN ENERGY CODE.
12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

1. RECEPTACLES IN WIREWAY SECTION ARE TO BE GFCI RATED, COORDINATE WIRING REQUIREMENTS AND SELECTION PRIOR TO ROUGH-IN.
2. ALL RECEPTACLES IN AUTOCLAVE TO BE GFCI RATED WITH WATERPROOF COVERS.
3. ALL CONDUITS AND FITTINGS SHALL BE THREADED RGC IN ACCORDANCE WITH RADIOISATOPE REQUIREMENTS. PROVIDE SEAL OFF FITTINGS WITH CONDUCTORS THAT ARE COMPATIBLE WITH THE SEALING COMPOUND FOR ALL PENETRATIONS ENTERING INTO THE ROOM/AREA. SILICONE BASED CAULK FOR AN AIR TIGHT SEAL ON ALL JUNCTION, DEVICE BOXES, AND LIGHT FIXTURE PENETRATIONS IN WALLS IN THE BSL-3 LAB. BOXES TO BE CAST TYPE BOXES WITH GASKETED DEVICE COVERPLATES. COVERPLATES TO BE CHEMICAL RESISTANT WITH WATERPROOF COVERS.
4. RECEPTACLE 'A' ARE TO BE LOCATED IN CEILING. COORDINATE FINAL LOCATION IN THE FIELD PRIOR TO ROUGH-IN.
5. ELECTRICAL CONTRACTOR TO PROVIDE 3#8,1#10EG - 1"C BETWEEN AUTOCLAVE AND 60A AT 480/3Ø DISCONNECT.

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LICENSED PROFESSIONAL ENGINEER

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
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DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LEVEL 4 ENLARGED SPECIALTY LABS

SHEET NO.
E-408

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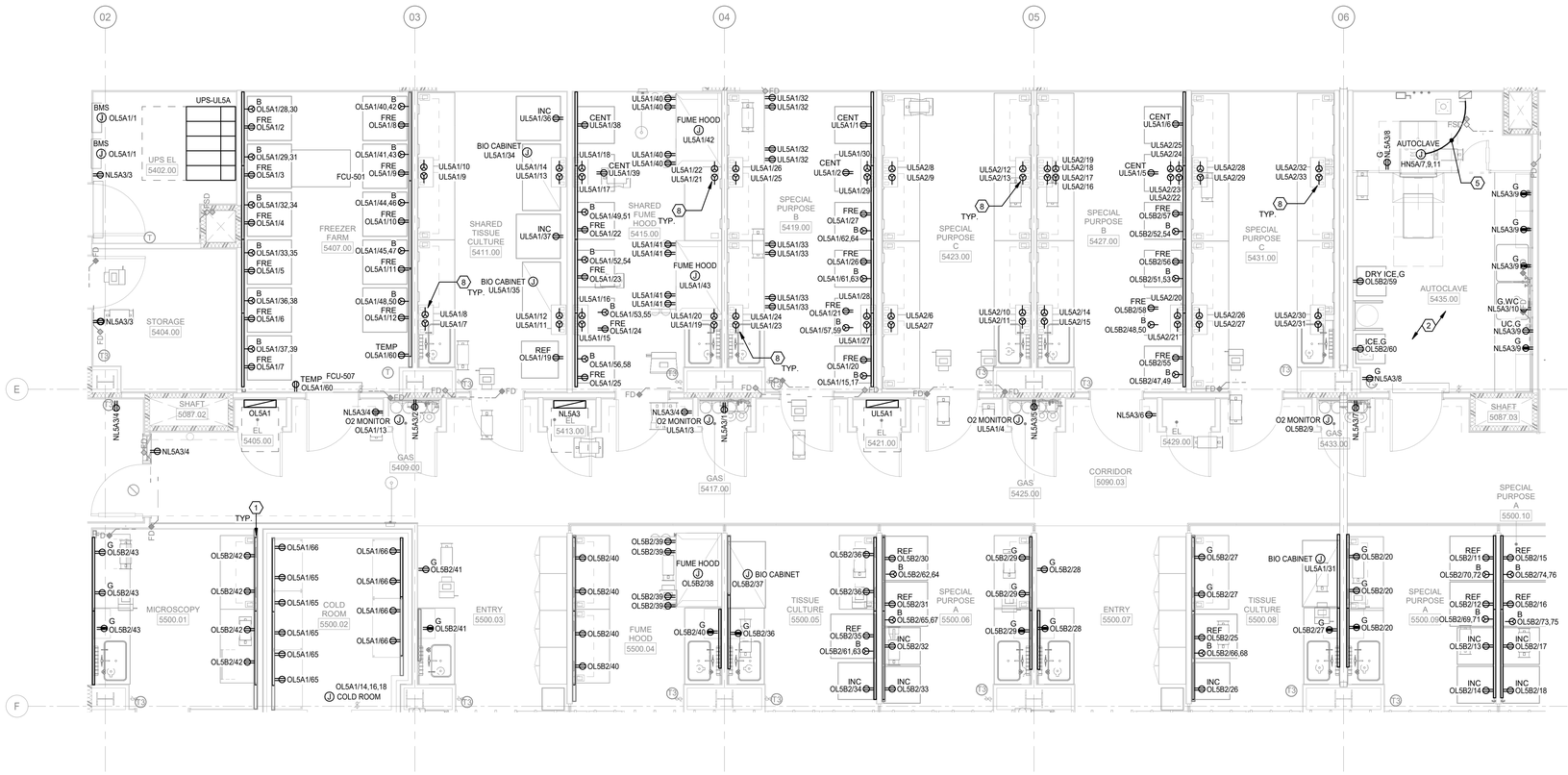
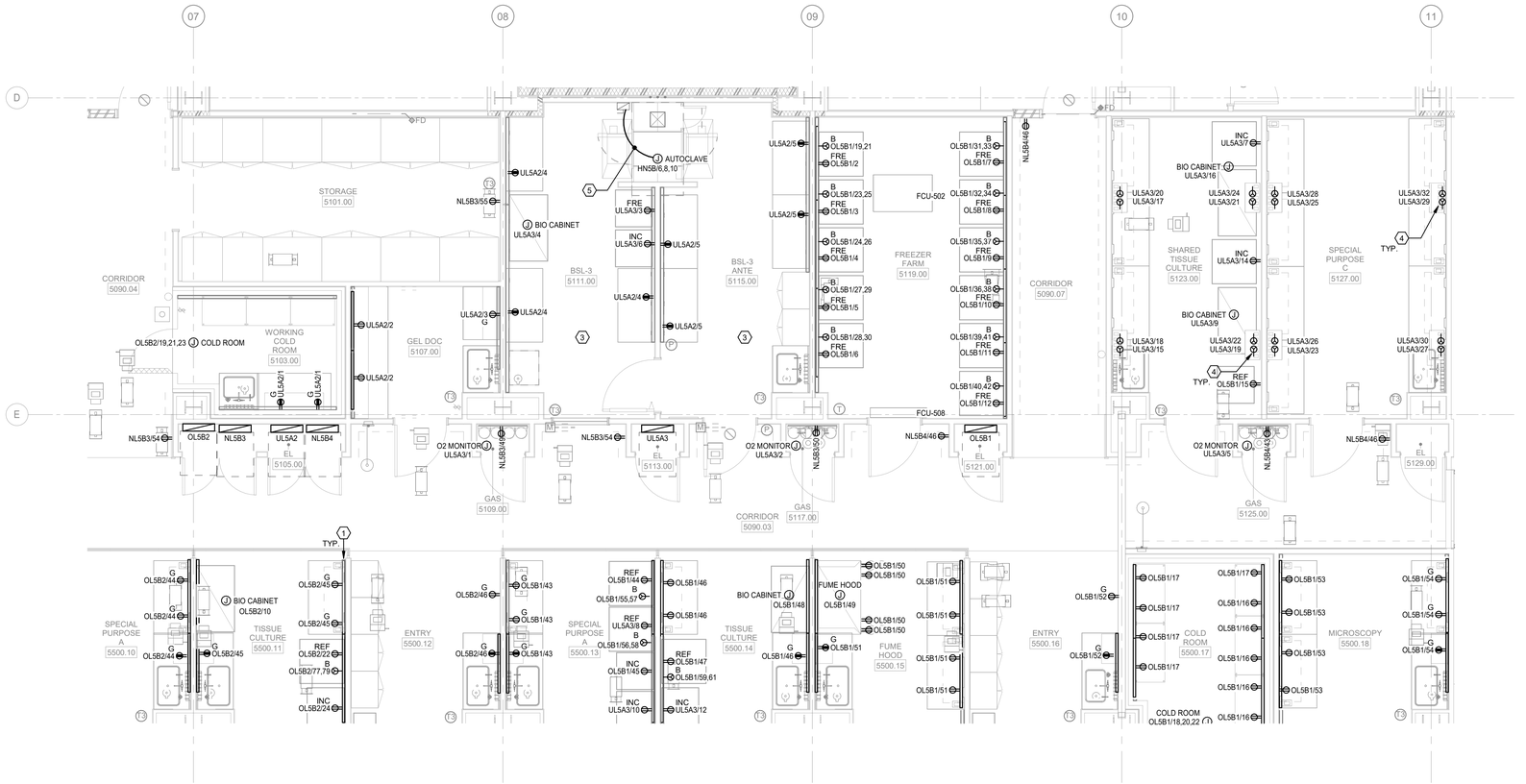


1 LEVEL 5 POWER PLAN - SPECIALTY LAB 1

SCALE: 1/4" = 1'-0"



2 LEVEL 5 POWER PLAN - SPECIALTY LAB 2

SCALE: 1/4" = 1'-0"

POWER SHEET GENERAL NOTES:

1. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
2. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
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4. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
5. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
6. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES.
7. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS. ALL SHARED EQUIPMENT GROUND CONDUCTORS SHALL BE #10 AWG MINIMUM.
8. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
9. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
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12. ALL SURFACE RACEWAYS ARE TO BE AL5200 ALUMINUM. COORDINATE MOUNTING HEIGHTS AND INSTALLATION REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN. ALL CONDUIT RISERS TO BE RECESSED IN WALL.

(#) SHEET KEY NOTES:

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PLAN NORTH
TRUE NORTH

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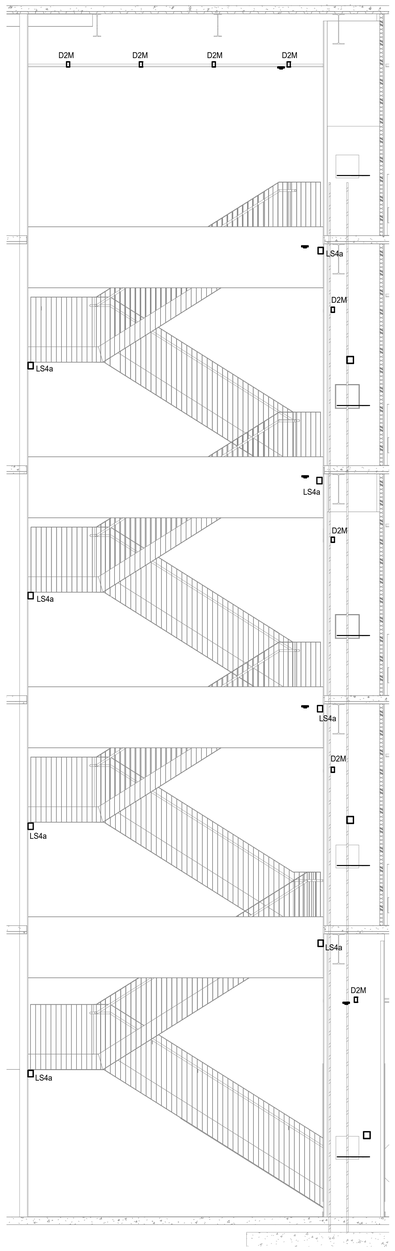
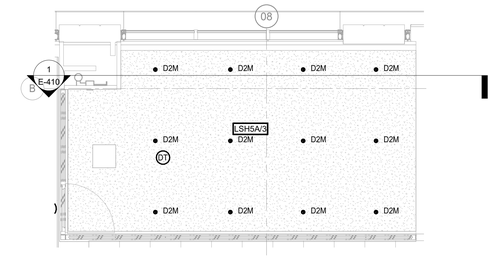
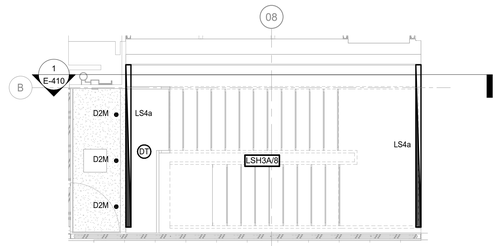


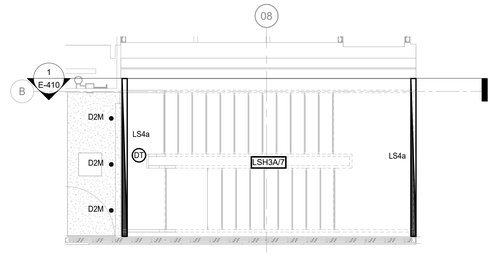
1 STAIR 2 SECTION
SCALE: 1/4" = 1'-0"



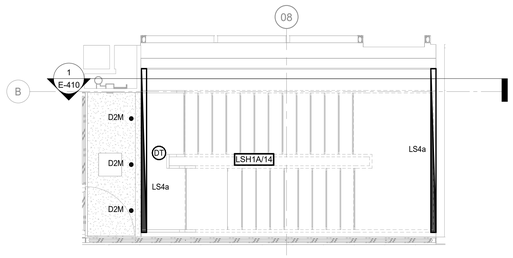
8 LEVEL 5 LIGHTING PLAN - STAIR 2
SCALE: 1/4" = 1'-0"



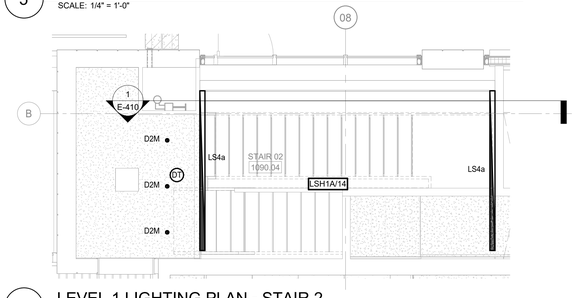
7 LEVEL 4 LIGHTING PLAN - STAIR 2
SCALE: 1/4" = 1'-0"



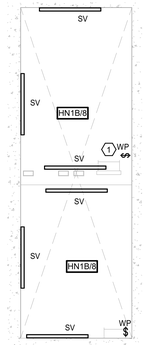
6 LEVEL 3 LIGHTING PLAN - STAIR 2
SCALE: 1/4" = 1'-0"



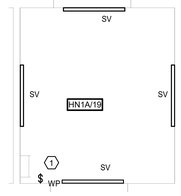
5 LEVEL 2 LIGHTING PLAN - STAIR 2
SCALE: 1/4" = 1'-0"



4 LEVEL 1 LIGHTING PLAN - STAIR 2
SCALE: 1/4" = 1'-0"



2 LEVEL 1 LIGHTING PLAN - ELEVATOR 02
SCALE: 1/4" = 1'-0"



3 LEVEL 1 LIGHTING PLAN - SERVICE ELEVATOR
SCALE: 1/4" = 1'-0"

SHEET KEY NOTES:

1. SWITCH SHALL BE IN AN ACCESSIBLE LOCATION NEAR ELEVATOR DOOR AND PIT LADDER.

GENERAL SHEET NOTES:

1. ALL EXIT SIGNS, EMERGENCY LIGHTING BATTERY PACKS, EMERGENCY LUMINAIRES (ON GENERATOR OR EMERGENCY LIGHTING BATTERY PACKS INTEGRAL TO LUMINAIRE), AND NIGHT LIGHTS (DENOTED 'NL') SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
2. EXACT LOCATION OF MECHANICAL, PLUMBING, KITCHEN, FURNITURE SYSTEMS, OWNER FURNISHED EQUIPMENT, ETC. THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THEIR RESPECTIVE DISCIPLINE DRAWINGS. COORDINATE EXACT LOCATIONS WITH RESPECTIVE CONTRACTORS AND/OR VENDORS PRIOR TO ANY ROUGH-INS.
3. REVIEW AND COORDINATE WITH ALL TRADES' CONTRACT DOCUMENTS AND CONTRACTORS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR EQUIPMENT WITH ELECTRICAL CONNECTIONS. COORDINATE EXACT MOUNTING LOCATIONS WITH THE SPECIFIC TRADE.
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5. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
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9. RECEPTACLE BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
10. REFER TO E-500's SERIES FOR OCCUPANCY SENSOR WIRING DIAGRAMS. CONTRACTOR TO VERIFY OCCUPANCY SENSOR LOCATION PER MANUFACTURERS SPECIFICATIONS.
11. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
12. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
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(#) SHEET KEY NOTES:

1. NOT USED.

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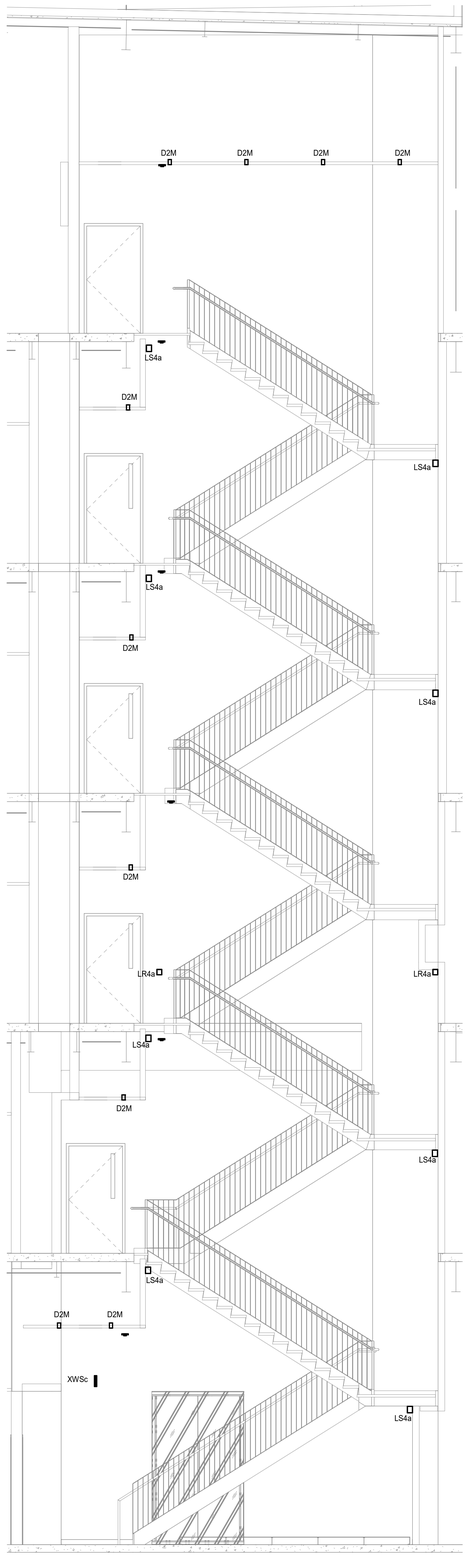
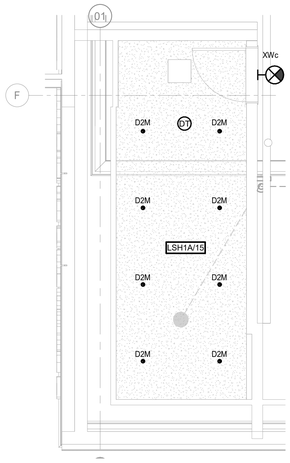
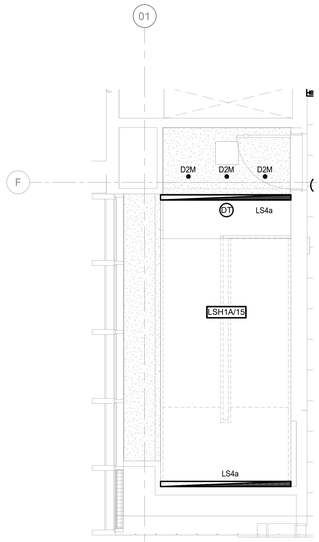
10. REFER TO E-500's SERIES FOR OCCUPANCY SENSOR WIRING DIAGRAMS. CONTRACTOR TO VERIFY OCCUPANCY SENSOR LOCATION PER MANUFACTURERS SPECIFICATIONS.
11. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
12. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
13. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.



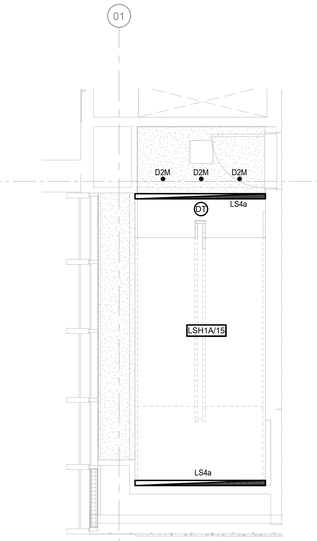
1 STAIR 01 SECTION
SCALE: 1/4" = 1'-0"



7 PENTHOUSE LIGHTING PLAN - STAIR 1
SCALE: 1/4" = 1'-0"



6 LEVEL 5 LIGHTING PLAN - STAIR 1
SCALE: 1/4" = 1'-0"



5 LEVEL 4 LIGHTING PLAN - STAIR 1
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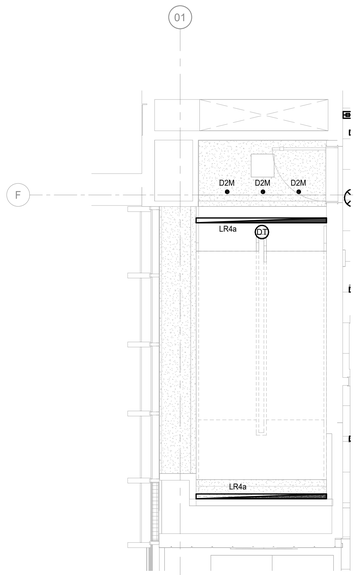
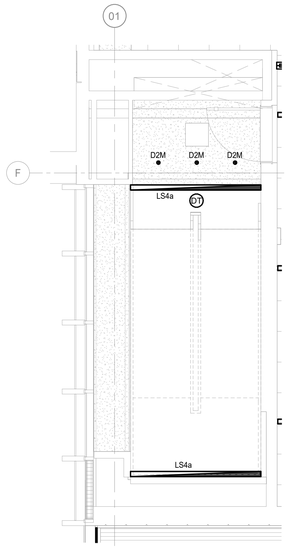
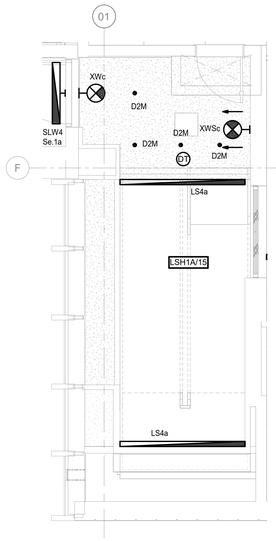


4 LEVEL 3 LIGHTING PLAN - STAIR 1
SCALE: 1/4" = 1'-0"



3 LEVEL 2 LIGHTING PLAN - STAIR 1
SCALE: 1/4" = 1'-0"



2 LEVEL 1 LIGHTING PLAN - STAIR 1
SCALE: 1/4" = 1'-0"

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TEMPLATE VERSION: 23.0.4

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09-29-25
LICENSED PROFESSIONAL ENGINEER

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ENLARGED LIGHTING PLANS

SHEET NO.
E-411

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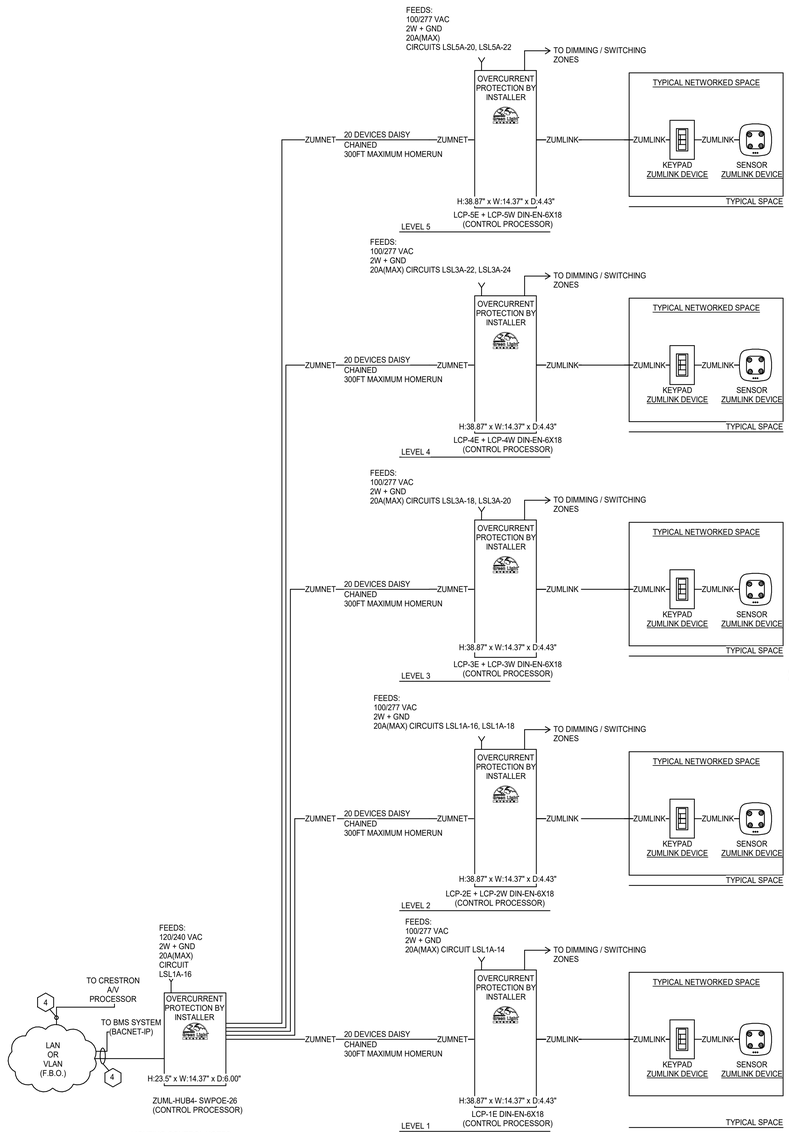
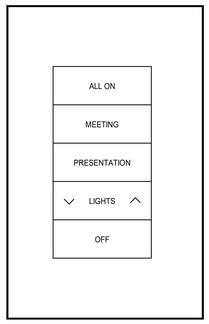


LIGHTING CONTROL NOTES:

1. THIS DIAGRAM REPRESENTS A TYPICAL SYSTEM. CONTRACTOR SHALL SUBMIT SYSTEM VENDOR INSTALLATION DRAWINGS AND WIRING DIAGRAMS AS PART OF SHOP DRAWING SUBMITTAL. REFER TO SPECIFICATION SECTION 265220 AND FINAL SYSTEM VENDOR DRAWINGS FOR EXACT SYSTEM REQUIREMENTS. SUBMITTAL SHALL INCLUDE LAYOUT OF EACH LIGHTING CONTROL STATION AND OPERATION OF PUSHBUTTON FUNCTION.
2. PROVIDE EMERGENCY RELAY CONTACT INPUT(S). EMERGENCY AND LIFE SAFETY NODES SHALL BE TURNED ON TO 100% LIGHT OUTPUT WHEN LOSS OF NORMAL POWER OCCURS.
3. COORDINATE WITH OTHER DIVISIONS AND PROVIDE ALL COMPONENTS REQUIRED FOR A COMPLETE SYSTEM. THIS INCLUDES, BUT IS NOT LIMITED TO: BAS SYSTEM, A/V SYSTEM(S), SECURITY SYSTEM, PROJECTORS.PROJECTIONS SCREENS, MOTORIZED SHADES, PARTITION SENSORS, ETC.

6 NETWORKED LIGHTING CONTROL SYSTEM WIRING DIAGRAM
SCALE: NONE

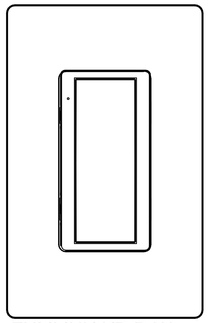


HORIZON KEYPAD (ENGRAVING EXAMPLE)

BACKLIT PROGRAMMABLE KEYPAD WITH SNAP-ON COVER PLATE PROVIDES CONTROL OF ONE OR MORE Zūm® WIRED J-BOX LOAD CONTROLLERS ENGRAVING OPTIONS AVAILABLE IN MULTIPLE COLORS, WITH CRESNET CABLE

TOP AND BOTTOM ROCKER BUTTON OPTIONS AVAILABLE, CONFIRM LETTERING/PROGRAMMING IN SUBMITTALS FOR EACH ROOM TYPE: CONFERENCE ROOMS, LABORATORIES, ETC.

7 HORIZON KEYPAD DETAIL
SCALE: NONE

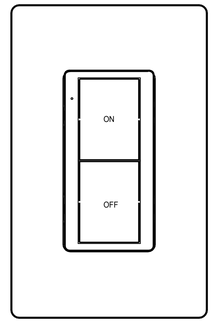


ZUMLINK-KP-R-W

ROCKER PROGRAMMABLE KEYPAD WITH SNAP-ON COVER PLATE PROVIDES CONTROL OF ONE OR MORE Zūm® WIRED J-BOX LOAD CONTROLLERS ENGRAVING OPTIONS AVAILABLE IN MULTIPLE COLORS

TOP AND BOTTOM ROCKER BUTTON OPTIONS AVAILABLE BASED ON OPERATION:
- NONE
- OFF: ASSIGNED LOADS CONTROLLERS TURN OFF.
- ON: ASSIGNED LOADS TURN ON
- RAISE: ASSIGNED LOAD CONTROLLERS RAISE
- LOWER: ASSIGNED LOAD CONTROLLERS LOWER

4 LOW VOLTAGE 1-ZONE DIMMER FACEPLATE DETAIL
SCALE: NONE

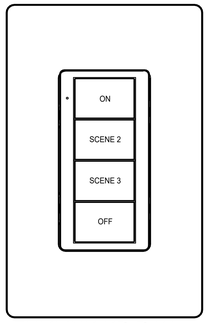


ZUMLINK-KP-R-W
+
ZUMLINK-BTN2-W

2 BUTTON PROGRAMMABLE KEYPAD WITH SNAP-ON COVER PLATE PROVIDES CONTROL OF ONE OR MORE Zūm® WIRED J-BOX LOAD CONTROLLERS ENGRAVING OPTIONS AVAILABLE IN MULTIPLE COLORS

TOP AND BOTTOM ROCKER BUTTON OPTIONS AVAILABLE BASED ON OPERATION:
- NONE
- OFF: ASSIGNED LOADS CONTROLLERS TURN OFF.
- ON: ASSIGNED LOADS TURN ON
- RAISE: ASSIGNED LOAD CONTROLLERS RAISE
- LOWER: ASSIGNED LOAD CONTROLLERS LOWER

2 LOW VOLTAGE 1-ZONE SWITCH FACEPLATE DETAIL
SCALE: NONE

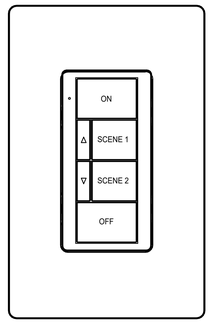


ZUMLINK-KP-R-W
+
ZUMLINK-BTN4-W

4 BUTTON PROGRAMMABLE KEYPAD WITH SNAP-ON COVER PLATE PROVIDES CONTROL OF ONE OR MORE Zūm® WIRED J-BOX LOAD CONTROLLERS ENGRAVING OPTIONS AVAILABLE IN MULTIPLE COLORS

TOP AND BOTTOM ROCKER BUTTON OPTIONS AVAILABLE BASED ON OPERATION:
- NONE
- OFF: ASSIGNED LOADS CONTROLLERS TURN OFF.
- ON: ASSIGNED LOADS TURN ON
- RAISE: ASSIGNED LOAD CONTROLLERS RAISE
- LOWER: ASSIGNED LOAD CONTROLLERS LOWER
- RECALL SCENE 1 - SCENE 16: ASSIGNED LOAD CONTROLLERS RECALL THE BEHAVIOR SET FOR THE SPECIFIED SCENE

5 LOW VOLTAGE OVERRIDE SWITCH FACEPLATE DETAIL
SCALE: NONE



ZUMLINK-KP-R-W
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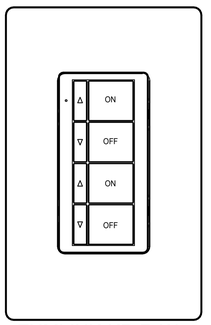
6 BUTTON PROGRAMMABLE KEYPAD WITH SNAP-ON COVER PLATE PROVIDES CONTROL OF ONE OR MORE Zūm® WIRED J-BOX LOAD CONTROLLERS ENGRAVING OPTIONS AVAILABLE IN MULTIPLE COLORS

TOP AND BOTTOM ROCKER BUTTON OPTIONS AVAILABLE BASED ON OPERATION:
- NONE
- OFF: ASSIGNED LOADS CONTROLLERS TURN OFF.
- ON: ASSIGNED LOADS TURN ON
- RAISE: ASSIGNED LOAD CONTROLLERS RAISE
- LOWER: ASSIGNED LOAD CONTROLLERS LOWER

3 LOW VOLTAGE 2-ZONE DIMMER FACEPLATE DETAIL
SCALE: NONE



ZUMLINK-KP-R-W
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ZUMLINK-BTN8-W

8 BUTTON PROGRAMMABLE KEYPAD WITH SNAP-ON COVER PLATE PROVIDES CONTROL OF ONE OR MORE Zūm® WIRED J-BOX LOAD CONTROLLERS ENGRAVING OPTIONS AVAILABLE IN MULTIPLE COLORS

TOP AND BOTTOM ROCKER BUTTON OPTIONS AVAILABLE BASED ON OPERATION:
- NONE
- OFF: ASSIGNED LOADS CONTROLLERS TURN OFF.
- ON: ASSIGNED LOADS TURN ON
- RAISE: ASSIGNED LOAD CONTROLLERS RAISE
- LOWER: ASSIGNED LOAD CONTROLLERS LOWER

1 LOW VOLTAGE 2-ZONE SWITCH FACEPLATE DETAIL
SCALE: NONE

LIGHTING CONTROL DETAIL NOTES:

1. LIGHTING CONTROL DETAILS ARE NOT INTENDED FOR CONSTRUCTION. AS PART OF THE SHOP DRAWING SUBMITTALS, CONTRACTOR SHALL PROVIDE A COMPLETE RISER DIAGRAM FOR THE LIGHTING CONTROL SYSTEM INDICATING ALL COMPONENTS NECESSARY FOR A COMPLETE SYSTEM.
2. PROVIDE AT A MINIMUM ONE (1), 4-HOUR TRAINING SESSION FOR LIGHTING CONTROL SYSTEM TRAINING AT THE OWNER'S SITE. PROVIDE ONE (1) ADDITIONAL TRAINING SESSION AT OWNER'S REQUEST.
3. THE CONTRACTOR SHALL HIRE A COMMISSIONING AGENT TO PERFORM FUNCTIONAL TESTING OF THE LIGHTING CONTROL DEVICES AND SYSTEM(S). THE AGENT PERFORMING THE TESTING SHALL BE A PARTY NOT DIRECTLY INVOLVED IN THE DESIGN OR CONSTRUCTION OF THE PROJECT. THE RESPONSIBILITIES OF THE COMMISSIONING AGENT INCLUDE CONFIRMING THAT PLACEMENT, SENSITIVITY, AND TIME-OUT SETTINGS OF OCCUPANCY SENSORS YIELD ACCEPTABLE PERFORMANCE, CONFIRMING THAT TIME SWITCH AND PROGRAMMABLE SCHEDULES HAVE BEEN PROGRAMMED TO TURN LIGHTS OFF, AND CONFIRMING THAT PHOTOSENSOR CONTROLS REDUCE LIGHT LEVELS BASED ON THE AMOUNT OF USABLE DAYLIGHT IN THE SPACE. THE AGENT SHALL PROVIDE DOCUMENTATION THAT THE LIGHTING CONTROLS MEET OF EXCEED ALL DOCUMENTED PERFORMANCE CRITERIA. REFER TO ASHRAE 90.1 SECTION 9.4.4.
4. PROVIDE TECHNICAL SUPPORT FOR UP TO TWELVE (12) MONTHS AFTER FINAL INSTALLATION OF LIGHTING CONTROL SYSTEM.
5. THE BASIS OF DESIGN PRODUCT/SYSTEM IS INDICATED ON DETAILS. ACCEPTABLE EQUAL MANUFACTURERS ARE COOPER LIGHTING ILC CONTROLS, CRESTRON, AND LUTRON.
6. PROVIDE ENGRAVED PUSHBUTTON WALL SWITCHES AS SHOWN AND APPROVED BY OWNER.
7. PROVIDE A MINIMUM SINGLE GANG BACKBOX WITH ONE (1) 3/4" EMT CONDUIT UP TO ACCESSIBLE CEILING SPACE FOR EACH LIGHTING CONTROL DEVICE FACEPLATE. PROVIDE CONDUIT WITH 90 DEGREE BEND AND NON-METALLIC BUSHING.
8. PROVIDE REMOTE POWER SUPPLY WITH ALL TOUCH SCREEN CONTROL DEVICES. POWER SUPPLY SHALL BE WIRED TO LOCAL LIGHTING CIRCUIT AHEAD OF ANY SWITCHING.
9. ALL CABLING FOR LIGHTING CONTROL SYSTEM(S) SHALL BE PLENUM RATED. CONDUIT FOR CONTROL CABLING IS NOT REQUIRED IN PLENUM SPACES OR ABOVE CEILING, UNLESS OTHERWISE REQUIRED BY APPLICIBLE CODES OR MANUFACTURER. PROPERLY SUPPORT ALL EXPOSED CABLING WITH J-HOOKS PER DIVISION 27 SPECIFICATION 270528.
10. PROVIDE BE PRE-TERMINATED CABLING. CONTRACTOR MAY PROVIDE CABLING AND TERMINATIONS ALONG WITH TESTING PER DIVISION 27 SPECIFICATION 271500.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PROGRAMMING OF THE LIGHTING CONTROL SYSTEM(S).
12. ALL OCCUPANCY/VACANCY SENSORS SHALL BE CAPABLE OF AUTOMATIC ON TO 50% / AUTOMATIC OFF ("OCCUPANCY" OPERATION) AND MANUAL ON / AUTOMATIC OFF ("VACANCY" OPERATION). SENSOR TIME OUT SETTING SHALL BE SET TO 15 MINUTE OFF WITHOUT SENSOR ACTIVATION. MICROPHONICS SHALL BE SET TO MINIMUM LEVEL.
13. SENSOR DEVICES SHOWN ON PLANS ARE SYMBOLIC. ELECTRICAL CONTRACTOR SHALL VERIFY FINAL QUANTITY AND LOCATION(S) OF SENSOR DEVICES WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND FIELD CONDITIONS. PROVIDE ADDITIONAL SENSOR DEVICES AS REQUIRED.
14. CONTROL DEVICES SHALL BE 0-10V AND CAPABLE OF DIMMING TO 10%, 1%, OR "DIM TO DARK" PER LUMINAIRE REQUIREMENTS - REFER TO LUMINAIRE SCHEDULE.
15. PROVIDE ALL INTERCONNECTION WIRING, CABLING, LOAD CONTROLLERS, POWER SUPPLIES, ETC. REQUIRED BY MANUFACTURER FOR A FULLY OPERATIONAL SYSTEM.
16. WHERE MECHANICAL EQUIPMENT IS REQUIRED TO BE INTERLOCKED WITH LIGHTING CONTROLS, PROVIDE A MOTOR RATED LOAD CONTROLLER OR INPUT/OUTPUT MODULE WITH RELAY CONNECTED TO LOCAL CONTROL BUS FOR CONTROL OF MECHANICAL EQUIPMENT. REFER TO DIVISION 23 SCHEDULES AND ELECTRICAL CONNECTION SCHEDULES ON SHEET SERIES E-700's.
17. PROVIDE ENGRAVED LABELS FOR ALL LIGHTING SWITCHES. CONFIRM LETTERING IN SUBMITTALS.

LUMINAIRE CONTROL SEQUENCE OF OPERATIONS:

1. GENERAL LIGHTING CONTROL SYSTEM:
   - A. PROVIDE BACNET OR MODBUS TO BAS SYSTEM, COORDINATE WITH DIVISION 23. THE BAS SHALL PROVIDE AN "OCCUPIED" OR "UNOCCUPIED SIGNAL TO THE LIGHTING CONTROL SYSTEM BASED ON BAS PROGRAMMED SCHEDULES.
   - B. MODIFICATION OF THE LIGHTING CONTROL SYSTEM PROGRAMMING DURING OPERATIONAL HOURS SHALL NOT CAUSE LIGHTING TO RESET OR OTHERWISE BE INTERRUPTED.
   - C. PROVIDE FLASH WARNING FOR ALL LIGHTING OVERRIDES BEFORE TURNING LIGHTING OFF MINIMUM WARNING TIME OF ONE (1) MINUTE.
   - D. WHERE "OR PRESET LEVEL" IS INDICATED IN PLAN, COORDINATE OUTPUT LEVEL WITH OWNER REPRESENTATIVE.
2. PUBLIC CIRCULATION SPACES (INCLUDING CORRIDORS, HALLS & LOBBIES):
   - A. CONTROLS SHALL BE NETWORKED.
   - B. CONTROL SHALL BE BASED ON BAS SYSTEM SIGNAL.
   - C. ALL LUMINAIRES SHALL BE CAPABLE OF CONTINUOUS DIMMING FROM LIGHTING CONTROL SYSTEM INTERFACE.
   - D. "OCCUPIED" MODE
     - a. ALL LUMINAIRES ON TO 50% (OR PRESET LEVEL) OUTPUT WHEN SIGNAL IS RECEIVED FROM BAS.
     - b. LUMINAIRES IN EACH ZONE RAISE TO 100% (OR PRESET LEVEL) OUTPUT VIA OCCUPANCY/VACANCY SENSORS, (15)-MINUTE TIME-OUT.
     - c. 2-HR MANUAL OVERRIDE VIA CONTROL STATION(S) INDICATED ON PLAN (FULL ON OR FULL OFF).
   - E. "UNOCCUPIED" MODE
     - a. ALL LUMINAIRES OFF WHEN SIGNAL IS RECEIVED FROM BAS.
     - b. ALL LUMINAIRES ON TO 50% (OR PRESET LEVEL) OUTPUT VIA OCCUPANCY/VACANCY SENSORS, (15)-MINUTE TIME-OUT.
     - c. 2-HR MANUAL OVERRIDE VIA CONTROL STATIONS(S) INDICATED ON PLAN (FULL ON OR FULL OFF).
3. LABORATORIES:
   - A. CORE LAB AND WET LABS:
     - a. CONTROLS SHALL BE NETWORKED.
     - b. MANUAL ON VIA LOW VOLTAGE DIMMER SWITCH.
     - c. AUTOMATIC PARTIAL OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
     - d. CONTINUOUS DIMMING VIA LOW VOLTAGE DIMMER SWITCH.
   - B. BIO-SAFETY LABS (INCLUDING SPECIAL PURPOSE LABS WITH NARROW SPECTRUM 'RED' LIGHTS):
     - a. CONTROLS SHALL BE NETWORKED.
     - b. NARROW SPECTRUM 'RED' LIGHTS SHALL BE CONNECTED TO TIME OF DAY CONTROLS ONLY, AND SHALL NOT BE CONNECTED TO OCCUPANCY/VACANCY SENSOR.
     - c. REMAINDER OF LIGHTING IN SPACE SHALL BE MANUAL ON VIA LOW VOLTAGE DIMMER SWITCH.
     - d. AUTOMATIC PARTIAL OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
4. PRIVATE OFFICES:
   - A. MANUAL ON VIA LOW VOLTAGE DIMMER SWITCH.
   - B. AUTOMATIC OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
   - C. CONTINUOUS DIMMING VIA LOW VOLTAGE DIMMER SWITCH.
   - D. RECEPTACLES CONNECTED TO OCCUPANCY SENSORS IN ROOM SHALL AUTOMATICALLY SHUT OFF WHEN VACANCY IS DETECTED, (15)-MINUTE TIME-OUT.
   - E. CONNECT CONTROLLED RECEPTACLES IN ADJACENT OPEN OFFICE AREAS TO AUTOMATIC SHUT OFF CONTROLS.
5. OPEN PLAN OFFICES (INCLUDING RECEPTION & WORK/TEAM STATIONS):
   - A. CONTROLS SHALL BE NETWORKED.
   - B. CONTROL SHALL BE BASED ON BAS SYSTEM SIGNAL.
   - C. ALL LUMINAIRES SHALL BE CAPABLE OF CONTINUOUS DIMMING FROM LIGHTING CONTROL SYSTEM INTERFACE.
   - D. "OCCUPIED" MODE
     - a. ALL LUMINAIRES ON TO 50% (OR PRESET LEVEL) OUTPUT WHEN SIGNAL IS RECEIVED FROM BAS.
     - b. LUMINAIRES IN EACH ZONE RAISE TO 100% (OR PRESET LEVEL) OUTPUT VIA OCCUPANCY/VACANCY SENSORS, (15)-MINUTE TIME-OUT.
     - c. 2-HR MANUAL OVERRIDE VIA CONTROL STATION(S) INDICATED ON PLAN (FULL ON OR FULL OFF).
   - E. "UNOCCUPIED" MODE
     - a. ALL LUMINAIRES OFF WHEN SIGNAL IS RECEIVED FROM BAS.
     - b. ALL LUMINAIRES ON TO 50% (OR PRESET LEVEL) OUTPUT VIA OCCUPANCY/VACANCY SENSORS, (15)-MINUTE TIME-OUT.
     - c. 2-HR MANUAL OVERRIDE VIA CONTROL STATION(S) INDICATED ON PLAN (FULL ON OR FULL OFF).
     - d. RECEPTACLES CONNECTED TO OCCUPANCY SENSORS IN ROOM SHALL AUTOMATICALLY SHUT OFF WHEN VACANCY IS DETECTED, (15)-MINUTE TIME-OUT.
6. MEETING ROOMS (INCLUDING CONFERENCE ROOMS & CLASSROOMS):
   - A. MANUAL ON VIA LOW VOLTAGE DIMMER SWITCH(ES).
   - B. AUTOMATIC OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
   - C. CONTINUOUS DIMMING PER ZONE VIA LOW VOLTAGE DIMMER SWITCH(ES).
   - D. RECEPTACLES CONNECTED TO OCCUPANCY SENSORS IN ROOM SHALL AUTOMATICALLY SHUT OFF WHEN VACANCY IS DETECTED, (15)-MINUTE TIME-OUT.
   - E. CONNECT CONTROLLED RECEPTACLES IN ADJACENT OPEN OFFICE AREAS TO AUTOMATIC SHUT OFF CONTROLS.
7. STORAGE ROOMS, RESTROOMS, EVS CLOSETS:
   - A. AUTOMATIC ON VIA OCCUPANCY/VACANCY SENSOR(S).
   - B. AUTOMATIC OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
8. STAIRWELLS:
   - A. RAISE TO 100% OUTPUT VIA INTEGRAL OCCUPANCY SENSOR.
   - B. DIM TO 50% OUTPUT VIA INTEGRAL OCCUPANCY SENSOR, (15)-MINUTE TIME-OUT.
9. EXTERIOR LIGHTING (INCLUDING PARKING LOTS, DRIVEWAYS, & SIDEWALKS):
   - A. CONTROL SHALL BE NETWORKED.
   - B. ON @ DUSK / OFF @ DAWN VIA BUILING MOUNTED PHOTOSENSOR.
   - C. DIM TO 20% OUTPUT FROM 12AM TO 6AM, COORDINATE HOURS OF OPERATION WITH OWNER REPRESENTATIVE.

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REVISION

NO.	DESCRIPTION	DATE
1	100% DD	05/09/25

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DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LIGHTING CONTROL DETAILS

SHEET NO.
E-501

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
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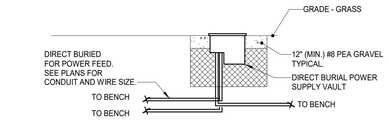
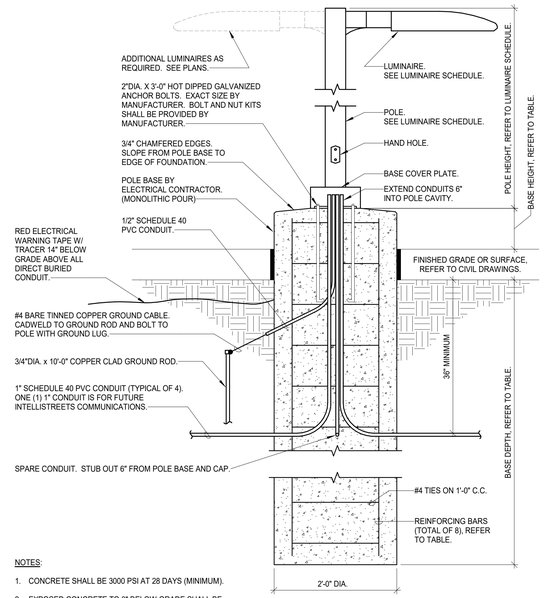


2 IN-GRADE POWER VAULT DETAIL

SCALE: NONE



NOTES:

1. CONCRETE SHALL BE 3000 PSI AT 28 DAYS (MINIMUM).
2. EXPOSED CONCRETE TO 3" BELOW GRADE SHALL BE "SMOOTH FORM" FINISH, RUBBED SMOOTH TO COVER FORM MARKS AND SURFACE IRREGULARITIES.
3. POLE BASE REINFORCEMENT SHALL HAVE A MINIMUM OF 3" CONCRETE COVER.
4. POLES SHALL BE DESIGNED FOR A STEADY WIND VELOCITY OF 100MPH WITH A 1.3 GUST FACTOR. EC SHALL PROVIDE ADEQUATE WIRING SLACK WITHIN THE POLE BASE TO COMPENSATE FOR WIND MOVEMENT. INTEGRAL VIBRATION DAMPENERS SHALL BE PROVIDED AND INSTALLED BY POLE MANUFACTURER ON ALL POLES 20'-0" AND TALLER.
5. THE EC SHALL COORDINATE SOIL CONDITIONS WITH THE CIVIL/SITE CONTRACTOR. IN CASES WHERE THE SOIL IS QUESTIONABLE, BASE DIAMETER AND DEPTH SHALL BE REVISED PER STRUCTURAL ENGINEER RECOMMENDATIONS.

POLE HEIGHT	*BASE DEPTH*	*BASE DIAMETER*	*VERTICAL REBAR SIZE*
10'-0"	4'-0"	1'-0"	#4
15'-0"	6'-0"	1'-6"	#5
20'-0"	8'-0"	2'-0"	#5
25'-0"	8'-0"	2'-0"	#5
30'-0"	12'-0"	2'-0"	#5
35'-0"	10'-0"	2'-6"	#6
40'-0"	10'-0"	2'-6"	#6

POLE LOCATION	*BASE HEIGHT*
UNPAVED AREAS (LAWN, PLANTERS, ETC.)	0'-3"
PARKING LOTS	3'-0"
SIDEWALKS	0'-0"

1 TYPICAL LIGHT POLE BASE DETAIL

SCALE: NONE

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
09-29-25
LICENSED PROFESSIONAL ENGINEER

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SITE LIGHTING DETAILS AND DIAGRAMS

SHEET NO.
E-502

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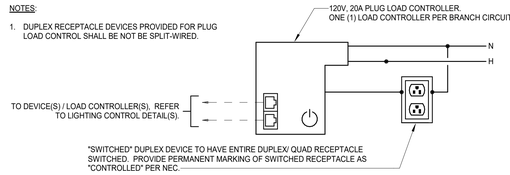
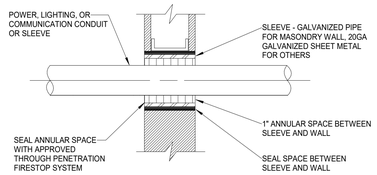


PLUG LOAD CONTROLLER LIGHTING CONTROL WIRING DIAGRAM

10 SCALE: NONE

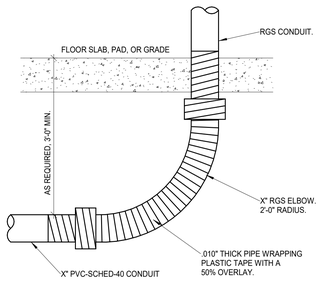


NOTES:

1. REFER TO DIVISION 7, FIRESTOPPING FOR ADDITIONAL REQUIREMENTS.

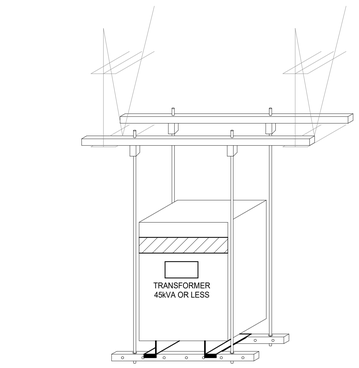
TYPICAL FIRESTOP SLEEVE DETAIL

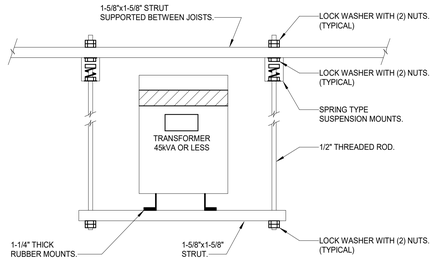
9 SCALE: NONE



TYPICAL CONDUIT TRANSITION PVC TO RGS DETAIL

8 SCALE: NONE



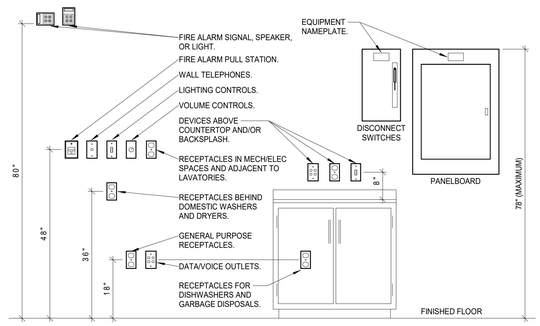


NOTES:

1. SEE TYPICAL 480V:208Y/120V DRY-TYPE TRANSFORMER GROUNDING DETAIL FOR GROUNDING REQUIREMENTS OF SEPARATELY DERIVED SYSTEMS.

TRAPEZE MOUNTED TRANSFORMER DETAIL

11 SCALE: NONE

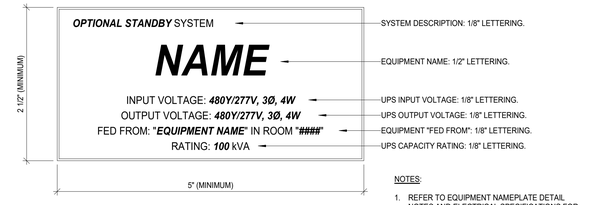


NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO THE CENTERLINE OF DEVICES EXCEPT FIRE ALARM A/V DEVICES.
2. NO WIRING DEVICES OR OUTLET BOXES SHALL BE MOUNTED BACK TO BACK.
3. ALL MOUNTING HEIGHTS SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS NOTED OTHERWISE.
4. FOR ALL ELEVATIONS (WHERE APPLICABLE), CASEWORK DETAILS, FIRE WALLS, SMOKE WALLS, LOCATION OF COUNTERTOP RECEPTACLES, LIGHTING FIXTURE SWITCHES, TELEPHONE OUTLETS, EQUIPMENT ROUGH-INS, HEADWALLS, ETC., SEE ARCHITECTURAL DRAWINGS. WHERE NO ARCHITECTURAL ELEVATIONS OR DETAILS OCCUR, CONTRACTOR SHALL USE MEANS AND METHODS AS WELL AS HIS/HER FIELD KNOWLEDGE TO SPOT DEVICES IN BEST LOCATIONS FOR THE PROJECT.
5. ALL MOUNTING HEIGHTS SHALL COMPLY WITH ADA REQUIREMENTS:
   A. GENERAL DEVICES: 15" MINIMUM, 48" MAXIMUM.
   B. ABOVE COUNTER DEVICES: 44" MAXIMUM.
   C. FIRE ALARM SIGNAL, SPEAKER, AND/OR LIGHT DEVICES: 80" MINIMUM, 96" MAXIMUM.

TYPICAL MOUNTING HEIGHTS DETAIL

7 SCALE: NONE

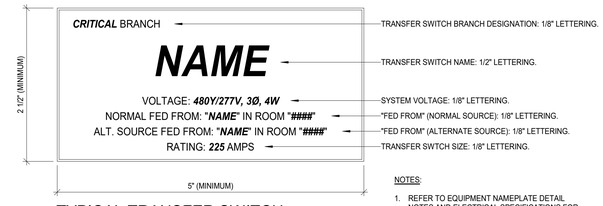


NOTES:

1. REFER TO EQUIPMENT NAMEPLATE DETAIL NOTES AND ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TYPICAL UPS NAMEPLATE DETAIL

6 SCALE: NONE

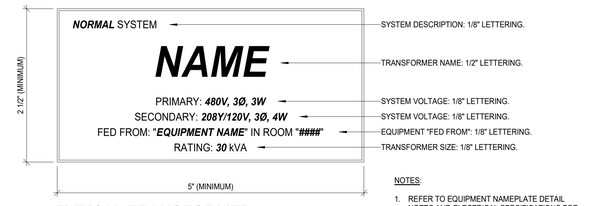


NOTES:

1. REFER TO EQUIPMENT NAMEPLATE DETAIL NOTES AND ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TYPICAL TRANSFER SWITCH NAMEPLATE DETAIL

5 SCALE: NONE

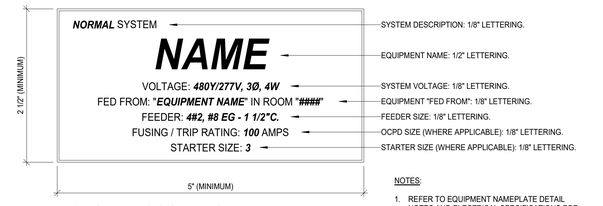


NOTES:

1. REFER TO EQUIPMENT NAMEPLATE DETAIL NOTES AND ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TYPICAL TRANSFORMER NAMEPLATE DETAIL

4 SCALE: NONE

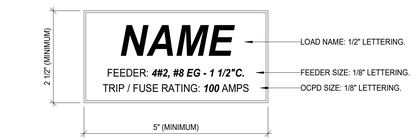


NOTES:

1. REFER TO EQUIPMENT NAMEPLATE DETAIL NOTES AND ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TYPICAL DISCONNECT NAMEPLATE DETAIL

3 SCALE: NONE

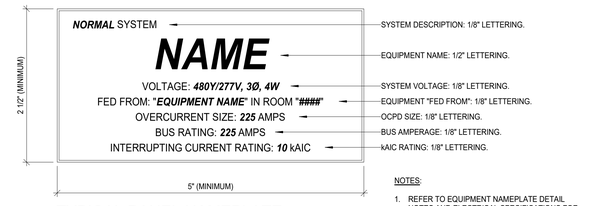


NOTES:

1. REFER TO EQUIPMENT NAMEPLATE DETAIL NOTES AND ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TYPICAL FEEDER OCPD NAMEPLATE DETAIL

2 SCALE: NONE



NOTES:

1. REFER TO EQUIPMENT NAMEPLATE DETAIL NOTES AND ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TYPICAL PANEL NAMEPLATE DETAIL

1 SCALE: NONE

ELECTRICAL EQUIPMENT NAMEPLATE DETAIL NOTES:

1. **DETAIL #1** SHALL BE UTILIZED FOR THE FOLLOWING EQUIPMENT:
   A. PANELBOARDS.
   B. DISTRIBUTION PANELBOARDS.
   C. SWITCHBOARDS.
   D. SWITCHGEAR.
   E. FIRE ALARM PANELS.
   F. BUILDING AUTOMATION SYSTEM (BAS) PANELS.
2. **DETAIL #2** SHALL BE UTILIZED FOR THE FOLLOWING EQUIPMENT:
   A. SWITCHGEAR MAIN AND FEEDER BREAKERS.
   B. SWITCHBOARD MAIN AND FEEDER BREAKERS.
   C. DISTRIBUTION PANELBOARD MAIN AND FEEDER BREAKERS.
3. **DETAIL #3** SHALL BE UTILIZED FOR THE FOLLOWING EQUIPMENT:
   A. NON-FUSED DISCONNECT SWITCHES.
   B. FUSIBLE DISCONNECT SWITCHES.
   C. MOTOR STARTERS.
   D. COMBINATION MOTOR STARTERS.
   E. VARIABLE FREQUENCY DRIVES (VFD's).
4. **DETAIL #4** SHALL BE UTILIZED FOR THE FOLLOWING EQUIPMENT:
   A. TRANSFORMERS.
5. **DETAIL #5** SHALL BE UTILIZED FOR THE FOLLOWING EQUIPMENT:
   A. AUTOMATIC TRANSFER SWITCHES (ATS's).
   B. MANUAL TRANSFER SWITCHES (MTS's).
6. **DETAIL #6** SHALL BE UTILIZED FOR THE FOLLOWING EQUIPMENT:
   A. UNINTERRUPTIBLE POWER SUPPLIES (UPS's).
7. REFER TO OWNER'S STANDARDS FOR VARIATIONS TO REQUIRED NAMEPLATE INFORMATION AND FORMATTING.
8. TEXT INCLUDED IN ***BOLDED ITALICIZED*** TEXT INDICATES INFORMATION SPECIFIC TO EACH PIECE OF EQUIPMENT.
9. NAMEPLATES SHALL BE ENGRAVED ACRYLIC OR MELAMINE WITH BEVELED EDGES.
10. FURNISH NAMEPLATE WITH SELF-ADHESIVE BACK OR PROVIDE TWO (2) STAINLESS STEEL SCREWS TO SECURE NAMEPLATE:
    A. SCREWS SHALL MAINTAIN 1/2" DISTANCE FROM LETTERING.
    B. SCREWS SHALL NOT DEGRADE THE NEMA RATING OF THE EQUIPMENT ENCLOSURE.
11. WHERE EQUIPMENT LISTED ABOVE IS FURNISHED OR PROVIDED BY OTHER DIVISIONS AND CONNECTED OR INSTALLED BY THE ELECTRICAL CONTRACTOR, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE EQUIPMENT NAMEPLATE. NAMEPLATE SHALL NOT COVER ANY FACTORY INSTALLED LABELING OR OTHER EQUIPMENT INFORMATION / IDENTIFICATION.
12. NAMEPLATE BACKGROUND AND LETTER COLORING SHALL BE AS FOLLOWS:
    A. *NORMAL SYSTEMS*: **BLACK** LETTERS ON A **WHITE** BACKGROUND.
    B. *ARTICLE 700 SYSTEMS (EMERGENCY, LIFE SAFETY, CRITICAL BRANCH, ETC.)*: **WHITE** LETTERS ON A **RED** BACKGROUND.
    C. *ARTICLE 701 SYSTEMS (LEGALLY REQUIRED STAND-BY)*: **WHITE** LETTERS ON A **RED** BACKGROUND.
    D. *ARTICLE 702 SYSTEMS (OPTIONAL STAND-BY)*: **BLACK** LETTERS ON **YELLOW** BACKGROUND.

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No. 43945
09-29-25
LICENSED PROFESSIONAL ENGINEER

REVISION

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HKS PROJECT NUMBER
26234.000

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29 SEPTEMBER 2025

ISSUE
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SHEET TITLE
POWER DETAILS AND DIAGRAMS

SHEET NO.
E-511

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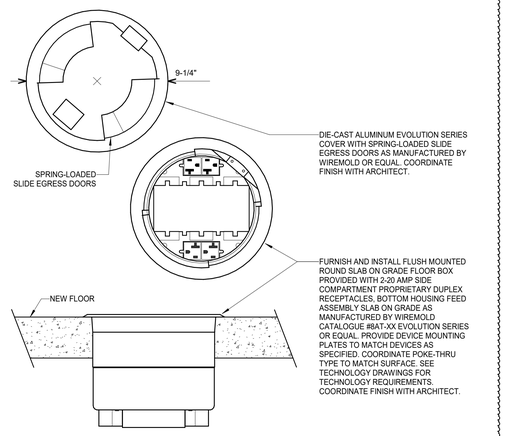
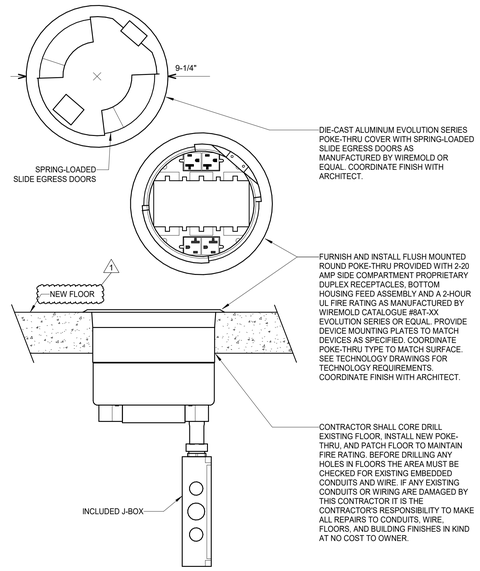


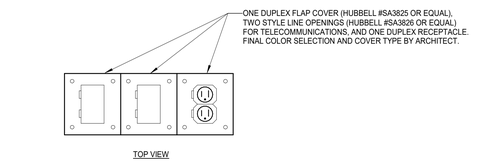
6 POWER AND DATA ROUND SLAB ON GRADE FLOOR BOX DETAIL

SCALE: NONE



5 POWER AND DATA ROUND POKE-THROUGH DETAIL

SCALE: NONE

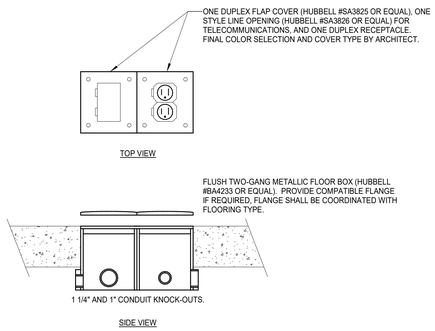


NOTES:

1. CONDUITS SHALL NOT BE RUN IN FLOOR OR SLAB.

4 POWER AND DATA FLOOR BOX DETAIL

SCALE: NONE



NOTES:

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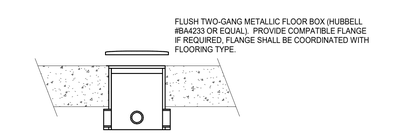
3 POWER AND DATA FLOOR BOX DETAIL

SCALE: NONE



NOTES:

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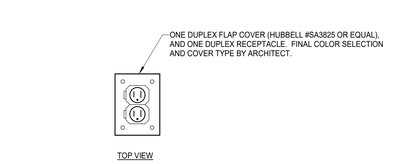
2 POWER FLOOR BOX DETAIL

SCALE: NONE



NOTES:

1. CONDUITS SHALL NOT BE RUN IN FLOOR OR SLAB.

1 POWER AND DATA FLOOR BOX DETAIL

SCALE: NONE

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T.P. GASSER
ENGINEER
No. 47045
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
	100% DD	05/09/25
1	ADDENDUM No. 1	10/17/2025

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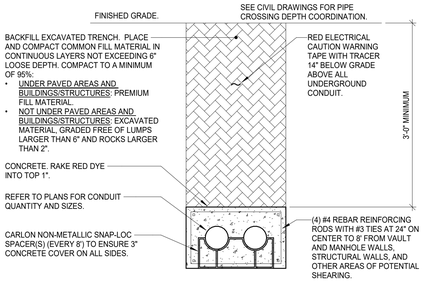
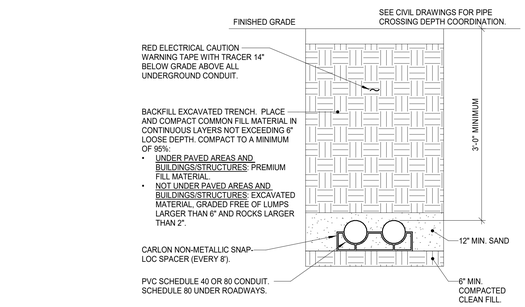


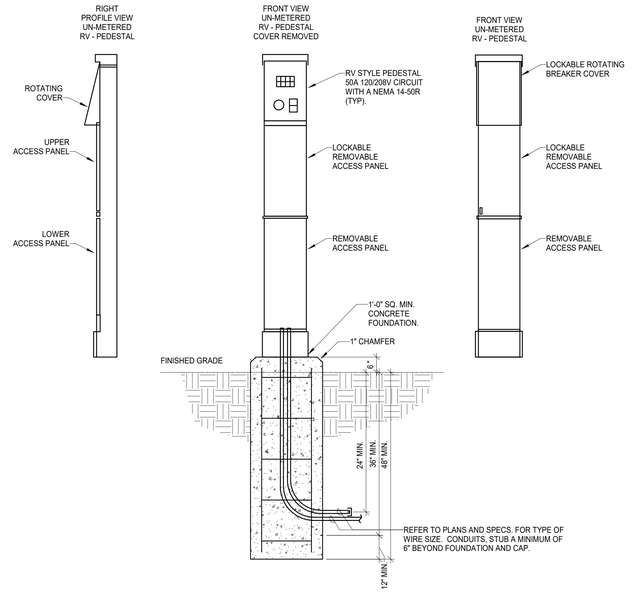
7 TYPICAL CONCRETE ENCASED DUCT BANK SECTION
SCALE: NONE



NOTES:

1. REFER TO PLANS FOR QUANTITY AND SIZE(S) OF CONDUITS.
2. MAINTAIN A MINIMUM SEPARATION OF 12" BETWEEN ELECTRICAL AND TECHNOLOGY RACEWAYS THROUGH ALL DIRECT BURY CONDUIT DUCT BANKS.

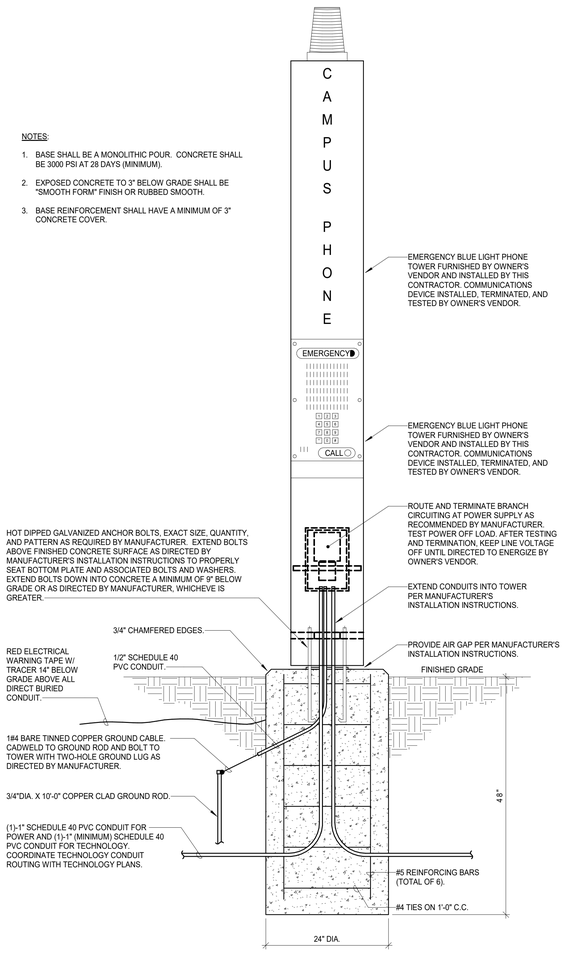
5 TYPICAL DIRECT BURY CONDUIT SECTION
SCALE: NONE



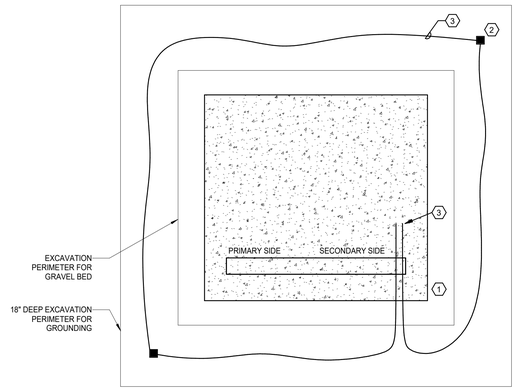
3 SITE RV POWER PEDESTAL DETAIL
SCALE: NONE

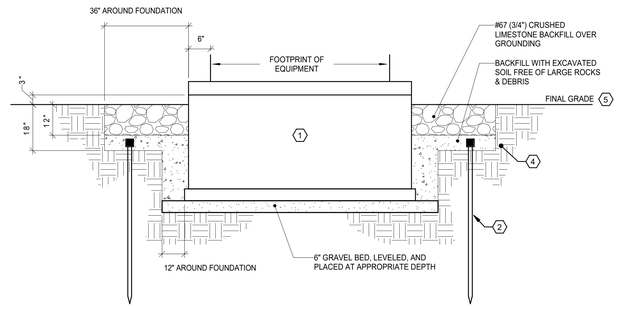
NOTES:

1. BASE SHALL BE A MONOLITHIC POUR. CONCRETE SHALL BE 3000 PSI AT 28 DAYS (MINIMUM).
2. EXPOSED CONCRETE TO 3" BELOW GRADE SHALL BE "SMOOTH FORM" FINISH OR RUBBED SMOOTH.
3. BASE REINFORCEMENT SHALL HAVE A MINIMUM OF 3" CONCRETE COVER.



6 EMERGENCY PHONE BASE DETAIL
SCALE: NONE

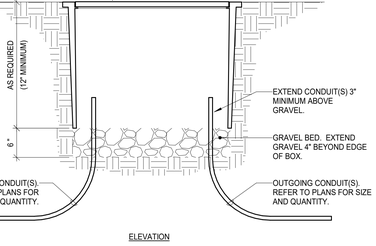




NOTES:

1. PRECAST TRANSFORMER VAULT PROVIDED BY EC. PROVIDE MFGR LINDSEY PRECAST OR EQUAL. VERIFY ALL VAULT CONSTRUCTION DIMENSIONS INCLUDING WIRE OPENINGS AND DUCTBANK KNOCKOUTS WITH TRANSFORMER SHOP DRAWINGS PRIOR TO INSTALLATION. VAULT SHALL EXTEND 6' BEYOND EQUIPMENT/ENCLOSURE FOOTPRINT ON ALL SIDES. PROVIDE DEEPER VAULT AS REQUIRED TO MAINTAIN NEC MINIMUM REQUIRED COVER OF DUCTBANKS.
2. PROVIDE **TWO (2)** 3/4" DIAMETER X 10'-0" COPPER GROUND RODS IN UNDISTURBED EARTH. CONNECTIONS SHALL BE MADE WITH EXOTHERMIC WELD PROCESS.
3. **#2 SOLID TINNED COPPER GROUND CONDUCTOR**. EXOTHERMIC WELD TO GROUND RODS AND PROVIDE LOOP AROUND NEW PAD. EXCESS LENGTH OF 15' COILED INSIDE VAULT.
4. SOIL SHALL BE COMPACTED TO 95% OF THE ORIGINAL SOIL DENSITY.
5. AREA SURROUNDING FOUNDATION SHALL BE GRADED SO THAT GROUND WATER WILL NOT COLLECT.

4 OIL-FILLED TRANSFORMER PAD/VAULT DETAIL
SCALE: NONE



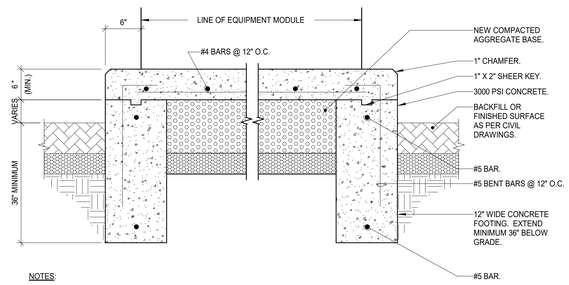
PLAN

ELEVATION

NOTES:

1. PROVIDE SPLICING CONNECTOR AS REQUIRED. USE BURNDY YPC2A8U OR APPROVED EQUAL. ENCAPSULATED WITH A RAYCHEM GEL ENCLOSURE #GHFC-1-90 SERIES.

2 GROUND BOX DETAIL
SCALE: NONE



NOTES:

1. CONCRETE SHALL BE 3000 PSI AT 28 DAYS (MINIMUM).
2. *EQUIPMENT ANCHORS* - CONTRACTOR TO COORDINATE EQUIPMENT MANUFACTURER THE LOCATIONS OF HURRICANE TIE-DOWN ANCHORS TO BE CAST INTO NEW CONCRETE FOUNDATION FOR EQUIPMENT. ANCHORAGE TO BE DESIGNED TO WITHSTAND WINDS UP TO 110 MPH OR AS REQUIRED BY LOCAL CODES.

1 TYPICAL EQUIPMENT PAD DETAIL
SCALE: NONE

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No. 43945
09-29-25
LICENSED PROFESSIONAL ENGINEER

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SITE POWER DETAILS

SHEET NO.
E-512

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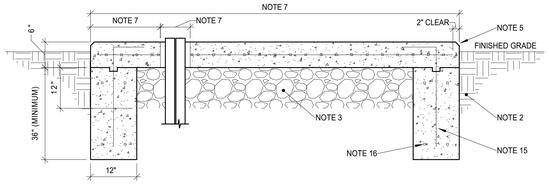
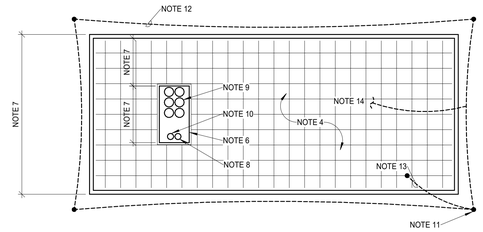


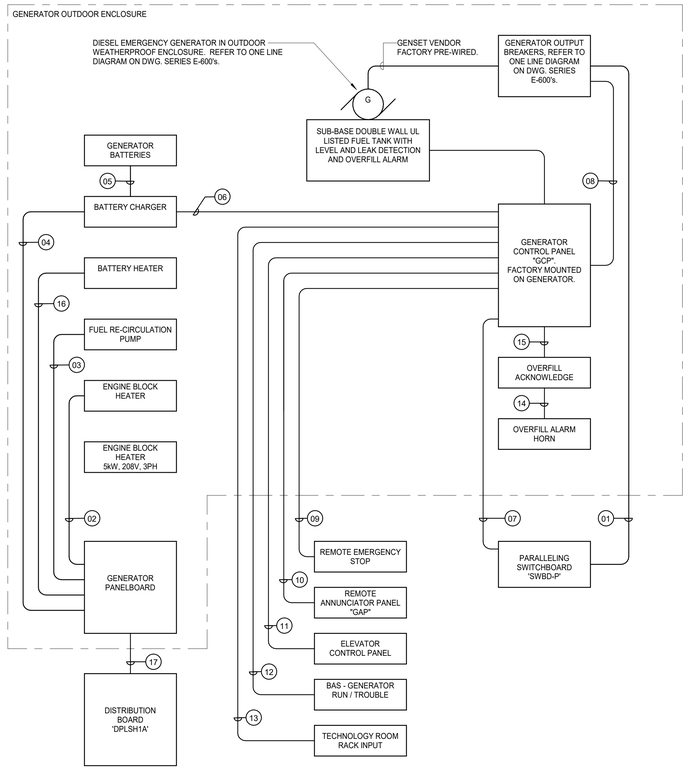


NOTES:

1. CONCRETE SHALL BE 3000 PSI AT 28 DAYS (MINIMUM).
2. SOIL SHALL BE COMPACTED TO 95% OF THE ORIGINAL SOIL DENSITY.
3. CRUSHED LIMESTONE #57 TO 12" BENEATH PAD.
4. ONE LAYER OF #4 REBAR @ 12" ON CENTER IN EACH DIRECTION.
5. CHAMFER ALL EXPOSED EDGES WITH 1/2" CHAMFER.
6. #4 REBAR ADDITIONAL (EXTEND 12" BEYOND OPENING).
7. VERIFY ALL PAD CONSTRUCTION DIMENSIONS INCLUDING CONDUIT OPENING WITH GENERATOR SHOP DRAWINGS PRIOR TO INSTALLATION. PAD SHALL EXTEND 2" BEYOND EQUIPMENT/ENCLOSURE ON ALL SIDES.
8. CONDUIT FOR GENERATOR WATER JACKET HEATER AND BATTERY CHARGER CIRCUITS. SEE TRENCHING DETAIL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
9. CONDUIT(S) FOR FEEDER TO AUTOMATIC TRANSFER SWITCH. SEE TRENCHED DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
10. CONDUIT FOR CONTROLS TO REMOTE GENERATOR ANNUNCIATOR PANEL (RGAP). SEE TRENCHING DETAILS FOR ADDITIONAL INFORMATION AND REQUIRMENTS.
11. 3/4" X 10'-0" COPPER CLAD STEEL GROUND ROD AT EACH CORNER OF NEW GENERATOR PAD.
12. #2 AWG BARE COPPER GROUND RING CONDUCTOR. EXOTHERMIC WELD TO GROUND RODS AND PROVIDE LOOP AROUND NEW PAD.
13. #4 AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR. EXOTHERMIC 2WELD TO CONCRETE ENCASED ELECTRODE.
14. #XX AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR TO GENERATOR GROUND BUS.
15. #5 BENT REBAR AT 12"O.C.
16. #5 REBAR.

2 GENERATOR GROUNDING AND PAD DETAIL

SCALE: NONE



GENERATOR CONDUIT AND WIRE LEGEND				
TAG	*SOURCE*	*DESTINATION*	*BRANCH CIRCUIT / FEEDER*	*NOTES*
01	GENERATOR OUTPUT BREAKER #1	PARALLELING GEAR 'SWBD-P'	REFER TO ONE LINE DIAGRAM.	7
02	GENERATOR BLOCK HEATER	GENERATOR PANEL	3#10, 1#10 EG - 3/4"C.	5, 7
03	FUEL RE-CIRCULATION PUMP	GENERATOR PANEL	2#12, 1#12 EG - 3/4"C.	5, 7
04	BATTERY CHARGER	GENERATOR PANEL	2#12, 1#12 EG - 3/4"C.	5, 7
05	GENERATOR BATTERIES (2)	BATTERY CHARGER	4#10: 2-BLK (+), 2-WHT (-)	3
06	BATTERY CHARGER	GENERATOR CONTROL PANEL "GCP"	4#14 - 1/2"C.	1, 3
07	PARALLELING GEAR 'SWGR-A'	GENERATOR CONTROL PANEL "GCP"	8#14 - 3/4"C.	1, 2, 6, 7
08	GENERATOR OUTPUT BREAKERS	GENERATOR CONTROL PANEL "GCP"	16#14 - 1"C.	1, 4
09	REMOTE EMERGENCY STOP (AT GENERATOR ENCLOSURE)	GENERATOR CONTROL PANEL "GCP"	6#14 - 3/4"C.	1, 6, 7
10	REMOTE ANNUNCIATOR PANEL "GAP" (FIRE COMMAND CENTER 1103 , REFER TO DWG. E-201)	GENERATOR CONTROL PANEL "GCP"	MFR. REC. CABLING IN 1"C.	6, 7
11	ELEVATOR CONTROL PANEL (RM 1103, REFER TO DWG. E-201)	GENERATOR CONTROL PANEL "GCP"	8#12 - 3/4"C.	1
12	BUILDING AUTOMATION SYSTEM PANEL (RM 1216.00, REFER TO DWG. E-201)	GENERATOR CONTROL PANEL "GCP"	2#12, 1#12 EG - 3/4"C.	1
13	RACK IN TELECOMMUNICATIONS ROOM (RM 1214.00, REFER TO DWG. E-402)	GENERATOR CONTROL PANEL "GCP"	(2) CAT 6. CABLES IN 1"C.	6, 7, 8
14	OVERFILL ALARM HORN	OVERFILL ACKNOWLEDGE	3#12 (RED), 1#12 EG (GREEN) - 3/4"C.	3
15	OVERFILL ACKNOWLEDGE	GENERATOR CONTROL PANEL "GCP"	3#12 (RED), 1#12 EG (GREEN) - 3/4"C.	3
16	BATTERY HEATER	GENERATOR PANELBOARD	2#12, 1#12 EG - 3/4"C.	5, 7
16	DISTRIBUTION PANELBOARD 'DPLSH1A'	GENERATOR PANELBOARD	4#3, 1#8 EG - 1-1/2"C.	7

CONDUIT AND WIRE LEGEND NOTES:

1. SPARE CONDUCTORS INCLUDED.
2. CONTROL WIRE TERMINATIONS BETWEEN AUTOMATIC TRANSFER SWITCHES SHALL BE COORDINATED WITH ATS MANUFACTURER.
3. COORDINATE WIRING COLOR CODE AND CONDUIT ENTRY BETWEEN CONTROL PANEL AND GENERATOR CABINET WITH ENGINE VENDOR.
4. FINAL CONNECTIONS AT ENGINE SKID-MOUNTED EQUIPMENT, OUTPUT BREAKER, REMOTE RADIATOR, MOTORS SOLENOID VALVES AND UNIT HEATERS SHALL BE FLEXIBLE WIRING AND SEALTITE CONDUIT.
5. CONTRACTOR MAY COMBINE POWER CIRCUITS FROM GENSET TO BUILDING IN ONE 4" PVC CONCRETE ENCASED 36" BELOW GRADE. CONDUCTORS SHALL BE SIZED PER DERATING FACTORS FROM N.E.C. TABLE 310.15(B)(3)(a).
6. CONTRACTOR MAY COMBINE CONTROL CIRCUITS FROM GENSET TO BUILDING IN ONE 4" PVC CONCRETE ENCASED 36" BELOW GRADE. CONDUCTORS SHALL BE SIZED PER DERATING FACTORS FROM N.E.C. TABLE 310.15(B)(3)(a).
7. UNDERGROUND CONDUIT SHALL BE PVC. TRANSFER FROM RIGID TO PVC AS SHOWN DETAIL #7 ON **DWG. E-501**.
8. REFER TO TECHNOLOGY DRAWINGS.

1 GENERATOR EQUIPMENT CONTROL WIRING DIAGRAM

SCALE: NONE

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10/17/2025

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
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29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
GENERATOR RISER DIAGRAM AND DETAILS
SHEET NO.
E-513

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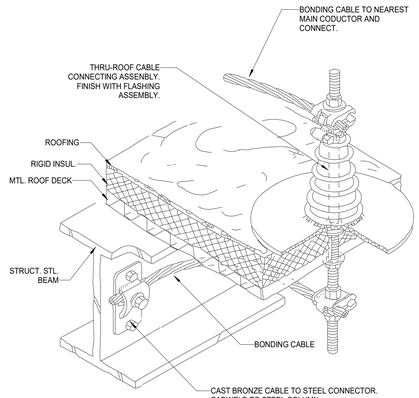
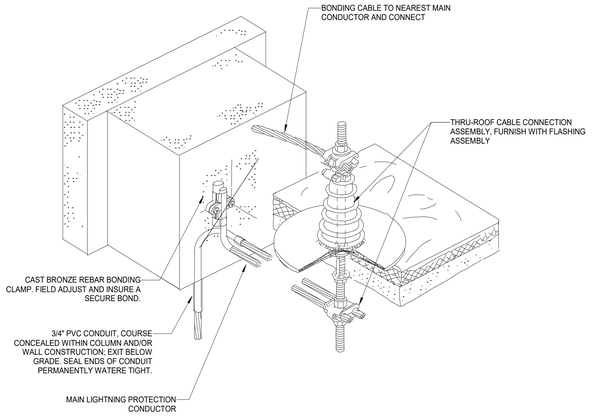


NOTE: STRUCTURAL STEEL SHALL BE BONDED TO THE ROOF PERIMETER CONDUCTOR AT INTERVALS OF NOT MORE THAN 100 FEET.

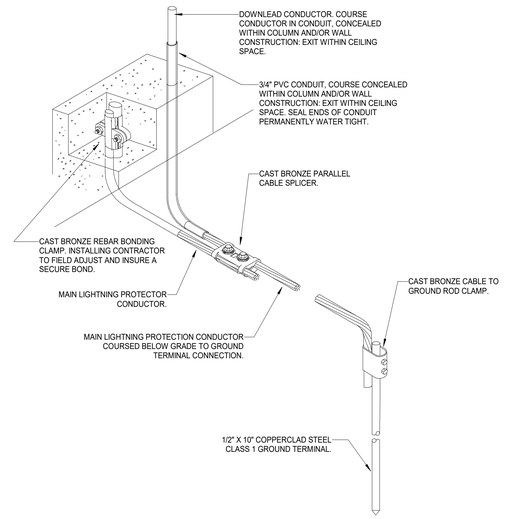
1 THRU-ROOF CABLE CONNECTION TO STEEL

SCALE: NONE



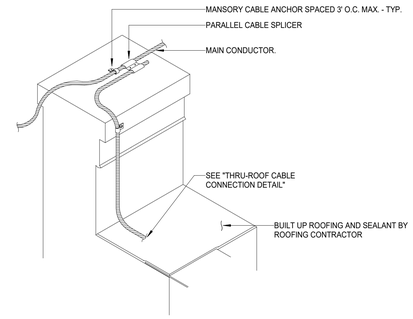
2 THRU-ROOF CABLE CONNECTION

SCALE: NONE



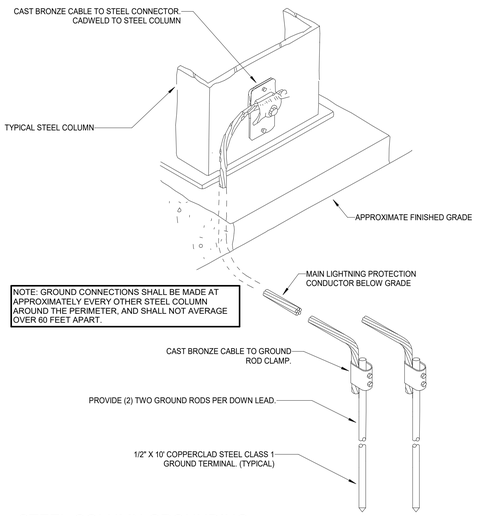
3 TYPICAL CONCEALED DOWNLEAD AND GROUNDING CONNECTION

SCALE: NONE



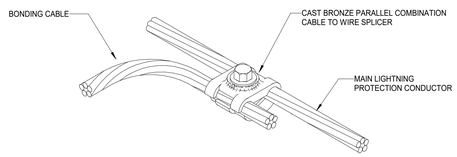
4 TYPICAL TOP MOUNT TO ROOFTOP DOWNLEAD

SCALE: NONE



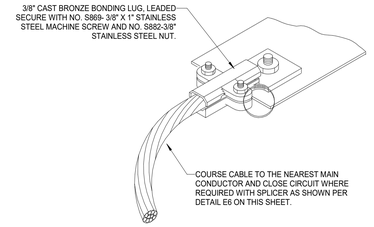
5 STEEL COLUMN GROUNDING DETAIL

SCALE: NONE



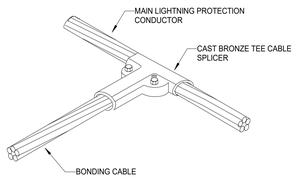
6 TYPICAL CABLE SPLICE

SCALE: NONE



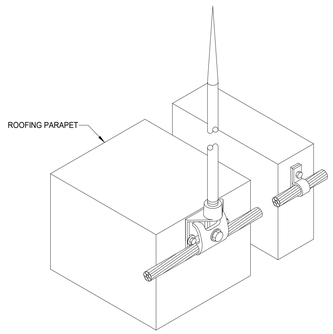
7 TYPICAL FRAME BOND

SCALE: NONE



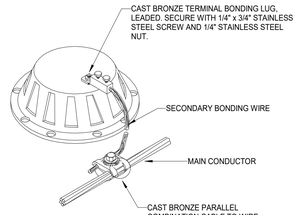
8 TYPICAL TEE CABLE SPLICE

SCALE: NONE



9 TYPICAL SIDE MOUNT AIR TERMINAL

SCALE: NONE



10 TYPICAL ROOF DRAIN BOND CONNECTION

SCALE: NONE

GENERAL LIGHTNING PROTECTION INSTALLATION NOTES

1. ENTIRE INSTALLATION SHALL COMPLY WITH NFPA 780.
2. CONNECTIONS TO GROUND ROD SHALL BE MADE NOT LESS THAN 1'-0" BELOW GRADE.
3. AIR TERMINALS SHALL BE PLACED AT UNPROTECTED OUTSIDE CORNERS AND LOCATED INTERMEDIATELY ON 20'-0" OF OUTSIDE EDGE.
4. MIDROOF AREAS SHALL BE PROVIDED WITH AIR TERMINALS AS REQUIRED TO INCLUDE THE ENTIRE ROOF AREA IN ACCORDANCE WITH NFPA 780.
5. GROUNDED METAL BODIES LOCATED ABOUT THE STRUCTURE SUCH AS SOIL PIPE VENTS, ROOF DRAINS, EXHAUST FANS, AIR HANDLING UNITS, (MISCELLANEOUS EQUIPMENT WITH ELECTRICAL SERVICES), ETC. SHALL BE INTERCONNECTED TO THE LIGHTNING CONDUCTOR SYSTEM, AS REQUIRED BY NFPA 780.
6. BOND METALLIC PIPES INCLUDING WATER, FIRE, GAS, SEWER, STORM, ETC. WHICH ENTER THE STRUCTURE WITHIN 12' OF GRADE TO THE NEAREST DOWNLEAD, GROUND ROD OR GROUND LOOP.
7. REINFORCING, STRUCTURAL, FRAMING AND MISCELLANEOUS STEEL SHALL BE MADE ELECTRICALLY CONTINUOUS THROUGHOUT CONSTRUCTION BY WELDING, CLIPPING, BOLTING OR OTHER APPROVED METHODS.
8. TELEPHONE AND/OR ELECTRIC SERVICE ENTRANCE GROUNDS SHALL BE INTERNCONNECTED TO THE ONE LIGHTNING PROTECTION GROUND OR WATER PIPE.
9. THE LIGHTNING PROTECTION SYSTEM SHALL BE INSTALLED IN A NEAT AND INCONSPICUOUS MANNER SO THAT ALL COMPONENTS WILL BLEND WITH THE APPEARANCE OF THE BUILDING.
10. NO BEND OF A CONDUCTOR SHALL FORM A FINAL UNCLUDED ANGLE OF LESS THAN 90o NOR SHALL HAVE A RADIUS OF LESS THAN 8".
11. CONDUCTORS SHALL INTERCONNECT AIR TERMINALS AND FORM A TWO-WAY PATH FROM EACH AIR TERMINALS HORIZONTALLY OR DOWNWARD TO CONNECTIONS WITH GROUND TERMINALS.
12. LIGHTNING PROTECTION CONDUCTORS SHALL BE FASTENED AT 3'-0" MAXIMUM INTERVALS.
13. ADHASIVE TYPE FITTINGS, IF USED, SHALL BE SET IN PLACE WITH AN APPLICATION OF COMPATIBLE ADHESIVE COMPOUND BEFORE ROOF GRAVEL IS APPLIED.
14. COORDINATE LOCATION OF AIR TERMINAL, CONDUCTOR, GROUND RODS, WITH ACTUAL JOBSITE CONDITIONS.
15. BARE COPPER LIGHTNING PROTECTION MATERIALS SHALL NOT BE INSTALLED ON ALUMINUM ROOF OR SIDING OR OTHER ALUMINUM SURFACES, LIKEWISE ALUMINUM LIGHTNING PROTECTION MATERIALS SHALL NOT BE INSTALLED ON COPPER ROOFING OR COPPER SIDING OR OTHER COPPER SURFACES.
16. LIGHTNING ARRESTER SHALL BE PROVIDED ON ELECTRIC AND TELEPHONE SERVICE ENTRANCES AND ON RADIO AND TELEVISION ANTENNA LEAD.
17. SEAL ENDS OF CONDUIT MOISTURE TIGHT WITH DUCT SEAL OR LEAD WEDGE.
18. THE LIGHTNING PROTECTION INSTALLATION SHALL COMPLY WITH LIGHTNING PROTECTION INSTITUTE STANDARD 175. THE INSTALLATION SHALL BE MADE BY, OR UNDER THE SUPERVISION OF, AN LPI CERTIFIED MASTER INSTALLER.
19. THE INSTALLATION SHALL MEET THE REQUIREMENTS OF UNDERWRITERS LABORATORIES STANDARD 96A FOR MASTER LABELED LIGHTNING PROTECTION SYSTEMS.
20. PROVIDE CERTIFICATION AT FINAL INSPECTION.

NOTES FOR DETAILS 1 AND 2

A. PROVIDE STAINLESS STEEL ALL-THREAD COMPATIBLE WITH THE CONNECTOR AND CABLE HARDWARE CUT THE ROD FLUSH WITH THE END OF THE CONNECTOR AND RETAINER NUTS. NO MORE THAN 4 INCHES ABOVE THE ROOF DECK.

B. REMOVE CABLE AND ALL-THREAD TAG ENDS FLUSH THE CONNECTING HARDWARE.

C. WHERE USING STEEL AS DOWN CONDUCTORS, CONNECT DIRECTLY TO VERTICAL COLUMN STEEL SPACED EVERY 60 FEET ON AVERAGE, AROUND THE PROJECT PERIPHERY. CONNECTIONS TO SPANDREL BEAMS OR OTHER NON-COLUMN STEEL IS NOT ACCEPTABLE. USE THE MOST DIRECT ROUTE.

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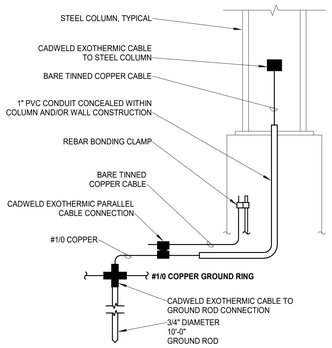
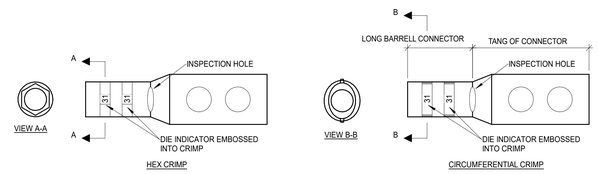


NOTES:

1. ALL GROUNDING AND BONDING ELECTRODES AND CONDUCTORS SHALL BE IN CONFORMANCE WITH N.E.C. ARTICLE 250 REQUIREIMENTS.
2. FOR ALL ADDITIONAL REQUIREMENTS REFER TO SPECIFICATION SECTION 260526.

8 TYPICAL STEEL COLUMN AND REBAR GROUNDING DETAIL

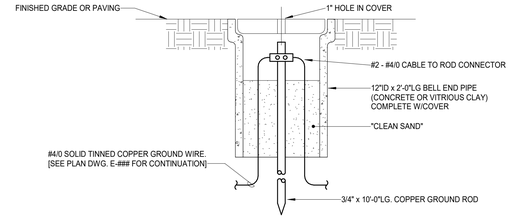
SCALE: NONE



AFTER CRIMPING, ALL FLASHES, BURRS, OR SHARP EDGES RESULTING FROM THE CRIMPING PROCESS MUST BE REMOVED.

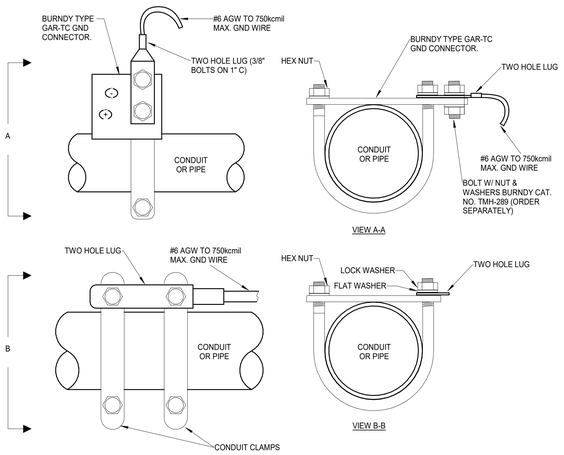
6 TWO HOLE CRIMP COPPER CONNECTION DETAIL

SCALE: NONE



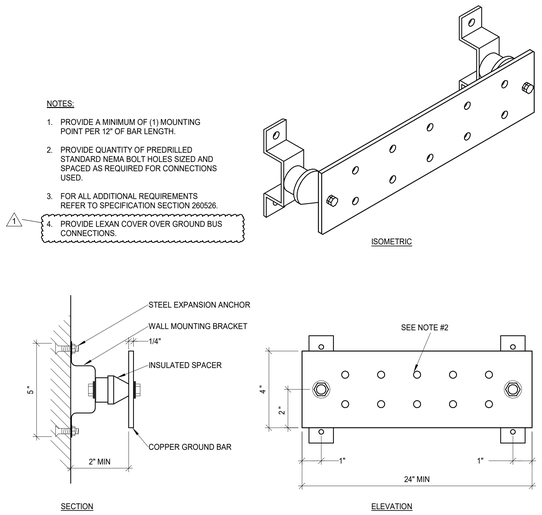
3 GROUND ROD AND TEST WELL DETAIL

SCALE: NONE



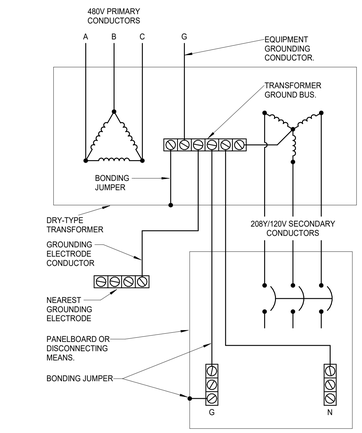
5 PIPE GROUND CLAMP DETAIL

SCALE: NONE



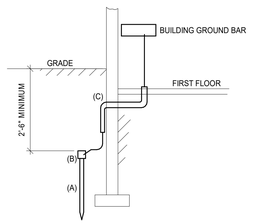
2 MAIN ELECTRICAL GROUND BUS (MEGB) DETAIL

SCALE: NONE



7 TYPICAL 480:208Y/120V DRY-TYPE TRANSFORMER GROUNDING DETAIL

SCALE: NONE



LEGEND:

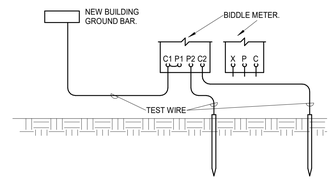
(A) 3/4" DIA. COPPER CLAD STEEL GROUND ROD 10', LG, DRIVEN TO 2'-6" MIN. BELOW GRADE.

(B) CADWELD CONNECTION.

(C) CONDUIT WALL PENETRATION.

4 GROUNDING CONDUCTOR ENTRANCE DETAIL

SCALE: NONE



LEGEND

(C) - CURRENT REFERENCE GROUND ROD

(P) - POTENTIAL REFERENCE GROUND ROD

(D) - RECOMMENDED DISTANCE OF CURRENT REFERENCE GROUND ROD FROM GROUND BAR FOR SINGLE EARTH ELECTRODE/WATER PIPE D = 50 TO 60 FEET

NOTES:

1. COORDINATE TESTING ONE WEEK IN ADVANCE WITH OWNER.
2. COMPLETE AND SUBMIT RESISTANCE TEST FORM.
3. MEASURE THE EARTH RESISTIVITY AT GROUND BAR, AS SHOWN IN FIGURE. IF THE RESISTIVITY IS MORE THAN 5 OHMS CONTACT OWNER.

1 FALL OF POTENTIAL TEST DIAGRAM

SCALE: NONE

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REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ELECTRICAL GROUNDING RISER AND DETAILS

SHEET NO.
E-521

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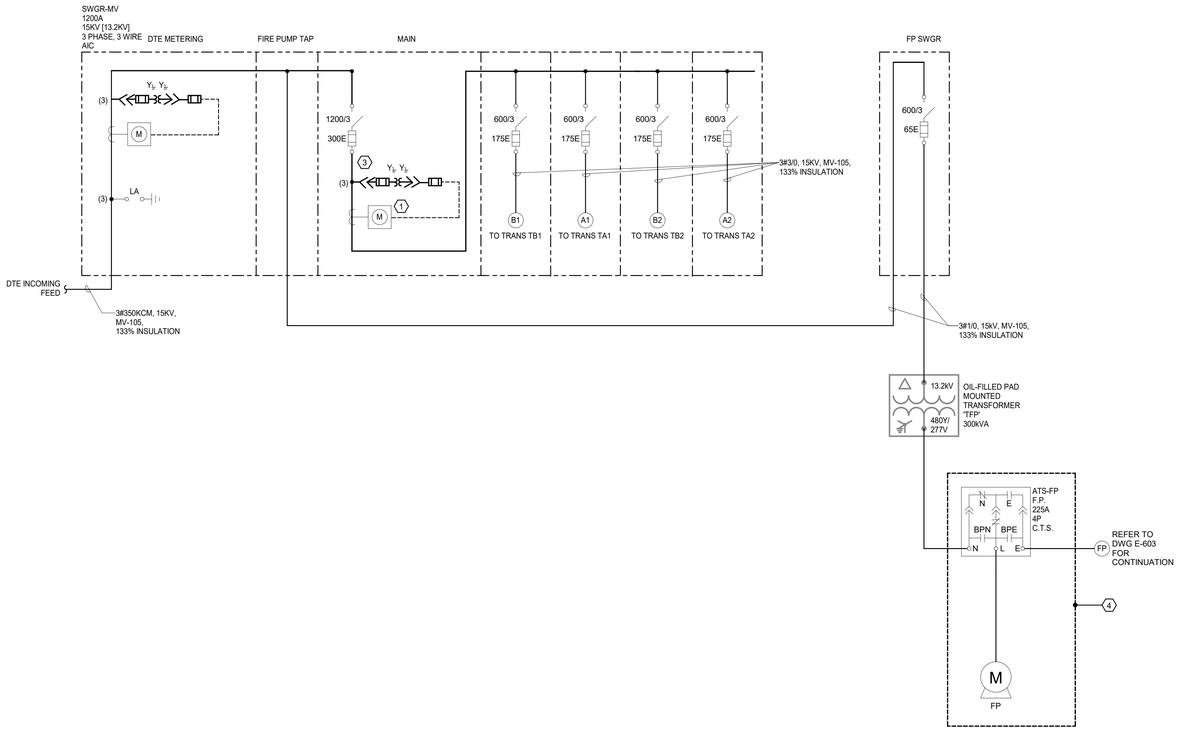

1 MEDIUM VOLTAGE ELECTRICAL ONE LINE DIAGRAM

SCALE: NONE

ELECTRICAL ONE LINE SHEET GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE VOLTAGE WIRING BETWEEN CONTROL PANELS AND/OR VFD's AND THEIR CORRESPONDING MOTORS. CONTROL PANELS AND/OR VFD's AND MOTORS ARE PROVIDED BY MECHANICAL HVAC CONTRACTOR. COORDINATE EXACT LOCATION OF ALL CONTROL PANELS, VFD's AND MOTORS AND THEIR REQUIREMENTS WITH MECHANICAL HVAC AND/OR CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
2. THE MEDIUM VOLTAGE SWITCHGEAR SHALL BE SUITABLE FOR USE AS SERVICE ENTRANCE (SE) EQUIPMENT AND LABELED IN ACCORDANCE WITH ALL U.L. REQUIREMENT(S).
3. SEE "GROUNDING ELECTRODE SYSTEM" DETAIL FOR ADDITIONAL GROUNDING AND BONDING REQUIREMENTS.
4. THE CONTRACTOR SHALL INCLUDED IN THEIR BID, ALL ELECTRIC UTILITY COMPANY CHARGES FOR PROVIDING SERVICE TO THE UTILITY SWITCHGEAR; INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING: TRANSFORMERS, CONCRETE PADS/VAULTS, CABLES, DUCTS, TRENCHING, BACKFILL, CONCRETE ENCASEMENT, METERING, GROUNDING, ALL ANCILLARY EQUIPMENT AND DEVICES, ETC. AND ASSOCIATED LABOR FOR A COMPLETE INSTALLATION PER N.E.C. AND ELECTRIC UTILITY COMPANY REQUIREMENTS. ANY LOCAL UTILITY COMPANY CHARGES FOR PROVISION OF ELECTRICAL SERVICE SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S BASE PRICE. AS A MINIMUM, THE INSTALLATION SHALL MEET THE SERVICE AND INSTALLATION REGULATIONS OF THE LOCAL UTILITY.
5. ROUTE UNDERGROUND PVC CONDUIT INCLUDING AT LEAST ONE SPARE CONDUIT IN ACCORDANCE WITH LOCAL UTILITY REGULATIONS TO THE LOCAL UTILITY CONNECTION POINT. PROVIDE PRIMARY CONDUCTORS PER THE LOCAL UTILITY UNLESS IT IS REQUIRED THAT CONDUCTORS BE PROVIDED BY THE LOCAL UTILITY. CONDUCTOR SIZE AND TYPE TO BE DETERMINED WITH THE LOCAL UTILITY. REVIEW THE CONNECTION POINT AND ROUTING WITH THE LOCAL UTILITY PRIOR TO START OF WORK. CONFIRM TRENCHING AND BURIAL DETAILS WITH LOCAL UTILITY PRIOR TO START OF WORK..
6. PROVIDE A TRANSFORMER PAD AND/OR VAULT OF THE PROPER SIZE AND MATERIAL TO MEET TO SERVICE AND INSTALLATION REGULATIONS OF THE LOCAL UTILITY PRIOR TO START OF WORK. PROVIDE A GROUND LOOP AND GROUNDING RODS AS REQUIRED TO MEET THE SERVICE AND INSTALLATION REGULATIONS OF THE LOCAL UTILITY. ALL GROUNDING CONNECTIONS SHALL BE MADE USING AN EXOTHERMIC WELD PROCESS.

SHEET KEY NOTES:

1. FURNISH AND INSTALL ADVANCED METERING SYSTEM TO MEET LEED V4 ADVANCED METERING REQUIREMENT.
2. TRANSFORMER TO BE SUPPLIED WITH LOW FLAMMABILITY OIL.
3. FURNISH AND INSTALL POWER QUALITY METER ON MAIN FUSE. POWER QUALITY METER TO BE CONNECTED TO ELECTRICITY METERING AND BMS SYSTEMS.
4. FIRE PUMP CONTROLLER AND TRANSFER SWITCH SHALL BE PROVIDED BY FIRE PROTECTION SUPPLIER.

FEEDER SCHEDULE - CU

TAG	PARALLEL SETS	PHASE / NEUTRAL	GROUND	CONDUIT
###F	X	X#XX	1#XX	X"C.
###S	X	X#XX	-	X"C.
60B	1	3#4	1#8	1 1/4"C.
60C	1	4#4	1#8	1 1/4"C.
70B	1	3#4	1#8	1 1/4"C.
100B	1	3#1	1#8	1 1/2"C.
100C	1	4#1	1#8	1 1/2"C.
100X	1	4#1	1#6	1 1/2"C.
150B	1	3#1/0	1#6	2"C.
150C	1	4#1/0	1#6	2"C.
150X	1	4#1/0	1#6	2"C.
175B	1	3#2/0	1#6	2"C.
200B	1	3#3/0	1#6	2"C.
200C	1	4#3/0	1#6	2"C.
225B	1	3#4/0	1#4	2"C.
225C	1	4#4/0	1#4	2 1/2"C.
300X	1	4#350kcmil	1#2	3"C.
400C	1	4#600kcmil	1#3	4"C.
400X	1	4#600kcmil	1#1/0	4"C.
600B	2	3#350kcmil	1#1	3"C.
600C	2	4#350kcmil	1#1	3"C.
600X	2	4#350kcmil	1#2/0	3"C.
1000C	3	4#500kcmil	1#2/0	3 1/2"C.
1200C	3	4#600kcmil	1#3/0	4"C.
1600C	4	4#600kcmil	1#4/0	4"C.
2000C	5	4#600kcmil	1#250kcmil	4"C.
3000C	8	4#500kcmil	1#400kcmil	3 1/2"C.
3000S	8	4#500kcmil		3 1/2"C.

DISTRIBUTION EQUIPMENT LOAD SUMMARY

EQUIPMENT NAME	VOLTAGE	BUS RATING (AMPS)	DEMAND LOAD (AMPS)	DEMAND LOAD (kVA)	SHORT CIRCUIT RATING
BDN-A	480Y/277V	1000 A	262 A	218.2 kVA	65kAIC
BDN-B	480Y/277V	1000 A	393 A	326.6 kVA	65kAIC
DPHN1A	480Y/277V	400 A	158 A	131.7 kVA	65kAIC
DPHN1B	480Y/277V	400 A	70 A	58.4 kVA	65kAIC
DPNL1A	208Y/120V	600 A	145 A	52.4 kVA	22kAIC
DPNL1B	208Y/120V	600 A	110 A	39.6 kVA	22kAIC
DPNL2A	208Y/120V	400 A	157 A	56.7 kVA	22kAIC
DPNL2B	208Y/120V	600 A	216 A	77.9 kVA	22kAIC
DPNL3A	208Y/120V	400 A	171 A	61.7 kVA	22kAIC
DPNL3B	208Y/120V	600 A	211 A	75.9 kVA	22kAIC
DPNL4A	208Y/120V	400 A	160 A	57.7 kVA	22kAIC
DPNL4B	208Y/120V	600 A	213 A	76.8 kVA	22kAIC
DPNL5A	208Y/120V	400 A	159 A	57.2 kVA	22kAIC
DPNL5B	208Y/120V	600 A	212 A	76.4 kVA	22kAIC
DPOL1A	208Y/120V	600 A	67 A	24.0 kVA	22kAIC
DPOL2B	208Y/120V	600 A	179 A	64.6 kVA	22kAIC
DPOL3B	208Y/120V	600 A	208 A	74.8 kVA	22kAIC
DPOL4B	208Y/120V	600 A	213 A	76.6 kVA	22kAIC
DPOL5B	208Y/120V	600 A	205 A	73.7 kVA	22kAIC
SWBD A	480Y/277V	3000 A	2542 A	2113.0 kVA	65kAIC
SWBD B	480Y/277V	3000 A	1841 A	1530.8 kVA	65kAIC
SWHN9A	480Y/277V	1000 A	560 A	465.9 kVA	65kAIC
SWHN6B	480Y/277V	1600 A	924 A	767.9 kVA	65kAIC
UPS-A	208Y/120V	600 A	462 A	166.3 kVA	22kAIC
UPS-T	208Y/120V	100 A	102 A	36.7 kVA	22kAIC
UPS-UL2A	208Y/120V	225 A	194 A	69.9 kVA	22kAIC
UPS-UL3A	208Y/120V	225 A	188 A	67.8 kVA	22kAIC
UPS-UL4A	208Y/120V	225 A	168 A	60.6 kVA	22kAIC
UPS-UL5A	208Y/120V	225 A	183 A	65.9 kVA	22kAIC

GENERATOR DISTRIBUTION EQUIPMENT LOAD SUMMARY

EQUIPMENT NAME	VOLTAGE	BUS RATING (AMPS)	DEMAND LOAD (AMPS)	DEMAND LOAD (kVA)	SHORT CIRCUIT RATING
ATS CH-1	480Y/277V	600 A	353 A	293.3 kVA	65kAIC
ATS CH-2	480Y/277V	600 A	353 A	293.3 kVA	65kAIC
ATS CH-3	480Y/277V	600 A	353 A	293.3 kVA	65kAIC
BDO-A	480Y/277V	1000 A	441 A	366.9 kVA	65kAIC
BDO-B	480Y/277V	1000 A	331 A	275.0 kVA	65kAIC
DPHEQ1B	480Y/277V	1200 A	65 A	53.7 kVA	65kAIC
DPHLRS1A	480Y/277V	1200 A	115 A	95.8 kVA	65kAIC
DPHLRS6A	480Y/277V	400 A	115 A	95.8 kVA	65kAIC
DPLSH1A	480Y/277V	400 A	114 A	94.8 kVA	65kAIC
DPOH1A	480Y/277V	1600 A	696 A	578.8 kVA	65kAIC
FP SWGR	480Y/277V	600 A	156 A	129.7 kVA	65kAIC
SWHEQ6A	480Y/277V	1600 A	586 A	487.3 kVA	65kAIC

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REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ELECTRICAL ONE LINE DIAGRAM

SHEET NO.
E-601

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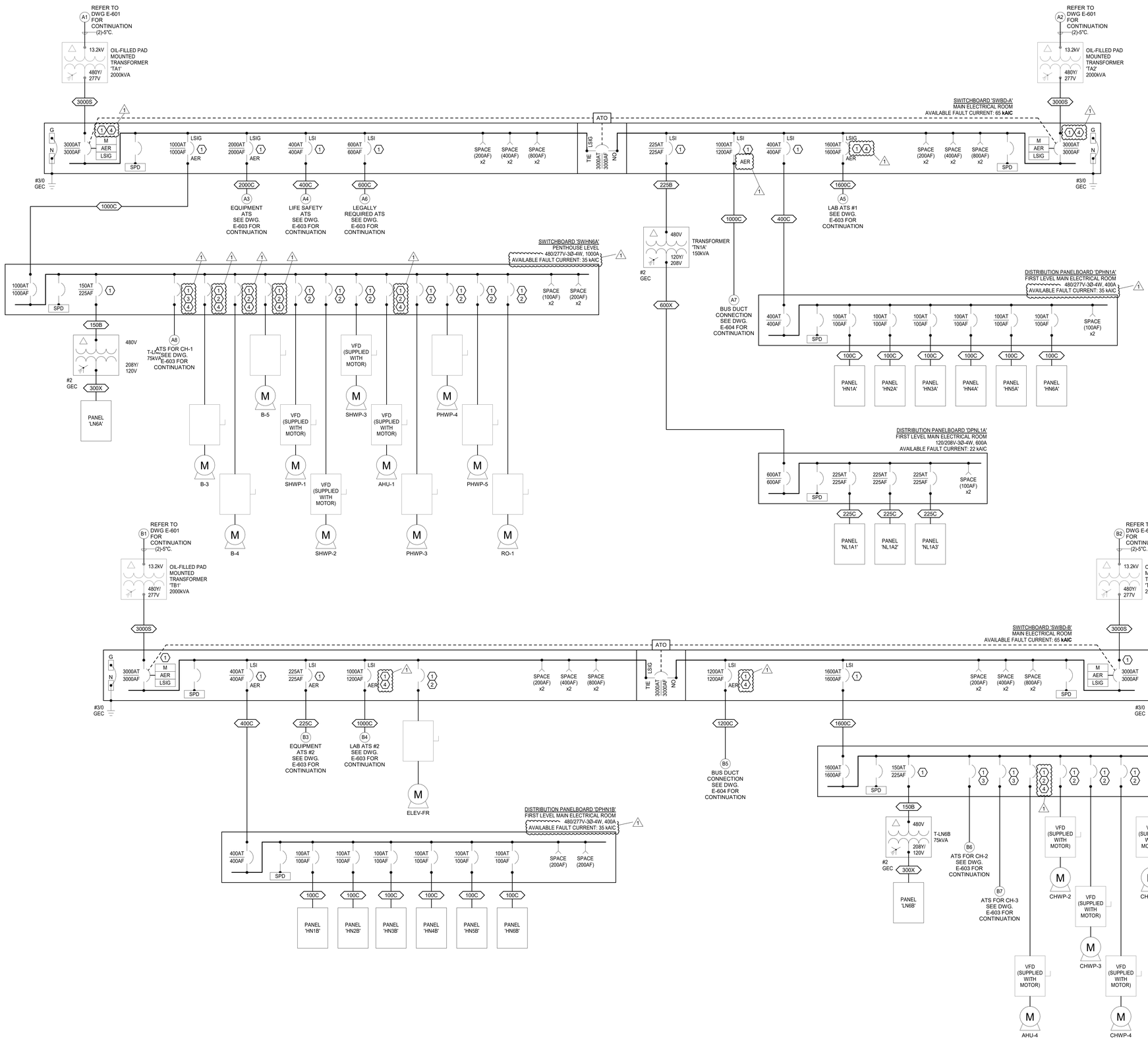

1 SWBD #1 & 2 ONE-LINE DIAGRAM
SCALE: NONE

ELECTRICAL ONE LINE SHEET GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE VOLTAGE WIRING BETWEEN CONTROL PANELS AND/OR VFD's AND THEIR CORRESPONDING MOTORS. CONTROL PANELS AND/OR VFD's AND MOTORS ARE PROVIDED BY MECHANICAL HVAC CONTRACTOR. COORDINATE EXACT LOCATION OF ALL CONTROL PANELS, VFD's AND MOTORS AND THEIR REQUIREMENTS WITH MECHANICAL HVAC AND/OR CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
2. SEE "GROUNDING ELECTRODE SYSTEM" DETAIL FOR ADDITIONAL GROUNDING AND BONDING REQUIREMENTS.

SHEET KEY NOTES:

1. FURNISH AND INSTALL ADVANCED METERING SYSTEM TO MEET LEED V4 ADVANCED METERING REQUIREMENT. INCLUDING DATA LOGGING REQUIREMENTS.
2. PROVIDE CONNECTION FOR EQUIPMENT PROVIDED BY OTHER DIVISION. REFER TO CONNECTION SCHEDULE(S) ON DWG. SERIES E-700'S FOR WIRE SIZE, OVERCURRENT PROTECTIVE DEVICE SIZE, AND ADDITIONAL REQUIREMENTS.
3. BREAKER SIZE TO COMPLY WITH SIZE OF ATS. REFER TO SHEET E-603 FOR ATS, CONDUIT, AND WIRE SIZING REQUIREMENTS.
4. METERING REQUIRED FOR LEED ADVANCED METERING CREDIT.

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REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
NORMAL POWER ONE-LINE DIAGRAM

SHEET NO.
E-602

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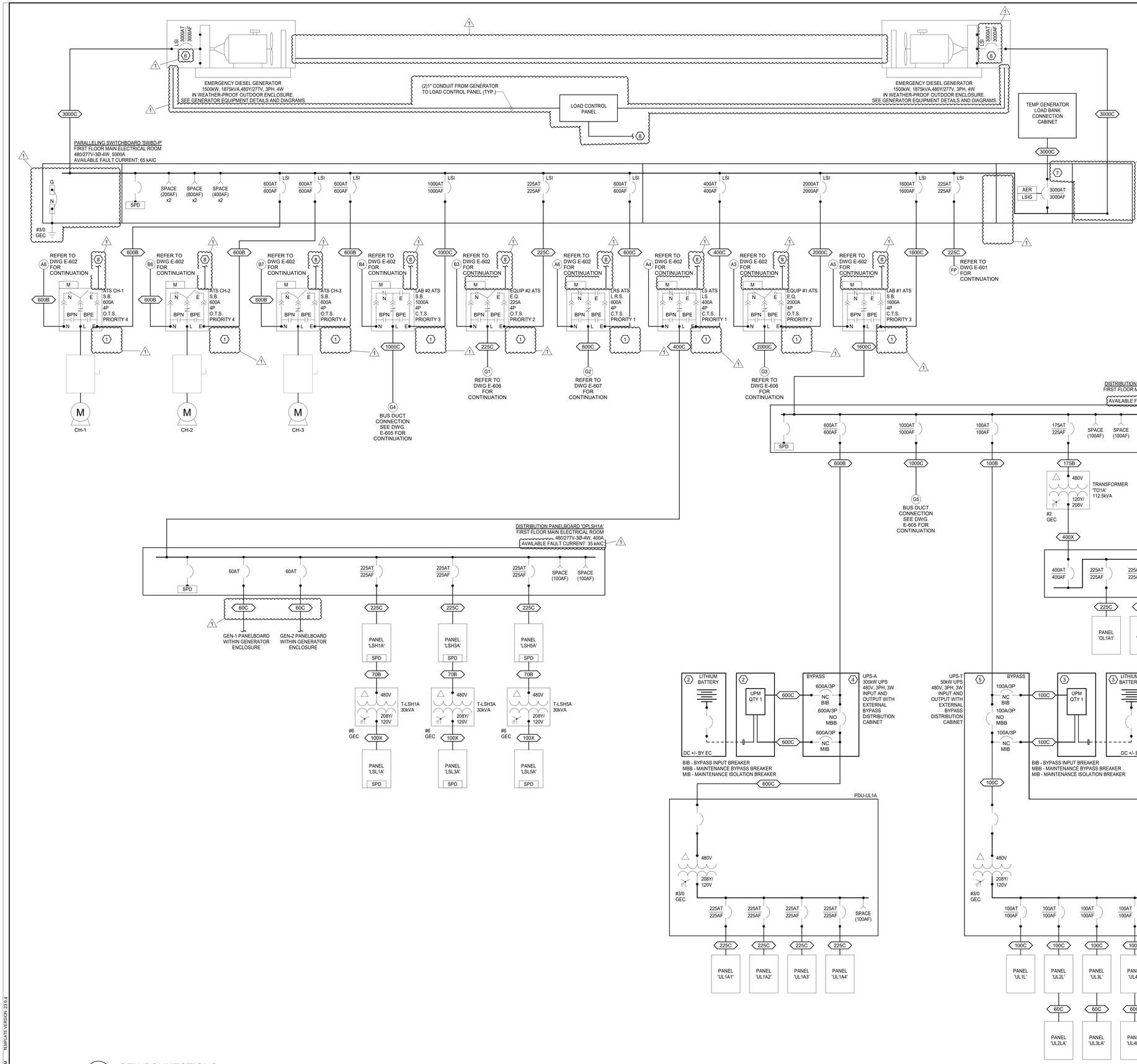

ELECTRICAL ONE LINE SHEET GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE VOLTAGE WIRING BETWEEN CONTROL PANELS AND/OR VFD's AND THEIR CORRESPONDING MOTORS. CONTROL PANELS AND/OR VFD's AND MOTORS ARE PROVIDED BY MECHANICAL HVAC CONTRACTOR. COORDINATE EXACT LOCATION OF ALL CONTROL PANELS, VFD's AND MOTORS AND THEIR REQUIREMENTS WITH MECHANICAL HVAC AND/OR CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
2. SEE "GROUNDING ELECTRODE SYSTEM" DETAIL FOR ADDITIONAL GROUNDING AND BONDING REQUIREMENTS.

SHEET KEY NOTES:

1. FURNISH AND INSTALL ADVANCED METERING SYSTEM TO MEET LEED V4 ADVANCED METERING REQUIREMENT INCLUDING DATA LOGGING REQUIREMENT.
2. PROVIDE NEW SINGLE UNIT 300kW UPS WITH 300kW OF MODULES, 480V, 3 PHASE, 3 WIRE INPUT AND 480V, 3 PHASE, 3 WIRE OUTPUT; AND BATTERY CABINETS AS REQUIRED FOR 5 MINUTES OF BACKUP AT 300kW.
3. PROVIDE NEW SINGLE UNIT 50kW UPS WITH 50kW OF MODULES, 480V, 3 PHASE, 3 WIRE INPUT AND 480V, 3 PHASE, 3 WIRE OUTPUT; AND BATTERY CABINETS AS REQUIRED FOR 5 MINUTES OF BACKUP AT 50kW.
4. PROVIDE NEW EXTERNAL 3 CIRCUIT BREAKER MAINTENANCE BYPASS SWITCH DISTRIBUTION PANELBOARD FOR 300kW UPS WITH KIRK KEY INTERLOCKING. ALL CIRCUIT BREAKERS FOR BY-PASS CABINET SHALL BE 100% RATED.
5. PROVIDE NEW EXTERNAL 3 CIRCUIT BREAKER MAINTENANCE BYPASS SWITCH DISTRIBUTION PANELBOARD FOR 50kW UPS WITH KIRK KEY INTERLOCKING. ALL CIRCUIT BREAKERS FOR BY-PASS CABINET SHALL BE 100% RATED.
6. BREAKER IN GENERATOR TO BE PARALLELING BREAKER.
7. LOAD BANK BREAKER TO BE CAPABLE OF TRIPPING IF AN OUTAGE OCCURS AND GENERATOR START SIGNAL IS RECEIVED.
8. PROVIDE 1"C BETWEEN LOAD CENTER CONTROL PANEL AND ATS.

1 GEN CONNECTIONS
SCALE: NONE

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HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ESSENTIAL SYSTEM ONE-LINE DIAGRAM

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SHEET NO.
E-603

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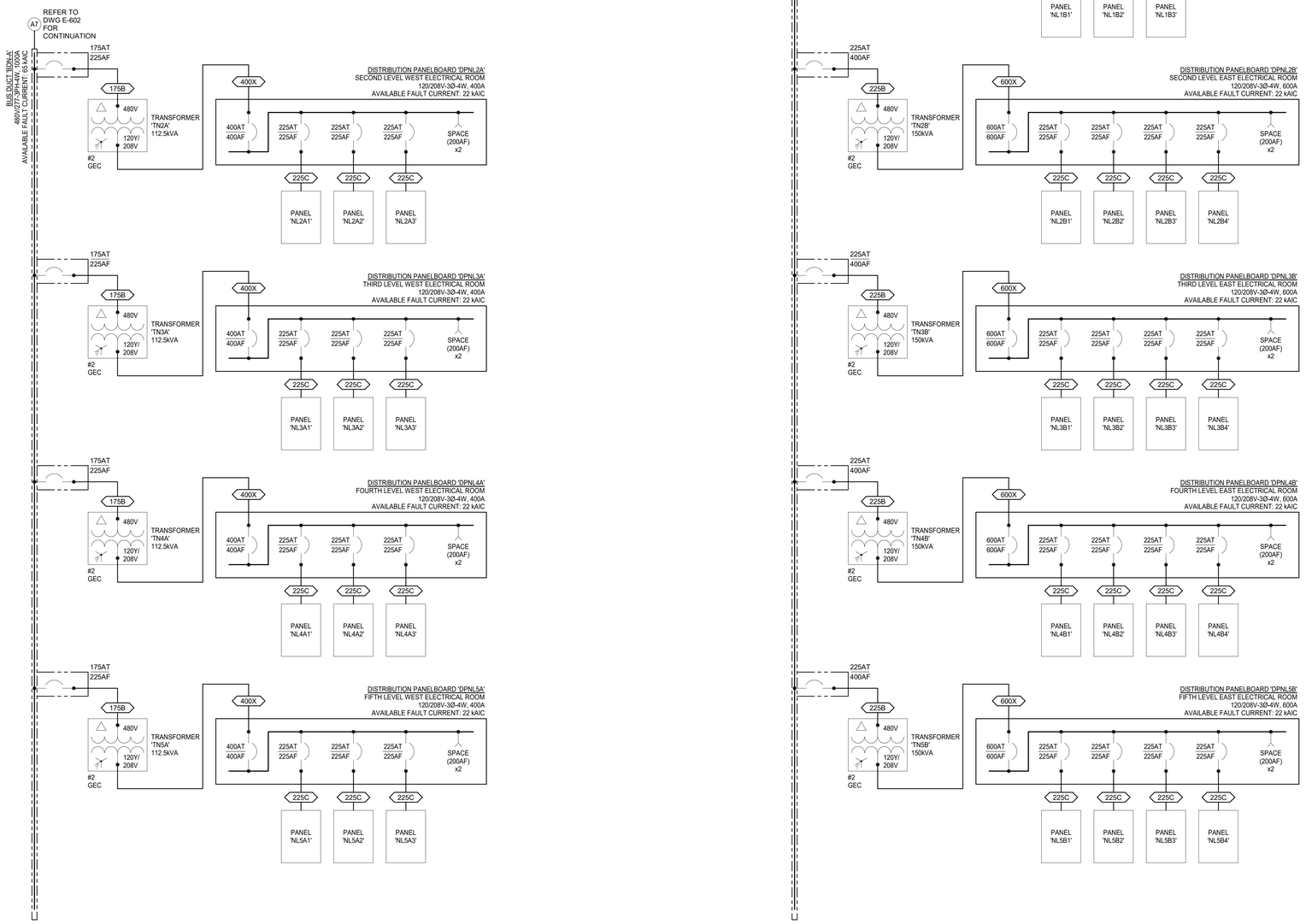

1 ELECTRICAL BUS DUCT CONNECTIONS
SCALE: NONE

ELECTRICAL ONE LINE SHEET GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE VOLTAGE WIRING BETWEEN CONTROL PANELS AND/OR VFD's AND THEIR CORRESPONDING MOTORS. CONTROL PANELS AND/OR VFD's AND MOTORS ARE PROVIDED BY MECHANICAL HVAC CONTRACTOR. COORDINATE EXACT LOCATION OF ALL CONTROL PANELS, VFD's AND MOTORS AND THEIR REQUIREMENTS WITH MECHANICAL HVAC AND/OR CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
2. SEE "GROUNDING ELECTRODE SYSTEM" DETAIL FOR ADDITIONAL GROUNDING AND BONDING REQUIREMENTS.

SHEET KEY NOTES:

1. NOT USED.

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PLAN NORTH
TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL BUS DUCTS

SHEET NO.
E-604

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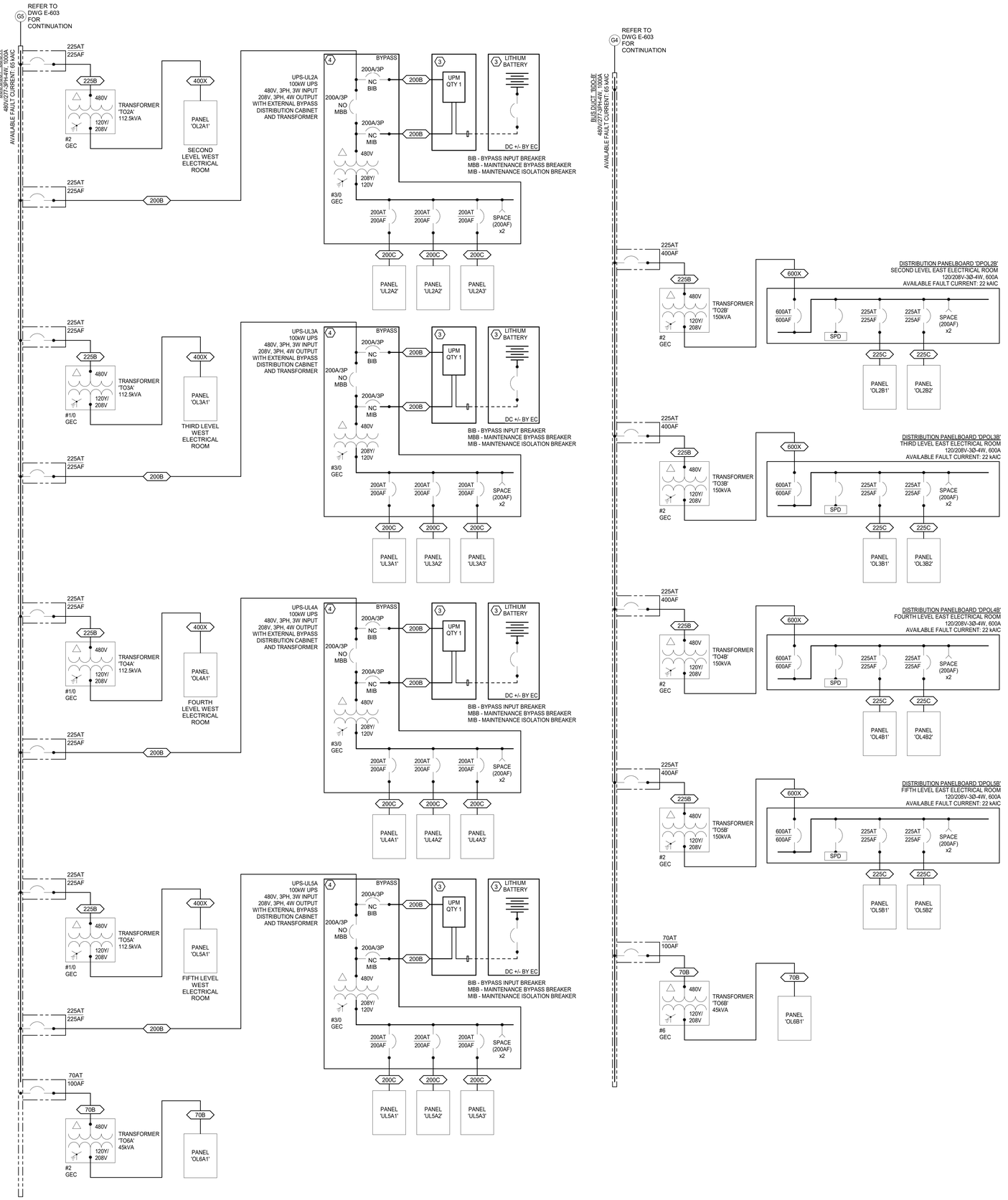

1 GEN CONNECTIONS
SCALE: NONE

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2. SEE "GROUNDING ELECTRODE SYSTEM" DETAIL FOR ADDITIONAL GROUNDING AND BONDING REQUIREMENTS.

SHEET KEY NOTES:

1. NOT USED.

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PLAN NORTH
TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
GEN BUS DUCT CONNECTIONS

SHEET NO.
E-605

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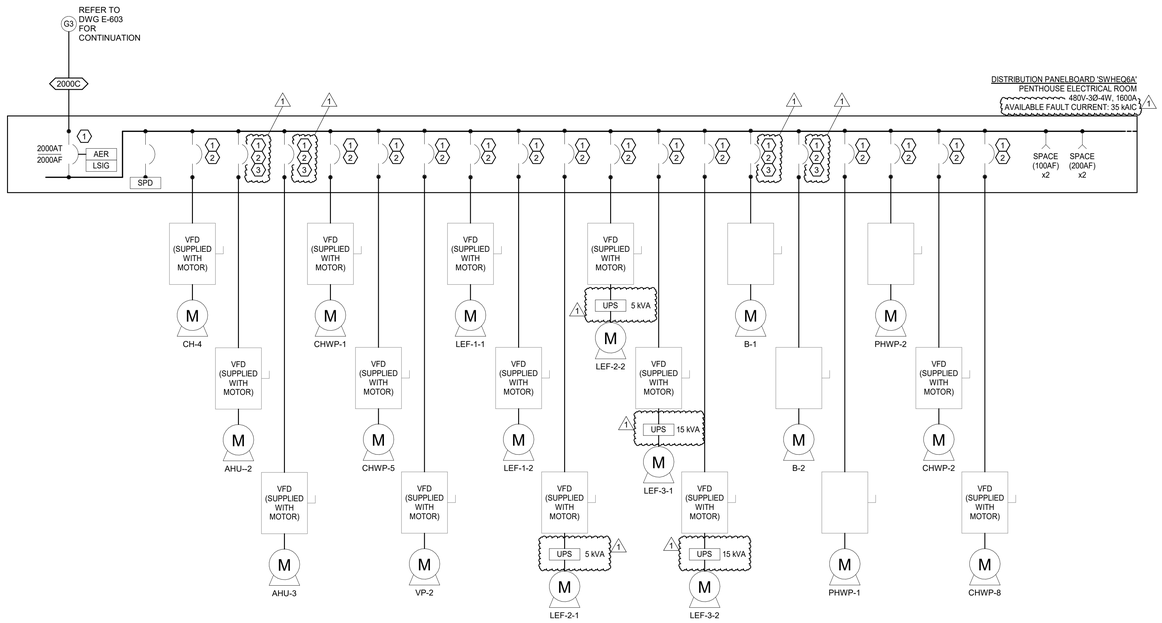
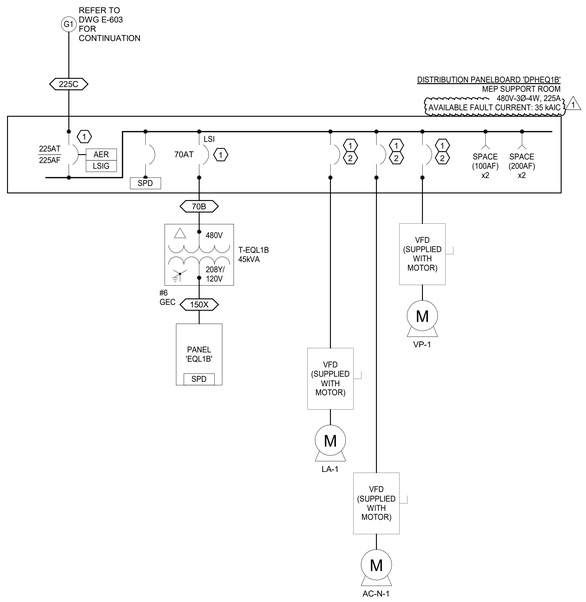
ELECTRICAL ONE LINE SHEET GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE VOLTAGE WIRING BETWEEN CONTROL PANELS AND/OR VFD's AND THEIR CORRESPONDING MOTORS. CONTROL PANELS AND/OR VFD's AND MOTORS ARE PROVIDED BY MECHANICAL HVAC CONTRACTOR. COORDINATE EXACT LOCATION OF ALL CONTROL PANELS, VFD's AND MOTORS AND THEIR REQUIREMENTS WITH MECHANICAL HVAC AND/OR CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
2. SEE "GROUNDING ELECTRODE SYSTEM" DETAIL FOR ADDITIONAL GROUNDING AND BONDING REQUIREMENTS.





SHEET KEY NOTES:

1. FURNISH AND INSTALL ADVANCED METERING SYSTEM TO MEET LEED V4 ADVANCED METERING REQUIREMENT INCLUDING DATA LOGGING REQUIREMENTS.
2. PROVIDE CONNECTION FOR EQUIPMENT PROVIDED BY OTHER DIVISION. REFER TO CONNECTION SCHEDULE(S) ON DWG. SERIES E-700'S FOR WIRE SIZE, OVERCURRENT PROTECTIVE DEVICE SIZE, AND ADDITIONAL REQUIREMENTS.
3. METERING REQUIRED FOR LEED ADVANCED METERING CREDIT.

1 EQUIPMENT ONE LINE DIAGRAM
SCALE: NONE

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10/17/2025

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
EQUIPMENT ONE-LINE DIAGRAM

SHEET NO.
E-606

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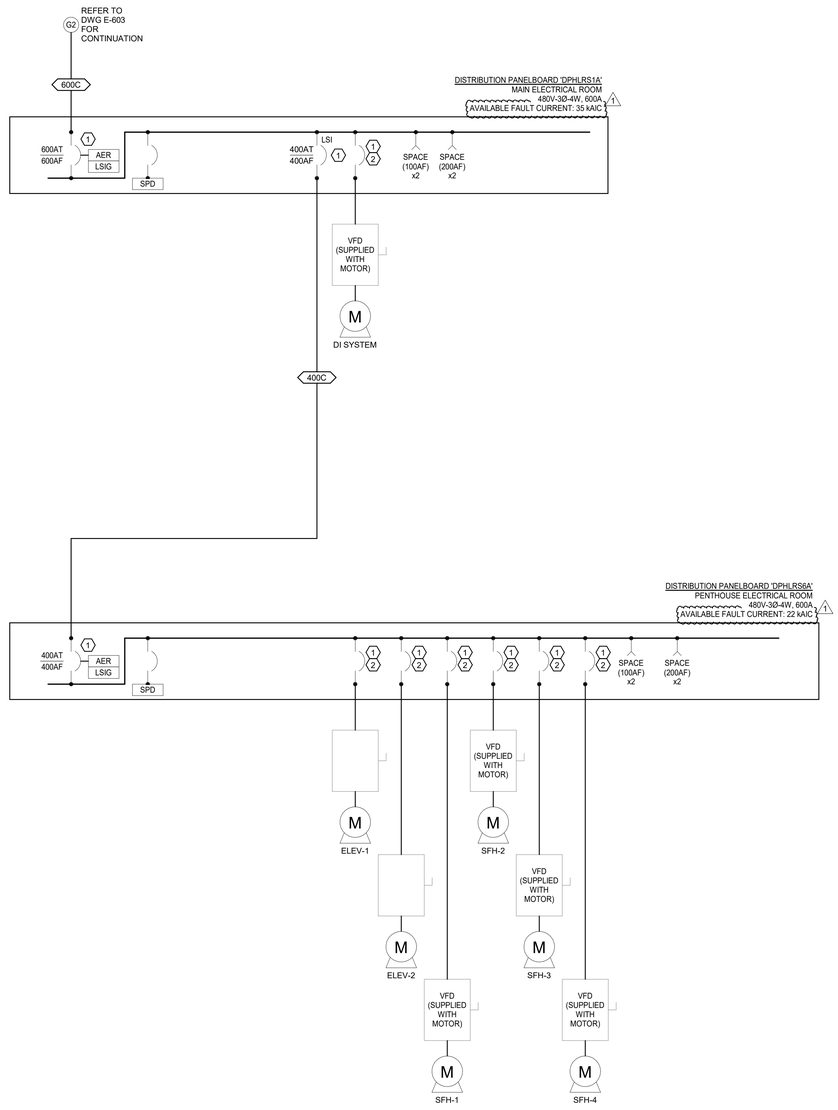

1 LEGALLY REQUIRED STANDBY ONE LINE DIAGRAM

SCALE: NONE

ELECTRICAL ONE LINE SHEET GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE VOLTAGE WIRING BETWEEN CONTROL PANELS AND/OR VFD's AND THEIR CORRESPONDING MOTORS. CONTROL PANELS AND/OR VFD's AND MOTORS ARE PROVIDED BY MECHANICAL HVAC CONTRACTOR. COORDINATE EXACT LOCATION OF ALL CONTROL PANELS, VFD's AND MOTORS AND THEIR REQUIREMENTS WITH MECHANICAL HVAC AND/OR CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
2. SEE "GROUNDING ELECTRODE SYSTEM" DETAIL FOR ADDITIONAL GROUNDING AND BONDING REQUIREMENTS.

SHEET KEY NOTES:

1. FURNISH AND INSTALL ADVANCED METERING SYSTEM TO MEET LEED V4 ADVANCED METERING REQUIREMENT.
2. PROVIDE CONNECTION FOR EQUIPMENT PROVIDED BY OTHER DIVISION. REFER TO CONNECTION SCHEDULE(S) ON DWG. SERIES E-700'S FOR WIRE SIZE, OVERCURRENT PROTECTIVE DEVICE SIZE, AND ADDITIONAL REQUIREMENTS.

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REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ESSENTIAL SYSTEM ONE-LINE DIAGRAM

SHEET NO.
E-607

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EXTERIOR LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	LOAD	DIMMING DRIVER	VOLTAGE	LUMENS	CRI	CCT	BASIS OF DESIGN	EQUIVALENT MANUFACTURER	NOTES	BUG RATINGS
SL2L	2"Wx3"D RECESSED LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN FULLY SEALED LENS, FLANGED WITH TRIM AND WHITE FINISH.	5 W / FOOT	0-10V	UNV	300 / FOOT	80	3000	AXIS EXTEND 2 RECESSED	METALUMEN RAIL 2 WET, ALIGHTS LINO RECESSED	ORIENTATION 0 DEGREES DOWN	
SL2LS	2"Wx4"D SURFACE/WALL MOUNTED LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN FULLY UL LISTED FOR WET LOCATION SEALED LENS. FINISH COLOR TO BE SELECTED BY ARCHITECT.	4 W / FOOT	0-10V	UNV	400 / FOOT	85	3000	AXIS EXTEND 2 SURFACE	NULITE REGOLO IP65, METALUMEN, ALIGHTS LIN WALL MOUNT	ORIENTATION 0 DEGREES DOWN	
SL4G	3.8"Wx4"Dx4' LONG RECESSED LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN FULLY SEALED LENS, FLANGED WITH TRIM, GRAZE DISTRIBUTION LENS. FINISH TO BE SELECTED BY ARCHITECT.	5 W / FOOT	0-10V	UNV	400 / FOOT	80	3000	AXIS EXTEND 4 RECESSED	PINNACLE EDGE EV3WET, METALUMEN	ORIENTATION 0 DEGREES DOWN	
SL4L	3.8"Wx4"Dx4' LONG RECESSED LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN FULLY SEALED LENS, FLANGED. FINISH COLOR TO BE SELECTED BY ARCHITECT.	4 W / FOOT	0-10V	UNV	400 / FOOT	85	3000	AXIS EXTEND 4 RECESSED	PINNACLE EDGE EV3WET, METALUMEN	ORIENTATION 0 DEGREES DOWN	
SL-P	39" DIA. INDIRECT CUT-OFF POLE TOP LUMINAIRE WITH SYMMETRIC DISTRIBUTION, 0-30 DEGREE REFLECTOR. PROVIDE 12 FOOT BEGA ALUMINUM ROUND HINGED TAPERED HIGH EPA POLE B12RHTE1	50 W	0-10V	UNV	2284	80	3000	BEGA B88309		INDIRECT ORIENTATION 180 UNDER SHADE	B1-U2-G1
SL-T	1.08"W x 1.18"D STATIC WHITE SURFACE MOUNTED LUMINAIRE, IP67 WET LOCATION RATED, (MOUNTED ON SIDE) WITH 13.6 GRAZER DEGREE DISTRIBUTION, OPITCAL GRAZER LENS, EXTERNAL BLACK LOUVER, MOUNTING BRACKET AND SIDE POWER FEED. PROVIDE ALL COMPONENTS NECESSARY (REMOTE POWER SUPPLIES, ETC.)REQUIRED FOR COMPLETE INSTALLATION AND CONTINUOUS APPEARANCE ALONG RUN LENGTH AS SHOWN ON DRAWINGS. COORDINATE EXACT RUN LENGTHS. REFER TO ARCHITECTURAL DETAILS FOR ADDITIONAL INFORMATION.	3 W / FOOT	0-10V	UNV	294 / FOOT	80	3000	QTL VERSA GRAZER 4	KELVIX	MOUNTED FACING SIDE OR BRIDGE AT 90 DEGREE	B0-U1-G0
SL-TB	.87"W x .72"D STATIC WHITE FULLY ENCAPSULATED SURFACE MOUNTED LUMINAIRE WITH BLACK EXTERIOR, IP67 WET LOCATION RATED, (MOUNTED IN FLEXIBLE BLACK BENDIT METAL CHANNEL) TRANSLUCENT ENCAPULATED LENS. PROVIDE ALL COMPONENTS NECESSARY (REMOTE POWER SUPPLIES, ETC.)REQUIRED FOR COMPLETE INSTALLATION AND CONTINUOUS APPEARANCE ALONG RUN LENGTH AS SHOWN ON DRAWINGS. COORDINATE EXACT RUN LENGTHS. REFER TO ARCHITECTURAL DETAILS FOR ADDITIONAL INFORMATION.	5 W / FOOT	0-10V	UNV	300 / FOOT	80	3000	QTL Q-CAP KURVE BLACK	KELVIX	MOUNTED FACING GROUND LEVEL AT ZERO DEGREE FACING DOWN	B0-U2-G0
SLDA	10"DIAx6-1/6"D RECESSED ADJUSTABLE WET LOCATION DOWNLIGHT WITH 0-30 ADJUSTABLE ANGLE, 360 DEGREE ROTATABLE OPTICAL ASSEMBLY, MARINE GRADE ALUMINUM HOUSING, ANODIZED ALUMINUM REFLECTOR AND CLEAR SAFETY GLASS LENS. FINISH TO BE SELECTED BY ARCHITECT.	20 W	0-10V	UNV	1569	82	3000	BEGA B55844	WE-EF	ORIENTATION 20 DEGREES FACING SIGNAGE ON BUILDING FACADE	B0-U0-G1
SLP2	21-5/8"x21-3/4"x3-15/16" DEEP LUMINAIRE WITH ALUMINUM HOUSING, 7" ARM, TYPE II DISTRIBUTION, SPILL LIGHT OPTICAL CONTROL, 600mA, INTEGRAL PHOTOCELL, MOTION SENSOR WITH DIMMING AFTER HOURS, AND BRONZE FINISH. POLE SHALL BE 30' IN HEIGHT, ROUND TAPERED ALUMINUM WITH MATCHING FINISH. LUMINAIRE AVAILABLE WITH INTEGRAL PHOTOCELL, AND INTEGRAL DIMMING FOR ASHRAE COMPLIANCE.	129 W	0-10V	UNV	15033	80	3000	MC-GRAW EDISON GLEON 600 POLE: MC-GRAW EDISON RTA, HAPCO, OR EQUIVALENT	CURRENT EALS.03 GARDCO PUREFORM LITHONIA DSX2 LED, LSI V-LOCITY	ORIENTATION 0 DEGREES DOWN	B1-U0-G2
SLP24	21-5/8"x21-3/4"x3-15/16"D DUAL HEAD 180 DEGREE LUMINAIRE WITH ALUMINUM HOUSING, 7" ARM, TYPE II DISTRIBUTION ON ONE SIDE AND TYPE IV FORWARD THROW DISTRIBUTION ON OPPOSITE SIDE, SPILL LIGHT OPTICAL CONTROL, 600mA, INTEGRAL PHOTOCELL, MOTION SENSOR WITH AFTER HOURS DIMMING. POLE SHALL BE 30' IN HEIGHT, ROUND TAPERED ALUMINUM WITH MATCHING FINISH. LUMINAIRE AVAILABLE WITH INTEGRAL PHOTOCELL, AND INTEGRAL DIMMING FOR ASHRAE COMPLIANCE. LUMINAIRE SHALL BE PROVIDED WITH INTELLISTREETS POST TOP MODULE.	129 W	0-10V	UNV	7200 EACH HEAD	80	3000	MC-GRAW EDISON GLEON 600 POLE: MC-GRAW EDISON RTA, HAPCO, OR EQUIVALENT	CURRENT EALS.03, LSI V-LOCITY, GARDCO PUREFORM LITHONIA DSX2 LED	ORIENTATION 0 DEGREES DOWN	B1-U0-G2
SLW	12"D x 7"H x 16"W WALL MOUNTED CURVED STYLE LUMINAIRE WITH WAVESTREAM TECHNOLOGY TYPE IV FORWARD THROW OPTICS UV STABILIZED FROSTED ACRYLIC DIFFUSER, ALUMINUM FRAME. UL LISTED FOR WET LOCATION. PROVIDE INTEGRAL COLD WEATHER BATTERY AND 277V PHOTOCELL CONTROL.	31 W	0-10V DIM TO 10%	UNV	2800	80	3000	INVUE CLEARCURVE WALL MOUNT		ORIENTATION 0 DEGREES DOWN	B1-U0-G1
SLW1	2.5"D x 16"H x 2.9"W WALL MOUNTED LUMINAIRE WITH UV STABILIZED FROSTED ACRYLIC DIFFUSER, FORMED/WELDED ALUMINUM FRAME, TYPE IV FORWARD THROW DISTRIBUTION. UL LISTED FOR WET LOCATION. PROVIDE INTEGRAL COLD WEATHER BATTERY AND 277V PHOTOCELL CONTROL.	25 W	0-10V DIM TO 10%	UNV	1015	90	3000	BROWNLEE SLOPE SLIM	BETA CALCO RAZR, VISUAL COMFORT MODERN PITCH	ORIENTATION 0 DEGREES DOWN	B0-U0-G0
SLW4	2.5"D x 5"H x 48"W WALL/MULLION MOUNTED LUMINAIRE WITH UV STABILIZED FROSTED ACRYLIC DIFFUSER, FORMED/WELDED ALUMINUM FRAME. PERIMETER ROOM FILL DISTRIBUTION. UL LISTED FOR WET LOCATION. PROVIDE INTEGRAL COLD WEATHER BATTERY AND 277V PHOTOCELL CONTROL.	14 W	0-10V DIM TO 10%	UNV	1200	90	3000	PRUDENTIAL WET BIONIC PRO 3	METALUMEN RAIL WET ALIGHTS LINO LIN MULL	ORIENTATION 0 DEGREES DOWN	B1-U0-G1
SLW6	2.5"D x 5"H x 6'W MULLION MOUNTED LUMINAIRE WITH UV STABILIZED FROSTED ACRYLIC DIFFUSER, FORMED/WELDED ALUMINUM FRAME, PERIMETER FILL DISTRIBUTION. UL LISTED FOR WET LOCATION. PROVIDE INTEGRAL COLD WEATHER BATTERY AND 277V PHOTOCELL CONTROL.	27 W	0-10V DIM TO 10%	UNV	1800	90	3000	PRUDENTIAL WET BIONIC PRO 3	METALUMEN RAIL WET ALIGHTS LINO LIN MULL	ORIENTATION 0 DEGREES DOWN	B1-U0-G1

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	LOAD	DIMMING DRIVER	VOLTAGE	LUMENS	CRI	CCT	BASIS OF DESIGN	EQUIVALENT MANUFACTURER	NOTES
D2-2	2" DIAMETER (NOMINAL), DUAL ADJUSTABLE DOWNLIGHTS, 7.5" DEEP DOWNLIGHT WITH SELF-FLANGED, SEMI-DIFFUSE CLEAR, LOW IRIDESCENT ALUMINUM REFLECTOR, FLOOD BEAM DISTRIBUTION, AND WHITE TRIM.	11 W	0-10V, DIM TO 10% ONE DRIVER PER 2 LUMINAIRES	UNV	1000	90	3500	LUMENWERX AERA 2	USAI LITTLE ONES MICRO DOUBLE ADJUSTABLE INTERLUX 1.5" PROTOOLS ADJUSTABLE TWIN TRIM (CURVED)	MOUNTED IN LAY-IN OR DRYWALL CEILING. CONFIRM CEILING TYPE AND PROVIDE PROPER MOUNTING ACCESSORIES.
D2M	2" DIAMETER (NOMINAL), LOW PROFILE HOUSING: 2.64" DEEP DOWNLIGHT WITH TRIMLESS, SEMI-DIFFUSE (COLOR) ALUMINUM REFLECTOR, 60 DEGREE FLOOD BEAM DISTRIBUTION. REFLECTOR FINISH TO BE SELECTED BY ARCHITECT.	11 W	0-10V, DIM TO 10%	UNV	1000	90	3500	FOCAL POINT ID+2.5	USAI LITTLE TWOS PRESCOLITE D2LED.MD25, LUCIFER ATOMOS 2 HE WILLIAMS 2DR LIGHTOLIER C2L	MOUNTED IN LAY-IN OR DRYWALL CEILING. CONFIRM CEILING TYPE AND PROVIDE PROPER MOUNTING ACCESSORIES.
D4M	4" DIAMETER, 8" DEEP DOWNLIGHT WITH SELF-FLANGED, SEMI-DIFFUSE (HAZE) CLEAR, LOW IRIDESCENT ALUMINUM REFLECTOR, MEDIUM BEAM DISTRIBUTION, AND WHITE PAINTED FLANGE.	23 W	0-10V,10%	UNV	1500	90	3500	FOCAL POINT ID+4.5X4.5	PORTFOLIO LD4B PRESCOLITE LTR-4RD.MFC HE WILLIAMS 4DR.TL LIGHTOLIER C4L.15 GOTHAM1C	MOUNTED IN LAY-IN OR DRYWALL CEILING. CONFIRM CEILING TYPE AND PROVIDE PROPER MOUNTING ACCESSORIES.
D8S	8" SQUARE APERATURE INSIDE 24"X24" ACOUSTIC TILE, LAMBERTIAN DISTRIBUTION, EDGE LIT OPTIC, WITH 18 GAUGE SHEET METAL HOUSING AND REMOTE DRIVER BOX.	23 W	0-10V	UNV	1500	80	3500	ARON BLOX	BYIBA SONIQ ACOUSTIC	MOUNTED IN ARON BLOX CEILING TILE. CONFIRM CEILING TYPE AND PROVIDE PROPER MOUNTING ACCESSORIES.
LG4W	4"Wx5.06"Dx4' LONG LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN LENS, TELESCOPING SLEEVES, AND WHITE FINISH.	5 W / FOOT	0-10V	UNV	545 / FOOT	90	3500	PRULITE STREAM PERIMETER 4"		COORDINATE TRIM COLOR WITH ARCHITECT.
LP4a	4"Wx5"Dx4' LONG LUMINAIRE WITH 50% DIRECT/50% INDIRECT DISTRIBUTION, ALUMINUM HOUSING, SATIN SNAP-IN LENS, AND MATTE WHITE FINISH.	56 W	0-10V	UNV	4120	85	3500	NEO-RAY S124	PRUDENTIAL BIO-LIN.XX.HO. SAL.D1-CW AXIS LTG BEAM 4 PINNACLE EX4 FOCAL POINT FSM4BS	LUMINAIRES SHALL BE RUN WITH A CONTINUOUS LENS AND RECESSED CEILING TO PENDANT ON FLOORS 2-5 WITH LP4a AT COLLABORATION/ELEVATOR LOBBY INTERSECTION.
LR4a	3.8"Wx4.11"Dx4' LONG LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN LENS, FLANGELESS TRIM AND WHITE FINISH. LUMINAIRES SHALL BE RUN WITH A CONTINUOUS LENS.	7 W / FOOT	0-10V	UNV	875 / FOOT	85	3500	FOCAL POINT SEEM 4	PRUDENTIAL BIO-STD.FLSH. MO.XX.SAL AXIS LTG BEAM 4 PINNACLE E4.A	LUMINAIRES SHALL BE RUN WITH A CONTINUOUS LENS AND RECESSED CEILING TO PENDANT ON FLOORS 2-5 WITH LP4a AT COLLABORATION/ELEVATOR LOBBY INTERSECTION.
LR4La	3.8"Wx4.11"Dx4' LONG LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN LENS, FLANGELESS TRIM AND WHITE FINISH.LUMINAIRES SHALL BE RUN WITH A CONTINUOUS LENS.	7 W / FOOT	0-10V	UNV	875 / FOOT	85	4000	FOCAL POINT SEEM 4	PRUDENTIAL BIO-STD.FLSH. MO.XX.SAL AXIS LTG BEAM 4 PINNACLE E4.A	LUMINAIRES SHALL BE RUN WITH A CONTINUOUS LENS.
LR4Lb	3.8"Wx5.5"Dx4' LONG LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN LENS, FLANGELESS TRIM AND WHITE FINISH. LUMINAIRES SHALL BE RUN WITH A CONTINUOUS LENS.	7 W / FOOT	0-10V	UNV	750 / FOOT	85	4000	KENALL SIMPLE SEAL CRS4	FAIL-SAFE FSN6	
LR4Lc	3.8"Wx5.5"Dx4' LONG LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN LENS, FLANGELESS TRIM AND WHITE FINISH. LUMINAIRES SHALL BE RUN WITH A CONTINUOUS LENS.	7 W / FOOT	0-10V	120	750 / FOOT	85	4000	KENALL SIMPLE SEAL CRS4	FAIL-SAFE FSN6	
LR4Wa	3.8"Wx5.5"Dx4' LONG LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN LENS,FLANGELESS TRIM AND WHITE FINISH.	7 W / FOOT	0-10V	UNV	515 / FOOT	85	4000	FOCAL POINT SEEM 4 ASYMMETRIC LENS	PRUDENTIAL BIO-STD.FLSH. MO.XX.SAL AXIS LTG BEAM 4 PINNACLE E4.A	
LRG	2.5"Wx3"D RECESSED LINEAR GRAZER LUMINAIRE WITH EXTRUDED ALUMINUM HOUSING, BLACK FINISH.	6 W / FOOT	0-10V	UNV	570 / FOOT	90	3500	BEULUX REGRAZER	ALIGHTS WGD9 PRULITE BIONIC PRO2 PERIMETER WITH GRAZE OPTICS SELUX M36 GRAZER	FINISH COLOR TO BE SELECTED BY ARCHITECT
LRP4a	4"Wx5.5"Dx4' LONG LUMINAIRE MOUNTED IN CONTINUOUS RUN AS SHOWN ON DRAWINGS WITH ALUMINUM HOUSING, TELESCOPING SLEEVES, REGRESSED LENS, AND WHITE FINISH.	7 W / FOOT	0-10V	UNV	500 / FOOT	85	4000	NEO-RAY S124RDRP	PRUDENTIAL P43-PER.REG1. XX.MO.XX.SAL.D1R AXIS LTG BEAM 4 PINNACLE EVL FOCAL POINT FSM4L	
LS1	.88"W x .64" TALL SURFACE MOUNTED LINEAR LUMINAIRE WITH A LENGTHWISE INTERNAL LOUVER, SURFACE MOUNTED TO THE UNDERSIDE OF THE STAIR STRINGER. COORDINATE LOCATION OF REMOTE DRIVER IN STAIRWELL CEILING. PROVIDE CONTINUOUS MAGNET MOUNT.	5 W	0-10V DIM TO 10%	UNV	100 / FOOT	80	3500	QTL VERS-NANO-LOUVER (11)	APPROVED EQUAL BY LUMINII	WATTAGE IS 5W PER FOOT
LS2a	1.5"Wx2.1"Dx1' LONG LUMINAIRE WITH DIE CAST ALUMINUM ROUND HOUSING, 10X60 DEGREE BEAM DISTRIBUTION, AND WHITE FINISH.	7 W / FOOT	0-10V	UNV	555 / FOOT	85	4000	NEO-RAY S122	PRUDENTIAL BIO2-STD.MO. XX.XX.SAL.D1 NU.UNV.SUR AXIS LTG BEAM 2 PINNACLE EX12 FOCAL POINT FSM2LS	
LS4	4"Wx6.06"Dx4' LONG LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN LENS, AND CUSTOM FINISH.	6 W / FOOT	0-10V	UNV	475 / FOOT	90	3500	PRULITE STREAM	-	
LS4a	4"Wx5.06" WALL MOUNTED (UP HIGH INTO THE CORNER) LUMINAIRE WITH ALUMINUM HOUSING, SATIN SNAP-IN LENS, AND ASYMMETRIC DISTRIBUTION. USED IN STAIRWELLS AND SHALL BE CONNECTED TO LIGHTING CONTROLS IN STAIRWELL FOR 50% DIMMING WHEN UNOCCUPIED.	6 W / FOOT	0-10V	UNV	1020 / FOOT	80	3500	NEORAY DEFINE 4 WALL MOUNT	FINELITE, PINNACLE	
P1	5"DIAx4"Hx LENGTH VARIES CORD DECORATIVE PENDANT WITH BRONZE FINISH HOUSING, LED LIGHT SOURCE, AND UL LISTED IP20.	6 W	0-10V	UNV	615	90	3000	ARTEMIDE UNTERLINDEN SUSPENSION	TMS AVRIL PENDANT AS APPROVED BY ARCHITECT	COLOR FINISH TO BE DETERMINED BY ARCHITECT
PC	9.59" APERTURE, 5" DIAMETER DOWNLIGHT CYLINDER PENDANT WITH ALUMINUM HOUSING, MEDIUM BEAM DISTRIBUTION, MATTE BLACK FINISH, AND MOUNTING METHOD TO BE CONFIRMED WITH ARCHITECT. MOUNTING HEIGHT SHALL BE CONFIRMED WITH ARCHITECT.	20 W	0-10V	UNV	1500	80	3500	FOCAL POINT ID+3.5" PURE CYLINDER	~~ANTHALYE PIPE TUBES 8~~ BETA CALCO MICRO CYLINDER	
RT1Y	1"x1"x7" DEEP RED NARROW SPECTRUM (660nM) LUMINAIRE WITH STEEL HOUSING, .156" PRISMATIC C73 TEMPERED GLASS LENS, AND WHITE FINISH STAINLESS STEEL DOORM.	33 W	0-10V	UNV		NARROW SPECTRUM	660nM RED	KURTZON DKS-F/G-1X1-LED	NEWSTAR STARCLEAN VIVARIUM, KENALL SIMPLESEAL NARROW SPECTRUM CSEDI	
RT2b	2'x2'x5-11/16" DEEP LUMINAIRE WITH COLD ROLLED STEEL HOUSING, SQUARE CENTER ACRYLIC BASKET, AND BAKED MATTE WHITE ENAMEL FINISH.	30 W	0-10V	UNV	3200	85	3500	METALUX 22RLN	COLUMBIA LSER22 DAYBRITE 2CAG HE WILLIAMS PT22SA LITHONIA 2ALL2 LITHONIA EPANL	
RT4b	2'x4'x1-3/4" DEEP LUMINAIRE WITH ALUMINUM HOUSING, EDGE-LIT DISTRIBUTION, TRANSLUCENT WHITE FROST LENS, AND WHITE FINISH.	36 W	0-10V	UNV	4500	85	3500	METALUX 24RLN	COLUMBIA LSER24 DAYBRITE 2CAG HE WILLIAMS PT24 LITHONIA 2ALL4	
S	3"Wx3-7/8"Dx4' LONG LUMINAIRE WITH COLD ROLLED STEEL HOUSING, WIDE BEAM DISTRIBUTION, FULL FROST LENS, AND BAKED WHITE ENAMEL FINISH.	6 W / FOOT	0-10V	UNV	683 / FOOT	85	3500	METALUX SNLED	COLUMBIA MPS DAYBRITE FSS HE WILLIAMS 75R LITHONIA ZL1N	
SV	7"Wx5-7/8"Dx4' LONG GASKETED LUMINAIRE WITH FIBERGLASS HOUSING, FROSTED LENS, WIDE DISTRIBUTION, AND WET LOCATION LISTED.	38 W	0-10V	UNV	4000	85	3500	METALUX 4VT2	COLUMBIA LXEM DAYBRITE V3W HE WILLIAMS 96-4 LITHONIA FEM4	PROVIDE VT2-CHAIN/SET-U AS REQUIRED.
SX	5.29"Wx7.18"Dx48"L EXPLOSION PROOF LUMINAIRE WITH A360 ALUMINUM WITH BAKED-ON GRAY EPOXY FINISH, TEMPERED GLASS LENS, STAINLESS STEEL HARDWARE, IIP66 RATED AND10KV SURGE PROTECTION.	38 W	0-10V	UNV	3800	80	3500	ARCUS LIN-EX	LDPI LEXS SERIES	
U1a	5-5/16"Wx1-3/8"Dx1' LONG LUMINAIRE WITH STEEL HOUSING, 0.125" THICK ACRYLIC LENS, INTEGRAL VACANCY SENSOR, AND WHITE ANTIMICROBIAL FINISH.	10 W	0-10V	UNV	775	85	3500	FAIL-SAFE UCL	KENALL MAUCLED AIREY-THOMPSON 13L.N.X. 24 HE WILLIAMS 1SF DAYBRITE LINCS100	
U3a	5-5/16"Wx1-3/8"Dx3' LONG LUMINAIRE WITH STEEL HOUSING, 0.125" THICK ACRYLIC LENS, INTEGRAL VACANCY SENSOR, AND WHITE ANTIMICROBIAL FINISH.	18 W	0-10V	UNV	1600	85	3500	FAIL-SAFE UCL	KENALL MAUCLED AIREY-THOMPSON 13 L.N.X. 36 HE WILLIAMS 1SF DAYBRITE LINCS100	
WSH	19.67"H x 3.30" W x 2.74"D FLAT INDIRECT SCONCE. BLACK FINISH, IP 65 RATED.HORIZONTALLY MOUNTED 2 INCHES ABOVE MIRROR.	25 W	0-10V	UNV	1080	85		EUREKA PLATE OUT DOUBLE 3450	~~HEMERA SLIK~~ OXYGEN REFLEX HEMERA SLIK	
WSV	19.67"H x 3.30" W x 2.74"D FLAT INDIRECT SCONCE. BLACK FINISH, IP 65 RATED.	7 W	0-10V	UNV	540	80	3500	EUREKA PLATE OUT SINGLE 3449		
Xc	EXIT SIGN WITH 6" HIGH GREEN LETTERS, CLEAR ACRYLIC PANELS, MIRRORED BACKGROUND FOR DOUBLE FACE SIGNS, AND BRUSHED ALUMINUM HOUSING. FACES, ARROWS AND MOUNTING AS INDICATED ON DRAWINGS.	4 W	N/A	UNV	N/A	N/A	N/A	SURE-LITES ELX6	DUAL-LITE LE CHLORIDE 45VL EMERGI-LITE LX LITHONIA LRP	EXIT SIGNS SHALL BE VISIBLE FOR EGRESS INDICATION.
XWc	EXIT SIGN WITH 6" HIGH GREEN LETTERS, CLEAR ACRYLIC PANELS, MIRRORED BACKGROUND FOR DOUBLE FACE SIGNS, AND BRUSHED ALUMINUM HOUSING. FACES, ARROWS AND MOUNTING AS INDICATED ON DRAWINGS.	4 W	N/A	UNV	N/A	N/A	N/A	SURE-LITES ELX6	DUAL-LITE LE CHLORIDE 45VL EMERGI-LITE LX LITHONIA LRP	WALL MOUNTED EXIT SIGNS SHALL BE ABOVE DOORS, CENTERED BETWEEN DOOR AND CEILING WHERE PRACTICAL, OR AT A SIMILAR HEIGHT IF NOT ABOVE DOORS. EXIT SIGNS SHALL BE VISIBLE FOR EGRESS INDICATION.
XWSc	EXIT SIGN WITH 6" HIGH GREEN LETTERS, CLEAR ACRYLIC PANELS, MIRRORED BACKGROUND FOR DOUBLE FACE SIGNS, AND BRUSHED ALUMINUM HOUSING. FACES, ARROWS AND MOUNTING AS INDICATED ON DRAWINGS.	4 W	N/A	UNV	N/A	N/A	N/A	SURE-LITES ELX6	DUAL-LITE LE CHLORIDE 45VL EMERGI-LITE LX LITHONIA LRP	WALL MOUNTED EXIT SIGNS SHALL BE ABOVE DOORS, CENTERED BETWEEN DOOR AND CEILING WHERE PRACTICAL, OR AT A SIMILAR HEIGHT IF NOT ABOVE DOORS. MOUNT EMERGENCY BATTERY PACKS AT SIMILAR HEIGHT. EXIT SIGNS SHALL BE VISIBLE FOR EGRESS INDICATION.

LUMINAIRE SCHEDULE NOTES:

1. LUMINAIRE MANUFACTURER AND SERIES INDICATED IN THE "BASIS OF DESIGN" COLUMN IS THE BASIS OF DESIGN. LUMINAIRE MANUFACTURERS AND SERIES INDICATED IN "EQUIVALENT MANUFACTURERS" COLUMN ARE EQUAL PRODUCTS.
2. ANY LUMINAIRES THAT ARE SUBMITTED AND ARE NOT INDICATED ON THE LUMINAIRE SCHEDULE OR WITHIN THE CONTRACT DOCUMENTS WILL BE REJECTED.
   A. VOLUNTARY ALTERNATES AND/OR SUBSTITUTIONS SHALL FOLLOW THE FRONT END DOCUMENTS AND AND BE SUBMITTED WITH THE CONTRACTOR'S PROPOSAL AT TIME OF THE BID.
   B. ALTERNATE AND/OR SUBSTITUTED LUMINAIRES BEING PROPOSED FOR CONSIDERATION **SHALL BE ACCOMPANIED BY A POINT-BY-POINT PHOTOMETRIC PLAN.** POINT-BY-POINT CALCULATIONS SHALL FOLLOW IESNA RECOMMENDED PRACTICES AND INCLUDE LIGHT LOSS FACTOR (LLF) USED FOR ALL LUMINAIRE TYPES, SURFACE REFLECTANCES, AVERAGE FOOTCANDLE LEVEL, MINIMUM FOOTCANDLE LEVEL(S), AND MAXIMUM-TO-MINIMUM RATIO FOR ALL AREAS WHERE PROPOSED ALTERNATES/SUBSTITUTED LUMINAIRE IS TO BE INSTALLED (ONE CALCULATION EACH FOR TYPICAL ROOMS/SPACES/AREAS IS ACCEPTABLE).
3. ALL LUMINAIRES SHALL BE IN ACCORDANCE WITH THE LUMINAIRE SCHEDULE. THE LUMINAIRE SCHEDULE PROVIDES THE MANUFACTURER AND CATALOG NUMBER. THE LUMINAIRE PROVIDED SHALL CONFORM TO THE DESCRIPTION IN THE LUMINAIRE SCHEDULE, THE MANUFACTURER AND CATALOG NUMBER, AND ALL PROVISIONS OF THE CONTRACT DOCUMENTS.
4. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL CEILINGS TYPES, LUMINAIRE COLORS, LENGTHS, TRIMS, FINISHES, MOUNTING HARDWARE, CONFIGURATIONS AND HEIGHTS OF SUSPENDED LUMINAIRES, ETC. WITH ARCHITECT PRIOR TO ANY ROUGH-INS AND PLACING FINAL PURCHASE ORDERS.
5. VERIFY FINAL LUMINAIRE LOCATIONS WITH OTHER CEILING MOUNTED EQUIPMENT SUCH AS DIFFUSERS, FIRE ALARM DEVICES, SPEAKERS, ETC. WITH ARCHITECTURAL RCP (REFLECTED CEILING PLANS).
6. VERIFY EXACT HEIGHT AND LOCATIONS OF ALL WALL MOUNTED AND PENDANT/CABLE MOUNTED LUMINAIRES WITH ARCHITECTURAL ELEVATIONS PRIOR TO ANY ROUGH-IN.
7. LUMINAIRES SHALL NOT BE SUPPORTED FROM SUSPENDED CEILING SUPPORTS UNLESS ADDITIONAL CEILING FRAMING AND SUPPORTS ARE ADDED BY THE CEILING CONTRACTOR ACCORDING TO MANUFACTURER'S RECOMMENDATIONS, U.L. LISTINGS, AND ANY APPLICABLE STATE OR LOCAL CODES.
8. CONNECTIONS TO RECESSED LUMINAIRES SHALL BE MADE WITH MINIMUM 1/2" FLEXIBLE METAL CONDUIT (FMC) FROM FIXTURE TO OUTLET BOX. LENGTH OF FMC SHALL NOT EXCEED 6'.
9. AT THE CONCLUSION OF THE WORK, EACH LUMINAIRE MUST BE CLEANED PER MANUFACTURER'S INSTRUCTIONS, EQUIPPED WITH THE PROPER TYPE, NUMBER OF LAMPS, INCLUDING KELVIN TEMPERATURE AND WATTAGE, AND ALL IN GOOD OPERATING CONDITION.
10. LIGHT FIXTURE COLOR TEMPERATURE SHALL BE **3500K MINIMUM** UNLESS OTHERWISE NOTED.
11. NOMINAL LUMEN VALUES MAY VARY BETWEEN DIFFERENT MANUFACTURERS OF SAME TYPE OF LUMINAIRE. NOMINAL LUMEN VALUES GIVEN IN SCHEDULE ARE THE VALUES USED FOR DESIGN.
12. FINAL COLOR SELECTION BY ARCHITECT/OWNER AT FIXTURE SUBMITTAL.
13. LENSED FIXTURES SHALL HAVE A MINIMUM OF 0.125" THICK ACRYLIC LENS UNLESS OTHERWISE NOTED.
14. **FOR LUMINAIRES WITH EMERGENCY BATTERY PACK OPTION, PROVIDE ADDITIONAL WIRING AS REQUIRED PER MANUFACTURER'S RECOMMENDATIONS FOR VOLTAGE SENSING OF THE NORMAL SOURCE SERVING THE LUMINAIRE.**

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REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LUMINAIRE SCHEDULE

SHEET NO.
E-700

OSBORN ENGINEERING
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PLOT DATE: 10/16/2025 2:04:01 PM TEMPLATE VERSION: 23.0.4

LIGHTING ZONE SCHEDULE - INTERIOR EMERGENCY

ZONE	PANEL	CKT	SEQUENCE
e1.0a	LSH1A	4	VESTIBULE
e1.0b	LSH1A	4	VESTIBULE
e1.1a	LSH1A	2	ELLIMAN CORRIDOR
e1.1b	LSH1A	1	SERVICE DOCK
e1.1c	LSH1A	2	CORRIDOR
e1.2a	LSH1A	2	CORRIDOR
e1.2c	LSH1A	4	LOBBY
e1.3a	LSH1A	4	CORRIDOR
e1.3b	LSH1A	5	CORRIDOR
e1.3c	LSH1A	4	PREFUNCTION
e1.3d	LSH1A	6	FIRE COMMAND CENTER
e1.4b	LSH1A	1	BOH
e1.5a	LSH1A	3	CORE LAB
e1.5b	LSH1A	3	CORE LAB
e1.6a	LSH1A	7	RESTROOM
e1.6b	LSH1A	7	RESTROOM
e1.7a	LSH1A	9	MULTIPURPOSE ROOM
e1.7b	LSH1A	9	PRIMARY DAYLIGHT ZONE
e1.7c	LSH1A	9	SECONDARY DAYLIGHT ZONE
e1.7d	LSH1A	9	MULTIPURPOSE ROOM
e1.8a	LSH1A	3	CORE LAB SECONDARY DAYLIGHTING ZONE
e1.8b	LSH1A	3	CORE LAB PRIMARY DAYLIGHTING ZONE
e1.11a	LSH1A	8	BREAK ROOM
e2.1a	LSH1A	12	WET LAB SECONDARY DAYLIGHTING ZONE
e2.1b	LSH1A	12	WET LAB SECONDARY DAYLIGHTING ZONE
e2.1c	LSH1A	12	SECONDARY DAYLIGHT ZONE
e2.1d	LSH1A	12	SECONDARY DAYLIGHT ZONE
e2.2a	LSH1A	12	SECONDARY DAYLIGHT ZONE
e2.2b	LSH1A	12	WET LAB SECONDARY DAYLIGHTING ZONE
e2.2c	LSH1A	10	CORRIDOR
e2.2d	LSH1A	10	CORRIDOR
e2.3a	LSH1A	10	CORRIDOR
e2.3b	LSH1A	10	CORRIDOR
e2.3d	LSH1A	10	CORRIDOR
e2.4a	LSH1A	10	CORRIDOR
e2.4b	LSH1A	10	CORRIDOR
e2.4c	LSH1A	10	CORRIDOR
e2.4d	LSH1A	10	CORRIDOR
e2.5a	LSH1A	10	CORRIDOR
e2.5b	LSH1A	10	WORKSPACE PRIMARY DAYLIGHTING ZONE
e2.5c	LSH1A	10	WORKSPACE
e2.5d	LSH1A	10	LOBBY
e2.6a	LSH1A	10	CORRIDOR
e2.6b	LSH1A	10	CORRIDOR
e2.6c	LSH1A	10	WORKSPACE
e2.6d	LSH1A	10	WORKSPACE
e2.7a	LSH1A	13	BREAK ROOM
e2.7b	LSH1A	10	RESTROOM
e2.7c	LSH1A	10	RESTROOM
e3.1a	LSH3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e3.1b	LSH3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e3.1c	LSH3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e3.1d	LSH3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e3.2a	LSH3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e3.2b	LSH3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e3.2c	LSH3A	2	CORRIDOR
e3.2d	LSH3A	2	CORRIDOR
e3.3a	LSH3A	2	CORRIDOR
e3.3b	LSH3A	2	CORRIDOR
e3.3d	LSH3A	2	CORRIDOR
e3.4a	LSH3A	2	CORRIDOR
e3.4b	LSH3A	2	CORRIDOR
e3.4c	LSH3A	2	CORRIDOR
e3.4d	LSH3A	2	CORRIDOR
e3.5a	LSH3A	2	CORRIDOR
e3.5b	LSH3A	2	WORKSPACE
e3.5c	LSH3A	2	WORKSPACE
e3.5d	LSH3A	2	LOBBY
e3.6a	LSH3A	2	CORRIDOR
e3.6b	LSH3A	2	CORRIDOR
e3.6c	LSH3A	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
e3.6d	LSH3A	2	WORKSPACE
e3.7a	LSH3A	2	BRIDGE
e3.7b	LSH3A	2	BREAK ROOM
e3.7c	LSH3A	2	RESTROOM
e3.7d	LSH3A	2	RESTROOM
e4.1a	LSH3A	4	WET LAB SECONDARY DAYLIGHTING ZONE
e4.1b	LSH3A	4	WET LAB SECONDARY DAYLIGHTING ZONE
e4.1c	LSH3A	4	WET LAB SECONDARY DAYLIGHTING ZONE
e4.1d	LSH3A	4	WET LAB SECONDARY DAYLIGHTING ZONE
e4.2a	LSH3A	4	WET LAB SECONDARY DAYLIGHTING ZONE
e4.2b	LSH3A	4	WET LAB SECONDARY DAYLIGHTING ZONE
e4.2c	LSH3A	5	CORRIDOR
e4.2d	LSH3A	5	CORRIDOR
e4.3a	LSH3A	5	CORRIDOR
e4.3b	LSH3A	5	CORRIDOR
e4.3d	LSH3A	5	CORRIDOR
e4.4a	LSH3A	5	CORRIDOR
e4.4b	LSH3A	5	CORRIDOR
e4.4c	LSH3A	5	CORRIDOR
e4.4d	LSH3A	5	CORRIDOR
e4.5a	LSH3A	5	CORRIDOR
e4.5c	LSH3A	5	WORKSPACE
e4.5d	LSH3A	5	CORRIDOR
e4.6a	LSH3A	5	CORRIDOR
e4.6b	LSH3A	5	CORRIDOR
e4.6c	LSH3A	5	WORKSPACE PRIMARY DAYLIGHTING ZONE
e4.6d	LSH3A	5	WORKSPACE
e4.8a	LSH3A	6	RESTROOM
e4.8b	LSH3A	6	RESTROOM
e5.1a	LSH5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e5.1b	LSH5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e5.1c	LSH5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e5.1d	LSH5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e5.2a	LSH5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e5.2b	LSH5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
e5.2c	LSH5A	2	CORRIDOR
e5.2d	LSH5A	2	CORRIDOR
e5.3a	LSH5A	2	CORRIDOR
e5.3b	LSH5A	2	CORRIDOR
e5.3d	LSH5A	2	CORRIDOR
e5.4a	LSH5A	2	CORRIDOR
e5.4b	LSH5A	2	CORRIDOR
e5.4c	LSH5A	2	CORRIDOR
e5.4d	LSH5A	2	CORRIDOR
e5.5a	LSH5A	2	CORRIDOR
e5.5b	LSH5A	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
e5.5c	LSH5A	2	WORKSPACE
e5.5d	LSH5A	2	LOBBY
e5.6a	LSH5A	2	CORRIDOR
e5.6b	LSH5A	2	CORRIDOR
e5.6c	LSH5A	2	WORKSPACE
e5.6d	LSH5A	2	WORKSPACE
e5.7b	LSH5A	3	RESTROOM
e5.7c	LSH5A	3	RESTROOM

LIGHTING ZONE SCHEDULE - INTERIOR NORMAL

ZONE	PANEL	CKT	SEQUENCE
n1.1a	HN1A	12	ELLIMAN CORRIDOR
n1.1b	HN1A	8	SERVICE DOCK
n1.1c	HN1A	14	CORRIDOR
n1.2a	HN1A	14	CORRIDOR
n1.2b	HN1B	1	VESTIBULE
n1.2c	HN1B	1	LOBBY
n1.2d	HN1B	1	VESTIBULE
n1.3a	HN1B	1	CORRIDOR
n1.3b	HN1B	6	CORRIDOR
n1.3c	HN1B	1	PREFUNCTION
n1.3d	HN1B	2	TECH CENTER
n1.6a	HN1B	7	MULTIPURPOSE ROOM
n1.6b	HN1B	7	MULTIPURPOSE ROOM
n1.6c	HN1B	7	<varies>
n1.6d	HN1A	15	BREAK/LOCKERS
n1.7a	HN1A	10	BOH
n1.7b	HN1B	7	PRIMARY DAYLIGHT ZONE
n1.7c	HN1B	7	SECONDARY DAYLIGHT ZONE
n1.7d	HN1B	7	SECONDARY DAYLIGHT ZONE
n1.8a	HN1B	7	SECONDARY DAYLIGHT ZONE
n1.9a	HN1A	16	CORE LAB
n1.9b	HN1A	16	CORE LAB
n1.11a	HN1B	7	BREAK ROOM
n1.11b	HN1B	7	BREAK ROOM
n1.11c	HN1A	20	CORE LAB PRIMARY DAYLIGHTING ZONE
n1.11d	HN1B	3	BOH
n1.12a	HN1A	20	CORE LAB SECONDARY DAYLIGHTING ZONE
n1.12b	HN1B	4	<varies>
n1.12c	HN1B	4	<varies>
n1.13a	HN1B	2	SECONDARY DAYLIGHT ZONE
n1.13b	HN1B	2	PRIMARY DAYLIGHT ZONE
n1.13c	HN1B	2	SECONDARY DAYLIGHT ZONE
n1.13d	HN1B	2	CONFERENCE
n1.14c	HN1B	3	BOH
n1.15a	HN1B	2	PRIMARY DAYLIGHT ZONE
n1.15b	HN1B	2	PRIMARY DAYLIGHT ZONE
n1.15c	HN1B	2	SECONDARY DAYLIGHT ZONE
n1.15d	HN1B	2	CONFERENCE
n1.16a	HN1B	1	LOBBY
n1.17a	HN1B	7	MULTIPURPOSE ROOM
n1.18b	HN1B	4	RESTROOM CORRIDOR
n2.1a	HN2A	3	WET LAB SECONDARY DAYLIGHTING ZONE
n2.1b	HN2A	3	WET LAB
n2.1c	HN2A	3	WET LAB
n2.1d	HN2B	3	WET LAB
n2.2a	HN2B	3	WET LAB
n2.2b	HN2B	3	WET LAB
n2.2c	HN2B	1	CORRIDOR
n2.2d	HN2B	1	CORRIDOR
n2.3a	HN2B	1	CORRIDOR
n2.3b	HN2A	1	CORRIDOR
n2.3c	HN2A	1	CORRIDOR
n2.3d	HN2A	1	CORRIDOR
n2.4a	HN2B	1	CORRIDOR
n2.4b	HN2A	1	CORRIDOR
n2.4c	HN2A	1	CORRIDOR
n2.4d	HN2A	1	CORRIDOR
n2.5a	HN2A	1	CORRIDOR
n2.5b	HN2A	1	WORKSPACE PRIMARY DAYLIGHTING ZONE
n2.5c	HN2A	1	WORKSPACE
n2.5d	HN2B	1	LOBBY
n2.6a	HN2B	1	CORRIDOR
n2.6b	HN2B	1	CORRIDOR
n2.6c	HN2B	1	WORKSPACE PRIMARY DAYLIGHTING ZONE
n2.6d	HN2B	1	WORKSPACE
n2.7a	HN2B	4	<varies>
n2.7b	HN2B	3	WET LAB PRIMARY DAYLIGHTING ZONE
n2.7c	HN2A	3	WET LAB PRIMARY DAYLIGHTING ZONE
n2.7d	HN2B	3	WET LAB PRIMARY DAYLIGHTING ZONE
n2.8a	HN2B	3	WET LAB PRIMARY DAYLIGHTING ZONE
n2.8b	HN2A	3	WET LAB PRIMARY DAYLIGHTING ZONE
n2.8c	HN2A	3	WET LAB
n2.8d	HN2A	3	WET LAB
n2.9a	HN2A	3	WET LAB PRIMARY DAYLIGHTING ZONE
n2.9b	HN2A	3	WET LAB
n2.9c	HN2B	3	WET LAB
n2.9d	HN2B	3	WET LAB
n2.10a	HN2B	3	WET LAB
n2.10b	HN2A	5	RESTROOM
n2.10c	HN2A	5	RESTROOM
n2.11a	HN2A	1	WORKSPACE
n2.11b	HN2B	1	WORKSPACE PRIMARY DAYLIGHTING ZONE
n2.12a	HN2A	4	CONFERENCE
n2.12b	HN2A	4	CONFERENCE
n2.12c	HN2A	4	CONFERENCE
n3.1a	HN3A	1	WET LAB
n3.1b	HN3A	1	WET LAB
n3.1c	HN3A	1	<varies>
n3.1d	HN3A	1	WET LAB
n3.2a	HN3A	1	WET LAB
n3.2b	HN3A	1	WET LAB
n3.2c	HN3B	2	CORRIDOR
n3.2d	HN3B	2	CORRIDOR
n3.3a	HN3B	2	CORRIDOR
n3.3b	HN3A	2	CORRIDOR
n3.3c	HN3A	2	CORRIDOR
n3.3d	HN3A	2	CORRIDOR
n3.4a	HN3B	2	CORRIDOR
n3.4b	HN3A	2	CORRIDOR
n3.4c	HN3A	2	CORRIDOR
n3.4d	HN3A	2	CORRIDOR

LIGHTING ZONE SCHEDULE - INTERIOR NORMAL

ZONE	PANEL	CKT	SEQUENCE
n3.5a	HN3A	2	CORRIDOR
n3.5b	HN3A	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
n3.5c	HN3A	2	WORKSPACE
n3.5d	HN3A	2	LOBBY
n3.6a	HN3B	2	CORRIDOR
n3.6b	HN3B	2	CORRIDOR
n3.6c	HN3B	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
n3.6d	HN3B	2	WORKSPACE
n3.7a	HN3A	2	BRIDGE
n3.7b	HN3B	4	BREAK ROOM
n3.7c	HN3B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n3.7d	HN3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n3.8a	HN3A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n3.8b	HN3A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n3.8c	HN3A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n3.8d	HN3B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n3.9a	HN3B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n3.9b	HN3B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n3.9c	HN3B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n3.9d	HN3B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n3.10a	HN3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n3.10b	HN3A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n3.10c	HN3A	5	RESTROOM
n3.10d	HN3A	5	RESTROOM
n3.11a	HN3A	2	WORKSPACE
n3.11b	HN3B	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
n3.12a	HN3A	4	CONFERENCE
n3.12b	HN3A	4	CONFERENCE
n3.12c	HN3A	4	CONFERENCE
n4.1a	HN4B	1	WET LAB
n4.1b	HN4B	1	WET LAB
n4.1c	HN4B	1	WET LAB
n4.1d	HN4B	1	WET LAB
n4.2a	HN4B	1	WET LAB
n4.2b	HN4B	1	WET LAB
n4.2c	HN4B	2	CORRIDOR
n4.2d	HN4B	2	CORRIDOR
n4.3a	HN4B	2	CORRIDOR
n4.3b	HN4A	2	CORRIDOR
n4.3c	HN4A	2	CORRIDOR
n4.3d	HN4A	2	CORRIDOR
n4.4a	HN4B	2	CORRIDOR
n4.4b	HN4A	2	CORRIDOR
n4.4c	HN4A	2	CORRIDOR
n4.4d	HN4A	2	CORRIDOR
n4.5a	HN4A	2	CORRIDOR
n4.5b	HN4A	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
n4.5c	HN4A	2	WORKSPACE
n4.5d	HN4B	2	LOBBY
n4.6a	HN4B	2	CORRIDOR
n4.6b	HN4B	2	CORRIDOR
n4.6c	HN4B	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
n4.6d	HN4B	2	WORKSPACE
n4.6e	HN4B	2	CORRIDOR
n4.7a	HN4B	3	BREAK ROOM
n4.7b	HN4B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n4.7c	HN4A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n4.7d	HN4A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n4.8a	HN4A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n4.8b	HN4A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n4.8c	HN4A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n4.8d	HN4B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n4.9a	HN4B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n4.9b	HN4B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n4.9c	HN4B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n4.9d	HN4B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n4.10a	HN4A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n4.10b	HN4A	5	RESTROOM
n4.10c	HN4A	5	RESTROOM
n4.11a	HN4A	2	WORKSPACE
n4.11b	HN4B	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
n4.12a	HN4A	3	CONFERENCE
n4.12b	HN4A	3	CONFERENCE
n4.12c	HN4A	3	CONFERENCE
n5.1a	HN5B	1	WET LAB
n5.1b	HN5B	1	WET LAB
n5.1c	HN5B	1	WET LAB
n5.1d	HN5B	1	WET LAB
n5.2a	HN5B	1	WET LAB
n5.2b	HN5B	1	WET LAB
n5.2c	HN5B	2	CORRIDOR
n5.2d	HN5B	2	CORRIDOR
n5.3a	HN5B	2	CORRIDOR
n5.3b	HN5A	2	CORRIDOR
n5.3c	HN5A	2	CORRIDOR
n5.3d	HN5A	2	CORRIDOR
n5.4a	HN5B	2	CORRIDOR
n5.4b	HN5A	2	CORRIDOR
n5.4c	HN5A	2	CORRIDOR
n5.4d	HN5A	2	CORRIDOR
n5.5a	HN5A	2	CORRIDOR
n5.5b	HN5A	2	WORKSPACE PRIMARY DAYLIGHTING ZONE
n5.5c	HN5A	2	WORKSPACE
n5.5d	HN5B	2	LOBBY
n5.6a	HN5B	2	CORRIDOR
n5.6b	HN5B	2	CORRIDOR
n5.6c	HN5B	2	WORKSPACE
n5.6d	HN5B	2	WORKSPACE
n5.7a	HN5B	4	BREAK ROOM
n5.7b	HN5B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n5.7c	HN5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n5.7d	HN5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n5.8a	HN5A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n5.8b	HN5A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n5.8c	HN5A	1	WET LAB PRIMARY DAYLIGHTING ZONE
n5.8d	HN5B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n5.9a	HN5B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n5.9b	HN5B	1	WET LAB PRIMARY DAYLIGHTING ZONE
n5.9c	HN5B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n5.9d	HN5B	1	WET LAB SECONDARY DAYLIGHTING ZONE
n5.10a	HN5A	1	WET LAB SECONDARY DAYLIGHTING ZONE
n5.10b	HN5A	6	RESTROOM
n5.10c	HN5A	6	RESTROOM
n5.11a	HN5A	2	WORKSPACE
n5.11b	HN5B	2	WORKSPACE
n5.12a	HN5A	4	CONFERENCE
n5.12b	HN5A	4	CONFERENCE
n5.12c	HN5A	4	CONFERENCE

LIGHTING ZONE SCHEDULE - SITE

ZONE	PANEL	CKT	SEQUENCE
Se1.1a	LSH1A	17	EXTERIOR
Se1.1c	LSH1A	19	EXTERIOR
Se.1a	LSH1A	17	EXTERIOR
Sn1.1a	HN1A	23	EXTERIOR
Sn1.1b	HN1A	21	BRIDGE EXTERIOR
Sn1.1c	HN1A	23	LINEAR BUILDING
Sn1.1d	HN1A	23	<varies>
Sn1.2a	HN1A	24	PEDESTRIAN POLES
Sn1.2b	HN1A	24	SITE POLES
Sn1.2c	HN1A	23	EXTERIOR BENCH
Sn6.1a	NL1B3	9	EXTERIOR SIGNAGE
Sn6.1b	NL5B3	53	SIGNAGE ON ROOF
Sn6.1c	HN1A	23	WSU LOGO

LUMINAIRE CONTROL SEQUENCE OF OPERATIONS:

1. GENERAL LIGHTING CONTROL SYSTEM:
   - A. PROVIDE BACNET OR MODBUS TO BAS SYSTEM. COORDINATE WITH DIVISION 23. THE BAS SHALL PROVIDE AN "OCCUPIED" OR "UNOCCUPIED SIGNAL TO THE LIGHTING CONTROL SYSTEM BASED ON BAS PROGRAMMED SCHEDULES.
   - B. MODIFICATION OF THE LIGHTING CONTROL SYSTEM PROGRAMMING DURING OPERATIONAL HOURS SHALL NOT CAUSE LIGHTING TO RESET OR OTHERWISE BE INTERRUPTED.
   - C. PROVIDE FLASH WARNING FOR ALL LIGHTING OVERRIDES BEFORE TURNING LIGHTING OFF. MINIMUM WARNING TIME OF ONE (1) MINUTE.
   - D. WHERE "OR PRESET LEVEL" IS INDICATED IN PLAN, COORDINATE OUTPUT LEVEL WITH OWNER REPRESENTATIVE.
2. PUBLIC CIRCULATION SPACES (INCLUDING CORRIDORS, HALLS & LOBBIES):
   - A. CONTROLS SHALL BE NETWORKED.
   - B. CONTROL SHALL BE BASED ON BAS SYSTEM SIGNAL.
   - C. ALL LUMINAIRES SHALL BE CAPABLE OF CONTINUOUS DIMMING FROM LIGHTING CONTROL SYSTEM INTERFACE.
   - D. "OCCUPIED" MODE
     - a. ALL LUMINAIRES ON TO 50% (OR PRESET LEVEL) OUTPUT WHEN SIGNAL IS RECEIVED FROM BAS.
     - b. LUMINAIRES IN EACH ZONE RAISE TO 100% (OR PRESET LEVEL) OUTPUT VIA OCCUPANCY/VACANCY SENSORS, (15)-MINUTE TIME-OUT.
     - c. 2-HR MANUAL OVERRIDE VIA CONTROL STATION(S) INDICATED ON PLAN (FULL ON OR FULL OFF).
   - E. "UNOCCUPIED" MODE
     - a. ALL LUMINAIRES OFF WHEN SIGNAL IS RECEIVED FROM BAS.
     - b. ALL LUMINAIRES ON TO 50% (OR PRESET LEVEL) OUTPUT VIA OCCUPANCY/VACANCY SENSORS, (15)-MINUTE TIME-OUT.
     - c. 2-HR MANUAL OVERRIDE VIA CONTROL STATIONS(S) INDICATED ON PLAN (FULL ON OR FULL OFF).
3. LABORATORIES:
   - A. CORE LAB AND WET LABS:
     - a. CONTROLS SHALL BE NETWORKED.
     - b. MANUAL ON VIA LOW VOLTAGE DIMMER SWITCH.
     - c. AUTOMATIC PARTIAL OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
     - d. CONTINUOUS DIMMING VIA LOW VOLTAGE DIMMER SWITCH.
   - B. BIO-SAFETY LABS (INCLUDING SPECIAL PURPOSE LABS WITH NARROW SPECTRUM 'RED' LIGHTS):
     - a. CONTROLS SHALL BE NETWORKED.
     - b. NARROW SPECTRUM 'RED' LIGHTS SHALL BE CONNECTED TO TIME OF DAY CONTROLS ONLY, AND SHALL NOT BE CONNECTED TO OCCUPANCY/VACANCY SENSOR.
     - c. REMAINDER OF LIGHTING IN SPACE SHALL BE MANUAL ON VIA LOW VOLTAGE DIMMER SWITCH.
     - d. AUTOMATIC PARTIAL OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
4. PRIVATE OFFICES:
   - A. MANUAL ON VIA LOW VOLTAGE DIMMER SWITCH.
   - B. AUTOMATIC OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
   - C. CONTINUOUS DIMMING VIA LOW VOLTAGE DIMMER SWITCH.
   - D. RECEPTACLES CONNECTED TO OCCUPANCY SENSOR IN ROOM SHALL AUTOMATICALLY SHUT OFF WHEN VACANCY IS DETECTED, (15)-MINUTE TIME-OUT.
   - E. CONNECT CONTROLLED RECEPTACLES IN ADJACENT OPEN OFFICE AREAS TO AUTOMATIC SHUT OFF CONTROLS.
5. OPEN PLAN OFFICES (INCLUDING RECEPTION & WORK/TEAM STATIONS):
   - A. CONTROLS SHALL BE NETWORKED.
   - B. CONTROL SHALL BE BASED ON BAS SYSTEM SIGNAL.
   - C. ALL LUMINAIRES SHALL BE CAPABLE OF CONTINUOUS DIMMING FROM LIGHTING CONTROL SYSTEM INTERFACE.
   - D. "OCCUPIED" MODE
     - a. ALL LUMINAIRES ON TO 50% (OR PRESET LEVEL) OUTPUT WHEN SIGNAL IS RECEIVED FROM BAS.
     - b. LUMINAIRES IN EACH ZONE RAISE TO 100% (OR PRESET LEVEL) OUTPUT VIA OCCUPANCY/VACANCY SENSORS, (15)-MINUTE TIME-OUT.
     - c. 2-HR MANUAL OVERRIDE VIA CONTROL STATION(S) INDICATED ON PLAN (FULL ON OR FULL OFF).
   - E. "UNOCCUPIED" MODE
     - a. ALL LUMINAIRES OFF WHEN SIGNAL IS RECEIVED FROM BAS.
     - b. ALL LUMINAIRES ON TO 50% (OR PRESET LEVEL) OUTPUT VIA OCCUPANCY/VACANCY SENSORS, (15)-MINUTE TIME-OUT.
     - c. 2-HR MANUAL OVERRIDE VIA CONTROL STATION(S) INDICATED ON PLAN (FULL ON OR FULL OFF).
     - d. RECEPTACLES CONNECTED TO OCCUPANCY SENSORS IN ROOM SHALL AUTOMATICALLY SHUT OFF WHEN VACANCY IS DETECTED, (15)-MINUTE TIME-OUT.
6. MEETING ROOMS (INCLUDING CONFERENCE ROOMS & CLASSROOMS):
   - A. MANUAL ON VIA LOW VOLTAGE DIMMER SWITCH(ES).
   - B. AUTOMATIC OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
   - C. CONTINUOUS DIMMING PER ZONE VIA LOW VOLTAGE DIMMER SWITCH(ES).
   - D. RECEPTACLES CONNECTED TO OCCUPANCY SENSORS IN ROOM SHALL AUTOMATICALLY SHUT OFF WHEN VACANCY IS DETECTED, (15)-MINUTE TIME-OUT.
   - E. CONNECT CONTROLLED RECEPTACLES IN ADJACENT OPEN OFFICE AREAS TO AUTOMATIC SHUT OFF CONTROLS.
7. STORAGE ROOMS, RESTROOMS, EVS CLOSETS:
   - A. AUTOMATIC ON VIA OCCUPANCY/VACANCY SENSOR(S).
   - B. AUTOMATIC OFF VIA OCCUPANCY/VACANCY SENSOR(S), (15)-MINUTE TIME-OUT.
8. STAIRWELLS:
   - A. RAISE TO 100% OUTPUT VIA INTEGRAL OCCUPANCY SENSOR.
   - B. DIM TO 50% OUTPUT VIA INTEGRAL OCCUPANCY SENSOR, (15)-MINUTE TIME-OUT.
9. EXTERIOR LIGHTING (INCLUDING PARKING LOTS, DRIVEWAYS, & SIDEWALKS):
   - A. CONTROL SHALL BE NETWORKED.
   - B. ON @ DUSK / OFF @ DAWN VIA BUILING MOUNTED PHOTOSENSOR.
   - C. DIM TO 20% OUTPUT FROM 12AM TO 6AM, COORDINATE HOURS OF OPERATION WITH OWNER REPRESENTATIVE.

ZONE KEY: **S x F . N y**

- EXTERIOR ZONE
  - S = SITE EXTERIOR (BLANK = INTERIOR)
- POWER SOURCE DISTRIBUTION SYSTEM
  - c = CRITICAL BRANCH
  - e = EMERGENCY OR LIFE SAFETY
  - n = NORMAL
  - s = STANDBY
- FLOOR NUMBER
  - 1, 2, 3, ...
- NODE NUMBER (PER FLOOR)
  - 1, 2, 3, ...
- ZONE DESIGNATION (PER NODE)
  - a, b, c, d

LIGHTING CONTROL ZONE KEY

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10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
LIGHTING CONTROL ZONE SCHEDULES

SHEET NO.
E-701

OSBORN ENGINEERING
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PLOT DATE: 10/16/2025 2:04:02 PM TEMPLATE VERSION: 23.0.4

EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

MECHANICAL DESIGNATION	EQUIPMENT DESCRIPTION	MOTOR					BRANCH CIRCUIT				REMARKS
		HP	kVA	VOLTAGE	PHASE	LOCATION	OCPD SIZE	CONDUCTORS/CONDUIT	PANEL	CKT. #	
AC-1	AIR CURTAIN	3x0.75HP	6.23 kVA	480 V	3	SERVICE/DOCK 1302.00	15A	3#12, 1#12 EG - 3/4"C	HN1A	1,3,5	3
AC-2	AIR CURTAIN	3x0.75HP	6.23 kVA	480 V	3	SERVICE/DOCK 1302.00	15A	3#12, 1#12 EG - 3/4"C	HN1A	2,4,6	3
AC-N-1	LABORATORY AIR COMPRESSOR	15	15.96 kVA	480 V	3	MEP SUPPORT	30A	4#10, 1#10 EG - 3/4"C	DPHEQ1B	5	3
AHU-1	AIR HANDLING UNIT	4x15HP 4x7.5HP	110.78 kVA	480 V	3	PENTHOUSE	175A	4#1/0, 1#6 EG - 2"C	SWHN6A	8	3,8
AHU-2	AIR HANDLING UNIT	4x40HP 4x15HP	253.57 kVA	480 V	3	PENTHOUSE	400A	4#300kCMIL, 1#3 EG - 2-1/2"C	SWHEQ6A	2	3,8
AHU-3	AIR HANDLING UNIT	4x30HP 4x15HP	211.07 kVA	480 V	3	PENTHOUSE	350A	4#4/0, 1#3 EG - 2-1/2"C	SWHEQ6A	3	3,8
AHU-4	AIR HANDLING UNIT	4x10HP 4x5HP	86.05 kVA	480 V	3	PENTHOUSE	125A	4#2, 1#6 EG - 1-1/4"C	SWHN6B	4	3,8
B-1	HOT WATER BOILER	-	9.98 kVA	480 V	3	PENTHOUSE	20A	4#12, 1#12 EG - 3/4"C	SWHEQ6A	13	3
B-2	HOT WATER BOILER	-	9.98 kVA	480 V	3	PENTHOUSE	20A	4#12, 1#12 EG - 3/4"C	SWHEQ6A	14	3
B-3	HOT WATER BOILER	-	9.98 kVA	480 V	3	PENTHOUSE	20A	4#12, 1#12 EG - 3/4"C	SWHN6A	2	3
B-4	HOT WATER BOILER	-	9.98 kVA	480 V	3	PENTHOUSE	20A	4#12, 1#12 EG - 3/4"C	SWHN6A	3	3
B-5	HOT WATER BOILER	-	9.98 kVA	480 V	3	PENTHOUSE	20A	4#12, 1#12 EG - 3/4"C	SWHN6A	4	3
CH HT-1	INTERNAL CHILLER HEAT TRACE	-	0.2 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	OL6A1	2	9
CH HT-2	INTERNAL CHILLER HEAT TRACE	-	0.2 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	OL6A1	3	9
CH HT-3	INTERNAL CHILLER HEAT TRACE	-	0.2 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	OL6B1	1	9
CH HT-4	INTERNAL CHILLER HEAT TRACE	-	0.2 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	OL6B1	3	9
CH-1	CHILLER	-	366.66 kVA	480 V	3	ROOF	600A	2x(4#4/0, 1#1 EG - 2-1/2"C)	ATS CH-1	1	1
CH-2	CHILLER	-	366.66 kVA	480 V	3	ROOF	600A	2x(4#4/0, 1#1 EG - 2-1/2"C)	ATS CH-2	1	1
CH-3	CHILLER	-	366.66 kVA	480 V	3	ROOF	600A	2x(4#4/0, 1#1 EG - 2-1/2"C)	ATS CH-3	1	1
CH-4	CHILLER	-	0 kVA	480 V	3	ROOF	600A	2x(4#500kcmil, 1#1/0 EG - 4"C)	SWHEQ6A	1	1,6
CHWP-1	PRIMARY CHILLED WATER	10	11.63 kVA	480 V	3	PENTHOUSE	25A	3#10, 1#10 EG - 3/4"C	SWHEQ6A	4	2
CHWP-2	PRIMARY CHILLED WATER	10	11.63 kVA	480 V	3	PENTHOUSE	25A	3#10, 1#10 EG - 3/4"C	SWHN6B	5	2
CHWP-3	PRIMARY CHILLED WATER	10	11.63 kVA	480 V	3	PENTHOUSE	25A	3#10, 1#10 EG - 3/4"C	SWHN6B	6	2
CHWP-4	PRIMARY CHILLED WATER	10	11.63 kVA	480 V	3	PENTHOUSE	25A	3#10, 1#10 EG - 3/4"C	SWHN6B	7	2
CHWP-5	CHILLED WATER LOOP	20	22.44 kVA	480 V	3	PENTHOUSE	50A	3#8, 1#8 EG - 3/4"C	SWHEQ6A	5	2
CHWP-6	CHILLED WATER LOOP	20	22.44 kVA	480 V	3	PENTHOUSE	50A	3#8, 1#8 EG - 3/4"C	SWHN6B	8	2
CHWP-7	SECONDARY CHILLED WATER	20	22.44 kVA	480 V	3	PENTHOUSE	50A	3#8, 1#8 EG - 3/4"C	SWHN6B	9	2
CHWP-8	SECONDARY CHILLED WATER	20	22.44 kVA	480 V	3	PENTHOUSE	50A	3#8, 1#8 EG - 3/4"C	SWHN6B	10	2
CHWP-9	SECONDARY CHILLED WATER	20	22.44 kVA	480 V	3	PENTHOUSE	50A	3#8, 1#8 EG - 3/4"C	SWHN6B	11	2
CP-1	HEATING COIL PUMP	1	1.75 kVA	480 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	SWHEQ6A	17	-
CP-2	HEATING COIL PUMP	1	1.75 kVA	480 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	SWHEQ6A	18	-
CP-3	HEATING COIL PUMP	0.75	1.33 kVA	480 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	SWHEQ6A	19	-
CP-4	HEATING COIL PUMP	0.75	1.33 kVA	480 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	SWHEQ6A	20	-
CUH-1	CABINET UNIT HEATER	-	0.35 kVA	120 V	1	VESTIBULE 1090.08	15A	2#12, 1#12 EG - 3/4"C	NL1A2	10	4
CUH-2	CABINET UNIT HEATER	-	0.35 kVA	120 V	1	MEP SUPPORT	15A	2#12, 1#12 EG - 3/4"C	NL1A2	2	4
CUH-3	CABINET UNIT HEATER	-	0.35 kVA	120 V	1	ELLIMAN CORRIDOR 1090.12	15A	2#12, 1#12 EG - 3/4"C	NL1A2	12	4
CUH-4	CABINET UNIT HEATER	-	0.58 kVA	120 V	1	VESTIBULE 1090.01	15A	2#12, 1#12 EG - 3/4"C	NL1B3	4	4
CUH-5	CABINET UNIT HEATER	-	0.58 kVA	120 V	1	VESTIBULE 1090.05	15A	2#12, 1#12 EG - 3/4"C	NL1B3	6	4
CUH-6	CABINET UNIT HEATER	-	0.35 kVA	120 V	1	CORRIDOR 1090.13	15A	2#12, 1#12 EG - 3/4"C	NL1B3	5	4
DWP-1	DOMESTIC WATER PUMP	2x7.5HP	18.91 kVA	208 V	3	MEP SUPPORT	60A	3#4, 1#10 EG - 1-1/4"C	EQL1B	1,3,5	5
EF-1	EXHAUST FAN	1/2	1.06 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	LN6B	11	4
EF-2	EXHAUST FAN	1/10	0.18 kVA	120 V	1	HAZ WASTE HOLDING 1301.00	15A	2#12, 1#12 EG - 3/4"C	NL1A2	16	4
EF-3	EXHAUST FAN	1/15	0.15 kVA	120 V	1	GASSES 1303	15A	2#12, 1#12 EG - 3/4"C	NL1A2	15	4
EF-4	EXHAUST FAN	1/15	0.15 kVA	120 V	1	GASSES 1303	15A	2#12, 1#12 EG - 3/4"C	NL1A2	11	4
EF-5	EXHAUST FAN	1/15	0.15 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	LN6B	12	4
EF-5	EXHAUST FAN	1/15	0.15 kVA	120 V	1	GASSES 1303	15A	2#12, 1#12 EG - 3/4"C	NL1A2	13	4
EF-6	EXHAUST FAN	1/10	0.15 kVA	120 V	1	GASSES 1303	15A	2#12, 1#12 EG - 3/4"C	NL1A2	14	4
EF-7	EXHAUST FAN	1/2	1.06 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	LN6A	11	4
EF-8	EXHAUST FAN	1/6	0.89 kVA	120 V	1	GASSES 1303	15A	2#12, 1#12 EG - 3/4"C	NL1A3	20	4
FH-1	FILTER HOUSING	-	0.1 kVA	120 V	1	ROOF	20A	2#12, 1#12 EG - 3/4"C	LN6B	1	-
FH-2	FILTER HOUSING	-	0.1 kVA	120 V	1	ROOF	20A	2#12, 1#12 EG - 3/4"C	LN6B	1	-
FH-3	FILTER HOUSING	-	0.1 kVA	120 V	1	ROOF	20A	2#12, 1#12 EG - 3/4"C	LN6B	1	-
FH-4	FILTER HOUSING	-	0.1 kVA	120 V	1	ROOF	20A	2#12, 1#12 EG - 3/4"C	LN6B	1	-
FP-1	FIRE PUMP	100	162.12 kVA	480 V	3	FIRE PUMP 1223.00	225A	4#2/0, 1#6 EG - 2"C	FP SWGR	1	-
GWH-1	WATER HEATER	.75	0.2 kVA	120 V	1	WATER 1218.00	15A	2#12, 1#12 EG - 3/4"C	NL1A1	32	1
GWH-2	WATER HEATER	.75	0.2 kVA	120 V	1	WATER 1218.00	15A	2#12, 1#12 EG - 3/4"C	NL1A1	32	1
H-2A	GAS FIRED STEAM GENERATOR	0.00	0.1 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	OL6A1	1	2
H-2B	GAS FIRED STEAM GENERATOR	0.00	0.1 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	OL6A1	1	2
H-3A	GAS FIRED STEAM GENERATOR	0.00	0.1 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	OL6A1	1	2
H-3B	GAS FIRED STEAM GENERATOR	0.00	0.1 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	OL6A1	1	2
HRWP-1	HEAT RECOVERY THROUGH CHILLER	3	3.98 kVA	480 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	SWHN6B	12	2
HRWP-2	HEAT RECOVERY THROUGH CHILLER	2	2.83 kVA	480 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	SWHN6B	13	2
JP-1	JOCKEY PUMP	3	3.47 kVA	208 V	3	FIRE PUMP 1223.00	20A	4#12, 1#12 EG - 3/4"C	NL1A2	26,28,30	-
LA-1	LABORATORY AIR PUMP	7.5	15 kVA	480 V	3	MEP SUPPORT	30A	4#10, 1#10 EG - 3/4"C	DPHEQ1B	3	3
LA-2	LABORATORY AIR PUMP	3	7 kVA	480 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	DPHEQ1B	4	3
LEF-1-1	LABORATORY EXHAUST FAN	25	25.76 kVA	480 V	3	ROOF	60A	4#6, 1#10 EG - 1"C	SWHEQ6A	7	3,7,8
LEF-1-2	LABORATORY EXHAUST FAN	25	25.76 kVA	480 V	3	ROOF	60A	4#6, 1#10 EG - 1"C	SWHEQ6A	8	3,7,8
LEF-2-1	LABORATORY EXHAUST FAN	3	3.32 kVA	480 V	3	ROOF	15A	3#12, 1#12 EG - 3/4"C	SWHEQ6A	10	3,7,8
LEF-2-2	LABORATORY EXHAUST FAN	3	0 kVA	480 V	3	ROOF	15A	3#12, 1#12 EG - 3/4"C	SWHEQ6A	11	3,7,8
LEF-3-1	LABORATORY EXHAUST FAN	10	10.8 kVA	480 V	3	ROOF	25A	3#10, 1#10 EG - 3/4"C	SWHEQ6A	12	3,7,8
LEF-3-2	LABORATORY EXHAUST FAN	10	0 kVA	480 V	3	ROOF	25A	3#10, 1#10 EG - 3/4"C	SWHEQ6A	9	3,7,8
NG-1	NITROGEN PUMP - HIGH PURITY	-	0.5 kVA	120 V	1	MEP SUPPORT	15A	2#12, 1#12 EG - 3/4"C	NL1A2	7	4
NG-2	NITROGEN PUMP - ULTRA HIGH PURITY	-	0.5 kVA	120 V	1	MEP SUPPORT	15A	2#12, 1#12 EG - 3/4"C	NL1A2	9	4
PHWP-1	BOILER IN-LINE PUMP	2	2.83 kVA	480 V	3	PENTHOUSE	15A	4#12, 1#12 EG - 3/4"C	SWHEQ6A	15	2,3
PHWP-2	BOILER IN-LINE PUMP	2	2.83 kVA	480 V	3	PENTHOUSE	15A	4#12, 1#12 EG - 3/4"C	SWHEQ6A	16	2,3
PHWP-3	BOILER IN-LINE PUMP	2	2.83 kVA	480 V	3	PENTHOUSE	15A	4#12, 1#12 EG - 3/4"C	SWHN6A	9	2,3
PHWP-4	BOILER IN-LINE PUMP	2	2.83 kVA	480 V	3	PENTHOUSE	15A	4#12, 1#12 EG - 3/4"C	SWHN6A	10	2,3
PHWP-5	BOILER IN-LINE PUMP	2	2.83 kVA	480 V	3	PENTHOUSE	15A	4#12, 1#12 EG - 3/4"C	SWHN6A	11	2,3
RO-1	REVERSE OSMOSIS	3	6.65 kVA	480 V	3	WATER 1218.00	15A	3#12, 1#12 EG - 3/4"C	SWHN6A	12	3
RO-2	REVERSE OSMOSIS	-	2.88 kVA	208 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	LN6B	13,15,17	3
SF-1	SUPPLY FAN	0.75	1.2 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	LN6A	7	4
SF-2	SUPPLY FAN	0.75	1.2 kVA	120 V	1	ROOF	15A	2#12, 1#12 EG - 3/4"C	LN6B	7	4
SFH-1	PRESSURIZATION SUPPLY FANS	5	6.32 kVA	480 V	3	ROOF	15A	3#12, 1#12 - 3/4"C	DPHLRS6A	4	3,8
SFH-2	PRESSURIZATION SUPPLY FANS	5	6.32 kVA	480 V	3	ROOF	15A	3#12, 1#12 - 3/4"C	DPHLRS6A	5	3,8
SFH-3	PRESSURIZATION SUPPLY FANS	5	6.32 kVA	480 V	3	ROOF	15A	3#12, 1#12 - 3/4"C	DPHLRS6A	6	3,8
SFH-4	PRESSURIZATION SUPPLY FANS	5	6.32 kVA	480 V	3	ROOF	15A	3#12, 1#12 - 3/4"C	DPHLRS6A	7	3,8
SHWP-1	SECONDARY HEATING WATER	15	17.45 kVA	480 V	3	PENTHOUSE	40A	4#8, 1#10 EG - 1"C	SWHN6A	5	3,8
SHWP-2	SECONDARY HEATING WATER	15	17.45 kVA	480 V	3	PENTHOUSE	40A	4#8, 1#10 EG - 1"C	SWHN6A	6	3,8
SHWP-3	SECONDARY HEATING WATER	15	17.45 kVA	480 V	3	PENTHOUSE	40A	4#8, 1#10 EG - 1"C	SWHN6A	7	3,8
SP-1	ELEVATOR SUMP PUMP	.5	1.25 kVA	120 V	1	SERVICE ELEVATOR 1075.02 PIT	20A	2#12, 1#12 EG - 3/4"C	NL1B2	36	-
SP-1	ELEVATOR SUMP PUMP	.5	1.25 kVA	120 V	1	SERVICE ELEVATOR 1075.01 PIT	20A	2#12, 1#12 EG - 3/4"C	NL1B2	38	-
SP-2	ELEVATOR SUMP PUMP	.5	1.02 kVA	120 V	1	SERVICE ELEVATOR 1075.03 PIT	20A	2#12, 1#12 EG - 3/4"C	NL1A1	36	-
UH-1	UNIT HEATER	-	0.5 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	LN6A	5	4
UH-2	UNIT HEATER	-	0.5 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	LN6B	6	4
UH-3	UNIT HEATER	-	0.5 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	LN6A	8	4
UH-4	UNIT HEATER	-	0.5 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	LN6B	8	4
UH-5	UNIT HEATER	-	0.5 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	LN6B	9	4
UH-6	UNIT HEATER	-	0.5 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	LN6A	10	4
UH-7	UNIT HEATER	-	0.5 kVA	120 V	1	SERVICE DOCK 1302.00	15A	2#12, 1#12 EG - 3/4"C	NL1A3	21	4
UH-8	UNIT HEATER	-	0.5 kVA	120 V	1	PENTHOUSE	15A	2#12, 1#12 EG - 3/4"C	NL1A3	22	4
VP-1	VACUUM PUMP	4.6	10.31 kVA	480 V	3	MEP SUPPORT	15A	3#12, 1#12 EG - 3/4"C	DPHEQ1B	2	3
VP-2	VACUUM PUMP	5.4	12.97 kVA	480 V	3	PENTHOUSE	15A	3#12, 1#12 EG - 3/4"C	SWHEQ6A	6	3

ELEVATOR CONNECTION SCHEDULE

MECHANICAL DESIGNATION	EQUIPMENT DESCRIPTION	MOTOR					BRANCH CIRCUIT				REMARKS
		HP	kVA	VOLTAGE	PHASE	LOCATION	OCPD SIZE	CONDUCTORS/CONDUIT	PANEL	CKT. #	
ELEV-1	ELEVATOR	50 HP	54.02 kVA	480 V	3	ELEV MACHINE ROOM 6075.01	100A	3#4, 1#8 EG - 1-1/4"C	DPHLRS6A	2	-
ELEV-2	ELEVATOR	50 HP	54.02 kVA	480 V	3	ELEV MACHINE ROOM 6075.01	100A	3#4, 1#8 EG - 1-1/4"C	DPHLRS6A	3	-
ELEV-FR	ELEVATOR	75 HP	79.78 KVA	480 V	3	ELEV MACHINE ROOM 7075.01	125A	3#1, 1#6 EG - 1-1/2"C	SWBD B	4	-

FAN COIL UNIT CONNECTION SCHEDULE

MECHANICAL DESIGNATION	EQUIPMENT DESCRIPTION	MOTOR					BRANCH CIRCUIT				REMARKS
		HP	kVA	VOLTAGE	PHASE	LOCATION	OCPD SIZE	CONDUCTORS/CONDUIT	PANEL	CKT. #	
FCU-101	FAN COIL UNIT	0.00	0.58 kVA	120 V	1	STAIR 02 1090.04	15A	2#12, 1#12 EG - 3/4"C	NL1B3	2	-
FCU-102	FAN COIL UNIT	0.00	0.58 kVA	120 V	1	STAIR 1090.09	15A	2#12, 1#12 EG - 3/4"C	NL1A1	33	-
FCU-103	FAN COIL UNIT	0.08	0.11 kVA	120 V	1	FREEZER 1202.10	15A	2#12, 1#12 EG - 3/4"C	OL1A2	6	-
FCU-104	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	FREEZER 1202.10	15A	2#12, 1#12 EG - 3/4"C	OL1A2	6	-
FCU-105	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	SERVER 1206.01	15A	2#12, 1#12 EG - 3/4"C	OL1A2	5	-
FCU-106	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	EL 1119.05	15A	2#12, 1#12 EG - 3/4"C	NL1B3	1	-
FCU-107	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	AV FOR MULTIP 1117.00	15A	2#12, 1#12 EG - 3/4"C	NL1B3	1	-
FCU-108	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IDF 1115.00	15A	2#12, 1#12 EG - 3/4"C	OL1A2	6	-
FCU-109	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	MICRO 1202.11	15A	2#12, 1#12 EG - 3/4"C	OL1A2	5	-
FCU-110	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	MICRO 1202.09	15A	2#12, 1#12 EG - 3/4"C	OL1A2	5	-
FCU-111	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	MICRO 1202.07	15A	2#12, 1#12 EG - 3/4"C	OL1A2	5	-
FCU-112	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	MICRO 1202.05	15A	2#12, 1#12 EG - 3/4"C	OL1A2	5	-
FCU-113	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	MICRO 1202.03	15A	2#12, 1#12 EG - 3/4"C	OL1A2	5	-
FCU-114	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	MICRO 1201.01	15A	2#12, 1#12 EG - 3/4"C	OL1A2	5	-
FCU-115	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	WATER 1218.00	15A	2#12, 1#12 EG - 3/4"C	OL1A2	3	-
FCU-116	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	FIRE PUMP 1223.00	15A	2#12, 1#12 EG - 3/4"C	OL1A2	3	-
FCU-117	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	FIRE PUMP 1223.00	15A	2#12, 1#12 EG - 3/4"C	OL1A2	3	-
FCU-118	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	EMERGENCY ELECTRICAL 1221.00	15A	2#12, 1#12 EG - 3/4"C	OL1A2	3	-
FCU-119	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	NORMAL ELECTRICAL 1219.00	15A	2#12, 1#12 EG - 3/4"C	NL1A1	35	-
FCU-120	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	NORMAL ELECTRICAL 1219.00	15A	2#12, 1#12 EG - 3/4"C	NL1A1	34	-
FCU-121	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IT 1214.00	15A	2#12, 1#12 EG - 3/4"C	OL1A2	3	-
FCU-122	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IT 1214.00	15A	2#12, 1#12 EG - 3/4"C	OL1A2	3	-
FCU-123	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	UPS 1212.00	15A	2#12, 1#12 EG - 3/4"C	NL1A1	34	-
FCU-123	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	UPS 1212.00	15A	2#12, 1#12 EG - 3/4"C	NL1A1	34	-
FCU-124	FAN COIL UNIT	0.05	0.92 kVA	120 V	1	WATER 1218.00	15A	2#12, 1#12 EG - 3/4"C	OL1A2	6	-
FCU-125	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	UPS 1212.00	15A	2#12, 1#12 EG - 3/4"C	NL1A1	34	-
FCU-201	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	FREEZER FARM 2407.00	15A	2#12, 1#12 EG - 3/4"C	OL2A1	65	-
FCU-202	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	FREEZER FARM 2119.00	15A	2#12, 1#12 EG - 3/4"C	OL2B2	8	-
FCU-203	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	EL 2311.00	15A	2#12, 1#12 EG - 3/4"C	NL2A1	32	-
FCU-204	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IDF 2309.00	15A	2#12, 1#12 EG - 3/4"C	OL2A1	65	-
FCU-205	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IDF 2204.00	15A	2#12, 1#12 EG - 3/4"C	OL2B2	8	-
FCU-206	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	EL 2206.00	15A	2#12, 1#12 EG - 3/4"C	NL2B1	14	-
FCU-207	FAN COIL UNIT	0.08	0.11 kVA	120 V	1	FREEZER FARM 2407.00	15A	2#12, 1#12 EG - 3/4"C	OL2A1	65	-
FCU-208	FAN COIL UNIT	0.08	0.11 kVA	120 V	1	FREEZER FARM 2119.00	15A	2#12, 1#12 EG - 3/4"C	OL2B2	8	-
FCU-209	FAN COIL UNIT	0.00	0.58 kVA	120 V	1	STAIR 2090.01	15A	2#12, 1#12 EG - 3/4"C	NL2A1	32	-
FCU-210	FAN COIL UNIT	0.00	0.23 kVA	120 V	1	STAIR 2090.06	15A	2#12, 1#12 EG - 3/4"C	NL2B1	14	-
FCU-211	FAN COIL UNIT	0.00	0.1 kVA	120 V	1	UPS EL 2402.00	15A	2#12, 1#12 EG - 3/4"C	NL2A1	32	-
FCU-212	FAN COIL UNIT	0.08	0.1 kVA	120 V	1	AUTOCLAVE 2435.00	15A	2#12, 1#12 EG - 3/4"C	OL2A1	65	-
FCU-301	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	FREEZER FARM 3407.00	15A	2#12, 1#12 EG - 3/4"C	OL3A1	1	-
FCU-302	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	FREEZER FARM 3119.00	15A	2#12, 1#12 EG - 3/4"C	OL3B1	1	-
FCU-303	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	EL 3311.00	15A	2#12, 1#12 EG - 3/4"C	NL3A2	1	-
FCU-304	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IDF 3309.00	15A	2#12, 1#12 EG - 3/4"C	OL3A1	1	-
FCU-305	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IDF 3204.00	15A	2#12, 1#12 EG - 3/4"C	NL3B1	28	-
FCU-306	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	3206.00	15A	2#12, 1#12 EG - 3/4"C	OL3B1	1	-
FCU-307	FAN COIL UNIT	0.08	0.11 kVA	120 V	1	FREEZER FARM 3407.00	15A	2#12, 1#12 EG - 3/4"C	OL3A1	1	-
FCU-308	FAN COIL UNIT	0.08	0.11 kVA	120 V	1	FREEZER FARM 3119.00	15A	2#12, 1#12 EG - 3/4"C	OL3B1	1	-
FCU-309	FAN COIL UNIT	0.00	0.58 kVA	120 V	1	STAIR 3090.01	15A	2#12, 1#12 EG - 3/4"C	NL3A2	1	-
FCU-310	FAN COIL UNIT	0.00	0.58 kVA	120 V	1	STAIR 3090.06	15A	2#12, 1#12 EG - 3/4"C	NL3B1	28	-
FCU-311	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	BRIDGE 3090.12	15A	2#12, 1#12 EG - 3/4"C	NL3A2	2	-
FCU-312	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	BRIDGE 3090.12	15A	2#12, 1#12 EG - 3/4"C	NL3A2	4	-
FCU-313	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	BRIDGE 3090.12	15A	2#12, 1#12 EG - 3/4"C	NL3A2	3	-
FCU-314	FAN COIL UNIT	0.00	0.1 kVA	120 V	1	UPS EL 3402.00	15A	2#12, 1#12 EG - 3/4"C	NL3A2	1	-
FCU-315	FAN COIL UNIT	0.00	0.1 kVA	120 V	1	AUTOCLAVE 3435	15A	2#12, 1#12 EG - 3/4"C	OL3A1	1	-
FCU-401	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	FREEZER FARM 4407.00	15A	2#12, 1#12 EG - 3/4"C	OL4A1	1	-
FCU-402	FAN COIL UNIT	0.00	0.92 kVA	120 V	1	FREEZER FARM 4119.00	15A	2#12, 1#12 EG - 3/4"C	OL4B2	41	-
FCU-403	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	EL 4311.00	15A	2#12, 1#12 EG - 3/4"C	NL4A1	20	-
FCU-404	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IDF 4309.00	15A	2#12, 1#12 EG - 3/4"C	OL4A1	1	-
FCU-405	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	IDF 4204.00	15A	2#12, 1#12 EG - 3/4"C	OL4B2	41	-
FCU-406	FAN COIL UNIT	0.05	0.1 kVA	120 V	1	EL 4206.00	15A	2#12, 1#12 EG - 3/4"C	NL4B1	29	-
FCU-407	FAN COIL UNIT	0.08	0.11 kVA	120 V	1	FREEZER FARM 4407.00	15A	2#12, 1#12 EG - 3/4"C	OL4A1	1	-
FCU-408	FAN COIL UNIT	0.08

PANEL ID: HN1A

LOCATION: CO2 GAS MANIFOLD 1216.01
POWER SUPPLIED FROM: DPHN1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
				1	2.08 kVA	2.08 kVA		2				
	AC-1	15 A	3	3		2.08 kVA	2.08 kVA	4	3	15 A	AC-2	
				5			2.08 kVA	2.08 kVA	6			
				7	0 kVA	0.46 kVA		8	1	20 A	SERVICE DOCK	
	FPC - FIRE PUMP 1223	20 A	3	9		0 kVA	0.73 kVA	10	1	20 A	BOH	
				11			0 kVA	0.27 kVA	12	1	20 A	ELLIMAN CORRIDOR	
	WASTE ROOM/GASES	20 A	1	13	0.3 kVA	0.33 kVA		14	1	20 A	CORRIDOR	
	OFFICE/BREAK	20 A	1	15		1.48 kVA	3.05 kVA	16	1	20 A	CORE LAB	
	RESTROOM	20 A	1	17			0.09 kVA	0.59 kVA	18	1	20 A	BOH	
	ELEVATOR PIT	20 A	1	19	0.15 kVA	1.64 kVA		20	1	20 A	CORE LAB	
	LIGHTING	20 A	1	21		1.05 kVA	0 kVA	22	1	20 A	SPARE	
	EXTERIOR LIGHTING	20 A	1	23			2.28 kVA	1 kVA	24	1	20 A	SITE LIGHTING	
	SPARE	20 A	1	25	0 kVA	0 kVA		26	1	20 A	SPARE	
	SPARE	20 A	1	27		0 kVA	0 kVA	28	1	20 A	SPARE	
	SPARE	20 A	1	29			0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA		32	1	20 A	SPARE	
	SPARE	20 A	1	33		0 kVA	0 kVA	34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--		38	1	--	(SPACE)	
	(SPACE)	--	1	39		--	--	40	1	--	(SPACE)	
	(SPACE)	--	1	41			--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	25.2 A	38 A	31 A					
				TOTAL LOAD:	6.98 kVA	10.34 kVA	8.33 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	12460 VA	80.00%	9968 VA		
LIGHTING	13301 VA	100.00%	13301 VA	**kVA (CONNECTED):**	25.6 kVA
MISC.	0 VA	0.00%	0 VA	**kVA (ESTIMATED DEMAND):**	23.2 kVA
				CURRENT (CONNECTED):	30.8 A
				CURRENT (ESTIMATED DEMAND):	27.9 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN2A

LOCATION: EL 2311.00
POWER SUPPLIED FROM: DPHN1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	CORRIDOR	20 A	1	1	2.89 kVA	0.61 kVA		2	1	20 A	BOH	
	WET LAB	20 A	1	3			2.77 kVA	1.01 kVA	4	1	20 A	OFFICE	
	RESTROOM	20 A	1	5				0.2 kVA	0.67 kVA	6	1	20 A	LABS	
				7	8.33 kVA	0 kVA				8	1	20 A	SPARE	
	AUTOCLAVE - 2435	40 A	3	9			8.33 kVA	0 kVA		10	1	20 A	SPARE	
				11					8.33 kVA	0 kVA	12	1	20 A	SPARE
	SPARE	20 A	1	13	0 kVA	0 kVA				14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA		16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE
	SPARE	20 A	1	19	0 kVA	0 kVA				20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA		22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE
	SPARE	20 A	1	25	0 kVA	0 kVA				26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA		28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE
	SPARE	20 A	1	31	0 kVA	0 kVA				32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA		34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE
	(SPACE)	--	1	37	--	--				38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--		40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)
				TOTAL AMPS:	43.7 A		45 A		33 A					
				TOTAL LOAD:	11.72 kVA		11.99 kVA		9.18 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	8146 VA	100.00%	8146 VA		
MISC.	25000 VA	70.00%	17500 VA	**kVA (CONNECTED):**	32.9 kVA
				kVA (ESTIMATED DEMAND):	25.4 kVA
				CURRENT (CONNECTED):	39.5 A
				CURRENT (ESTIMATED DEMAND):	30.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN3A

LOCATION: EL 3311.00
POWER SUPPLIED FROM: DPHN1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	WET LAB	20 A	1	1	3.78 kVA	3.88 kVA		2	1	20 A	CORRIDOR	
	BOH	20 A	1	3		0.44 kVA	0.82 kVA	4	1	20 A	OFFICE	
	RESTROOM	20 A	1	5			0.23 kVA	2.33 kVA	6	1	20 A	LABS	
				7	8.33 kVA	0 kVA				8	1	20 A	SPARE	
	AUTOCLAVE - 3435	40 A	3	9		8.33 kVA	0 kVA			10	1	20 A	SPARE	
				11			8.33 kVA	0 kVA		12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA				14	1	20 A	SPARE	
	SPARE	20 A	1	15		0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17			0 kVA	0 kVA		18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA				20	1	20 A	SPARE	
	SPARE	20 A	1	21		0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23			0 kVA	0 kVA		24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA				26	1	20 A	SPARE	
	SPARE	20 A	1	27		0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29			0 kVA	0 kVA		30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA				32	1	20 A	SPARE	
	SPARE	20 A	1	33		0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA	0 kVA		36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--				38	1	--	(SPACE)	
	(SPACE)	--	1	39		--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41			--	--		42	1	--	(SPACE)	
				TOTAL AMPS:	57.7 A	35 A	40 A							
				TOTAL LOAD:	15.80 kVA	9.56 kVA	10.79 kVA							

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	11458 VA	100.00%	11458 VA		
MISC.	25000 VA	70.00%	17500 VA	**kVA (CONNECTED):**	36.1 kVA
				kVA (ESTIMATED DEMAND):	28.6 kVA
				CURRENT (CONNECTED):	43.4 A
				CURRENT (ESTIMATED DEMAND):	34.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN4A

LOCATION: EL 4311.00
POWER SUPPLIED FROM: DPHN1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	WET LAB	20 A	1	1	1.76 kVA	2.87 kVA		2	1	20 A	CORRIDOR	
	OFFICE	20 A	1	3		0.82 kVA	2.33 kVA	4	1	20 A	LABS	
	RESTROOM	20 A	1	5			0.2 kVA	0.39 kVA	6	1	20 A	BOH	
				7	8.33 kVA	0 kVA				8	1	20 A	SPARE	
	AUTOCLAVE - 4435	40 A	3	9			8.33 kVA	0 kVA		10	1	20 A	SPARE	
				11					8.33 kVA	0 kVA	12	1	20 A	SPARE
	SPARE	20 A	1	13	0 kVA	0 kVA				14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA		16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE
	SPARE	20 A	1	19	0 kVA	0 kVA				20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA		22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE
	SPARE	20 A	1	25	0 kVA	0 kVA				26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA		28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE
	SPARE	20 A	1	31	0 kVA	0 kVA				32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA		34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE
	(SPACE)	--	1	37	--	--				38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--		40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)
				TOTAL AMPS:	47.7 A		42 A		32 A					
				TOTAL LOAD:	12.82 kVA		11.37 kVA		8.92 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	8353 VA	100.00%	8353 VA		
MISC.	25000 VA	70.00%	17500 VA	**kVA (CONNECTED):**	33.1 kVA
				kVA (ESTIMATED DEMAND):	25.6 kVA
				CURRENT (CONNECTED):	39.8 A
				CURRENT (ESTIMATED DEMAND):	30.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN5A

LOCATION: EL 5311.00
POWER SUPPLIED FROM: DPHN1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	WET LAB	20 A	1	1	1.76 kVA	2.85 kVA		2	1	20 A	CORRIDOR	
	LABS	20 A	1	3		2.44 kVA	0.82 kVA	4	1	20 A	OFFICE	
	BOH	20 A	1	5			0.44 kVA	0.23 kVA	6	1	20 A	RESTROOM	
				7	8.33 kVA	0 kVA				8	1	20 A	SPARE	
	AUTOCLAVE - 5435	40 A	3	9		8.33 kVA	0 kVA			10	1	20 A	SPARE	
				11			8.33 kVA	0 kVA		12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA				14	1	20 A	SPARE	
	SPARE	20 A	1	15		0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17			0 kVA	0 kVA		18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA				20	1	20 A	SPARE	
	SPARE	20 A	1	21		0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23			0 kVA	0 kVA		24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA				26	1	20 A	SPARE	
	SPARE	20 A	1	27		0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29			0 kVA	0 kVA		30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA				32	1	20 A	SPARE	
	SPARE	20 A	1	33		0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA	0 kVA		36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--				38	1	--	(SPACE)	
	(SPACE)	--	1	39		--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41			--	--		42	1	--	(SPACE)	
				TOTAL AMPS:	47.6 A	43 A	32 A							
				TOTAL LOAD:	12.79 kVA	11.48 kVA	9.00 kVA							

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	8515 VA	100.00%	8515 VA		
MISC.	25000 VA	70.00%	17500 VA	**kVA (CONNECTED):**	33.2 kVA
				kVA (ESTIMATED DEMAND):	25.8 kVA
				CURRENT (CONNECTED):	40.0 A
				CURRENT (ESTIMATED DEMAND):	31.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN6A

LOCATION: PENTHOUSE 6000.00
POWER SUPPLIED FROM: DPHN1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	SERVICE ELEVATOR	20 A	1	1	0.19 kVA	1.53 kVA		2	1	20 A	LIGHTING	
	LTG PENTHOUSE	20 A	1	3			1.33 kVA	0.1 kVA	4	1	20 A	LTG ELEV MACHINE ROOM	
	SPARE	20 A	1	5				0 kVA	0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA				8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA		10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE
	SPARE	20 A	1	13	0 kVA	0 kVA				14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA		16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE
	SPARE	20 A	1	19	0 kVA	0 kVA				20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA		22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE
	SPARE	20 A	1	25	0 kVA	0 kVA				26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA		28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE
	SPARE	20 A	1	31	0 kVA	0 kVA				32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA		34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE
	(SPACE)	--	1	37	--	--				38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--		40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)
				TOTAL AMPS:	7.0 A		6 A		0 A					
				TOTAL LOAD:	1.72 kVA		1.43 kVA		0.00 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	3140 VA	100.00%	3140 VA		
				kVA (CONNECTED):	3.1 kVA
				kVA (ESTIMATED DEMAND):	3.1 kVA
				CURRENT (CONNECTED):	3.8 A
				CURRENT (ESTIMATED DEMAND):	3.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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DETROIT, MI 48226

STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
10/17/2025
LICENSED PROFESSIONAL ENGINEER

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL
SHEET NO.
E-710

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:04:04 PM TEMPLATE VERSION: 23.0.4

PANEL ID: HN1B

LOCATION: EL 1119.00
POWER SUPPLIED FROM: DPHN1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	LOBBY/PREFUNCTION	20 A	1	1	2.06 kVA	1.12 kVA					2	1	20 A	CONFERENCE/TECH CENTER	
	BOH AMENITIES	20 A	1	3			1.11 kVA	0.25 kVA			4	1	20 A	RESTROOM	
	BOH	20 A	1	5					0.2 kVA	0.06 kVA	6	1	20 A	CORRIDOR	
	MULTIPRPOSE/BREAK	20 A	1	7	1.45 kVA	0.23 kVA					8	1	20 A	ELEVATOR PIT	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	18.1 A		5 A		1 A						
				TOTAL LOAD:	4.85 kVA		1.35 kVA		0.25 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
LIGHTING	6431 VA	100.00%	6431 VA	
				kVA (CONNECTED): 6.4 kVA
				kVA (ESTIMATED DEMAND): 6.4 kVA
				CURRENT (CONNECTED): 7.7 A
				CURRENT (ESTIMATED DEMAND): 7.7 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN2B

LOCATION: EL 2206.00
POWER SUPPLIED FROM: DPHN1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	CORRIDOR	20 A	1	1	2.74 kVA	0.3 kVA					2	1	20 A	BOH	
	WET LAB	20 A	1	3			2.74 kVA	0.15 kVA			4	1	20 A	BREAK ROOM	
	LABS	20 A	1	5					3.08 kVA	0.67 kVA	6	1	20 A	LIGHTING	
	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	11.0 A		10 A		14 A						
				TOTAL LOAD:	3.03 kVA		2.89 kVA		3.76 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
LIGHTING	9674 VA	100.00%	9674 VA	
				kVA (CONNECTED): 9.7 kVA
				kVA (ESTIMATED DEMAND): 9.7 kVA
				CURRENT (CONNECTED): 11.6 A
				CURRENT (ESTIMATED DEMAND): 11.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN3B

LOCATION: EL 3206.00
POWER SUPPLIED FROM: DPHN1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	WET LAB	20 A	1	1	1.74 kVA	2.48 kVA					2	1	20 A	CORRIDOR	
	BOH	20 A	1	3			0.3 kVA	0.42 kVA			4	1	20 A	OFFICE/BREAK	
	LABS	20 A	1	5					2.19 kVA	0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	16.0 A		3 A		9 A						
				TOTAL LOAD:	4.21 kVA		0.72 kVA		2.19 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
LIGHTING	7123 VA	100.00%	7123 VA	
				kVA (CONNECTED): 7.1 kVA
				kVA (ESTIMATED DEMAND): 7.1 kVA
				CURRENT (CONNECTED): 8.6 A
				CURRENT (ESTIMATED DEMAND): 8.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN4B

LOCATION: EL 4206.00
POWER SUPPLIED FROM: DPHN1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	WET LAB	20 A	1	1	3.75 kVA	2.75 kVA					2	1	20 A	CORRIDOR	
	OFFICE/BREAK	20 A	1	3			0.42 kVA	1.97 kVA			4	1	20 A	LABS	
	BOH	20 A	1	5					0.3 kVA	0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	24.7 A		10 A		1 A						
				TOTAL LOAD:	6.51 kVA		2.39 kVA		0.30 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
LIGHTING	9192 VA	100.00%	9192 VA	
				kVA (CONNECTED): 9.2 kVA
				kVA (ESTIMATED DEMAND): 9.2 kVA
				CURRENT (CONNECTED): 11.1 A
				CURRENT (ESTIMATED DEMAND): 11.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN5B

LOCATION: EL 5206.00
POWER SUPPLIED FROM: DPHN1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	WET LAB	20 A	1	1	3.75 kVA	2.72 kVA					2	1	20 A	CORRIDOR	
	LABS	20 A	1	3			1.82 kVA	0.42 kVA			4	1	20 A	OFFICE/BREAK	
	BOH	20 A	1	5					0.3 kVA	8.33 kVA	6				
	SPARE	20 A	1	7	0 kVA	8.33 kVA					8	3	40 A	AUTOCLAVE - BSL-5111/5115	
	SPARE	20 A	1	9			0 kVA	8.33 kVA			10				
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	53.8 A		39 A		31 A						
				TOTAL LOAD:	14.62 kVA		10.50 kVA		8.62 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
LIGHTING	9007 VA	100.00%	9007 VA	
MISC.	25000 VA	70.00%	17500 VA	
				kVA (CONNECTED): 33.7 kVA
				kVA (ESTIMATED DEMAND): 26.2 kVA
				CURRENT (CONNECTED): 40.5 A
				CURRENT (ESTIMATED DEMAND): 31.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: HN6B

LOCATION: PENTHOUSE 6000.00
POWER SUPPLIED FROM: DPHN1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
				1							2				
				3							4				
				5							6				
	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	0.0 A		0 A		0 A						
				TOTAL LOAD:	0.00 kVA		0.00 kVA		0.00 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
				kVA (CONNECTED): 0.0 kVA
				kVA (ESTIMATED DEMAND): 0.0 kVA
				CURRENT (CONNECTED): 0.0 A
				CURRENT (ESTIMATED DEMAND): 0.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 47045
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

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26234.000
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SHEET NO.
E-711

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PLOT DATE: 10/16/2025 2:04:05 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL1A1

LOCATION: NORMAL ELECTRICAL 1219.00
POWER SUPPLIED FROM: DPNL1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - SHARED OFFICE-1217	20 A	1	1	1.8 kVA	1.8 kVA					2	1	20 A	REC - SHARED OFFICE-1215	
	REC - OFFICE-1209,1211,1213	20 A	1	3			1.08 kVA	1.08 kVA			4	1	20 A	REC - OFFICE-1209,1211,1213	
	REC - OFFICE-1205,1207	20 A	1	5					1.44 kVA	1.26 kVA	6	1	20 A	REC - OFFICE-1205,1207	
	REC - OFFICE-1201,1203	20 A	1	7	0.72 kVA	0.72 kVA					8	1	20 A	REC - OFFICE-1201,1203	
	REC - OFFICE-1206	20 A	1	9			1.62 kVA	0.72 kVA			10	1	20 A	REC - CONF-1202.02	
	REC - CONF-1202.02	20 A	1	11					0.9 kVA	0.18 kVA	12	1	20 A	REC - CONF-1202.02	
	XFMR - TLT-1210	20 A	1	13	1 kVA	0.18 kVA					14	1	20 A	REC - TLT-1210	
	REC - 1090.06, 1090.01	20 A	1	15			0.9 kVA	1 kVA			16	1	20 A	REC-REF - BRK RM-1208	
	REC-MW - BRK RM-1208	20 A	1	17					1.2 kVA	1 kVA	18	1	20 A	REC-COF - BRK RM-1208	
	REC - BRK RM-1208	20 A	1	19	0.9 kVA	0.18 kVA					20	1	20 A	REC- OUTDOOR WEST	
	REC - OUTDOOR SOUTH	20 A	1	21			0.18 kVA	0.18 kVA			22	1	20 A	REC - OUTDOOR NORTH	
	REC - CORR-1090.07,10,12	20 A	1	23					0.72 kVA	0.18 kVA	24	1	20 A	REC - SVC DOCK-1302	
	DOOR OP WEST -...	20 A	1	25	1 kVA	0.18 kVA					26	1	20 A	REC - CORR-1090.11	
	REC - CORR-1090.11	20 A	1	27			0.36 kVA	0.18 kVA			28	1	20 A	REC - CORR-1090.11	
	REC - ELEVATOR-1075.03	20 A	1	29					0.18 kVA	0.18 kVA	30	1	20 A	RECEPTACLE	
	RECEPTACLE	20 A	1	31	0.18 kVA	0.4 kVA					32	1	15 A	GWH	
	FCU 102,105,110-114	15 A	1	33			0.58 kVA	0.4 kVA			34	1	15 A	FCU 109,120-123,125	
	FCU 115-119	15 A	1	35					0.1 kVA	1.02 kVA	36	1	20 A	SP-2	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	75.6 A		69 A		70 A						
				TOTAL LOAD:	9.06 kVA		8.28 kVA		8.36 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	1080 VA	80.00%	864 VA		
MISC.	2400 VA	70.00%	1680 VA	**kVA (CONNECTED):**	25.7 kVA
Motor	1020 VA	125.00%	1275 VA	**kVA (ESTIMATED DEMAND):**	19.4 kVA
RECEPTACLE	21200 VA	73.58%	15600 VA	**CURRENT (CONNECTED):**	71.3 A
				CURRENT (ESTIMATED DEMAND):	53.9 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL1A2

LOCATION: NORMAL ELECTRICAL 1219.00
POWER SUPPLIED FROM: DPNL1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - TRANSFORMER YARD	20 A	1	1	0.72 kVA	0.35 kVA					2	1	15 A	CUH-2	
	SPARE	20 A	1	3			0 kVA	0.36 kVA			4	1	15 A	REC - UPS 1212	
	SPARE	20 A	1	5					0 kVA	0.54 kVA	6	1	20 A	REC - EM ELECTRICAL 1221	
	NG-1	15 A	1	7	0.5 kVA	0.9 kVA					8	1	20 A	REC - NORMAL ELECTRICAL 1219	
	NG-2	15 A	1	9			0.5 kVA	0.35 kVA			10	1	15 A	CUH-1	
	EF-4	15 A	1	11					0.15 kVA	0.35 kVA	12	1	15 A	CUH-3	
	EF-5	15 A	1	13	0.15 kVA	0.15 kVA					14	1	15 A	EF-6	
	EF-3	15 A	1	15			0.15 kVA	0.18 kVA			16	1	15 A	EF-2	
	REC - CORE LAB -1204	20 A	1	17					0.18 kVA	0.54 kVA	18	1	20 A	REC - CORE LAB -1202	
				19							20				
	RV PEDESTAL ON SITE	50 A	2	21			2 kVA	2 kVA			22	2	50 A	RV PEDESTAL ON SITE	
				23					2 kVA	2 kVA	24				
	SITE PARKING GATES	20 A	1	25	0.52 kVA	1.16 kVA					26				
	SITE PARKING GATE	20 A	1	27			0.26 kVA	1.16 kVA			28	3	20 A	JP-1	
	SPARE	20 A	1	29					0 kVA	1.16 kVA	30				
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	37.0 A		61 A		61 A						
				TOTAL LOAD:	4.45 kVA		6.96 kVA		6.92 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	6296 VA	80.00%	5036 VA		
MISC.	8780 VA	70.00%	6146 VA	**kVA (CONNECTED):**	18.3 kVA
RECEPTACLE	3240 VA	100.00%	3240 VA	**kVA (ESTIMATED DEMAND):**	14.4 kVA
				CURRENT (CONNECTED):	50.8 A
				CURRENT (ESTIMATED DEMAND):	40.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL1A3

LOCATION: NORMAL ELECTRICAL 1219.00
POWER SUPPLIED FROM: DPNL1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC -SERVICE DOCK	20 A	1	1	0.9 kVA	0.72 kVA					2	1	20 A	REC - SERVICE DOCK	
	JB - DOOR OPERATOR	20 A	1	3			0.6 kVA	0.6 kVA			4	1	20 A	JB - DOOR OPERATOR	
				5					4.2 kVA	4.2 kVA	6				
	DOCK LEVELER	60 A	3	7	4.2 kVA	4.2 kVA					8	3	60 A	DOCK LEVELER	
				9			4.2 kVA	4.2 kVA			10				
				11					0.13 kVA	0.13 kVA	12				
	JB - OD SERVICE DOCK	20 A	3	13	0.13 kVA	0.13 kVA					14	3	20 A	JB - OD SERVICE DOCK	
				15			0.13 kVA	0.13 kVA			16				
1	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0.89 kVA					20	1	20 A	HVAC - EF-8	
	HVAC - UH-7	20 A	1	21			0.5 kVA	0.5 kVA			22	1	20 A	HVAC - UH-8	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	96.0 A		93 A		72 A						
				TOTAL LOAD:	11.18 kVA		10.87 kVA		8.67 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	1888 VA	80.00%	1510 VA		
MISC.	27218 VA	70.00%	19053 VA	**kVA (CONNECTED):**	30.7 kVA
RECEPTACLE	1620 VA	100.00%	1620 VA	**kVA (ESTIMATED DEMAND):**	22.2 kVA
				CURRENT (CONNECTED):	85.3 A
				CURRENT (ESTIMATED DEMAND):	61.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 1
SHEET NO.
E-712

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:04:05 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL1B1

LOCATION: EL 1119.00
POWER SUPPLIED FROM: DPNL1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - OFFICE-1116,1118,1120	20 A	1	1	1.08 kVA	1.08 kVA					2	1	20 A	REC - OFFICE-1116,1118,1120	
	REC - OFFICE-1112,1114	20 A	1	3			1.44 kVA	1.08 kVA			4	1	20 A	REC - OFFICE-1112	
	FLREC - CONF-1106,1108	20 A	1	5					0.72 kVA	1.08 kVA	6	1	20 A	REC - CONF-1108	
	REC - CONF-1108	20 A	1	7	0.72 kVA	1.08 kVA					8	1	20 A	REC - CONF-1106	
	REC - CONF-1106	20 A	1	9			0.72 kVA	0.9 kVA			10	1	20 A	FLREC - TCENTER-1102	
	FLREC - TCENTER-1102	20 A	1	11					0.72 kVA	1.08 kVA	12	1	20 A	REC - TCENTER-1102	
	REC - TCENTER-1102	20 A	1	13	0.9 kVA	0.54 kVA					14	1	20 A	REC TV - TCENTER-1102	
	REC - INTERVIEW-1107,1109	20 A	1	15			1.08 kVA	0.9 kVA			16	1	20 A	REC-1124,1125	
	REC - 1111.13, 1090.03	20 A	1	17					0.72 kVA	1 kVA	18	1	20 A	DOOR OP SOUTH - VEST-1090.01	
	REC -1090.02B	20 A	1	19	1.08 kVA	1 kVA					20	1	20 A	DOOR OP SOUTH - OUTSIDE	
	REC - MULTIROOM-1122	20 A	1	21			1.08 kVA	0.54 kVA			22	1	20 A	REC - AV-1117	
	REC - WELL-1105	20 A	1	23					0.36 kVA	1 kVA	24	1	20 A	XFMR - RESTROOM-1124.04	
	REC - VENDING-1125	20 A	1	25	1 kVA	1 kVA					26	1	20 A	REC - VENDING-1125	
	REC - VENDING-1125	20 A	1	27			1 kVA	1 kVA			28	1	20 A	REC - VENDING-1125	
	FLREC - MULTIROOM-1122	20 A	1	29					0.9 kVA	0.54 kVA	30	1	20 A	REC - MULTIFAITH-1101	
	REC - MULTIROOM-1122	20 A	1	31	1.08 kVA	0.54 kVA					32	1	20 A	REC - MULTIROOM-1122	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	94.6 A		83 A		68 A						
				TOTAL LOAD:	11.10 kVA		9.74 kVA		8.12 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	3000 VA	70.00%	2100 VA		
RECEPTACLE	25960 VA	69.26%	17980 VA	**kVA (CONNECTED):**	29.0 kVA
				kVA (ESTIMATED DEMAND):	20.1 kVA
				CURRENT (CONNECTED):	80.4 A
				CURRENT (ESTIMATED DEMAND):	55.7 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL1B2

LOCATION: EL 1119.00
POWER SUPPLIED FROM: DPNL1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - BRK RM-1123	20 A	1	1	0.9 kVA	1 kVA					2	1	20 A	REC-REF - BRK RM-1123	
	REC-REF - BRK RM-1123	20 A	1	3			1 kVA	1 kVA			4	1	20 A	REC-COF - BRK RM-1123	
	REC-ICE - BRK RM-1123	20 A	1	5					1 kVA	0.36 kVA	6	1	20 A	REC - BRK RM-1123	
	REC-MW - BRK RM-1123	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-MW - BRK RM-1123	
	REC - PREFUNCTION-1126	20 A	1	9			0.9 kVA	1.08 kVA			10	1	20 A	REC - PREFUNC-1126,COAT-1128	
	REC - MULTIROOM-1121	20 A	1	11					1.08 kVA	1.08 kVA	12	1	20 A	REC - MULTIROOM-1121	
	FLREC - MULTIROOM-1121	20 A	1	13	0.36 kVA	0.72 kVA					14	1	20 A	REC - CORR-1090.13	
	REC - ELEVATOR-1075.01,02	20 A	1	15			0.36 kVA	0.36 kVA			16	1	20 A	REC - OUTDOOR NORTH	
	REC - OUTDOOR NORTH	20 A	1	17					0.18 kVA	0.18 kVA	18	1	20 A	REC - OUTDOOR EAST	
	REC - OUTDOOR SOUTH	20 A	1	19	0.18 kVA	0.18 kVA					20	1	20 A	REC - SHOWER-1090	
	REC - STAIR02-1090.04	20 A	1	21			0.18 kVA	0.72 kVA			22	1	20 A	REC - LOBBY-1090.02A	
	REC - LOBBY-1090.02A	20 A	1	23					1.08 kVA	1 kVA	24	1	20 A	DOOR OP NORTH - VEST-1090.05	
	DOOR OP NORTH - OUTSIDE	20 A	1	25	1 kVA	0.9 kVA					26	1	20 A	FLREC - MULTIROOM-1122	
	MOTOR SHADE - MULTI-1122	20 A	1	27			0.24 kVA	0.48 kVA			28	1	20 A	MOTOR SHADE - MULTI-1122	
	MOTOR SHADE - CONF-1108	20 A	1	29					0.48 kVA	0.24 kVA	30	1	20 A	MOTOR SHADE - TECH-1102	
	MOTOR SHADE - TECH-1102	20 A	1	31	0.48 kVA	0.24 kVA					32	1	20 A	MOTOR SHADE - TECH-1102	
	MOTOR SHADE - CONF-1106	20 A	1	33			0.24 kVA	0.18 kVA			34	1	20 A	REC - INTERVIEW-1107	
1	RECS - ELEVATOR-1075.01-.02	20 A	1	35					0.36 kVA	1.25 kVA	36	1	20 A	SP-1 - ELEV 1075.02	
	SPARE	20 A	1	37	0 kVA	1.25 kVA					38	1	20 A	SP-1 - ELEV 1075.01	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	82.1 A		56 A		71 A						
				TOTAL LOAD:	9.61 kVA		6.74 kVA		8.29 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	4400 VA	70.00%	3080 VA		
Motor	2496 VA	112.50%	2808 VA	**kVA (CONNECTED):**	24.6 kVA
RECEPTACLE	17740 VA	78.18%	13870 VA	**kVA (ESTIMATED DEMAND):**	19.8 kVA
				CURRENT (CONNECTED):	68.4 A
				CURRENT (ESTIMATED DEMAND):	54.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL1B3

LOCATION: EL 1119.00
POWER SUPPLIED FROM: DPNL1B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	FCU 106, 107, 108	15 A	1	1	0.2 kVA	0.58 kVA					2	1	15 A	FCU 101,103	
	SPARE	20 A	1	3			0 kVA	0.58 kVA			4	1	15 A	CUH-4	
	CUH-6	15 A	1	5					0.35 kVA	0.58 kVA	6	1	15 A	CUH-5	
	RED - FCC-1103	20 A	1	7	0.72 kVA	0.36 kVA					8	1	20 A	REC - EL 1119	
	EXTERIOR SIGNAGE	20 A	1	9			0.5 kVA	0.36 kVA			10	1	20 A	REC - MULTIROOM-1122	
	XFMR - RESTROOM-1124.02	20 A	1	11					1 kVA	1 kVA	12	1	20 A	XFMR - RESTROOM-1124.02	
	XFMR - RESTROOM-1124.03	20 A	1	13	1 kVA	1 kVA					14	1	20 A	XFMR - RESTROOM-1124.03	
	HEAT TRACE	20 A	2	15			0.46 kVA	0.54 kVA			16	1	20 A	SITE CHARGING STATIONS N.E.	
				17					0.46 kVA	0.54 kVA	18	1	20 A	SITE CHARGING STATIONS N.	
	SPARE	20 A	1	19	0 kVA	0.36 kVA					20	1	20 A	SITE CHARGING STATIONS S.	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	37.1 A		20 A		35 A						
				TOTAL LOAD:	4.22 kVA		2.43 kVA		3.92 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	2282 VA	80.00%	1826 VA		
LIGHTING	500 VA	100.00%	500 VA	**kVA (CONNECTED):**	10.6 kVA
MISC.	6355 VA	70.00%	4449 VA	**kVA (ESTIMATED DEMAND):**	8.2 kVA
RECEPTACLE	1440 VA	100.00%	1440 VA	**CURRENT (CONNECTED):**	29.4 A
				CURRENT (ESTIMATED DEMAND):	22.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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1265 WASHINGTON BLVD, SUITE 200
DETROIT, MI 48226

STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 1
SHEET NO.
E-713

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:04:06 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL2A1

LOCATION: EL 2311.00
POWER SUPPLIED FROM: DPNL2A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - OFFICE-2316,2318,2320	20 A	1	1	1.08 kVA	1.08 kVA		2	1	20 A	REC - OFFICE-2316,2318,2320	
	REC - OFFICE-2310,23122314	20 A	1	3	0.9 kVA	1.08 kVA		4	1	20 A	REC - OFFICE-2310,2312,2314	
	REC - OFFICE-2304,2306,2308	20 A	1	5	1.08 kVA	1.08 kVA		6	1	20 A	REC - OFFICE-2304,2306,2308	
	REC - HUDDLE-2302	20 A	1	7	0.72 kVA	0.36 kVA		8	1	20 A	FLREC - CONF-2303	
	REC - CONF-2303	20 A	1	9	1.08 kVA	0.9 kVA		10	1	20 A	REC - CONF-2303	
	REC - TLT-2307.03	20 A	1	11	0.36 kVA	1 kVA		12	1	20 A	XFMR - TLT-2307.03	
	REC - WELLNESS-2305	20 A	1	13	0.18 kVA	1 kVA		14	1	20 A	XFMR - WELLNESS-2305	
	REC - RESTROOM-2307.01,02	20 A	1	15	0.36 kVA	0.18 kVA		16	1	20 A	REC-EWC - CORR-2090.09	
	XFMR - RESTROOM -2307.01,02	20 A	1	17	1 kVA	1 kVA		18	1	20 A	XFMR - RESTROOM -2307.01,02	
	REC - CORR-2090.09	20 A	1	19	0.9 kVA	0.9 kVA		20	1	20 A	REC - CORR-2090.02,11	
	REC-FEED - WK SPACE-2322	20 A	1	21	1.2 kVA	1.2 kVA		22	1	20 A	REC-FEED - WK SPACE-2322	
	REC-FEED - WK SPACE-2322	20 A	1	23	1.2 kVA	1.2 kVA		24	1	20 A	REC-FEED - WK SPACE-2323	
	REC-FEED - WK SPACE-2323	20 A	1	25	1.2 kVA	1.2 kVA		26	1	20 A	REC-FEED - WK SPACE-2323	
	REC-FEED - WK SPACE-2323	20 A	1	27	1.2 kVA	0.48 kVA		28	1	20 A	MOTOR SHADE - WK SPACE-2322	
	REC - EVS-2401	20 A	1	29	0.18 kVA	0.48 kVA		30	1	20 A	MOTOR SHADE - WET LAB-2500	
	MOTOR SHADE - WET...	20 A	1	31	0.48 kVA	0.78 kVA		32	1	15 A	FCU 203-204,207,209,211	
	MOTOR SHADE - WET...	20 A	1	33	0.24 kVA	0 kVA		34	1	20 A	SPARE	
	SPARE	20 A	1	35	0 kVA	0 kVA		36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA		38	1	20 A	SPARE	
	SPARE	20 A	1	39	0 kVA	0 kVA		40	1	20 A	SPARE	
	(SPACE)	--	1	41	--	--		42	1	--	(SPACE)	
				TOTAL AMPS:	82.6 A	74 A	72 A					
				TOTAL LOAD:	9.88 kVA	8.82 kVA	8.58 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	780 VA	80.00%	624 VA		
MISC.	5680 VA	70.00%	3976 VA	**kVA (CONNECTED):**	27.3 kVA
RECEPTACLE	20820 VA	74.02%	15410 VA	**kVA (ESTIMATED DEMAND):**	20.0 kVA
				CURRENT (CONNECTED):	75.7 A
				CURRENT (ESTIMATED DEMAND):	55.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL2A2

LOCATION: EL 2311.00
POWER SUPPLIED FROM: DPNL2A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	LCP - EL-2311	20 A	1	1	0 kVA	1.2 kVA		2	1	20 A	REC-FEED - WK SPACE-2322	
	REC-FEED - WK SPACE-2322	20 A	1	3		1.2 kVA	1.2 kVA	4	1	20 A	REC-FEED - WK SPACE-2323	
	REC-FEED - WK SPACE-2322	20 A	1	5			1.2 kVA	6	1	20 A	REC-FEED - WK SPACE-2323	
	REC-FEED - WK SPACE-2323	20 A	1	7	1.2 kVA	0 kVA		8	1	20 A	SPARE	
	REC-FEED - WK SPACE-2323	20 A	1	9		0.36 kVA	0 kVA	10	1	20 A	SPARE	
	SPARE	20 A	1	11			0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA		14	1	20 A	SPARE	
	SPARE	20 A	1	15		0 kVA	0 kVA	16	1	20 A	SPARE	
	SPARE	20 A	1	17			0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA		20	1	20 A	SPARE	
1	REC-FEED - WK SPACE-2322	20 A	1	21		1.2 kVA	1.2 kVA	22	1	20 A	REC-FEED - WK SPACE-2322	
	REC-FEED - WK SPACE-2322	20 A	1	23			1.2 kVA	24	1	20 A	REC-FEED - WK SPACE-2323	
	REC-FEED - WK SPACE-2323	20 A	1	25	1.2 kVA	1.2 kVA		26	1	20 A	REC-FEED - WK SPACE-2323	
	REC-FEED - WK SPACE-2323	20 A	1	27		1.2 kVA	0 kVA	28	1	20 A	SPARE	
	SPARE	20 A	1	29			0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA		32	1	20 A	SPARE	
	SPARE	20 A	1	33		0 kVA	0 kVA	34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--		38	1	--	(SPACE)	
	(SPACE)	--	1	39		--	--	40	1	--	(SPACE)	
	(SPACE)	--	1	41			--	42	1	--	(SPACE)	
				TOTAL AMPS:	40.0 A	53 A	40 A					
				TOTAL LOAD:	4.80 kVA	6.36 kVA	4.80 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	0 VA	0.00%	0 VA		
RECEPTACLE	15960 VA	81.33%	12980 VA	**kVA (CONNECTED):**	16.0 kVA
				kVA (ESTIMATED DEMAND):	13.0 kVA
				CURRENT (CONNECTED):	44.3 A
				CURRENT (ESTIMATED DEMAND):	36.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
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SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 2
SHEET NO.
E-714

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PLOT DATE: 10/16/2025 2:04:09 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL2A3

LOCATION: EL 2413.00
POWER SUPPLIED FROM: DPNL2A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - MANIFOLD - GAS-2417	20 A	1	1	0.18 kVA	0.18 kVA					2	1	20 A	REC - MANIFOLD - GAS 2409	
	REC- 2402 / 2404	20 A	1	3			0.36 kVA	0.72 kVA			4	1	20 A	REC - CORRIDOR-2090.03	
	REC - MANIFOLD - GAS-2433	20 A	1	5					0.18 kVA	0.36 kVA	6	1	20 A	REC - STERLIZER	
	REC - AUTOCLAVE-2435	20 A	1	7	0.9 kVA	1 kVA					8	1	20 A	REC-EWC - AUTOCLAVE-2435	
	REC - CORRIDOR-2090.03	20 A	1	9			0.18 kVA	0.18 kVA			10	1	20 A	REC - MANIFOLD - GAS-2425	
	REC-CEILING - WET LAB-2500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-2500	
	REC-QUAD - WET LAB-2500	20 A	1	21			1.08 kVA	0.72 kVA			22	1	20 A	REC-DUPLEX - WET LAB-2500	
	REC-GEN - WET LAB-2500	20 A	1	23					0.54 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	49	1.2 kVA	1.2 kVA					50	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	51			1.2 kVA	1.2 kVA			52	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	53					1.2 kVA	1.2 kVA	54	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	55	1.2 kVA	1.2 kVA					56	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	57			1.2 kVA	1.2 kVA			58	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	59					1.2 kVA	1.2 kVA	60	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	61	1.2 kVA	1.2 kVA					62	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	63			1.2 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
	TOTAL AMPS:				199.1 A		177 A		179 A						
	TOTAL LOAD:				23.86 kVA		21.24 kVA		21.48 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	66580 VA	57.51%	38290 VA		
				kVA (CONNECTED):	66.6 kVA
				kVA (ESTIMATED DEMAND):	38.3 kVA
				CURRENT (CONNECTED):	184.8 A
				CURRENT (ESTIMATED DEMAND):	106.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL2B1

LOCATION: EL 2206.00
POWER SUPPLIED FROM: DPNL2B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - HUD-2201,OFFICE-2203	20 A	1	1	0.72 kVA	0.72 kVA					2	1	20 A	REC - HUD-2201,OFFICE-2203	
	REC - OFFICE-2205,2207,2209	20 A	1	3			1.08 kVA	1.08 kVA			4	1	20 A	REC - OFFICE-2205,2207,2209	
	REC - FLR - WORKSPACE 2210	20 A	1	5					1.2 kVA	1 kVA	6	1	20 A	REC - REF - BRK RM-2200	
	REC-REF - BRK RM-2200	20 A	1	7	1 kVA	1 kVA					8	1	20 A	REC - ICE - BRK RM-2200	
	REC-COF - BRK RM-2200	20 A	1	9			1 kVA	0.36 kVA			10	1	20 A	REC - BRK RM-2200	
	REC-MW - BRK RM-2200	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-MW - BRK RM-2200	
	REC - BRK RM-2200	20 A	1	13	0.9 kVA	0.33 kVA					14	1	15 A	FCU 205-206,208,210,212	
	MOTOR SHADE - 2500	20 A	1	15			0.48 kVA	0.18 kVA			16	1	20 A	REC-COPY - PRINT-2202	
	REC - PRINT-2202	20 A	1	17					0.36 kVA	1.2 kVA	18	1	20 A	REC-FEED - WK SPACE-2208	
	REC-FEED - WK SPACE-2208	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-FEED - WK SPACE-2208	
	REC-FEED - WK SPACE-2210	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-FEED - WK SPACE-2210	
	REC-FEED - WK SPACE-2210	20 A	1	23					1.2 kVA	0.36 kVA	24	1	20 A	REC - WK SPACE-2208,2210	
	REC -...	20 A	1	25	0.54 kVA	0.36 kVA					26	1	20 A	REC - CORR-2090.09	
	REC - CORR-2090.09	20 A	1	27			0.36 kVA	0.18 kVA			28	1	20 A	REC - STAIR 02-2090.06	
	REC - ELEV LOBBY-2090.10	20 A	1	29					0.18 kVA	0.48 kVA	30	1	20 A	MOTOR SHADE - WK SPACE-2210	
	MOTOR SHADE - 2500	20 A	1	31	0.48 kVA	0.48 kVA					32	1	20 A	MOTOR SHADE - WET LAB-2500	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
	TOTAL AMPS:				76.0 A		59 A		71 A						
	TOTAL LOAD:				8.93 kVA		7.12 kVA		8.38 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	330 VA	80.00%	264 VA		
MISC.	1920 VA	70.00%	1344 VA	**kVA (CONNECTED):**	24.4 kVA
RECEPTACLE	22180 VA	72.54%	16090 VA	**kVA (ESTIMATED DEMAND):**	17.7 kVA
				CURRENT (CONNECTED):	67.8 A
				CURRENT (ESTIMATED DEMAND):	49.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL2B2

LOCATION: EL 2206.00
POWER SUPPLIED FROM: DPNL2B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	LCP - EL-2206	20 A	1	1	0 kVA	0.36 kVA					2	1	20 A	REC - EL-2206	
1	SPARE	20 A	1	3			0 kVA	0 kVA			4	1	20 A	SPARE	
	REC-FEED - WK SPACE 2210	20 A	1	5					1.2 kVA	0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	1.2 kVA	18	1	20 A	REC-FEED - WK SPACE-2208	
1	REC-FEED - WK SPACE-2208	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-FEED - WK SPACE-2208	
	REC-FEED - WK SPACE-2210	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-FEED - WK SPACE-2210	
	REC-FEED - WK SPACE-2210	20 A	1	23					1.2 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
	TOTAL AMPS:				23.5 A		20 A		30 A						
	TOTAL LOAD:				2.76 kVA		2.40 kVA		3.60 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	0 VA	0.00%	0 VA		
RECEPTACLE	8760 VA	100.00%	8760 VA	**kVA (CONNECTED):**	8.8 kVA
				kVA (ESTIMATED DEMAND):	8.8 kVA
				CURRENT (CONNECTED):	24.3 A
				CURRENT (ESTIMATED DEMAND):	24.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 2
SHEET NO.
E-715

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PLOT DATE: 10/16/2025 2:04:07 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL2B3

LOCATION: EL 2105.00
POWER SUPPLIED FROM: DPNL2B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CEILING - WET LAB-2500	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-2500	
	REC - CORRIDOR-2090.04	20 A	1	17					0.36 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-2500	
	REC - STORAGE-2101	20 A	1	19	0.18 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-2500	
	REC-QUAD - WET LAB-2500	20 A	1	27			1.08 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	35					1.2 kVA	0.72 kVA	36	1	20 A	REC-DUPLEX - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - WET LAB-2500	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	153.0 A		141 A		129 A						
				TOTAL LOAD:	18.18 kVA		16.68 kVA		15.48 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	50340 VA	59.93%	30170 VA		
				kVA (CONNECTED):	50.3 kVA
				kVA (ESTIMATED DEMAND):	30.2 kVA
				CURRENT (CONNECTED):	139.7 A
				CURRENT (ESTIMATED DEMAND):	83.7 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL2B4

LOCATION: EL 2105.00
POWER SUPPLIED FROM: DPNL2B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CEILING - WET LAB-2500	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-CEILING - WET LAB-2500	
	REC-CEILING - WET LAB-2500	20 A	1	49	1.2 kVA	1.2 kVA					50	1	20 A	REC-CEILING - WET LAB-25000	
	REC-QUAD - WET LAB-2500	20 A	1	51			1.08 kVA	0.54 kVA			52	1	20 A	REC-GEN - WET LAB-2500	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	182.1 A		176 A		160 A						
				TOTAL LOAD:	21.60 kVA		20.82 kVA		19.20 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	61620 VA	58.11%	35810 VA		
				kVA (CONNECTED):	61.6 kVA
				kVA (ESTIMATED DEMAND):	35.8 kVA
				CURRENT (CONNECTED):	171.0 A
				CURRENT (ESTIMATED DEMAND):	99.4 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
09-29-25
LICENSED PROFESSIONAL ENGINEER

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 2
SHEET NO.
E-716

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PLOT DATE: 9/29/2025 2:05:03 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL3A1

LOCATION: EL 3311.00
POWER SUPPLIED FROM: DPNL3A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - OFFICE-3316,3318,3320	20 A	1	1	1.08 kVA	1.08 kVA					2	1	20 A	REC - OFFICE-3316,3318,3320	
	REC - OFFICE-3310,3312,3314	20 A	1	3			1.08 kVA	1.08 kVA			4	1	20 A	REC - OFFICE-3310,3312,3314	
	REC - OFFICE-3304,3306,3308	20 A	1	5					1.08 kVA	1.08 kVA	6	1	20 A	REC - OFFICE-3304,3306,3308	
	REC - HUDDLE-3302	20 A	1	7	0.72 kVA	0.36 kVA					8	1	20 A	FLREC - CONF-3303	
	REC - CONF-3303	20 A	1	9			1.08 kVA	0.9 kVA			10	1	20 A	REC - CONF-3303	
	REC - TLT-3307.03	20 A	1	11					0.18 kVA	1 kVA	12	1	20 A	XFMR - TLT-3307.03	
	REC - WELLNESS-3305	20 A	1	13	0.18 kVA	1 kVA					14	1	20 A	XFMR - WELLNESS-3305	
	REC - RESTROOM-3307.01,02	20 A	1	15			0.36 kVA	0.18 kVA			16	1	20 A	REC-EWC - CORR-3090.09	
	XFMR - RESTROOM -3307.01,02	20 A	1	17					1 kVA	1 kVA	18	1	20 A	XFMR - RESTROOM -3307.01,02	
	REC - CORR-3090.09	20 A	1	19	0.9 kVA	0.24 kVA					20	1	20 A	MOTOR SHADE - 3500	
	REC-FEED - WK SPACE-3322	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-FEED - WK SPACE-3322	
	REC-FEED - WK SPACE-3322	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-FEED - WK SPACE-3323	
	REC-FEED - WK SPACE-3323	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-FEED - WK SPACE-3323	
	FLREC - WK SPACE-3323	20 A	1	27			1.2 kVA	0.9 kVA			28	1	20 A	REC - CORR-3090.02,11	
	REC - EVS-3401	20 A	1	29					0.18 kVA	0.72 kVA	30	1	20 A	REC - BRIDGE-3090.12	
	MOTOR SHADE - 3322	20 A	1	31	0.48 kVA	0.48 kVA					32	1	20 A	MOTOR SHADE - 3500	
	MOTOR SHADE - 3500	20 A	1	33			0.48 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
	TOTAL AMPS:				74.7 A		81 A		72 A						
	TOTAL LOAD:				8.92 kVA		9.66 kVA		8.64 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	5680 VA	70.00%	3976 VA		
RECEPTACLE	21540 VA	73.21%	15770 VA	**kVA (CONNECTED):**	27.2 kVA
				kVA (ESTIMATED DEMAND):	19.7 kVA
				CURRENT (CONNECTED):	75.6 A
				CURRENT (ESTIMATED DEMAND):	54.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL3A2

LOCATION: EL 3311.00
POWER SUPPLIED FROM: DPNL3A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	FCU 303-304, 307,309,314	15 A	1	1	0.78 kVA	0.92 kVA					2	1	15 A	FCU 311	
	FCU 313	15 A	1	3			0.92 kVA	0.92 kVA			4	1	15 A	FCU 312	
	REC - EL-3311	20 A	1	5					2 kVA	1.18 kVA	6	1	20 A	RECEPTACLE	
	REC - EWC BRIDGE	20 A	1	7	0.18 kVA	0.5 kVA					8	1	20 A	LCP - EL-3311	
1	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
1	REC-FEED - WK SPACE-3322	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-FEED - WK SPACE-3322	
	REC-FEED - WK SPACE-3322	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-FEED - WK SPACE-3323	
	REC-FEED - WK SPACE-3323	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-FEED - WK SPACE-3323	
	FLREC - WK SPACE-3323	20 A	1	27			0.18 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
	TOTAL AMPS:				40.3 A		37 A		47 A						
	TOTAL LOAD:				4.78 kVA		4.43 kVA		5.58 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	3548 VA	80.00%	2838 VA		
MISC.	500 VA	70.00%	350 VA	**kVA (CONNECTED):**	14.8 kVA
RECEPTACLE	10740 VA	96.55%	10370 VA	**kVA (ESTIMATED DEMAND):**	13.6 kVA
				CURRENT (CONNECTED):	41.0 A
				CURRENT (ESTIMATED DEMAND):	37.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL3A3

LOCATION: EL 3413.00
POWER SUPPLIED FROM: DPNL3A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - MANIFOLD - GAS-3417	20 A	1	1	0.18 kVA	0.18 kVA					2	1	20 A	REC - MANIFOLD - GAS-3409	
	REC- UPS-3402 / STORAGE...	20 A	1	3			0.36 kVA	0.72 kVA			4	1	20 A	REC - CORRIDOR-3090.03	
	REC - MANIFOLD - GAS-3425	20 A	1	5					0.18 kVA	0.18 kVA	6	1	20 A	REC - MANIFOLD - GAS-3433	
	REC - AUTOCLAVE-3435	20 A	1	7	0.36 kVA	0.9 kVA					8	1	20 A	REC - AUTOCLAVE-3435	
	REC-EWC - AUTOCLAVE-3435	20 A	1	9			1 kVA	0.18 kVA			10	1	20 A	REC - CORRIDOR-3090.03	
	REC-QUAD - WET LAB-3500	20 A	1	11					1.08 kVA	0.72 kVA	12	1	20 A	REC-DUPLEX - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-3500	
	REC-GEN - WET LAB-3500	20 A	1	23					0.54 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	49	1.2 kVA	1.2 kVA					50	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	51			1.2 kVA	1.2 kVA			52	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	53					1.2 kVA	1.2 kVA	54	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	55	1.2 kVA	1.2 kVA					56	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	57			1.2 kVA	1.2 kVA			58	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	59					1.2 kVA	1.2 kVA	60	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	61	1.2 kVA	1.2 kVA					62	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	63			1.2 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
	TOTAL AMPS:				196.0 A		191 A		173 A						
	TOTAL LOAD:				23.22 kVA		22.66 kVA		20.70 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	66580 VA	57.51%	38290 VA		
				kVA (CONNECTED):	66.6 kVA
				kVA (ESTIMATED DEMAND):	38.3 kVA
				CURRENT (CONNECTED):	184.8 A
				CURRENT (ESTIMATED DEMAND):	106.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 3

SHEET NO.
E-717

OSBORN ENGINEERING
1420 Washington Blvd, Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:04:07 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL3B1

LOCATION: EL 3206.00
POWER SUPPLIED FROM: DPNL3B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - HUD-3201,OFFICE-3203	20 A	1	1	0.72 kVA	0.72 kVA					2	1	20 A	REC - HUD-3201,OFFICE-3203	
	REC - OFFICE-3205,3207,3209	20 A	1	3			1.08 kVA	1.08 kVA			4	1	20 A	REC - OFFICE-3205,3207,3209	
	FLREC - WK SPACE-3210	20 A	1	5					1.2 kVA	1 kVA	6	1	20 A	REC-REF - BREAK-3200	
	REC-REF - BREAK-3200	20 A	1	7	1 kVA	0.36 kVA					8	1	20 A	REC - BREAK-3200	
	REC - BREAK-3200	20 A	1	9			0.36 kVA	0.36 kVA			10	1	20 A	REC - PRINT-3202	
	REC - BREAK-3200	20 A	1	11					0.9 kVA	1.2 kVA	12	1	20 A	REC-FEED - WK SPACE-3210	1
	REC-COPY - PRINT-3202	20 A	1	13	0.18 kVA	1.2 kVA					14	1	20 A	REC-FEED - WK SPACE-3210	
	REC-FEED - WK SPACE-3208	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-FEED - WK SPACE-3208	1
	REC-FEED - WK SPACE-3208	20 A	1	17					1.2 kVA	0.54 kVA	18	1	20 A	REC - COLLABORATION-3090.05	
	REC-FEED - WK SPACE-3210	20 A	1	19	1.2 kVA	0.36 kVA					20	1	20 A	REC - CORR 3090.09	
	REC - CORR-3090.08	20 A	1	21			0.36 kVA	0.18 kVA			22	1	20 A	REC - ELEV LOBBY-3090.10	
	REC - CORR-3090.09	20 A	1	23					0.36 kVA	0.48 kVA	24	1	20 A	MOTOR SHADE - WET LAB-3500	
	REC - STAIR 02-3090.06	20 A	1	25	0.18 kVA	0.48 kVA					26	1	20 A	MOTOR SHADE - WET LAB-3500	
	MOTOR SHADE - 3210	20 A	1	27			0.48 kVA	0.68 kVA			28	1	15 A	FCU 305-306,308,310,315	
	MOTOR SHADE - 3500	20 A	1	29					0.48 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
					TOTAL AMPS:	53.3 A		59 A		62 A					
					TOTAL LOAD:	6.40 kVA		6.98 kVA		7.36 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	680 VA	80.00%	544 VA		
MISC.	1920 VA	70.00%	1344 VA	**kVA (CONNECTED):**	20.7 kVA
RECEPTACLE	18140 VA	77.56%	14070 VA	**kVA (ESTIMATED DEMAND):**	16.0 kVA
				CURRENT (CONNECTED):	57.6 A
				CURRENT (ESTIMATED DEMAND):	44.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL3B2

LOCATION: EL 3206.00
POWER SUPPLIED FROM: DPNL3B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
1	REC - EL-3206	20 A	1	1	0.36 kVA	0 kVA					2	1	20 A	LCP - EL-3206	
	SPARE	20 A	1	3			0 kVA	0 kVA			4	1	20 A	SPARE	
	FLREC - WK SPACE-3210	20 A	1	5					1.2 kVA	0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	1.2 kVA	12	1	20 A	REC-FEED - WK SPACE-3210	
	SPARE	20 A	1	13	0 kVA	1.2 kVA					14	1	20 A	REC-FEED - WK SPACE-3210	
	REC-FEED - WK SPACE-3208	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-FEED - WK SPACE-3208	
	REC-FEED - WK SPACE-3208	20 A	1	17					1.2 kVA	0 kVA	18	1	20 A	SPARE	
	REC-FEED - WK SPACE-3210	20 A	1	19	1.2 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
					TOTAL AMPS:	23.5 A		20 A		30 A					
					TOTAL LOAD:	2.76 kVA		2.40 kVA		3.60 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	0 VA	0.00%	0 VA		
RECEPTACLE	8760 VA	100.00%	8760 VA	**kVA (CONNECTED):**	8.8 kVA
				kVA (ESTIMATED DEMAND):	8.8 kVA
				CURRENT (CONNECTED):	24.3 A
				CURRENT (ESTIMATED DEMAND):	24.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 3
SHEET NO.
E-718

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PLOT DATE: 10/16/2025 2:04:09 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL3B3

LOCATION: EL 3105.00
POWER SUPPLIED FROM: DPNL3B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS

VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4

kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - CORRIDOR-3090.04	20 A	1	1	0.36 kVA	0.18 kVA					2	1	20 A	REC G - GEL DOC-3107	
	REC - STORAGE-3101	20 A	1	3			0.18 kVA	1.2 kVA			4	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	27			1.2 kVA	0.72 kVA			28	1	20 A	REC-DUPLEX - WET LAB-3500	
	REC-QUAD - WET LAB-3500	20 A	1	29					1.08 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	49	1.2 kVA	1.2 kVA					50	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	51			1.2 kVA	1.2 kVA			52	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	53					1.2 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75			0 kVA	0 kVA			76	1	20 A	SPARE	
	SPARE	20 A	1	77					0 kVA	0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	164.5 A		168 A		169 A						
				TOTAL LOAD:	19.74 kVA		20.10 kVA		20.28 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	60120 VA	58.32%	35060 VA		
				kVA (CONNECTED):	60.1 kVA
				kVA (ESTIMATED DEMAND):	35.1 kVA
				CURRENT (CONNECTED):	166.9 A
				CURRENT (ESTIMATED DEMAND):	97.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL3B4

LOCATION: EL 3105.00
POWER SUPPLIED FROM: DPNL3B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS

VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4

kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CEILING - WET LAB-3500	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-3500	
	REC-CEILING - WET LAB-3500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-3500	
	REC - MANIFOLD - GAS-3125	20 A	1	43	0.18 kVA	0.54 kVA					44	1	20 A	REC-GEN - WET LAB-3500	
	REC-QUAD - WET LAB-3500	20 A	1	45			1.08 kVA	0.18 kVA			46	1	20 A	REC - GAS-3117	
	REC - CORRIDOR-3090.03 / .07	20 A	1	47					0.54 kVA	0.18 kVA	48	1	20 A	REC - MANIFOLD - GAS-3109	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	146.0 A		151 A		146 A						
				TOTAL LOAD:	17.52 kVA		18.06 kVA		17.52 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	53100 VA	59.42%	31550 VA		
				kVA (CONNECTED):	53.1 kVA
				kVA (ESTIMATED DEMAND):	31.6 kVA
				CURRENT (CONNECTED):	147.4 A
				CURRENT (ESTIMATED DEMAND):	87.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 3

SHEET NO.
E-719

OSBORN ENGINEERING
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PLOT DATE: 9/25/2025 2:05:19 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL4A1

LOCATION: EL 4311.00
POWER SUPPLIED FROM: DPNL4A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - OFFICE-4316,4318,4320	20 A	1	1	1.08 kVA	1.08 kVA		2	1	20 A	REC - OFFICE-4316,4318,4320	
	REC - OFFICE-4310,4312,4314	20 A	1	3			1.08 kVA 1.08 kVA	4	1	20 A	REC - OFFICE-4310,4312,4314	
	REC - OFFICE-4304,4306,4308	20 A	1	5			1.08 kVA 1.08 kVA	6	1	20 A	REC - OFFICE-4304,4306,4308	
	REC - HUDDLE-4302	20 A	1	7	0.72 kVA	0.36 kVA		8	1	20 A	FLREC - CONF-4303	
	REC - CONF-4303	20 A	1	9			1.08 kVA 0.9 kVA	10	1	20 A	REC - CONF-4303	
	REC - TLT-4307.03	20 A	1	11			0.18 kVA 1 kVA	12	1	20 A	XFMR - TLT-4307.03	
	REC - WELLNESS-4305	20 A	1	13	0.18 kVA	1 kVA		14	1	20 A	XFMR - WELLNESS-4305	
	REC - RESTROOM-4307.01,02	20 A	1	15			0.36 kVA 0.18 kVA	16	1	20 A	REC-EWC - CORR-4090.09	
	XFMR - RESTROOM -4307.01,02	20 A	1	17			1 kVA 1 kVA	18	1	20 A	XFMR - RESTROOM -4307.01,02	
	REC - CORR-4090.09	20 A	1	19	0.9 kVA	0.78 kVA		20	1	15 A	FCU 403-404,407,409,411	
	REC-FEED - WK SPACE-4322	20 A	1	21			1.2 kVA 1.2 kVA	22	1	20 A	REC-FEED - WK SPACE-4322	
	REC-FEED - WK SPACE-4322	20 A	1	23			1.2 kVA 1.2 kVA	24	1	20 A	REC-FEED - WK SPACE-4323	
	REC-FEED - WK SPACE-4323	20 A	1	25	1.2 kVA	1.2 kVA		26	1	20 A	REC-FEED - WK SPACE-4323	
	FLREC - WK SPACE-4323	20 A	1	27			1.2 kVA 0.9 kVA	28	1	20 A	REC - CORR-4090.02,11	
	REC - EVS 4401	20 A	1	29			0.18 kVA 0.48 kVA	30	1	20 A	MOTOR SHADE - WK SPACE-4322	
	MOTOR SHADE - 4500	20 A	1	31	0.48 kVA	0.48 kVA		32	1	20 A	MOTOR SHADE - WET LAB-4500	
	MOTOR SHADE - 4500	20 A	1	33			0.24 kVA 0 kVA	34	1	20 A	SPARE	
				35			0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA		38	1	20 A	SPARE	
	(SPACE)	--	1	39			-- --	40	1	--	(SPACE)	
	(SPACE)	--	1	41			-- --	42	1	--	(SPACE)	
	TOTAL AMPS:				80.1 A		80 A 70 A					
	TOTAL LOAD:				9.46 kVA		9.42 kVA 8.40 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	776 VA	80.00%	621 VA		
MISC.	5680 VA	70.00%	3976 VA	**kVA (CONNECTED):**	27.3 kVA
RECEPTACLE	20820 VA	74.02%	15410 VA	**kVA (ESTIMATED DEMAND):**	20.0 kVA
				CURRENT (CONNECTED):	75.7 A
				CURRENT (ESTIMATED DEMAND):	55.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL4A2

LOCATION: EL 4311.00
POWER SUPPLIED FROM: DPNL4A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - EL-4311	20 A	1	1	2 kVA	0 kVA		2	1	20 A	LCP - EL-4311	
	SPARE	20 A	1	3		0 kVA 0 kVA		4	1	20 A	SPARE	
	SPARE	20 A	1	5			0 kVA 0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA		8	1	20 A	SPARE	
	SPARE	20 A	1	9		0 kVA 0 kVA		10	1	20 A	SPARE	
	SPARE	20 A	1	11			0 kVA 0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA		14	1	20 A	SPARE	
	SPARE	20 A	1	15		0 kVA 0 kVA		16	1	20 A	SPARE	
	SPARE	20 A	1	17			0 kVA 0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA		20	1	20 A	SPARE	
1	REC-FEED - WK SPACE-4322	20 A	1	21		1.2 kVA 1.2 kVA		22	1	20 A	REC-FEED - WK SPACE-4322	
	REC-FEED - WK SPACE-4322	20 A	1	23			1.2 kVA 1.2 kVA	24	1	20 A	REC-FEED - WK SPACE-4323	
	REC-FEED - WK SPACE-4323	20 A	1	25	1.2 kVA	1.2 kVA		26	1	20 A	REC-FEED - WK SPACE-4323	
	FLREC-FEED - WK SPACE-4323	20 A	1	27		0.18 kVA 0 kVA		28	1	20 A	SPARE	
	SPARE	20 A	1	29			0 kVA 0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA		32	1	20 A	SPARE	
	SPARE	20 A	1	33		0 kVA 0 kVA		34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA 0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--		38	1	--	(SPACE)	
	(SPACE)	--	1	39		-- --		40	1	--	(SPACE)	
	(SPACE)	--	1	41			-- --	42	1	--	(SPACE)	
	TOTAL AMPS:				36.9 A	22 A	20 A					
	TOTAL LOAD:				4.40 kVA	2.58 kVA	2.40 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	0 VA	0.00%	0 VA		
RECEPTACLE	9380 VA	100.00%	9380 VA	**kVA (CONNECTED):**	9.4 kVA
				kVA (ESTIMATED DEMAND):	9.4 kVA
				CURRENT (CONNECTED):	26.0 A
				CURRENT (ESTIMATED DEMAND):	26.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL4A3

LOCATION: EL 4413.00
POWER SUPPLIED FROM: DPNL4A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - MANIFOLD - GAS-4417	20 A	1	1	0.18 kVA	0.18 kVA		2	1	20 A	REC - MANIFOLD - GAS-4409	
	REC- UPS-4402 / STORAGE...	20 A	1	3			0.36 kVA 0.72 kVA	4	1	20 A	REC - CORRIDOR-4090.03	
	REC - MANIFOLD - GAS-4425	20 A	1	5			0.18 kVA 0.18 kVA	6	1	20 A	REC - CORRIDOR-4090.03	
	REC - AUTOCLAVE-4435	20 A	1	7	0.36 kVA	0.9 kVA		8	1	20 A	REC - AUTOCLAVE-4435	
	REC-EWC - AUTOCLAVE-4435	20 A	1	9		1 kVA	0.18 kVA	10	1	20 A	REC - MANIFOLD - GAS-4433	
	REC-CEILING - WET LAB-4500	20 A	1	11			1.2 kVA 1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-4500	
	REC-GEN - WET LAB-4500	20 A	1	13	0.54 kVA	1.08 kVA		14	1	20 A	REC-QUAD - WET LAB-4500	
	REC-DUPLEX - WET LAB-4500	20 A	1	15		0.72 kVA	1.2 kVA	16	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	17			1.2 kVA 1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	19	1.2 kVA	1.2 kVA		20	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	21		1.2 kVA	1.2 kVA	22	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	23			1.2 kVA 1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	25	1.2 kVA	1.2 kVA		26	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	27		1.2 kVA	1.2 kVA	28	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	29			1.2 kVA 1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	31	1.2 kVA	1.2 kVA		32	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	33		1.2 kVA	1.2 kVA	34	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	35			1.2 kVA 1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	37	1.2 kVA	1.2 kVA		38	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	39		1.2 kVA	1.2 kVA	40	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	41			1.2 kVA 1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	43	1.2 kVA	1.2 kVA		44	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	45		1.2 kVA	1.2 kVA	46	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	47			1.2 kVA 1.2 kVA	48	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	49	1.2 kVA	1.2 kVA		50	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	51		1.2 kVA	1.2 kVA	52	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	53			1.2 kVA 1.2 kVA	54	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	55	1.2 kVA	1.2 kVA		56	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	57		1.2 kVA	1.2 kVA	58	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	59			1.2 kVA 1.2 kVA	60	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	61	1.2 kVA	1.2 kVA		62	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	63		1.2 kVA	0 kVA	64	1	20 A	SPARE	
	SPARE	20 A	1	65			0 kVA 0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA		68	1	20 A	SPARE	
	(SPACE)	--	1	69		-- --		70	1	--	(SPACE)	
	(SPACE)	--	1	71			-- --	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--		74	1	--	(SPACE)	
	(SPACE)	--	1	75		-- --		76	1	--	(SPACE)	
	(SPACE)	--	1	77			-- --	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--		80	1	--	(SPACE)	
	(SPACE)	--	1	81		-- --		82	1	--	(SPACE)	
	(SPACE)	--	1	83			-- --	84	1	--	(SPACE)	
	TOTAL AMPS:				187.3 A		185 A 183 A					
	TOTAL LOAD:				22.44 kVA		22.18 kVA 21.96 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	66580 VA	57.51%	38290 VA		
				kVA (CONNECTED):	66.6 kVA
				kVA (ESTIMATED DEMAND):	38.3 kVA
				CURRENT (CONNECTED):	184.8 A
				CURRENT (ESTIMATED DEMAND):	106.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 47045
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION NO. | DESCRIPTION | DATE
1 | ADDENDUM No. 1 | 10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 4
SHEET NO.
E-720

OSBORN ENGINEERING
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PLOT DATE: 10/16/2025 2:04:08 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL4B1

LOCATION: EL 4206.00
POWER SUPPLIED FROM: DPNL4B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - HUD-4201,OFFICE-4203	20 A	1	1	0.72 kVA	0.72 kVA					2	1	20 A	REC - HUD-4201,OFFICE-4203	
	REC - OFFICE-4205,4207,4209	20 A	1	3			1.08 kVA	1.08 kVA			4	1	20 A	REC - OFFICE-4205,4207,4209	
	FLREC - WK SPACE-4210	20 A	1	5					1.2 kVA	1 kVA	6	1	20 A	REC-REF - BREAK-4200	
	REC-REF - BREAK-4200	20 A	1	7	1 kVA	0.36 kVA					8	1	20 A	REC - BREAK-4200	
	REC - BREAK-4200	20 A	1	9			0.36 kVA	0.9 kVA			10	1	20 A	REC - BREAK-4200	
	REC-COPY - PRINT-4202	20 A	1	11					0.18 kVA	0.36 kVA	12	1	20 A	REC - PRINT-4202	
	REC-FEED - WK SPACE-4208	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-FEED - WK SPACE-4208	
	REC-FEED - WK SPACE-4208	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-FEED - WK SPACE-4210	
	REC-FEED - WK SPACE-4210	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-FEED - WK SPACE-4210	
	REC - CORR-4090.08	20 A	1	19	0.36 kVA	0.54 kVA					20	1	20 A	REC - COLLABORATION-4090.05	
	REC - CORR-4090.09	20 A	1	21			0.36 kVA	0.36 kVA			22	1	20 A	REC - CORR-4090.09	
	REC - STAIR 02-4090.06	20 A	1	23					0.18 kVA	0.18 kVA	24	1	20 A	REC - ELEV LOBBY-4090.10	
	MOTOR SHADE - WK...	20 A	1	25	0.48 kVA	0.48 kVA					26	1	20 A	MOTOR SHADE - WET LAB-4500	
	MOTOR SHADE - WET...	20 A	1	27			0.48 kVA	0.48 kVA			28	1	20 A	MOTOR SHADE - WET LAB-4500	
	FCU 405-406,408,410,412	15 A	1	29					0.33 kVA	0 kVA	30	1	20 A	SPARE	
	RECEPTACLE	20 A	1	31	2 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
		TOTAL AMPS:			77.6 A		65 A		49 A						
		TOTAL LOAD:			9.06 kVA		7.50 kVA		5.83 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	330 VA	80.00%	264 VA		
MISC.	1920 VA	70.00%	1344 VA	**kVA (CONNECTED):**	22.4 kVA
RECEPTACLE	20140 VA	74.83%	15070 VA	**kVA (ESTIMATED DEMAND):**	16.7 kVA
				CURRENT (CONNECTED):	62.1 A
				CURRENT (ESTIMATED DEMAND):	46.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL4B2

LOCATION: EL 4206.00
POWER SUPPLIED FROM: DPNL4B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
1	LCP - EL-4206	20 A	1	1	0 kVA	0 kVA					2	1	20 A	SPARE	
	SPARE	20 A	1	3			0 kVA	0 kVA			4	1	20 A	SPARE	
	FLREC-FEED - WK SPACE-4210	20 A	1	5					1.2 kVA	0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
1	REC-FEED - WK SPACE-4208	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-FEED - WK SPACE-4208	
	REC-FEED - WK SPACE-4208	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-FEED - WK SPACE-4210	
	REC-FEED - WK SPACE-4210	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-FEED - WK SPACE-4210	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
		TOTAL AMPS:			20.0 A		20 A		30 A						
		TOTAL LOAD:			2.40 kVA		2.40 kVA		3.60 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	0 VA	0.00%	0 VA		
RECEPTACLE	8400 VA	100.00%	8400 VA	**kVA (CONNECTED):**	8.4 kVA
				kVA (ESTIMATED DEMAND):	8.4 kVA
				CURRENT (CONNECTED):	23.3 A
				CURRENT (ESTIMATED DEMAND):	23.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 4
SHEET NO.
E-721

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PLOT DATE: 10/16/2025 2:04:09 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL4B3

LOCATION: EL 4105.00
POWER SUPPLIED FROM: DPNL4B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CEILING - WET LAB-4500	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-CEILING - WET LAB-4500	
	REC-QUAD - WET LAB-4500	20 A	1	49	1.08 kVA	0.72 kVA					50	1	20 A	REC-DUPLEX - WET LAB-4500	
	REC - GAS-4109	20 A	1	51			0.18 kVA	0.36 kVA			52	1	20 A	REC - CORRIDOR-4090.04	
	REC G - GEL DOC-4107	20 A	1	53					0.18 kVA	0.72 kVA	54	1	20 A	REC - RADIOISOTOPE ANTE-4115	
	REC - STORAGE-4101	20 A	1	55	0.18 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
	TOTAL AMPS:				177.0 A		165 A		168 A						
	TOTAL LOAD:				21.18 kVA		19.74 kVA		20.10 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
RECEPTACLE	61020 VA	58.19%	35510 VA	
				kVA (CONNECTED): 61.0 kVA
				kVA (ESTIMATED DEMAND): 35.5 kVA
				CURRENT (CONNECTED): 169.4 A
				CURRENT (ESTIMATED DEMAND): 98.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL4B4

LOCATION: EL 4105.00
POWER SUPPLIED FROM: DPNL4B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CEILING - WET LAB-4500	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-4500	
	REC-CEILING - WET LAB-4500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-4500	
	REC -GAS-4125	20 A	1	43	0.18 kVA	0.18 kVA					44	1	20 A	REC - GAS-4117	
	REC-QUAD - WET LAB-4500	20 A	1	45			1.08 kVA	0.54 kVA			46	1	20 A	REC-GEN - WET LAB-4500	
	REC - CORRIDOR-4090.03 / .07	20 A	1	47					0.54 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
	TOTAL AMPS:				143.0 A		154 A		145 A						
	TOTAL LOAD:				17.16 kVA		18.42 kVA		17.34 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS
RECEPTACLE	52920 VA	59.45%	31460 VA	
				kVA (CONNECTED): 52.9 kVA
				kVA (ESTIMATED DEMAND): 31.5 kVA
				CURRENT (CONNECTED): 146.9 A
				CURRENT (ESTIMATED DEMAND): 87.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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ENGINEER
No. 43945
09-29-25
LICENSED PROFESSIONAL ENGINEER

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 4
SHEET NO.
E-722

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PLOT DATE: 9/29/2025 2:05:35 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL5A1

LOCATION: EL 5311.00
POWER SUPPLIED FROM: DPNL5A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - OFFICE-5316,5318,5320	20 A	1	1	1.08 kVA			2	1	20 A	REC - OFFICE-5316,5318,5320	
	REC - OFFICE-5310,5312,5314	20 A	1	3		1.08 kVA		4	1	20 A	REC - OFFICE-5310,5312,5314	
	REC - OFFICE-5304,5306,5308	20 A	1	5			1.08 kVA	6	1	20 A	REC - OFFICE-5304,5306,5308	
	REC - HUDDLE-5302	20 A	1	7	0.72 kVA	0.36 kVA		8	1	20 A	FLREC - CONF-5303	
	REC - CONF-5303	20 A	1	9		1.08 kVA	0.9 kVA	10	1	20 A	REC - CONF-5303	
	REC - TLT-5307.03	20 A	1	11			0.18 kVA	12	1	20 A	XFMR - TLT-5307.03	
	REC - WELLNESS-5305	20 A	1	13	0.18 kVA	1 kVA		14	1	20 A	XFMR - WELLNESS-5305	
	REC - RESTROOM-5307.01,02	20 A	1	15		0.36 kVA	0.18 kVA	16	1	20 A	REC-EWC - CORR-5090.09	
	XFMR - RESTROOM -5307.01	20 A	1	17			1 kVA	18	1	20 A	XFMR - RESTROOM -5307.01	
	REC - CORR-5090.09	20 A	1	19	0.9 kVA	0.78 kVA		20	1	15 A	FCU 503-504,507,509,511	
	REC-FEED - WK SPACE-5322	20 A	1	21		1.2 kVA	1.2 kVA	22	1	20 A	REC-FEED - WK SPACE-5322	
	REC-FEED - WK SPACE-5322	20 A	1	23			1.2 kVA	24	1	20 A	REC-FEED - WK SPACE-5323	
	REC-FEED - WK SPACE-5323	20 A	1	25	1.2 kVA	1.2 kVA		26	1	20 A	REC-FEED - WK SPACE-5323	
	FLREC - WK SPACE-5323	20 A	1	27		1.2 kVA	0.9 kVA	28	1	20 A	REC - CORR-5090.02,11	
	REC - EVS 5401	20 A	1	29			0.18 kVA	30	1	20 A	MOTOR SHADE - WK SPACE-5322	
	MOTOR SHADE - 5500	20 A	1	31	0.48 kVA	0.48 kVA		32	1	20 A	MOTOR SHADE - WET LAB-5500	
	MOTOR SHADE - 5500	20 A	1	33		0.24 kVA	0 kVA	34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA		38	1	20 A	SPARE	
	(SPACE)	--	1	39		--	--	40	1	--	(SPACE)	
	(SPACE)	--	1	41			--	42	1	--	(SPACE)	
	TOTAL AMPS:				80.1 A	80 A	70 A					
	TOTAL LOAD:				9.46 kVA	9.42 kVA	8.40 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	776 VA	80.00%	621 VA		
MISC.	5680 VA	70.00%	3976 VA	**kVA (CONNECTED):**	27.3 kVA
RECEPTACLE	20820 VA	74.02%	15410 VA	**kVA (ESTIMATED DEMAND):**	20.0 kVA
				CURRENT (CONNECTED):	75.7 A
				CURRENT (ESTIMATED DEMAND):	55.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL5A2

LOCATION: EL 5311.00
POWER SUPPLIED FROM: DPNL5A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - EL-5311	20 A	1	1	0.36 kVA	0.5 kVA		2	1	20 A	LCP - EL-5311	
	SPARE	20 A	1	3			0 kVA	4	1	20 A	SPARE	
	SPARE	20 A	1	5				6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA		8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	10	1	20 A	SPARE	
	SPARE	20 A	1	11				12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA		14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	16	1	20 A	SPARE	
	SPARE	20 A	1	17				18	1	20 A	SPARE	
1	SPARE	20 A	1	19	0 kVA	0 kVA		20	1	20 A	SPARE	
	REC-FEED - WK SPACE-5322	20 A	1	21			1.2 kVA	22	1	20 A	REC-FEED - WK SPACE-5322	
	REC-FEED - WK SPACE-5322	20 A	1	23			1.2 kVA	24	1	20 A	REC-FEED - WK SPACE-5323	
	REC-FEED - WK SPACE-5323	20 A	1	25	1.2 kVA	1.2 kVA		26	1	20 A	REC-FEED - WK SPACE-5323	
	FLREC - WK SPACE-5323	20 A	1	27			0.18 kVA	28	1	20 A	SPARE	
	SPARE	20 A	1	29			0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA		32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--		38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	40	1	--	(SPACE)	
	(SPACE)	--	1	41			--	42	1	--	(SPACE)	
	TOTAL AMPS:				27.4 A	22 A	20 A					
	TOTAL LOAD:				3.26 kVA	2.58 kVA	2.40 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC	500 VA	70.00%	350 VA		
RECEPTACLE	7740 VA	100.00%	7740 VA	**kVA (CONNECTED):**	8.2 kVA
				kVA (ESTIMATED DEMAND):	8.1 kVA
				CURRENT (CONNECTED):	22.9 A
				CURRENT (ESTIMATED DEMAND):	22.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL5A3

LOCATION: EL 5413.00
POWER SUPPLIED FROM: DPNL5A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - MANIFOLD - GAS-5417	20 A	1	1	0.18 kVA	0.18 kVA		2	1	20 A	REC - MSNIFOLD - GAS-5409	
	REC- UPS-5402 / STORAGE...	20 A	1	3		0.36 kVA	0.72 kVA	4	1	20 A	REC - CORRIDOR-5090.03	
	REC - GAS-5425	20 A	1	5			0.18 kVA	6	1	20 A	REC - CORRIDOR-5090.03	
	REC - MANIFOLD - GAS-5433	20 A	1	7	0.18 kVA	0.36 kVA		8	1	20 A	REC - AUTOCLAVE-5435	
	REC - AUTOCLAVE-5435	20 A	1	9		0.9 kVA	1 kVA	10	1	20 A	REC-EWC - AUTOCLAVE-5435	
	REC-CEILING - WET LAB-5500	20 A	1	11			1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-5500	
	REC-GEN - WET LAB-5500	20 A	1	13	0.54 kVA	1.08 kVA		14	1	20 A	REC-QUAD - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	15		1.2 kVA	1.2 kVA	16	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	17			1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	19	1.2 kVA	1.2 kVA		20	1	20 A	REC-CEILING - WET LAB-5500	
	REC-DUPLEX - WET LAB-5500	20 A	1	21		0.72 kVA	1.2 kVA	22	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	23			1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	25	1.2 kVA	1.2 kVA		26	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	27		1.2 kVA	1.2 kVA	28	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	29			1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	31	1.2 kVA	1.2 kVA		32	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	33		1.2 kVA	1.2 kVA	34	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	35			1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	37	1.2 kVA	1.2 kVA		38	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	39		1.2 kVA	1.2 kVA	40	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	41			1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	43	1.2 kVA	1.2 kVA		44	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	45		1.2 kVA	1.2 kVA	46	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	47			1.2 kVA	48	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	49	1.2 kVA	1.2 kVA		50	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	51		1.2 kVA	1.2 kVA	52	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	53			1.2 kVA	54	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	55	1.2 kVA	1.2 kVA		56	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	57		1.2 kVA	1.2 kVA	58	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	59			1.2 kVA	60	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	61	1.2 kVA	1.2 kVA		62	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	63		1.2 kVA	0 kVA	64	1	20 A	SPARE	
	SPARE	20 A	1	65			0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA		68	1	20 A	SPARE	
	(SPACE)	--	1	69		--	--	70	1	--	(SPACE)	
	(SPACE)	--	1	71			--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--		74	1	--	(SPACE)	
	(SPACE)	--	1	75		--	--	76	1	--	(SPACE)	
	(SPACE)	--	1	77			--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--		80	1	--	(SPACE)	
	(SPACE)	--	1	81		--	--	82	1	--	(SPACE)	
	(SPACE)	--	1	83			--	84	1	--	(SPACE)	
	TOTAL AMPS:				181.0 A	191 A	183 A					
	TOTAL LOAD:				21.72 kVA	22.90 kVA	21.96 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	66580 VA	57.51%	38290 VA		
				kVA (CONNECTED):	66.6 kVA
				kVA (ESTIMATED DEMAND):	38.3 kVA
				CURRENT (CONNECTED):	184.8 A
				CURRENT (ESTIMATED DEMAND):	106.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
10/17/2025
LICENSED PROFESSIONAL ENGINEER

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 5
SHEET NO.
E-723

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PLOT DATE: 10/16/2025 2:04:09 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL5B1

LOCATION: EL 5206.00
POWER SUPPLIED FROM: DPNL5B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - HUD-5201,OFFICE-5203	20 A	1	1	0.72 kVA	0.72 kVA					2	1	20 A	REC - HUD-5201,OFFICE-5203	
	REC - OFFICE-5205,5207,5209	20 A	1	3			1.08 kVA	1.08 kVA			4	1	20 A	REC - OFFICE-5205,5207,5209	
	FLREC - WK SPACE-5210	20 A	1	5					1.2 kVA	1 kVA	6	1	20 A	REC-REF - BREAK-5200	
	REC-REF - BREAK-5200	20 A	1	7	1 kVA	0.36 kVA					8	1	20 A	REC - BREAK-5200	
	REC - BREAK-5200	20 A	1	9			0.36 kVA	0.9 kVA			10	1	20 A	REC - BREAK-5200	
	FCU 505-506,508,510,512	15 A	1	11					0.33 kVA	0.36 kVA	12	1	20 A	REC - PRINT-5202	
	REC-COPY - PRINT-5202	20 A	1	13	0.18 kVA	1.2 kVA					14	1	20 A	REC-FEED - WK SPACE-5208	
	REC-FEED - WK SPACE-5208	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-FEED - WK SPACE-5210	
	REC-FEED - WK SPACE-5208	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-FEED - WK SPACE-5210	
	REC-FEED - WK SPACE-5210	20 A	1	19	1.2 kVA	0.54 kVA					20	1	20 A	REC - COLLABORATION-5090.05	
	REC - CORR-5090.08	20 A	1	21			0.36 kVA	0.36 kVA			22	1	20 A	REC - CORR-5090.09	
	REC - CORR-5090.09	20 A	1	23					0.36 kVA	0.18 kVA	24	1	20 A	REC - ELEV LOBBY-5090.10	
	REC - STAIR 02-5090.06	20 A	1	25	0.18 kVA	0.48 kVA					26	1	20 A	MOTOR SHADE - WET LAB-5500	
	MOTOR SHADE - WK...	20 A	1	27			0.48 kVA	0.48 kVA			28	1	20 A	MOTOR SHADE - WET LAB-5500	
	MOTOR SHADE - WET...	20 A	1	29					0.48 kVA	0 kVA	30	1	20 A	SPARE	
	RECEPTACLE	20 A	1	31	2 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
					TOTAL AMPS:	73.0 A		64 A		53 A					
					TOTAL LOAD:	8.58 kVA		7.50 kVA		6.31 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	330 VA	80.00%	264 VA		
MISC.	1920 VA	70.00%	1344 VA	**kVA (CONNECTED):**	22.4 kVA
RECEPTACLE	20140 VA	74.83%	15070 VA	**kVA (ESTIMATED DEMAND):**	16.7 kVA
				CURRENT (CONNECTED):	62.1 A
				CURRENT (ESTIMATED DEMAND):	46.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL5B2

LOCATION: EL 5206.00
POWER SUPPLIED FROM: DPNL5B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	LCP - EL-5206	20 A	1	1	0 kVA	0 kVA					2	1	20 A	SPARE	
1	SPARE	20 A	1	3			0 kVA	0 kVA			4	1	20 A	SPARE	
1	FLREC - WK SPACE-5210	20 A	1	5					1.2 kVA	0 kVA	6	1	20 A	SPARE	
1	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
1	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
1	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	1.2 kVA					14	1	20 A	REC-FEED - WK SPACE-5208	
1	REC-FEED - WK SPACE-5208	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-FEED - WK SPACE-5210	
1	REC-FEED - WK SPACE-5208	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-FEED - WK SPACE-5210	
1	REC-FEED - WK SPACE-5210	20 A	1	19	1.2 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
					TOTAL AMPS:	20.0 A		20 A		30 A					
					TOTAL LOAD:	2.40 kVA		2.40 kVA		3.60 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	0 VA	0.00%	0 VA		
RECEPTACLE	8400 VA	100.00%	8400 VA	**kVA (CONNECTED):**	8.4 kVA
				kVA (ESTIMATED DEMAND):	8.4 kVA
				CURRENT (CONNECTED):	23.3 A
				CURRENT (ESTIMATED DEMAND):	23.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 5
SHEET NO.
E-724

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PLOT DATE: 10/16/2025 2:04:09 PM TEMPLATE VERSION: 23.0.4

PANEL ID: NL5B3

LOCATION: EL 5105.00
POWER SUPPLIED FROM: DPNL5B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CEILING - WET LAB-5500	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - WET LAB-55000	
	REC-CEILING - WET LAB-5500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-DUPLEX - WET LAB-5500	
	REC - MANIFOLD - GAS-5109	20 A	1	49	0.18 kVA	0.18 kVA					50	1	20 A	REC - MANIFOLD GAS-5117	
	REC-QUAD - WET LAB-5500	20 A	1	51			1.08 kVA	0.72 kVA			52	1	20 A	REC-DUPLEX - WET LAB-5500	
	WSU SIGN ON ROOF	20 A	1	53					0 kVA	0.36 kVA	54	1	20 A	REC - CORRIDOR-5090.04	
	REC - STORAGE-5101	20 A	1	55	0.18 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75			0 kVA	0 kVA			76	1	20 A	SPARE	
	SPARE	20 A	1	77					0 kVA	0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
					TOTAL AMPS:	164.7 A		175 A		163 A					
					TOTAL LOAD:	19.74 kVA		21.00 kVA		19.56 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	0 VA	0.00%	0 VA		
RECEPTACLE	60300 VA	58.29%	35150 VA	**kVA (CONNECTED):**	60.3 kVA
				kVA (ESTIMATED DEMAND):	35.2 kVA
				CURRENT (CONNECTED):	167.4 A
				CURRENT (ESTIMATED DEMAND):	97.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: NL5B4

LOCATION: EL 5105.00
POWER SUPPLIED FROM: DPNL5B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CEILING - WET LAB-5500	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - WET LAB-5500	
	REC-CEILING - WET LAB-5500	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - WET LAB-5500	
	REC - MANIFOLD - GAS-5125	20 A	1	43	0.18 kVA	0.54 kVA					44	1	20 A	REC-GEN - WET LAB-5500	
	REC-QUAD - WET LAB-5500	20 A	1	45			1.08 kVA	0.54 kVA			46	1	20 A	REC - CORRIDOR-5090.03 / .07	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75			0 kVA	0 kVA			76	1	20 A	SPARE	
	SPARE	20 A	1	77					0 kVA	0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
					TOTAL AMPS:	146.9 A		154 A		140 A					
					TOTAL LOAD:	17.52 kVA		18.42 kVA		16.80 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	52740 VA	59.48%	31370 VA	**kVA (CONNECTED):**	52.7 kVA
				kVA (ESTIMATED DEMAND):	31.4 kVA
				CURRENT (CONNECTED):	146.4 A
				CURRENT (ESTIMATED DEMAND):	87.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 5
SHEET NO.
E-725

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PLOT DATE: 9/25/2025 2:55:48 PM TEMPLATE VERSION: 23.0.4

PANEL ID: LN6A

LOCATION: PENTHOUSE 6000.00
POWER SUPPLIED FROM: TLN6A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: 225 A

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - ELEV MACHINE - 7075.01	20 A	1	1	0.18 kVA	1.08 kVA					2	1	20 A	REC - PENTHOUSE-6000	
	LTG - ELEV CAB	20 A	1	3			0.5 kVA	0.54 kVA			4	1	20 A	REC - ROOFTOP	
	HVAC - UH-1	15 A	1	5					0.5 kVA	0.1 kVA	6	1	15 A	FCU 601	
	HVAC - SF-1	15 A	1	7	1.2 kVA	0.5 kVA					8	1	15 A	HVAC - UH-3	
	HVAC - GF-1	20 A	1	9			0.18 kVA	0.5 kVA			10	1	15 A	HVAC - UH-6	
	HVAC - EF-7	15 A	1	11					1.06 kVA	0.8 kVA	12	1	20 A	AHU-LTG	
	SPARE	20 A	1	13	0 kVA	0.36 kVA					14	1	20 A	REC - PENTHOUSE-6000	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	28.6 A		14 A		21 A						
				TOTAL LOAD:	3.32 kVA		1.72 kVA		2.46 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	3860 VA	80.00%	3088 VA		
MISC.	1300 VA	70.00%	910 VA	**kVA (CONNECTED):**	7.5 kVA
RECEPTACLE	2340 VA	100.00%	2340 VA	**kVA (ESTIMATED DEMAND):**	6.3 kVA
				CURRENT (CONNECTED):	20.8 A
				CURRENT (ESTIMATED DEMAND):	17.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: LN6B

LOCATION: PENTHOUSE 6000.00
POWER SUPPLIED FROM: TLN6B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: 225 A

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	HVAC - FH-1,2,3,4	20 A	1	1	0.4 kVA	0.9 kVA					2	1	20 A	REC - PENTHOUSE-6000	
	REC-G - PENTHOUSE	20 A	1	3			0.18 kVA	0.1 kVA			4	1	15 A	FCU-602	
	REC - ELEV MACHINE - 6075.01	20 A	1	5					0.18 kVA	0.5 kVA	6	1	15 A	HVAC - UH-2	
	HVAC - SF-2	15 A	1	7	1.2 kVA	0.5 kVA					8	1	15 A	HVAC - UH-4	
	HVAC - UH-5	15 A	1	9			0.5 kVA	0.18 kVA			10	1	20 A	HVAC - GF-2	
	HVAC - EF-1	15 A	1	11					1.06 kVA	0.15 kVA	12	1	20 A	HVAC - EF-5	
	HVAC- RO-2	15 A	3	13	0.96 kVA	--					14	1	--	(SPACE)	
				15			0.96 kVA	--			16	1	--	(SPACE)	
				17					0.96 kVA	--	18	1	--	(SPACE)	
	(SPACE)	--	1	19	--	--					20	1	--	(SPACE)	
	(SPACE)	--	1	21			--	--			22	1	--	(SPACE)	
	(SPACE)	--	1	23					--	--	24	1	--	(SPACE)	
	(SPACE)	--	1	25	--	--					26	1	--	(SPACE)	
	(SPACE)	--	1	27			--	--			28	1	--	(SPACE)	
	(SPACE)	--	1	29					--	--	30	1	--	(SPACE)	
	(SPACE)	--	1	31	--	--					32	1	--	(SPACE)	
	(SPACE)	--	1	33			--	--			34	1	--	(SPACE)	
	(SPACE)	--	1	35					--	--	36	1	--	(SPACE)	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	34.2 A		16 A		25 A						
				TOTAL LOAD:	3.96 kVA		1.92 kVA		2.85 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	7290 VA	80.00%	5832 VA		
RECEPTACLE	1440 VA	100.00%	1440 VA	**kVA (CONNECTED):**	8.7 kVA
				kVA (ESTIMATED DEMAND):	7.3 kVA
				CURRENT (CONNECTED):	24.2 A
				CURRENT (ESTIMATED DEMAND):	20.2 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
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4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - NORMAL LEVEL 6
SHEET NO.
E-726

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PLOT DATE: 10/16/2025 2:04:19 PM TEMPLATE VERSION: 23.0.4

PANEL ID: LSH1A

LOCATION: EMERGENCY ELECTRICAL...
POWER SUPPLIED FROM: DPLSH1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	SERVICE DOCK	20 A	1	1	0.89 kVA	0.36 kVA					2	1	20 A	ELLIMAN CORRIDOR	
	CORE LAB	20 A	1	3			1.32 kVA	1.34 kVA			4	1	20 A	LOBBY/VESTIBULE/PREFUNCTI...	
	CORRIDOR	20 A	1	5					0.06 kVA	0.23 kVA	6	1	20 A	BOH	
	RESTROOM	20 A	1	7	0.06 kVA	0.09 kVA					8	1	20 A	BREAK ROOM	
	MULTIPRPOSE	20 A	1	9			0.15 kVA	1.98 kVA			10	1	20 A	CORRIDOR	
	BOH	20 A	1	11					0.23 kVA	0.53 kVA	12	1	20 A	WET LAB	
	BREAK ROOM	20 A	1	13	0.04 kVA	0.28 kVA					14	1	20 A	STAIRS	
	LIGHTING	20 A	1	15			0.97 kVA	0.07 kVA			16	1	20 A	LIGHTING	
	EXTERIOR LIGHTING	20 A	1	17					0.3 kVA	0 kVA	18	1	20 A	SPARE	
	LIGHTING	20 A	1	19	0.05 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
				37	6.43 kVA	--					38	1	--	(SPACE)	
	PANEL LSL1A VIA TX	70 A	3	39			5.26 kVA	--			40	1	--	(SPACE)	
				41					5.17 kVA	--	42	1	--	(SPACE)	
				TOTAL AMPS:	30.5 A		41 A		23 A						
				TOTAL LOAD:	8.19 kVA		10.98 kVA		6.48 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	9349 VA	100.00%	9349 VA		
MISC.	16168 VA	70.00%	11318 VA	**kVA (CONNECTED):**	25.6 kVA
Power	180 VA	100.00%	180 VA	**kVA (ESTIMATED DEMAND):**	20.8 kVA
				CURRENT (CONNECTED):	30.8 A
				CURRENT (ESTIMATED DEMAND):	25.0 A

NOTES:

ADDITIONAL REQUIREMENTS:
1. PROVIDE PANEL WITH SURGE PROTECTIVE DEVICE.

PANEL ID: LSL1A

LOCATION: EMERGENCY ELECTRICAL 1221.00
POWER SUPPLIED FROM: TLSL1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: 100 A

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	FIRE SHUTTER	20 A	1	1	1.18 kVA	1.18 kVA					2	1	20 A	FIRE SHUTTER	
	FIRE SHUTTER	20 A	1	3			1.18 kVA	1.18 kVA			4	1	20 A	FIRE SHUTTER	
	FIRE SHUTTER	20 A	1	5					1.18 kVA	1.18 kVA	6	1	20 A	FIRE SHUTTER - 2ND FLR	
	FIRE SHUTTER - 2ND FLR	20 A	1	7	1.18 kVA	1.18 kVA					8	1	20 A	FIRE SHUTTER - 2ND FLR	
	FIRE SHUTTER - 2ND FLR	20 A	1	9			1.18 kVA	1.18 kVA			10	1	20 A	FIRE SHUTTER - 2ND FLR	
	FIRE SHUTTER - 2ND FLR	20 A	1	11					1.18 kVA	1.18 kVA	12	1	20 A	FIRE SHUTTER - 2ND FLR	
	FIRE SHUTTER - 2ND FLR	20 A	1	13	1.18 kVA	0.12 kVA					14	1	20 A	LCP LEVEL 1 EAST	
	FACU	20 A	1	15			0.1 kVA	0.28 kVA			16	1	20 A	LCP LEVEL 2 WEST	
	FSCP	20 A	1	17					0.1 kVA	0.12 kVA	18	1	20 A	LCP LEVEL 2 EAST	
(1)	LOAD CNTL PNL - EM ELEC...	20 A	1	19	0.18 kVA	0 kVA					20	1	20 A	SPARE	
	GAS - CO2-MANIFOLD - 1216.01	20 A	1	21			0.18 kVA	0 kVA			22	1	20 A	SPARE	
	GAS MANIFOLD - GASES 1303	20 A	1	23					0.25 kVA	0 kVA	24	1	20 A	SPARE	
	O2 MANIFOLD - GASES 1303	20 A	1	25	0.25 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	53.7 A		44 A		43 A						
				TOTAL LOAD:	6.43 kVA		5.26 kVA		5.17 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	517 VA	100.00%	517 VA		
MISC.	16168 VA	70.00%	11318 VA	**kVA (CONNECTED):**	16.9 kVA
Power	180 VA	100.00%	180 VA	**kVA (ESTIMATED DEMAND):**	12.0 kVA
				CURRENT (CONNECTED):	46.8 A
				CURRENT (ESTIMATED DEMAND):	33.3 A

NOTES:

ADDITIONAL REQUIREMENTS:
1. PROVIDE PANEL WITH SURGE PROTECTIVE DEVICE.

PANEL ID: LSH3A

LOCATION: EL 3311.00
POWER SUPPLIED FROM: DPLSH1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	WET LAB	20 A	1	1	0.53 kVA	2.51 kVA					2	1	20 A	LIGHTING	
	BOH	20 A	1	3			0.23 kVA	0.53 kVA			4	1	20 A	WET LAB	
	CORRIDOR	20 A	1	5					1.97 kVA	0.34 kVA	6	1	20 A	BOH	
	STAIRS	20 A	1	7	0.11 kVA	0.11 kVA					8	1	20 A	STAIRS	
	LIGHTING	20 A	1	9			0.07 kVA	0.06 kVA			10	1	20 A	LIGHTING	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
				37	7.55 kVA	--					38	1	--	(SPACE)	
	PANEL LSL3A VIA TX	70 A	3	39			7.33 kVA	--			40	1	--	(SPACE)	
				41					5.46 kVA	--	42	1	--	(SPACE)	
				TOTAL AMPS:	39.0 A		30 A		28 A						
				TOTAL LOAD:	10.72 kVA		8.20 kVA		7.69 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	7720 VA	100.00%	7720 VA		
MISC.	18816 VA	70.00%	13171 VA	**kVA (CONNECTED):**	26.6 kVA
RECEPTACLE	200 VA	100.00%	200 VA	**kVA (ESTIMATED DEMAND):**	21.0 kVA
				CURRENT (CONNECTED):	32.0 A
				CURRENT (ESTIMATED DEMAND):	25.2 A

NOTES:

ADDITIONAL REQUIREMENTS:
1. PROVIDE PANEL WITH SURGE PROTECTIVE DEVICE.

PANEL ID: LSL3A

LOCATION: EL 3311.00
POWER SUPPLIED FROM: TLSL3A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: 100 A

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	FIRE SHUTTER - 3RD FLR	20 A	1	1	1.18 kVA	1.18 kVA					2	1	20 A	FIRE SHUTTER - 3RD FLR	
	FIRE SHUTTER - 4TH FLR	20 A	1	3			1.18 kVA	1.18 kVA			4	1	20 A	FIRE SHUTTER - 4TH FLR	
	NAC - ELEC-3311	20 A	1	5					0.2 kVA	1.18 kVA	6	1	20 A	FIRE SHUTTER - 3RD FLR	
	FIRE SHUTTER - 3RD FLR	20 A	1	7	1.18 kVA	1.18 kVA					8	1	20 A	FIRE SHUTTER - 3RD FLR	
	FIRE SHUTTER - 3RD FLR	20 A	1	9			1.18 kVA	1.18 kVA			10	1	20 A	FIRE SHUTTER - 3RD FLR	
	FIRE SHUTTER - 3RD FLR	20 A	1	11					1.18 kVA	1.18 kVA	12	1	20 A	FIRE SHUTTER - 4TH FLR	
	FIRE SHUTTER - 4TH FLR	20 A	1	13	1.18 kVA	1.18 kVA					14	1	20 A	FIRE SHUTTER - 4TH FLR	
	FIRE SHUTTER - 4TH FLR	20 A	1	15			1.18 kVA	1.18 kVA			16	1	20 A	FIRE SHUTTER - 4TH FLR	
	FIRE SHUTTER - 4TH FLR	20 A	1	17					1.18 kVA	0.28 kVA	18	1	20 A	LCP-3W	
	LIGHTING BSL3 LAB	20 A	1	19	0.22 kVA	0.28 kVA					20	1	20 A	LCP-3E	
	SPARE	20 A	1	21			0 kVA	0.28 kVA			22	1	20 A	LCP-4W	
	SPARE	20 A	1	23					0 kVA	0.28 kVA	24	1	20 A	LCP-3E	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	65.3 A		64 A		45 A						
				TOTAL LOAD:	7.55 kVA		7.33 kVA		5.46 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	1323 VA	100.00%	1323 VA		
MISC.	18816 VA	70.00%	13171 VA	**kVA (CONNECTED):**	20.3 kVA
RECEPTACLE	200 VA	100.00%	200 VA	**kVA (ESTIMATED DEMAND):**	14.7 kVA
				CURRENT (CONNECTED):	56.4 A
				CURRENT (ESTIMATED DEMAND):	40.8 A

NOTES:

ADDITIONAL REQUIREMENTS:
1. PROVIDE PANEL WITH SURGE PROTECTIVE DEVICE.

PANEL ID: LSH5A

LOCATION: EL 5311.00
POWER SUPPLIED FROM: DPLSH1A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 480Y/277V
PHASE: 3
WIRES: 4
kAIC RATING: 35kAIC (1)
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	WET LAB	20 A	1	1	0.53 kVA	2.01 kVA					2	1	20 A	CORRIDOR	
	BOH	20 A	1	3			0.4 kVA	0.06 kVA			4	1	20 A	LIGHTING	
	LIGHTING	20 A	1	5					0.8 kVA	0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA					8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA			16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
				37	6.36 kVA	--					38	1	--	(SPACE)	
	PANEL LSL5A VIA TX	70 A	3	39			7.33 kVA	--			40	1	--	(SPACE)	
				41					7.27 kVA	--	42	1	--	(SPACE)	
				TOTAL AMPS:	32.0 A		28 A		29 A						
				TOTAL LOAD:	8.81 kVA		7.80 kVA		8.07 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	4533 VA	100.00%	4533 VA		
MISC.	19992 VA	70.00%	13994 VA	**kVA (CONNECTED):**	24.7 kVA
RECEPTACLE	200 VA	100.00%	200 VA	**kVA (ESTIMATED DEMAND):**	18.7 kVA
				CURRENT (CONNECTED):	29.7 A
				CURRENT (ESTIMATED DEMAND):	22.5 A

NOTES:

ADDITIONAL REQUIREMENTS:
1. PROVIDE PANEL WITH SURGE PROTECTIVE DEVICE.

PANEL ID: LSL5A

LOCATION: EL 5311.00
POWER SUPPLIED FROM: TLSL5A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: 100 A

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	NAC - ELEC-5311	20 A	1	1	0.2 kVA	1.18 kVA					2	1	20 A	FIRE SHUTTER - 5TH FLR	
	FIRE SHUTTER - 5TH FLR	20 A	1	3			1.18 kVA	1.18 kVA			4	1	20 A	FIRE SHUTTER - 5TH FLR	
	FIRE SHUTTER - 5TH FLR	20 A	1	5					1.18 kVA	1.18 kVA	6	1	20 A	FIRE SHUTTER - 5TH FLR	
	FIRE SHUTTER - 5TH FLR	20 A	1	7	1.18 kVA	1.18 kVA					8	1	20 A	FIRE SHUTTER - 5TH FLR	
	FIRE SHUTTER - 5TH FLR	20 A	1	9			1.18 kVA	1.18 kVA			10	1	20 A	FIRE SHUTTER - 5TH FLR	
	FIRE SHUTTER - PENTHOUSE	20 A	1	11					1.18 kVA	1.18 kVA	12	1	20 A	FIRE SHUTTER - PENTHOUSE	
	FIRE SHUTTER - PENTHOUSE	20 A	1	13	1.18 kVA	1.18 kVA					14	1	20 A	FIRE SHUTTER - PENTHOUSE	
	FIRE SHUTTER - PENTHOUSE	20 A	1	15			1.18 kVA	1.18 kVA			16	1	20 A	FIRE SHUTTER - PENTHOUSE	
	FIRE SHUTTER - PENTHOUSE	20 A	1	17					1.18 kVA	1.18 kVA	18	1	20 A	FIRE SHUTTER - PENTHOUSE	
	SPARE	20 A	1	19	0 kVA	0.28 kVA					20	1	20 A	LCP-5W	
	SPARE	20 A	1	21			0 kVA	0.28 kVA			22	1	20 A	LCP-5E	
	SPARE	20 A	1	23					0 kVA	0.22 kVA	24	1	20 A	LIGHTING BSL-3 LAB	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	53.0 A		62 A		62 A						
				TOTAL LOAD:	6.36 kVA		7.33 kVA		7.27 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
LIGHTING	770 VA	100.00%	770 VA		
MISC.	19992 VA	70.00%	13994 VA	**kVA (CONNECTED):**	21.0 kVA
RECEPTACLE	200 VA	100.00%	200 VA	**kVA (ESTIMATED DEMAND):**	15.0 kVA
				CURRENT (CONNECTED):	58.2 A
				CURRENT (ESTIMATED DEMAND):	41.5 A

NOTES:

ADDITIONAL REQUIREMENTS:
1. PROVIDE PANEL WITH SURGE PROTECTIVE DEVICE.

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION NO. | DESCRIPTION | DATE
1 | ADDENDUM No. 1 | 10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
SHEET NO.
E-730

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:04:19 PM TEMPLATE VERSION: 23.0.4

PANEL ID: UL1A1

LOCATION: CORE LAB 1204.00
POWER SUPPLIED FROM: UPS-A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - CORE LAB-1204	20 A	1	1	0.54 kVA	0.9 kVA					2	1	20 A	REC - CORE LAB-1204	
	REC-CEILING - CORE LAB-1204	20 A	1	3			1.2 kVA	1.08 kVA			4	1	20 A	REC - CORE LAB-1204	
	REC - CORE LAB-1204	20 A	1	5					1.08 kVA	1.08 kVA	6	1	20 A	REC - CORE LAB-1204	
	REC - CORE LAB-1204	20 A	1	7	1.08 kVA	1.08 kVA					8	1	20 A	REC - CORE LAB-1204	
	REC - CORE LAB-1204	20 A	1	9			1.08 kVA	1.08 kVA			10	1	20 A	REC - CORE LAB-1204	
	REC - FH - CORE LAB-1204	20 A	1	11					0.72 kVA	1.8 kVA	12	1	30 A	FUME HOOD - CORE LAB-1204	
	REC - FH - CORE LAB-1204	20 A	1	13	0.72 kVA	1.8 kVA					14	1	30 A	FUME HOOD - CORE LAB-1204	
	REC - FH - CORE LAB-1204	20 A	1	15			0.72 kVA	1.8 kVA			16	1	30 A	FUME HOOD - CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	17					0.36 kVA	0.54 kVA	18	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	19	0.36 kVA	0.54 kVA					20	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	21			0.36 kVA	0.36 kVA			22	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	23					0.54 kVA	0.36 kVA	24	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	25	0.54 kVA	0.36 kVA					26	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	27			0.36 kVA	0.54 kVA			28	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	29					0.36 kVA	0.54 kVA	30	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	31	0.36 kVA	0.36 kVA					32	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	33			0.54 kVA	0.36 kVA			34	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	35					0.36 kVA	0.54 kVA	36	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	37	0.36 kVA	0.54 kVA					38	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	39			0.36 kVA	0.54 kVA			40	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	41					0.36 kVA	0.36 kVA	42	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	43	0.54 kVA	0.36 kVA					44	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	45			0.54 kVA	0.36 kVA			46	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	47					0.36 kVA	0.54 kVA	48	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	49	0.36 kVA	0.54 kVA					50	1	20 A	REC-LAB TABLE- CORE LAB-1204	
	REC-LAB TABLE- CORE...	20 A	1	51			0.36 kVA	1.2 kVA			52	1	20 A	REC-CEILING - CORE LAB-1204	
	REC-CEILING - CORE LAB-1204	20 A	1	53					1.2 kVA	1.2 kVA	54	1	20 A	REC-CEILING - CORE LAB-1204	
	REC-CEILING - CORE LAB-1204	20 A	1	55	1.2 kVA	1.2 kVA					56	1	20 A	REC-CEILING - CORE LAB-1204	
	REC-CEILING - CORE LAB-1204	20 A	1	57			1.2 kVA	1.2 kVA			58	1	20 A	REC-CEILING - CORE LAB-1204	
	REC-CEILING - CORE LAB-1204	20 A	1	59					1.2 kVA	1.2 kVA	60	1	20 A	REC-CEILING - CORE LAB-1204	
	REC-CEILING - CORE LAB-1204	20 A	1	61	1.2 kVA	1.2 kVA					62	1	20 A	REC-CEILING - CORE LAB-1204	
	REC-CEILING - CORE LAB-1204	20 A	1	63			1.2 kVA	1.2 kVA			64	1	20 A	REC-CEILING - CORE LAB-1204	
	REC-CEILING - CORE LAB-1204	20 A	1	65					1.2 kVA	1.2 kVA	66	1	20 A	REC-CEILING - CORE LAB-1204	
	REC - CORE LAB-1204	20 A	1	67	0.9 kVA	1.25 kVA					68	2	20 A	REC-SPEC - CORE LAB-1204	
	REC-SPEC - CORE LAB-1204	30 A	2	69			2.08 kVA	1.25 kVA			70				
				71					2.08 kVA	1.25 kVA	72	2	20 A	REC-SPEC - CORE LAB-1204	
	REC-SPEC - CORE LAB-1204	30 A	2	73	2.08 kVA	1.25 kVA					74				
				75			2.08 kVA	1.08 kVA			76	1	20 A	REC - CORE LAB-1204	
	SPARE	20 A	1	77					0 kVA	2.08 kVA	78	2	30 A	REC - CORE LAB 1202.04	
	SPARE	20 A	1	79	0 kVA	2.08 kVA					80				
	SPARE	20 A	1	81			0 kVA	0 kVA			82	1	20 A	SPARE	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
					TOTAL AMPS:		199.0 A		203 A		188 A				
					TOTAL LOAD:		23.70 kVA		24.13 kVA		22.51 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	5400 VA	80.00%	4320 VA		
RECEPTACLE	64940 VA	57.70%	37470 VA	**kVA (CONNECTED):**	70.3 kVA
				kVA (ESTIMATED DEMAND):	41.8 kVA
				CURRENT (CONNECTED):	195.2 A
				CURRENT (ESTIMATED DEMAND):	116.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL1A2

LOCATION: CORE LAB 1204.00
POWER SUPPLIED FROM: UPS-A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-SPEC - CORE LAB-1204	30 A	2	1	2.08 kVA	1.25 kVA					2	2	20 A	REC-SPEC - CORE LAB-1204	
				3			2.08 kVA	1.25 kVA			4				
	REC-SPEC - CORE LAB-1204	30 A	2	5					2.08 kVA	1.25 kVA	6	2	20 A	REC-SPEC - CORE LAB-1204	
				7	2.08 kVA	1.25 kVA					8				
	REC-SPEC - CORE LAB-1204	30 A	2	9			2.08 kVA	1.25 kVA			10	2	20 A	REC-SPEC - CORE LAB-1204	
				11					2.08 kVA	1.25 kVA	12				
	REC-SPEC - CORE LAB-1204	30 A	2	13	2.08 kVA	2.08 kVA					14	2	30 A	REC-SPEC - CORE LAB-1204	
				15			2.08 kVA	2.08 kVA			16				
	REC-SPEC - CORE LAB-1204	20 A	2	17					1.25 kVA	2.08 kVA	18	2	30 A	REC-SPEC - CORE LAB-1204	
				19	1.25 kVA	2.08 kVA					20				
	REC-SPEC - CORE LAB-1204	20 A	2	21					1.25 kVA	2.08 kVA	22	2	30 A	REC-SPEC - CORE LAB-1204	
				23						1.25 kVA 2.08 kVA	24				
	REC-SPEC - CORE LAB-1204	20 A	2	25	1.25 kVA	2.08 kVA					26	2	30 A	REC-SPEC - CORE LAB-1204	
				27					1.25 kVA	2.08 kVA	28				
	REC-SPEC - CORE LAB-1204	30 A	2	29						2.08 kVA 1.25 kVA	30	2	20 A	REC-SPEC - CORE LAB-1204	
				31	2.08 kVA	1.25 kVA					32				
	REC-SPEC - CORE LAB-1204	30 A	2	33			2.08 kVA	1.25 kVA			34	2	20 A	REC-SPEC - CORE LAB-1204	
				35					2.08 kVA	1.25 kVA	36				
	REC-SPEC - CORE LAB-1204	30 A	2	37	2.08 kVA	1.25 kVA					38	2	20 A	REC-SPEC - CORE LAB-1204	
				39			2.08 kVA	1.25 kVA			40				
	REC-SPEC - CORE LAB-1204	30 A	2	41					2.08 kVA	2.08 kVA	42	2	30 A	REC-SPEC - CORE LAB-1204	
				43	2.08 kVA	2.08 kVA					44				
	REC-SPEC - CORE LAB-1204	20 A	2	45					1.25 kVA	2.08 kVA	46	2	30 A	REC-SPEC - CORE LAB-1204	
				47						1.25 kVA 2.08 kVA	48				
	REC-SPEC - CORE LAB-1204	20 A	2	49	1.25 kVA	2.08 kVA					50	2	30 A	REC-SPEC - CORE LAB-1204	
				51					1.25 kVA	2.08 kVA	52				
	REC-SPEC - CORE LAB-1204	20 A	2	53						1.25 kVA 2.08 kVA	54	2	30 A	REC-SPEC - CORE LAB-1204	
				55	1.25 kVA	2.08 kVA					56				
	SPARE	20 A	1	57					0 kVA	2.08 kVA	58	2	30 A	REC-SPEC - CORE LAB-1204	
	SPARE	20 A	1	59						0 kVA 2.08 kVA	60				
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63					0 kVA	0 kVA	64	1	20 A	SPARE	
	SPARE	20 A	1	65						0 kVA 0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69					0 kVA	0 kVA	70	1	20 A	SPARE	
	SPARE	20 A	1	71						0 kVA 0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75					0 kVA	0 kVA	76	1	20 A	SPARE	
	SPARE	20 A	1	77						0 kVA 0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
					TOTAL AMPS:		291.3 A		274 A		274 A				
					TOTAL LOAD:		34.96 kVA		32.88 kVA		32.88 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	100720 VA	54.96%	55360 VA		
				kVA (CONNECTED):	100.7 kVA
				kVA (ESTIMATED DEMAND):	55.4 kVA
				CURRENT (CONNECTED):	279.6 A
				CURRENT (ESTIMATED DEMAND):	153.7 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL1A3

LOCATION: CORE LAB 1202.00
POWER SUPPLIED FROM: UPS-A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-SPEC - CORE LAB-1204	30 A	2	1	2.08 kVA	1.25 kVA					2	2	20 A	REC-SPEC - CORE LAB-1204	
				3			2.08 kVA	1.25 kVA			4				
	REC-SPEC - CORE LAB-1204	30 A	2	5					2.08 kVA	1.25 kVA	6	2	20 A	REC-SPEC - CORE LAB-1204	
				7	2.08 kVA	1.25 kVA					8				
	REC-SPEC - CORE LAB-1204	30 A	2	9			2.08 kVA	1.25 kVA			10	2	20 A	REC-SPEC - CORE LAB-1204	
				11					2.08 kVA	1.25 kVA	12				
	REC-SPEC - CORE LAB-1204	30 A	2	13	2.08 kVA	1.2 kVA					14	1	20 A	REC-CEILING - CORE LAB-1202	
				15			2.08 kVA	1.2 kVA			16	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-CEILING - CORE LAB-1202	20 A	1	49	1.2 kVA	1.2 kVA					50	1	20 A	REC-CEILING - CORE LAB-1202	
	REC-SPEC - CORE LAB-1204	30 A	2	51	2.08 kVA	1.25 kVA					52	2	20 A	REC-SPEC - CORE LAB-1204	
				53			2.08 kVA	1.25 kVA			54				
	REC-SPEC - CORE LAB-1204	30 A	2	55	2.08 kVA	1.25 kVA					56	2	20 A	REC-SPEC - CORE LAB-1204	
				57			2.08 kVA	1.25 kVA			58				
	REC-SPEC - CORE LAB-1204	30 A	2	59					2.08 kVA	1.25 kVA	60	2	20 A	REC-SPEC - CORE LAB-1204	
				61	2.08 kVA	1.25 kVA					62				
	REC-SPEC - CORE LAB-1204	30 A	2	63			2.08 kVA	1.25 kVA			64	2	20 A	REC-SPEC - CORE LAB-1204	
				65					2.08 kVA	1.25 kVA	66				
	REC-SPEC - CORE LAB-1204	30 A	2	67	2.08 kVA	--					68	1	--	(SPACE)	
				69			2.08 kVA	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
					TOTAL AMPS:		278.3 A		286 A		259 A				
					TOTAL LOAD:		33.08 kVA		34.01 kVA		31.05 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	98140 VA	55.09%	54070 VA		
				kVA (CONNECTED):	98.1 kVA
				kVA (ESTIMATED DEMAND):	54.1 kVA
				CURRENT (CONNECTED):	272.4 A
				CURRENT (ESTIMATED DEMAND):	150.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL1A4

LOCATION: CORE LAB 1202.00
POWER SUPPLIED FROM: UPS-A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC SPEC - EM -1202.04	20 A	1	1	0.18 kVA	0.9 kVA					2	1	20 A	REC SPEC - EM -1202.04	
	REC SPEC - EM -1202.04	20 A	2	3			1.56 kVA	1.56 kVA			4	2	20 A	REC SPEC - EM -1202.04	
				5					1.56 kVA	1.56 kVA	6				
	REC - INC - CORE LAB-1202	20 A	1	7	0.18 kVA	1 kVA					8	1	20 A	REC-INC - CORE LAB-1202	
	FLREC-EQ - CORE LAB-1202	20 A	1	9			0.36 kVA	0.36 kVA			10	1	20 A	REC - CORE LAB-1202	
	REC - CORE LAB-1202	20 A	1	11					1.08 kVA	1.08 kVA	12	1	20 A	REC - CORE LAB-1202	
	REC - MICRO-1202.01	20 A	1	13	0.9 kVA	0.18 kVA					14	1	20 A	REC - CORE LAB-1202	
	REC - MICRO-1202.01	20 A	1	15			0.9 kVA	0.9 kVA			16	1	20 A	REC - MICRO-1202.03	
	REC - MICRO-1202.03	20 A	1	17					0.9 kVA	0.36 kVA	18	1	20 A	REC - MICRO-1202.03	
	REC - MICRO-1202.05	20 A	1	19	0.9 kVA	1.08 kVA					20	1	20 A	REC - MICRO-1202.05	
	REC - SERVER 1206.01	20 A	1	21			0.36 kVA	0.9 kVA			22	1	20 A	REC - MICRO-1202.07	
	REC - MICRO-1202.07	20 A	1	23					0.9 kVA	0.9 kVA	24	1	20 A	REC - MICRO-1202.09	
	REC - MICRO-1202.09	20 A	1	25	0.9 kVA	0.72 kVA					26	1	20 A	REC - EM-1202.04	
	REC - MICRO-1202.11	20 A	1	27			0.9 kVA	0.9 kVA			28	1	20 A	REC - MICRO-1202.11	
	REC - EM-1202.04	20 A	1	29					1.08 kVA	1.08 kVA	30	1	20 A	REC - CORE LAB-1202	
	REC - CORE LAB-1202	20 A	1	31	1.08 kVA	1.08 kVA					32	1	20 A	REC - CORE LAB-1202	
	REC-FH - CORE LAB-1202	20 A	1	33			0.72 kVA	1.8 kVA			34	1	20 A	FUME HOOD - CORE LAB-1202	
	REC - SORTER-1202.06	20 A	1	35					1.08 kVA	0.18 kVA	36	1	20 A	REC - SORTER-1202.06	
	REC - SORTER-1202.06	20 A	1	37	1.08 kVA	1.08 kVA					38	1	20 A	REC - SORTER-1202.06	
	REC - SORTER-1202.06	20 A	1	39			1.08 kVA	0.54 kVA			40	1	20 A	REC - SORTER-1202.06	
	REC - EM-1202.04	20 A	1	41					1.08 kVA	1.08 kVA	42	1	20 A	REC - EM-1202.04	
	REC - MICRO 1202.07	20 A	3	43	1.83 kVA	1.83 kVA					44	3	30 A	REC - CORE LAB 1202.09	
				45			1.83 kVA	1.83 kVA			46				
				47					1.83 kVA	1.83 kVA	48				
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75			0 kVA	0 kVA			76	1	20 A	SPARE	
	SPARE	20 A	1	77					0 kVA	0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
					TOTAL AMPS:		124.4 A		140 A		149 A				
					TOTAL LOAD:		14.93 kVA		16.51 kVA		17.59 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	1800 VA	80.00%	1440 VA		
RECEPTACLE	47220 VA	60.59%	28610 VA	**kVA (CONNECTED):**	49.0 kVA
				kVA (ESTIMATED DEMAND):	30.1 kVA
				CURRENT (CONNECTED):	136.1 A
				CURRENT (ESTIMATED DEMAND):	83.4 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 47945
09-29-25
LICENSED PROFESSIONAL ENGINEER

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE

PANEL ID: UL1T1

LOCATION: IT 1214.00
POWER SUPPLIED FROM: UPS-T
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 IT 1214	30 A	2	1	0.08 kVA	0.08 kVA					2	2	30 A	REC - L6-30 IT 1214	
				3			0.08 kVA	0.08 kVA			4				
	REC - L6-30 IT 1214	30 A	2	5					0.08 kVA	0.08 kVA	6	2	30 A	REC - L6-30 IT 1214	
				7	0.08 kVA	0.08 kVA					8				
	REC - L6-30 IT 1214	30 A	2	9			0.08 kVA	0.08 kVA			10	2	30 A	REC - L6-30 IT 1214	
				11					0.08 kVA	0.08 kVA	12				
	REC - L6-30 IT 1214	30 A	2	13	0.08 kVA	0.08 kVA					14	2	30 A	REC - L6-30 IT 1214	
				15			0.08 kVA	0.08 kVA			16				
	REC - L6-30 IT 1214	30 A	2	17					0.08 kVA	0.08 kVA	18	2	30 A	REC - L6-30 IT 1214	
				19	0.08 kVA	0.08 kVA					20				
	REC - L6-30 IT 1214	30 A	2	21			0.08 kVA	0.08 kVA			22	2	30 A	REC - L6-30 IT 1214	
				23					0.08 kVA	0.08 kVA	24				
	REC - L6-30 IT 1214	30 A	2	25	0.08 kVA	0.72 kVA					26	1	20 A	REC - IT 1214	
				27			0.08 kVA	0.72 kVA			28	1	20 A	REC - IT 1214	
	REC - IT 1214	20 A	1	29					0.72 kVA	0.72 kVA	30	1	20 A	REC - IT 1214	
	REC - IT 1214	20 A	1	31	0.72 kVA	0.9 kVA					32	1	20 A	REC - IT 1214	
	REC - IT 1214	20 A	1	33			0.72 kVA	1.97 kVA			34				
	ACP - IT 1214	20 A	1	35					0.18 kVA	1.77 kVA	36	3	20 A	UL1T2	
1	ACP - IT 1214	20 A	1	37	0.18 kVA	1.82 kVA					38				
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	SPARE	20 A	1	41					0 kVA	0 kVA	42	1	20 A	SPARE	
				TOTAL AMPS:	41.9 A		34 A		33 A						
				TOTAL LOAD:	5.01 kVA		4.08 kVA		3.99 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	720 VA	70.00%	504 VA		
RECEPTACLE	12360 VA	90.45%	11180 VA	**kVA (CONNECTED):**	13.1 kVA
				kVA (ESTIMATED DEMAND):	11.7 kVA
				CURRENT (CONNECTED):	36.3 A
				CURRENT (ESTIMATED DEMAND):	32.4 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL1T2

LOCATION: IDF 1115.00
POWER SUPPLIED FROM: UL1T1
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 1115	30 A	2	1	0.08 kVA	0.08 kVA					2	2	30 A	REC - L6-30 1115	
				3			0.08 kVA	0.08 kVA			4				
	REC - L6-30 2309	30 A	2	5					0.08 kVA	1.56 kVA	6	2	30 A	REC - L6-30 1115	
				7	0.08 kVA	1.56 kVA					8				
	REC -IDF 1115	20 A	1	9			0.72 kVA	0.9 kVA			10	1	20 A	REC - IDF 1115	
	ACP - IDF 1115	20 A	1	11					0.18 kVA	--	12	1	--	(SPACE)	
1	ACP - IDF 1115	20 A	1	13	0.18 kVA	--					14	1	--	(SPACE)	
	(SPACE)	--	1	15			--	--			16	1	--	(SPACE)	
	(SPACE)	--	1	17					--	--	18	1	--	(SPACE)	
	(SPACE)	--	1	19	--	--					20	1	--	(SPACE)	
	(SPACE)	--	1	21			--	--			22	1	--	(SPACE)	
	(SPACE)	--	1	23					--	--	24	1	--	(SPACE)	
	(SPACE)	--	1	25	--	--					26	1	--	(SPACE)	
	(SPACE)	--	1	27			--	--			28	1	--	(SPACE)	
	(SPACE)	--	1	29					--	--	30	1	--	(SPACE)	
	(SPACE)	--	1	31	--	--					32	1	--	(SPACE)	
	(SPACE)	--	1	33			--	--			34	1	--	(SPACE)	
	(SPACE)	--	1	35					--	--	36	1	--	(SPACE)	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	16.4 A		15 A		15 A						
				TOTAL LOAD:	1.97 kVA		1.77 kVA		1.82 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	360 VA	70.00%	252 VA		
RECEPTACLE	5190 VA	100.00%	5190 VA	**kVA (CONNECTED):**	5.6 kVA
				kVA (ESTIMATED DEMAND):	5.4 kVA
				CURRENT (CONNECTED):	15.4 A
				CURRENT (ESTIMATED DEMAND):	15.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL2T1

LOCATION: IDF 2309.00
POWER SUPPLIED FROM: UPS-T
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 2309	30 A	2	1	0.08 kVA	0.08 kVA					2	2	30 A	REC - L6-30 2309	
				3			0.08 kVA	0.08 kVA			4				
	REC - L6-30 2309	30 A	2	5					1.56 kVA	0.08 kVA	6	2	30 A	REC - L6-30 2309	
				7	1.56 kVA	0.08 kVA					8				
	REC - L6-30 2309	30 A	2	9			0.08 kVA	0.9 kVA			10	1	20 A	REC - IDF 2309	
				11					0.08 kVA	1.08 kVA	12	1	20 A	REC - IDF 2309	
1	ACP - IDF 2309	20 A	1	13	0.36 kVA	1.79 kVA					14				
	IDCP - IDF 2309	20 A	1	15			0.18 kVA	1.77 kVA			16	3	20 A	UL2T2	
	(SPACE)	--	1	17					--	2 kVA	18				
	(SPACE)	--	1	19	--	--					20	1	--	(SPACE)	
	(SPACE)	--	1	21			--	--			22	1	--	(SPACE)	
	(SPACE)	--	1	23					--	--	24	1	--	(SPACE)	
	(SPACE)	--	1	25	--	--					26	1	--	(SPACE)	
	(SPACE)	--	1	27			--	--			28	1	--	(SPACE)	
	(SPACE)	--	1	29					--	--	30	1	--	(SPACE)	
	(SPACE)	--	1	31	--	--					32	1	--	(SPACE)	
	(SPACE)	--	1	33			--	--			34	1	--	(SPACE)	
	(SPACE)	--	1	35					--	--	36	1	--	(SPACE)	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	33.8 A		26 A		41 A						
				TOTAL LOAD:	3.93 kVA		3.08 kVA		4.79 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	900 VA	70.00%	630 VA		
RECEPTACLE	10890 VA	95.91%	10445 VA	**kVA (CONNECTED):**	11.8 kVA
				kVA (ESTIMATED DEMAND):	11.1 kVA
				CURRENT (CONNECTED):	32.7 A
				CURRENT (ESTIMATED DEMAND):	30.7 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL2T2

LOCATION: IDF 2204.00
POWER SUPPLIED FROM: UL2T1
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 60 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 2204	30 A	2	1	0.08 kVA	0.08 kVA					2	2	30 A	REC - L6-30 2204	
				3			0.08 kVA	0.08 kVA			4				
	REC - L6-30 2204	30 A	2	5					1.56 kVA	0.08 kVA	6	2	30 A	REC - L6-30 2204	
				7	1.56 kVA	0.08 kVA					8				
	REC - IDF 2204	20 A	1	9			0.72 kVA	0.9 kVA			10	1	20 A	REC - IDF 2204	
1	ACP - IDF 2204	20 A	1	11					0.36 kVA	--	12	1	--	(SPACE)	
	(SPACE)	--	1	13	--	--					14	1	--	(SPACE)	
	(SPACE)	--	1	15			--	--			16	1	--	(SPACE)	
	(SPACE)	--	1	17					--	--	18	1	--	(SPACE)	
	(SPACE)	--	1	19	--	--					20	1	--	(SPACE)	
	(SPACE)	--	1	21			--	--			22	1	--	(SPACE)	
	(SPACE)	--	1	23					--	--	24	1	--	(SPACE)	
	(SPACE)	--	1	25	--	--					26	1	--	(SPACE)	
	(SPACE)	--	1	27			--	--			28	1	--	(SPACE)	
	(SPACE)	--	1	29					--	--	30	1	--	(SPACE)	
	(SPACE)	--	1	31	--	--					32	1	--	(SPACE)	
	(SPACE)	--	1	33			--	--			34	1	--	(SPACE)	
	(SPACE)	--	1	35					--	--	36	1	--	(SPACE)	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	14.9 A		15 A		17 A						
				TOTAL LOAD:	1.79 kVA		1.77 kVA		2.00 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	360 VA	70.00%	252 VA		
RECEPTACLE	5190 VA	100.00%	5190 VA	**kVA (CONNECTED):**	5.6 kVA
				kVA (ESTIMATED DEMAND):	5.4 kVA
				CURRENT (CONNECTED):	15.4 A
				CURRENT (ESTIMATED DEMAND):	15.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL3T1

LOCATION: IDF 3309.00
POWER SUPPLIED FROM: UPS-T
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 3309	30 A	2	1	0.08 kVA	0.08 kVA					2	2	30 A	REC - L6-30 3309	
				3			0.08 kVA	0.08 kVA			4				
	REC - L6-30 3309	30 A	2	5					1.56 kVA	0.08 kVA	6	2	30 A	REC - L6-30 3309	
				7	1.56 kVA	0.08 kVA					8				
	REC - L6-30 3309	30 A	2	9			0.08 kVA	1.08 kVA			10	1	20 A	REC - IDF 3309	
				11					0.08 kVA	0.9 kVA	12	1	20 A	REC - IDF 3309	
	ACP - IDF 3309	20 A	1	13	0.36 kVA	1.79 kVA					14				
1	IDCP - IDF 3309	20 A	1	15			0.18 kVA	1.77 kVA			16	3	20 A	UL3T2	
	(SPACE)	--	1	17					--	2 kVA	18				
	(SPACE)	--	1	19	--	--					20	1	--	(SPACE)	
	(SPACE)	--	1	21			--	--			22	1	--	(SPACE)	
	(SPACE)	--	1	23					--	--	24	1	--	(SPACE)	
	(SPACE)	--	1	25	--	--					26	1	--	(SPACE)	
	(SPACE)	--	1	27			--	--			28	1	--	(SPACE)	
	(SPACE)	--	1	29					--	--	30	1	--	(SPACE)	
	(SPACE)	--	1	31	--	--					32	1	--	(SPACE)	
	(SPACE)	--	1	33			--	--			34	1	--	(SPACE)	
	(SPACE)	--	1	35					--	--	36	1	--	(SPACE)	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	33.6 A		27 A		39 A						
				TOTAL LOAD:	3.93 kVA		3.26 kVA		4.61 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	900 VA	70.00%	630 VA		
RECEPTACLE	10890 VA	95.91%	10445 VA	**kVA (CONNECTED):**	11.8 kVA
				kVA (ESTIMATED DEMAND):	11.1 kVA
				CURRENT (CONNECTED):	32.7 A
				CURRENT (ESTIMATED DEMAND):	30.7 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL3T2

LOCATION: IDF 3204.00
POWER SUPPLIED FROM: UL3T1
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 60 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 3204	30 A	2	1	0.08 kVA	0.08 kVA					2	2	30 A	REC - L6-30 3204	
				3			0.08 kVA	0.08 kVA			4				
	REC - L6-30	30 A	2	5					1.56 kVA	0.08 kVA	6	2	30 A	REC - L6-30 3204	
				7	1.56 kVA	0.08 kVA					8				
	REC - IDF 3204	20 A	1	9			0.9 kVA	0.72 kVA			10	1	20 A	REC - IDF 3204	
1	ACP - IDF 3204	20 A	1	11					0.36 kVA	--	12	1	--	(SPACE)	
	(SPACE)	--	1	13	--	--					14	1	--	(SPACE)	
	(SPACE)	--	1	15			--	--			16	1	--	(SPACE)	
	(SPACE)	--	1	17					--	--	18	1	--	(SPACE)	
	(SPACE)	--	1	19	--	--					20	1	--	(SPACE)	
	(SPACE)	--	1	21			--	--			22	1	--	(SPACE)	
	(SPACE)	--	1	23					--	--	24	1	--	(SPACE)	
	(SPACE)	--	1	25	--	--					26	1	--	(SPACE)	
	(SPACE)	--	1	27			--	--			28	1	--	(SPACE)	
	(SPACE)	--	1	29					--	--	30	1	--	(SPACE)	
	(SPACE)	--	1	31	--	--					32	1	--	(SPACE)	
	(SPACE)	--	1	33			--	--			34	1	--	(SPACE)	
	(SPACE)	--	1	35					--	--	36	1	--	(SPACE)	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	14.9 A		15 A		17 A						
				TOTAL LOAD:	1.79 kVA		1.77 kVA		2.00 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	360 VA	70.00%	252 VA		
RECEPTACLE	5190 VA	100.00%	5190 VA	**kVA (CONNECTED):**	5.6 kVA
				kVA (ESTIMATED DEMAND):	5.4 kVA
				CURRENT (CONNECTED):	15.4 A
				CURRENT (ESTIMATED DEMAND):	15.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM

SHEET NO.
E-732

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:04:11 PM TEMPLATE VERSION: 23.0.4

PANEL ID: UL4T1

LOCATION: IDF 4309.00
POWER SUPPLIED FROM: UPS-T
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 4309	30 A	2	1	0.08 kVA	1.56 kVA		2	2	30 A	REC - L6-30 4309	
				3		0.08 kVA	1.56 kVA	4				
	REC - L6-30 4309	30 A	2	5			0.08 kVA	0.08 kVA	6	2	30 A	REC - L6-30 4309	
				7	0.08 kVA	0.08 kVA			8				
	REC - IDF 4309	20 A	1	9		1.72 kVA	2.72 kVA		10	1	30 A	REC -IDF 4309	
1	ACP - IDF 4309	20 A	1	11				0.36 kVA	1.86 kVA	12			
	IDCP - IDF 4309	20 A	1	13	0.18 kVA	1.77 kVA				14	3	20 A	UL4T2	
	SPARE	20 A	1	15			0 kVA	2.07 kVA		16				
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
					TOTAL AMPS:	32.9 A	70 A	20 A							
					TOTAL LOAD:	3.74 kVA	8.15 kVA	2.37 kVA							

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	900 VA	70.00%	630 VA		
RECEPTACLE	13350 VA	87.45%	11675 VA	**kVA (CONNECTED):**	14.3 kVA
				kVA (ESTIMATED DEMAND):	12.3 kVA
				CURRENT (CONNECTED):	39.6 A
				CURRENT (ESTIMATED DEMAND):	34.2 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL4T2

LOCATION: IDF 4204.00
POWER SUPPLIED FROM: UL4T1
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 4204	30 A	2	1	0.08 kVA	0.08 kVA		2	2	30 A	REC - L6-30 4204	
				3		0.08 kVA	0.08 kVA	4				
	REC - L6-30 4204	30 A	2	5			0.08 kVA	1.56 kVA	6	2	30 A	REC - L6-30 4204	
				7	0.08 kVA	1.56 kVA			8				
	REC - IDF 4204	20 A	1	9		0.9 kVA	0.72 kVA		10	1	20 A	REC -IDF 4204	
1	ACP - IDF 4204	20 A	1	11				0.36 kVA	0.08 kVA	12	2	30 A	REC - L6-30 4309	
	SPARE	20 A	1	13	0 kVA	0.08 kVA				14				
	SPARE	20 A	1	15			0 kVA	0 kVA		16	1	20 A	SPARE	
	SPARE	20 A	1	17					0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
					TOTAL AMPS:	15.6 A	15 A	17 A							
					TOTAL LOAD:	1.86 kVA	1.77 kVA	2.07 kVA							

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	360 VA	70.00%	252 VA		
RECEPTACLE	5340 VA	100.00%	5340 VA	**kVA (CONNECTED):**	5.7 kVA
				kVA (ESTIMATED DEMAND):	5.6 kVA
				CURRENT (CONNECTED):	15.8 A
				CURRENT (ESTIMATED DEMAND):	15.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL5T1

LOCATION: IDF 5309.00
POWER SUPPLIED FROM: UPS-T
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 100 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 5309	30 A	2	1	0.08 kVA	0.08 kVA		2	2	30 A	REC - L6-30 5309	
				3		0.08 kVA	0.08 kVA	4				
	REC - L6-30 5309	30 A	2	5			1.56 kVA	0.08 kVA	6	2	30 A	REC - L6-30 5309	
				7	1.56 kVA	0.08 kVA			8				
	REC - L6-30 5309	30 A	2	9		0.08 kVA	2.72 kVA		10	1	30 A	REC - IDF 5309	
				11				0.08 kVA	1.72 kVA	12	1	20 A	REC - IDF 5309	
1	ACP - IDF 5309	30 A	1	13	0.36 kVA	1.79 kVA				14				
	SPARE	20 A	1	15			0 kVA	4.23 kVA		16	3	20 A	UL5T2	
	SPARE	20 A	1	17					0 kVA	2 kVA	18				
	SPARE	20 A	1	19	0 kVA	0 kVA					20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA			22	1	20 A	SPARE	
	SPARE	20 A	1	23					0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
					TOTAL AMPS:	32.8 A	62 A	47 A							
					TOTAL LOAD:	3.93 kVA	7.18 kVA	5.43 kVA							

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	720 VA	70.00%	504 VA		
RECEPTACLE	15810 VA	81.63%	12905 VA	**kVA (CONNECTED):**	16.5 kVA
				kVA (ESTIMATED DEMAND):	13.4 kVA
				CURRENT (CONNECTED):	45.9 A
				CURRENT (ESTIMATED DEMAND):	37.2 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL5T2

LOCATION: IDF 5204.00
POWER SUPPLIED FROM: UL5T1
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 60 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - L6-30 5204	30 A	2	1	0.08 kVA	0.08 kVA		2	2	30 A	REC - L6-30 5204	
				3		0.08 kVA	0.08 kVA	4				
	REC - L6-30 5204	30 A	2	5			0.08 kVA	1.56 kVA	6	2	30 A	REC - L6-30 5204	
				7	0.08 kVA	1.56 kVA			8				
	REC - IDF 5204	20 A	1	9		1.72 kVA	2.36 kVA		10	1	20 A	REC - IDF 5204	
1	ACP - IDF 5204	20 A	1	11				0.36 kVA	--	12	1	--	(SPACE)	
	(SPACE)	--	1	13	--	--				14	1	--	(SPACE)	
	(SPACE)	--	1	15			--	--		16	1	--	(SPACE)	
	(SPACE)	--	1	17					--	--	18	1	--	(SPACE)	
	(SPACE)	--	1	19	--	--					20	1	--	(SPACE)	
	(SPACE)	--	1	21			--	--			22	1	--	(SPACE)	
	(SPACE)	--	1	23					--	--	24	1	--	(SPACE)	
	(SPACE)	--	1	25	--	--					26	1	--	(SPACE)	
	(SPACE)	--	1	27			--	--			28	1	--	(SPACE)	
	(SPACE)	--	1	29					--	--	30	1	--	(SPACE)	
	(SPACE)	--	1	31	--	--					32	1	--	(SPACE)	
	(SPACE)	--	1	33			--	--			34	1	--	(SPACE)	
	(SPACE)	--	1	35					--	--	36	1	--	(SPACE)	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
					TOTAL AMPS:	14.9 A	36 A	17 A							
					TOTAL LOAD:	1.79 kVA	4.23 kVA	2.00 kVA							

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
MISC.	360 VA	70.00%	252 VA		
RECEPTACLE	7650 VA	100.00%	7650 VA	**kVA (CONNECTED):**	8.0 kVA
				kVA (ESTIMATED DEMAND):	7.9 kVA
				CURRENT (CONNECTED):	22.2 A
				CURRENT (ESTIMATED DEMAND):	21.9 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
SHEET NO.
E-733

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:04:12 PM TEMPLATE VERSION: 23.0.4

PANEL ID: UL2A1

LOCATION: EL 2421.00
POWER SUPPLIED FROM: UPS-UL2A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CENT - SPECIAL B-2419	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CENT - SPECIAL B-2419	
	REC - COLD ROOM-2500.02	20 A	1	3			1.08 kVA	0.72 kVA			4	1	20 A	REC - COLD ROOM-2500.02	
	BMS - UPS EL-2402	20 A	1	5					0.2 kVA	0 kVA	6	1	20 A	SPARE	
	O2 MONITOR - GAS-2417	20 A	1	7	0.2 kVA	0.2 kVA					8	1	20 A	O2 MONITOR - GAS-2425	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	REC-CENT - SPECIAL B-2427	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CENT - SPECIAL B-2427	
	REC-INC - CULTURE-2411	20 A	1	15			1 kVA	1 kVA			16	1	20 A	REC-INC - CULTURE-2411	
	BIO CABINET - CULTURE-2411	20 A	1	17					1.15 kVA	1.15 kVA	18	1	20 A	BIO CABINET - CULTURE-2411	
	REC-FH - FUME HOOD-2415	20 A	1	19	0.72 kVA	0.72 kVA					20	1	20 A	REC-FH - FUME HOOD-2415	
	FUME HOOD - SHARED...	20 A	1	21			1.8 kVA	1.8 kVA			22	1	20 A	FUME HOOD - SHARED FH-2415	
	REC-CENT - SHARED FH-2415	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CENT - SHARED FH-2415	
	REC-FH - SPECIAL B-2419	20 A	1	25	0.72 kVA	0.72 kVA					26	1	20 A	REC-FH - SPECIAL B-2419	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	REC-CEILING - CULTURE-2411	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - CULTURE-2411	
	REC-CEILING - CULTURE-2411	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - CULTURE-2411	
	REC-CEILING - CULTURE-2411	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - CULTURE-2411	
	REC-CEILING - CULTURE-2411	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - CULTURE-2411	
	REC-CEILING - HOOD-2415	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - HOOD-2415	
	REC-CEILING - HOOD-2415	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - HOOD-2415	
	REC-CEILING - HOOD-2415	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - HOOD-2415	
	REC-CEILING - HOOD-2415	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - HOOD-2415	
	REC-CEILING - SPECIAL B-2419	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-CEILING - SPECIAL B-2419	
	REC-CEILING - SPECIAL B-2419	20 A	1	49	1.2 kVA	1.2 kVA					50	1	20 A	REC-CEILING - SPECIAL B-2419	
	REC-CEILING - SPECIAL B-2419	20 A	1	51			1.2 kVA	1.2 kVA			52	1	20 A	REC-CEILING - SPECIAL B-2419	
	REC-CEILING - SPECIAL B-2419	20 A	1	53					1.2 kVA	1.2 kVA	54	1	20 A	REC-CEILING - SPECIAL B-2419	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75			0 kVA	0 kVA			76	1	20 A	SPARE	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	150.5 A		145 A		121 A						
				TOTAL LOAD:	17.68 kVA		17.00 kVA		14.50 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	5900 VA	80.00%	4720 VA		
MISC.	600 VA	70.00%	420 VA	**kVA (CONNECTED):**	49.2 kVA
RECEPTACLE	42680 VA	61.72%	26340 VA	**kVA (ESTIMATED DEMAND):**	31.5 kVA
				CURRENT (CONNECTED):	136.5 A
				CURRENT (ESTIMATED DEMAND):	87.4 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL2A2

LOCATION: EL 2105.00
POWER SUPPLIED FROM: UPS-UL2A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - COLD ROOM -2103	20 A	1	1	0.36 kVA	0.36 kVA					2	1	20 A	REC - GEL DOC-2107	
	REC G - GEL DOC-2107	20 A	1	3			0.18 kVA	--			4	1	--	(SPACE)	
	REC-CEILING - SPECIAL C-2423	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - SPECIAL C-2423	
	REC-CEILING - SPECIAL C-2423	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - SPECIAL C-2423	
	REC-CEILING - SPECIAL C-2423	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - SPECIAL C-2423	
	REC-CEILING - SPECIAL C-2423	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - SPECIAL C-2423	
	REC-CEILING - SPECIAL B-2427	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - SPECIAL B-2427	
	REC-CEILING - SPECIAL B-2427	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - SPECIAL B-2427	
	REC-CEILING - SPECIAL B-2427	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - SPECIAL B-2427	
	REC-CEILING - SPECIAL B-2427	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - SPECIAL B-2427	
	REC-CEILING - SPECIAL C-2431	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - SPECIAL C-2431	
	REC-CEILING - SPECIAL C-2431	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - SPECIAL C-2431	
	REC-CEILING - SPECIAL C-2431	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - SPECIAL C-2431	
	REC-CEILING - SPECIAL C-2431	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - SPECIAL C-2431	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	SPARE	20 A	1	41					0 kVA	0 kVA	42	1	20 A	SPARE	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	86.2 A		82 A		80 A						
				TOTAL LOAD:	10.32 kVA		9.78 kVA		9.60 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	29700 VA	66.84%	19850 VA		
				kVA (CONNECTED):	29.7 kVA
				kVA (ESTIMATED DEMAND):	19.9 kVA
				CURRENT (CONNECTED):	82.4 A
				CURRENT (ESTIMATED DEMAND):	55.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL2A3

LOCATION: EL 2113.00
POWER SUPPLIED FROM: UPS-UL2A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	O2 MONITOR - GAS-2109	20 A	1	1	0.2 kVA	0.2 kVA					2	1	20 A	O2 MONITOR - GAS-2117	
	REC-CENT - SPECIAL B-2115	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CENT - SPECIAL B-2115	
	REC-INC - CULTURE-2123	20 A	1	5					1 kVA	1 kVA	6	1	20 A	REC-INC - CULTURE-2123	
	BIO-CABINET - CULTURE-2123	20 A	1	7	1.15 kVA	1.15 kVA					8	1	20 A	BIO-CABINET - CULTURE-2123	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	REC-CEILING - SPECIAL C-2111	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - SPECIAL C-2111	
	REC-CEILING - SPECIAL C-2111	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - SPECIAL C-2111	
	REC-CEILING - SPECIAL C-2111	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - SPECIAL C-2111	
	REC-CEILING - SPECIAL C-2111	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - SPECIAL C-2111	
	REC-CEILING - SPECIAL B-2115	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - SPECIAL B-2115	
	REC-CEILING - SPECIAL B-2115	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - SPECIAL B-2115	
	REC-CEILING - SPECIAL B-2115	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - SPECIAL B-2115	
	REC-CEILING - SPECIAL B-2115	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - SPECIAL B-2115	
	REC-CEILING - CULTURE-2123	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - CULTURE-2123	
	REC-CEILING - CULTURE-2123	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - CULTURE-2123	
	REC-CEILING - CULTURE-2123	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - CULTURE-2123	
	REC-CEILING - CULTURE-2123	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - CULTURE-2123	
	REC-CEILING - SPECIAL C-2127	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - SPECIAL C-2127	
	REC-CEILING - SPECIAL C-2127	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - SPECIAL C-2127	
	REC-CEILING - SPECIAL C-2127	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - SPECIAL C-2127	
	REC-CEILING - SPECIAL C-2127	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - SPECIAL C-2127	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	122.9 A		120 A		137 A						
				TOTAL LOAD:	14.70 kVA		14.40 kVA		16.40 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	2300 VA	80.00%	1840 VA		
MISC.	400 VA	70.00%	280 VA	**kVA (CONNECTED):**	45.5 kVA
RECEPTACLE	42800 VA	61.68%	26400 VA	**kVA (ESTIMATED DEMAND):**	28.5 kVA
				CURRENT (CONNECTED):	126.3 A
				CURRENT (ESTIMATED DEMAND):	79.2 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
SHEET NO.
E-734

OSBORN ENGINEERING
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PLOT DATE: 9/25/2025 2:06:19 PM TEMPLATE VERSION: 23.0.4

PANEL ID: UL3A1

LOCATION: EL 3421.00
POWER SUPPLIED FROM: UPS-UL3A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CENT - SPECIAL B-3419	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CENT - SPECIAL B-3419	
	REC-FRE - 3419 (REDUNDANT)	20 A	1	3			0 kVA	0 kVA			4	1	20 A	REC-FRE - 3419 (REDUNDANT)	
	REC-FRE - 3419 (REDUNDANT)	20 A	1	5					0 kVA	0 kVA	6	1	20 A	REC-FRE - 3419 (REDUNDANT)	
	O2 MONITOR - GAS-3417	20 A	1	7	0.2 kVA	0.2 kVA					8	1	20 A	O2 MONITOR - GAS-3409	
	BIO CABINET - CULTURE-3411	20 A	1	9			1.15 kVA	1.15 kVA			10	1	20 A	BIO CABINET - CULTURE-3411	
	REC-INC - CULTURE-3411	20 A	1	11					1 kVA	1 kVA	12	1	20 A	REC-INC - CULTURE-3411	
	REC-CENT - SHARED FH-3415	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CENT - SHARED FH-3415	
	O2 MONITOR - GAS-3433	20 A	1	15			0.2 kVA	0.2 kVA			16	1	20 A	O2 MONITOR - GAS-3425	
	FUME HOOD - FUME...	20 A	1	17					1.8 kVA	0.72 kVA	18	1	20 A	REC-FH - FUME HOOD-3500.04	
	REC-CENT - SPECIAL B-3427	20 A	1	19	1.2 kVA	1.15 kVA					20	1	20 A	BIO-CABINET-CULTURE-3500.05	
	BMS - UPS EL-3402	20 A	1	21			0 kVA	1.2 kVA			22	1	20 A	REC-CENT - SPECIAL B-3427	
	REC-FH - FUME HOOD-3415	20 A	1	23					0.72 kVA	0.72 kVA	24	1	20 A	REC-FH - FUME HOOD-3415	
	REC-CEILING - SPECIAL B-3419	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - SPECIAL B-3419	
	REC-CEILING - CULTURE-3411	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - CULTURE-3411	
	REC-CEILING - CULTURE-3411	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - CULTURE-3411	
	REC-CEILING - CULTURE-3411	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - CULTURE-3411	
	REC-CEILING - CULTURE-3411	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - CULTURE-3411	
	REC-CEILING - HOOD-3415	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - HOOD-3415	
	REC-CEILING - HOOD-3415	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - HOOD-3415	
	REC-CEILING - HOOD-3415	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - HOOD-3415	
	REC-CEILING - HOOD-3415	20 A	1	41					1.2 kVA	1.2 kVA	42	1	20 A	REC-CEILING - HOOD-3415	
	REC-CEILING - SPECIAL B-3419	20 A	1	43	1.2 kVA	1.2 kVA					44	1	20 A	REC-CEILING - SPECIAL B-3419	
	REC-CEILING - SPECIAL B-3419	20 A	1	45			1.2 kVA	1.2 kVA			46	1	20 A	REC-CEILING - SPECIAL B-3419	
	REC-CEILING - SPECIAL B-3419	20 A	1	47					1.2 kVA	1.2 kVA	48	1	20 A	REC-CEILING - SPECIAL B-3419	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75			0 kVA	0 kVA			76	1	20 A	SPARE	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	145.6 A		113 A		132 A						
				TOTAL LOAD:	17.15 kVA		13.50 kVA		15.56 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	5250 VA	80.00%	4200 VA		
MISC.	800 VA	70.00%	560 VA	**kVA (CONNECTED):**	46.2 kVA
RECEPTACLE	40160 VA	62.45%	25080 VA	**kVA (ESTIMATED DEMAND):**	29.8 kVA
				CURRENT (CONNECTED):	128.3 A
				CURRENT (ESTIMATED DEMAND):	82.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL3A2

LOCATION: EL 3105.00
POWER SUPPLIED FROM: UPS-UL3A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - COLD ROOM -3103	20 A	1	1	0.36 kVA	0.36 kVA					2	1	20 A	REC - GEL DOC-3107	
	REC-CEILING - SPECIAL C-3423	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CEILING - SPECIAL C-3423	
	REC-CEILING - SPECIAL C-3423	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - SPECIAL C-3423	
	REC-CEILING - SPECIAL C-3423	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - SPECIAL C-3423	
	REC-CEILING - SPECIAL C-3423	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - SPECIAL C-3423	
	REC-CEILING - SPECIAL B-3427	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - SPECIAL B-3427	
	REC-CEILING - SPECIAL B-3427	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - SPECIAL B-3427	
	REC-CEILING - SPECIAL B-3427	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - SPECIAL B-3427	
	REC-CEILING - SPECIAL B-3427	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - SPECIAL B-3427	
	REC-CEILING - SPECIAL C-3431	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - SPECIAL C-3431	
	REC-CEILING - SPECIAL C-3431	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - SPECIAL C-3431	
	REC-CEILING - SPECIAL C-3431	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - SPECIAL C-3431	
	REC-CEILING - SPECIAL C-3431	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - SPECIAL C-3431	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	SPARE	20 A	1	41					0 kVA	0 kVA	42	1	20 A	SPARE	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	86.0 A		80 A		80 A						
				TOTAL LOAD:	10.32 kVA		9.60 kVA		9.60 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	29520 VA	66.94%	19760 VA		
				kVA (CONNECTED):	29.5 kVA
				kVA (ESTIMATED DEMAND):	19.8 kVA
				CURRENT (CONNECTED):	81.9 A
				CURRENT (ESTIMATED DEMAND):	54.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL3A3

LOCATION: EL 3113.00
POWER SUPPLIED FROM: UPS-UL3A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	O2 MONITOR - GAS-3109	20 A	1	1	0.2 kVA	0.2 kVA					2	1	20 A	O2 MONITOR - GAS-3117	
	REC-CENT - SPECIAL B-3115	20 A	1	3			1.2 kVA	1.2 kVA			4	1	20 A	REC-CENT - SPECIAL B-3115	
	BIO-CABINET - CULTURE-3123	20 A	1	5					1.15 kVA	1.15 kVA	6	1	20 A	BIO-CABINET - CULTURE-3123	
	REC-INC - CULTURE-3123	20 A	1	7	1 kVA	0.2 kVA					8	1	20 A	O2 MONITOR - GAS-3125	
	REC-CEILING - SPECIAL C-3111	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - SPECIAL C-3111	
	REC-CEILING - SPECIAL C-3111	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - SPECIAL C-3111	
	REC-CEILING - SPECIAL C-3111	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - SPECIAL C-3111	
	REC-CEILING - SPECIAL C-3111	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - SPECIAL C-3111	
	REC-CEILING - SPECIAL B-3115	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - SPECIAL B-3115	
	REC-CEILING - SPECIAL B-3115	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - SPECIAL B-3115	
	REC-CEILING - SPECIAL B-3115	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - SPECIAL B-3115	
	REC-CEILING - SPECIAL B-3115	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - SPECIAL B-3115	
	REC-CEILING - CULTURE-3123	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - CULTURE-3123	
	REC-CEILING - CULTURE-3123	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - CULTURE-3123	
	REC-CEILING - CULTURE-3123	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - CULTURE-3123	
	REC-CEILING - CULTURE-3123	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - CULTURE-3123	
	REC-CEILING - SPECIAL C-3127	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - SPECIAL C-3127	
	REC-CEILING - SPECIAL C-3127	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - SPECIAL C-3127	
	REC-CEILING - SPECIAL C-3127	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - SPECIAL C-3127	
	REC-CEILING - SPECIAL C-3127	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - SPECIAL C-3127	
	SPARE	20 A	1	41					0 kVA	0 kVA	42	1	20 A	SPARE	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	113.3 A		141 A		120 A						
				TOTAL LOAD:	13.60 kVA		16.80 kVA		14.30 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	2300 VA	80.00%	1840 VA		
MISC.	600 VA	70.00%	420 VA	**kVA (CONNECTED):**	44.7 kVA
RECEPTACLE	41800 VA	61.96%	25900 VA	**kVA (ESTIMATED DEMAND):**	28.2 kVA
				CURRENT (CONNECTED):	124.1 A
				CURRENT (ESTIMATED DEMAND):	78.2 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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HKS ARCHITECTS, PC
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REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
SHEET NO.
E-735

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PLOT DATE: 9/25/2025 2:09:24 PM TEMPLATE VERSION: 23.0.4

PANEL ID: UL4A1

LOCATION: EL 4421.00
POWER SUPPLIED FROM: UPS-UL4A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CENT - SPECIAL B-4419	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CENT - SPECIAL B-4419	
	BMS - UPS EL-4402	20 A	1	3			0 kVA	1.15 kVA			4	1	20 A	BIO CABINET - CULTURE-4411	
	O2 MONITOR - GAS-4417	20 A	1	5					0.2 kVA	1 kVA	6	1	20 A	REC-INC - CULTURE-4411	
	BIO CABINET - CULTURE-4411	20 A	1	7	1.15 kVA	1.2 kVA					8	1	20 A	REC-CENT - SHARED FH 4415	
	REC-INC - CULTURE-4411	20 A	1	9			1 kVA	0.72 kVA			10	1	20 A	REC-FH - FUME HOOD-4415	
	REC-CENT - SHARED FH 4415	20 A	1	11					1.2 kVA	0.2 kVA	12	1	20 A	O2 MONITOR - GAS-4425	
	REC-CENT - SPECIAL B-4427	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CENT - SPECIAL B-4427	
	REC-FH - FUME HOOD-4415	20 A	1	15			0.72 kVA	1.8 kVA			16	1	20 A	FUME HOOD - SHARED FH 4415	
	FUME HOOD - SHARED FH...	20 A	1	17					1.8 kVA	1.2 kVA	18	1	20 A	REC-CEILING - CULTURE-4411	
	REC-CEILING - CULTURE-4411	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - CULTURE-4411	
	REC-CEILING - CULTURE-4411	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - CULTURE-4411	
	REC-CEILING - CULTURE-4411	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - CULTURE-4411	
	REC-CEILING - CULTURE-4411	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - HOOD-4415	
	REC-CEILING - HOOD-4415	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - HOOD-4415	
	REC-CEILING - HOOD-4415	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - HOOD-4415	
	REC-CEILING - HOOD-4415	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - HOOD-4415	
	REC-CEILING - HOOD-4415	20 A	1	33			1.2 kVA	1.2 kVA			34	1	20 A	REC-CEILING - SPECIAL B-4419	
	REC-CEILING - SPECIAL B-4419	20 A	1	35					1.2 kVA	1.2 kVA	36	1	20 A	REC-CEILING - SPECIAL B-4419	
	REC-CEILING - SPECIAL B-4419	20 A	1	37	1.2 kVA	1.2 kVA					38	1	20 A	REC-CEILING - SPECIAL B-4419	
	REC-CEILING - SPECIAL B-4419	20 A	1	39			1.2 kVA	1.2 kVA			40	1	20 A	REC-CEILING - SPECIAL B-4419	
	REC-CEILING - SPECIAL B-4419	20 A	1	41					1.2 kVA	0 kVA	42	1	20 A	SPARE	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	140.9 A		126 A		117 A						
				TOTAL LOAD:	16.75 kVA		14.99 kVA		14.00 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	5900 VA	80.00%	4720 VA		
MISC.	400 VA	70.00%	280 VA	**kVA (CONNECTED):**	45.7 kVA
RECEPTACLE	39440 VA	62.68%	24720 VA	**kVA (ESTIMATED DEMAND):**	29.7 kVA
				CURRENT (CONNECTED):	127.0 A
				CURRENT (ESTIMATED DEMAND):	82.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL4A2

LOCATION: EL 4105.00
POWER SUPPLIED FROM: UPS-UL4A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - COLD ROOM -4103	20 A	1	1	0.36 kVA	0.36 kVA					2	1	20 A	REC - GEL DOC-4107	
	REC-CEILING - SPECIAL C-4423	20 A	1	3			1.2 kVA	0.72 kVA			4	1	20 A	REC-FH - RADIOISOTOPE-4111	
	REC-CEILING - SPECIAL C-4423	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CEILING - SPECIAL C-4423	
	REC-CEILING - SPECIAL C-4423	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - SPECIAL C-4423	
	REC-CEILING - SPECIAL C-4423	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - SPECIAL C-4423	
	REC-CEILING - SPECIAL B-4427	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - SPECIAL C-4423	
	REC-CEILING - SPECIAL B-4427	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - SPECIAL B-4427	
	REC-CEILING - SPECIAL B-4427	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - SPECIAL B-4427	
	REC-CEILING - SPECIAL B-4427	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - SPECIAL B-4427	
	REC-CEILING - SPECIAL C-4431	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - SPECIAL B-4427	
	REC-CEILING - SPECIAL C-4431	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - SPECIAL C-4431	
	REC-CEILING - SPECIAL C-4431	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - SPECIAL C-4431	
	REC-CEILING - SPECIAL C-4431	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - SPECIAL C-4431	
	SPARE	20 A	1	27			0 kVA	1.2 kVA			28	1	20 A	REC-CEILING - SPECIAL C-4431	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	SPARE	20 A	1	41					0 kVA	0 kVA	42	1	20 A	SPARE	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	86.9 A		87 A		80 A						
				TOTAL LOAD:	10.32 kVA		10.32 kVA		9.60 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	30240 VA	66.53%	20120 VA		
				kVA (CONNECTED):	30.2 kVA
				kVA (ESTIMATED DEMAND):	20.1 kVA
				CURRENT (CONNECTED):	83.9 A
				CURRENT (ESTIMATED DEMAND):	55.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL4A3

LOCATION: EL 4113.00
POWER SUPPLIED FROM: UPS-UL4A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	O2 MONITOR - GAS-4109	20 A	1	1	0.2 kVA	0.2 kVA					2	1	20 A	O2 MONITOR - GAS-4117	
	FUME HOOD - ISOTOPE-4111	20 A	1	3			1.8 kVA	1.8 kVA			4	1	20 A	FUME HOOD - ISOTOPE-4111	
	REC-INC - CULTURE-4123	20 A	1	5					1 kVA	1 kVA	6	1	20 A	REC-INC - CULTURE-4123	
	BIO-CABINET - CULTURE-4123	20 A	1	7	1.15 kVA	1.15 kVA					8	1	20 A	BIO-CABINET - CULTURE-4123	
	O2 MONITOR - GAS-4125	20 A	1	9			0.2 kVA	1.2 kVA			10	1	20 A	REC - CULTURE-4123	
	REC - CULTURE-4123	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC - CULTURE-4123	
	REC - CULTURE-4123	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC - CULTURE-4123	
	REC - CULTURE-4123	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC - CULTURE-4123	
	REC - CULTURE-4123	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC - SPECIAL C-4127	
	REC - SPECIAL C-4127	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC - SPECIAL C-4127	
	REC - SPECIAL C-4127	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC - SPECIAL C-4127	
	REC - SPECIAL C-4127	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC - SPECIAL C-4127	
	REC - SPECIAL C-4127	20 A	1	25	1.2 kVA	0 kVA					26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA			28	1	20 A	SPARE	
	SPARE	20 A	1	29					0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA					32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	SPARE	20 A	1	41					0 kVA	0 kVA	42	1	20 A	SPARE	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	72.5 A		82 A		77 A						
				TOTAL LOAD:	8.70 kVA		9.80 kVA		9.20 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	5900 VA	80.00%	4720 VA		
MISC.	600 VA	70.00%	420 VA	**kVA (CONNECTED):**	27.7 kVA
RECEPTACLE	21200 VA	73.58%	15600 VA	**kVA (ESTIMATED DEMAND):**	20.7 kVA
				CURRENT (CONNECTED):	76.9 A
				CURRENT (ESTIMATED DEMAND):	57.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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CONSTRUCTION MANAGER
THE CHRISTMAN COMPANY
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DETROIT, MI 48226

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
SHEET NO.
E-736

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 9/25/2025 2:09:31 PM TEMPLATE VERSION: 23.0.4

PANEL ID: UL5A1

LOCATION: EL 5421.00
POWER SUPPLIED FROM: UPS-UL5A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-CENT - SPECIAL B-5419	20 A	1	1	1.2 kVA	1.2 kVA					2	1	20 A	REC-CENT - SPECIAL B-5419	
	O2 MONITOR - GAS-5417	20 A	1	3			0.2 kVA	0.2 kVA			4	1	20 A	O2 MONITOR - GAS-5425	
	REC-CENT - SPECIAL B-5427	20 A	1	5					1.2 kVA	1.2 kVA	6	1	20 A	REC-CENT - SPECIAL B-5427	
	REC-CEILING - CULTURE-5411	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - CULTURE-5411	
	REC-CEILING - CULTURE-5411	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - CULTURE-5411	
	REC-CEILING - CULTURE-5411	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - CULTURE-5411	
	REC-CEILING - CULTURE-5411	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - CULTURE-5411	
	REC-CEILING - HOOD-5415	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - HOOD-5415	
	REC-CEILING - HOOD-5415	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - HOOD-5415	
	REC-CEILING - HOOD-5415	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - HOOD-5415	
	REC-CEILING - HOOD-5415	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - HOOD-5415	
	REC-CEILING - SPECIAL B-5419	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - SPECIAL B-5419	
	REC-CEILING - SPECIAL B-5419	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - SPECIAL B-5419	
	REC-CEILING - SPECIAL B-5419	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - SPECIAL B-5419	
	REC-CEILING - SPECIAL B-5419	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - SPECIAL B-5419	
	BIO-CABINET-CULTURE-5500....	20 A	1	31	1.15 kVA	0.72 kVA					32	1	20 A	REC-FH - SPECIAL B-5419	
	REC-FH - SPECIAL B-5419	20 A	1	33			0.72 kVA	1.15 kVA			34	1	20 A	BIO CABINET - CULTURE-5411	
	BIO CABINET - CULTURE-5411	20 A	1	35					1.15 kVA	1 kVA	36	1	20 A	REC-INC - CULTURE-5411	
	REC-INC - CULTURE-5411	20 A	1	37	1 kVA	1.2 kVA					38	1	20 A	REC-CENT - SHARED FH 5415	
	REC-CENT - SHARED FH 5415	20 A	1	39			1.2 kVA	0.72 kVA			40	1	20 A	REC-FH - FUME HOOD-5415	
	REC-FH - FUME HOOD-5415	20 A	1	41					0.72 kVA	1.8 kVA	42	1	20 A	FUME HOOD - SHARED FH 5415	
	FUME HOOD - SHARED FH...	20 A	1	43	1.8 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	--					68	1	--	(SPACE)	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	152.6 A		115 A		143 A						
				TOTAL LOAD:	17.87 kVA		13.79 kVA		16.67 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	7050 VA	80.00%	5640 VA		
MISC.	400 VA	70.00%	280 VA	**kVA (CONNECTED):**	48.3 kVA
RECEPTACLE	40880 VA	62.23%	25440 VA	**kVA (ESTIMATED DEMAND):**	31.4 kVA
				CURRENT (CONNECTED):	134.2 A
				CURRENT (ESTIMATED DEMAND):	87.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL5A2

LOCATION: EL 5105.00
POWER SUPPLIED FROM: UPS-UL5A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - COLD ROOM -5103	20 A	1	1	0.36 kVA	0.36 kVA					2	1	20 A	REC - GEL DOC-5107	
	REC G - GEL DOC-5107	20 A	1	3			0.18 kVA	0.54 kVA			4	1	20 A	REC - BSL3-5111	
	REC - BSL3 ANTE-5115	20 A	1	5					0.72 kVA	1.2 kVA	6	1	20 A	REC-CEILING - SPECIAL C-5423	
	REC-CEILING - SPECIAL C-5423	20 A	1	7	1.2 kVA	1.2 kVA					8	1	20 A	REC-CEILING - SPECIAL C-5423	
	REC-CEILING - SPECIAL C-5423	20 A	1	9			1.2 kVA	1.2 kVA			10	1	20 A	REC-CEILING - SPECIAL C-5423	
	REC-CEILING - SPECIAL...	20 A	1	11					1.2 kVA	1.2 kVA	12	1	20 A	REC-CEILING - SPECIAL B-5427	
	REC-CEILING - SPECIAL C-5423	20 A	1	13	1.2 kVA	1.2 kVA					14	1	20 A	REC-CEILING - SPECIAL B-5427	
	REC-CEILING - SPECIAL B-5427	20 A	1	15			1.2 kVA	1.2 kVA			16	1	20 A	REC-CEILING - SPECIAL B-5427	
	REC-CEILING - SPECIAL B-5427	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC-CEILING - SPECIAL B-5427	
	REC-CEILING - SPECIAL B-5427	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC-CEILING - SPECIAL B-5427	
	REC-CEILING - SPECIAL B-5427	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC-CEILING - SPECIAL B-5427	
	REC-CEILING - SPECIAL B-5427	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC-CEILING - SPECIAL B-5427	
	REC-CEILING - SPECIAL B-5427	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC-CEILING - SPECIAL C-5431	
	REC-CEILING - SPECIAL C-5431	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC-CEILING - SPECIAL C-5431	
	REC-CEILING - SPECIAL C-5431	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC-CEILING - SPECIAL C-5431	
	REC-CEILING - SPECIAL C-5431	20 A	1	31	1.2 kVA	1.2 kVA					32	1	20 A	REC-CEILING - SPECIAL C-5431	
	REC-CEILING - SPECIAL C-5431	20 A	1	33			1.2 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	SPARE	20 A	1	41					0 kVA	0 kVA	42	1	20 A	SPARE	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	106.0 A		96 A		96 A						
				TOTAL LOAD:	12.72 kVA		11.52 kVA		11.52 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	35760 VA	63.98%	22880 VA		
				kVA (CONNECTED):	35.8 kVA
				kVA (ESTIMATED DEMAND):	22.9 kVA
				CURRENT (CONNECTED):	99.3 A
				CURRENT (ESTIMATED DEMAND):	63.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: UL5A3

LOCATION: EL 5113.00
POWER SUPPLIED FROM: UPS-UL5A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	O2 MONITOR - GAS-5109	20 A	1	1	0.2 kVA	0.2 kVA					2	1	20 A	O2 MONITOR - GAS-5117	
	REC-FRE - BSL3 -5111	20 A	1	3			1.2 kVA	1.15 kVA			4	1	20 A	BIO CABINET - BSL3-5111	
	O2 MONITOR - GAS-5125	20 A	1	5					0.2 kVA	1 kVA	6	1	20 A	REC-INC - BSL3 -5111	
	REC-INC - CULTURE-5123	20 A	1	7	1 kVA	1 kVA					8	1	20 A	REC-REF - SPECIAL A-5500.13	
	BIO-CABINET - CULTURE-5123	20 A	1	9			1.15 kVA	1 kVA			10	1	20 A	REC-INC - SPECIAL A-5500.13	
	BMS PANELS	20 A	1	11					0.2 kVA	1 kVA	12	1	20 A	REC-INC - CULTURE-5500.14	
	BMS PANELS	20 A	1	13	0.2 kVA	1 kVA					14	1	20 A	REC-INC - CULTURE-5123	
	REC - CULTURE-5123	20 A	1	15			1.2 kVA	1.15 kVA			16	1	20 A	BIO-CABINET - CULTURE-5123	
	REC - CULTURE-5123	20 A	1	17					1.2 kVA	1.2 kVA	18	1	20 A	REC - CULTURE-5123	
	REC - CULTURE-5123	20 A	1	19	1.2 kVA	1.2 kVA					20	1	20 A	REC - CULTURE-5123	
	REC - CULTURE-5123	20 A	1	21			1.2 kVA	1.2 kVA			22	1	20 A	REC - CULTURE-5123	
	REC - SPECIAL C-5127	20 A	1	23					1.2 kVA	1.2 kVA	24	1	20 A	REC - CULTURE-5123	
	REC - SPECIAL C-5127	20 A	1	25	1.2 kVA	1.2 kVA					26	1	20 A	REC - SPECIAL C-5127	
	REC - SPECIAL C-5127	20 A	1	27			1.2 kVA	1.2 kVA			28	1	20 A	REC - SPECIAL C-5127	
	REC - SPECIAL C-5127	20 A	1	29					1.2 kVA	1.2 kVA	30	1	20 A	REC - SPECIAL C-5127	
	SPARE	20 A	1	31	0 kVA	1.2 kVA					32	1	20 A	REC - SPECIAL C-5127	
	SPARE	20 A	1	33			0 kVA	0 kVA			34	1	20 A	SPARE	
	SPARE	20 A	1	35					0 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	SPARE	20 A	1	41					0 kVA	0 kVA	42	1	20 A	SPARE	
	SPARE	20 A	1	43	0 kVA	0 kVA					44	1	20 A	SPARE	
	SPARE	20 A	1	45			0 kVA	0 kVA			46	1	20 A	SPARE	
	SPARE	20 A	1	47					0 kVA	0 kVA	48	1	20 A	SPARE	
	SPARE	20 A	1	49	0 kVA	0 kVA					50	1	20 A	SPARE	
	SPARE	20 A	1	51			0 kVA	0 kVA			52	1	20 A	SPARE	
	SPARE	20 A	1	53					0 kVA	0 kVA	54	1	20 A	SPARE	
	SPARE	20 A	1	55	0 kVA	0 kVA					56	1	20 A	SPARE	
	SPARE	20 A	1	57			0 kVA	0 kVA			58	1	20 A	SPARE	
	SPARE	20 A	1	59					0 kVA	0 kVA	60	1	20 A	SPARE	
	SPARE	20 A	1	61	0 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63			0 kVA	0 kVA			64	1	20 A	SPARE	
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	(SPACE)	--	1	69			--	--			70	1	--	(SPACE)	
	(SPACE)	--	1	71					--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--					74	1	--	(SPACE)	
	(SPACE)	--	1	75			--	--			76	1	--	(SPACE)	
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	80.0 A		97 A		80 A						
				TOTAL LOAD:	9.60 kVA		11.65 kVA		9.60 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	3450 VA	80.00%	2760 VA		
MISC.	1000 VA	70.00%	700 VA	**kVA (CONNECTED):**	30.9 kVA
RECEPTACLE	26400 VA	68.94%	18200 VA	**kVA (ESTIMATED DEMAND):**	21.7 kVA
				CURRENT (CONNECTED):	85.6 A
				CURRENT (ESTIMATED DEMAND):	60.1 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - ESSENTIAL SYSTEM
SHEET NO.
E-737

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PLOT DATE: 9/25/2025 2:06:38 PM TEMPLATE VERSION: 23.0.4

PANEL ID: OL1A1

LOCATION: NORMAL ELECTRICAL 1219.00
POWER SUPPLIED FROM: DPOL1A — **VOLTAGE:** 208Y/120V — **kAIC RATING:** 22kAIC
MOUNTING: SURFACE — **PHASE:** 3 — **BUS RATING:** 225 A
ENCLOSURE: PER SPECIFICATIONS — **WIRES:** 4 — **MAIN OCPD RATING:** MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-REF - CORE LAB - 1204	20 A	1	1	1 kVA	1 kVA					2	1	20 A	REC-REF - CORE LAB - 1204	
	REC-REF - CORE LAB - 1204	20 A	1	3			1 kVA	1 kVA			4	1	20 A	REC-REF - CORE LAB - 1204	
	REC-REF - FREEZER - 1202.10	20 A	1	5					0.18 kVA	0.18 kVA	6	1	20 A	REC-REF - FREEZER - 1202.10	
	REC-REF - FREEZER - 1202.10	20 A	1	7	1 kVA	1 kVA					8	1	20 A	REC-REF - FREEZER - 1202.10	
	REC - REF - CORE LAB-1202	20 A	2	9			1.04 kVA	1.04 kVA			10	2	20 A	REC - REF - CORE LAB-1202	
				11					1.04 kVA	1.04 kVA	12				
	REC-REF - FREEZER - 1202.10	20 A	1	13	1 kVA	1 kVA					14	1	20 A	REC-REF - FREEZER - 1202.10	
	REC - REF - CORE LAB-1202	20 A	2	15			1.04 kVA	1.04 kVA			16	2	20 A	REC - REF - CORE LAB-1202	
				17					1.04 kVA	1.04 kVA	18				
	REC-REF - FREEZER - 1202.10	20 A	1	19	1 kVA	1 kVA					20	1	20 A	REC-REF - FREEZER - 1202.10	
	REC - REF - CORE LAB-1202	20 A	2	21			1.04 kVA	1.04 kVA			22	2	20 A	REC - REF - CORE LAB-1202	
				23					1.04 kVA	1.04 kVA	24				
	REC-REF - CORE LAB - 1202	20 A	1	25	1 kVA	1 kVA					26	1	20 A	REC-REF - CORE LAB - 1202	
	REC-REF - CORE LAB - 1202	20 A	1	27			1 kVA	0.9 kVA			28	1	20 A	REC - CORE LAB - 1202	
	REC-REF - CORE LAB - 1202	20 A	1	29					1 kVA	1 kVA	30	1	20 A	REC-REF - CORE LAB-1202	
	REC-REF - CORE LAB-1202	20 A	1	31	1 kVA	0.54 kVA					32	1	20 A	REC-REF - CORE LAB-1202	
	REC-REF - CORE LAB-1202	20 A	1	33			1 kVA	0.36 kVA			34	1	20 A	REC-TEMPS - CORE LAB-1202	
	REC-TEMPS - CORE LAB-1204	20 A	1	35					0.18 kVA	0 kVA	36	1	20 A	SPARE	
	SPARE	20 A	1	37	0 kVA	0 kVA					38	1	20 A	SPARE	
	SPARE	20 A	1	39			0 kVA	0 kVA			40	1	20 A	SPARE	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	99.7 A		99 A		73 A						
				TOTAL LOAD:	11.54 kVA		11.50 kVA		8.78 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
RECEPTACLE	31820 VA	65.71%	20910 VA		
				kVA (CONNECTED):	31.8 kVA
				kVA (ESTIMATED DEMAND):	20.9 kVA
				CURRENT (CONNECTED):	88.3 A
				CURRENT (ESTIMATED DEMAND):	58.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL1A2

LOCATION: NORMAL ELECTRICAL 1219.00
POWER SUPPLIED FROM: DPOL1A — **VOLTAGE:** 208Y/120V — **kAIC RATING:** 22kAIC
MOUNTING: SURFACE — **PHASE:** 3 — **BUS RATING:** 225 A
ENCLOSURE: PER SPECIFICATIONS — **WIRES:** 4 — **MAIN OCPD RATING:** MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	JPC - FIRE PUMP 1223	20 A	1	1	0 kVA	0.4 kVA					2	1	20 A	EMERG. BLUE LIGHT PHONES	
	FCU-115,116,117,118,121,122	20 A	1	3			0.6 kVA	0.2 kVA			4	1	20 A	EMERG. BLUE LIGHT PHONES	
	FCU-105,109-114	20 A	1	5					0.7 kVA	2.05 kVA	6	1	15 A	FCU-103,104108,124	1
	SPARE	20 A	1	7	0 kVA	0.8 kVA					8	1	20 A	SITE OPT. INTELLISTREET POLES	
	SPARE	20 A	1	9			0 kVA	0 kVA			10	1	20 A	SPARE	
	SPARE	20 A	1	11					0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA					14	1	20 A	SPARE	
	(SPACE)	--	1	15			--	0 kVA			16	1	20 A	SPARE	
	(SPACE)	--	1	17					--	--	18	1	--	(SPACE)	
	(SPACE)	--	1	19	--	--					20	1	--	(SPACE)	
	(SPACE)	--	1	21			--	--			22	1	--	(SPACE)	
	(SPACE)	--	1	23					--	--	24	1	--	(SPACE)	
	(SPACE)	--	1	25	--	--					26	1	--	(SPACE)	
	(SPACE)	--	1	27			--	--			28	1	--	(SPACE)	
	(SPACE)	--	1	29					--	--	30	1	--	(SPACE)	
	(SPACE)	--	1	31	--	--					32	1	--	(SPACE)	
	(SPACE)	--	1	33			--	--			34	1	--	(SPACE)	
	(SPACE)	--	1	35					--	--	36	1	--	(SPACE)	
	(SPACE)	--	1	37	--	--					38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--			40	1	--	(SPACE)	
	(SPACE)	--	1	41					--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	10.5 A		7 A		23 A						
				TOTAL LOAD:	1.20 kVA		0.80 kVA		2.75 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	3354 VA	80.00%	2683 VA		
MISC.	1400 VA	70.00%	980 VA		
				kVA (CONNECTED):	4.8 kVA
				kVA (ESTIMATED DEMAND):	3.7 kVA
				CURRENT (CONNECTED):	13.2 A
				CURRENT (ESTIMATED DEMAND):	10.2 A

NOTES:

ADDITIONAL REQUIREMENTS:

1 — 10.5 kVA — 0.4 kVA — 0.7 kVA — 2.05 kVA

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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STATE OF MICHIGAN — T.P. GASSER — ENGINEER — No. 43945 — LICENSED PROFESSIONAL ENGINEER — 10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - STANDBY LEVEL 1
SHEET NO.
E-738

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
(313) 915-4014 www.osborn-eng.com

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PLOT DATE: 10/16/2025 2:04:12 PM TEMPLATE VERSION: 23.0.4

PANEL ID: OL2A1

LOCATION: EL 2405.00
POWER SUPPLIED FROM: T02A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	SPARE	20 A	1	1	0 kVA	0 kVA		2	1	20 A	REC-FRE - 2407 (REDUNDANT)	
	REC-FRE - 2407 (REDUNDANT)	20 A	1	3		0 kVA	0 kVA	4	1	20 A	REC-FRE - 2407 (REDUNDANT)	
	REC-FRE - 2407 (REDUNDANT)	20 A	1	5			0 kVA	6	1	20 A	REC-FRE - 2407 (REDUNDANT)	
	REC-FRE - 2407 (REDUNDANT)	20 A	1	7	0 kVA	0 kVA		8	1	20 A	REC-FRE - 2407 (REDUNDANT)	
	REC-FRE - 2407 (REDUNDANT)	20 A	1	9		0 kVA	0 kVA	10	1	20 A	REC-FRE - 2407 (REDUNDANT)	
	REC-FRE - 2407 (REDUNDANT)	20 A	1	11			0 kVA	12	1	20 A	REC-FRE - 2407 (REDUNDANT)	
	O2 MONITOR - GAS-2409	20 A	1	13	0.2 kVA	2.07 kVA		14	3	20 A	COLD ROOM - 2500.02	
	REC-REF - CULTURE-2411	20 A	1	15		1 kVA	2.07 kVA	16				
	REC-FRE - 2415 (REDUNDANT)	20 A	1	17			0 kVA	2.07 kVA	18			
	REC-FRE - 2415 (REDUNDANT)	20 A	1	19	0 kVA	0 kVA		20	1	20 A	REC-FRE - 2415 (REDUNDANT)	
	REC-FRE - FREEZER FARM-2407	20 A	2	21		1.04 kVA	0 kVA	22	1	20 A	REC-FRE - 2415 (REDUNDANT)	
				23			1.04 kVA	1.04 kVA	24	2	20 A	REC-FRE - FREEZER FARM-2407	
	REC-FRE - FREEZER FARM-2407	20 A	2	25	1.04 kVA	1.04 kVA		26				
				27		1.04 kVA	1.04 kVA	28	2	20 A	REC-FRE - FREEZER FARM-2407	
	REC-FRE - FREEZER FARM-2407	20 A	2	29			1.04 kVA	1.04 kVA	30			
				31	1.04 kVA	1.04 kVA		32	2	20 A	REC-FRE - FREEZER FARM-2407	
	REC-FRE - FREEZER FARM-2407	20 A	2	33		1.04 kVA	1.04 kVA	34				
				35			1.04 kVA	1.04 kVA	36	2	20 A	REC-FRE - FREEZER FARM-2407	
	REC-FRE - FREEZER FARM-2407	20 A	2	37	1.04 kVA	1.04 kVA		38				
				39		1.04 kVA	1.04 kVA	40	2	20 A	REC-FRE - FREEZER FARM-2407	
	REC-FRE - SHARED FH- 2415	20 A	2	41			1.04 kVA	1.04 kVA	42			
				43	1.04 kVA	1.04 kVA		44	2	20 A	REC-FRE - FREEZER FARM-2407	
	REC-FRE - SHARED FH- 2415	20 A	2	45		1.04 kVA	1.04 kVA	46				
				47			1.04 kVA	1.04 kVA	48	2	20 A	REC-FRE - SHARED FH- 2415	
	REC - MICROSCOPY-2500.01	20 A	1	49	0.72 kVA	1.04 kVA		50				
	REC - FUME HOOD-2500.04	20 A	1	51		0.9 kVA	1.04 kVA	52	2	20 A	REC-FRE - SHARED FH- 2415	
	FUME HOOD - FUME...	20 A	1	53			1.8 kVA	1.04 kVA	54			
	REC - CULTURE-2500.05	20 A	1	55	0.54 kVA	0.54 kVA		56	1	20 A	REC G - MICROSCOPY-2500.01	
	REC-INC - CULTURE-2500.05	20 A	1	57		1 kVA	0.36 kVA	58	1	20 A	REC G - ENTRY-2500.03	
	REC-REF - SPECIAL A-2500.06	20 A	1	59			1 kVA	0.72 kVA	60	1	20 A	REC-FH - FUME HOOD-2500.04	
	REC-INC - SPECIAL A-2500.06	20 A	1	61	1 kVA	1.15 kVA		62	1	20 A	BIO-CABINET-CULTURE-2500.05	
	REC - ENTRY-2500.07	20 A	1	63		0.36 kVA	1 kVA	64	1	20 A	REC-REF - CULTURE-2500.05	
	FCU-201,204,207,212	20 A	1	65			1.23 kVA	1 kVA	66	1	20 A	REC-REF - SPECIAL A-2500.06	
	SPARE	20 A	1	67	0 kVA	0.54 kVA		68	1	20 A	REC - SPECIAL A-2500.06	
	SPARE	20 A	1	69		0 kVA	1 kVA	70	1	20 A	REC-INC - SPECIAL A-2500.06	
	SPARE	20 A	1	71			0 kVA	0.36 kVA	72	1	20 A	REC-TEMP - FREEZER FARM-2407	
	SPARE	20 A	1	73	0 kVA	0 kVA		74	1	20 A	SPARE	
	SPARE	20 A	1	75		0 kVA	0 kVA	76	1	20 A	SPARE	
	SPARE	20 A	1	77			0 kVA	0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--		80	1	--	(SPACE)	
	(SPACE)	--	1	81		--	--	82	1	--	(SPACE)	
	(SPACE)	--	1	83			--	--	84	1	--	(SPACE)	
		TOTAL AMPS:			134.3 A	153 A	166 A					
		TOTAL LOAD:			16.12 kVA	18.09 kVA	19.62 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	4180 VA	80.00%	3344 VA		
MISC.	6400 VA	70.00%	4480 VA	**kVA (CONNECTED):**	53.8 kVA
RECEPTACLE	43240 VA	61.56%	26620 VA	**kVA (ESTIMATED DEMAND):**	34.4 kVA
				CURRENT (CONNECTED):	149.4 A
				CURRENT (ESTIMATED DEMAND):	95.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL2B1

LOCATION: EL 2121.00
POWER SUPPLIED FROM: DPOL2B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	O2 MONITOR - GAS-2125	20 A	1	1	0.2 kVA	0 kVA		2	1	20 A	REC-FRE - 2119 (REDUNDANT)	
	REC-FRE - 2119 (REDUNDANT)	20 A	1	3		0 kVA	0 kVA	4	1	20 A	REC-FRE - 2119 (REDUNDANT)	
	REC-FRE - 2119 (REDUNDANT)	20 A	1	5			0 kVA	0 kVA	6	1	20 A	REC-FRE - 2119 (REDUNDANT)	
	REC-FRE - 2119 (REDUNDANT)	20 A	1	7	0 kVA	0 kVA		8	1	20 A	REC-FRE - 2119 (REDUNDANT)	
	REC-FRE - 2119 (REDUNDANT)	20 A	1	9		0 kVA	0 kVA	10	1	20 A	REC-FRE - 2119 (REDUNDANT)	
	REC-FRE - 2119 (REDUNDANT)	20 A	1	11			0 kVA	0 kVA	12	1	20 A	REC-FRE - 2119 (REDUNDANT)	
	REC - COLD ROOM-2500.17	20 A	1	13	0.72 kVA	1.08 kVA		14	1	20 A	REC - COLD ROOM-2500.17	
	REC-REF - CULTURE-2123	20 A	1	15		1 kVA	0 kVA	16	1	20 A	SPARE	
	SPARE	20 A	1	17			0 kVA	2.07 kVA	18	3	20 A	COLD ROOM - 2500.17	
	REC-FRE - FREEZER FARM-2119	20 A	2	19	1.04 kVA	2.07 kVA		20				
				21			1.04 kVA	2.07 kVA	22				
	REC-FRE - FREEZER FARM-2119	20 A	2	23			1.04 kVA	1.04 kVA	24	2	20 A	REC-FRE - FREEZER FARM-2119	
				25	1.04 kVA	1.04 kVA		26				
	REC-FRE - FREEZER FARM-2119	20 A	2	27			1.04 kVA	1.04 kVA	28	2	20 A	REC-FRE - FREEZER FARM-2119	
				29			1.04 kVA	1.04 kVA	30				
	REC-FRE - FREEZER FARM-2119	20 A	2	31	1.04 kVA	1.04 kVA		32	2	20 A	REC-FRE - FREEZER FARM-2119	
				33			1.04 kVA	1.04 kVA	34				
	REC-FRE - FREEZER FARM-2119	20 A	2	35			1.04 kVA	1.04 kVA	36	2	20 A	REC-FRE - FREEZER FARM-2119	
				37	1.04 kVA	1.04 kVA		38				
	REC-FRE - FREEZER FARM-2119	20 A	2	39			1.04 kVA	1.04 kVA	40	2	20 A	REC-FRE - FREEZER FARM-2119	
				41			1.04 kVA	1.04 kVA	42				
	REC - CULTURE-2500.14	20 A	1	43	0.54 kVA	1 kVA		44	1	20 A	REC-REF - CULTURE-2500.14	
	REC-INC - CULTURE-2500.14	20 A	1	45		1 kVA	1.15 kVA	46	1	20 A	BIO CABINET-CULTURE-2500.14	
	FUME HOOD - ...	20 A	1	47			1.8 kVA	0.72 kVA	48	1	20 A	REC-FH - FUME HOOD-2500.15	
	REC- FUME HOOD-2500.15	20 A	1	49	0.9 kVA	0.36 kVA		50	1	20 A	REC G - ENTRY- 2500.16	
	REC - MICROSCOPY- 2500.18	20 A	1	51		0.72 kVA	0.54 kVA	52	1	20 A	REC G - MICROSCOPY-2500.18	
	REC-TEMP-FREEZER...	20 A	1	53			0.36 kVA	1.04 kVA	54	2	20 A	REC-FRE - SPECIAL B-2115	
	REC-FRE - SPECIAL B-2115	20 A	2	55	1.04 kVA	1.04 kVA		56				
				57		1.04 kVA	1.04 kVA	58	2	20 A	REC-FRE - SPECIAL B-2115	
	REC-FRE - SPECIAL B-2115	20 A	2	59			1.04 kVA	1.04 kVA	60			
				61	1.04 kVA	0 kVA		62	1	20 A	REC-FRE - 2115 (REDUNDANT)	
	REC-FRE - 2115 (REDUNDANT)	20 A	1	63			0 kVA	0 kVA	64	1	20 A	REC-FRE - 2115 (REDUNDANT)	
	REC-FRE - 2115 (REDUNDANT)	20 A	1	65			0 kVA	0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA		68	1	20 A	SPARE	
	SPARE	20 A	1	69		0 kVA	0 kVA	70	1	20 A	SPARE	
	SPARE	20 A	1	71			0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA		74	1	20 A	SPARE	
	SPARE	20 A	1	75		0 kVA	0 kVA	76	1	20 A	SPARE	
	SPARE	20 A	1	77			0 kVA	0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--		80	1	--	(SPACE)	
	(SPACE)	--	1	81		--	--	82	1	--	(SPACE)	
	(SPACE)	--	1	83			--	--	84	1	--	(SPACE)	
		TOTAL AMPS:			144.6 A	132 A	137 A					
		TOTAL LOAD:			17.27 kVA	15.84 kVA	16.39 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	2950 VA	80.00%	2360 VA		
MISC.	6400 VA	70.00%	4480 VA	**kVA (CONNECTED):**	49.5 kVA
RECEPTACLE	40140 VA	62.46%	25070 VA	**kVA (ESTIMATED DEMAND):**	31.9 kVA
				CURRENT (CONNECTED):	137.4 A
				CURRENT (ESTIMATED DEMAND):	88.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL2B2

LOCATION:
POWER SUPPLIED FROM: DPOL2B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-REF - WET LAB-2500	20 A	1	1	2 kVA	2 kVA		2	1	20 A	REC-REF - WET LAB-2500	
	REC-REF - WET LAB-2500	20 A	1	3		2 kVA	2 kVA	4	1	20 A	REC-REF - WET LAB-2500	
	REC-REF - WET LAB-2500	20 A	1	5			2 kVA	2 kVA	6	1	20 A	REC-REF - WET LAB-2500	
	REC-REF - WET LAB-2500	20 A	1	7	2 kVA	1.13 kVA		8	1	20 A	FCU-202,205,208	
	O2 MONITOR - GAS-2433	20 A	1	9		0.2 kVA	1.15 kVA	10	1	20 A	BIO CABINET-CULTURE-2500.11	
	REC-REF - SPECIAL A-2500.09	20 A	1	11			1 kVA	1 kVA	12	1	20 A	REC-REF - SPECIAL A-2500.09	
	REC-INC - SPECIAL A-2500.09	20 A	1	13	1 kVA	1 kVA		14	1	20 A	REC-INC - SPECIAL A-2500.09	
	REC-REF - SPECIAL A-2500.10	20 A	1	15		1 kVA	1 kVA	16	1	20 A	REC-REF - SPECIAL A-2500.10	
	REC-INC - SPECIAL A-2500.10	20 A	1	17			1 kVA	1 kVA	18	1	20 A	REC-INC - SPECIAL A-2500.10	
	COLD ROOM-2103.00	20 A	3	19	2.07 kVA	0.54 kVA		20	1	20 A	REC - CULTURE-2500.08	
				21		2.07 kVA	1 kVA	22	1	20 A	REC-REF - CULTURE-2500.11	
				23			2.07 kVA	1 kVA	24	1	20 A	REC-INC - CULTURE-2500.11	
	REC-REF - CULTURE-2500.08	20 A	1	25	1 kVA	1 kVA		26	1	20 A	REC-INC - CULTURE-2500.08	
	BIO-CABINET-CULTURE-2500....	20 A	1	27		1.15 kVA	0.54 kVA	28	1	20 A	REC - SPECIAL A-2500.09	
	REC - ENTRY-2500.12	20 A	1	29			0.36 kVA	1 kVA	30	1	20 A	REC-REF - SPECIAL A-2500.13	
	REC-REF - SPECIAL A-2500.13	20 A	1	31	1 kVA	1 kVA		32	1	20 A	REC-INC - SPECIAL A-2500.13	
	REC-INC - SPECIAL A-2500.13	20 A	1	33		1 kVA	0.54 kVA	34	1	20 A	REC - SPECIAL A-2500.13	
	REC-ICE - AUTOCLAVE-2435	20 A	1	35			1 kVA	0.18 kVA	36	1	20 A	REC - AUTOCLAVE-2435	
	REC-FRE - SPECIAL B- 2419	20 A	2	37	1.04 kVA	1.04 kVA		38					
				39		1.04 kVA	1.04 kVA	40	2	20 A	REC-FRE - SPECIAL B- 2419	
	REC-FRE - SPECIAL B- 2419	20 A	2	41			1.04 kVA	1.04 kVA	42				
				43	1.04 kVA	1.04 kVA		44	2	20 A	REC-FRE - SPECIAL B- 2419	
	REC-FRE - SPECIAL B- 2427	20 A	2	45		1.04 kVA	1.04 kVA	46				
				47			1.04 kVA	1.04 kVA	48	2	20 A	REC-FRE - SPECIAL B- 2427	
	REC-FRE - SPECIAL B- 2427	20 A	2	49	1.04 kVA	1.04 kVA		50					
				51		1.04 kVA	1.04 kVA	52	2	20 A	REC-FRE - SPECIAL B- 2427	
	REC-FRE - 2419 (REDUNDANT)	20 A	1	53			0 kVA	0 kVA	54	1	20 A	REC-FRE - 2419 (REDUNDANT)	
	REC-FRE - 2419 (REDUNDANT)	20 A	1	55	0 kVA	0 kVA		56	1	20 A	REC-FRE - 2419 (REDUNDANT)	
	REC-FRE - 2427 (REDUNDANT)	20 A	1	57		0 kVA	0 kVA	58	1	20 A	REC-FRE - 2427 (REDUNDANT)	
	REC-FRE - 2427 (REDUNDANT)	20 A	1	59			0 kVA	0 kVA	60	1	20 A	REC-FRE - 2427 (REDUNDANT)	
	REC - SPECIAL A-2500.10	20 A	1	61	0.54 kVA	0.54 kVA		62	1	20 A	REC - CULTURE-2500.11	
	(SPACE)	--	1	63		--	--	64	1	--	(SPACE)	
	(SPACE)	--	1	65			--	--	66	1	--	(SPACE)	
	(SPACE)	--	1	67	--	--		68	1	--	(SPACE)	
	(SPACE)	--	1	69		--	--	70	1	--	(SPACE)	
	(SPACE)	--	1	71			--	--	72	1	--	(SPACE)	
	(SPACE)	--	1	73	--	--		74	1	--	(SPACE)	
	(SPACE)	--	1	75		--	--	76	1	--	(SPACE)	
	(SPACE)	--	1	77			--	--	78	1	--	(SPACE)	
	(SPACE)	--	1	79	--	--		80	1	--	(SPACE)	
	(SPACE)	--	1	81		--	--	82	1	--	(SPACE)	
	(SPACE)	--	1	83			--	--	84	1	--	(SPACE)	
		TOTAL AMPS:			194.9 A	168 A	148 A					
		TOTAL LOAD:			23.06 kVA	19.89 kVA	17.77 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	3430 VA	80.00%	2744 VA		
MISC.	6400 VA	70.00%	4480 VA	**kVA (CONNECTED):**	60.7 kVA
RECEPTACLE	50880 VA	59.83%	30440 VA	**kVA (ESTIMATED DEMAND):**	37.7 kVA
				CURRENT (CONNECTED):	168.5 A
				CURRENT (ESTIMATED DEMAND):	104.5 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

ARCHITECT
HKS ARCHITECTS, PC
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NORTHVILLE, MI 48167

STRUCTURAL ENGINEER
RESURGET ENGINEERING
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CONSTRUCTION MANAGER
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REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - STANDBY LEVEL 2
SHEET NO.
E-739

OSBORN ENGINEERING
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PLOT DATE: 9/25/2025 2:06:50 PM TEMPLATE VERSION: 23.0.4

PANEL ID: OL3A1

LOCATION: EL 3405.00
POWER SUPPLIED FROM: T03A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	FCU-301,304,307,315	20 A	1	1	1.23 kVA	0 kVA		2	1	20 A	REC-FRE - 3407 (REDUNDANT)	
	REC-FRE - 3407 (REDUNDANT)	20 A	1	3		0 kVA	0 kVA	4	1	20 A	REC-FRE - 3407 (REDUNDANT)	
	REC-FRE - 3407 (REDUNDANT)	20 A	1	5			0 kVA	6	1	20 A	REC-FRE - 3407 (REDUNDANT)	
	REC-FRE - 3407 (REDUNDANT)	20 A	1	7	0 kVA	0 kVA		8	1	20 A	REC-FRE - 3407 (REDUNDANT)	
	REC-FRE - 3407 (REDUNDANT)	20 A	1	9		0 kVA	0 kVA	10	1	20 A	REC-FRE - 3407 (REDUNDANT)	
	REC-FRE - 3407 (REDUNDANT)	20 A	1	11			0 kVA	12	1	20 A	REC-FRE - 3407 (REDUNDANT)	
	REC-FRE - CULTURE-3500.05	20 A	2	13	1.04 kVA	2.07 kVA		14	3	20 A	COLD ROOM - 3500.02	
				15		1.04 kVA	2.07 kVA	16				
	REC - COLD ROOM-3500.02	20 A	1	17			0.9 kVA	2.07 kVA	18			
	REC-REF - CULTURE-3411	20 A	1	19	1 kVA	0.9 kVA		20	1	20 A	REC - COLD ROOM-3500.02	
	SPARE	20 A	1	21		0 kVA	0 kVA	22	1	20 A	REC-FRE - SHARED FH-3415	
	REC-FRE - SHARED FH-3415	20 A	1	23			0 kVA	0 kVA	24	1	20 A	REC-FRE - SHARED FH-3415
	REC-FRE - SHARED FH-3415	20 A	1	25	0 kVA	1.8 kVA		26	1	20 A	FUME HOOD - SHARED FH-3415	
	FUME HOOD - SHARED...	20 A	1	27		1.8 kVA	1.04 kVA	28	2	20 A	REC-FRE - FREEZER FARM-3407	
	REC-FRE - FREEZER FARM-3407	20 A	2	29			1.04 kVA	1.04 kVA	30			
				31	1.04 kVA	1.04 kVA		32				
	REC-FRE - FREEZER FARM-3407	20 A	2	33		1.04 kVA	1.04 kVA	34	2	20 A	REC-FRE - FREEZER FARM-3407	
				35			1.04 kVA	1.04 kVA	36			
	REC-FRE - FREEZER FARM-3407	20 A	2	37	1.04 kVA	1.04 kVA		38	2	20 A	REC-FRE - FREEZER FARM-3407	
				39		1.04 kVA	1.04 kVA	40				
	REC-FRE - FREEZER FARM-3407	20 A	2	41			1.04 kVA	1.04 kVA	42	2	20 A	REC-FRE - FREEZER FARM-3407
				43	1.04 kVA	1.04 kVA		44				
	REC-FRE - FREEZER FARM-3407	20 A	2	45		1.04 kVA	1.04 kVA	46	2	20 A	REC-FRE - FREEZER FARM-3407	
				47			1.04 kVA	1.04 kVA	48			
	REC-FRE - SHARED FH- 3415	20 A	2	49	1.04 kVA	1.04 kVA		50	2	20 A	REC-FRE - SHARED FH- 3415	
				51		1.04 kVA	1.04 kVA	52				
	REC-FRE - SHARED FH- 3415	20 A	2	53			1.04 kVA	1.04 kVA	54			
				55	1.04 kVA	1.04 kVA		56	2	20 A	REC-FRE - SHARED FH- 3415	
	REC-FRE - SPECIAL A-3500.06	20 A	2	57		1.04 kVA	1.04 kVA	58				
				59			1.04 kVA	0.36 kVA	60	1	20 A	REC G - MICROSCOPY-3500.01
	REC - MICROSCOPY-3500.01	20 A	1	61	0.72 kVA	0.36 kVA		62	1	20 A	REC G - ENTRY-3500.03	
	REC - FUME HOOD-3500.04	20 A	1	63		0.9 kVA	1.04 kVA	64	2	20 A	REC-FRE - SPECIAL A-3500	
	SPARE	20 A	1	65			0 kVA	1.04 kVA	66			
	REC-REF - CULTURE-3500.05	20 A	1	67	1 kVA	0.54 kVA		68	1	20 A	REC - CULTURE-3500.05	
	REC-INC - CULTURE-3500.05	20 A	1	69		1 kVA	1 kVA	70	1	20 A	REC-REF - SPECIAL A-3500.06	
	REC-REF - SPECIAL A-3500.06	20 A	1	71			1 kVA	1 kVA	72	1	20 A	REC-INC - SPECIAL A-3500.06
	SPARE	20 A	1	73	0 kVA	0 kVA		74	1	20 A	SPARE	
	SPARE	20 A	1	75		0 kVA	0 kVA	76	1	20 A	SPARE	
	SPARE	20 A	1	77			0 kVA	0 kVA	78	1	20 A	SPARE
	(SPACE)	--	1	79	--	--		80	1	--	(SPACE)	
	(SPACE)	--	1	81		--	--	82	1	--	(SPACE)	
	(SPACE)	--	1	83			--	--	84	1	--	(SPACE)	
					TOTAL AMPS:	178.6 A	172 A	148 A				
					TOTAL LOAD:	21.05 kVA	20.29 kVA	17.81 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	4826 VA	80.00%	3861 VA		
MISC.	6200 VA	70.00%	4340 VA	**kVA (CONNECTED):**	59.1 kVA
RECEPTACLE	48120 VA	60.39%	29060 VA	**kVA (ESTIMATED DEMAND):**	37.3 kVA
				CURRENT (CONNECTED):	164.2 A
				CURRENT (ESTIMATED DEMAND):	103.4 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL3B1

LOCATION: EL 3121.00
POWER SUPPLIED FROM: DPOL3B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	FCU-302,306,308	20 A	1	1	1.13 kVA	0 kVA		2	1	20 A	REC-FRE - 3119 (REDUNDANT)	
	REC-FRE - 3119 (REDUNDANT)	20 A	1	3		0 kVA	0 kVA	4	1	20 A	REC-FRE - 3119 (REDUNDANT)	
	REC-FRE - 3119 (REDUNDANT)	20 A	1	5			0 kVA	0 kVA	6	1	20 A	REC-FRE - 3119 (REDUNDANT)
	REC-FRE - 3119 (REDUNDANT)	20 A	1	7	0 kVA	0 kVA		8	1	20 A	REC-FRE - 3119 (REDUNDANT)	
	REC-FRE - 3119 (REDUNDANT)	20 A	1	9		0 kVA	0 kVA	10	1	20 A	REC-FRE - 3119 (REDUNDANT)	
	REC-FRE - 3119 (REDUNDANT)	20 A	1	11			0 kVA	0 kVA	12	1	20 A	REC-FRE - 3119 (REDUNDANT)
	SPARE	20 A	1	13	0 kVA	1 kVA		14	1	20 A	REC-INC - CULTURE-3123	
	REC-REF - CULTURE-3123	20 A	1	15			1 kVA	1.08 kVA	16	1	20 A	REC - COLD ROOM-3500.17
	REC - COLD ROOM -3500.17	20 A	1	17					0.72 kVA	2.07 kVA	18	
	REC-FRE - FREEZER FARM-3119	20 A	2	19	1.04 kVA	2.07 kVA					20	3	20 A	COLD ROOM - 3500.17
				21			1.04 kVA	2.07 kVA	22			
	REC-FRE - FREEZER FARM-3119	20 A	2	23					1.04 kVA	1.04 kVA	24	2	20 A	REC-FRE - FREEZER FARM-3119
				25	1.04 kVA	1.04 kVA					26			
	REC-FRE - FREEZER FARM-3119	20 A	2	27			1.04 kVA	1.04 kVA	28	2	20 A	REC-FRE - FREEZER FARM-3119
				29					1.04 kVA	1.04 kVA	30			
	REC-FRE - FREEZER FARM-3119	20 A	2	31	1.04 kVA	1.04 kVA					32	2	20 A	REC-FRE - FREEZER FARM-3119
				33			1.04 kVA	1.04 kVA	34			
	REC-FRE - FREEZER FARM-3119	20 A	2	35					1.04 kVA	1.04 kVA	36	2	20 A	REC-FRE - FREEZER FARM-3119
				37	1.04 kVA	1.04 kVA					38			
	REC-FRE - FREEZER FARM-3119	20 A	2	39			1.04 kVA	1.04 kVA	40	2	20 A	REC-FRE - FREEZER FARM-3119
				41					1.04 kVA	1.04 kVA	42			
	REC - CULTURE-3500.14	20 A	1	43	0.54 kVA	1 kVA		44	1	20 A	REC-REF - CULTURE-3500.14	
	REC-INC - CULTURE-3500.14	20 A	1	45		1 kVA	1.8 kVA	46	1	20 A	FUME HOOD - CULTURE-3500.15	
	BIO...	20 A	1	47			1.15 kVA	0.72 kVA	48	1	20 A	REC-FH - FUME HOOD-3500.15
	REC- FUME HOOD-3500.15	20 A	1	49	0.9 kVA	0.36 kVA		50	1	20 A	REC G - ENTRY- 3500.16	
	REC - MICROSCOPY- 3500.18	20 A	1	51		0.72 kVA	0.54 kVA	52	1	20 A	REC G - MICROSCOPY-3500.18	
	REC - SPECIAL A-3500.13	20 A	1	53			0.54 kVA	1 kVA	54	1	20 A	REC-REF - SPECIAL A-3500.13
	REC-REF - SPECIAL A-3500.13	20 A	1	55	1 kVA	1 kVA		56	1	20 A	REC-INC - SPECIAL A-3500.13	
	REC - FRE SPECIAL A-3500.13	20 A	2	57			1.04 kVA	1.04 kVA	58	2	20 A	REC-FRE - SPECIAL A-3500.13
				59					1.04 kVA	1.04 kVA	60			
	REC-FRE - CULTURE-3500.14	20 A	2	61	1.04 kVA	0 kVA					62	1	20 A	SPARE
				63			1.04 kVA	0 kVA	64	1	20 A	SPARE		
	SPARE	20 A	1	65					0 kVA	0 kVA	66	1	20 A	SPARE
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE
	SPARE	20 A	1	69			0 kVA	0 kVA	70	1	20 A	SPARE		
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE
	SPARE	20 A	1	75			0 kVA	0 kVA	76	1	20 A	SPARE		
	(SPACE)	--	1	77					--	--	78	1	--	(SPACE)
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)
					TOTAL AMPS:	145.2 A	156 A	138 A				
					TOTAL LOAD:	17.32 kVA	18.61 kVA	16.60 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	4080 VA	80.00%	3264 VA		
MISC.	6200 VA	70.00%	4340 VA	**kVA (CONNECTED):**	52.5 kVA
RECEPTACLE	42240 VA	61.84%	26120 VA	**kVA (ESTIMATED DEMAND):**	33.7 kVA
				CURRENT (CONNECTED):	145.8 A
				CURRENT (ESTIMATED DEMAND):	93.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL3B2

LOCATION: EL 3105.00
POWER SUPPLIED FROM: DPOL3B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-REF - WET LAB-3500	20 A	1	1	2 kVA	2 kVA		2	1	20 A	REC-REF - WET LAB-3500	
	REC-REF - WET LAB-3500	20 A	1	3		2 kVA	2 kVA	4	1	20 A	REC-REF - WET LAB-3500	
	REC-REF - WET LAB-3500	20 A	1	5			2 kVA	2 kVA	6	1	20 A	REC-REF - WET LAB-3500
	REC-REF - WET LAB-3500	20 A	1	7	2 kVA	--		8	1	--	(SPACE)	
	REC - AUTOCLAVE-3435	20 A	1	9		0.18 kVA	1.15 kVA	10	1	20 A	BIO CABINET-CULTURE-3500.11	
	REC-REF - SPECIAL A-3500.09	20 A	1	11			1 kVA	1 kVA	12	1	20 A	REC-REF - SPECIAL A-3500.09
	REC-INC - SPECIAL A-3500.09	20 A	1	13	1 kVA	1 kVA		14	1	20 A	REC-INC - SPECIAL A-3500.09	
	REC-REF - SPECIAL A-3500.10	20 A	1	15		1 kVA	1 kVA	16	1	20 A	REC-REF - SPECIAL A-3500.10	
	REC-INC - SPECIAL A-3500.10	20 A	1	17			1 kVA	1 kVA	18	1	20 A	REC-INC - SPECIAL A-3500.10
	COLD ROOM-3103.00	20 A	3	19	2.07 kVA	1 kVA		20	1	20 A	REC-INC - SPECIAL A-3500.06	
				21		2.07 kVA	1 kVA	22	1	20 A	REC-REF - CULTURE-3500.11	
				23			2.07 kVA	1 kVA	24	1	20 A	REC-INC - CULTURE-3500.11
	REC-REF - CULTURE-3500.08	20 A	1	25	1 kVA	1 kVA		26	1	20 A	REC-INC - CULTURE-3500.08	
	REC - SPECIAL A-3500.06	20 A	1	27		0.36 kVA	0.36 kVA	28	1	20 A	REC - ENTRY-3500.07	
	REC - CULTURE-3500.08	20 A	1	29			0.54 kVA	1.15 kVA	30	1	20 A	BIO-CABINET-CULTURE-3500.08
	REC - SPECIAL A-3500.09	20 A	1	31	0.54 kVA	0.54 kVA		32	1	20 A	REC - SPECIAL A-3500.10	
	REC - CULTURE-3500.11	20 A	1	33		0.54 kVA	0.36 kVA	34	1	20 A	REC - ENTRY-3500.12	
	(SPACE)	--	1	35			--	--	36	1	--	(SPACE)
	(SPACE)	--	1	37	--	--		38	1	--	(SPACE)	
	REC-INC - SPECIAL A-3500.13	20 A	1	39		1 kVA	1.04 kVA	40	2	20 A	REC-FRE - SPECIAL B- 3419	
	REC-FRE - SPECIAL B- 3419	20 A	2	41			1.04 kVA	1.04 kVA	42			
				43	1.04 kVA	1.04 kVA		44	2	20 A	REC-FRE - SPECIAL B- 3419	
	REC-FRE - SPECIAL B- 3419	20 A	2	45		1.04 kVA	1.04 kVA	46				
				47			1.04 kVA	1.04 kVA	48	2	20 A	REC-FRE - SPECIAL B- 3427
	REC-FRE - SPECIAL B- 3427	20 A	2	49	1.04 kVA	1.04 kVA		50				
				51		1.04 kVA	1.04 kVA	52	2	20 A	REC-FRE - SPECIAL B- 3427	
	REC-FRE - SPECIAL B- 3427	20 A	2	53			1.04 kVA	1.04 kVA	54			
				55	1.04 kVA	0 kVA		56	1	20 A	REC-FRE - 3427 (REDUNDANT)	
	REC-FRE - 3427 (REDUNDANT)	20 A	1	57		0 kVA	0 kVA	58	1	20 A	REC-FRE - 3427 (REDUNDANT)	
	REC-FRE - 3427 (REDUNDANT)	20 A	1	59			0 kVA	1 kVA	60	1	20 A	REC-ICE - AUTOCLAVE-3435
	REC-FRE - CULTURE-3500.08	20 A	2	61	1.04 kVA	1.04 kVA		62	2	20 A	REC-FRE - SPECIAL A-3500.9	
				63		1.04 kVA	1.04 kVA	64				
	REC-FRE - SPECIAL A-3500.09	20 A	2	65			1.04 kVA	1.04 kVA	66	2	20 A	REC-FRE - SPECIAL A-3500.10
				67	1.04 kVA	1.04 kVA		68				
	REC-FRE - SPECIAL A-3500.10	20 A	2	69		1.04 kVA	1.04 kVA	70	2	20 A	REC-FRE - SPECIAL B-3115	
				71			1.04 kVA	1.04 kVA	72			
	REC-FRE - SPECIAL B-3115	20 A	2	73	1.04 kVA	1.04 kVA		74	2	20 A	REC-FRE - SPECIAL B-3115	
				75		1.04 kVA	1.04 kVA	76				
	REC-FRE - SPECIAL B-3115	20 A	2	77			1.04 kVA	0 kVA	78	1	20 A	REC-FRE - 3115 (REDUNDANT)
				79	1.04 kVA	0 kVA		80	1	20 A	REC-FRE - 3115 (REDUNDANT)	
	REC-FRE - CULTURE-3500.11	20 A	2	81		1.04 kVA	0 kVA	82	1	20 A	REC-FRE - 3115 (REDUNDANT)	
				83			1.04 kVA	0 kVA	84	1	20 A	REC-FRE - 3115 (REDUNDANT)	
					TOTAL AMPS:	222.8 A	212 A	220 A				
					TOTAL LOAD:	26.63 kVA	25.50 kVA	26.24 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	2300 VA	80.00%	1840 VA		
MISC.	6200 VA	70.00%	4340 VA	**kVA (CONNECTED):**	78.4 kVA
RECEPTACLE	69860 VA	57.16%	39930 VA	**kVA (ESTIMATED DEMAND):**	46.1 kVA
				CURRENT (CONNECTED):	217.5 A
				CURRENT (ESTIMATED DEMAND):	128.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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STATE OF MICHIGAN
T.P. GASSER
ENGINEER
No. 43945
09-29-25
LICENSED PROFESSIONAL ENGINEER

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - STANDBY LEVEL 3
SHEET NO.
E-740

OSBORN ENGINEERING
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PLOT DATE: 9/25/2025 2:09:06 PM TEMPLATE VERSION: 23.0.4

PANEL ID: OL4A1

LOCATION: EL 4405.00
POWER SUPPLIED FROM: T04A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	FCU-401,404,407,412	20 A	1	1	1.23 kVA 0 kVA			2	1	20 A	REC-FRE - 4407 (REDUNDANT)	
	REC-FRE - 4407 (REDUNDANT)	20 A	1	3		0 kVA 0 kVA		4	1	20 A	REC-FRE - 4407 (REDUNDANT)	
	REC-FRE - 4407 (REDUNDANT)	20 A	1	5			0 kVA 0 kVA	6	1	20 A	REC-FRE - 4407 (REDUNDANT)	
	REC-FRE - 4407 (REDUNDANT)	20 A	1	7	0 kVA 0 kVA			8	1	20 A	REC-FRE - 4407 (REDUNDANT)	
	REC-FRE - 4407 (REDUNDANT)	20 A	1	9		0 kVA 0 kVA		10	1	20 A	REC-FRE - 4407 (REDUNDANT)	
	REC-FRE - 4407 (REDUNDANT)	20 A	1	11			0 kVA 0 kVA	12	1	20 A	REC-FRE - 4407 (REDUNDANT)	
	O2 MONITOR - GAS-4409	20 A	1	13	0.2 kVA 2.07 kVA			14	3	30 A	COLD ROOM - 4500.02	
	REC-FRE - CULTURE-4500.05	20 A	2	15		1.04 kVA 2.07 kVA		16				
				17			1.04 kVA 2.07 kVA	18				
	REC-REF - CULTURE-4411	20 A	1	19	1 kVA 0.9 kVA			20	1	20 A	REC - COLD ROOM-4500.02	
	REC -COLD ROOM-4500.02	20 A	1	21		0.9 kVA 0 kVA		22	1	20 A	REC-FRE - SHARED FH 4415	
	REC-FRE - SHARED FH 4415	20 A	1	23			0 kVA 0 kVA	24	1	20 A	REC-FRE - SHARED FH 4415	
	REC-FRE - SHARED FH 4415	20 A	1	25	0 kVA 1.04 kVA			26	2	20 A	REC-FRE - FREEZER FARM-4407	
	REC-FRE - FREEZER FARM-4407	20 A	2	27		1.04 kVA 1.04 kVA		28				
				29			1.04 kVA 1.04 kVA	30	2	20 A	REC-FRE - FREEZER FARM-4407	
	REC-FRE - FREEZER FARM-4407	20 A	2	31	1.04 kVA 1.04 kVA			32				
				33		1.04 kVA 1.04 kVA		34	2	20 A	REC-FRE - FREEZER FARM-4407	
	REC-FRE - FREEZER FARM-4407	20 A	2	35			1.04 kVA 1.04 kVA	36				
				37	1.04 kVA 1.04 kVA			38	2	20 A	REC-FRE - FREEZER FARM-4407	
	REC-FRE - FREEZER FARM-4407	20 A	2	39		1.04 kVA 1.04 kVA		40				
				41			1.04 kVA 1.04 kVA	42	2	20 A	REC-FRE - FREEZER FARM-4407	
	REC-FRE - FREEZER FARM-4407	20 A	2	43	1.04 kVA 1.04 kVA			44				
				45		1.04 kVA 1.04 kVA		46	2	20 A	REC-FRE - FREEZER FARM-4407	
	REC-FRE - SHARED FH- 4415	20 A	2	47			1.04 kVA 1.04 kVA	48				
				49	1.04 kVA 1.04 kVA			50	2	20 A	REC-FRE - SHARED FH- 4415	
	REC-FRE - SHARED FH- 4415	20 A	2	51		1.04 kVA 1.04 kVA		52				
				53			1.04 kVA 1.04 kVA	54	2	20 A	REC-FRE - SHARED FH- 4415	
	REC - MICROSCOPY-4500.01	20 A	1	55	0.72 kVA 1.04 kVA			56				
	REC - FUME HOOD-4500.04	20 A	1	57		0.9 kVA 0.36 kVA		58	1	20 A	REC G - MICROSCOPY-4500.01	
	FUME HOOD - FUME...	20 A	1	59			1.8 kVA 0.36 kVA	60	1	20 A	REC G - ENTRY-4500.03	
	REC - CULTURE-4500.05	20 A	1	61	0.54 kVA 0.72 kVA			62	1	20 A	REC-FH - FUME HOOD-4500.04	
	REC-INC - CULTURE-4500.05	20 A	1	63		1 kVA 1.15 kVA		64	1	20 A	BIO-CABINET-CULTURE-4500.05	
	SPARE	20 A	1	65			0 kVA 1 kVA	66	1	20 A	REC-REF - CULTURE-4500.05	
	SPARE	20 A	1	67	0 kVA 0 kVA			68	1	20 A	SPARE	
	SPARE	20 A	1	69		0 kVA 0 kVA		70	1	20 A	SPARE	
	SPARE	20 A	1	71			0 kVA 0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA 0 kVA			74	1	20 A	SPARE	
	SPARE	20 A	1	75		0 kVA 0 kVA		76	1	20 A	SPARE	
	SPARE	20 A	1	77			0 kVA 0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	-- --			80	1	--	(SPACE)	
	(SPACE)	--	1	81		-- --		82	1	--	(SPACE)	
	(SPACE)	--	1	83			-- --	84	1	--	(SPACE)	
				TOTAL AMPS:	149.5 A	150 A	139 A					
				TOTAL LOAD:	17.77 kVA	17.82 kVA	16.67 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	4176 VA	80.00%	3341 VA		
MISC.	6400 VA	70.00%	4480 VA	**kVA (CONNECTED):**	52.3 kVA
RECEPTACLE	41680 VA	62.00%	25840 VA	**kVA (ESTIMATED DEMAND):**	33.7 kVA
				CURRENT (CONNECTED):	145.0 A
				CURRENT (ESTIMATED DEMAND):	93.4 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL4B1

LOCATION: EL 4121.00
POWER SUPPLIED FROM: DPOL4B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC - SPECIAL A-4500.13	20 A	1	1	0.54 kVA 0 kVA			2	1	20 A	REC-FRE - 4119 (REDUNDANT)	
	REC-FRE - 4119 (REDUNDANT)	20 A	1	3		0 kVA 0 kVA		4	1	20 A	REC-FRE - 4119 (REDUNDANT)	
	REC-FRE - 4119 (REDUNDANT)	20 A	1	5			0 kVA 0 kVA	6	1	20 A	REC-FRE - 4119 (REDUNDANT)	
	REC-FRE - 4119 (REDUNDANT)	20 A	1	7	0 kVA 0 kVA			8	1	20 A	REC-FRE - 4119 (REDUNDANT)	
	REC-FRE - 4119 (REDUNDANT)	20 A	1	9		0 kVA 0 kVA		10	1	20 A	REC-FRE - 4119 (REDUNDANT)	
	REC-FRE - 4119 (REDUNDANT)	20 A	1	11			0 kVA 0 kVA	12	1	20 A	REC-FRE - 4119 (REDUNDANT)	
	REC-INC - SPECIAL A-4500.13	20 A	1	13	1 kVA 1.04 kVA			14	2	20 A	REC-FRE - SPECIAL A-4500.13	
	REC-REF - CULTURE-4123	20 A	1	15		1 kVA 1.04 kVA		16				
	REC-INC - SPECIAL A-4500.13	20 A	1	17			1 kVA 2.07 kVA	18				
	REC-FRE - FREEZER FARM-4119	20 A	2	19	1.04 kVA 2.07 kVA			20	3	20 A	COLD ROOM - 4500.17	
				21		1.04 kVA 2.07 kVA		22				
	REC-FRE - FREEZER FARM-4119	20 A	2	23			1.04 kVA 1.04 kVA	24	2	20 A	REC-FRE - FREEZER FARM-4119	
				25	1.04 kVA 1.04 kVA			26				
	REC-FRE - FREEZER FARM-4119	20 A	2	27		1.04 kVA 1.04 kVA		28	2	20 A	REC-FRE - FREEZER FARM-4119	
				29			1.04 kVA 1.04 kVA	30				
	REC-FRE - FREEZER FARM-4119	20 A	2	31	1.04 kVA 1.04 kVA			32	2	20 A	REC-FRE - FREEZER FARM-4119	
				33		1.04 kVA 1.04 kVA		34				
	REC-FRE - FREEZER FARM-4119	20 A	2	35			1.04 kVA 1.04 kVA	36	2	20 A	REC-FRE - FREEZER FARM-4119	
				37	1.04 kVA 1.04 kVA			38				
	REC-FRE - FREEZER FARM-4119	20 A	2	39		1.04 kVA 1.04 kVA		40	2	20 A	REC-FRE - FREEZER FARM-4119	
				41			1.04 kVA 1.04 kVA	42				
	REC - CULTURE-4500.14	20 A	1	43	0.54 kVA 1 kVA			44	1	20 A	REC-REF - CULTURE-4500.14	
	REC-INC - CULTURE-4500.14	20 A	1	45		1 kVA 1.15 kVA		46	1	20 A	BIO CABINET-CULTURE-4500.14	
	FH - CULTURE - 4500.15	20 A	1	47			1.8 kVA 0.72 kVA	48	1	20 A	REC-FH - FUME HOOD-4500.15	
	REC- FH CULTURE - 4500.15	20 A	1	49	0.9 kVA 0.36 kVA			50	1	20 A	REC G - ENTRY- 4500.16	
	REC - MICROSCOPY- 4500.18	20 A	1	51		0.72 kVA 0.54 kVA		52	1	20 A	REC G - MICROSCOPY-4500.18	
	REC-TEMP-FREEZER...	20 A	1	53			0.36 kVA 1.04 kVA	54	2	20 A	REC-FRE - SPECIAL A-4500.13	
	REC-FRE - CULTURE-4500.14	20 A	2	55	1.04 kVA 1.04 kVA			56				
				57		1.04 kVA 1 kVA		58	1	20 A	REC-REF - SPECIAL A-4500.13	
	REC-REF - SPECIAL A-4500.13	20 A	1	59			1 kVA 0.9 kVA	60	1	20 A	REC - COLD ROOM-4500.17	
	REC - COLD ROOM-4500.17	20 A	1	61	0.9 kVA 0 kVA			62	1	20 A	SPARE	
	SPARE	20 A	1	63		0 kVA 0 kVA		64	1	20 A	SPARE	
	SPARE	20 A	1	65			0 kVA 0 kVA	66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA 0 kVA			68	1	20 A	SPARE	
	SPARE	20 A	1	69		0 kVA 0 kVA		70	1	20 A	SPARE	
	SPARE	20 A	1	71			0 kVA 0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA 0 kVA			74	1	20 A	SPARE	
	SPARE	20 A	1	75		0 kVA 0 kVA		76	1	20 A	SPARE	
	SPARE	20 A	1	77			0 kVA 0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	-- --			80	1	--	(SPACE)	
	(SPACE)	--	1	81		-- --		82	1	--	(SPACE)	
	(SPACE)	--	1	83			-- --	84	1	--	(SPACE)	
				TOTAL AMPS:	148.0 A	140 A	144 A					
				TOTAL LOAD:	17.71 kVA	16.84 kVA	17.21 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	2950 VA	80.00%	2360 VA		
MISC.	6200 VA	70.00%	4340 VA	**kVA (CONNECTED):**	51.8 kVA
RECEPTACLE	42600 VA	61.74%	26300 VA	**kVA (ESTIMATED DEMAND):**	33.0 kVA
				CURRENT (CONNECTED):	143.6 A
				CURRENT (ESTIMATED DEMAND):	91.6 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL4B2

LOCATION: EL 4105.00
POWER SUPPLIED FROM: DPOL4B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-REF - WET LAB-4500	20 A	1	1	2 kVA 2 kVA			2	1	20 A	REC-REF - WET LAB-4500	
	REC-REF - WET LAB-4500	20 A	1	3		2 kVA 2 kVA		4	1	20 A	REC-REF - WET LAB-4500	
	REC-REF - WET LAB-4500	20 A	1	5			2 kVA 2 kVA	6	1	20 A	REC-REF - WET LAB-4500	
	REC-REF - WET LAB-4500	20 A	1	7	2 kVA 0.54 kVA			8	1	20 A	REC - RADIOISOTOPE-4111	
	O2 MONITOR - GAS-4433	20 A	1	9		0.2 kVA 1.15 kVA		10	1	20 A	BIO CABINET-CULTURE-4500.11	
	REC-REF - SPECIAL A-4500.09	20 A	1	11			1 kVA 1 kVA	12	1	20 A	REC-REF - SPECIAL A-4500.09	
	REC-INC - SPECIAL A-4500.09	20 A	1	13	1 kVA 1 kVA			14	1	20 A	REC-INC - SPECIAL A-4500.09	
	REC-REF - SPECIAL A-4500.10	20 A	1	15		1 kVA 1 kVA		16	1	20 A	REC-REF - SPECIAL A-4500.10	
	REC-INC- SPECIAL A-4500.10	20 A	1	17			1 kVA 1 kVA	18	1	20 A	REC-INC - SPECIAL A-4500.10	
	COLD ROOM-4103.00	20 A	3	19	2.07 kVA 1 kVA			20	1	20 A	REC-REF - SPECIAL A-4500.06	
				21		2.07 kVA 1 kVA		22	1	20 A	REC-REF - CULTURE-4500.11	
				23			2.07 kVA 1 kVA	24	1	20 A	REC-INC - CULTURE-4500.11	
	REC-REF - CULTURE-4500.08	20 A	1	25	1 kVA 1 kVA			26	1	20 A	REC-INC - CULTURE-4500.08	
	REC-REF - SPECIAL A-4500.06	20 A	1	27		1 kVA 1 kVA		28	1	20 A	REC-INC - SPECIAL A-4500.06	
	REC-INC - SPECIAL A-4500.06	20 A	1	29			1 kVA 0.54 kVA	30	1	20 A	REC - SPECIAL A-4500.06	
	REC - ENTRY-4500.07	20 A	1	31	0.36 kVA 0.54 kVA			32	1	20 A	REC - CULTURE-4500.08	
	BIO-CABINET-CULTURE-4500....	20 A	1	33		1.15 kVA 0.54 kVA		34	1	20 A	REC - SPECIAL A-4500.09	
	REC - SPECIAL A-4500.10	20 A	1	35			0.54 kVA 0.54 kVA	36	1	20 A	REC - CULTURE-4500.11	
	REC - ENTRY-4500.12	20 A	1	37	0.36 kVA 1.2 kVA			38	1	20 A	REC-FRE - ISOTOPE-4111	
	REC-INC - ISOTOPE-4111	20 A	1	39		1 kVA 1.04 kVA		40	2	20 A	REC-FRE - RADIOISOTOPE-4111	
	FCU-402,405,408	20 A	1	41			1.13 kVA 1.04 kVA	42				
	REC-FRE - SPECIAL B- 4419	20 A	2	43	1.04 kVA 1.04 kVA			44	2	20 A	REC-FRE - SPECIAL B- 4419	
				45		1.04 kVA 1.04 kVA		46				
	REC-FRE - SPECIAL B- 4419	20 A	2	47			1.04 kVA 1.04 kVA	48	2	20 A	REC-FRE - SPECIAL B- 4419	
				49	1.04 kVA 1.04 kVA			50				
	REC-FRE - SPECIAL B- 4427	20 A	2	51		1.04 kVA 1.04 kVA		52	2	20 A	REC-FRE - SPECIAL B- 4427	
				53			1.04 kVA 1.04 kVA	54				
	REC-FRE - SPECIAL B- 4427	20 A	2	55	1.04 kVA 1.04 kVA			56	2	20 A	REC-FRE - SPECIAL B- 4427	
				57		1.04 kVA 1.04 kVA		58				
	REC-FRE - 4419 (REDUNDANT)	20 A	1	59			0 kVA 0 kVA	60	1	20 A	REC-FRE - 4419 (REDUNDANT)	
	REC-FRE - 4419 (REDUNDANT)	20 A	1	61	0 kVA 0 kVA			62	1	20 A	REC-FRE - 4419 (REDUNDANT)	
	REC-FRE - 4427 (REDUNDANT)	20 A	1	63		0 kVA 0 kVA		64	1	20 A	REC-FRE - 4427 (REDUNDANT)	
	REC-FRE - 4427 (REDUNDANT)	20 A	1	65			0 kVA 0 kVA	66	1	20 A	REC-FRE - 4427 (REDUNDANT)	
	REC - AUTOCLAVE-4435	20 A	1	67	0.18 kVA 1 kVA			68	1	20 A	REC-ICE - AUTOCLAVE-4435	
	REC-FRE - SPECIAL A-4500.06	20 A	2	69		1.04 kVA 1.04 kVA		70	2	20 A	REC-FRE - SPECIAL A-4500.06	
				71			1.04 kVA 1.04 kVA	72				
	REC-FRE - CULTURE-4500.08	20 A	2	73	1.04 kVA 1.04 kVA			74	2	20 A	REC-FRE - SPECIAL A-4500.09	
				75		1.04 kVA 1.04 kVA		76				
	REC-FRE - SPECIAL A-4500.09	20 A	2	77			1.04 kVA 1.04 kVA	78	2	20 A	REC-FRE - SPECIAL A-4500.10	
				79	1.04 kVA 1.04 kVA			80				
	REC-FRE - SPECIAL A-4500.10	20 A	2	81		1.04 kVA 1.04 kVA		82	2	20 A	RECEPTACLE	
				83			1.04 kVA 1.04 kVA	84				
				TOTAL AMPS:	232.2 A	240 A	219 A					
				TOTAL LOAD:	27.65 kVA	28.63 kVA	26.26 kVA					

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	3430 VA	80.00%	2744 VA		
MISC.	6400 VA	70.00%	4480 VA	**kVA (CONNECTED):**	82.5 kVA
RECEPTACLE	72700 VA	56.88%	41350 VA	**kVA (ESTIMATED DEMAND):**	48.6 kVA
				CURRENT (CONNECTED):	229.1 A
				CURRENT (ESTIMATED DEMAND):	134.8 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - STANDBY LEVEL 4
SHEET NO.
E-741

OSBORN ENGINEERING
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PLOT DATE: 9/25/2025 2:07:03 PM TEMPLATE VERSION: 23.0.4

PANEL ID: OL5A1

LOCATION: EL 5405.00
POWER SUPPLIED FROM: T05A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	BMS - UPS EL-5402	20 A	1	1	0 kVA	0 kVA					2	1	20 A	REC-FRE - 5407 (REDUNDANT)	
	REC-FRE - 5407 (REDUNDANT)	20 A	1	3			0 kVA	0 kVA			4	1	20 A	REC-FRE - 5407 (REDUNDANT)	
	REC-FRE - 5407 (REDUNDANT)	20 A	1	5					0 kVA	0 kVA	6	1	20 A	REC-FRE - 5407 (REDUNDANT)	
	REC-FRE - 5407 (REDUNDANT)	20 A	1	7	0 kVA	0 kVA					8	1	20 A	REC-FRE - 5407 (REDUNDANT)	
	REC-FRE - 5407 (REDUNDANT)	20 A	1	9			0 kVA	0 kVA			10	1	20 A	REC-FRE - 5407 (REDUNDANT)	
	REC-FRE - 5407 (REDUNDANT)	20 A	1	11					0 kVA	0 kVA	12	1	20 A	REC-FRE - 5407 (REDUNDANT)	
	O2 MONITOR - GAS-5409	20 A	1	13	0.2 kVA	2.07 kVA					14	3	20 A	COLD ROOM - 5500.02	
	REC-FRE - SPECIAL B- 5419	20 A	2	15			1.04 kVA	2.07 kVA			16				
				17					1.04 kVA	2.07 kVA	18				
	REC-REF - CULTURE-5411	20 A	1	19	1 kVA	0 kVA					20	1	20 A	REC-FRE - 5419 (REDUNDANT)	
	REC-FRE - 5419 (REDUNDANT)	20 A	1	21			0 kVA	0 kVA			22	1	20 A	REC-FRE - SHARED FH 5415	
	REC-FRE - SHARED FH 5415	20 A	1	23					0 kVA	0 kVA	24	1	20 A	REC-FRE - SHARED FH 5415	
	REC-FRE - SHARED FH 5415	20 A	1	25	0 kVA	0 kVA					26	1	20 A	REC-FRE - 5419 (REDUNDANT)	
	REC-FRE - 5419 (REDUNDANT)	20 A	1	27			0 kVA	1.04 kVA			28	2	20 A	REC-FRE - FREEZER FARM-5407	
	REC-FRE - FREEZER FARM-5407	20 A	2	29					1.04 kVA	1.04 kVA	30				
				31	1.04 kVA	1.04 kVA					32	2	20 A	REC-FRE - FREEZER FARM-5407	
	REC-FRE - FREEZER FARM-5407	20 A	2	33			1.04 kVA	1.04 kVA			34				
				35					1.04 kVA	1.04 kVA	36	2	20 A	REC-FRE - FREEZER FARM-5407	
	REC-FRE - FREEZER FARM-5407	20 A	2	37	1.04 kVA	1.04 kVA					38				
				39			1.04 kVA	1.04 kVA			40	2	20 A	REC-FRE - FREEZER FARM-5407	
	REC-FRE - FREEZER FARM-5407	20 A	2	41					1.04 kVA	1.04 kVA	42				
				43	1.04 kVA	1.04 kVA					44	2	20 A	REC-FRE - FREEZER FARM-5407	
	REC-FRE - FREEZER FARM-5407	20 A	2	45			1.04 kVA	1.04 kVA			46				
				47					1.04 kVA	1.04 kVA	48	2	20 A	REC-FRE - FREEZER FARM-5407	
	REC-FRE - SHARED FH- 5415	20 A	2	49	1.04 kVA	1.04 kVA					50				
				51			1.04 kVA	1.04 kVA			52	2	20 A	REC-FRE - SHARED FH- 5415	
	REC-FRE - SHARED FH- 5415	20 A	2	53					1.04 kVA	1.04 kVA	54				
				55	1.04 kVA	1.04 kVA					56	2	20 A	REC-FRE - SHARED FH- 5415	
	REC-FRE - SPECIAL B- 5419	20 A	2	57			1.04 kVA	1.04 kVA			58				
				59					1.04 kVA	0.36 kVA	60	1	20 A	REC-TEMP - FREEZER FARM-5407	
	REC-FRE - SPECIAL B- 5419	20 A	2	61	1.04 kVA	1.04 kVA					62	2	20 A	REC-FRE - SPECIAL B- 5419	
				63			1.04 kVA	1.04 kVA			64				
	REC - COLD ROOM-5500.02	20 A	1	65					0.9 kVA	0.9 kVA	66	1	20 A	REC - COLD ROOM-5500.02	
	FCU-501,504,507,512	20 A	1	67	1.23 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75			0 kVA	0 kVA			76	1	20 A	SPARE	
	SPARE	20 A	1	77					0 kVA	0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	141.5 A		139 A		139 A						
				TOTAL LOAD:	16.97 kVA		16.63 kVA		16.71 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	1226 VA	80.00%	981 VA		
MISC.	6400 VA	70.00%	4480 VA	**kVA (CONNECTED):**	50.3 kVA
RECEPTACLE	42680 VA	61.72%	26340 VA	**kVA (ESTIMATED DEMAND):**	31.8 kVA
				CURRENT (CONNECTED):	139.6 A
				CURRENT (ESTIMATED DEMAND):	88.3 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL5B1

LOCATION: EL 5121.00
POWER SUPPLIED FROM: DPOL5B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	FCU-502,505,508	20 A	1	1	1.13 kVA	0 kVA					2	1	20 A	REC-FRE - 5119 (REDUNDANT)	
	REC-FRE - 5119 (REDUNDANT)	20 A	1	3			0 kVA	0 kVA			4	1	20 A	REC-FRE - 5119 (REDUNDANT)	
	REC-FRE - 5119 (REDUNDANT)	20 A	1	5					0 kVA	0 kVA	6	1	20 A	REC-FRE - 5119 (REDUNDANT)	
	REC-FRE - 5119 (REDUNDANT)	20 A	1	7	0 kVA	0 kVA					8	1	20 A	REC-FRE - 5119 (REDUNDANT)	
	REC-FRE - 5119 (REDUNDANT)	20 A	1	9			0 kVA	0 kVA			10	1	20 A	REC-FRE - 5119 (REDUNDANT)	
	REC-FRE - 5119 (REDUNDANT)	20 A	1	11					0 kVA	0 kVA	12	1	20 A	REC-FRE - 5119 (REDUNDANT)	
	(SPACE)	--	1	13	--	--					14	1	--	(SPACE)	
	REC-REF - CULTURE-5123	20 A	1	15			1 kVA	0.9 kVA			16	1	20 A	REC - COLD ROOM-5500.17	
	REC - COLD ROOM-5500.17	20 A	1	17					0.9 kVA	2.07 kVA	18	3	20 A	COLD ROOM - 5500.17	
	REC-FRE - FREEZER FARM-5119	20 A	2	19	1.04 kVA	2.07 kVA					20				
				21			1.04 kVA	2.07 kVA			22				
	REC-FRE - FREEZER FARM-5119	20 A	2	23					1.04 kVA	1.04 kVA	24	2	20 A	REC-FRE - FREEZER FARM-5119	
				25	1.04 kVA	1.04 kVA					26				
	REC-FRE - FREEZER FARM-5119	20 A	2	27			1.04 kVA	1.04 kVA			28	2	20 A	REC-FRE - FREEZER FARM-5119	
				29					1.04 kVA	1.04 kVA	30				
	REC-FRE - FREEZER FARM-5119	20 A	2	31	1.04 kVA	1.04 kVA					32	2	20 A	REC-FRE - FREEZER FARM-5119	
				33			1.04 kVA	1.04 kVA			34				
	REC-FRE - FREEZER FARM-5119	20 A	2	35					1.04 kVA	1.04 kVA	36	2	20 A	REC-FRE - FREEZER FARM-5119	
				37	1.04 kVA	1.04 kVA					38				
	REC-FRE - FREEZER FARM-5119	20 A	2	39			1.04 kVA	1.04 kVA			40	2	20 A	REC-FRE - FREEZER FARM-5119	
				41					1.04 kVA	1.04 kVA	42				
	REC - SPECIAL A-5500.13	20 A	1	43	0.54 kVA	1 kVA					44	1	20 A	REC-REF - SPECIAL A-5500.13	
	REC-INC - SPECIAL A-5500.13	20 A	1	45			1 kVA	0.54 kVA			46	1	20 A	REC - CULTURE-5500.14	
	REC-REF - CULTURE-5500.14	20 A	1	47					1 kVA	1.15 kVA	48	1	20 A	BIO CABINET-CULTURE-5500.14	
	FUME HOOD - 5500.15	20 A	1	49	1.8 kVA	0.72 kVA					50	1	20 A	REC-FH - FUME HOOD-5500.15	
	REC- FUME HOOD-5500.15	20 A	1	51			0.9 kVA	0.36 kVA			52	1	20 A	REC G - ENTRY- 5500.16	
	REC - MICROSCOPY- 5500.18	20 A	1	53					0.72 kVA	0.54 kVA	54	1	20 A	REC G - MICROSCOPY-5500.18	
	REC-FRE - SPECIAL A-5500.13	20 A	2	55	1.04 kVA	1.04 kVA					56	2	20 A	REC-FRE - SPECIAL A-5500.13	
				57			1.04 kVA	1.04 kVA			58				
	REC-FRE - CULTURE-5500.14	20 A	2	59					1.04 kVA	0 kVA	60	1	20 A	SPARE	
				61	1.04 kVA	0 kVA					62	1	20 A	SPARE	
	SPARE	20 A	1	63					0 kVA	0 kVA	64	1	20 A	SPARE	
	SPARE	20 A	1	65							66	1	20 A	SPARE	
	SPARE	20 A	1	67	0 kVA	0 kVA					68	1	20 A	SPARE	
	SPARE	20 A	1	69			0 kVA	0 kVA			70	1	20 A	SPARE	
	SPARE	20 A	1	71					0 kVA	0 kVA	72	1	20 A	SPARE	
	SPARE	20 A	1	73	0 kVA	0 kVA					74	1	20 A	SPARE	
	SPARE	20 A	1	75			0 kVA	0 kVA			76	1	20 A	SPARE	
	SPARE	20 A	1	77					0 kVA	0 kVA	78	1	20 A	SPARE	
	(SPACE)	--	1	79	--	--					80	1	--	(SPACE)	
	(SPACE)	--	1	81			--	--			82	1	--	(SPACE)	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	147.6 A		135 A		131 A						
				TOTAL LOAD:	17.66 kVA		16.13 kVA		15.74 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	4080 VA	80.00%	3264 VA		
MISC.	6200 VA	70.00%	4340 VA	**kVA (CONNECTED):**	49.5 kVA
RECEPTACLE	39240 VA	62.74%	24620 VA	**kVA (ESTIMATED DEMAND):**	32.2 kVA
				CURRENT (CONNECTED):	137.5 A
				CURRENT (ESTIMATED DEMAND):	89.4 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL5B2

LOCATION: EL 5105.00
POWER SUPPLIED FROM: DPOL5B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 225 A
MAIN OCPD RATING: MLO

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A		B		C		CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	REC-REF - WET LAB-5500	20 A	1	1	2 kVA	2 kVA					2	1	20 A	REC-REF - WET LAB-5500	
	REC-REF - WET LAB-5500	20 A	1	3			2 kVA	2 kVA			4	1	20 A	REC-REF - WET LAB-5500	
	REC-REF - WET LAB-5500	20 A	1	5					2 kVA	2 kVA	6	1	20 A	REC-REF - WET LAB-5500	
	REC-REF - WET LAB-5500	20 A	1	7	2 kVA	--					8	1	--	(SPACE)	
	O2 MONITOR - GAS-5433	20 A	1	9			0.2 kVA	1.15 kVA			10	1	20 A	BIO CABINET-CULTURE-5500.11	
	REC-REF - SPECIAL A-5500.09	20 A	1	11					1 kVA	1 kVA	12	1	20 A	REC-REF - SPECIAL A-5500.09	
	REC-INC - SPECIAL A-5500.09	20 A	1	13	1 kVA	1 kVA					14	1	20 A	REC-INC - SPECIAL A-5500.09	
	REC-REF - SPECIAL A-5500.10	20 A	1	15			1 kVA	1 kVA			16	1	20 A	REC-REF - SPECIAL A-5500.10	
	REC-INC - SPECIAL A-5500.10	20 A	1	17					1 kVA	1 kVA	18	1	20 A	REC-INC - SPECIAL A-5500.10	
	COLD ROOM-5103.00	30 A	3	19	2.07 kVA	0.54 kVA					20	1	20 A	REC - SPECIAL A-5500.09	
				21			2.07 kVA	1 kVA			22	1	20 A	REC-REF - CULTURE-5500.11	
				23					2.07 kVA	1 kVA	24	1	20 A	REC-INC - CULTURE-5500.11	
	REC-REF - CULTURE-5500.08	20 A	1	25	1 kVA	1 kVA					26	1	20 A	REC-INC - CULTURE-5500.08	
	REC - CULTURE-5500.08	20 A	1	27			0.54 kVA	0.36 kVA			28	1	20 A	REC - ENTRY-5500.07	
	REC - SPECIAL A-5500.06	20 A	1	29					0.54 kVA	1 kVA	30	1	20 A	REC-REF - SPECIAL A-5500.06	
	REC-REF - SPECIAL A-5500.06	20 A	1	31	1 kVA	1 kVA					32	1	20 A	REC-INC - SPECIAL A-5500.06	
	REC-INC - SPECIAL A-5500.06	20 A	1	33			1 kVA	1 kVA			34	1	20 A	REC-INC - CULTURE-5500.05	
	REC-REF - CULTURE-5500.05	20 A	1	35					1 kVA	0.54 kVA	36	1	20 A	REC - CULTURE 5500.05	
	BIO-CABINET-CULTURE-5500....	20 A	1	37	1.15 kVA	1.8 kVA					38	1	20 A	FUME HOOD - FUME...	
	REC-FH - FUME HOOD-5500.04	20 A	1	39			0.72 kVA	0.9 kVA			40	1	20 A	REC - FUME HOOD-5500.04	
	REC G - ENTRY-5500.03	20 A	1	41					0.36 kVA	0.72 kVA	42	1	20 A	REC - MICROSCOPY-5500.01	
	REC G - MICROSCOPY-5500.01	20 A	1	43	0.54 kVA	0.54 kVA					44	1	20 A	REC - SPECIAL A-5500.10	
	REC - CULTURE-5500.11	20 A	1	45			0.54 kVA	0.36 kVA			46	1	20 A	REC - ENTRY-5500.12	
	REC-FRE - SPECIAL B-5427	20 A	2	47					1.04 kVA	1.04 kVA	48	2	20 A	REC-FRE - SPECIAL B-5427	
				49	1.04 kVA	1.04 kVA					50				
	REC-FRE - SPECIAL B-5427	20 A	2	51			1.04 kVA	1.04 kVA			52	2	20 A	REC-FRE - SPECIAL B-5427	
				53					1.04 kVA	1.04 kVA	54				
	REC-FRE - 5427 (REDUNDANT)	20 A	1	55	0 kVA	0 kVA					56	1	20 A	REC-FRE - 5427 (REDUNDANT)	
	REC-FRE - 5427 (REDUNDANT)	20 A	1	57			0 kVA	0 kVA			58	1	20 A	REC-FRE - 5427 (REDUNDANT)	
	REC - AUTOCLAVE-5435	20 A	1	59					0.18 kVA	1 kVA	60	1	20 A	REC-ICE - AUTOCLAVE-5435	
	REC-FRE - CULTURE-5500.05	20 A	2	61	1.04 kVA	1.04 kVA					62	2	20 A	REC-FRE - SPECIAL-5500.06	
				63			1.04 kVA	1.04 kVA			64				
	REC-FRE - SPECIAL A-5500.06	20 A	2	65					1.04 kVA	1.04 kVA	66	2	20 A	REC-FRE - CULTURE-5500.08	
				67	1.04 kVA	1.04 kVA					68				
	REC-FRE - SPECIAL A-5500.09	20 A	2	69			1.04 kVA	1.04 kVA			70	2	20 A	REC-FRE - SPECIAL A-5500.09	
				71					1.04 kVA	1.04 kVA	72				
	REC-FRE - SPECIAL A-5500.10	20 A	2	73	1.04 kVA	1.04 kVA					74	2	20 A	REC-FRE - SPECIAL A-5500.10	
				75			1.04 kVA	1.04 kVA			76				
	REC-FRE - CULTURE-5500.11	20 A	2	77					1.04 kVA	0 kVA	78	1	20 A	SPARE	
				79	1.04 kVA	0 kVA					80	1	20 A	SPARE	
	SPARE	20 A	1	81			0 kVA	0 kVA			82	1	20 A	SPARE	
	(SPACE)	--	1	83					--	--	84	1	--	(SPACE)	
				TOTAL AMPS:	235.4 A		201 A		217 A						
				TOTAL LOAD:	28.00 kVA		24.16 kVA		25.77 kVA						

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	4100 VA	80.00%	3280 VA		
MISC.	6400 VA	70.00%	4480 VA	**kVA (CONNECTED):**	77.9 kVA
RECEPTACLE	67420 VA	57.42%	38710 VA	**kVA (ESTIMATED DEMAND):**	46.5 kVA
				CURRENT (CONNECTED):	216.3 A
				CURRENT (ESTIMATED DEMAND):	129.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PLOT DATE: 9/25/2025 2:07:10 PM TEMPLATE VERSION: 23.0.4

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

HKS

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REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - STANDBY LEVEL 5
SHEET NO.
E-742

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
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PANEL ID: OL6A1

LOCATION: PENTHOUSE 6000.00
POWER SUPPLIED FROM: T06A
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 175 A
MAIN OCPD RATING: 150 A

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	HVAC - HUMIDIFIERS	15 A	1	1	0.4 kVA	0.2 kVA		2	1	15 A	CH HT-1	
	CH HT-2	15 A	1	3		0.2 kVA	2 kVA	4	1	30 A	ROOF TOP HEAT TRACE CNTRL	
	SPARE	20 A	1	5			0 kVA	2 kVA	6	1	30 A	ROOF TOP HEAT TRACE CNTRL	
	SPARE	20 A	1	7	0 kVA	0 kVA			8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA	10	1	20 A	SPARE	
	SPARE	20 A	1	11			0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA			14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA	16	1	20 A	SPARE	
	SPARE	20 A	1	17			0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA			20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA	22	1	20 A	SPARE	
	SPARE	20 A	1	23			0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA			26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA	28	1	20 A	SPARE	
	SPARE	20 A	1	29			0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA			32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA	34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--			38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--	40	1	--	(SPACE)	
	(SPACE)	--	1	41			--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	5.0 A		20 A		18 A				
				TOTAL LOAD:	0.60 kVA		2.20 kVA		2.00 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	800 VA	80.00%	640 VA		
RECEPTACLE	4000 VA	100.00%	4000 VA	**kVA (CONNECTED):**	4.8 kVA
				kVA (ESTIMATED DEMAND):	4.6 kVA
				CURRENT (CONNECTED):	13.3 A
				CURRENT (ESTIMATED DEMAND):	12.9 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANEL ID: OL6B1

LOCATION: PENTHOUSE 6000.00
POWER SUPPLIED FROM: T06B
MOUNTING: SURFACE
ENCLOSURE: PER SPECIFICATIONS
VOLTAGE: 208Y/120V
PHASE: 3
WIRES: 4
kAIC RATING: 22kAIC
BUS RATING: 175 A
MAIN OCPD RATING: 150 A

NOTES	CIRCUIT DESCRIPTION	TRIP	POLE	CKT	A	B	C	CKT	POLE	TRIP	CIRCUIT DESCRIPTION	NOTES
	CH HT-3	15 A	1	1	0.2 kVA	2 kVA		2	1	20 A	ROOF TOP HEAT TRACE CNTRL	
	CH HT-4	15 A	1	3		0.2 kVA	2 kVA	4	1	20 A	ROOF TOP HEAT TRACE CNTRL	
	SPARE	20 A	1	5			0 kVA	0 kVA	6	1	20 A	SPARE	
	SPARE	20 A	1	7	0 kVA	0 kVA			8	1	20 A	SPARE	
	SPARE	20 A	1	9			0 kVA	0 kVA	10	1	20 A	SPARE	
	SPARE	20 A	1	11			0 kVA	0 kVA	12	1	20 A	SPARE	
	SPARE	20 A	1	13	0 kVA	0 kVA			14	1	20 A	SPARE	
	SPARE	20 A	1	15			0 kVA	0 kVA	16	1	20 A	SPARE	
	SPARE	20 A	1	17			0 kVA	0 kVA	18	1	20 A	SPARE	
	SPARE	20 A	1	19	0 kVA	0 kVA			20	1	20 A	SPARE	
	SPARE	20 A	1	21			0 kVA	0 kVA	22	1	20 A	SPARE	
	SPARE	20 A	1	23			0 kVA	0 kVA	24	1	20 A	SPARE	
	SPARE	20 A	1	25	0 kVA	0 kVA			26	1	20 A	SPARE	
	SPARE	20 A	1	27			0 kVA	0 kVA	28	1	20 A	SPARE	
	SPARE	20 A	1	29			0 kVA	0 kVA	30	1	20 A	SPARE	
	SPARE	20 A	1	31	0 kVA	0 kVA			32	1	20 A	SPARE	
	SPARE	20 A	1	33			0 kVA	0 kVA	34	1	20 A	SPARE	
	SPARE	20 A	1	35			0 kVA	0 kVA	36	1	20 A	SPARE	
	(SPACE)	--	1	37	--	--			38	1	--	(SPACE)	
	(SPACE)	--	1	39			--	--	40	1	--	(SPACE)	
	(SPACE)	--	1	41			--	--	42	1	--	(SPACE)	
				TOTAL AMPS:	21.2 A		21 A		0 A				
				TOTAL LOAD:	2.20 kVA		2.20 kVA		0.00 kVA				

LOAD CLASSIFICATION:	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED...	PANEL TOTALS	
HVAC	400 VA	80.00%	320 VA		
RECEPTACLE	4000 VA	100.00%	4000 VA	**kVA (CONNECTED):**	4.4 kVA
				kVA (ESTIMATED DEMAND):	4.3 kVA
				CURRENT (CONNECTED):	12.2 A
				CURRENT (ESTIMATED DEMAND):	12.0 A

NOTES:

ADDITIONAL REQUIREMENTS:

PANELBOARD SCHEDULE NOTES:

1. BRANCH CIRCUIT BREAKER(S) FEEDING FIRE ALARM AND/OR EMERGENCY COMMUNICATIONS SYSTEMS SHALL BE IDENTIFIED AS REQUIRED BY THE LATEST ADOPTED EDITION OF NFPA 72 ARTICLES 10.6.5.2.2 AND 10.6.5.2.3.
2. PROVIDE HACR RATED BREAKERS FOR ALL MECHANICAL EQUIPMENT.
3. PER N.E.C. ARTICLE 408.4(A) A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ANY AND ALL PANELBOARDS PROVIDED/MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
4. AT THE CONCLUSION OF WORK, ALL EXISTING CIRCUIT BREAKERS THAT ARE NOT IN USE SHALL BE LABELED AS SPARE IN THE UPDATED TYPE WRITTEN PANELBOARD DIRECTORY AND SHALL BE IN THE "OFF" POSITION.
5. NUMBERS IN "NOTES" COLUMN CORRESPOND TO NOTES LISTED AT THE BOTTOM OF THE PANEL SCHEDULE.
6. ADDITIONAL REQUIREMENTS AT THE BOTTOM OF THE PANEL SCHEDULE APPLY TO THE ENTIRE PANEL.

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T.P. GASSER
ENGINEER
No. 43945
LICENSED PROFESSIONAL ENGINEER
10/17/2025

REVISION

NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL PANEL SCHEDULES - STANDBY LEVEL 6
SHEET NO.
E-743

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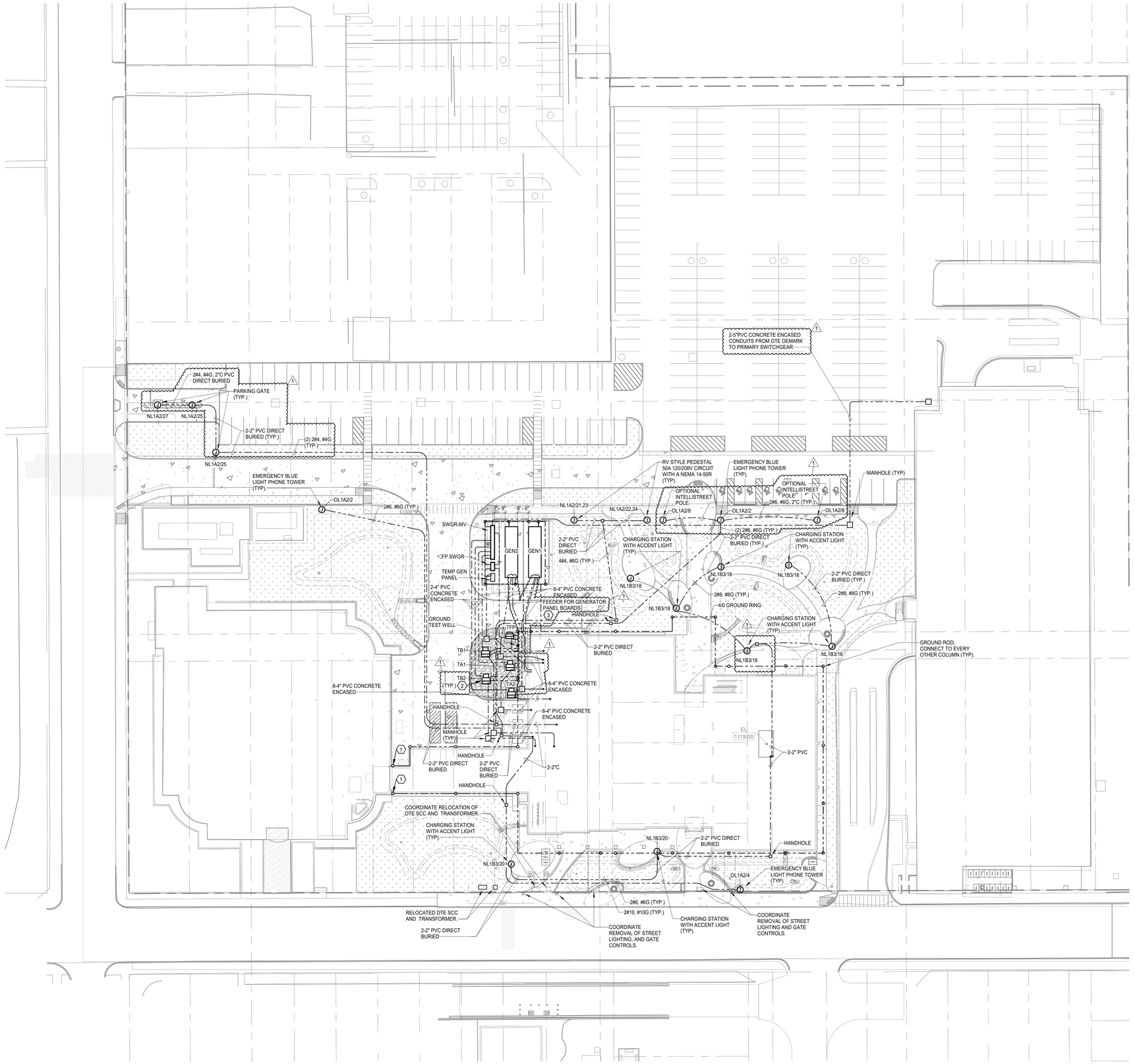

1 ELECTRICAL SITE PLAN
SCALE: 1" = 30'-0"

GENERAL SHEET NOTES:

1. ROCK AND/OR ADVERSE SOIL CONDITIONS MAY BE PRESENT ON SITE. THE ELECTRICAL CONTRACTOR SHALL COORDINATE INSTALLATION REQUIREMENTS FOR ALL BELOW GRADE WORK WITH GEOTECHNICAL REPORT, AND SHALL INCLUDE IN HIS BID ANY WORK RELATED TO GEOTECHNICAL CONSIDERATIONS AS IT MAY PERTAIN TO THE INSTALLATION OF ALL SITE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO: DUCTBANKS, FOUNDATIONS, FOOTERS, CONCRETE SLABS AND PADS, VAULTS, DIRECT BURIED CABLES OR CONDUITS, SITE LIGHTING POLE BASES, ETC.
2. COORDINATE EXACT LOCATION OF ALL UNDERGROUND ELECTRICAL WORK WITH CIVIL ENGINEERING DRAWINGS AND DOCUMENTS, ALL OTHER SITE UTILITIES, AND SITE CONTRACTOR.
3. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 OR SCHEDULE 80. REFER TO DWG. SERIES E-500's FOR TYPICAL DIRECT BURIED CONDUIT SECTION.
4. GROUND RODS SHALL BE DRIVEN VERTICALLY. IF ROCK IS ENCOUNTERED, THEN GROUND RODS MAY BE DRIVEN AT A DIAGONAL BUT IN NO CASE SHALL GROUND RODS BE LESS THAN 10'-0" LONG.
5. THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS BID, ALL ELECTRIC UTILITY COMPANY CHARGES FOR PROVIDING SERVICE TO THE BUILDING, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING: TRANSFORMERS, CONCRETE PADS/VAULTS, CABLES, DUCTS, TRENCHING, BACKFILL, CONCRETE ENCASEMENT, METERING, GROUNDING, ALL ANCILLARY EQUIPMENT AND DEVICES, ETC., AND ASSOCIATED LABOR FOR A COMPLETE INSTALLATION PER N.E.C. AND ELECTRIC UTILITY COMPANY REQUIREMENTS. ANY LOCAL UTILITY COMPANY CHARGES FOR PROVISION OF ELECTRICAL SERVICE SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S BASE PRICE. AS A MINIMUM, THE INSTALLATION SHALL MEET THE SERVICE AND INSTALLATION REGULATIONS OF THE LOCAL UTILITY.
   A. CONTACT DTE UTILITY COMPANY REPRESENTATIVE: **TIA STANLEY @** (313) 938-7345, FOR ALL SERVICE REQUIREMENTS, SPECIFICATIONS, AND EXACT TRANSFORMER AND PAD LOCATION.
   B. ROUTE UNDERGROUND PVC CONDUIT INCLUDING AT LEAST ONE SPARE CONDUIT IN ACCORDANCE WITH LOCAL UTILITY REGULATIONS TO THE LOCAL UTILITY CONNECTION POINT. PROVIDE PRIMARY CONDUCTORS PER THE LOCAL UTILITY UNLESS IT IS REQUIRED THAT CONDUCTORS BE PROVIDED BY THE LOCAL UTILITY. CONDUCTOR SIZE AND TYPE TO BE DETERMINED WITH THE LOCAL UTILITY. REVIEW THE CONNECTION POINT AND ROUTING WITH THE LOCAL UTILITY PRIOR TO START OF WORK. CONFIRM TRENCHING AND BURIAL DETAILS WITH LOCAL UTILITY PRIOR TO START OF WORK.
   C. PROVIDE A SWITCHGEAR PAD AND/OR VAULT OF THE PROPER SIZE AND MATERIAL TO MEET TO SERVICE AND INSTALLATION REGULATIONS OF THE LOCAL UTILITY. COORDINATE THE TRANSFORMER LOCATION WITH THE LOCAL UTILITY PRIOR TO START OF WORK. PROVIDE A GROUND LOOP AND GROUNDING RODS AS REQUIRED TO MEET THE SERVICE AND INSTALLATION REGULATIONS OF THE LOCAL UTILITY. ALL GROUNDING CONNECTIONS SHALL BE MADE USING AN EXOTHERMIC WELD PROCESS.
   D. PROVIDE TRENCHING, FOR PRIMARY CABLES, BACKFILL, SAND & CONDUITS FROM EXISTING POWER COMPANY PRIMARY POLE TO TRANSFORMER. CONDUITS SHALL BE RUN VERTICAL UP POLE TO A HEIGHT AS DETERMINED BY THE UTILITY COMPANY. ALL PRIMARY CABLE & TERMINATIONS SHALL BE PROVIDED BY THE UTILITY COMPANY. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONCRETE WORK, TRENCHING, BACKFILL, ASPHALT PATCHING AND RE-SEEDING AS PART OF THIS CONTRACT.
   E. PROVIDE ALL SECONDARY SERVICE ENTRANCE TRENCHING, BACKFILL, CONCRETE DUCT BANK, CABLE AND TERMINATIONS FROM UTILITY TRANSFORMER TO SERVICE ENTRANCE EQUIPMENT.
   F. PROVIDE ALL TRANSFORMER SECONDARY CABLE, CABLE LUGS, CONDUIT & DUCTBANK AND MAKE ALL FINAL SECONDARY (**480V**) TERMINATIONS. UTILITY COMPANY SHALL MAKE ALL PRIMARY (**13.2KV**) CONNECTIONS.
   G. THE UTILITY COMPANY GROUNDING SYSTEM SHALL BE TESTED. THE MAXIMUM ALLOWABLE IMPEDANCE SHALL BE 25 OHMS TO GROUND. ADDITIONAL GROUND RODS SHALL BE PROVIDED, IF REQUIRED, TO ACHIEVE THIS LEVEL.

(#) SHEET KEY NOTES:

1. TIE INTO EXISTING LIGHTNING PROTECTION SYSTEM IN ELLIMAN.
2. INSTALL TWO DEDICATED GROUND RODS AND A GROUND RING AROUND ALL MEDIUM VOLTAGE TRANSFORMERS.
3. FEEDERS FOR GENERATOR PANELS, REFER TO SHEET E-513 FOR ADDITIONAL INFORMATION.

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REVISION NO.	DESCRIPTION	DATE
1	ADDENDUM No. 1	10/17/2025

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ELECTRICAL SITE AND GROUNDING PLAN
SHEET NO.
EG-100

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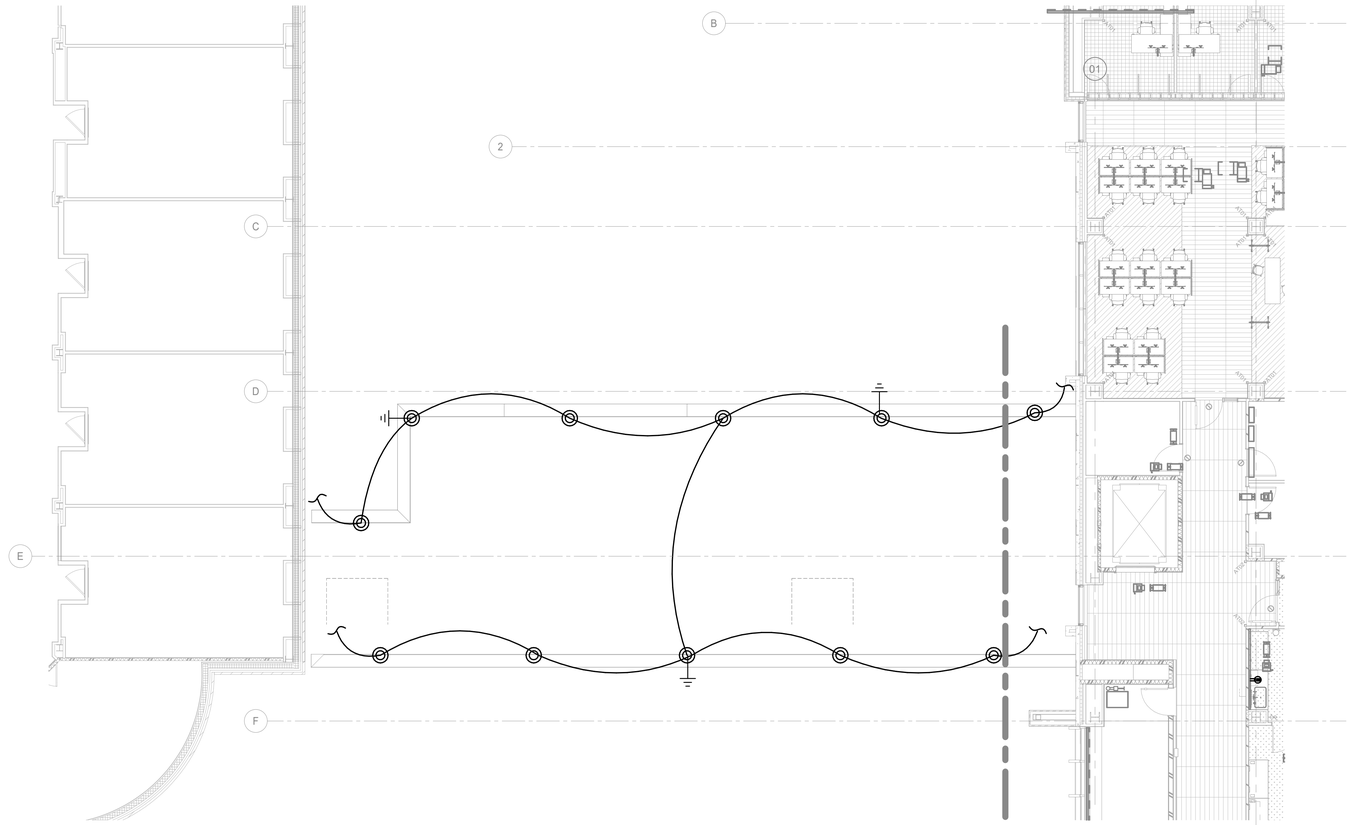
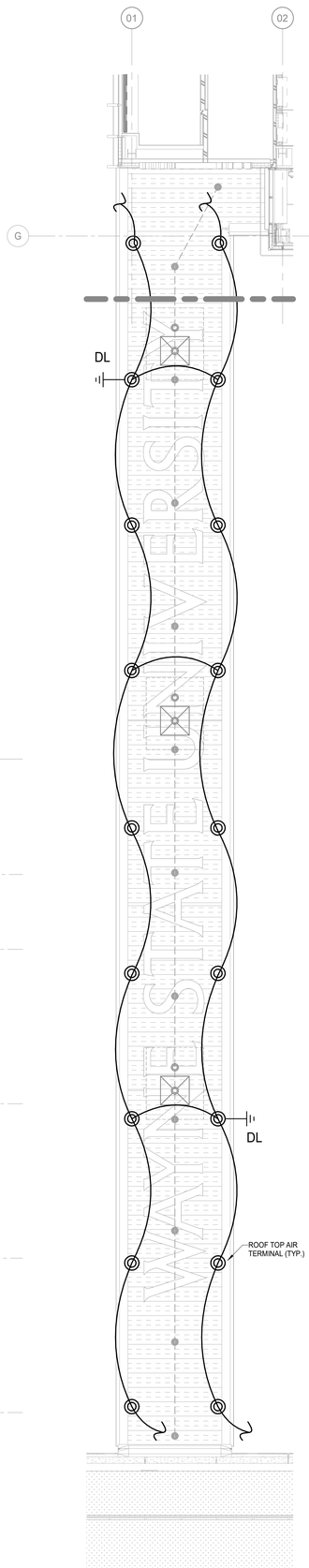


2 LEVEL 1 SERVICE DOCK LIGHTNING PROTECTION PLAN
SCALE: 1/8" = 1'-0"



1 LEVEL 3 BRIDGE LIGHTNING PROTECTION PLAN
SCALE: 1/8" = 1'-0"

LIGHTNING PROTECTION GENERAL NOTES:

1. PROVIDE A COMPLETE ROOF NFPA 780 LIGHTNING PROTECTION SYSTEM AND SUBMIT SHOP DRAWINGS FOR ARCHITECT / ENGINEER REVIEW. ALL COMPONENTS SHALL MEET CLASS 1 REQUIREMENTS AND TO BE OF COPPER OR COPPERWELD CONSTRUCTION.
2. THE SYSTEM TO BE ESIGNED AND INSTALLED BY A LIGHTNING PROTECTION CONTRACTOR ACTIVELY ENGAGED IN THE INSTALLATION OF UL MASTER LABEL SYSTEMS. THE CONTRACTOR TO HAVE A MINIMUM OF 5 YEARS EXPERIENCE IN LIGHTNING PROTECTION INSTALLATION .
3. INSTALL CONDUCTORS AND COMPLEMENTARY PARTS SO COMPLETED WORK IS UNOBTRUSIVE AND DOES NOT DISTRACT FROM APPEARANCE.
4. INTERCONNECT CONDUCTORS TO PROVIDE AT LEAST TWO ELECTRIC PATHS TO GROUND. AVOID AN UPWARD DIRECTION FOR LATERAL CONDUCTORS INTERCONNECTING AIR TERMINALS. TURN RADIUS OF AT LEAST 8" AT AN INCLUDED ANGLE NOT MORE ACUTE THAN RIGHT ANGLE. SPACE DOWN CONDUCTORS AROUND BUILDING PERIPHERY AS SHOWN IN PLAN VIEW.
5. DOWN CONDUCTORS MAY UTILIZE VERTICAL BUILDING STEEL COLUMNS WHERE ACCESSIBLE. OTHERWISE, PROVIDE DOWN CONDUCTOR RUNS IN PVC AT CONCRETE COLUMNS.
6. BOND FULL SIZE CONDUCTOR TO ALL METAL OBJECTS ON ROOF. BOND ROOF DRAINS AS REQUIRED, LADDER HATCHES, ETC.
7. JOB CONDITIONS MIGHT NECESSITATE A SLIGHT VARIATION IN INSTALLATION.
8. UPON COMPLETION OF THE JOB, PROVIDE OWNER WITH A UL LETTER OF CERTIFICATION.

LIGHTNING GENERAL NOTES:

1. PROVIDE A MASTER LABL LIGHTNING PROTECTION SYSTEM FOR ENTIRE BUILDING. THIS DRAWING DOES NOT REPRESENT A COMPLETE LIGHTNING PROTECTION DESIGN. REFER TO SPECIFICATION SECTION 26413 LIGHTNING PROTECTION FOR STRUCTURES.
2. PROVIDE LIGHTNING PROTECTION AIR TERMINALS AS REQUIRED.
3. BUILDING STEEL FRAME SHOULD BE USED AS DOWN CONDUCTORS.

(#) SHEET KEY NOTES:

1. PROVIDE LIGHTNING PROTECTION CONDUCTOR BETWEEN STEEL COLUMNS.
2. BOND LIGHTNING PROTECTION CONDUCTOR TO TOP OF THE BUILDING STEEL.

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REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
LVL 1 ROOF & LVL 3 BRIDGE LIGHTNING PROTECTION PLAN
SHEET NO.
EG-101

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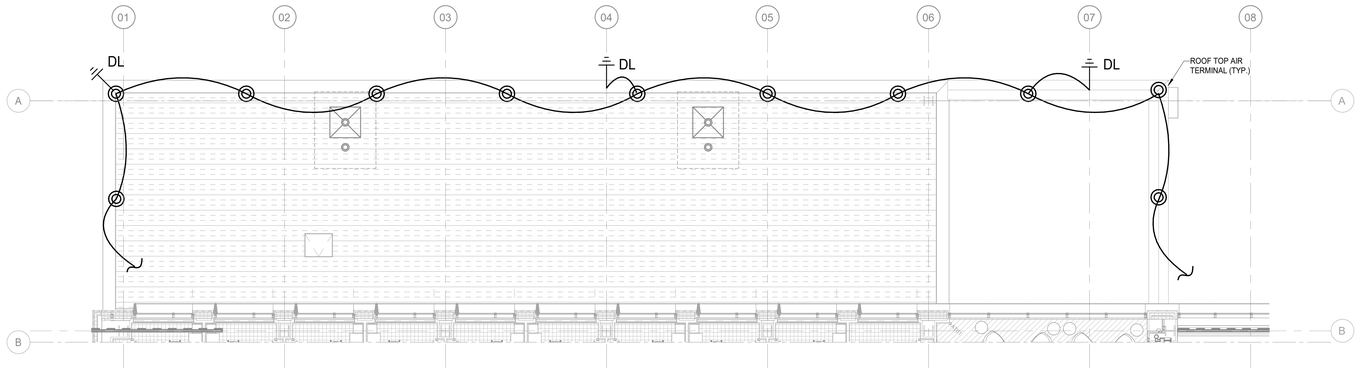
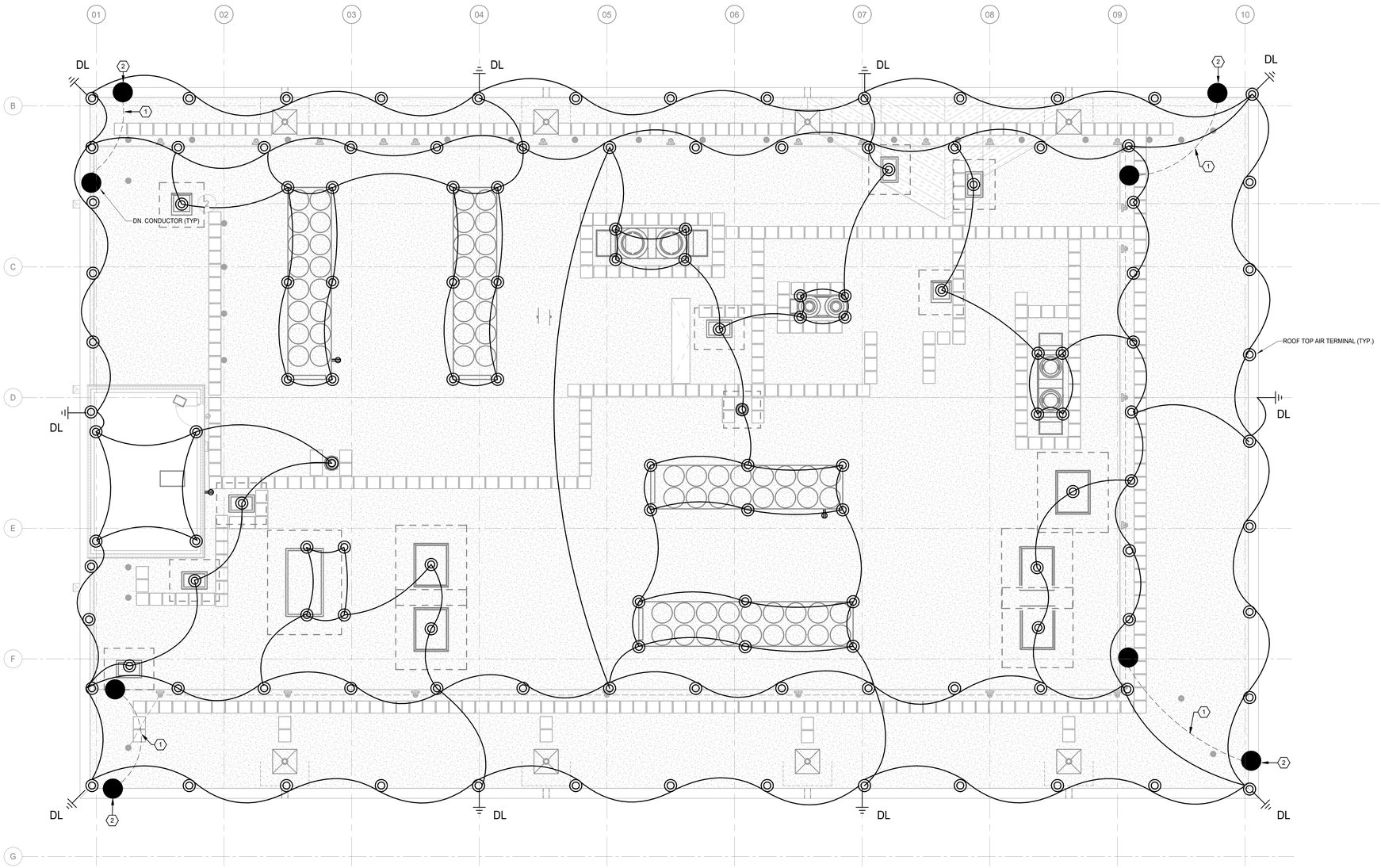


2 LEVEL 2 ROOF LIGHTNING PROTECTION PLAN
SCALE: 1/8" = 1'-0"



1 ROOF LIGHTNING PROTECTION PLAN
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1. PROVIDE A COMPLETE ROOF NFPA 780 LIGHTNING PROTECTION SYSTEM AND SUBMIT SHOP DRAWINGS FOR ARCHITECT / ENGINEER REVIEW. ALL COMPONENTS SHALL MEET CLASS 1 REQUIREMENTS AND TO BE OF COPPER OR COPPERWELD CONSTRUCTION.
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REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
ROOF LIGHTNING PROTECTION PLAN

SHEET NO.
EG-102

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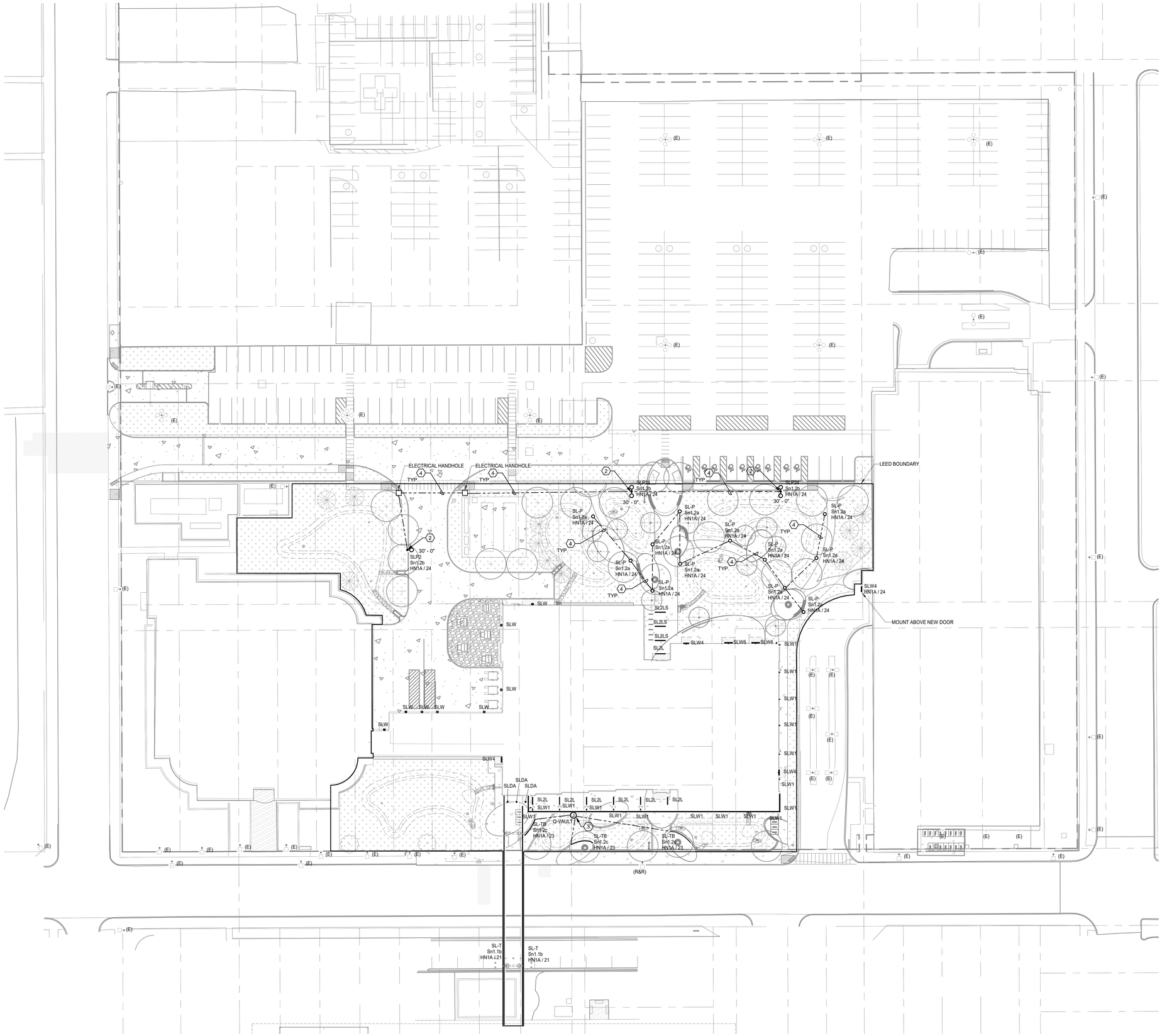

1 ELECTRICAL SITE LIGHTING PLAN
SCALE: 1" = 30'-0"

LIGHTING SHEET GENERAL NOTES:

1. ALL EXIT SIGNS, EMERGENCY LIGHTING BATTERY PACKS, EMERGENCY LUMINAIRES (ON GENERATOR OR EMERGENCY LIGHTING BATTERY PACKS INTEGRAL TO LUMINAIRE), AND NIGHT LIGHTS (DENOTED 'NL') SHALL BE CONNECTED TO THE LOCAL LIGHTING CIRCUIT AHEAD OF ANY CONTROLS SUCH AS: SWITCHES, OCCUPANCY SENSORS AND/OR RELAY CONTROLS.
2. MINIMUM CONDUCTOR SIZE FOR 277 VOLT BRANCH CIRCUITING SHALL BE #12AWG. FOR 277 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 125 LINEAR FEET A MINIMUM CONDUCTOR SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
3. MINIMUM CONDUCTOR SIZE FOR 120 VOLT BRANCH CIRCUITS SHALL BE #12AWG. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUNS OVER 75 LINEAR FEET, A MINIMUM WIRE SIZE OF #10AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. FOR 120 VOLT BRANCH CIRCUITS WITH HOMERUN OVER 150 LINEAR FEET, A MINIMUM WIRE SIZE OF #8AWG SHALL BE PROVIDED FROM FIRST JUNCTION BOX TO BRANCH CIRCUIT PANELBOARD. ASSOCIATED EQUIPMENT GROUNDING CONDUCTOR SHALL ALSO BE INCREASED PER N.E.C. ARTICLE 250.122(B) REQUIREMENTS.
4. AT A MINIMUM ALL BRANCH CIRCUITS SHALL CONTAIN 2#12AWG, #12 EG, 3/4" CONDUIT UNLESS OTHERWISE INDICATED.
5. ALL BRANCH CIRCUITS SHALL BE RUN WITH AN INDIVIDUAL NEUTRAL WIRE. BRANCH CIRCUITS SHALL NOT SHARE NEUTRAL WIRES. PER N.E.C. 404.2(C) THE NEUTRAL WIRE SHALL BE EXTENDED TO ALL SWITCHING LOCATIONS.
6. LIGHTING BRANCH CIRCUITS MAY SHARE EQUIPMENT GROUND CONDUCTORS.
7. REFER TO E-500's SERIES FOR LIGHTING CONTROL WIRING DIAGRAMS. CONTRACTOR TO VERIFY ALL SENSOR LOCATIONS PER MANUFACTURERS SPECIFICATIONS.
8. EXACT LOCATION OF ALL LUMINAIRES, AND EXACT MOUNTING HEIGHT OF ALL PENDANT MOUNTED LUMINAIRES SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-INS.
9. ALL CONDUCTORS SHALL BE IDENTIFIED BY PANELBOARD AND CIRCUIT NUMBER(S) IN ALL CABINETS, JUNCTION BOXES, WIRING TROUGHS, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
10. A NEW TYPED PANELBOARD DIRECTORY CARD SHALL BE PROVIDED FOR ALL PANELS INSTALLED OR MODIFIED UNDER THIS CONTRACT. NEW DIRECTORY CARDS SHALL BE LOCATED ON THE INSIDE DOOR OF ASSOCIATED PANELS.
11. FIXTURES WITH EM TAG ARE TO HAVE 1 EMERGENCY CIRCUIT AND 1 NORMAL CIRCUIT THROUGH A GTD DEVICE. REFER TO LIGHTING CONTROL DETAILS FOR ADDITIONAL INFORMATION.

(#) SHEET KEY NOTES:

1. EXISTING LIGHT POLE TO BE RELOCATED / REPLACED. COORDINATE WITH DETROIT PUBLIC LIGHTING AUTHORITY.
2. POLES INDICATED SHALL BE PREPPED FOR FUTURE INTELLISTREETS COMMUNICATIONS SERVICES. REFER TO TECHNOLOGY DRAWINGS AND SHEET E-502 FOR MORE DETAILS.
3. Q-VAULT DIRECT BURIAL POWER SUPPLY LOCATION FOR BENCH LIGHTING. CONTAINS ONE (1) Q-SET 0-10V 100W POWER SUPPLY.
4. PROVIDE 2#8, 1#8 EG IN 1"C FOR SITE LIGHTING BRANCH CIRCUITING. PROVIDE ADDITIONAL SPARE CONDUIT WITH PULLSTRING FOR FUTURE USE.

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REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
SITE LIGHTING PLAN

SHEET NO.
EG-103

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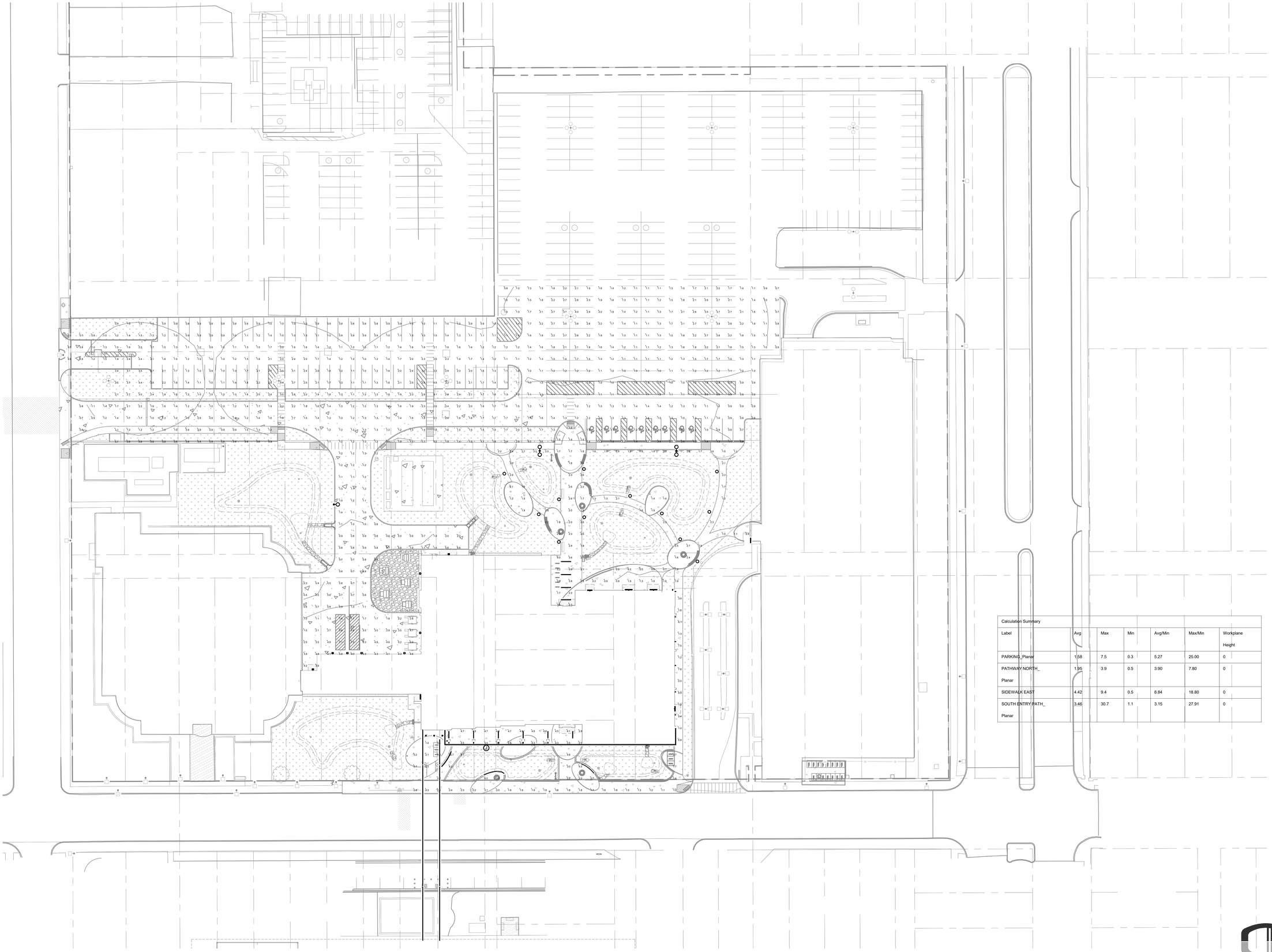
TEMPLATE VERSION: 23.0.4



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SIDEWALK EAST	4.42	9.4	0.5	8.84	18.80	0
SOUTH ENTRY PATH_ Planar	3.46	30.7	1.1	3.15	27.91	0

1 SITE LIGHTING CALCULATION PLAN
SCALE: 1" = 30'-0"

PLOT DATE:
9/29/2025 1:52:12 PM
TEMPLATE VERSION: 23.0.4

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SITE LIGHTING CALCULATION PLAN

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GENERAL NOTES

1. **THIS T-SERIES DRAWING SET MUST COMPLY WITH WSU's STANDARDS FOR TELECOMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf)**
2. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, OR SHAFTS SHALL BE SEALED IN ACCORDANCE WITH SPECIFICATION SECTION 270524, DIVISION 7 SPECIFICATIONS, AS WELL AS ALL APPLICABLE CODES AND REGULATIONS.
3. CONTRACTOR(S) SHALL COORDINATE LOCATIONS OF ALL CEILING MOUNTED DEVICES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS, ELEVATIONS, SECTIONS, DETAILS AND FINISHES. ANY MODIFICATION THAT WOULD EFFECT PERFORMANCE OF THE DEVICE OR RELATED SYSTEM WHICH CANNOT BE ADJUSTED TO AN ACCEPTABLE LEVEL SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER.
4. VOICE AND/OR DATA CONNECTIONS TO MECHANICAL, ELECTRICAL, ELEVATOR OR OTHER EQUIPMENT PROVIDED BY OTHERS SHALL BE VERIFIED WITH THE VARIOUS MANUFACTURERS PRIOR TO INSTALLATION. THE INSTALLATION AS INDICATED ON THE DRAWINGS SHALL BE ADAPTED TO ACCOMMODATE SUCH MANUFACTURER REQUIRED OR SUGGESTED INSTALLATION PRACTICES AND METHODS, BUT SHALL BE DONE TO ALLOW ALL REQUIRED TESTING AND CERTIFICATION, AS WELL AS BEING COMPLETED IN COMPLIANCE WITH ALL CODES AND REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
5. ALL RACKS, CABINETS, CABLE TRAY, CABLE RUNWAY OR OTHER NON-CURRENT CARRYING EQUIPMENT SHALL BE GROUNDED TO THE TELECOMMUNICATIONS GROUNDING BUSBAR SERVICING THIS AREA IN ACCORDANCE WITH SPECIFICATION SECTION 270526.
6. UTILIZATION OF THE PHRASE "PROVIDED BY" WITHIN THE CONTEXT OF THESE DOCUMENTS SHALL EXPLICITLY REPRESENT "FURNISHED AND INSTALLED BY".
7. THE CONTRACTOR(S) SHALL ASSUME RESPONSIBILITY FOR REMOVING EXISTING CEILING TILES AND REPLACE WITH EXISTING TILES AS REQUIRED FOR EXECUTION OF THEIR SCOPE OF WORK. THIS INCLUDES SPACES IN THE NEW WORK AS INDICATED ON THE DRAWINGS AND AREAS NOT SHOWN WHERE THE CONTRACTOR IS REQUIRED TO AFFECT EXISTING CONDITIONS WHILE EXECUTING THEIR SCOPE OF WORK. DAMAGED TILES SHALL BE REPLACED BY THE CONTRACTOR(S) AT NO COST TO THE OWNER OR THE OWNER'S REPRESENTATIVES.
8. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING NECESSARY FOR INSTALLATION OF NEW WORK WITHIN THEIR RESPECTIVE SCOPE. CUTTING OF A STRUCTURAL MEMBER IS PROHIBITED WITHOUT SPECIFIC WRITTEN PERMISSION FROM THE ARCHITECT. ALL CUTTING AND PATCHING SHALL BE PERFORMED BY QUALIFIED TRADESMEN.
9. WHENEVER NOT OTHERWISE SPECIFIED, THE FINAL LOCATIONS FOR VISIBLE ITEMS IN PUBLIC AREAS SHALL BE VERTICALLY AND OR HORIZONTALLY ALIGNED WITH OTHER DEVICES IN THE FIELD OF VIEW OR AS DIRECTED BY THE ARCHITECT. WHENEVER POSSIBLE CONTRACTOR SHALL SIMILARLY COORDINATE WITH THE DEVICE LOCATIONS OF OTHER TRADES. ITEMS OF SPECIAL CONCERN INCLUDE ANY DEVICE WITH A FACEPLATE INCLUDING BUT NOT LIMITED TO RECEPTACLES, SWITCHES, AND TECHNOLOGY OUTLETS ETC.
10. ALL DEVICES IN INACCESSIBLE CEILINGS SHALL HAVE CONDUIT STUB IN NEAREST ACCESSIBLE CEILING IN THE DIRECTION OF THE APPROPRIATE CABLE ROUTE, UON.

SLEEVE REQUIREMENT NOTE

1. THE ELECTRICAL CONTRACTOR SHALL SUPPLY ALL NECESSARY SLEEVES REQUIRED FOR ALL DEVICE LOCATIONS AND, AS REQUIRED, TO TRAVERSE THE BUILDING(S) WITH WALL HORIZONTAL AND BACKBONE CABLING. SLEEVES SHALL BE LOCATED SO AS TO PROVIDE A READY PATHWAY FROM EACH DEVICE AND/OR EQUIPMENT LOCATION TO THE PATHWAY DEFINED ON THESE DRAWINGS. FURTHERMORE ALL PATHWAYS SHALL BE CREATED BETWEEN THE CORRIDOR OR OTHER MAJOR PATHWAY AND THE DESTINATION TERMINATION POINT, E.G. PATCH PANEL IN RACK AT A RATE OF (1) - 4" CONDUIT PER (50) CABLES, UON. PROVIDE PENETRATIONS DOWN MAJOR PATHWAYS THROUGH FIRE/SMOKE BARRIER AT A RATE OF (1) - 4" CONDUIT PER (50) CABLES, UON. ALL CONTRACTORS SHALL MAINTAIN ALL SMOKE BARRIER AND FIRE WALL RATINGS FOR ALL PENETRATIONS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THESE SLEEVES WITH THE TECHNOLOGY CONTRACTOR PRIOR TO INSTALLATION. MINIMUM SLEEVE SHALL BE 2".

PLENUM USAGE NOTE

1. IT IS INCUMBENT ON THE BIDDER TO REVIEW THE MECHANICAL PLANS TO DETERMINE THE EXACT LOCATION OF PLENUM CABLE REQUIREMENTS AND PROVIDE THAT CABLE AS NECESSARY, INCLUDING ANY CHANGES THAT WOULD BE MADE BY POTENTIAL ADDENDA OR BULLETINS OR OTHER DOCUMENT CHANGES.

SCOPE CLARIFICATION NOTE

1. THE ELECTRICAL CONTRACTOR, UNDER THE DIVISION 26 SCOPE OF WORK, SHALL PROVIDE ALL CONDUIT, JUNCTION BOXES, HANDHOLES, MANHOLES, BACKBOXES, RACEWAYS, PLASTER RINGS AND RELATED HARDWARE REQUIRED FOR ALL ROUGH IN, AND CONDUIT PATHWAYS INDICATED ON THE DIVISION 27 DRAWINGS.
2. THE TECHNOLOGY CONTRACTOR, UNDER THE DIVISION 27/28 SCOPE OF WORK, SHALL PROVIDE BLANK FACEPLATES FOR ALL TECHNOLOGY ROUGH-INS INDICATED ON DIVISION 27 DRAWINGS AS BEING ROUGH-IN ONLY, FOR FUTURE USE, OR OTHERWISE LEFT UNUSED.
3. THE ELECTRICAL CONTRACTOR, UNDER THE DIVISION 26 SCOPE OF WORK, SHALL PROVIDE ALL PLYWOOD BACKBOARDS INDICATED ON THE DIVISION 27/28 DRAWINGS, INCLUDING, BUT NOT LIMITED TO, ALL PREPARATIONS, SUCH AS TWO COATS OF FIRE RETARDANT PAINT ON ALL SIDES, AND ALL OTHER REQUIREMENTS LISTED IN SPECIFICATION SECTION 270524.
4. THE ELECTRICAL CONTRACTOR, UNDER THE DIVISION 26 SCOPE OF WORK, SHALL PROVIDE ONLY THOSE UPS'S AND/OR OTHER POWER QUALITY DEVICES INDICATED ON THE DIVISION 26 DOCUMENTS. THE TECHNOLOGY CONTRACTOR, UNDER THE DIVISION 27 SCOPE OF WORK, SHALL PROVIDE ALL UPS'S AND/OR POWER QUALITY DEVICES INDICATED ON THE DIVISION 27 AND/OR 28 DOCUMENTS.
5. THE ELECTRICAL CONTRACTOR, UNDER THE DIVISION 26 SCOPE OF WORK, SHALL PROVIDE ALL CABLE TRAY AND CABLE RUNWAY INDICATED ON THE DIVISION 27/28 DOCUMENTS NOT INDICATED IN TECHNOLOGY ROOMS, OR TR's.
6. THE ELECTRICAL CONTRACTOR, UNDER THE DIVISION 26 SCOPE OF WORK, SHALL PROVIDE ALL CONDUIT SLEEVES. CONDUIT SLEEVES SHALL BE AS INDICATED ON THE DRAWINGS, AND/OR REQUIRED BY THE SPECIFICATIONS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE EXACT SLEEVING REQUIREMENTS WITH THE TECHNOLOGY CONTRACTOR PRIOR TO INSTALLATION. MINIMUM SLEEVE SHALL BE 2", UON.
7. THE ELECTRICAL CONTRACTOR, UNDER THE DIVISION 26 SCOPE OF WORK, SHALL PROVIDE ALL BUSBARS, CABLING AND RELATED HARDWARE INDICATED ON THE DIVISION 27/28 DOCUMENTS, REQUIRED TO PROVIDE THE ENTIRE TECHNOLOGY GROUNDING SYSTEM.
8. THE TECHNOLOGY CONTRACTOR SHALL PROVIDE ALL BONDING JUMPERS REQUIRED TO BOND ALL EQUIPMENT PROVIDED BY THE TECHNOLOGY CONTRACTOR TO THE TECHNOLOGY SUPPLEMENTAL GROUNDING SYSTEM.
9. THE ELECTRICAL CONTRACTOR, UNDER THE DIVISION 26 SCOPE OF WORK, SHALL PROVIDE ALL BONDING JUMPERS REQUIRED TO BOND THE CABLETRAY SYSTEM TO ASSURE THAT THE ENTIRE CABLETRAY SYSTEM IS ELECTRICALLY CONTINUOUS AND BONDED TO THE TECHNOLOGY GROUNDING SYSTEM.
10. THE TECHNOLOGY CONTRACTOR, UNDER THE DIVISION 27 SCOPE OF WORK, SHALL PROVIDE ALL OTHER CABLING, CONNECTORS, PATHWAY HARDWARE AND OTHER EQUIPMENT REQUIRED TO COMPLETE THE INSTALLATION OF THE SYSTEMS AND CABLE PLANT AS INDICATED ON THE DIVISION 27 DOCUMENTS.

TEMPORARY CABLING NOTE

1. TECHNOLOGY CONTRACTOR SHALL PROVIDE ALL TECHNOLOGY CABLING FOR TEMPORARY FACILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION TRAILERS. TECHNOLOGY CONTRACTOR SHALL ALSO REMOVE ALL TEMPORARY CABLING AT THE END OF THE PROJECT WHEN DIRECTED BY THE CONSTRUCTION MANAGER.

TAGS AND CALLOUT SYMBOLS

SECTION CALLOUT
SECTION NUMBER
SHEET NUMBER
REVISION CALLOUT
3/4" AC GRADE FIRE RESISTANT PLYWOOD BACKBOARD - MOUNTED 1'-0" TO 9'-0" AFF
DETAIL CALLOUT
DETAIL NUMBER
SHEET NUMBER
KEYNOTE CALLOUT

CABLE TRAY PATHWAYS

INDICATES HEIGHT OF CABLE TRAY
INDICATES WIDTH OF CABLE TRAY

LADDER CABLE TRAY PATHWAYS

INDICATES HEIGHT OF CABLE TRAY
INDICATES WIDTH OF CABLE TRAY

DEVICE NOTES:
1. REFER TO DRAWING PLANS MOUNTING HEIGHT.
2. REFER TO DETAILS PLANS FOR MOUNTING REQUIREMENTS.

ABBREVIATIONS

A	AMPERE
AAC	ABOVE ACCESSIBLE CEILING
AC	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GRADE LEVEL
AHJ	AUTHORITY HAVING JURISDICTION
AL	ALUMINUM
ARCH	ARCHITECT
ATM	AUTOMATIC TELLER MACHINE
AV	AUDIOVISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BFG	BELOW FINISHED GRADE
BICSI	BUILDING INDUSTRY CONSULTING SERVICE INTERNATIONAL
BKBD	BACKBOARD
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CAM	CAMERA
CAT	CATEGORY
CATV	COMMUNITY ANTENNA TELEVISION / CABLE TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CKT	CIRCUIT
CLG	CEILING
CONC	CONCRETE
CO	CONDUIT ONLY
CP	CONSOLIDATION POINT
CONT	CONTINUATION
CU	COPPER
DAS	DISTRIBUTED ANTENNA SYSTEM
DB	DECIBEL
DIV	DIVISION
DIA	DIAMETER
DP	DEMARCATION POINT
DPDT	DOUBLE POLE DOUBLE THROW
DWG	DRAWING
EA	EACH
EAC	ELECTRONIC ACCESS CONTROL
EC	ELECTRICAL CONTRACTOR
EF	ENTRANCE FACILITY
EIA	ELECTRONICS INDUSTRIES ASSOCIATION
ELEC	ELECTRICAL
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EP	EXPLOSION PROOF
EQUIP	EQUIPMENT
ER	EQUIPMENT ROOM
ETR	EXISTING TO REMAIN
EXIST	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FATC	FIRE ALARM TERMINAL CABINET
FIXT	FIXTURE
FO	FIBER OPTIC
FT	FEET
G	GROUND
GC	GENERAL CONTRACTOR
HC	HORIZONTAL CROSS-CONNECT
HP	HORSEPOWER
HZ	HERTZ (CYCLES/SECOND)
INTERCOM	INTERCOMMUNICATION
IP	INTERNET PROTOCOL
IR	INFRARED
ISP	INTERNET SERVICE PROVIDER
JB	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILS
KO	KNOCKOUT
KVM	KEYBOARD/VIDEO/MOUSE
KW	KILOWATT
LAN	LOCAL AREA NETWORK
LCP	LIGHTING CONTROL PANEL
LTG	LIGHTING
LV	LOW VOLTAGE
LVC	LOW VOLTAGE CONTRACTOR
MATV	MASTER ANTENNA TELEVISION
MAX	MAXIMUM
MC	MAIN CROSS-CONNECT
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MM	MULTIMODE
MTD	MOUNTED
MTG	MOUNTING
MTR	MAIN TELECOMMUNICATIONS ROOM
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEX	NEW DEVICE IN EXISTING BACKBOX
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OBC	OHIO BUILDING CODE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFE	OWNER FURNISHED EQUIPMENT
OFOI	OWNER FURNISHED OWNER INSTALLED
OSP	OUTSIDE PLANT
PA	PUBLIC ADDRESS
PB	PULL BOX
PBB	PRIMARY BUS BAR
PBX	PRIVATE BRANCH EXCHANGE
PIR	PASSIVE INFRARED
PLBG	PLUMBING
P/N	PART NUMBER
POC	POINT OF CONNECTION
POE	POWER OVER ETHERNET
POS	POINT OF SALE
PP	PATCH PANEL
PR	PAIR
PTZ	PAN/TILT/ZOOM
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
RCDD	REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
RD	RELOCATED DEVICE
REC	RECESSED
RECPT	RECEPTACLE
REF	REFRIGERATOR
REX	REMOVE EXISTING DEVICE
RF	RADIO FREQUENCY
RGS	RIGID GALVANIZED STEEL
RR	REMOVE AND RELOCATE
RTE	REQUEST TO EXIT
RU	RACK UNIT (1 3/4")
SBB	SECONDARY BUS BAR
SM	SINGLE MODE
SP	SPEAKER
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATION
STP	SHIELDED TWISTED PAIR
SYM	SYMMETRICAL
SYS	SYSTEM
TBD	TO BE DETERMINED
TC	TECHNOLOGY CONTRACTOR
TELECOM	TELECOMMUNICATIONS
TGB	SEE SBB
TMGB	SEE PBB
TR	TELECOMMUNICATIONS ROOM
TV	TELEVISION
TYP	TYPICAL
UG	UNDERGROUND
UGPS	UNDERGROUND PULL SECTION
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VLAN	VIRTUAL LOCAL AREA NETWORK
VMS	VIDEO MANAGEMENT SOFTWARE
VOIP	VOICE OVER INTERNET PROTOCOL
W	WATTS
WAN	WIDE AREA NETWORK
WAP	WIRELESS ACCESS POINT
WG	WIRE GUARD
WLAN	WIRELESS LOCAL AREA NETWORK
WP	WEATHERPROOF
XFMR	TRANSFORMER

DEVICE MOUNTING HEIGHT DIAGRAM

NOTE: MOUNTING HEIGHTS FOR DEVICES UNLESS OTHERWISE NOTED ON THE DRAWINGS.
ALL MOUNTING HEIGHTS ARE TO TOP OF DEVICE.

EQUIPMENT RACKS AND CABINETS

FRONT	FLOOR-MOUNTED TWO-POST EQUIPMENT RACK	FRONT	FLOOR-MOUNTED EQUIPMENT/SERVER ENCLOSURE
FRONT	WALL-MOUNTED ENCLOSED EQUIPMENT CABINET	FRONT	FLOOR-MOUNTED FOUR-POST EQUIPMENT RACK
FRONT	WALL-MOUNTED OPEN-AIR EQUIPMENT RACK		

NOTES:
1. REFER TO ENLARGED FLOOR PLANS AND DETAILS FOR SPECIFIC EQUIPMENT RACK AND CABINET INFORMATION.

MISCELLANEOUS

J XX	JUNCTION BOX, WALL-MOUNTED	J XX	JUNCTION BOX, FLOOR-MOUNTED
J XX	JUNCTION BOX, CEILING-MOUNTED		TELECOMMUNICATIONS BONDING BUSBAR

XX = DEVICE DESCRIPTION
SFF = STRUCTURED FURNITURE FEED

TELECOMMUNICATIONS SYSTEM

XX ▼	DATA OUTLET, WALL MOUNTED	XX ▼	DATA OUTLET, ABOVE COUNTER

DEVICE NOTES:
1. PROVIDE A 4-11/16" SQUARE BY 2-1/8" DEEP BACK BOX WITH A SINGLE GANG REDUCTION RING AT EACH LOCATION, UNO.
2. PROVIDE A 1" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. SEE TECHNOLOGY DETAIL PLANS FOR DATA OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION.

▼ XX	DATA OUTLET, RACEWAY MOUNTED		

DEVICE NOTES:
1. MOUNT OUTLET IN RACEWAY PROVIDED BY THE ELECTRICAL CONTRACTOR. COORDINATE INSTALLATION OF OUTLET IN RACEWAY WITH ELECTRICAL PLANS AND SPECIFICATIONS, UNO.
2. PROVIDE 1.25" CONDUITS ROUTED BETWEEN THE RACEWAY AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE, IN THE SAME ROOM AS THE RACEWAY FLOOR BOX. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. SEE TECHNOLOGY DETAIL PLANS FOR RACEWAY OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION.

▼ XX	DATA OUTLET, FLOOR MOUNTED		

DEVICE NOTES:
1. MOUNT OUTLET IN FLOOR BOX PROVIDED BY THE ELECTRICAL CONTRACTOR. REFER TO THE ELECTRICAL PLANS AND SPECIFICATIONS FOR FLOOR BOX DETAILS, UNO.
2. PROVIDE 1.25" CONDUITS ROUTED BETWEEN THE FLOOR BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE, IN THE SAME ROOM AS THE DATA FLOOR BOX. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. SEE TECHNOLOGY DETAIL PLANS FOR FLOOR BOX OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION.

▼ XX	DATA OUTLET, CEILING MOUNTED		

DEVICE NOTES:
1. PROVIDE A 4-11/16" SQUARE BY 2-1/8" DEEP BACK BOX WITH A SINGLE GANG REDUCTION RING AT EACH LOCATION, UNO.
2. PROVIDE A 1" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. FLUSH MOUNT OUTLET LOCATION IN CEILING, UNO.
4. SEE TECHNOLOGY DETAIL PLANS FOR DATA OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION.

XX	WIRELESS ACCESS POINT (WAP), WALL MOUNTED	XX	WIRELESS ACCESS POINT (WAP), CEILING MOUNTED

DEVICE NOTES:
1. PROVIDE A 4-11/16" SQUARE BY 2-1/8" DEEP BACK BOX WITH A SINGLE GANG REDUCTION RING AT EACH LOCATION, UNO.
2. PROVIDE A 1" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CABLE PATHWAY OR CEILING SPACE ABOVE, UNO. STUB CONDUIT OUT 90 DEGREES. PROVIDE A PLASTIC BUSHING ON CONDUIT STUB END.
3. FLUSH MOUNT OUTLET LOCATION IN CEILING, UNO.
4. FOR ALL WIRELESS DATA DROPS, THE CONTRACTOR SHALL PROVIDE CABLING TO THE LOCATION INDICATED AND TO THE EXTENT THAT IT DOES NOT EXCEED EIA/TIA DISTANCE LIMITATIONS, PROVIDE A 25' SERVICE LOOP.
5. OUTLET TERMINATIONS SHALL BE BAGGED FOR PROTECTION UNTIL READY TO SURVEY AND DEPLOY ACCESS POINTS. CONTRACTOR SHALL EXTEND SERVICE LOOP CABLING TO A LOCATION AS DIRECTED BY OWNER'S VENDOR.
6. SEE TECHNOLOGY DETAIL PLANS FOR WIRELESS OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION

XX = DEVICE / OUTLET ATTRIBUTE, WHERE "XX" INDICATES DEVICE / OUTLET TYPE
E = ELEVATOR PHONE
PRJ = PROJECTOR
RS = ROOM SCHEDULER
W = WALL PHONE
WP = WEATHERPROOF

BUILDING MANAGEMENT SYSTEMS

XX ▼	BUILDING MANAGEMENT OUTLET, WALL MOUNTED		

DEVICE NOTES:
1. PROVIDE A 4-11/16" SQUARE BY 2-1/8" DEEP BACK BOX WITH A SINGLE GANG REDUCTION RING AT EACH LOCATION, UNO.
2. PROVIDE A 1" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. COORDINATE EXACT BACK BOX AND CONDUIT REQUIREMENTS WITH BMS SYSTEM CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
4. SEE TECHNOLOGY DETAIL PLANS FOR BMS OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION.

XX = DEVICE / OUTLET ATTRIBUTE, WHERE "XX" INDICATES DEVICE / OUTLET TYPE.
BMS = BUILDING MANAGEMENT SYSTEM OUTLET
FACU = FIRE ALARM CONTROL UNIT OUTLET
FSCP = FIRE FIGHTER SMOKE CONTROL PANEL OUTLET
GAP = GENERAL ANNUNCIATOR PANEL OUTLET
LCP = LIGHTING CONTROL PANEL OUTLET

INTERCOM SYSTEM

XX ▼	INTERCOM STATION OUTLET, WALL MOUNTED		

DEVICE NOTES:
1. PROVIDE A 4-11/16" SQUARE BY 2-1/8" DEEP BACK BOX AT EACH LOCATION, UNO.
2. PROVIDE A 1" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. COORDINATE EXACT BACK BOX AND CONDUIT REQUIREMENTS WITH INTERCOM SYSTEM CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
4. SEE TECHNOLOGY DETAIL PLANS FOR INTERCOM OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION.

XX = DEVICE TYPE
IDM = INTERCOM MASTER STATION
IDV = INTERCOM DOOR VIDEO

ELECTRONIC ACCESS CONTROL SYSTEM

CR XX	PROXIMITY / CARD READER	PB XX	PUSH BUTTON

DEVICE NOTES:
1. PROVIDE A 4-11/16" SQUARE BY 2-1/8" DEEP BACK BOX WITH A SINGLE GANG REDUCTION RING AT EACH LOCATION, UNO.
2. PROVIDE A 1" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. DOOR RELEASE BUTTON SHALL BE SURFACE-MOUNTED TO UNDERSIDE OF COUNTER/DESK. MOUNT THE BACK BOX DIRECTLY BELOW THE COUNTER/DESK AND PROVIDE SURFACE-MOUNTED RACEWAY FROM THE BACK BOX TO THE DOOR RELEASE BUTTON LOCATION, UNO.
4. COORDINATE EXACT BACK BOX AND CONDUIT REQUIREMENTS WITH SECURITY SYSTEM CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
5. SEE TECHNOLOGY DETAIL PLANS FOR ACCESS DOOR ROUGH-IN INFORMATION.

ACP	ACCESS CONTROL PANEL	ACPS	ACCESS CONTROL POWER SUPPLY

XX = DEVICE TYPE
DB = DURESS BUTTON
DE = DELAY EGRESS
DR = DOOR RELEASE ROCKER
LD = LOCK DOWN
MU = MULLION-MOUNTED
RTE = REQUEST TO EXIT

ACCESS CONTROL NOTE:
1. ACCESS CONTROL CONTRACTOR SHALL COORDINATE WITH AUTOMATIC DOOR PROVIDER FOR ALL DOORS BEING CONTROLLED BY ACCESS CONTROL SYSTEM. ACCESS CONTROL CONTRACTOR SHALL PROVIDE ANY REQUIRED RELAY INTERFACE. TIME DELAY CIRCUIT AND/OR OTHER RELATED DEVICES AND CABLING TO FULLY AND SUCCESSFULLY INTERFACE THE ACCESS CONTROL SYSTEM WITH THE AUTO DOORS. ACCESS CONTROL CONTRACTOR SHALL COORDINATE SEQUENCE OF OPERATION WITH DOOR VENDOR TO ASSURE PROPER OPERATION.

INTRUSION DETECTION SYSTEM

GB	GLASS BREAK SENSOR	IDCP	INTRUSION CONTROL PANEL

DEVICE NOTES:
1. PROVIDE A SINGLE GANG 1-1/2" DEEP BACK BOX WITH A SINGLE GANG REDUCTION RING AT EACH LOCATION, UNO.
2. PROVIDE A 1" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. COORDINATE EXACT BACK BOX AND CONDUIT REQUIREMENTS WITH SECURITY SYSTEM CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.

VIDEO SURVEILLANCE SYSTEM

CAM-XXX	VIDEO SURVEILLANCE CAMERA DEVICE / OUTLET, WALL-MOUNTED	CAM-XXX	VIDEO SURVEILLANCE CAMERA DEVICE / OUTLET, CEILING-MOUNTED

DEVICE NOTES:
1. PROVIDE A 4-11/16" SQUARE BY 2-1/8" DEEP BACK BOX WITH A SINGLE GANG REDUCTION RING AT EACH LOCATION, UNO.
2. PROVIDE A 1" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. COORDINATE EXACT BACK BOX AND CONDUIT REQUIREMENTS WITH SECURITY SYSTEM CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
4. SEE TECHNOLOGY DETAIL PLANS FOR CAMERA OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION..
5. SEE SECURITY CAMERA SCHEDULE FOR DEVICE TYPE AND MOUNTING INFORMATION.

AUDIOVISUAL SYSTEM

SP	SPEAKER, CEILING-MOUNTED	MIC	MICROPHONE, CEILING-MOUNTED

DEVICE NOTES:
1. PROVIDE A 3/4" CONDUIT ROUTED BETWEEN EACH SPEAKER BACK BOX AND THE ASSOCIATED POWER AMPLIFIER OR NEAREST ACCESSIBLE CABLE PATHWAY, UNO.
2. INSTALL CEILING-MOUNTED SPEAKERS FLUSH TO CEILING, UNO. PROVIDE ALL NECESSARY MOUNTING HARDWARE AND TIE OFF ACCESSORIES TO PROPERLY SUPPORT THE SPEAKER PER MANUFACTURER'S MOUNTING INSTRUCTIONS.
3. PROVIDE SPEAKER GRILLES TO MATCH THE ADJACENT CEILING / WALL COLOR, UNO.

TV ▼ XX	TELEVISION OUTLET, WALL-MOUNTED	PRJ ▼	PROJECTOR OUTLET, CEILING-MOUNTED
WC ▼	WALL CONTROLLER OUTLET, WALL-MOUNTED	XX ▼	TELEVISION OUTLET, CEILING-MOUNTED
CAM ▼	AV VIDEO CAMERA, WALL-MOUNTED		

DEVICE NOTES:
1. PROVIDE A 4-11/16" SQUARE BY 2-1/8" DEEP BACK BOX WITH A SINGLE GANG REDUCTION RING AT EACH LOCATION, UNO.
2. PROVIDE A 1.25" CONDUIT ROUTED BETWEEN THE BACK BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. COORDINATE EXACT BACK BOX AND CONDUIT REQUIREMENTS WITH AV SYSTEM CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
4. SEE TECHNOLOGY DETAIL PLANS FOR TELEVISION OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION.

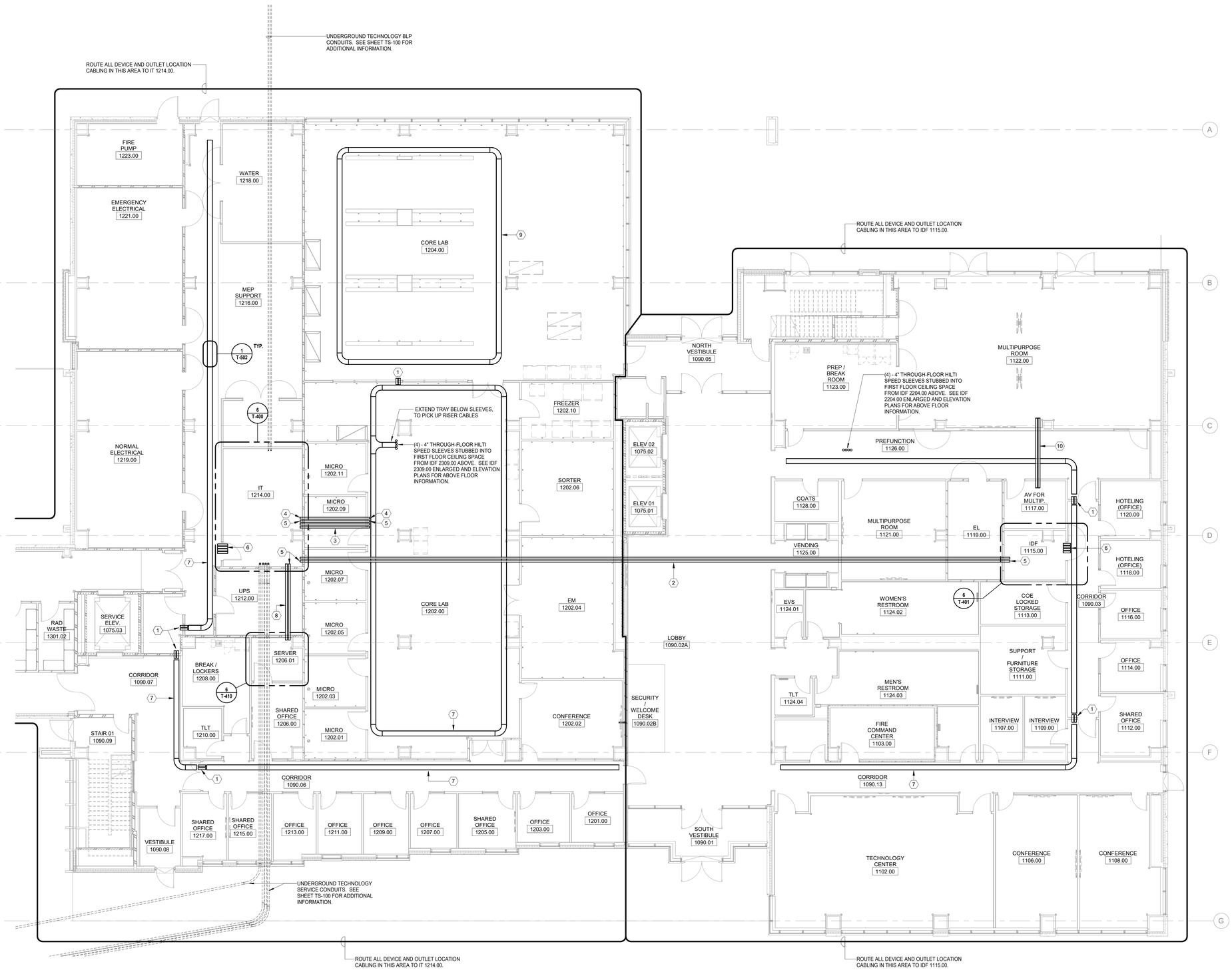
AV ▼ XX	AUDIO / VISUAL DEVICE, FLOOR MOUNTED		

DEVICE NOTES:
1. MOUNT OUTLET IN FLOOR BOX PROVIDED BY THE ELECTRICAL CONTRACTOR. REFER TO THE ELECTRICAL PLANS AND SPECIFICATIONS FOR FLOOR BOX DETAILS, UNO.
2. PROVIDE 1.25" CONDUITS ROUTED BETWEEN THE FLOOR BOX AND THE NEAREST ACCESSIBLE CEILING SPACE ABOVE, IN THE SAME ROOM AS THE FLOOR BOX. STUB CONDUIT OUT 90 DEGREES INTO CEILING SPACE, UNO.
3. SEE TECHNOLOGY DETAIL PLANS FOR AV FLOOR BOX OUTLET CABLE, CONNECTOR, AND FACEPLATE INFORMATION.

XX = DEVICE / OUTLET ATTRIBUTE, WHERE "XX" INDICATES DEVICE / OUTLET TYPE
HDMI = CABLED DEVICE / OUTLET
H/U = HDMI & USB-C CABLED DEVICE / OUTLET

XX	WALL MOUNTED AV DISPLAY		

DEVICE NOTES:
1. PROVIDE ALL MONITOR MOUNTS AND MOU



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

TECHNOLOGY PATHWAY PLAN - SHEET GENERAL NOTES:

A. REFER TO T-400 SERIES DRAWINGS FOR TELECOM ROOM LAYOUTS, INFORMATION, AND REQUIREMENTS.
B. ALL HORIZONTAL CONDUIT SLEEVES AND PRE-MANUFACTURED PATHWAYS SHALL BE PROVIDED IN AN ACCESSIBLE CEILING SPACE. COORDINATE CONDUIT SLEEVE PENETRATIONS WITH OTHER TRADES, TO AVOID CONFLICTS AND BLOCKING OF CONDUIT SLEEVE CABLE ACCESS, BY TRADE INSTALLED SYSTEMS. VERIFY CONDUIT SLEEVE PLACEMENT, PRIOR TO INSTALLATION. MOVE OR RELOCATE SLEEVES FROM DRAWING PLAN PLACEMENT, AS NECESSARY, TO ENSURE CONFLICT FREE INSTALLATION AND CABLE ACCESS. ANY SLEEVE DEVIATIONS, MOVES, AND RELOCATIONS SHALL BE DOCUMENTED AND SUBMITTED AS PART OF FINAL AS-BUILT DRAWINGS.
C. OPENINGS AROUND PENETRATIONS OF TECHNOLOGY CABLES, TECHNOLOGY RACEWAYS, AND CABLE ROUTING ASSEMBLIES THROUGH FIRE RESISTANT RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
D. WHERE NO CABLE TRAY IS PRESENT AND CABLES ARE NOT IN CONDUIT, CONTRACTOR SHALL PROVIDE AND INSTALL THEIR OWN CABLE SUPPORTS, INDEPENDENTLY SUSPENDED OR ATTACHED TO STRUCTURE OR STRUCTURAL CEILINGS OR WALLS. CABLE SUPPORTS SHALL BE SPECIFICALLY DESIGNED FOR SUPPORTING CATEGORY RATED CABLES.
E. INSTALL AND ALIGN BOTTOM OF SLEEVES AND THROUGH-WALL PENETRATIONS, WITH TOP OF CABLE TRAYS. WHERE CABLE TRAYS ARE AT DIFFERENT LEVELS, INSTALL BOTTOM OF SLEEVES AND THROUGH-WALL PENETRATIONS WITH TOP OF HIGHEST CABLE TRAY. WHERE NO CABLE TRAYS ARE PRESENT, INSTALL SLEEVES AND THROUGH-WALL PENETRATIONS A MINIMUM OF 3" ABOVE FINISHED CEILING.
F. NOTED CABLE TRAY HEIGHTS ARE TO THE BOTTOM OF THE CABLE TRAY.

(#) TECHNOLOGY PATHWAY PLAN - CODED NOTES:

1 PROVIDE TWO (2) - 4" THROUGH-WALL SLEEVES. SLEEVES THROUGH FIRE RATED WALLS SHALL BE HILTI SPEED SLEEVE #CP 563 BA. SLEEVES THROUGH STANDARD OR NON-RATED WALLS SHALL BE STI #FS400. COORDINATE AND VERIFY WALL TYPE WITH ARCHITECTURAL PLANS PRIOR TO INSTALLATION.

2 PROVIDE (2) - 4" CONDUITS BETWEEN IT 1214.00 AND IDF 1115.00. STUB EACH CONDUIT A MINIMUM OF 4" INTO EACH ROOM. PROVIDE PLASTIC BUSHING ON BOTH ENDS OF EACH CONDUIT

3 PROVIDE (4) - 4" CONDUITS BETWEEN IT 1214.00 AND CABLE TRAY IN CORE LAB 1202.00. STUB EACH CONDUIT A MINIMUM OF 4" INTO EACH ROOM. PROVIDE PLASTIC BUSHING ON BOTH ENDS OF EACH CONDUIT.

4 DESIGNATE CONDUIT AS "SECURITY CABLES ONLY".

5 DESIGNATE CONDUIT AS "FIBER RISER CABLES ONLY".

6 PROVIDE FOUR (4) - 4" HILTI SPEED SLEEVES #CP 563 BA.

7 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-0" AFF.

8 PROVIDE (2) - 4" CONDUITS BETWEEN IT 1214.00 AND CORE LAB SERVER 1206.01. STUB EACH CONDUIT A MINIMUM OF 4" INTO EACH ROOM. PROVIDE PLASTIC BUSHING ON BOTH ENDS OF EACH CONDUIT

9 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-6" AFF.

10 PROVIDE (2) - 4" CONDUITS BETWEEN AV ROOM AND MULTIPURPOSE ROOM FOR AV CABLING. STUB EACH CONDUIT A MINIMUM OF 4" INTO EACH ROOM. PROVIDE PLASTIC BUSHING ON BOTH ENDS OF EACH CONDUIT.

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KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY PATHWAY PLAN - LEVEL 01
SHEET NO.
T-101

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TECHNOLOGY PATHWAY PLAN - SHEET GENERAL NOTES:

A. REFER TO T-400 SERIES DRAWINGS FOR TELECOM ROOM LAYOUTS, INFORMATION, AND REQUIREMENTS.
B. ALL HORIZONTAL CONDUIT SLEEVES AND PRE-MANUFACTURED PATHWAYS SHALL BE PROVIDED IN AN ACCESSIBLE CEILING SPACE. COORDINATE CONDUIT SLEEVE PENETRATIONS WITH OTHER TRADES, TO AVOID CONFLICTS AND BLOCKING OF CONDUIT SLEEVE CABLE ACCESS, BY TRADE INSTALLED SYSTEMS. VERIFY CONDUIT SLEEVE PLACEMENT, PRIOR TO INSTALLATION. MOVE OR RELOCATE SLEEVES FROM DRAWING PLAN PLACEMENT, AS NECESSARY, TO ENSURE CONFLICT FREE INSTALLATION AND CABLE ACCESS. ANY SLEEVE DEVIATIONS, MOVES, AND RELOCATIONS SHALL BE DOCUMENTED AND SUBMITTED AS PART OF FINAL AS-BUILT DRAWINGS.
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F. NOTED CABLE TRAY HEIGHTS ARE TO THE BOTTOM OF THE CABLE TRAY.

(#) **TECHNOLOGY PATHWAY PLAN - CODED NOTES:**

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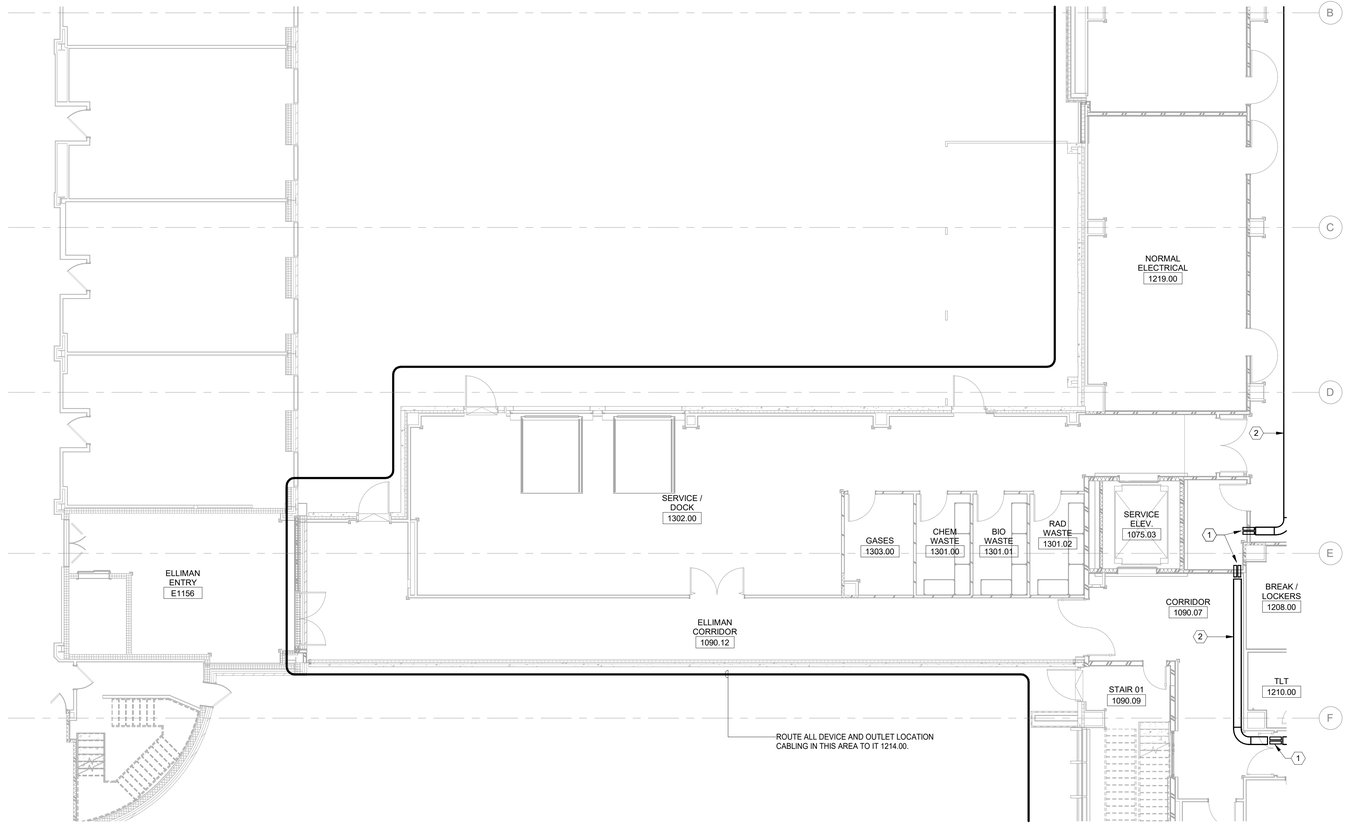
2 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-0" AFF.



1 TECHNOLOGY PATHWAY PLAN - LEVEL 01 - SERVICE DOCK
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/26/2025 8:35:09 AM TEMPLATE VERSION: 23.0.4

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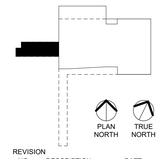
KEY PLAN



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY PATHWAY PLAN - LEVEL 01 - SERVICE
SHEET NO.
T-101.2

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1 TECHNOLOGY PATHWAY PLAN - LEVEL 02
SCALE: 1/8" = 1'-0"

TECHNOLOGY PATHWAY PLAN - SHEET GENERAL NOTES:

A. REFER TO T-400 SERIES DRAWINGS FOR TELECOM ROOM LAYOUTS, INFORMATION, AND REQUIREMENTS.
B. ALL HORIZONTAL CONDUIT SLEEVES AND PRE-MANUFACTURED PATHWAYS SHALL BE PROVIDED IN AN ACCESSIBLE CEILING SPACE. COORDINATE CONDUIT SLEEVE PENETRATIONS WITH OTHER TRADES, TO AVOID CONFLICTS AND BLOCKING OF CONDUIT SLEEVE CABLE ACCESS, BY TRADE INSTALLED SYSTEMS. VERIFY CONDUIT SLEEVE PLACEMENT, PRIOR TO INSTALLATION. MOVE OR RELOCATE SLEEVES FROM DRAWING PLAN PLACEMENT, AS NECESSARY, TO ENSURE CONFLICT FREE INSTALLATION AND CABLE ACCESS. ANY SLEEVE DEVIATIONS, MOVES, AND RELOCATIONS SHALL BE DOCUMENTED AND SUBMITTED AS PART OF FINAL AS-BUILT DRAWINGS.
C. OPENINGS AROUND PENETRATIONS OF TECHNOLOGY CABLES, TECHNOLOGY RACEWAYS, AND CABLE ROUTING ASSEMBLIES THROUGH FIRE RESISTANT RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
D. WHERE NO CABLE TRAY IS PRESENT AND CABLES ARE NOT IN CONDUIT, CONTRACTOR SHALL PROVIDE AND INSTALL THEIR OWN CABLE SUPPORTS, INDEPENDENTLY SUSPENDED OR ATTACHED TO STRUCTURE OR STRUCTURAL CEILINGS OR WALLS. CABLE SUPPORTS SHALL BE SPECIFICALLY DESIGNED FOR SUPPORTING CATEGORY RATED CABLES.
E. INSTALL AND ALIGN BOTTOM OF SLEEVES AND THROUGH-WALL PENETRATIONS, WITH TOP OF CABLE TRAYS. WHERE CABLE TRAYS ARE AT DIFFERENT LEVELS, INSTALL BOTTOM OF SLEEVES AND THROUGH-WALL PENETRATIONS WITH TOP OF HIGHEST CABLE TRAY. WHERE NO CABLE TRAYS ARE PRESENT, INSTALL SLEEVES AND THROUGH-WALL PENETRATIONS A MINIMUM OF 3" ABOVE FINISHED CEILING.
F. NOTED CABLE TRAY HEIGHTS ARE TO THE BOTTOM OF THE CABLE TRAY.

TECHNOLOGY PATHWAY PLAN - CODED NOTES:

1 PROVIDE FOUR (4) - 4" HILTI SPEED SLEEVES #CP 563 BA.
2 PROVIDE TWO (2) - 4" THROUGH-WALL SLEEVES. SLEEVES THROUGH FIRE RATED WALLS SHALL BE HILTI SPEED SLEEVE #CP 563 BA. SLEEVES THROUGH STANDARD OR NON-RATED WALLS SHALL BE STI #FS400. COORDINATE AND VERIFY WALL TYPE WITH ARCHITECTURAL PLANS PRIOR TO INSTALLATION.
3 DESIGNATE CONDUIT AS "FIBER RISER CABLES ONLY".
4 PROVIDE (1) - 4" CONDUIT BETWEEN IDF ROOMS. STUB CONDUIT A MINIMUM OF 4" INTO EACH IDF ROOM. PROVIDE PLASTIC BUSHING ON BOTH ENDS OF CONDUIT.
5 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-4" AFF.
6 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-4" AFF.
7 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-4" AFF.
8 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-4" AFF.
9 LOCATION OF CONDUIT SLEEVE(S) THROUGH BULKHEAD AND/OR OVER GYPSUM CEILING. EXTEND CONDUIT SLEEVE(S) THROUGH THE ENTIRE SPAN OF THE BULKHEAD AND/OR GYPSUM CEILING. STUB CONDUIT SLEEVE(S) INTO AN ACCESSIBLE CEILING SPACE, ON EACH SIDE OF THE BULKHEAD AND/OR GYPSUM CEILING.
10 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-10" AFF.

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KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY PATHWAY PLAN - LEVEL 02
SHEET NO.
T-102

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PLOT DATE: 9/25/2025 8:39:03 AM TEMPLATE VERSION: 23.0.4

1 TECHNOLOGY PATHWAY PLAN - LEVEL 03
SCALE: 1/8" = 1'-0"

TECHNOLOGY PATHWAY PLAN - SHEET GENERAL NOTES:

A. REFER TO T-400 SERIES DRAWINGS FOR TELECOM ROOM LAYOUTS, INFORMATION, AND REQUIREMENTS.
B. ALL HORIZONTAL CONDUIT SLEEVES AND PRE-MANUFACTURED PATHWAYS SHALL BE PROVIDED IN AN ACCESSIBLE CEILING SPACE. COORDINATE CONDUIT SLEEVE PENETRATIONS WITH OTHER TRADES, TO AVOID CONFLICTS AND BLOCKING OF CONDUIT SLEEVE CABLE ACCESS, BY TRADE INSTALLED SYSTEMS. VERIFY CONDUIT SLEEVE PLACEMENT, PRIOR TO INSTALLATION. MOVE OR RELOCATE SLEEVES FROM DRAWING PLAN PLACEMENT, AS NECESSARY, TO ENSURE CONFLICT FREE INSTALLATION AND CABLE ACCESS. ANY SLEEVE DEVIATIONS, MOVES, AND RELOCATIONS SHALL BE DOCUMENTED AND SUBMITTED AS PART OF FINAL AS-BUILT DRAWINGS.
C. OPENINGS AROUND PENETRATIONS OF TECHNOLOGY CABLES, TECHNOLOGY RACEWAYS, AND CABLE ROUTING ASSEMBLIES THROUGH FIRE RESISTANT RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
D. WHERE NO CABLE TRAY IS PRESENT AND CABLES ARE NOT IN CONDUIT, CONTRACTOR SHALL PROVIDE AND INSTALL THEIR OWN CABLE SUPPORTS, INDEPENDENTLY SUSPENDED OR ATTACHED TO STRUCTURE OR STRUCTURAL CEILINGS OR WALLS. CABLE SUPPORTS SHALL BE SPECIFICALLY DESIGNED FOR SUPPORTING CATEGORY RATED CABLES.
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F. NOTED CABLE TRAY HEIGHTS ARE TO THE BOTTOM OF THE CABLE TRAY.

(#) TECHNOLOGY PATHWAY PLAN - CODED NOTES:

1 PROVIDE FOUR (4) - 4" HILTI SPEED SLEEVES #CP 563 BA.

2 PROVIDE TWO (2) - 4" THROUGH-WALL SLEEVES. SLEEVES THROUGH FIRE RATED WALLS SHALL BE HILTI SPEED SLEEVE #CP 563 BA. SLEEVES THROUGH STANDARD OR NON-RATED WALLS SHALL BE STI #FS400. COORDINATE AND VERIFY WALL TYPE WITH ARCHITECTURAL PLANS PRIOR TO INSTALLATION.

3 DESIGNATE CONDUIT AS "FIBER RISER CABLES ONLY".

4 PROVIDE (1) - 4" CONDUIT BETWEEN IDF ROOMS. STUB CONDUIT A MINIMUM OF 4" INTO EACH IDF ROOM. PROVIDE PLASTIC BUSHING ON BOTH ENDS OF CONDUIT.

5 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-4" AFF.

6 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-4" AFF.

7 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-4" AFF.

8 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-4" AFF.

9 LOCATION OF CONDUIT SLEEVE(S) THROUGH BULKHEAD AND/OR OVER GYPSUM CEILING. EXTEND CONDUIT SLEEVE(S) THROUGH THE ENTIRE SPAN OF THE BULKHEAD AND/OR GYPSUM CEILING. STUB CONDUIT SLEEVE(S) INTO AN ACCESSIBLE CEILING SPACE, ON EACH SIDE OF THE BULKHEAD AND/OR GYPSUM CEILING.

10 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-10" AFF.

PLOT DATE: 9/25/2025 8:39:07 AM TEMPLATE VERSION: 23.0.4

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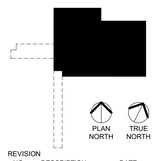
KEY PLAN



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HKS PROJECT NUMBER
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ISSUE
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TECHNOLOGY PATHWAY PLAN - LEVEL 03
SHEET NO.
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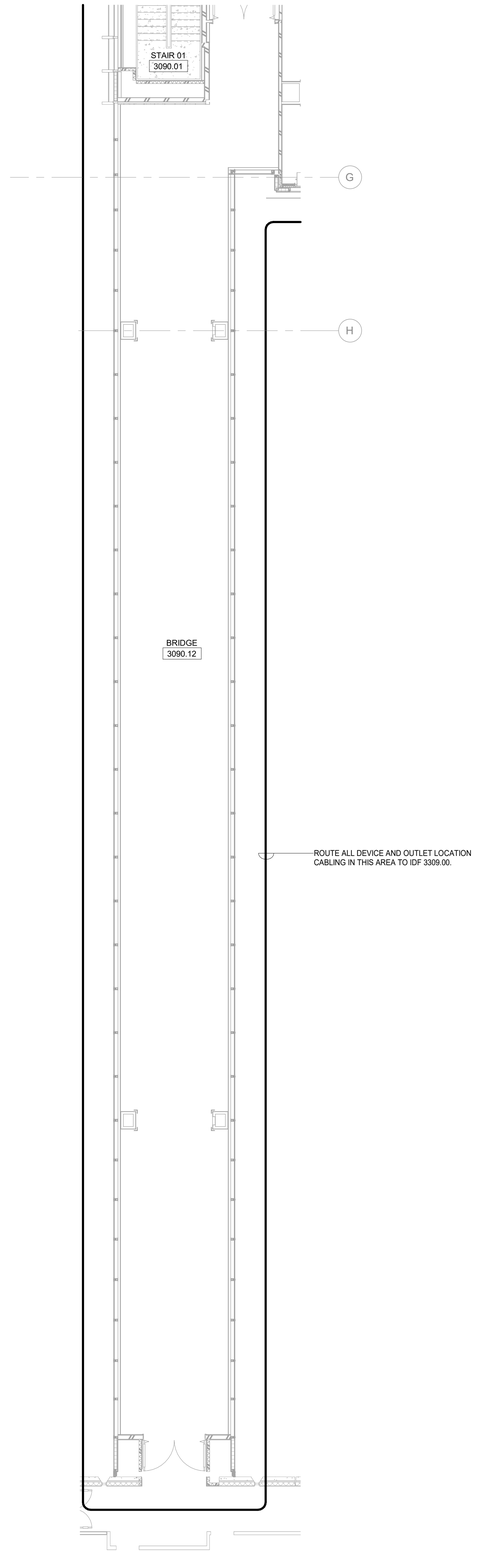

1 TECHNOLOGY PATHWAY PLAN - LEVEL 03 - BRIDGE
SCALE: 1/8" = 1'-0"

TECHNOLOGY PATHWAY PLAN - SHEET GENERAL NOTES:

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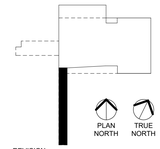
KEY PLAN



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY PATHWAY PLAN - LEVEL 03 - BRIDGE
SHEET NO.
T-103.3

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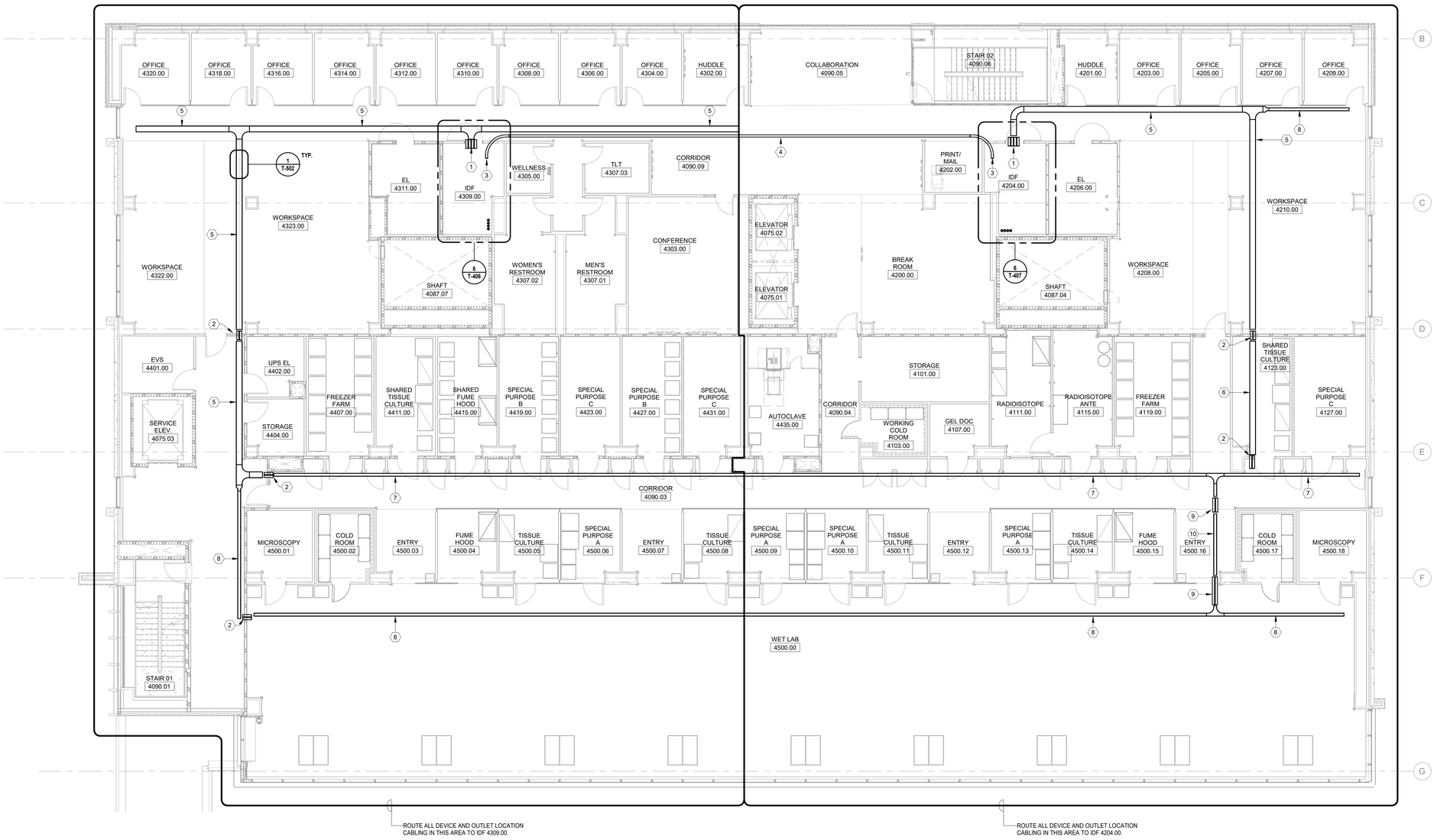

1 TECHNOLOGY PATHWAY PLAN - LEVEL 04
SCALE: 1/8" = 1'-0"

TECHNOLOGY PATHWAY PLAN - SHEET GENERAL NOTES:

A. REFER TO T-400 SERIES DRAWINGS FOR TELECOM ROOM LAYOUTS, INFORMATION, AND REQUIREMENTS.
B. ALL HORIZONTAL CONDUIT SLEEVES AND PRE-MANUFACTURED PATHWAYS SHALL BE PROVIDED IN AN ACCESSIBLE CEILING SPACE. COORDINATE CONDUIT SLEEVE PENETRATIONS WITH OTHER TRADES, TO AVOID CONFLICTS AND BLOCKING OF CONDUIT SLEEVE CABLE ACCESS, BY TRADE INSTALLED SYSTEMS. VERIFY CONDUIT SLEEVE PLACEMENT, PRIOR TO INSTALLATION. MOVE OR RELOCATE SLEEVES FROM DRAWING PLAN PLACEMENT, AS NECESSARY, TO ENSURE CONFLICT FREE INSTALLATION AND CABLE ACCESS. ANY SLEEVE DEVIATIONS, MOVES, AND RELOCATIONS SHALL BE DOCUMENTED AND SUBMITTED AS PART OF FINAL AS-BUILT DRAWINGS.
C. OPENINGS AROUND PENETRATIONS OF TECHNOLOGY CABLES, TECHNOLOGY RACEWAYS, AND CABLE ROUTING ASSEMBLIES THROUGH FIRE RESISTANT RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
D. WHERE NO CABLE TRAY IS PRESENT AND CABLES ARE NOT IN CONDUIT, CONTRACTOR SHALL PROVIDE AND INSTALL THEIR OWN CABLE SUPPORTS, INDEPENDENTLY SUSPENDED OR ATTACHED TO STRUCTURE OR STRUCTURAL CEILINGS OR WALLS. CABLE SUPPORTS SHALL BE SPECIFICALLY DESIGNED FOR SUPPORTING CATEGORY RATED CABLES.
E. INSTALL AND ALIGN BOTTOM OF SLEEVES AND THROUGH-WALL PENETRATIONS, WITH TOP OF CABLE TRAYS. WHERE CABLE TRAYS ARE AT DIFFERENT LEVELS, INSTALL BOTTOM OF SLEEVES AND THROUGH-WALL PENETRATIONS WITH TOP OF HIGHEST CABLE TRAY. WHERE NO CABLE TRAYS ARE PRESENT, INSTALL SLEEVES AND THROUGH-WALL PENETRATIONS A MINIMUM OF 3" ABOVE FINISHED CEILING.
F. NOTED CABLE TRAY HEIGHTS ARE TO THE BOTTOM OF THE CABLE TRAY.

(#) TECHNOLOGY PATHWAY PLAN - CODED NOTES:

1 PROVIDE FOUR (4) - 4" HILTI SPEED SLEEVES #CP 563 BA.

2 PROVIDE TWO (2) - 4" THROUGH-WALL SLEEVES. SLEEVES THROUGH FIRE RATED WALLS SHALL BE HILTI SPEED SLEEVE #CP 563 BA. SLEEVES THROUGH STANDARD OR NON-RATED WALLS SHALL BE STI #FS400. COORDINATE AND VERIFY WALL TYPE WITH ARCHITECTURAL PLANS PRIOR TO INSTALLATION.

3 DESIGNATE CONDUIT AS "FIBER RISER CABLES ONLY".

4 PROVIDE (1) - 4" CONDUIT BETWEEN IDF ROOMS. STUB CONDUIT A MINIMUM OF 4" INTO EACH IDF ROOM. PROVIDE PLASTIC BUSHING ON BOTH ENDS OF CONDUIT.

5 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-4" AFF.

6 PROVIDE 12" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-4" AFF.

7 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-4" AFF.

8 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 10'-4" AFF.

9 LOCATION OF CONDUIT SLEEVE(S) THROUGH BULKHEAD AND/OR OVER GYPSUM CEILING. EXTEND CONDUIT SLEEVE(S) THROUGH THE ENTIRE SPAN OF THE BULKHEAD AND/OR GYPSUM CEILING. STUB CONDUIT SLEEVE(S) INTO AN ACCESSIBLE CEILING SPACE, ON EACH SIDE OF THE BULKHEAD AND/OR GYPSUM CEILING.

10 PROVIDE 6" WIDE x 4" DEEP CABLE TRAY. BOTTOM OF TRAY MOUNTED AT 9'-10" AFF.

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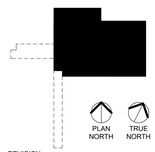

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HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY PATHWAY PLAN - LEVEL 04
SHEET NO.
T-104

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1 TECHNOLOGY PATHWAY PLAN - LEVEL 05
SCALE: 1/8" = 1'-0"

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KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

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26234.000
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ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY PATHWAY PLAN - LEVEL 05
SHEET NO.
T-105

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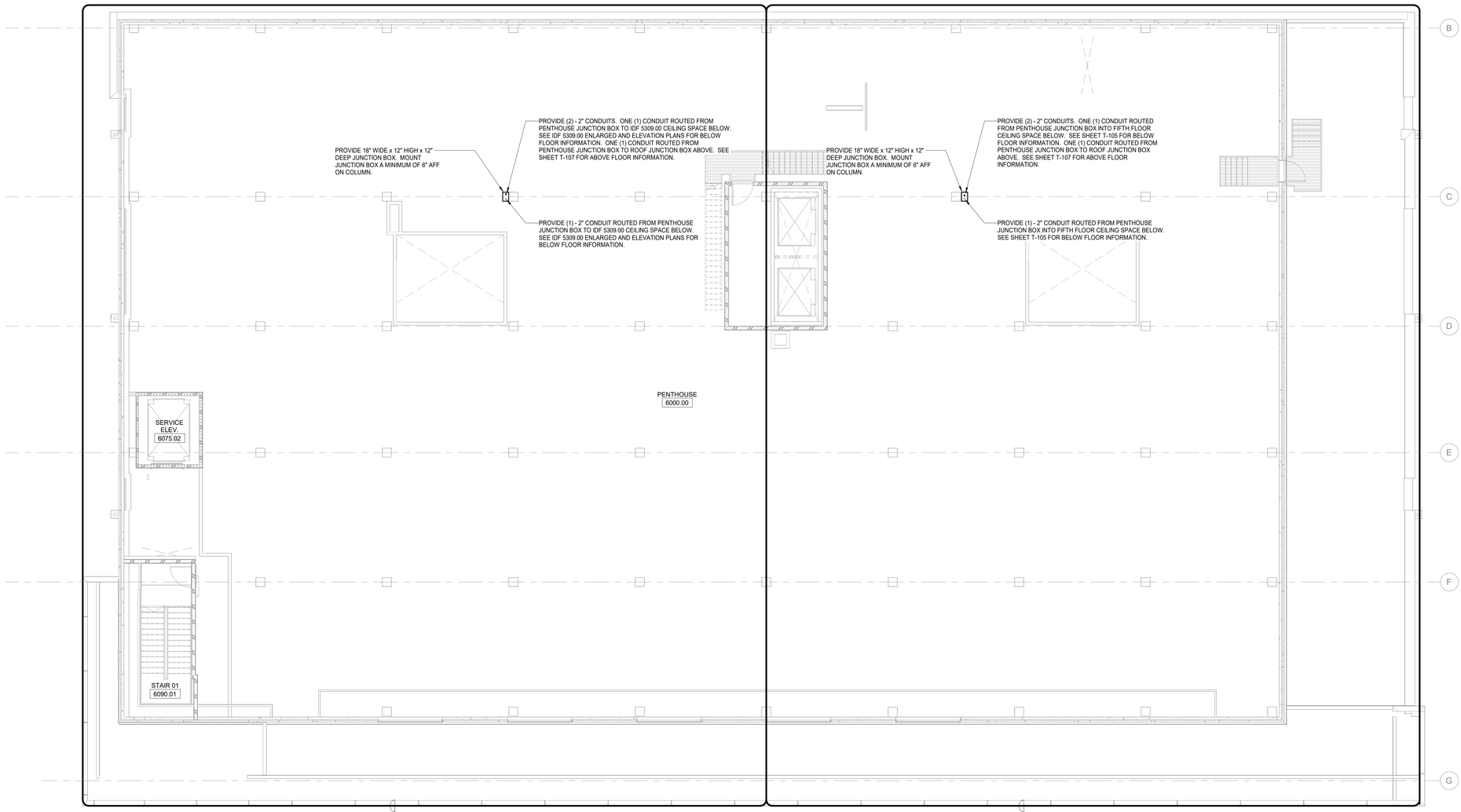

1 TECHNOLOGY PATHWAY PLAN - PENTHOUSE
SCALE: 1/8" = 1'-0"

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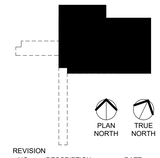

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SHEET TITLE
TECHNOLOGY PATHWAY PLAN - PENTHOUSE

SHEET NO.
T-106

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TECHNOLOGY PATHWAY PLAN - SHEET GENERAL NOTES:

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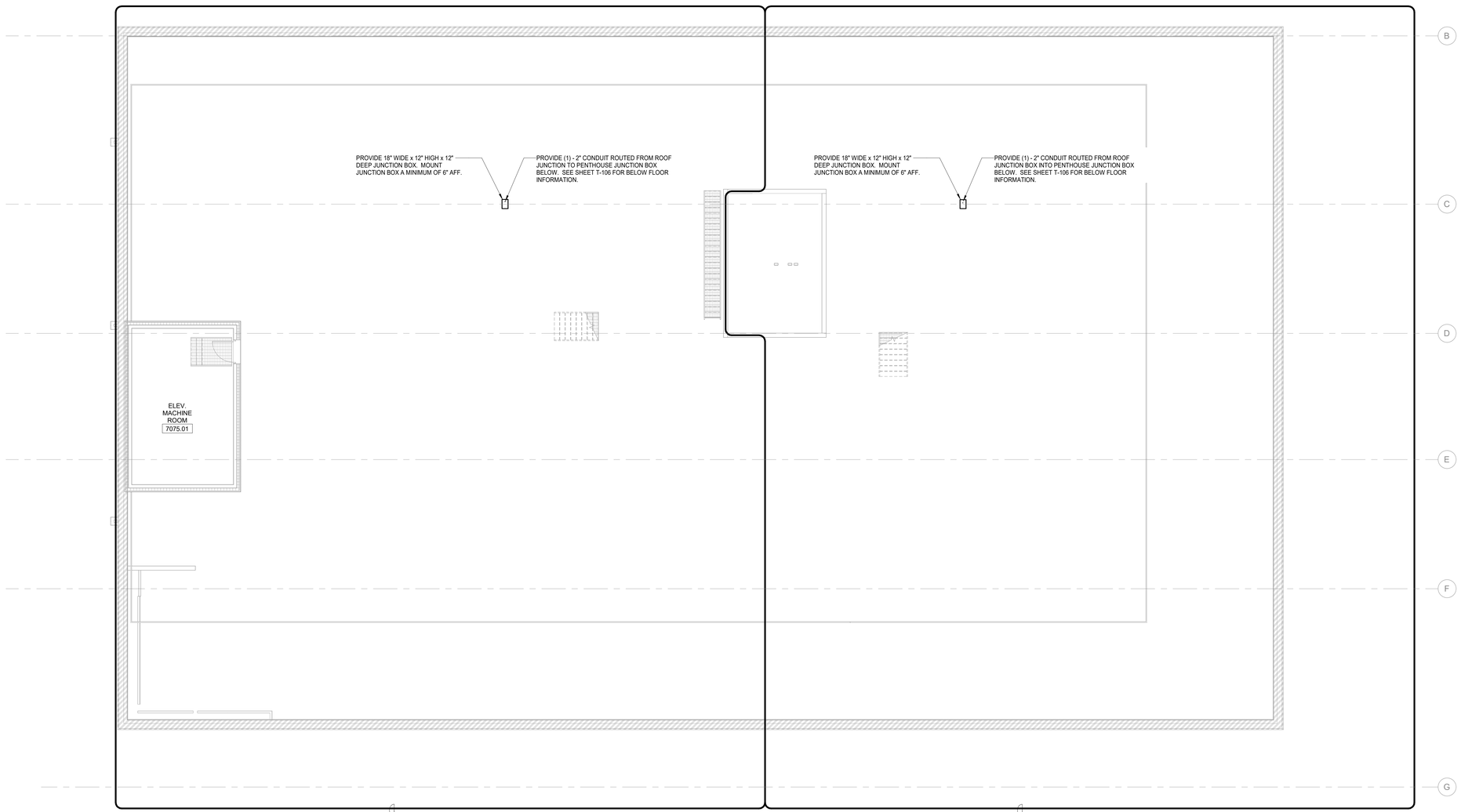

1 TECHNOLOGY PATHWAY PLAN - ROOF
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/25/2025 8:39:20 AM TEMPLATE VERSION: 23.0.4

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TRUE NORTH

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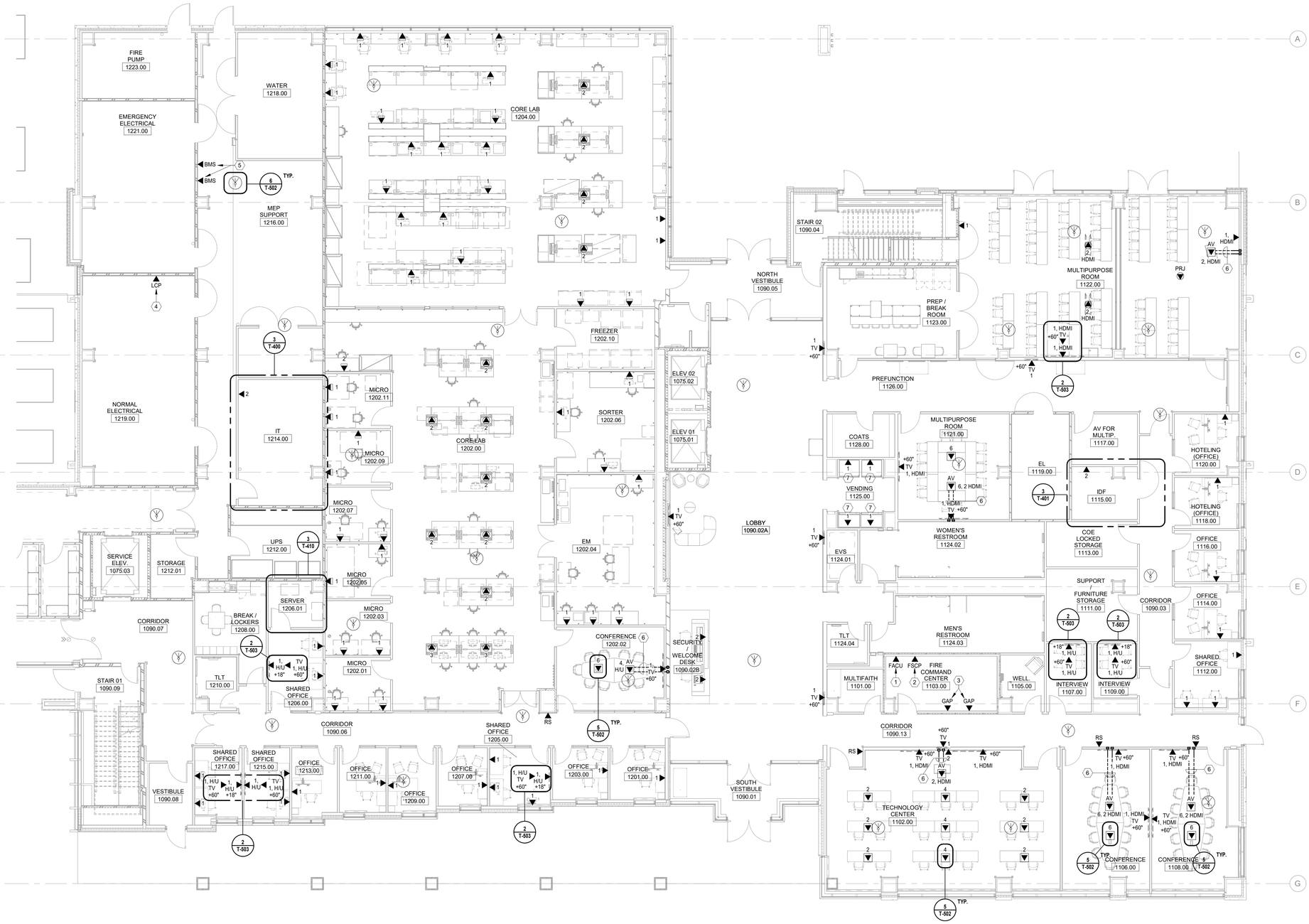

1 TECHNOLOGY FLOOR PLAN - LEVEL 01
SCALE: 1/8" = 1'-0"

TECHNOLOGY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF TECHNOLOGY OUTLETS, CABLING, DEVICES AND HARDWARE WITH OTHER TRADES AS NECESSARY.
B. REFER TO SHEET T-001 MOUNTING HEIGHT DIAGRAMS FOR DEVICE AND OUTLET MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED ON THIS SHEET.
C. THE CONTRACTOR SHALL INSTALL APPROPRIATELY RATED CABLES (PLENUM, NON-PLENUM) FOR THE ENVIRONMENT AND CEILING AIR SPACE IN WHICH THE CABLES ARE INSTALLED, AND SHALL BE LISTED IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
D. THE CONTRACTOR SHALL PROVIDE ALL TECHNOLOGY CABLING, DEVICES, AND MOUNTING HARDWARE, AS SHOWN AND AS NECESSARY, FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
E. THE CONTRACTOR SHALL PROVIDE ALL TECHNOLOGY BACK BOXES, CONDUIT, AND JUNCTION BOXES, AS SHOWN AND AS NECESSARY, FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
F. IN AREAS WITHOUT CEILINGS, INSTALL TECHNOLOGY OUTLET CONDUITS AS TIGHT TO OVERHEAD STRUCTURE AS POSSIBLE.
G. TECHNOLOGY OUTLETS IN STAIRS SHALL HAVE THEIR CONDUITS STUBBED TO THE NEAREST ACCESSIBLE CORRIDOR CEILING SPACE OR CABLE TRAY.
H. FURNISH AND INSTALL A NYLON PULL STRING, IN ALL INSTALLED CONDUITS. SECURE PULL STRING AT BOTH ENDS TO PREVENT PULL STRING FROM RETRACTING INTO THE CONDUIT. PULL STRING SHALL HAVE A MINIMUM 200 POUND TENSILE STRENGTH.
I. ALL FLOOR BOX CONDUITS SHALL ROUTE UP THE NEAREST WALL INTO THE SAME ROOM CEILING SPACE THE FLOOR BOX IS INSTALLED IN. ALL FLOOR BOX CABLES SHALL TERMINATE ON THE SAME FLOOR IT/IDF THE FLOOR BOX IS SERVICED BY.
J. REFER TO TA-SERIES AND TY-SERIES DRAWINGS FOR ADDITIONAL NETWORK/ETHERNET/CAT 6A CABLE OUTLET LOCATIONS.

(#) TECHNOLOGY FLOOR PLAN - CODED NOTES:

1 ETHERNET OUTLET LOCATION FOR FIRE ALARM CONTROL UNIT (FACU). COORDINATE OUTLET LOCATION WITH FACU LOCATION IN ROOM.

2 ETHERNET OUTLET LOCATION FOR FIRE FIGHTER SMOKE CONTROL PANEL (FSCP). COORDINATE OUTLET LOCATION WITH FSCP LOCATION IN ROOM.

3 ETHERNET OUTLET LOCATION FOR GENERATOR ANNUNCIATOR PANEL (GAP). COORDINATE OUTLET LOCATION WITH GAP LOCATION IN ROOM.

4 ETHERNET OUTLET LOCATION FOR LIGHTING SYSTEM CONTROL PANEL (LCP). COORDINATE OUTLET LOCATION WITH LCP LOCATION IN ROOM.

5 ETHERNET OUTLET LOCATION FOR BUILDING MANAGEMENT SYSTEM (BMS). COORDINATE OUTLET LOCATION WITH BMS LOCATION IN ROOM.

6 PROVIDE TWO (2) - 1 1/4" UNDERSLAB CONDUITS, ROUTED UP NEARBY WALL AND STUBBED INTO AN ACCESSIBLE CEILING SPACE, IN SAME ROOM, FOR CONNECTION TO FLOOR BOX EQUIPMENT.

7 OUTLET LOCATION FOR VENDING MACHINE EQUIPMENT CONNECTION.

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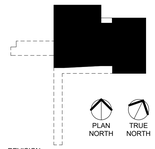

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL 01
SHEET NO.
T-201

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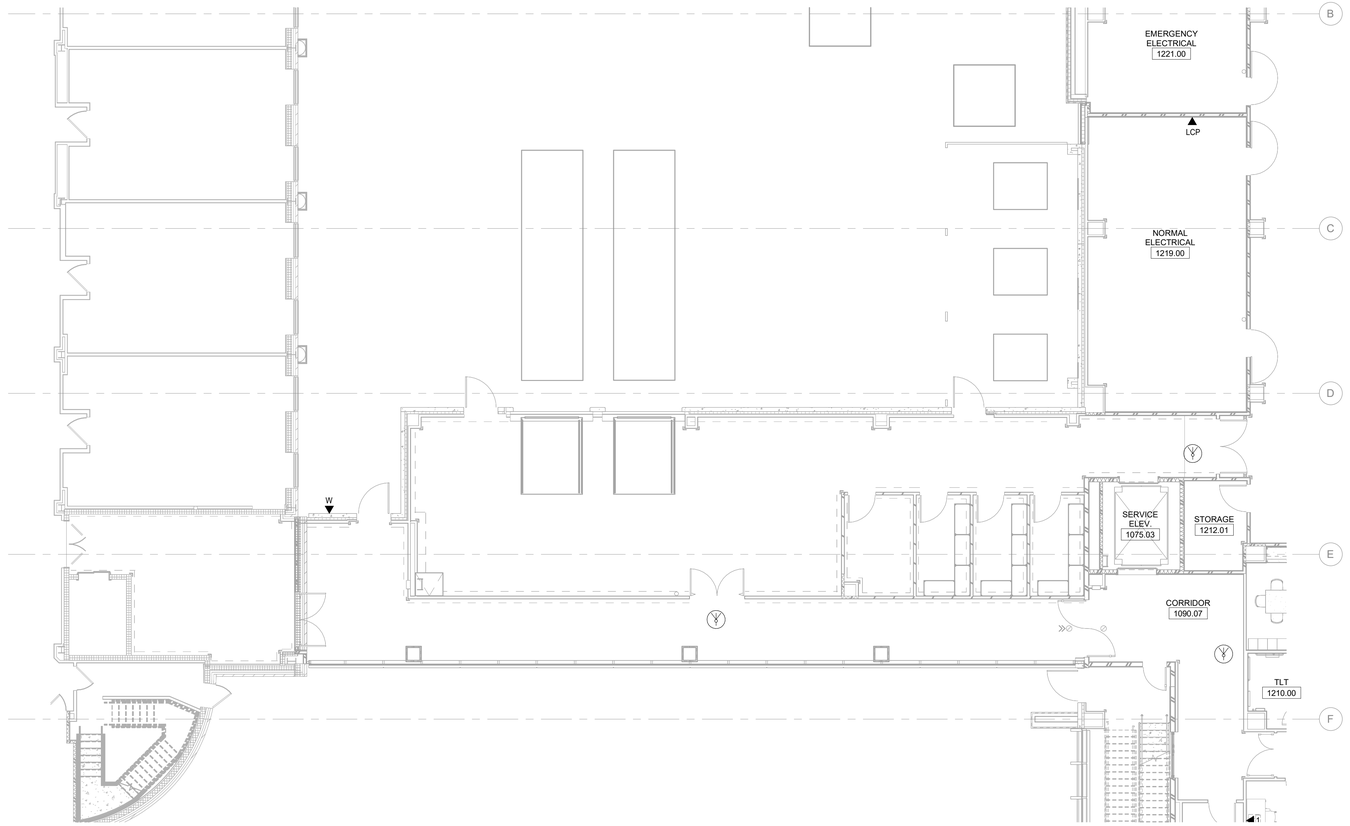
TECHNOLOGY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF TECHNOLOGY OUTLETS, CABLING, DEVICES AND HARDWARE WITH OTHER TRADES AS NECESSARY.
B. REFER TO SHEET T-001 MOUNTING HEIGHT DIAGRAMS FOR DEVICE AND OUTLET MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED ON THIS SHEET.
C. THE CONTRACTOR SHALL INSTALL APPROPRIATELY RATED CABLES (PLENUM, NON-PLENUM) FOR THE ENVIRONMENT AND CEILING AIR SPACE IN WHICH THE CABLES ARE INSTALLED, AND SHALL BE LISTED IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
D. THE CONTRACTOR SHALL PROVIDE ALL TECHNOLOGY CABLING, DEVICES, AND MOUNTING HARDWARE, AS SHOWN AND AS NECESSARY, FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
E. THE CONTRACTOR SHALL PROVIDE ALL TECHNOLOGY BACK BOXES, CONDUIT, AND JUNCTION BOXES, AS SHOWN AND AS NECESSARY, FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
F. IN AREAS WITHOUT CEILINGS, INSTALL TECHNOLOGY OUTLET CONDUITS AS TIGHT TO OVERHEAD STRUCTURE AS POSSIBLE.
G. TECHNOLOGY OUTLETS IN STAIRS SHALL HAVE THEIR CONDUITS STUBBED TO THE NEAREST ACCESSIBLE CORRIDOR CEILING SPACE OR CABLE TRAY.
H. FURNISH AND INSTALL A NYLON PULL STRING, IN ALL INSTALLED CONDUITS. SECURE PULL STRING AT BOTH ENDS TO PREVENT PULL STRING FROM RETRACTING INTO THE CONDUIT. PULL STRING SHALL HAVE A MINIMUM 200 POUND TENSILE STRENGTH.
I. ALL FLOOR BOX CONDUITS SHALL ROUTE UP THE NEAREST WALL INTO THE SAME ROOM CEILING SPACE THE FLOOR BOX IS INSTALLED IN. ALL FLOOR BOX CABLES SHALL TERMINATE ON THE SAME FLOOR IT/IDF THE FLOOR BOX IS SERVICED BY.
J. REFER TO TA-SERIES AND TY-SERIES DRAWINGS FOR ADDITIONAL NETWORK/ETHERNET/CAT 6A CABLE OUTLET LOCATIONS.



1 TECHNOLOGY FLOOR PLAN - LEVEL 01 - SERVICE DOCK
SCALE: 1/8" = 1'-0"

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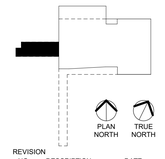

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL 01 - SERVICE DOCK
SHEET NO.
T-201.2

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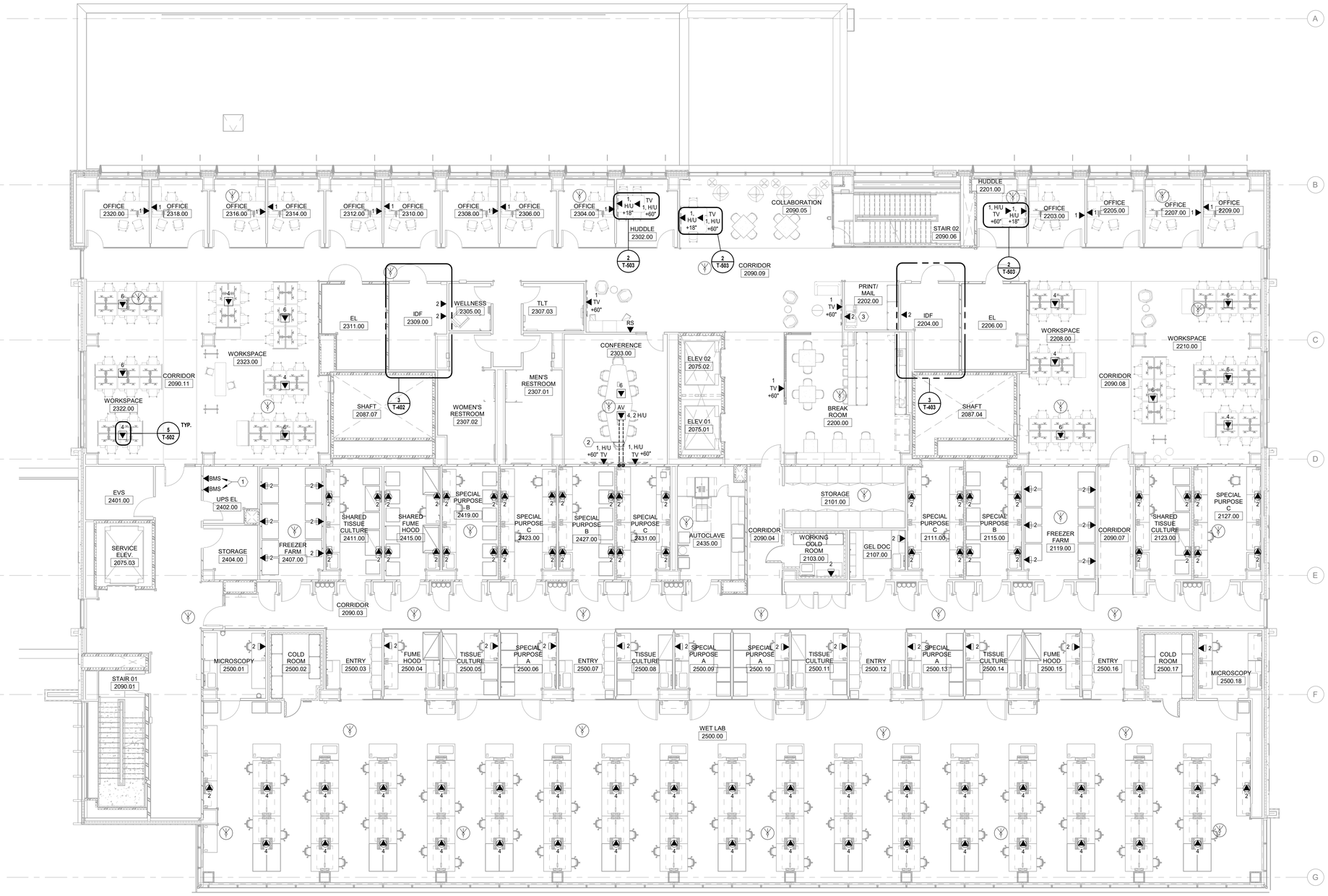

1 TECHNOLOGY FLOOR PLAN - LEVEL 02

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

TECHNOLOGY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF TECHNOLOGY OUTLETS, CABLING, DEVICES AND HARDWARE WITH OTHER TRADES AS NECESSARY.
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J. REFER TO TA-SERIES AND TY-SERIES DRAWINGS FOR ADDITIONAL NETWORK/ETHERNET/CAT 6A CABLE OUTLET LOCATIONS.

(#) TECHNOLOGY FLOOR PLAN - CODED NOTES:

1 ETHERNET OUTLET LOCATION FOR BUILDING MANAGEMENT SYSTEM (BMS). COORDINATE OUTLET LOCATION WITH BMS LOCATION IN ROOM.

2 PROVIDE TWO (2) - 1 1/4" UNDERSLAB CONDUITS, ROUTED UP NEARBY WALL AND STUBBED INTO AN ACCESSIBLE CEILING SPACE, IN SAME ROOM, FOR CONNECTION TO FLOOR BOX EQUIPMENT.

3 OUTLET LOCATION FOR PRINTER / MULTIFUNCTION DEVICE CONNECTION.

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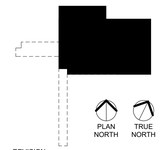

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL 02
SHEET NO.
T-202

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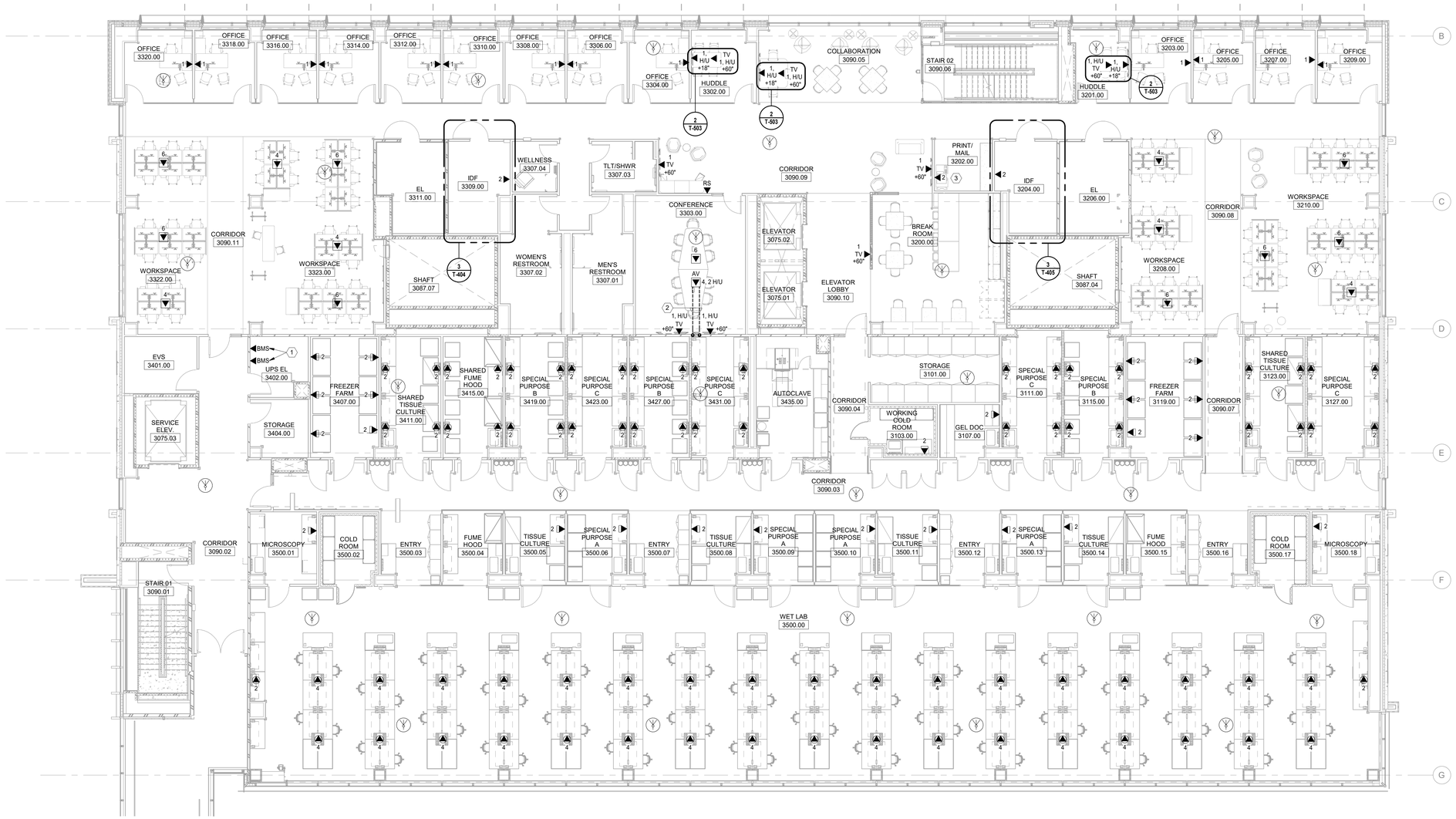

1 TECHNOLOGY FLOOR PLAN - LEVEL 03

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

TECHNOLOGY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF TECHNOLOGY OUTLETS, CABLING, DEVICES AND HARDWARE WITH OTHER TRADES AS NECESSARY.
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J. REFER TO TA-SERIES AND TY-SERIES DRAWINGS FOR ADDITIONAL NETWORK/ETHERNET/CAT 6A CABLE OUTLET LOCATIONS.

(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 ETHERNET OUTLET LOCATION FOR BUILDING MANAGEMENT SYSTEM (BMS). COORDINATE OUTLET LOCATION WITH BMS LOCATION IN ROOM.

2 PROVIDE TWO (2) - 1 1/4" UNDERSLAB CONDUITS, ROUTED UP NEARBY WALL AND STUBBED INTO AN ACCESSIBLE CEILING SPACE, IN SAME ROOM, FOR CONNECTION TO FLOOR BOX EQUIPMENT.

3 OUTLET LOCATION FOR PRINTER / MULTIFUNCTION DEVICE CONNECTION.

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TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL 03

SHEET NO.
T-203

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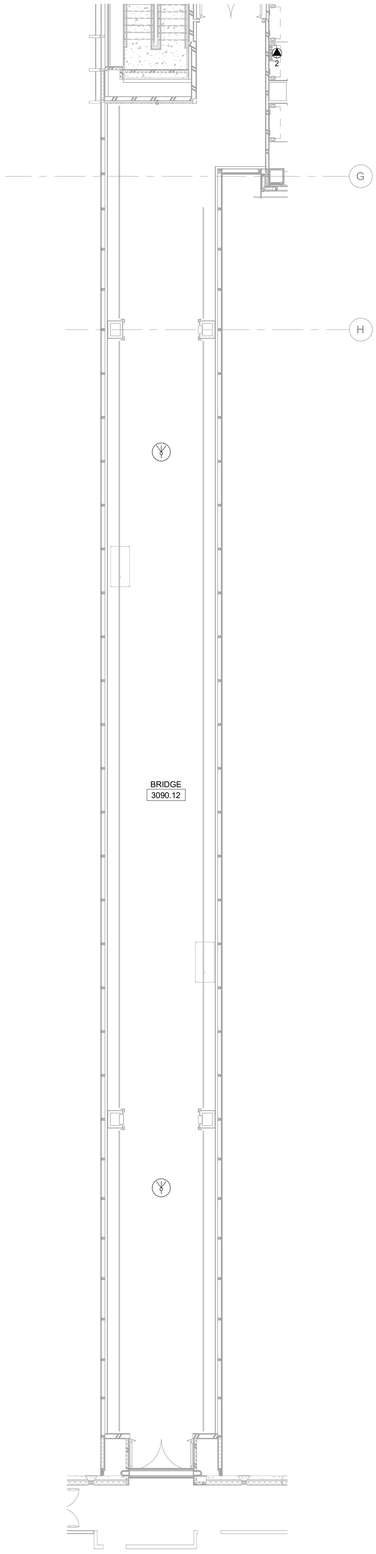

1 TECHNOLOGY FLOOR PLAN - LEVEL 03 - BRIDGE
SCALE: 1/8" = 1'-0"

TECHNOLOGY FLOOR PLAN - SHEET GENERAL NOTES:

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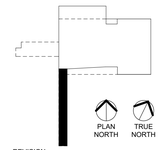

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
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ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL 03 - BRIDGE

SHEET NO.
T-203.3

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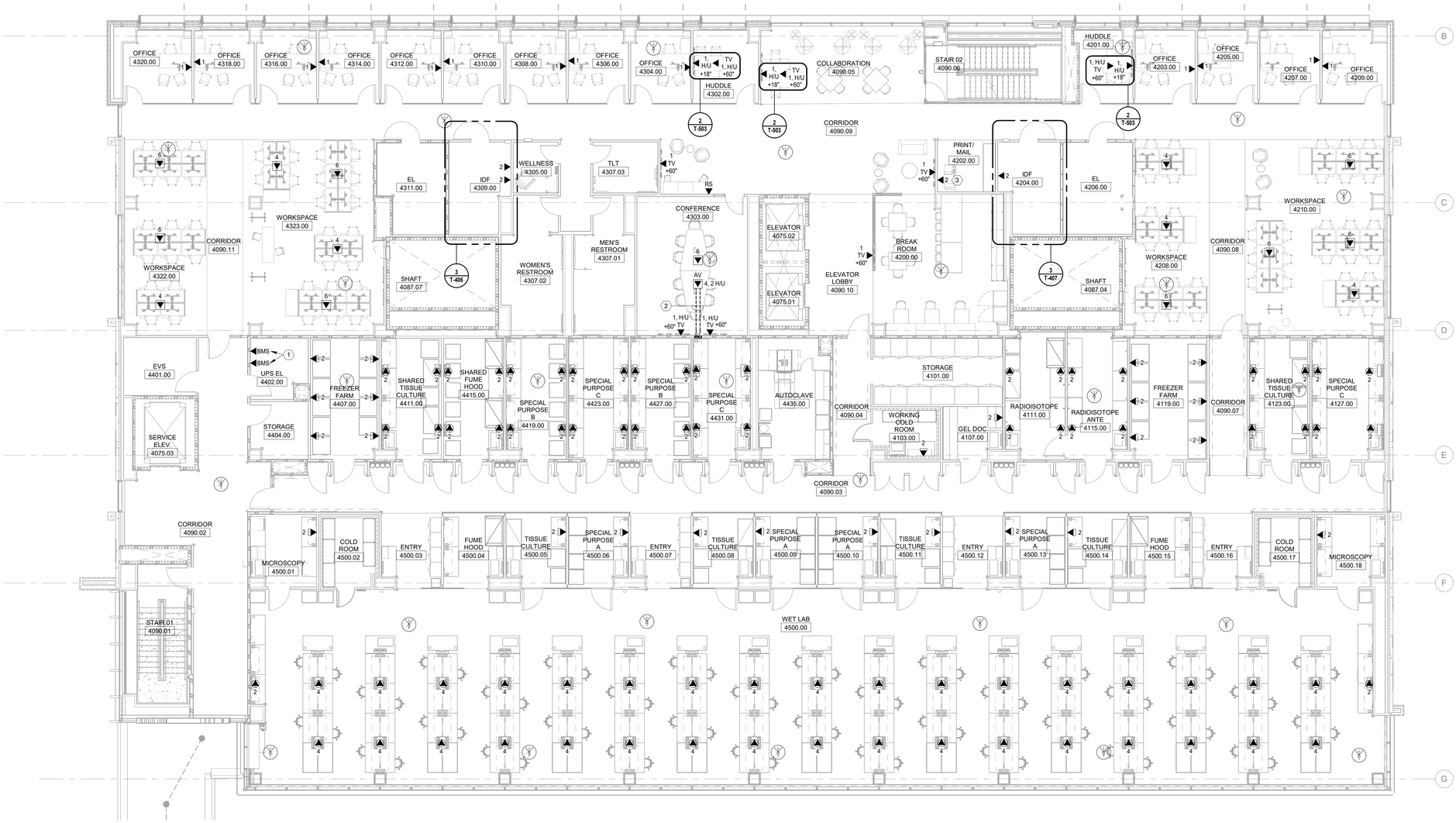

1 TECHNOLOGY FLOOR PLAN - LEVEL 04

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

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KEY PLAN

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TRUE NORTH

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ISSUE
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TECHNOLOGY FLOOR PLAN - LEVEL 04
SHEET NO.
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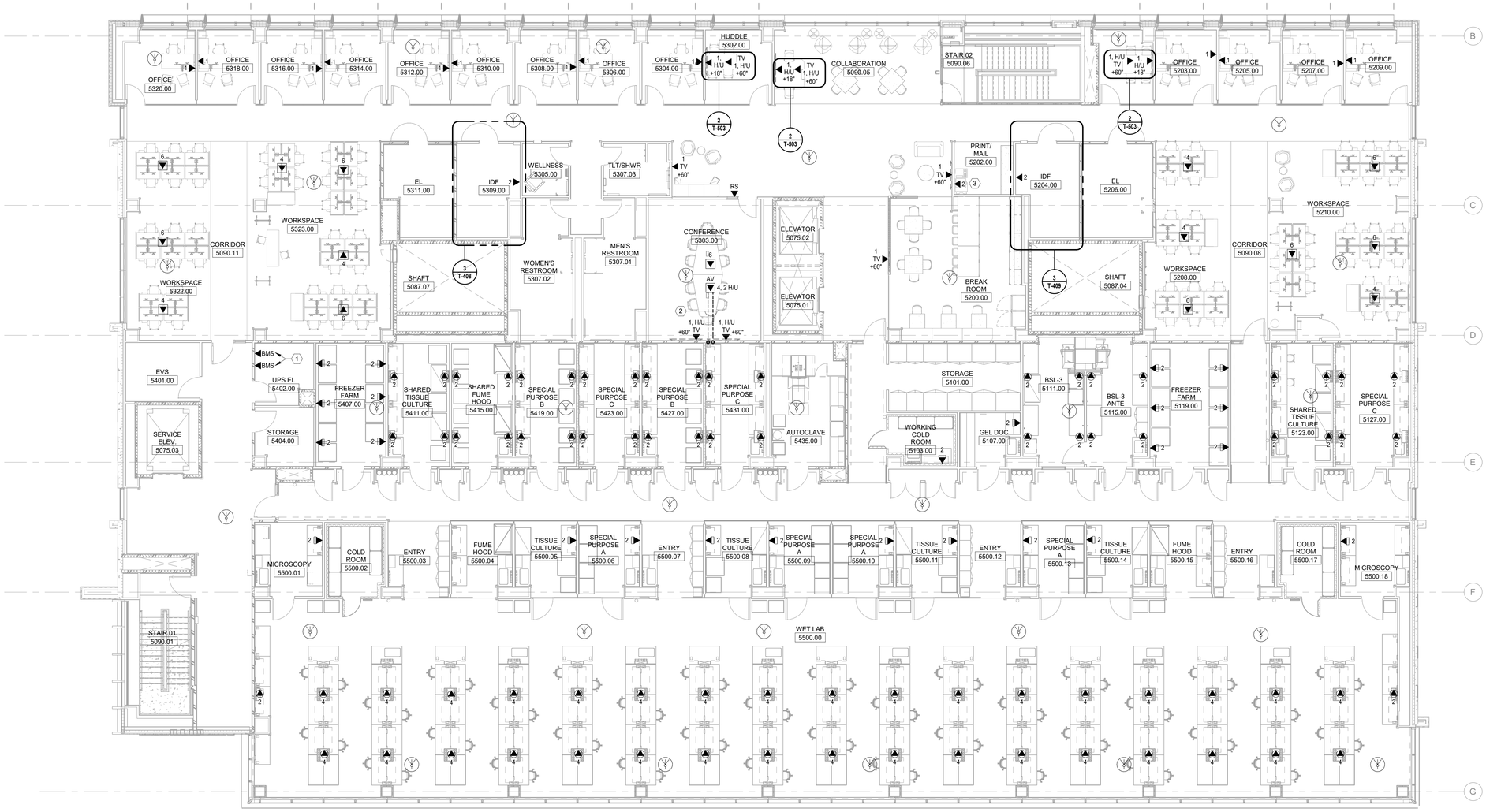

1 TECHNOLOGY FLOOR PLAN - LEVEL 05

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

TECHNOLOGY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF TECHNOLOGY OUTLETS, CABLING, DEVICES AND HARDWARE WITH OTHER TRADES AS NECESSARY.
B. REFER TO SHEET T-001 MOUNTING HEIGHT DIAGRAMS FOR DEVICE AND OUTLET MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED ON THIS SHEET.
C. THE CONTRACTOR SHALL INSTALL APPROPRIATELY RATED CABLES (PLENUM, NON-PLENUM) FOR THE ENVIRONMENT AND CEILING AIR SPACE IN WHICH THE CABLES ARE INSTALLED, AND SHALL BE LISTED IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
D. THE CONTRACTOR SHALL PROVIDE ALL TECHNOLOGY CABLING, DEVICES, AND MOUNTING HARDWARE, AS SHOWN AND AS NECESSARY, FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
E. THE CONTRACTOR SHALL PROVIDE ALL TECHNOLOGY BACK BOXES, CONDUIT, AND JUNCTION BOXES, AS SHOWN AND AS NECESSARY, FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
F. IN AREAS WITHOUT CEILINGS, INSTALL TECHNOLOGY OUTLET CONDUITS AS TIGHT TO OVERHEAD STRUCTURE AS POSSIBLE.
G. TECHNOLOGY OUTLETS IN STAIRS SHALL HAVE THEIR CONDUITS STUBBED TO THE NEAREST ACCESSIBLE CORRIDOR CEILING SPACE OR CABLE TRAY.
H. FURNISH AND INSTALL A NYLON PULL STRING, IN ALL INSTALLED CONDUITS. SECURE PULL STRING AT BOTH ENDS TO PREVENT PULL STRING FROM RETRACTING INTO THE CONDUIT. PULL STRING SHALL HAVE A MINIMUM 200 POUND TENSILE STRENGTH.
I. ALL FLOOR BOX CONDUITS SHALL ROUTE UP THE NEAREST WALL INTO THE SAME ROOM CEILING SPACE THE FLOOR BOX IS INSTALLED IN. ALL FLOOR BOX CABLES SHALL TERMINATE ON THE SAME FLOOR IT/IDF THE FLOOR BOX IS SERVICED BY.
J. REFER TO TA-SERIES AND TY-SERIES DRAWINGS FOR ADDITIONAL NETWORK/ETHERNET/CAT 6A CABLE OUTLET LOCATIONS.

(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 ETHERNET OUTLET LOCATION FOR BUILDING MANAGEMENT SYSTEM (BMS). COORDINATE OUTLET LOCATION WITH BMS LOCATION IN ROOM.

2 PROVIDE TWO (2) - 1 1/4" UNDERSLAB CONDUITS, ROUTED UP NEARBY WALL AND STUBBED INTO AN ACCESSIBLE CEILING SPACE, IN SAME ROOM, FOR CONNECTION TO FLOOR BOX EQUIPMENT.

3 OUTLET LOCATION FOR PRINTER / MULTIFUNCTION DEVICE CONNECTION.

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KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL 05

SHEET NO.
T-205

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TECHNOLOGY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF TECHNOLOGY OUTLETS, CABLING, DEVICES AND HARDWARE WITH OTHER TRADES AS NECESSARY.
B. REFER TO SHEET T-001 MOUNTING HEIGHT DIAGRAMS FOR DEVICE AND OUTLET MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED ON THIS SHEET.
C. THE CONTRACTOR SHALL INSTALL APPROPRIATELY RATED CABLES (PLENUM, NON-PLENUM) FOR THE ENVIRONMENT AND CEILING AIR SPACE IN WHICH THE CABLES ARE INSTALLED, AND SHALL BE LISTED IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
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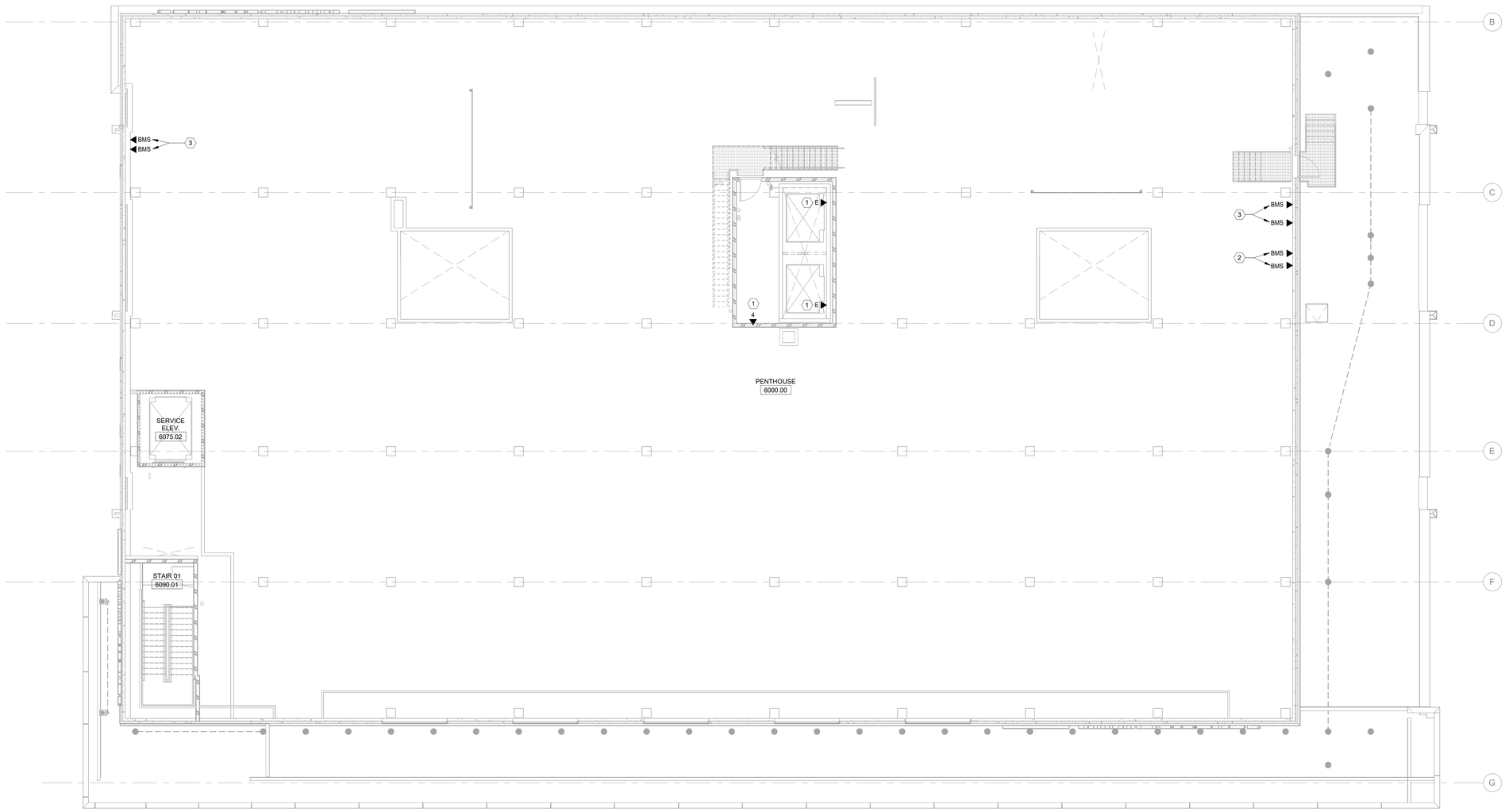
G. TECHNOLOGY OUTLETS IN STAIRS SHALL HAVE THEIR CONDUITS STUBBED TO THE NEAREST ACCESSIBLE CORRIDOR CEILING SPACE OR CABLE TRAY.
H. FURNISH AND INSTALL A NYLON PULL STRING, IN ALL INSTALLED CONDUITS. SECURE PULL STRING AT BOTH ENDS TO PREVENT PULL STRING FROM RETRACTING INTO THE CONDUIT. PULL STRING SHALL HAVE A MINIMUM 200 POUND TENSILE STRENGTH.
I. ALL FLOOR BOX CONDUITS SHALL ROUTE UP THE NEAREST WALL INTO THE SAME ROOM CEILING SPACE THE FLOOR BOX IS INSTALLED IN. ALL FLOOR BOX CABLES SHALL TERMINATE ON THE SAME FLOOR IT/IDF THE FLOOR BOX IS SERVICED BY.
J. REFER TO TA-SERIES AND TY-SERIES DRAWINGS FOR ADDITIONAL NETWORK/ETHERNET/CAT 6A CABLE OUTLET LOCATIONS.

(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 COORDINATE OUTLET LOCATION, ROUGH-IN REQUIREMENTS, CABLE TERMINATIONS, AND CONNECTIONS TO ELEVATOR CONTROL EQUIPMENT, TRAVELLER CABLES, AND ELEVATOR DEVICES WITH ELEVATOR CONTRACTOR.

2 ETHERNET OUTLET LOCATION FOR FUTURE BUILDING MANAGEMENT SYSTEM (BMS) SERVICES. COORDINATE EXACT OUTLET LOCATION IN ROOM WITH BMS CONTRACTOR.

3 ETHERNET OUTLET LOCATION FOR BUILDING MANAGEMENT SYSTEM (BMS). COORDINATE OUTLET LOCATION WITH BMS LOCATION IN ROOM.



1 TECHNOLOGY FLOOR PLAN - PENTHOUSE
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/29/2025 8:39:53 AM
TEMPLATE VERSION: 23.0.4

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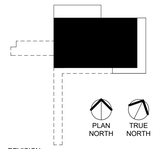
REGISTERED PROFESSIONAL ENGINEER

KEY PLAN



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY FLOOR PLAN - PENTHOUSE
SHEET NO.
T-206

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TECHNOLOGY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF TECHNOLOGY OUTLETS, CABLING, DEVICES AND HARDWARE WITH OTHER TRADES AS NECESSARY.
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C. THE CONTRACTOR SHALL INSTALL APPROPRIATELY RATED CABLES (PLENUM, NON-PLENUM) FOR THE ENVIRONMENT AND CEILING AIR SPACE IN WHICH THE CABLES ARE INSTALLED, AND SHALL BE LISTED IN ACCORDANCE WITH NFPA 70, ARTICLES 725 & 800.
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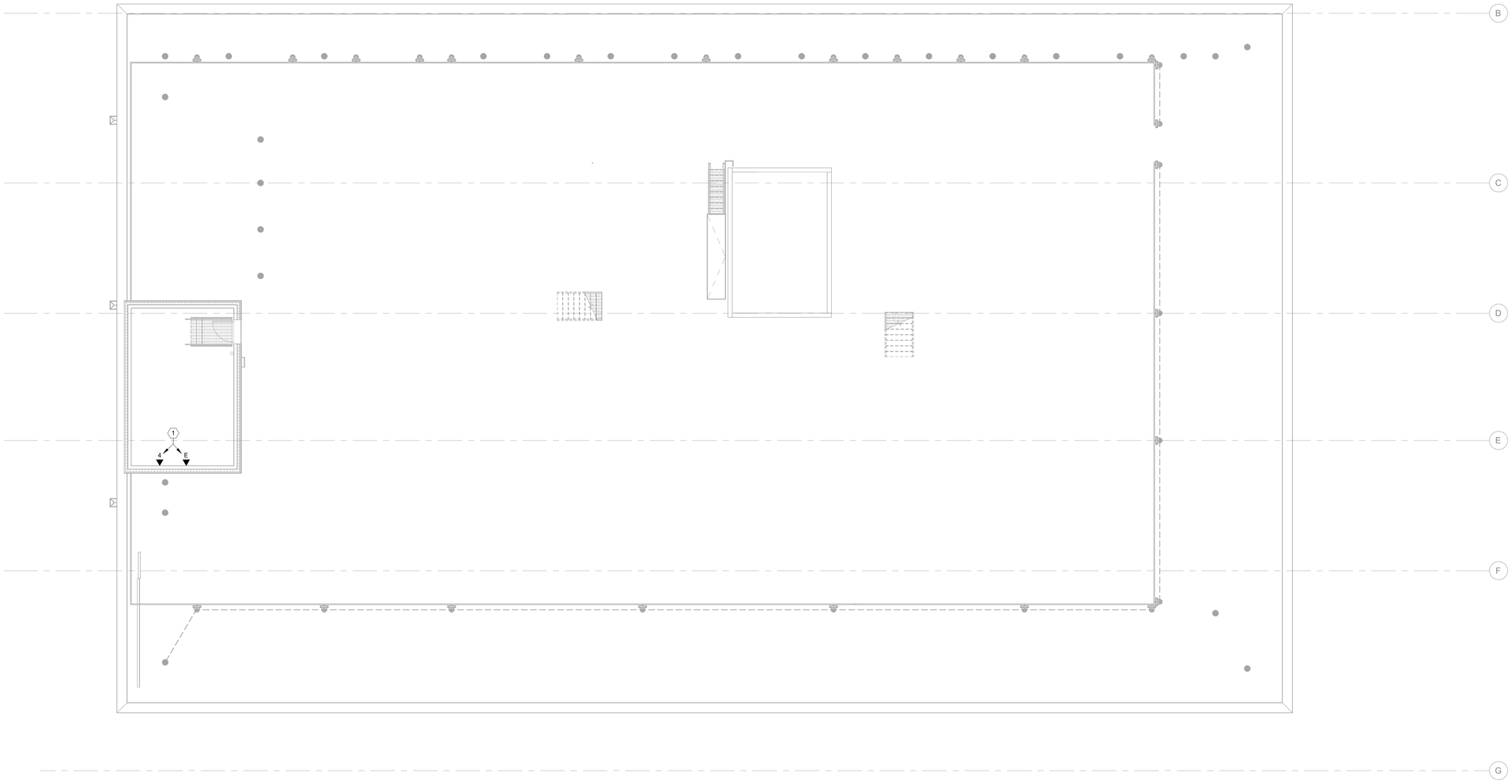
(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 COORDINATE OUTLET LOCATION, ROUGH-IN REQUIREMENTS, CABLE TERMINATIONS, AND CONNECTIONS TO ELEVATOR CONTROL EQUIPMENT, TRAVELLER CABLES, AND ELEVATOR DEVICES WITH ELEVATOR CONTRACTOR.



1 TECHNOLOGY FLOOR PLAN - ROOF
SCALE: 1/8" = 1'-0"

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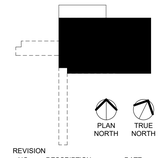
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY FLOOR PLAN - ROOF

SHEET NO.
T-207

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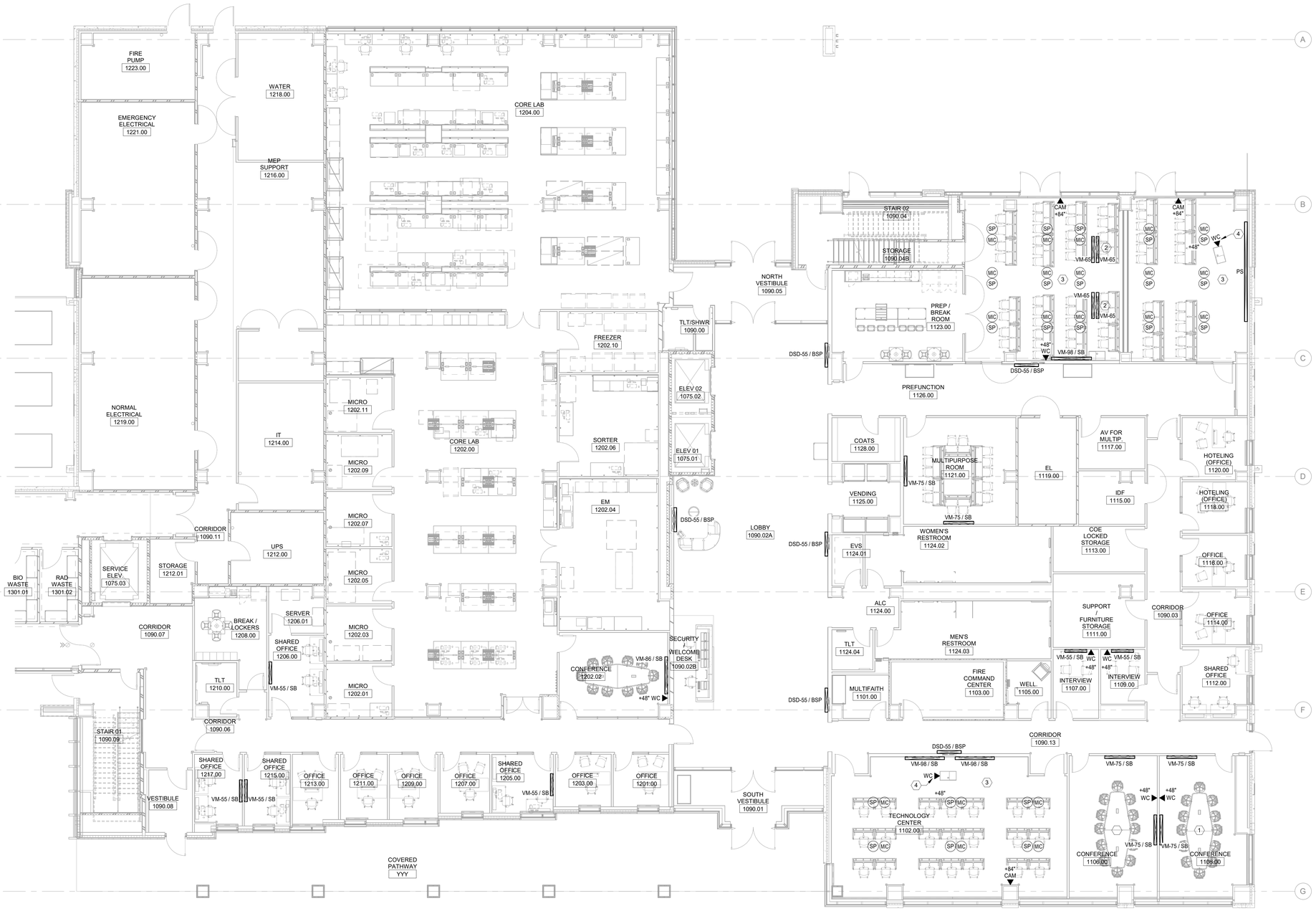

1 AV FLOOR PLAN - LEVEL 01
SCALE: 1/8" = 1'-0"

AV FLOOR PLAN - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR CABLE, CONNECTOR, FACEPLATE, AND LABELING PRODUCTS AND REQUIREMENTS.

(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

PROVIDE BARCO CLICKSHARE CX30. COORDINATE LOCATION IN TABLE WITH WSU C&IT.

1 PROVIDE BARCO CLICKSHARE CX30. COORDINATE LOCATION IN TABLE WITH WSU C&IT.

2 CEILING HUNG VIDEO MONITORS. PROVIDE DOUBLE SIDED MOUNTING BRACKET AND MOUNTING ARM.

3 COORDINATE EXACT MICROPHONE AND SPEAKER LAYOUT WITH FURNITURE ARRANGEMENT, AV SYSTEM, AND WSU C&IT.

4 MOUNT WALL CONTROLLER DEVICE IN INSTRUCTOR PODIUM. COORDINATE EXACT LOCATION WITH PODIUM STRUCTURE AND WSU C&IT.

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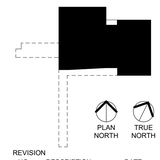

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
AUDIO-VISUAL FLOOR PLAN - LEVEL 01

SHEET NO.
TA-201

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1 AV FLOOR PLAN - LEVEL 02
SCALE: 1/8" = 1'-0"

AV FLOOR PLAN - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR CABLE, CONNECTOR, FACEPLATE, AND LABELING PRODUCTS AND REQUIREMENTS.

(#) TECHNOLOGY FLOOR PLAN - CODED NOTES:

1 PROVIDE BARCO CLICKSHARE CX30. COORDINATE LOCATION IN TABLE WITH WSU C&IT.

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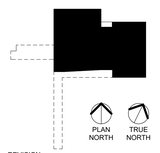
KEY PLAN



REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
AUDIO-VISUAL FLOOR PLAN - LEVEL 02
SHEET NO.
TA-202

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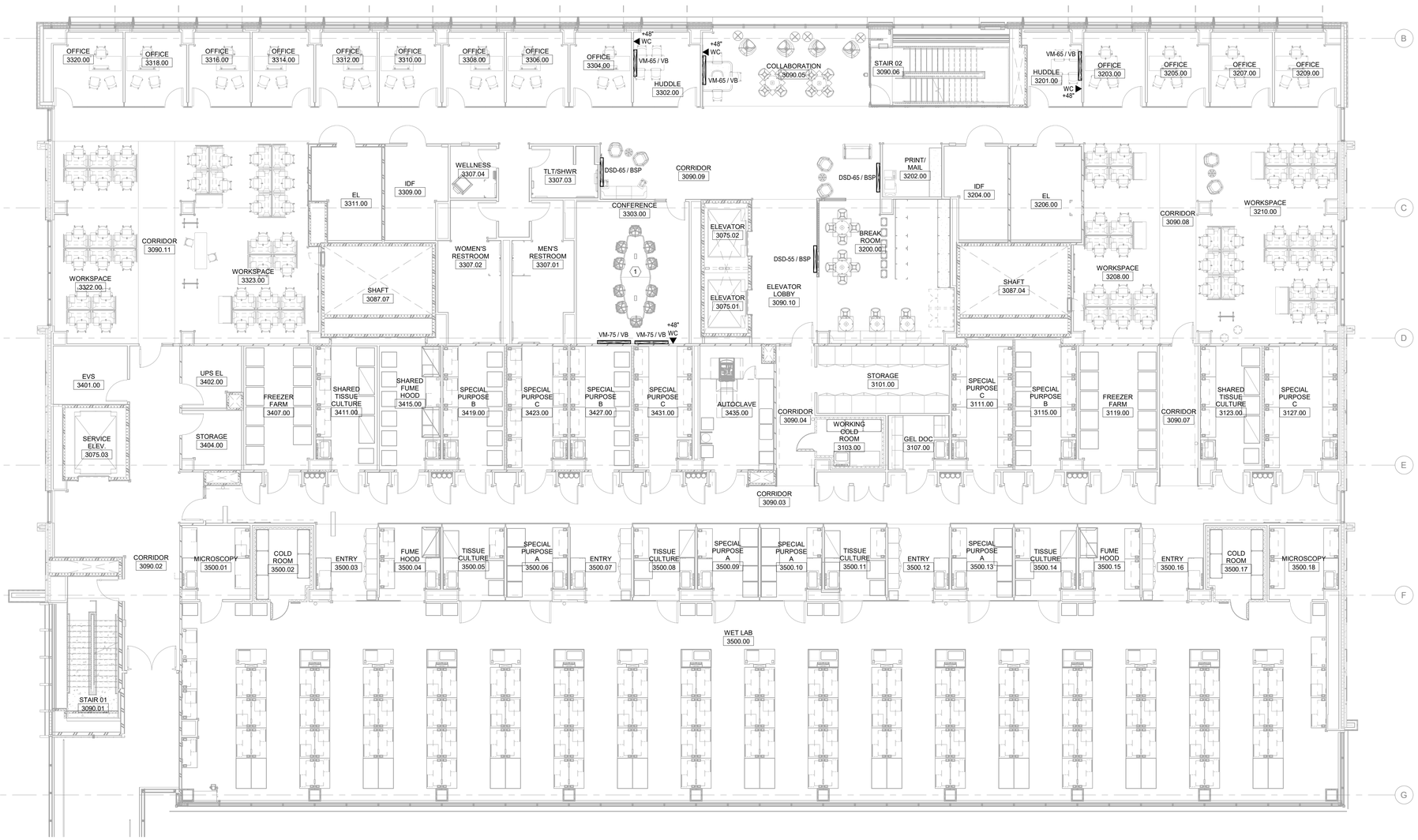

1 AV FLOOR PLAN - LEVEL 03
SCALE: 1/8" = 1'-0"

AV FLOOR PLAN - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR CABLE, CONNECTOR, FACEPLATE, AND LABELING PRODUCTS AND REQUIREMENTS.

(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 PROVIDE BARCO CLICKSHARE CX30. COORDINATE LOCATION IN TABLE WITH WSU C&IT.

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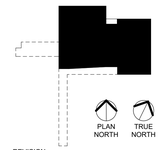
KEY PLAN



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
AUDIO-VISUAL FLOOR PLAN - LEVEL 03

SHEET NO.
TA-203

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PLOT DATE: 9/26/2025 8:40:17 AM TEMPLATE VERSION: 23.0.4

AV FLOOR PLAN - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR CABLE, CONNECTOR, FACEPLATE, AND LABELING PRODUCTS AND REQUIREMENTS.

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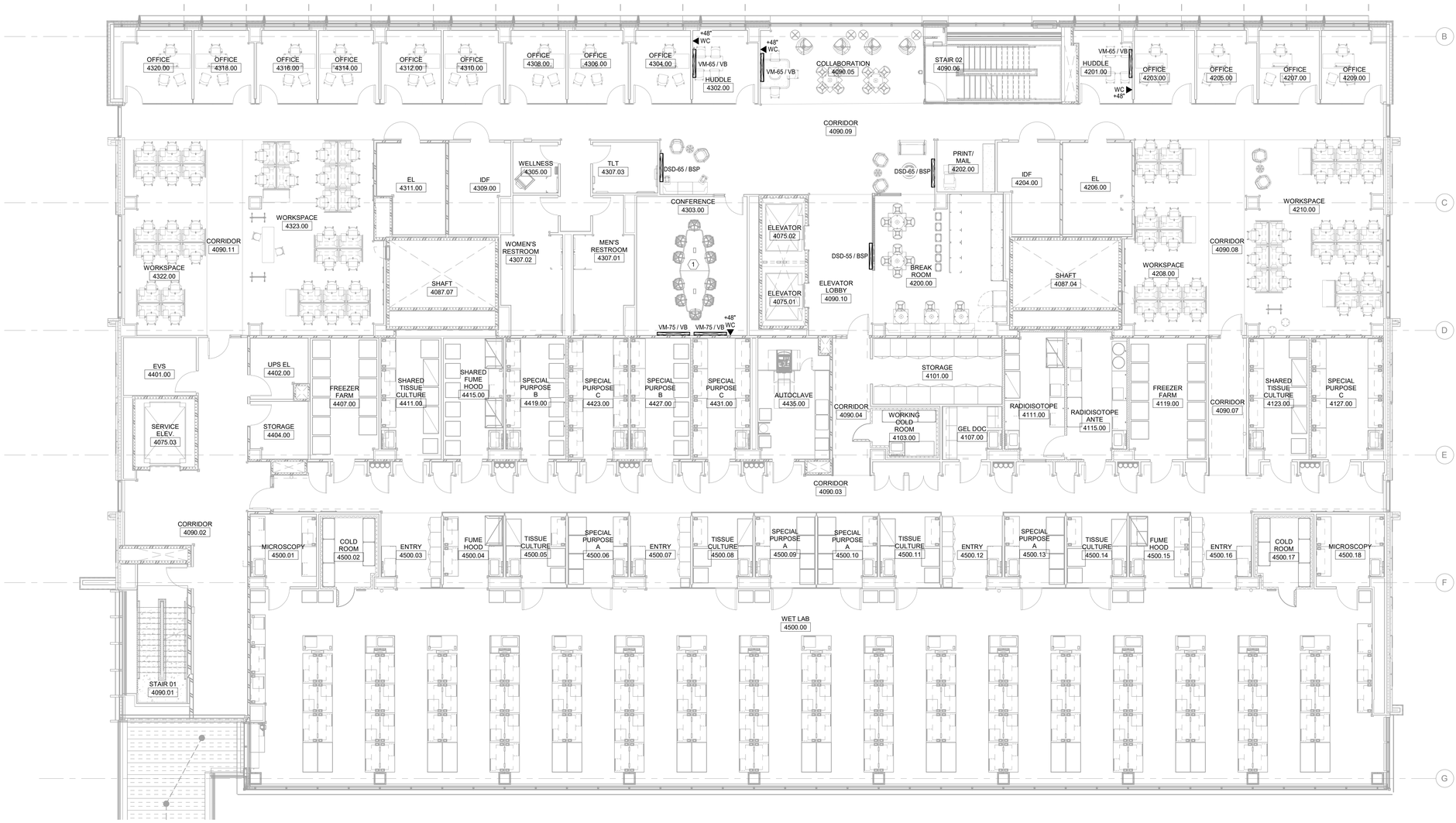

1 AV FLOOR PLAN - LEVEL 04
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/29/2025 8:40:25 AM TEMPLATE VERSION: 23.0.4

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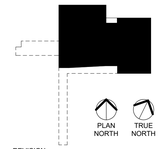
LICENSED PROFESSIONAL ENGINEER

KEY PLAN



REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
AUDIO-VISUAL FLOOR PLAN - LEVEL 04
SHEET NO.
TA-204

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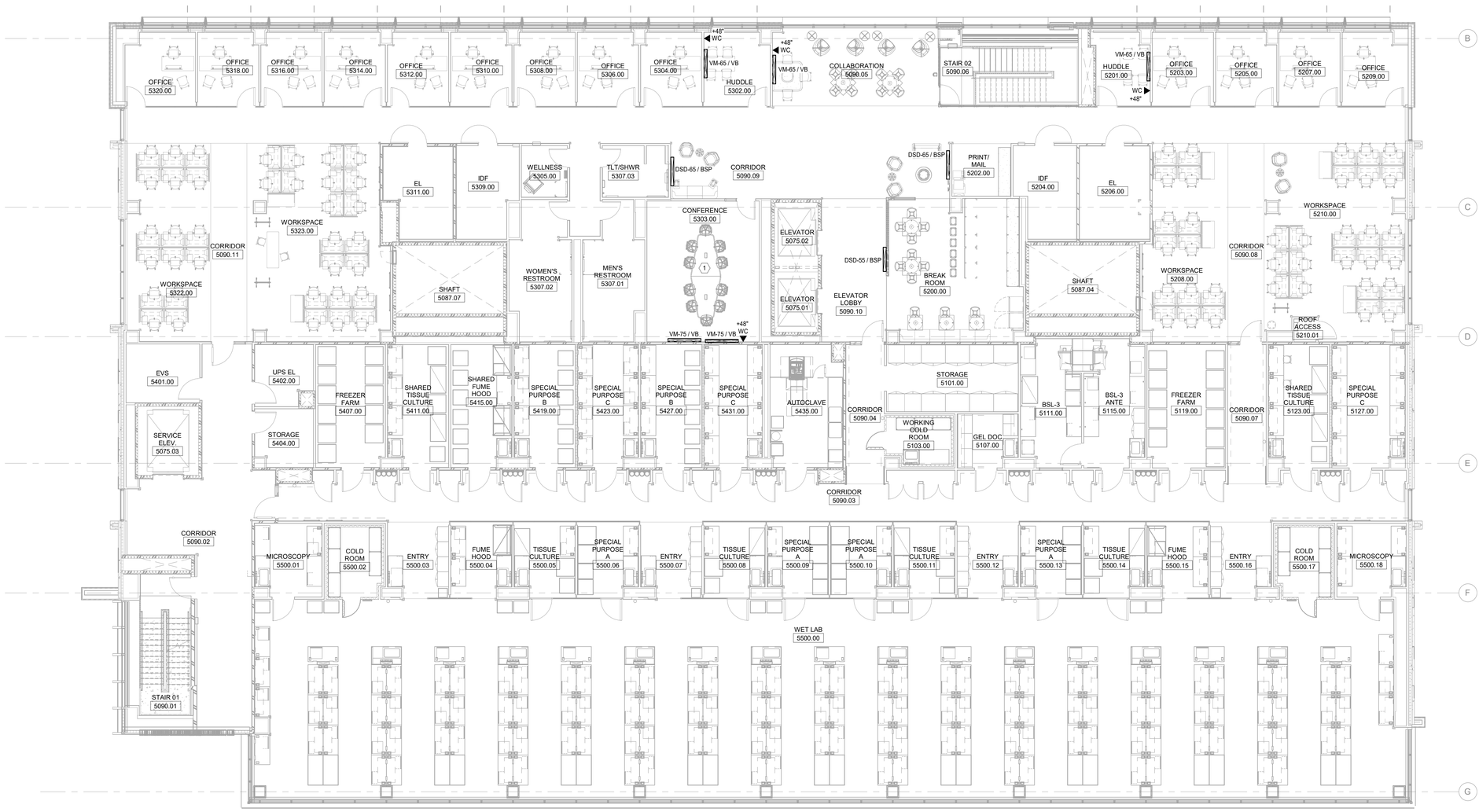
AV FLOOR PLAN - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR CABLE, CONNECTOR, FACEPLATE, AND LABELING PRODUCTS AND REQUIREMENTS.

(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 PROVIDE BARCO CLICKSHARE CX30. COORDINATE LOCATION IN TABLE WITH WSU C&IT.



1 AV FLOOR PLAN - LEVEL 05
SCALE: 1/8" = 1'-0"

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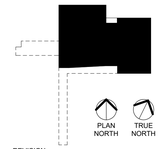

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
AUDIO-VISUAL FLOOR PLAN - LEVEL 05
SHEET NO.
TA-205

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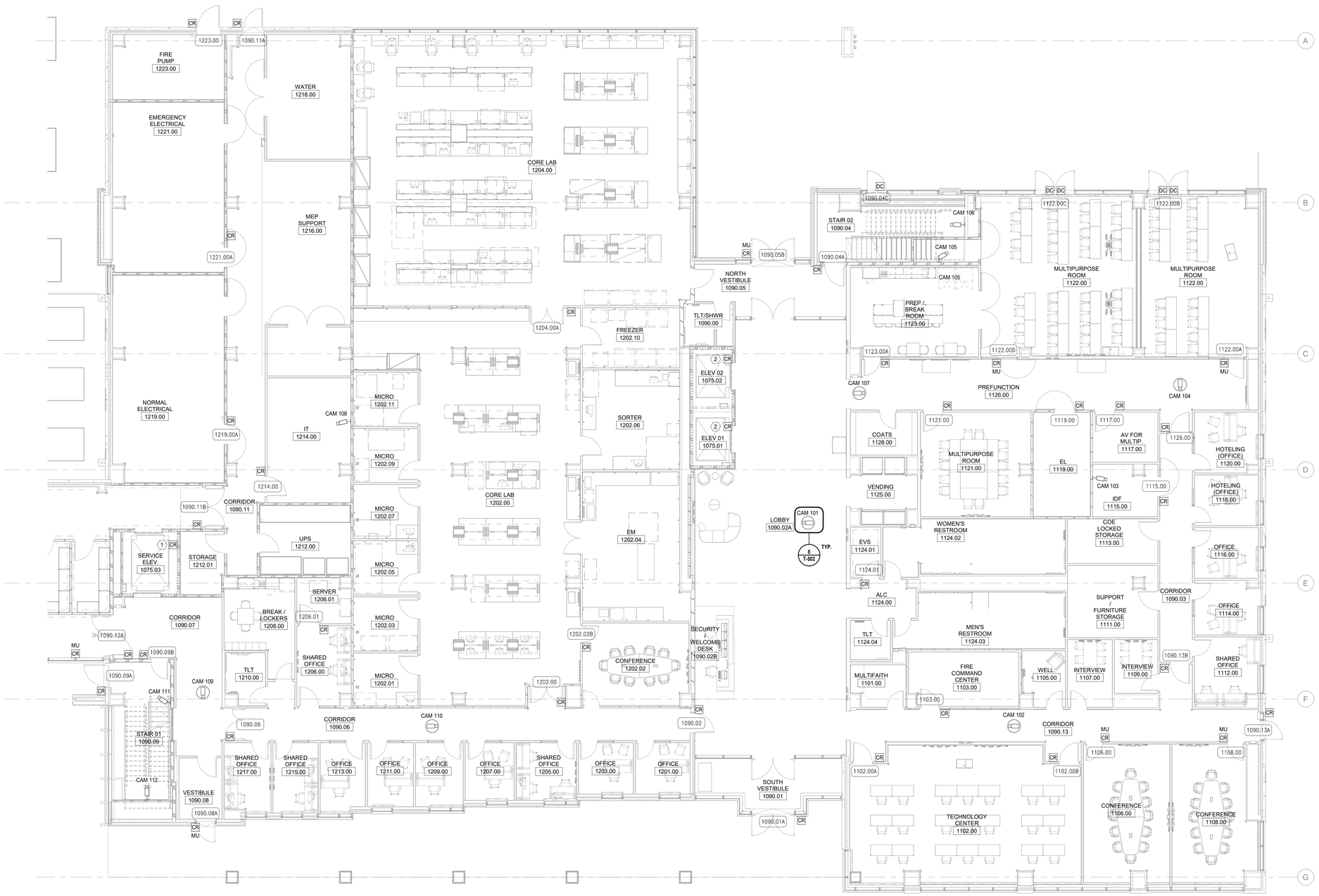

1 SECURITY FLOOR PLAN - LEVEL 01
SCALE: 1/8" = 1'-0"

SECURITY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF ACCESS CONTROL AND CAMERA CABLING, EQUIPMENT AND HARDWARE WITH OTHER TRADES, AS NECESSARY AND REQUIRED.
B. THE CONTRACTOR SHALL INSTALL APPROPRIATELY RATES CABLES FOR THE ENVIRONMENT AND CEILING AIR SPACE IN WHICH THE CABLES ARE INSTALLED, AND SHALL BE LISTED IN ACCORDANCE WITH NFPA 70. ARTICLES 725 & 800.
C. THE CONTRACTOR SHALL PROVIDE ALL ACCESS CONTROL AND CAMERA CABLING,DEVICES AND MOUNTING HARDWARE, AS SHOWN AND AS NECESSARY, FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
D. THE CONTRACTOR SHALL PROVIDE ALL ACCESS CONTROL AND CAMERA BACK BOXES, CONDUIT, AND JUNCTION BOXES, AS SHOWN AND AS NECESSARY, FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
E. CONTRACTOR SHALL MOUNT CARD READERS ON THE LATCH/LOCK SIDE OF THE DOOR WHERE POSSIBLE.
F. IT IS INCUMBENT UPON THE ELECTRICAL CONTRACTOR AND THE ACCESS CONTROL CONTRACTOR TO REVIEW AND VERIFY THE ACTUAL LOCKING HARDWARE AS DEFINED IN THE LATEST REVISIONS OF THE ARCHITECTURAL DOOR HARDWARE SCHEDULE TO ASSURE PROPER ROUGH-IN AND ROUTING OF THE CABLING AT THE DOOR. DEVICES INDICATED ON THE TECHNOLOGY DRAWINGS ARE TO INFORM THE CONTRACTORS OF DOORS REQUIRING ACCESS CONTROL, HOWEVER, THE TECHNOLOGY DRAWINGS DO NOT DEFINE THE ACTUAL REQUIRED LOCKING HARDWARE. CHANGES REQUIRED TO THE INSTALLATION OF THE ROUGH-INS AND/OR CABLING CONFIGURATIONS OF THE ACCESS CONTROLLED DOORS DUE TO THE LACK OF THIS VERIFICATION SHALL BE BORNE BY THE ELECTRICAL CONTRACTOR FOR THE ROUGH-IN WORK, AND THE ACCESS CONTROL CONTRACTOR FOR THE ACCESS CONTROL CABLING WORK.
G. INTERIOR WALL MOUNT CAMERAS SHALL BE MOUNTED AS HIGH AS POSSIBLE, WITHOUT BEING BLOCKED IN ANY WAY FROM OTHER TRADE ITEMS SUCH AS DUCT WORK, PIPING, LIGHTING, ETC. EXTERIOR CAMERAS SHALL BE MOUNTED AT 12'-14'.
H. SECURITY CONTRACTOR AND ELECTRICAL CONTRACTORS SHALL DO A WALK-THROUGH WITH WSU C&IT TO DETERMINE EXACT CAMERA HEIGHTS, LOCATIONS, MOUNTING TYPE, AND ROUGH-IN REQUIREMENTS, PRIOR TO ANY INSTALLATION OR ROUGH-IN WORK.

(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 ELEVATOR DEVICE CONNECTIONS ARE IN SERVICE ELEVATOR CONTROL ROOM. SEE SHEET T-207 FOR INFORMATION.

2 ELEVATOR DEVICE CONNECTIONS ARE IN ELEVATOR CONTROL ROOM. SEE SHEET T-206 FOR INFORMATION.

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KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SECURITY FLOOR PLAN - LEVEL 01

SHEET NO.
TY-201

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SECURITY FLOOR PLAN - SHEET GENERAL NOTES:

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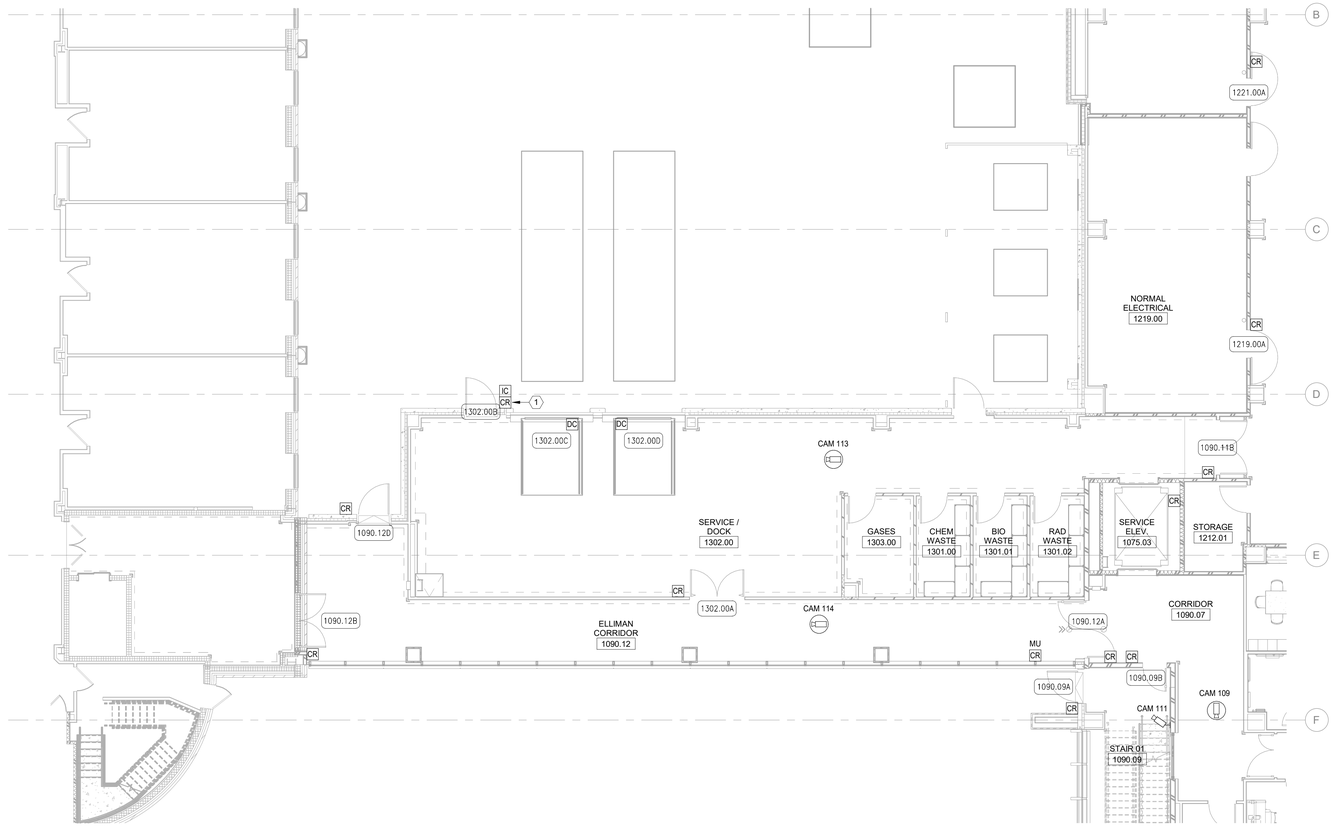
H. SECURITY CONTRACTOR AND ELECTRICAL CONTRACTORS SHALL DO A WALK-THROUGH WITH WSU C&IT TO DETERMINE EXACT CAMERA HEIGHTS, LOCATIONS, MOUNTING TYPE, AND ROUGH-IN REQUIREMENTS, PRIOR TO ANY INSTALLATION OR ROUGH-IN WORK.

(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 COORDINATE REMOTE RELEASE PROGRAMMING OF DOOR WITH WSU C&IT.



1 SECURITY FLOOR PLAN - LEVEL 01 - SERVICE DOCK
SCALE: 1/8" = 1'-0"

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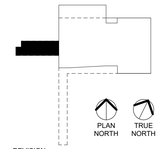
KEY PLAN



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
SECURITY FLOOR PLAN - LEVEL 01 - SERVICE DOCK
SHEET NO.
TY-201.2

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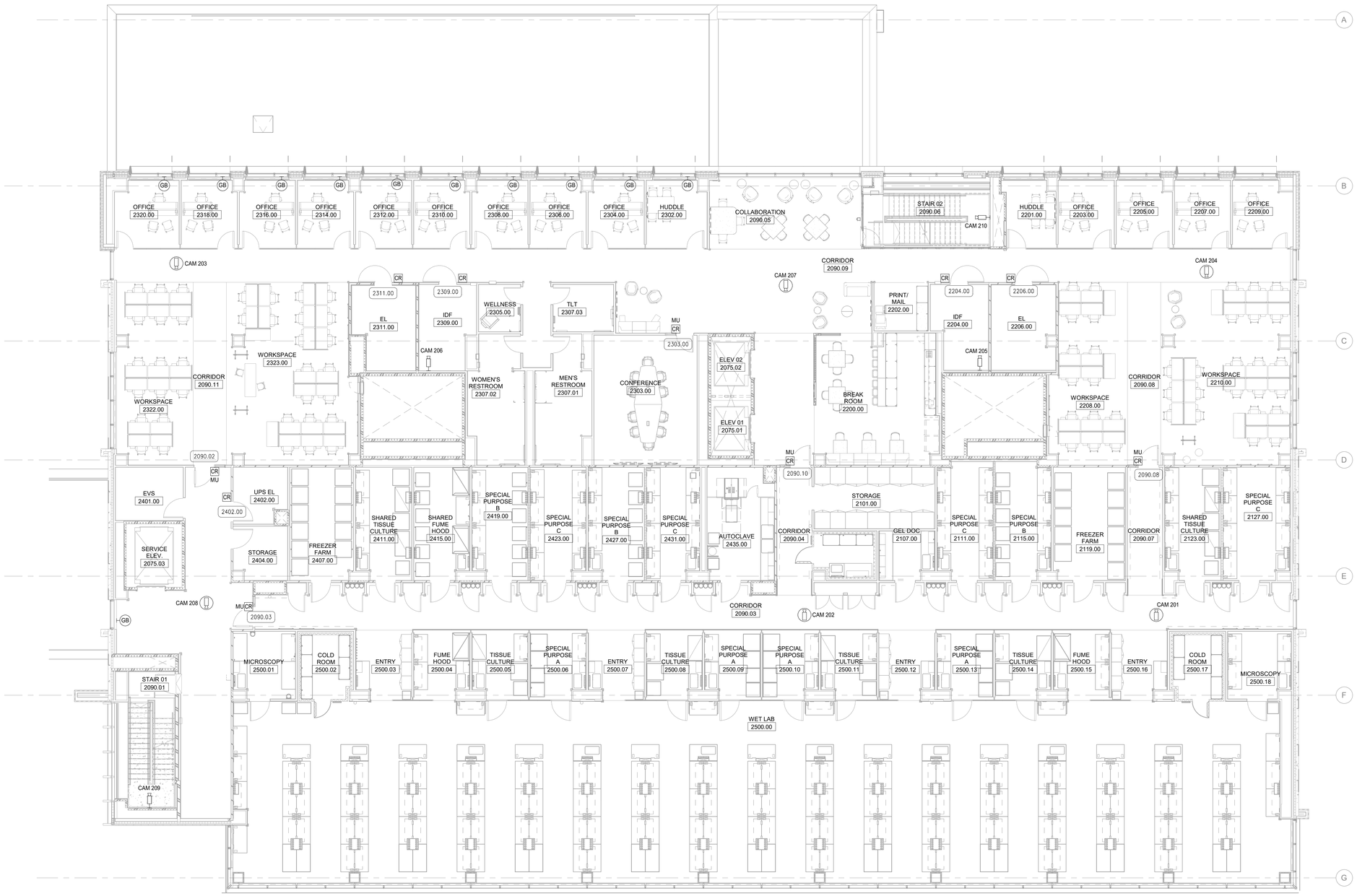

1 SECURITY FLOOR PLAN - LEVEL 02

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

SECURITY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF ACCESS CONTROL AND CAMERA CABLING, EQUIPMENT AND HARDWARE WITH OTHER TRADES, AS NECESSARY AND REQUIRED.
B. THE CONTRACTOR SHALL INSTALL APPROPRIATELY RATES CABLES FOR THE ENVIRONMENT AND CEILING AIR SPACE IN WHICH THE CABLES ARE INSTALLED, AND SHALL BE LISTED IN ACCORDANCE WITH NFPA 70. ARTICLES 725 & 800.
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E. CONTRACTOR SHALL MOUNT CARD READERS ON THE LATCH/LOCK SIDE OF THE DOOR WHERE POSSIBLE.
F. IT IS INCUMBENT UPON THE ELECTRICAL CONTRACTOR AND THE ACCESS CONTROL CONTRACTOR TO REVIEW AND VERIFY THE ACTUAL LOCKING HARDWARE AS DEFINED IN THE LATEST REVISIONS OF THE ARCHITECTURAL DOOR HARDWARE SCHEDULE TO ASSURE PROPER ROUGH-IN AND ROUTING OF THE CABLING AT THE DOOR. DEVICES INDICATED ON THE TECHNOLOGY DRAWINGS ARE TO INFORM THE CONTRACTORS OF DOORS REQUIRING ACCESS CONTROL, HOWEVER, THE TECHNOLOGY DRAWINGS DO NOT DEFINE THE ACTUAL REQUIRED LOCKING HARDWARE. CHANGES REQUIRED TO THE INSTALLATION OF THE ROUGH-INS AND/OR CABLING CONFIGURATIONS OF THE ACCESS CONTROLLED DOORS DUE TO THE LACK OF THIS VERIFICATION SHALL BE BORNE BY THE ELECTRICAL CONTRACTOR FOR THE ROUGH-IN WORK, AND THE ACCESS CONTROL CONTRACTOR FOR THE ACCESS CONTROL CABLING WORK.
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H. SECURITY CONTRACTOR AND ELECTRICAL CONTRACTORS SHALL DO A WALK-THROUGH WITH WSU C&IT TO DETERMINE EXACT CAMERA HEIGHTS, LOCATIONS, MOUNTING TYPE, AND ROUGH-IN REQUIREMENTS, PRIOR TO ANY INSTALLATION OR ROUGH-IN WORK.

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PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SECURITY FLOOR PLAN - LEVEL 02

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TY-202

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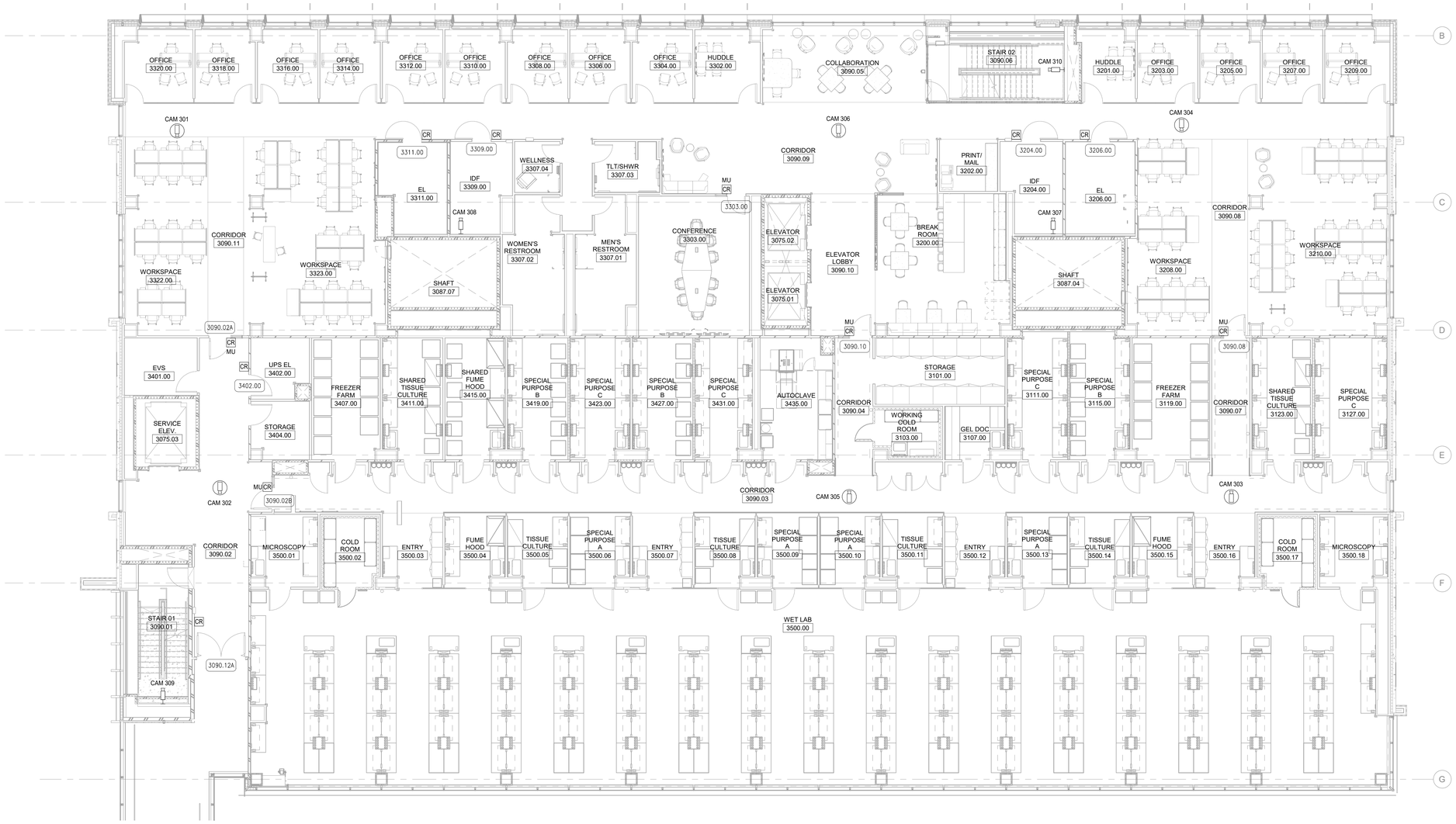

1 SECURITY FLOOR PLAN - LEVEL 03
SCALE: 1/8" = 1'-0"

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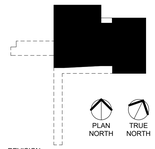

REVISION NO. | DESCRIPTION | DATE

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ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SECURITY FLOOR PLAN - LEVEL 03

SHEET NO.
TY-203

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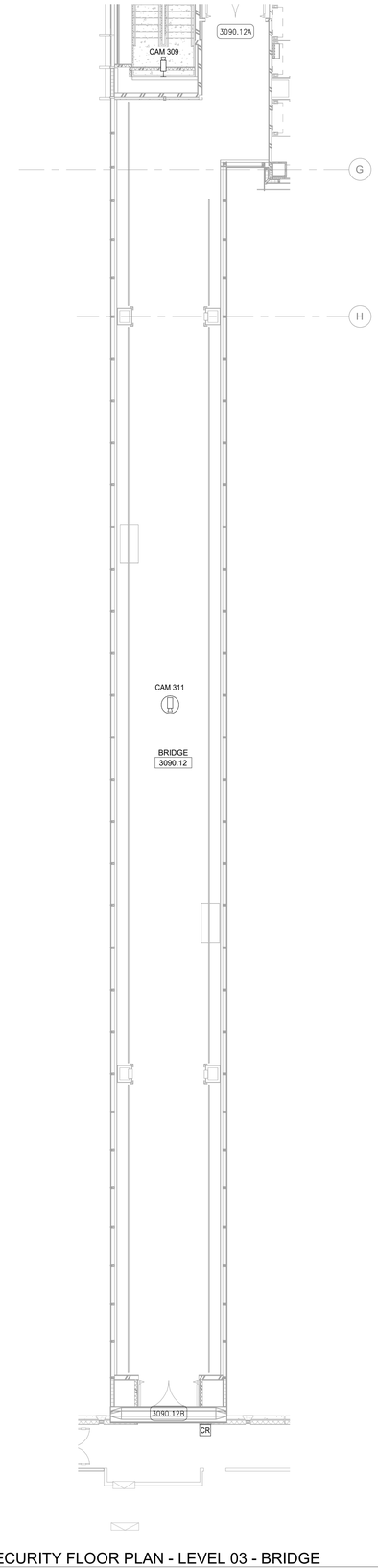

1 SECURITY FLOOR PLAN - LEVEL 03 - BRIDGE
SCALE: 1/8" = 1'-0"

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A. COORDINATE INSTALLATION OF ACCESS CONTROL AND CAMERA CABLING, EQUIPMENT AND HARDWARE WITH OTHER TRADES, AS NECESSARY AND REQUIRED.
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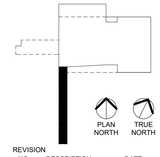
KEY PLAN



REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SECURITY FLOOR PLAN - LEVEL 03 - BRIDGE

SHEET NO.
TY-203.3

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PLOT DATE: 9/25/2025 8:40:53 AM TEMPLATE VERSION: 23.0.4

SECURITY FLOOR PLAN - SHEET GENERAL NOTES:

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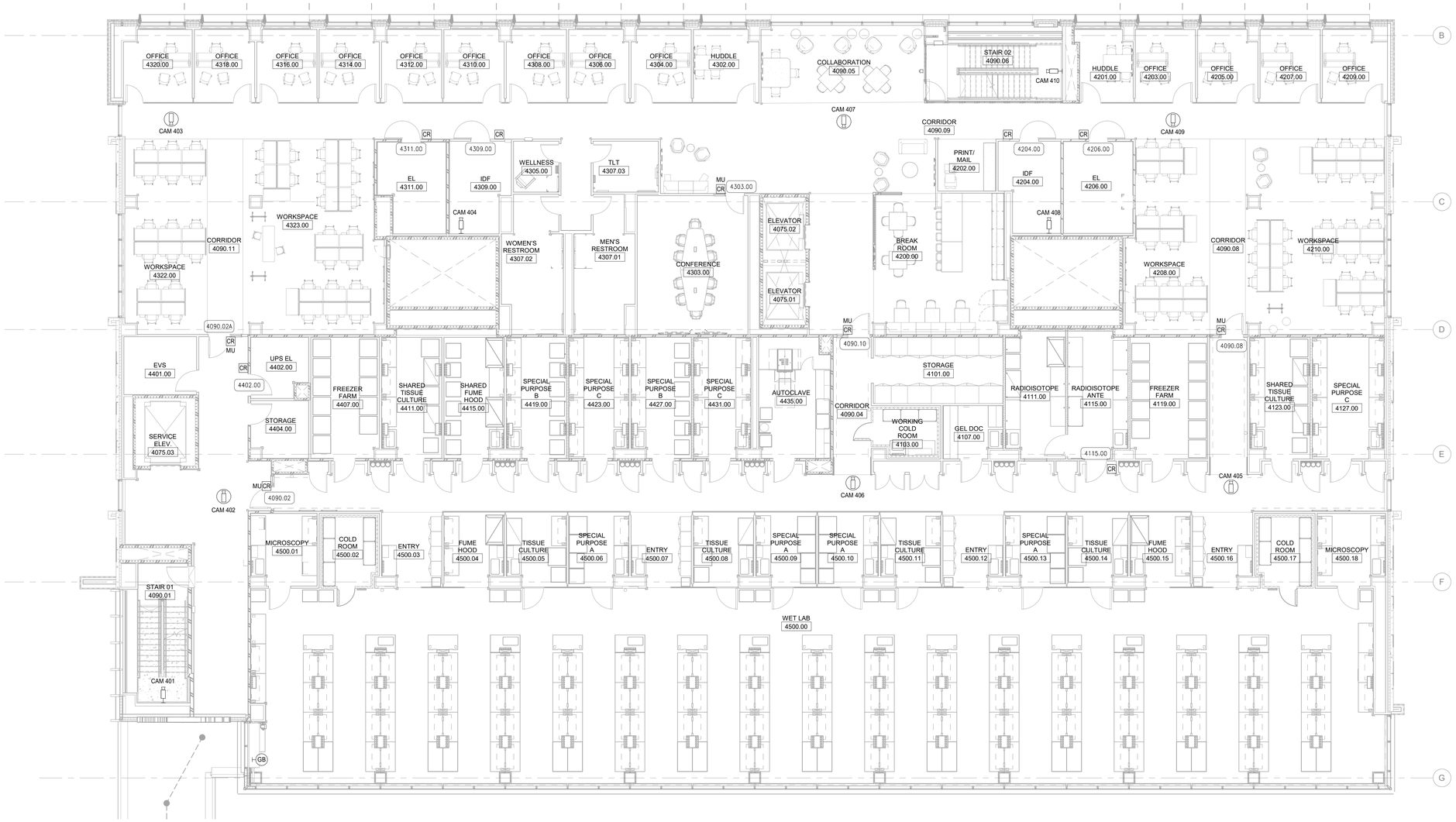

1 SECURITY FLOOR PLAN - LEVEL 04
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/26/2025 8:41:09 AM TEMPLATE VERSION: 23.0.4

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PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
SECURITY FLOOR PLAN - LEVEL 04

SHEET NO.
TY-204

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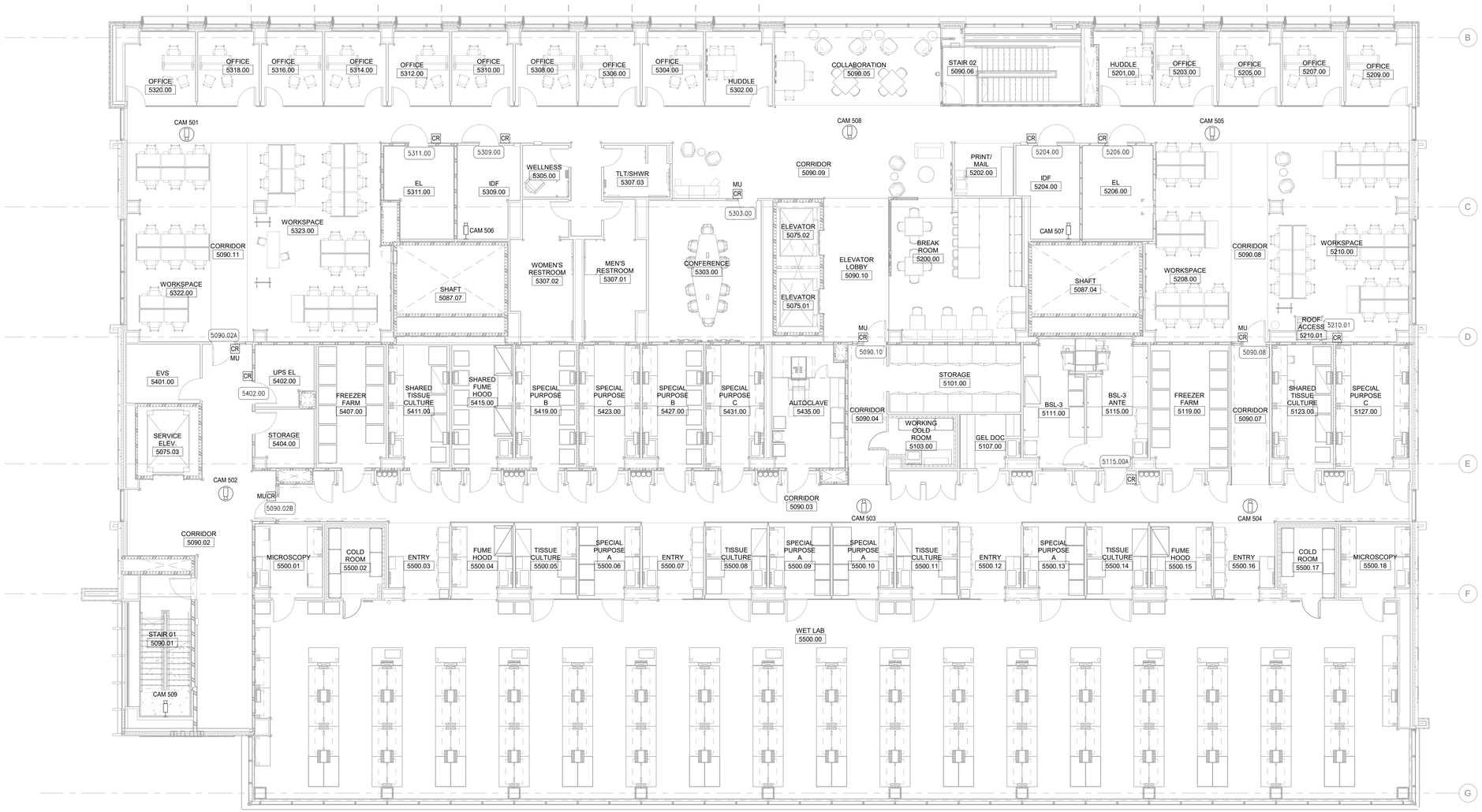

1 SECURITY FLOOR PLAN - LEVEL 05

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

SECURITY FLOOR PLAN - SHEET GENERAL NOTES:

A. COORDINATE INSTALLATION OF ACCESS CONTROL AND CAMERA CABLING, EQUIPMENT AND HARDWARE WITH OTHER TRADES, AS NECESSARY AND REQUIRED.
B. THE CONTRACTOR SHALL INSTALL APPROPRIATELY RATES CABLES FOR THE ENVIRONMENT AND CEILING AIR SPACE IN WHICH THE CABLES ARE INSTALLED, AND SHALL BE LISTED IN ACCORDANCE WITH NFPA 70. ARTICLES 725 & 800.
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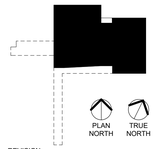

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SECURITY FLOOR PLAN - LEVEL 05

SHEET NO.
TY-205

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SECURITY FLOOR PLAN - SHEET GENERAL NOTES:

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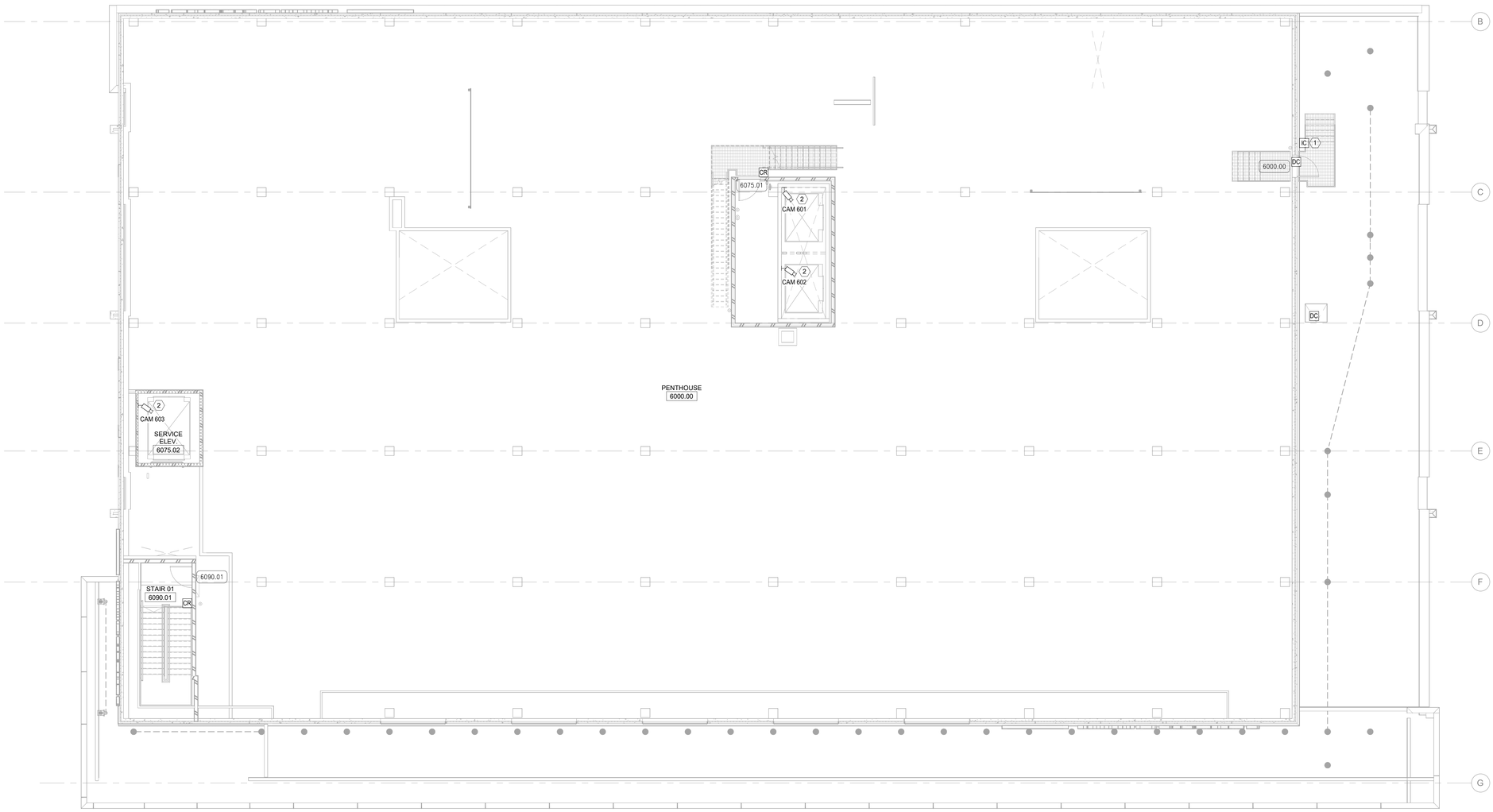
(#) **TECHNOLOGY FLOOR PLAN - CODED NOTES:**

1 INTERCOM TO BE PROGRAMMED TO CALL PUBLIC SAFETY.

2 ELEVATOR DEVICE CONNECTIONS ARE IN ELEVATOR CONTROL ROOM. SEE SHEET T-206 FOR INFORMATION.



1 SECURITY FLOOR PLAN - PENTHOUSE
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/26/2025 8:41:07 AM TEMPLATE VERSION: 23.0.4

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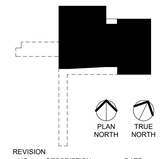
KEY PLAN



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
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ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SECURITY FLOOR PLAN - PENTHOUSE

SHEET NO.
TY-206

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SECURITY FLOOR PLAN - SHEET GENERAL NOTES:

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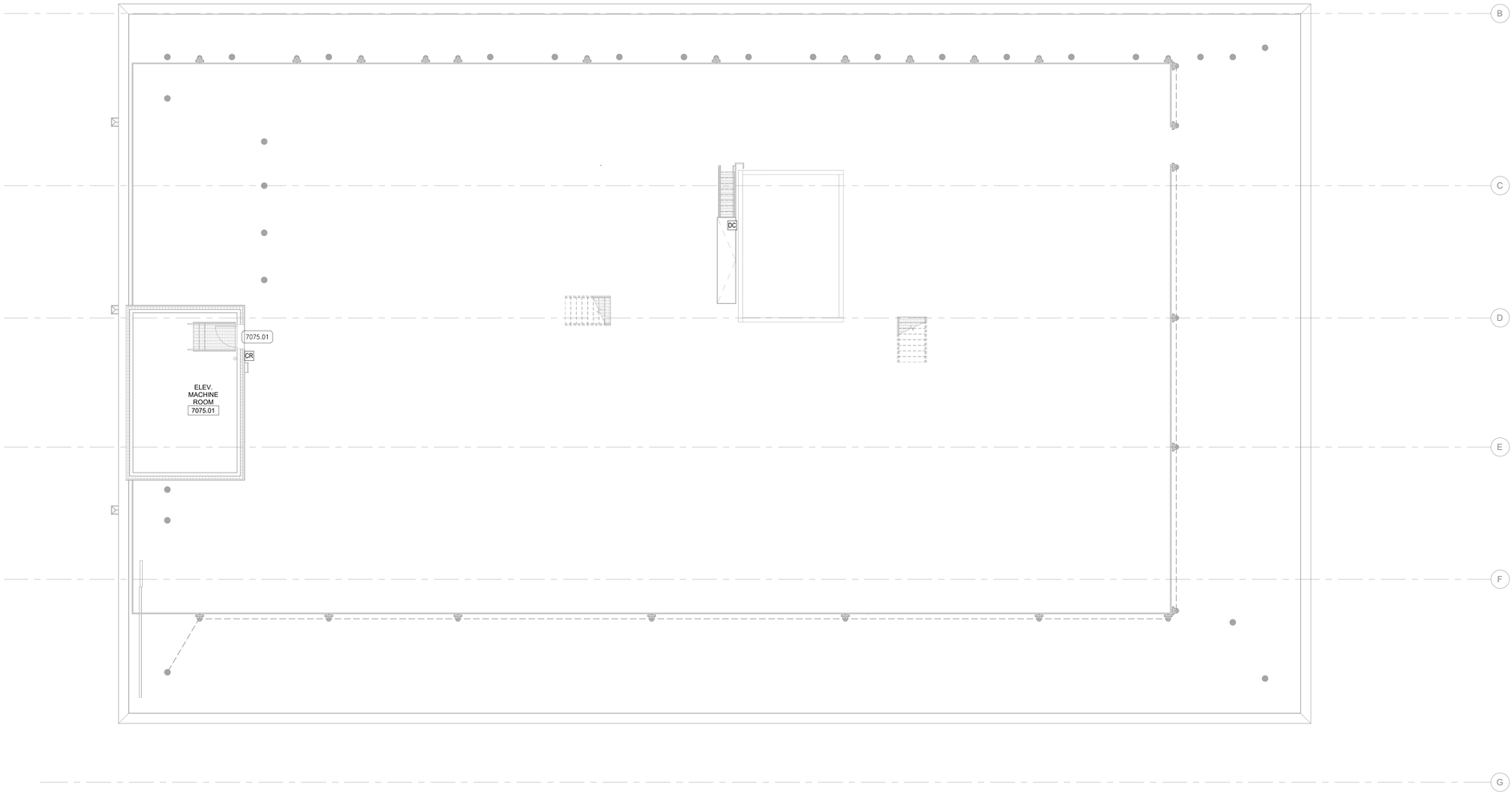

1 SECURITY FLOOR PLAN - ROOF
SCALE: 1/8" = 1'-0"

PLOT DATE: 9/25/2025 8:41:08 AM TEMPLATE VERSION: 23.0.4

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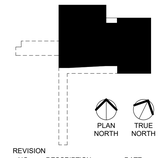
KEY PLAN



REVISION NO. | DESCRIPTION | DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SECURITY FLOOR PLAN - ROOF

SHEET NO.
TY-207

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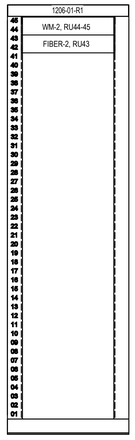
TECHNOLOGY ELEVATION PLAN - SHEET GENERAL NOTES:

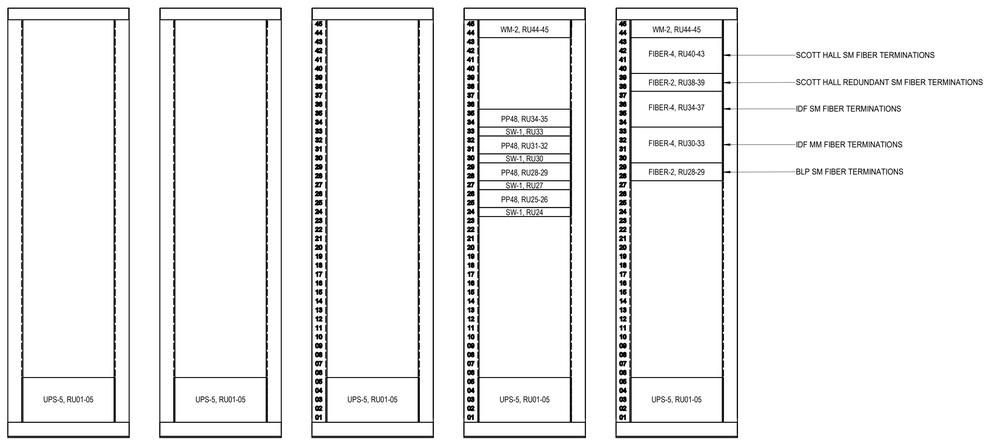
A. RACK LAYOUT IS DIAGRAMMATIC AND FOR REFERENCE ONLY. FINAL RACK LAYOUT BY DIVISION 27 CONTRACTOR. SUBMIT PROPOSED RACK LAYOUT TO ARCHITECT PRIOR TO INSTALLATION.
B. VERIFY FINAL RACK AND CABINET PLACEMENT WITH OWNER PRIOR TO INSTALLATION.
C. DIVISION 27 CONTRACTOR SHALL PROVIDE AND INSTALL ALL EQUIPMENT AS SHOWN AND NOTED IN THE RACK UNIT (RU) SLOTS INDICATED, UNLESS NOTED OTHERWISE.
D. PROPERLY GROUND AND BOND RACKS AND CABINET BY MEANS OF A GROUNDING CONDUCTOR TO AN APPROVED GROUNDING ELECTRODE.
E. SEE DIVISION 27 AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION ON RACK MOUNTED EQUIPMENT MANUFACTURERS, PRODUCTS, AND REQUIREMENTS.

TECHNOLOGY ELEVATION PLAN - SHEET CODED NOTES:

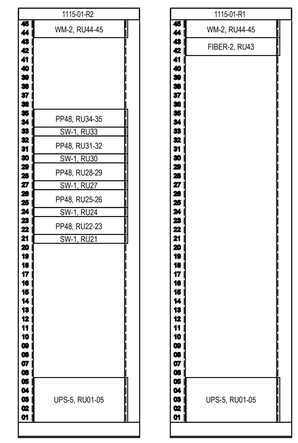
FIBER-1	PROVIDE ONE (1) - RACK MOUNTED FIBER LIU, 1RU.
FIBER-2	PROVIDE ONE (1) - RACK MOUNTED FIBER LIU, 2RU.
FIBER-4	PROVIDE ONE (1) - RACK MOUNTED FIBER LIU, 4RU.
PP-48	PROVIDE ONE (1) - 48-PORT PATCH PANEL, 2RU.
SW-1	SPACE RESERVED FOR OWNER PROVIDED SWITCH, 1RU.
UPS-5	SPACE RESERVED FOR OWNER PROVIDED UPS AND/OR POWER CONDITIONER, 5RU.
WM-2	PROVIDE ONE (1) - RACK MOUNTED HORIZONTAL WIRE MANAGER, 2RU.



3 CORE LAB SERVER 1206.01 - RACK ELEVATIONS
SCALE: NONE



1 IT 1214.00 - RACK ELEVATIONS
SCALE: NONE



2 IDF 1115.00 - RACK ELEVATIONS
SCALE: NONE

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ANTHONY M WULK
ENGINEER
6201068656
LICENSED PROFESSIONAL ENGINEER

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY ELEVATION PLANS - LEVEL 01
SHEET NO.
T-300

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1420 Washington Blvd., Suite 301 | Detroit, MI 48226
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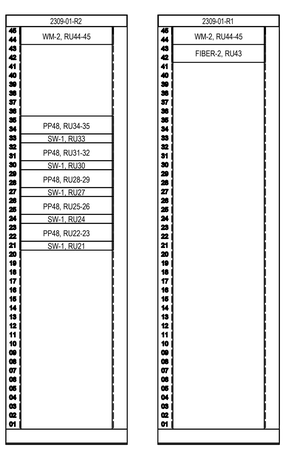
PLOT DATE:
9/26/2025 8:41:09 AM TEMPLATE VERSION: 23.0.4

TECHNOLOGY ELEVATION PLAN - SHEET GENERAL NOTES:

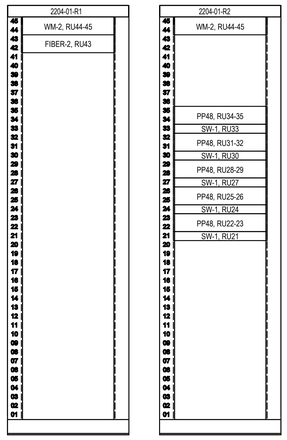
A. RACK LAYOUT IS DIAGRAMMATIC AND FOR REFERENCE ONLY. FINAL RACK LAYOUT BY DIVISION 27 CONTRACTOR. SUBMIT PROPOSED RACK LAYOUT TO ARCHITECT PRIOR TO INSTALLATION.
B. VERIFY FINAL RACK AND CABINET PLACEMENT WITH OWNER PRIOR TO INSTALLATION.
C. DIVISION 27 CONTRACTOR SHALL PROVIDE AND INSTALL ALL EQUIPMENT AS SHOWN AND NOTED IN THE RACK UNIT (RU) SLOTS INDICATED, UNLESS NOTED OTHERWISE.
D. PROPERLY GROUND AND BOND RACKS AND CABINET BY MEANS OF A GROUNDING CONDUCTOR TO AN APPROVED GROUNDING ELECTRODE.
E. SEE DIVISION 27 AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION ON RACK MOUNTED EQUIPMENT MANUFACTURERS, PRODUCTS, AND REQUIREMENTS.

TECHNOLOGY ELEVATION PLAN - SHEET CODED NOTES:

FIBER-1	PROVIDE ONE (1) - RACK MOUNTED FIBER LIU, 1RU.
FIBER-2	PROVIDE ONE (1) - RACK MOUNTED FIBER LIU, 2RU.
FIBER-4	PROVIDE ONE (1) - RACK MOUNTED FIBER LIU, 4RU.
PP-48	PROVIDE ONE (1) - 48-PORT PATCH PANEL, 2RU.
SW-1	SPACE RESERVED FOR OWNER PROVIDED SWITCH, 1RU.
UPS-5	SPACE RESERVED FOR OWNER PROVIDED UPS AND/OR POWER CONDITIONER, 5RU.
WM-2	PROVIDE ONE (1) - RACK MOUNTED HORIZONTAL WIRE MANAGER, 2RU.



1 IDF 2309.00 - RACK ELEVATIONS
SCALE: NONE



2 IDF 2204.00 - RACK ELEVATIONS
SCALE: NONE

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HKS PROJECT NUMBER
26234.000
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ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY ELEVATION PLANS - LEVEL 02
SHEET NO.
T-301

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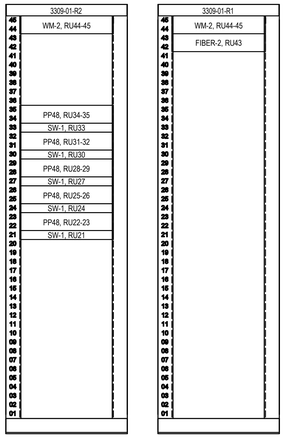
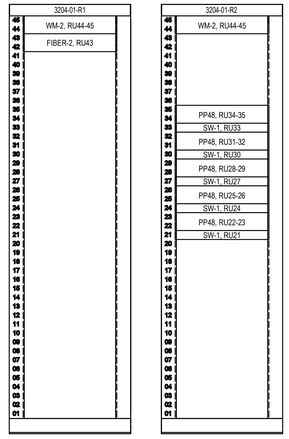


1 IDF 3309.00 - RACK ELEVATIONS
SCALE: NONE



2 IDF 3204.00 - RACK ELEVATIONS
SCALE: NONE

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REVISION

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DATE
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ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY ELEVATION PLANS - LEVEL 03
SHEET NO.
T-302

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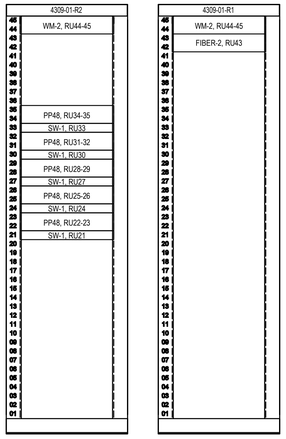
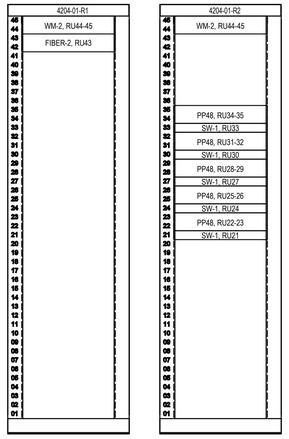


1 IDF 4309.00 - RACK ELEVATIONS
SCALE: NONE



2 IDF 4202.00 - RACK ELEVATIONS
SCALE: NONE

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REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY ELEVATION PLANS - LEVEL 04
SHEET NO.
T-303

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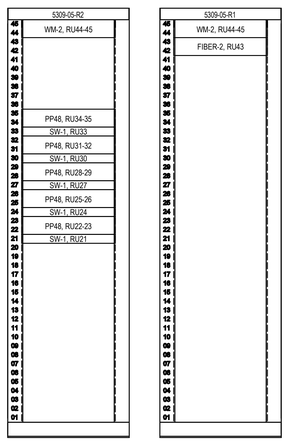
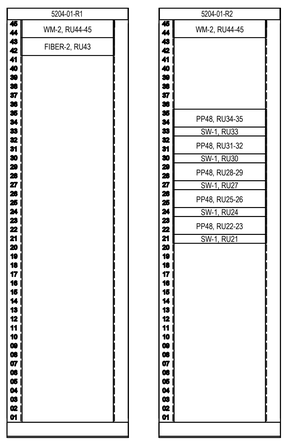


1 IDF 5309.00 - RACK ELEVATIONS
SCALE: NONE



2 IDF 5204.00 - RACK ELEVATIONS
SCALE: NONE

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NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY ELEVATION PLANS - LEVEL 05
SHEET NO.
T-304

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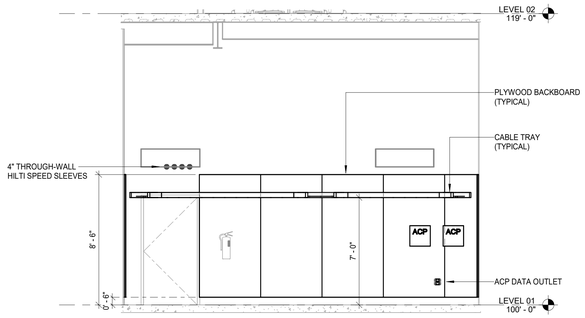
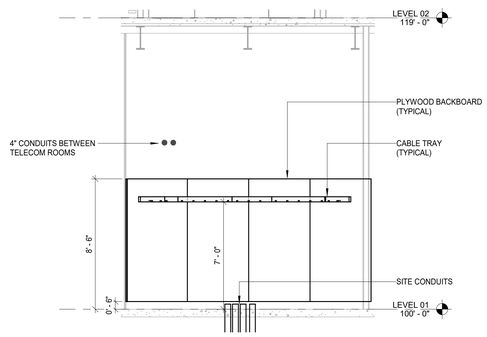
PLOT DATE:
9/25/2025 8:41:13 AM TEMPLATE VERSION: 23.0.4

TECHNOLOGY ENLARGED PLANS - SHEET GENERAL NOTES:

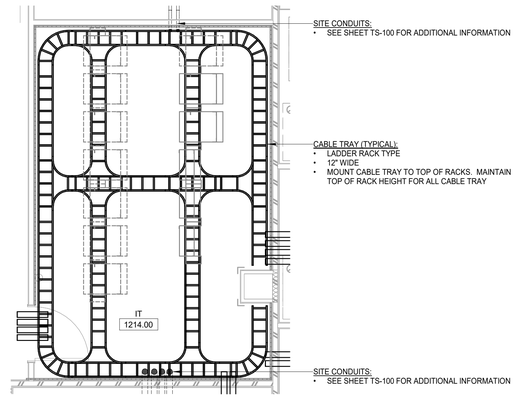
A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR TELECOM ROOM FIT-OUT AND EQUIPMENT REQUIREMENTS
B. PLYWOOD BACKBOARDS SHALL BE FABRICATED FROM SHEETS OF 3/4", FIRE RATED GRADE PLYWOOD. PLYWOOD BACKBOARDS SHALL BE MOUNTED ON WALLS VERTICALLY, 6" OFF THE FLOOR AND EXTENDING UP THE WALL TOWARD THE CEILING. INSTALL BACKBOARDS IN FULL 8-FOOT BY 4-FOOT SHEETS, WHERE POSSIBLE. ALL PLYWOOD BACKBOARDS SHALL BE UNPAINTED.
C. SEE T-100 SERIES DRAWINGS FOR TELECOM ROOM THROUGH-WALL SLEEVE AND BETWEEN ROOM CONDUIT INFORMATION.
D. PROVIDE CABLE TRAY WATERFALLS, AT ALL LOCATIONS WHERE CABLE ENTER AND EXIT THE CABLE TRAY.
E. STUB ALL THROUGH-FLOOR AND THROUGH-WALL CONDUITS AND SLEEVES A MINIMUM OF 4" INTO IT / IDF ROOMS. PROVIDE A PLASTIC BUSHING ON EACH END OF THROUGH-FLOOR AND THROUGH-WALL CONDUIT SLEEVES.
F. SEE T100 SERIES DRAWINGS FOR THROUGH-WALL SLEEVE AND CONDUIT INFORMATION IN MDF AND IDF ROOMS.



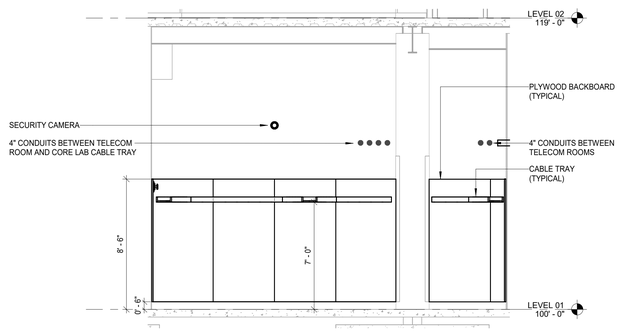
4 IT 1214.00 - WEST WALL ELEVATION
SCALE: 1/4" = 1'-0"



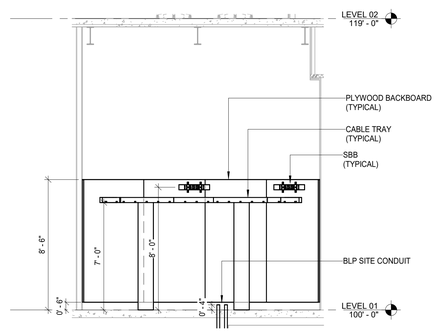
5 IT 1214.00 - SOUTH WALL ELEVATION
SCALE: 1/4" = 1'-0"



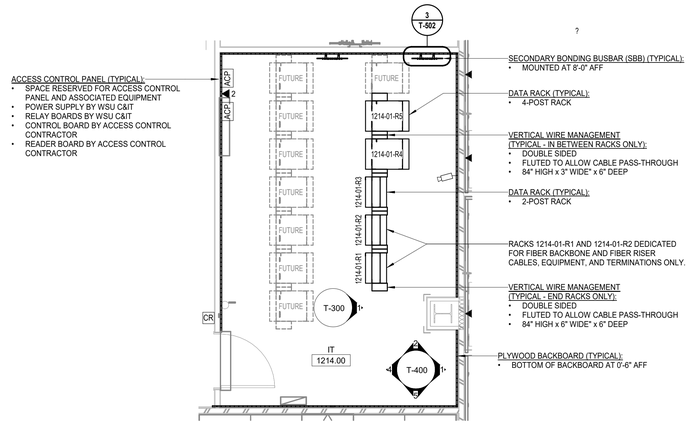
6 IT 1214.00 - ENLARGED PATHWAY PLAN
SCALE: 1/4" = 1'-0"



1 IT 1214.00 - EAST WALL ELEVATION
SCALE: 1/4" = 1'-0"



2 IT 1214.00 - NORTH WALL ELEVATION
SCALE: 1/4" = 1'-0"



3 IT 1214.00 - ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"

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E. STUB ALL THROUGH-FLOOR AND THROUGH-WALL CONDUITS AND SLEEVES A MINIMUM OF 4" INTO IT / IDF ROOMS. PROVIDE A PLASTIC BUSHING ON EACH END OF THROUGH-FLOOR AND THROUGH-WALL CONDUIT SLEEVES.
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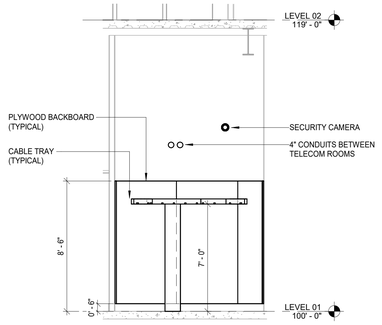
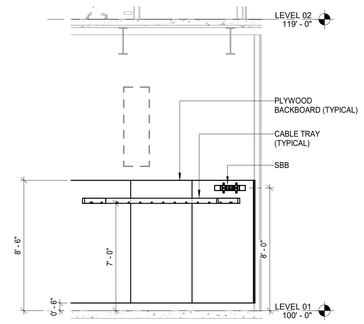
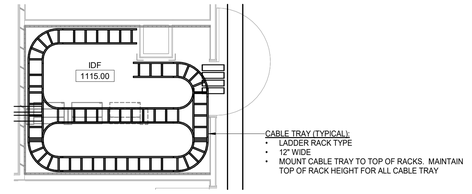


4 IDF 1115.00 - WEST WALL ELEVATION
SCALE: 1/4" = 1'-0"



5 IDF 1115.00 - SOUTH WALL ELEVATION
SCALE: 1/4" = 1'-0"



6 IDF 1115.00 - ENLARGED PATHWAY PLAN
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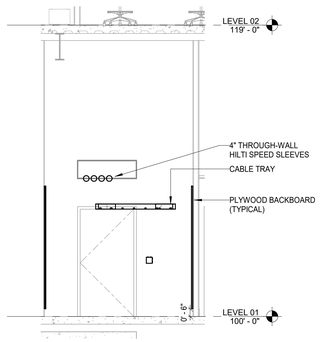

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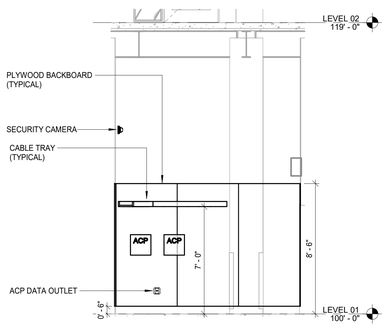

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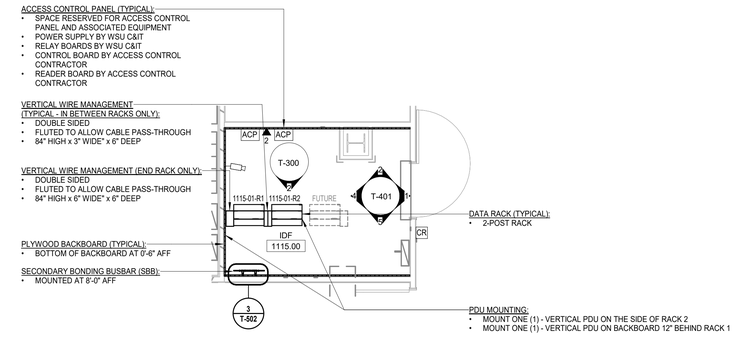
SCALE: 1/4" = 1'-0"



3 IDF 1115.00 - ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"

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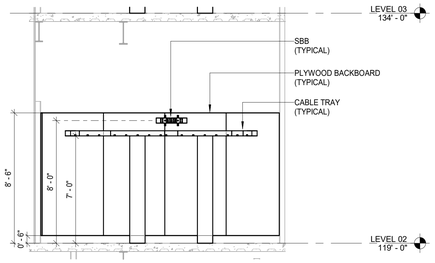
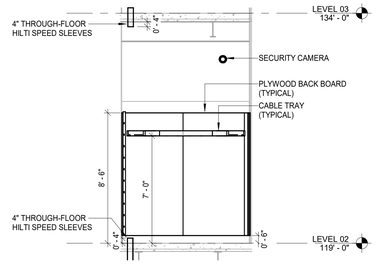
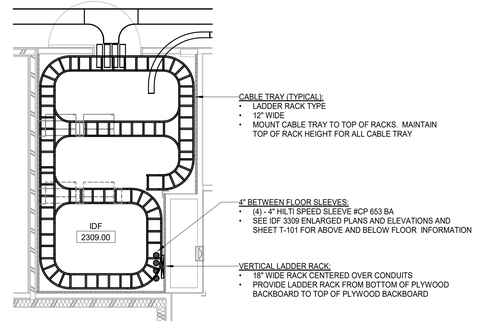


4 IDF 2309.00 - WEST WALL ELEVATION
SCALE: 1/4" = 1'-0"



5 IDF 2309.00 - SOUTH WALL ELEVATION
SCALE: 1/4" = 1'-0"



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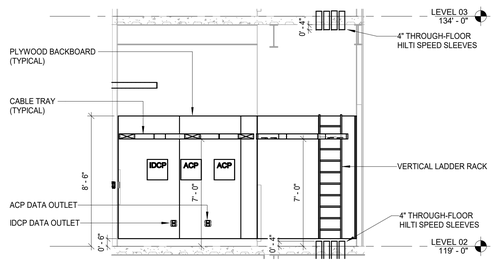
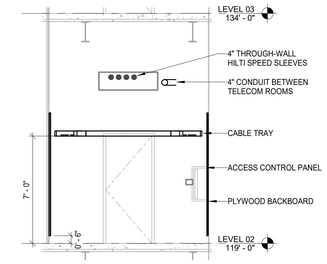
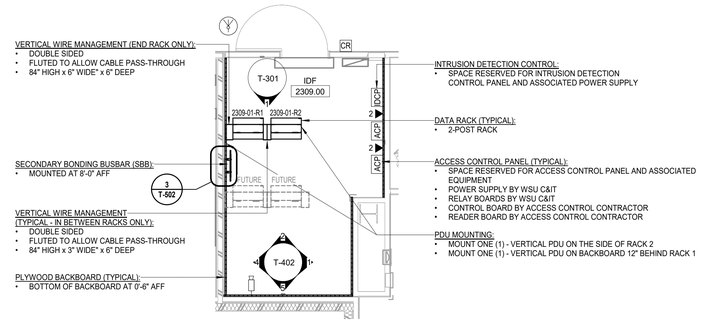
SCALE: 1/4" = 1'-0"



1 IDF 2309.00 - EAST WALL ELEVATION
SCALE: 1/4" = 1'-0"



2 IDF 2309.00 - NORTH WALL ELEVATION
SCALE: 1/4" = 1'-0"



3 IDF 2309.00 - ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"

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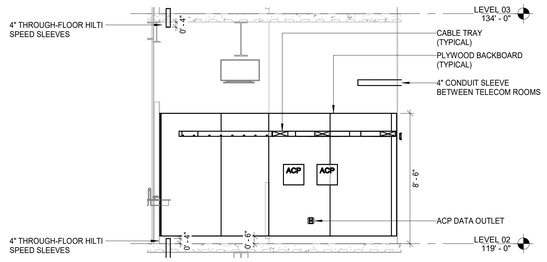
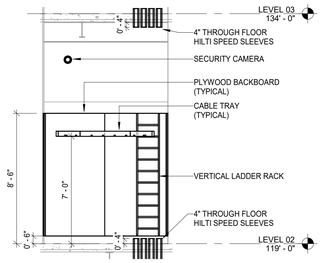
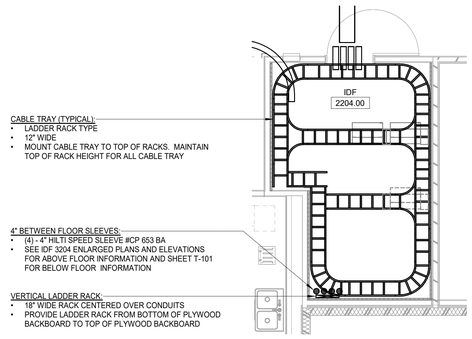


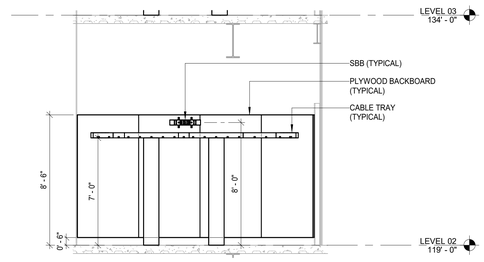
4 IDF 2204.00 - WEST WALL ELEVATION
SCALE: 1/4" = 1'-0"



5 IDF 2204.00 - SOUTH WALL ELEVTION
SCALE: 1/4" = 1'-0"



6 IDF 2204.00 - ENLARGED PATHWAY PLAN
SCALE: 1/4" = 1'-0"



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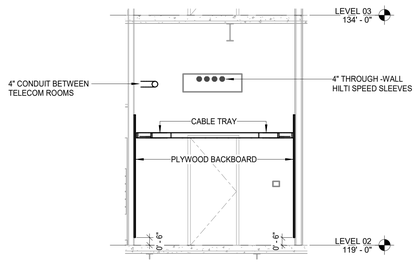
SCALE: 1/4" = 1'-0"



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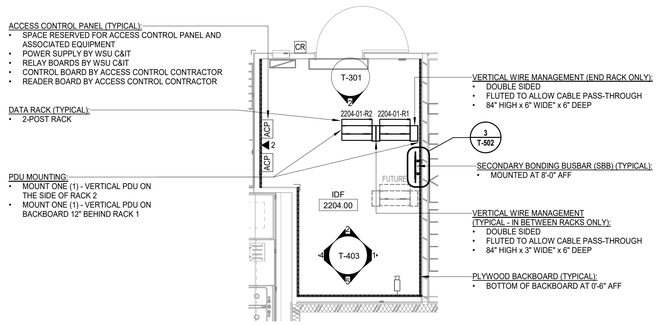
SCALE: 1/4" = 1'-0"



3 IDF 2204.00 - ENLARGED FLOOR PLAN
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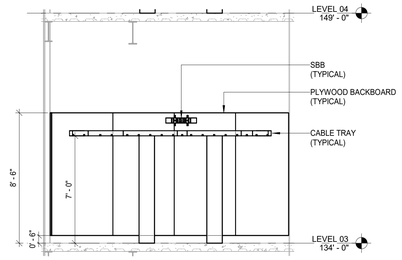
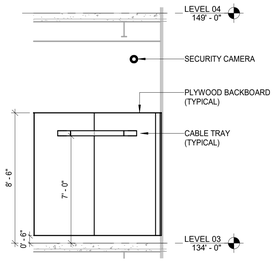


4 IDF 3309.00 - WEST WALL ELEVATION
SCALE: 1/4" = 1'-0"



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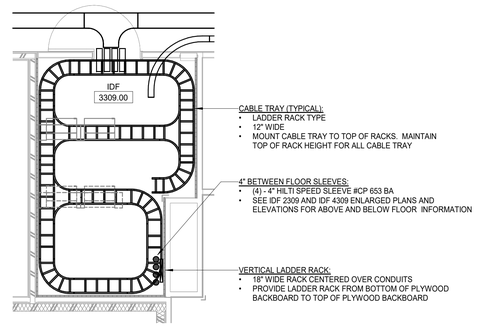

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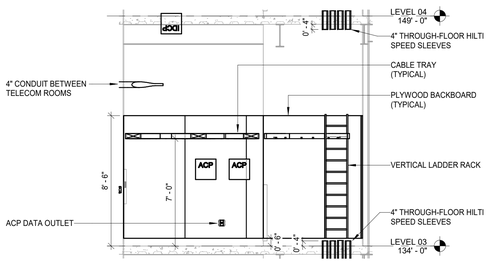

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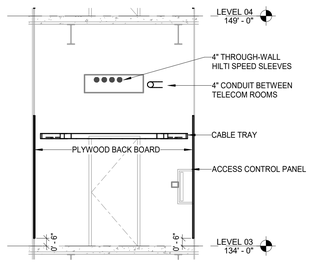

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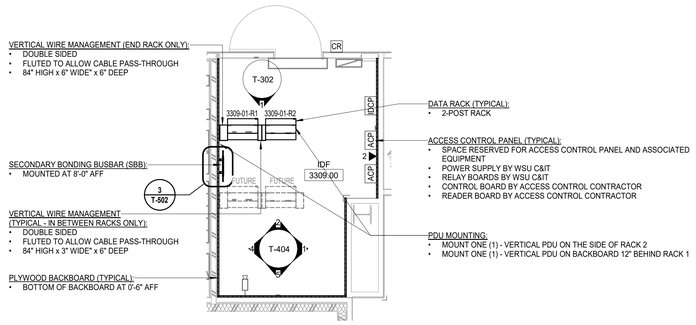

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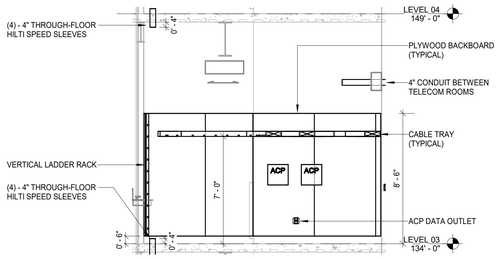
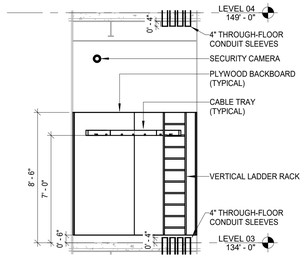


4 IDF 3204.00 - WEST WALL ELEVATION
SCALE: 1/4" = 1'-0"



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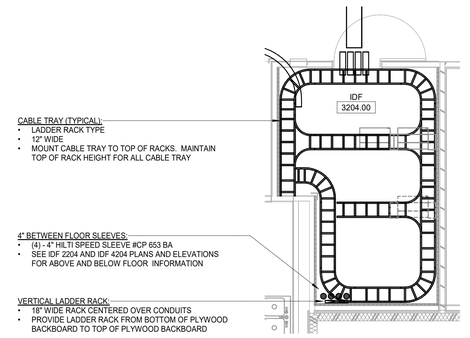

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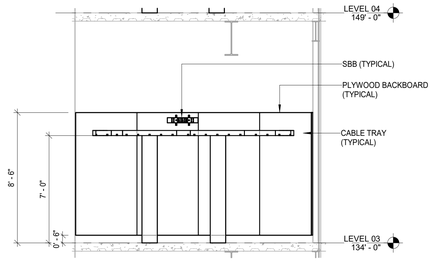

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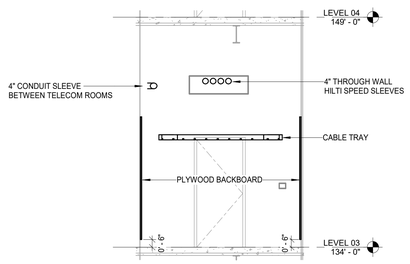

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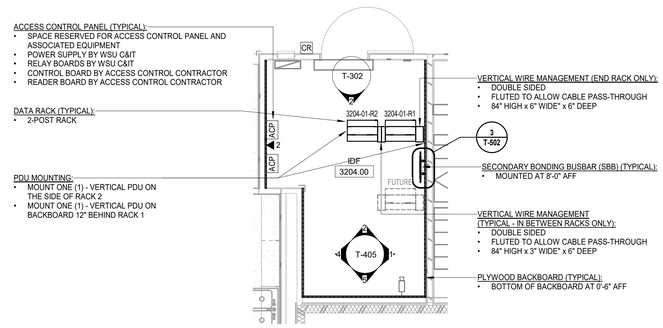

3 IDF 3204.00 - ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"

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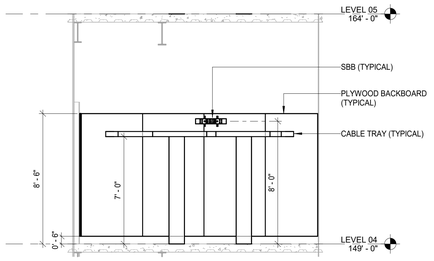

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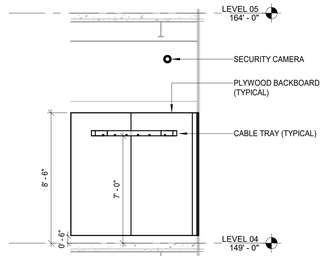

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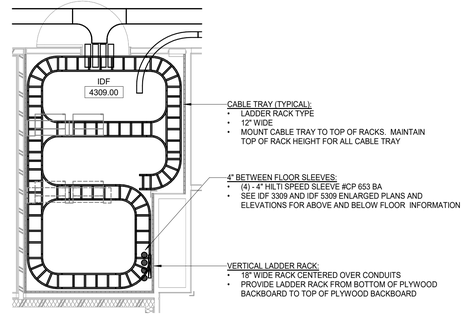

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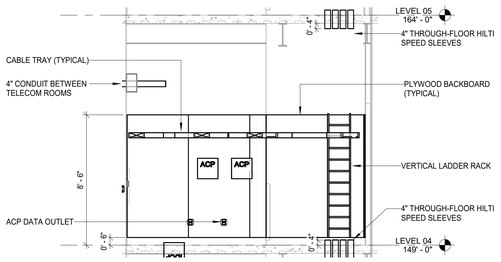

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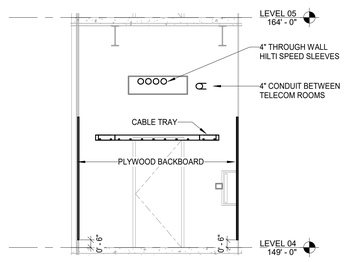

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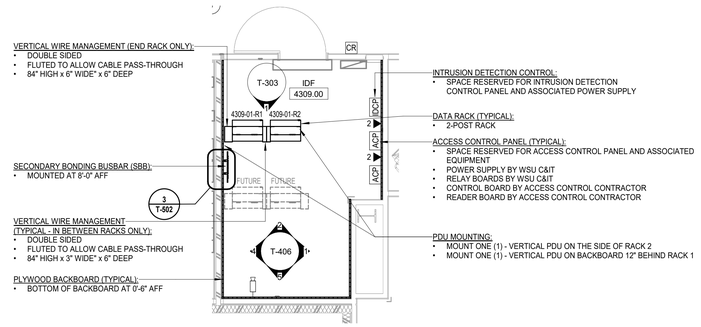

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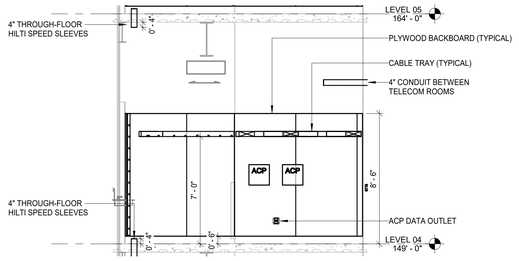

4 IDF 4204.00 - WEST WALL ELEVATION
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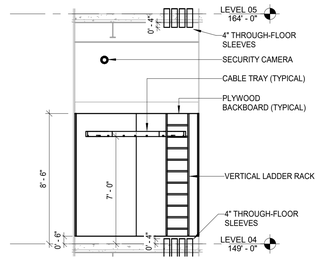

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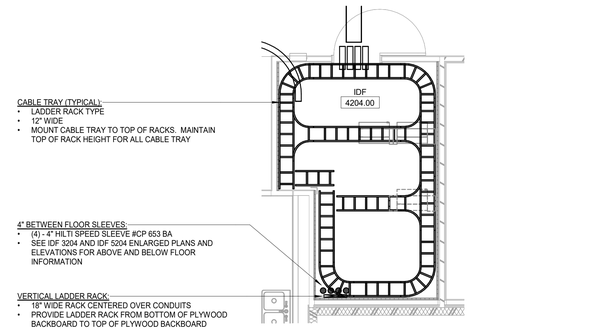

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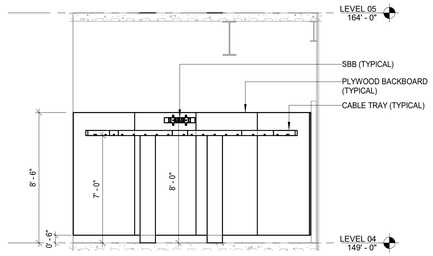

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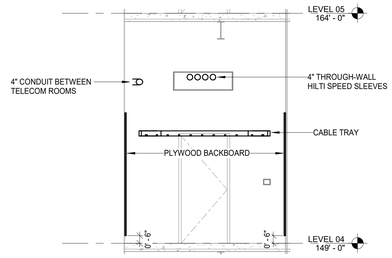

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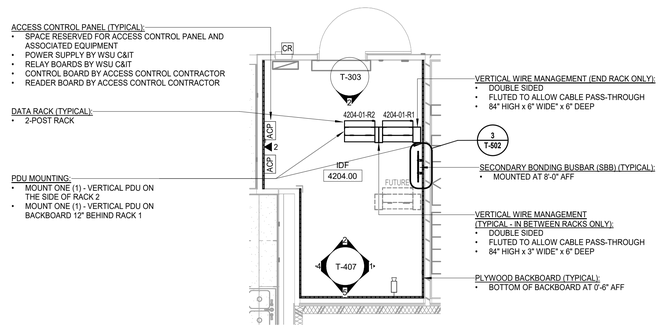

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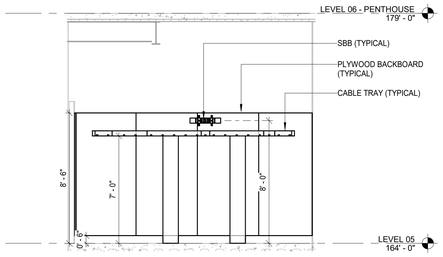

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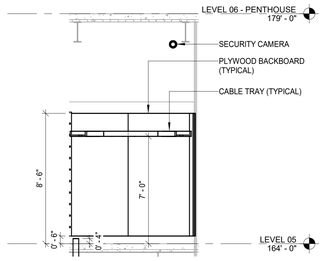

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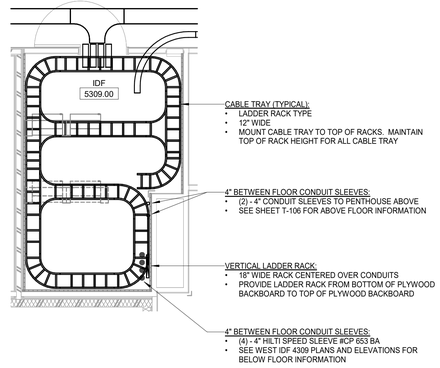

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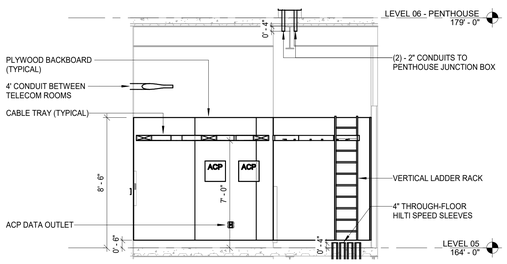

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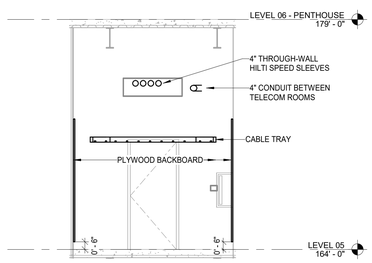

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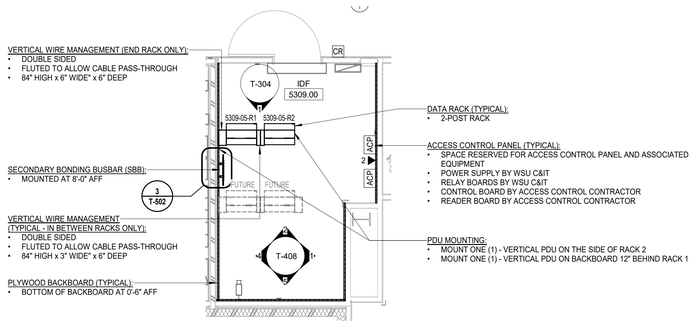

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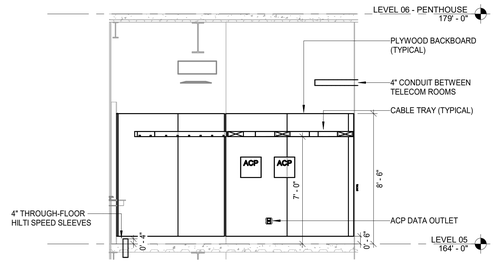

4 IDF 5204.00 - WEST WALL ELEVATION
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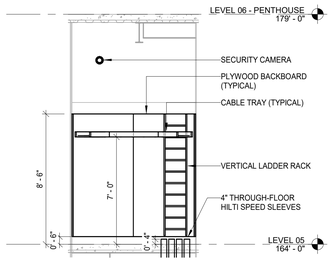
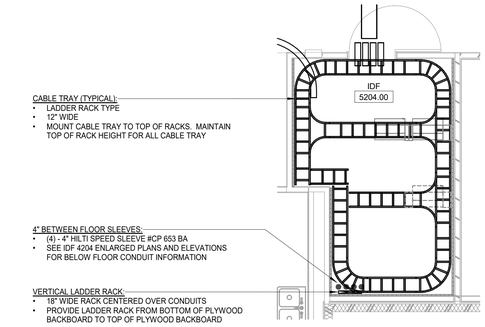
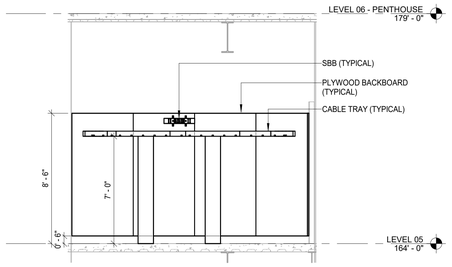


5 IDF 5204.00 - SOUTH WALL ELEVATION
SCALE: 1/4" = 1'-0"



6 IDF 5204.00 - ENLARGED PATHWAY PLAN
SCALE: 1/4" = 1'-0"



1 IDF 5204.00 - EAST WALL ELEVATION
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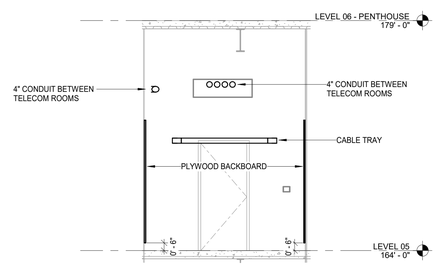
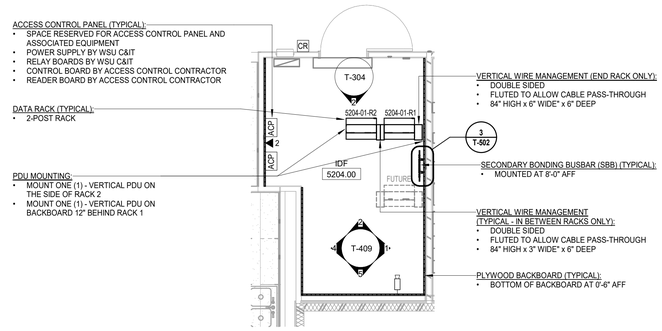


2 IDF 5204.00 - NORTH WALL ELEVATION
SCALE: 1/4" = 1'-0"



3 IDF 5204.00 - ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"

PLOT DATE:
9/26/2025 8:41:39 AM TEMPLATE VERSION: 23.0.4

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REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY ENLARGED PLANS - IDF 5204.00
SHEET NO.
T-409

OSBORN ENGINEERING
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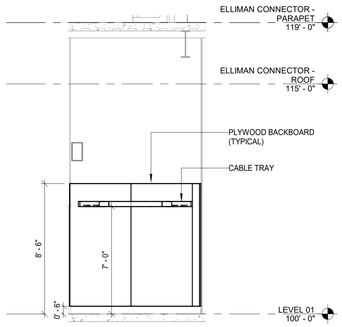
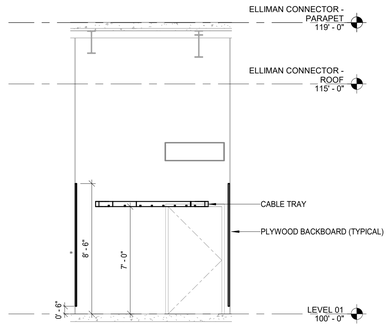
TECHNOLOGY ENLARGED PLANS - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR TELECOM ROOM FIT-OUT AND EQUIPMENT REQUIREMENTS
B. PLYWOOD BACKBOARDS SHALL BE FABRICATED FROM SHEETS OF 3/4", FIRE RATED GRADE PLYWOOD. PLYWOOD BACKBOARDS SHALL BE MOUNTED ON WALLS VERTICALLY, 6" OFF THE FLOOR AND EXTENDING UP THE WALL TOWARD THE CEILING. INSTALL BACKBOARDS IN FULL 8-FOOT BY 4-FOOT SHEETS, WHERE POSSIBLE. ALL PLYWOOD BACKBOARDS SHALL BE UNPAINTED.
C. SEE T-100 SERIES DRAWINGS FOR TELECOM ROOM THROUGH-WALL SLEEVE AND BETWEEN ROOM CONDUIT INFORMATION.
D. PROVIDE CABLE TRAY WATERFALLS, AT ALL LOCATIONS WHERE CABLE ENTER AND EXIT THE CABLE TRAY.
E. STUB ALL THROUGH-FLOOR AND THROUGH-WALL CONDUITS AND SLEEVES A MINIMUM OF 4" INTO IT / IDF ROOMS. PROVIDE A PLASTIC BUSHING ON EACH END OF THROUGH-FLOOR AND THROUGH-WALL CONDUIT SLEEVES.
F. SEE T100 SERIES DRAWINGS FOR THROUGH-WALL SLEEVE AND CONDUIT INFORMATION IN MDF AND IDF ROOMS.



4 CORE LAB SERVER 1206.01 - WEST WALL ELEVATION
SCALE: 1/4" = 1'-0"



5 CORE LAB SERVER 1206.01 - SOUTH WALL ELEVATION
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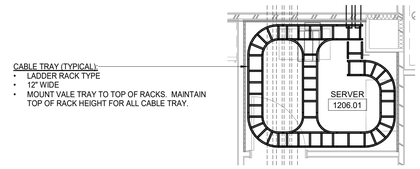

6 CORE LAB SERVER 1206.01 - ENLARGED PATHWAY PLAN
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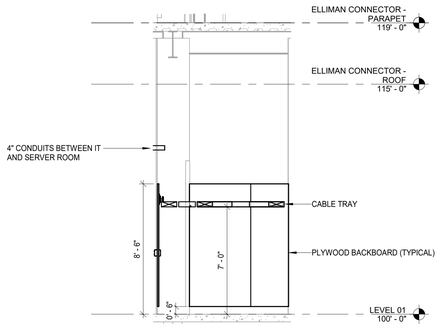

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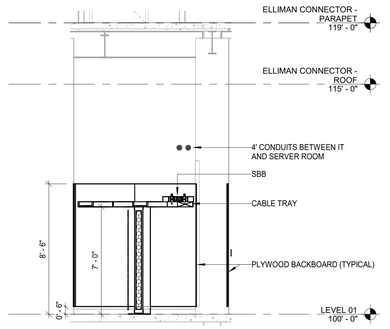

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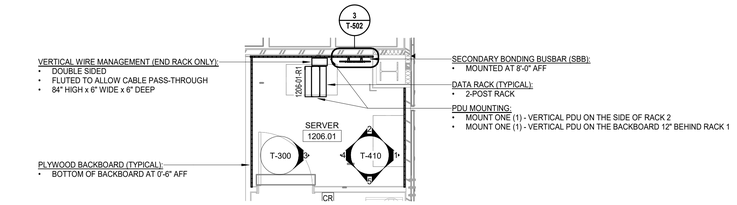

3 CORE LAB SERVER 1206.01 - ENLARGED FLOOR PLAN
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PLOT DATE:
9/25/2025 8:41:37 AM
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LICENSED PROFESSIONAL ENGINEER

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SHEET NO.
T-410

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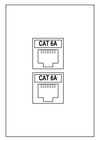
VOICE/DATA OUTLET FACEPLATE - WALL
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) 1-PORT FACEPLATE.

1 PLAN SYMBOL

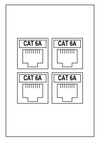
VOICE/DATA OUTLET FACEPLATE - WALL
DIVISION 27:
(2) CATEGORY 6A UTP CABLES.
(2) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 4-PORT FACEPLATE.

2 PLAN SYMBOL



VOICE/DATA OUTLET FACEPLATE - WALL
DIVISION 27:
(4) CATEGORY 6A UTP CABLES.
(4) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 4-PORT FACEPLATE.

4 PLAN SYMBOL



TECHNOLOGY VOICE/DATA OUTLET FACEPLATE - RACEWAY
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) 1-PORT FACEPLATE.

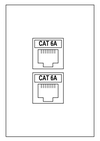
DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATE IN RACEWAY WITH RACEWAY SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.

1 PLAN SYMBOL

TECHNOLOGY VOICE/DATA OUTLET FACEPLATE - RACEWAY
DIVISION 27:
(2) CATEGORY 6A UTP CABLES.
(2) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 2-PORT FACEPLATE.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATE IN RACEWAY WITH RACEWAY SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.

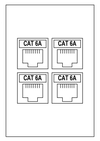
2 PLAN SYMBOL



TECHNOLOGY VOICE/DATA OUTLET FACEPLATE - RACEWAY
DIVISION 27:
(4) CATEGORY 6A UTP CABLES.
(4) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 4-PORT FACEPLATE.

DIVISION 27 NOTES:
1. SEE ARCHITECTURAL PLANS FOR CEILING PANEL INFORMATION.
2. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATE IN CEILING PANEL WITH CEILING PANEL SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.

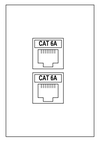
4 PLAN SYMBOL



TECHNOLOGY VOICE/DATA OUTLET - CEILING PANEL
DIVISION 27:
(2) CATEGORY 6A UTP CABLES.
(2) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 2-PORT FACEPLATE.

DIVISION 27 NOTES:
1. SEE ARCHITECTURAL PLANS FOR CEILING PANEL INFORMATION.
2. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATE IN CEILING PANEL WITH CEILING PANEL SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.

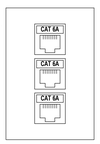
2 PLAN SYMBOL



TECHNOLOGY VOICE/DATA OUTLET - CEILING PANEL
DIVISION 27:
(3) CATEGORY 6A UTP CABLES.
(3) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 3-PORT FACEPLATE.

DIVISION 27 NOTES:
1. SEE ARCHITECTURAL PLANS FOR CEILING PANEL INFORMATION.
2. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATE IN CEILING PANEL WITH CEILING PANEL SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.

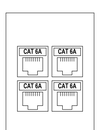
3 PLAN SYMBOL



TECHNOLOGY VOICE/DATA OUTLET - CEILING PANEL
DIVISION 27:
(4) CATEGORY 6A UTP CABLES.
(4) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 4-PORT FACEPLATE.

DIVISION 27 NOTES:
1. SEE ARCHITECTURAL PLANS FOR CEILING PANEL INFORMATION.
2. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATE IN CEILING PANEL WITH CEILING PANEL SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.

4 PLAN SYMBOL



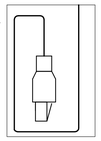
WALL PHONE OUTLET FACEPLATE - WALL
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) 1-PORT FACEPLATE WITH TELEPHONE MOUNTING LUGS.

W PLAN SYMBOL

WIRELESS ACCESS POINT OUTLET FACEPLATE - WALL
DIVISION 27:
(2) CATEGORY 6A UTP CABLES.
(2) CATEGORY 6A RJ-45 FIELD TERMINABLE PLUGS.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF FIELD TERMINABLE PLUG WITH WIRELESS ACCESS POINT DEVICE. SHOULD THIS SOLUTION NOT BE VIABLE WITH WIRELESS ACCESS POINT, REPLACE TERMINATION METHOD WITH ONE OF THE FOLLOWING OPTIONS:
   A. WIRELESS ACCESS POINT DOES NOT MOUNT OVER BACK BOX. PROVIDE CATEGORY 6A MODULAR JACK OUTLETS MOUNTED IN A 2-PORT FACEPLATE.
   B. WIRELESS ACCESS POINT DOES MOUNT OVER BACK BOX. PROVIDE CATEGORY 6A MODULAR JACK OUTLETS MOUNTED IN A 2-PORT SURFACE MOUNT BOX. LODGE SURFACE MOUNT BOX IN BACK BOX.

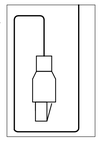
PLAN SYMBOL



WIRELESS ACCESS POINT, WEATHERPROOF OUTLET FACEPLATE - WALL
DIVISION 27:
(2) CATEGORY 6A UTP CABLES.
(2) CATEGORY 6A RJ-45 FIELD TERMINABLE PLUGS.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF FIELD TERMINABLE PLUG WITH WIRELESS ACCESS POINT DEVICE. SHOULD THIS SOLUTION NOT BE VIABLE WITH WIRELESS ACCESS POINT, REPLACE TERMINATION METHOD WITH ONE OF THE FOLLOWING OPTIONS:
   A. WIRELESS ACCESS POINT DOES NOT MOUNT OVER BACK BOX. PROVIDE CATEGORY 6A MODULAR JACK OUTLETS MOUNTED IN A 2-PORT FACEPLATE.
   B. WIRELESS ACCESS POINT DOES MOUNT OVER BACK BOX. PROVIDE CATEGORY 6A MODULAR JACK OUTLETS MOUNTED IN A 2-PORT SURFACE MOUNT BOX. LODGE SURFACE MOUNT BOX IN BACK BOX.

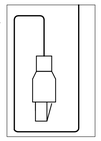
WP PLAN SYMBOL



WIRELESS ACCESS POINT OUTLET FACEPLATE - CEILING
DIVISION 27:
(2) CATEGORY 6A UTP CABLES.
(2) CATEGORY 6A RJ-45 FIELD TERMINABLE PLUGS.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF FIELD TERMINABLE PLUG WITH WIRELESS ACCESS POINT DEVICE. SHOULD THIS SOLUTION NOT BE VIABLE WITH WIRELESS ACCESS POINT, REPLACE TERMINATION METHOD WITH ONE OF THE FOLLOWING OPTIONS:
   A. WIRELESS ACCESS POINT DOES NOT MOUNT OVER BACK BOX. PROVIDE CATEGORY 6A MODULAR JACK OUTLETS MOUNTED IN A 2-PORT FACEPLATE.
   B. WIRELESS ACCESS POINT DOES MOUNT OVER BACK BOX. PROVIDE CATEGORY 6A MODULAR JACK OUTLETS MOUNTED IN A 2-PORT SURFACE MOUNT BOX. LODGE SURFACE MOUNT BOX IN BACK BOX.

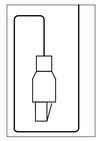
PLAN SYMBOL



SECURITY CAMERA OUTLET FACEPLATE - CEILING
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A RJ-45 FIELD TERMINABLE PLUG.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF FIELD TERMINABLE PLUG WITH SECURITY CAMERA DEVICE. SHOULD THIS SOLUTION NOT BE VIABLE WITH SECURITY CAMERA, REPLACE TERMINATION METHOD WITH ONE OF THE FOLLOWING OPTIONS:
   A. SECURITY CAMERA DOES NOT MOUNT OVER BACK BOX, PROVIDE A CATEGORY 6A MODULAR JACK OUTLET MOUNTED IN A 1-PORT FACEPLATE.
   B. SECURITY CAMERA POINT DOES MOUNT OVER BACK BOX. PROVIDE A CATEGORY 6A MODULAR JACK OUTLET MOUNTED IN A 1-PORT SURFACE MOUNT BOX. LODGE SURFACE MOUNT BOX IN BACK BOX.

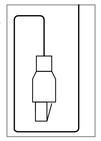
PLAN SYMBOL



SECURITY CAMERA OUTLET FACEPLATE - WALL MOUNTED - WALL
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A RJ-45 FIELD TERMINABLE PLUG.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF FIELD TERMINABLE PLUG WITH SECURITY CAMERA DEVICE. SHOULD THIS SOLUTION NOT BE VIABLE WITH SECURITY CAMERA, REPLACE TERMINATION METHOD WITH ONE OF THE FOLLOWING OPTIONS:
   A. SECURITY CAMERA DOES NOT MOUNT OVER BACK BOX, PROVIDE A CATEGORY 6A MODULAR JACK OUTLET MOUNTED IN A 1-PORT FACEPLATE.
   B. SECURITY CAMERA POINT DOES MOUNT OVER BACK BOX. PROVIDE A CATEGORY 6A MODULAR JACK OUTLET MOUNTED IN A 1-PORT SURFACE MOUNT BOX. LODGE SURFACE MOUNT BOX IN BACK BOX.

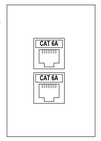
PLAN SYMBOL



TECHNOLOGY VOICE/DATA OUTLET FACEPLATE - FLOOR BOX
DIVISION 27:
(2) CATEGORY 6A UTP CABLES.
(2) CATEGORY 6A MODULAR JACK OUTLETS.
(2) 4-PORT FACEPLATE.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATES IN FLOOR BOX WITH FLOOR BOX SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.
2. PROVIDE BLANKING ON ALL UNUSED TECHNOLOGY FLOOR BOX COMPARTMENTS.

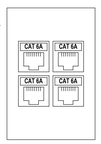
2 PLAN SYMBOL



TECHNOLOGY VOICE/DATA OUTLET FACEPLATE - FLOOR BOX
DIVISION 27:
(4) CATEGORY 6A UTP CABLES.
(4) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 4-PORT FACEPLATE.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATES IN FLOOR BOX WITH FLOOR BOX SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.
2. PROVIDE BLANKING ON ALL UNUSED TECHNOLOGY FLOOR BOX COMPARTMENTS.

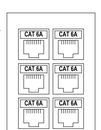
4 PLAN SYMBOL



TECHNOLOGY VOICE/DATA OUTLET FACEPLATE - FLOOR BOX
DIVISION 27:
(6) CATEGORY 6A UTP CABLES.
(6) CATEGORY 6A MODULAR JACK OUTLETS.
(1) 6-PORT FACEPLATE.

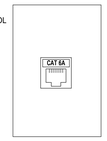
DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF CABLES, OUTLETS, AND FACEPLATES IN FLOOR BOX WITH FLOOR BOX SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.
2. PROVIDE BLANKING ON ALL UNUSED TECHNOLOGY FLOOR BOX COMPARTMENTS.

6 PLAN SYMBOL



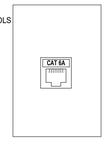
ELEVATOR OUTLET FACEPLATE
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) 1-PORT FACEPLATE.

E PLAN SYMBOL



BUILDING MANAGEMENT SYSTEM OUTLET FACEPLATE
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) 1-PORT FACEPLATE.

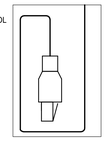
BMS PLAN SYMBOLS
FACU
FSCP
GAP
LCP



ROOM SCHEDULER OUTLET - WALL
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A RJ-45 FIELD TERMINABLE PLUG.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF FIELD TERMINABLE PLUG WITH ROOM SCHEDULER DEVICE. SHOULD THIS SOLUTION NOT BE VIABLE WITH ROOM SCHEDULER DEVICE, REPLACE TERMINATION METHOD WITH THE FOLLOWING OPTION:
   A. PROVIDE CATEGORY 6A MODULAR JACK OUTLET MOUNTED IN A 1-PORT SURFACE MOUNT BOX. LODGE SURFACE MOUNT BOX IN BACK BOX.

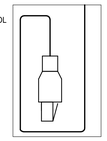
RS PLAN SYMBOL



AV WALL CONTROLLER OUTLET - WALL
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A RJ-45 FIELD TERMINABLE PLUG.

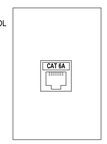
DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF FIELD TERMINABLE PLUG WITH WALL CONTROLLER DEVICE. SHOULD THIS SOLUTION NOT BE VIABLE WITH WALL CONTROLLER DEVICE, REPLACE TERMINATION METHOD WITH THE FOLLOWING OPTION:
   A. PROVIDE CATEGORY 6A MODULAR JACK OUTLET MOUNTED IN A 1-PORT SURFACE MOUNT BOX. LODGE SURFACE MOUNT BOX IN BACK BOX.

WC PLAN SYMBOL



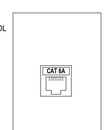
AV PROJECTOR OUTLET FACEPLATE - CEILING
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) 1-PORT FACEPLATE.

PRJ PLAN SYMBOL



AV/DATA OUTLET FACEPLATE - WALL
DIVISION 27:
(1) CATEGORY 6A UTP CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) 1-PORT FACEPLATE.

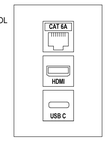
TV PLAN SYMBOL
1



AV/DATA OUTLET FACEPLATE - WALL
(1) CATEGORY 6A CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) PRE-MANUFACTURED HDMI CABLE, LENGTH AS NECESSARY.
(1) HDMI PASS-THROUGH INSERT.
(1) PRE-MANUFACTURED USB-C CABLE, LENGTH AS NECESSARY.
(1) USB-C PASS-THROUGH INSERT.
(1) 3-PORT FACEPLATE.

DIVISION 27 NOTES:
1. CONNECT OTHER ENDS OF HDMI AND USB CABLES TO HDMI/USB DATA OUTLET OR HDMI/USB FLOOR BOX LOCATION IN SAME ROOM.

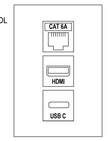
1, H/U PLAN TV SYMBOL



TECHNOLOGY AV/DATA OUTLET FACEPLATE - WALL
(1) CATEGORY 6A CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) PRE-MANUFACTURED HDMI CABLE, LENGTH AS NECESSARY.
(1) HDMI PASS-THROUGH INSERT.
(1) PRE-MANUFACTURED USB-C CABLE, LENGTH AS NECESSARY.
(1) USB-C PASS-THROUGH INSERT.
(1) 3-PORT FACEPLATE.

DIVISION 27 NOTES:
1. CONNECT OTHER ENDS OF HDMI AND USB CABLES TO HDMI/USB TV OUTLET LOCATION IN SAME ROOM.

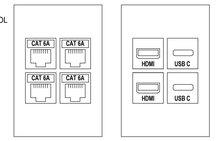
1, H/U PLAN TV SYMBOL



TECHNOLOGY AV/DATA OUTLET FACEPLATE - FLOOR BOX
DIVISION 27:
(4) CATEGORY 6A UTP CABLES.
(4) CATEGORY 6A MODULAR JACK OUTLETS.
(2) PRE-MANUFACTURED HDMI CABLES, LENGTH AS NECESSARY.
(2) HDMI PASS-THROUGH INSERTS.
(2) PRE-MANUFACTURED USB C CABLES, LENGTH AS NECESSARY.
(2) USB-C PASS-THROUGH INSERTS.
(2) 4-PORT FACEPLATES.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF OUTLETS IN FLOOR BOX WITH FLOOR BOX SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.
2. PROVIDE BLANKING ON ALL UNUSED TECHNOLOGY FLOOR BOX COMPARTMENTS.
3. CONNECT OTHER END OF HDMI AND USB CABLES TO HDMI / USB TV OUTLET LOCATION IN SAME ROOM, RESPECTIVELY.

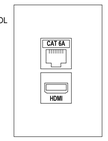
4, 2 H/U PLAN AV SYMBOL



TECHNOLOGY AV/DATA OUTLET FACEPLATE - WALL
(1) CATEGORY 6A CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) PRE-MANUFACTURED HDMI CABLE, LENGTH AS NECESSARY.
(1) HDMI PASS-THROUGH INSERT.
(1) 2-PORT FACEPLATE.

DIVISION 27 NOTES:
1. CONNECT OTHER END OF HDMI CABLE TO HDMI DATA OUTLET OR HDMI AV FLOOR BOX LOCATION IN SAME ROOM.

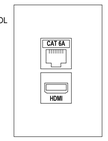
1, HDMI PLAN TV SYMBOL



TECHNOLOGY AV/DATA OUTLET FACEPLATE - WALL
(1) CATEGORY 6A CABLE.
(1) CATEGORY 6A MODULAR JACK OUTLET.
(1) PRE-MANUFACTURED HDMI CABLE, LENGTH AS NECESSARY.
(1) HDMI PASS-THROUGH INSERT.
(1) 2-PORT FACEPLATE

DIVISION 27 NOTES:
1. CONNECT OTHER END OF HDMI CABLE TO HDMI TV OUTLET LOCATION IN SAME ROOM.

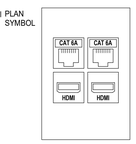
1, PLAN HDMI SYMBOL



TECHNOLOGY AV/DATA OUTLET FACEPLATE - FLOOR BOX
DIVISION 27:
(2) CATEGORY 6A UTP CABLES.
(2) CATEGORY 6A MODULAR JACK OUTLETS.
(2) PRE-MANUFACTURED HDMI CABLE, LENGTH AS NECESSARY.
(2) HDMI PASS-THROUGH INSERTS.
(1) 4-PORT FACEPLATE.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF OUTLETS IN FLOOR BOX WITH FLOOR BOX SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.
2. PROVIDE BLANKING ON ALL UNUSED TECHNOLOGY FLOOR BOX COMPARTMENTS.
3. CONNECT OTHER END OF HDMI CABLES TO HDMI TV OUTLET LOCATIONS IN SAME ROOM, IRRESPECTIVELY.

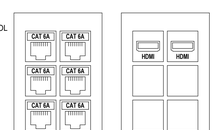
2, HDMI PLAN AV SYMBOL



TECHNOLOGY AV/DATA OUTLET FACEPLATE- FLOOR BOX
DIVISION 27:
(6) CATEGORY 6A UTP CABLES.
(6) CATEGORY 6A MODULAR JACK OUTLETS.
(2) PRE-MANUFACTURED HDMI CABLES, LENGTH AS NECESSARY.
(2) HDMI PASS-THROUGH INSERTS.
(4) BLANK MODULAR INSERTS.
(2) 6-PORT FACEPLATES.

DIVISION 27 NOTES:
1. COORDINATE INSTALLATION OF OUTLETS IN FLOOR BOX WITH FLOOR BOX SPECIFICATIONS. PROVIDE 106-STYLE OR DECORA STYLE FRAMES, IN LIEU OF FACEPLATES, AS NECESSARY.
2. PROVIDE BLANKING ON ALL UNUSED TECHNOLOGY FLOOR BOX COMPARTMENTS.
3. CONNECT OTHER END OF HDMI CABLES TO HDMI TV OUTLET LOCATIONS IN SAME ROOM, RESPECTIVELY.

6, 2 HDMI PLAN AV SYMBOL



TECHNOLOGY DETAIL PLAN - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY'S STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR CABLE, CONNECTOR, FACEPLATE, AND LABELING PRODUCTS AND REQUIREMENTS.
B. ALL FACEPLATES IN LABS WET LABS SHALL BE STAINLESS STEEL.
C. ALL FACEPLATES IN WET/WATER LABS SHALL HAVE APPROPRIATELY RATED NEMA COVERS TO PROTECT OUTLET AND OUTLET CONNECTIONS.
D. SEE SHEET T-001 FOR OUTLET BOX AND CONDUIT INFORMATION.

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REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
TECHNOLOGY DETAIL PLAN - OUTLETS

SHEET NO.
T-501

OSBORN ENGINEERING
1420 Washington Blvd, Suite 301 | Detroit, MI 48226
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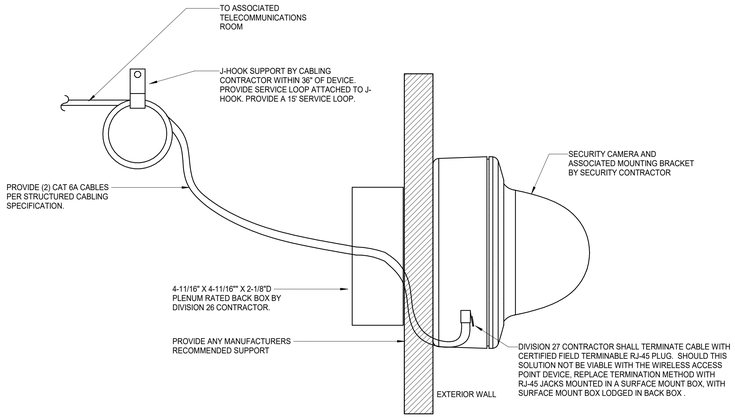
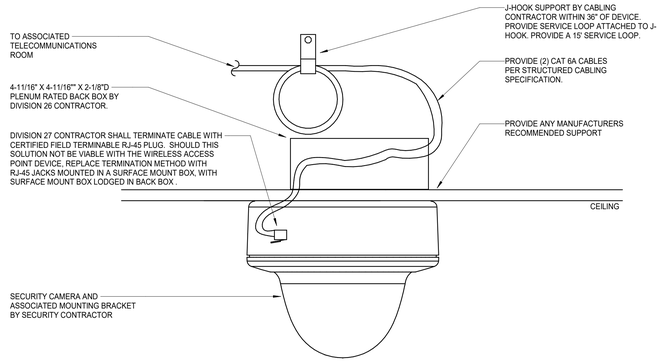
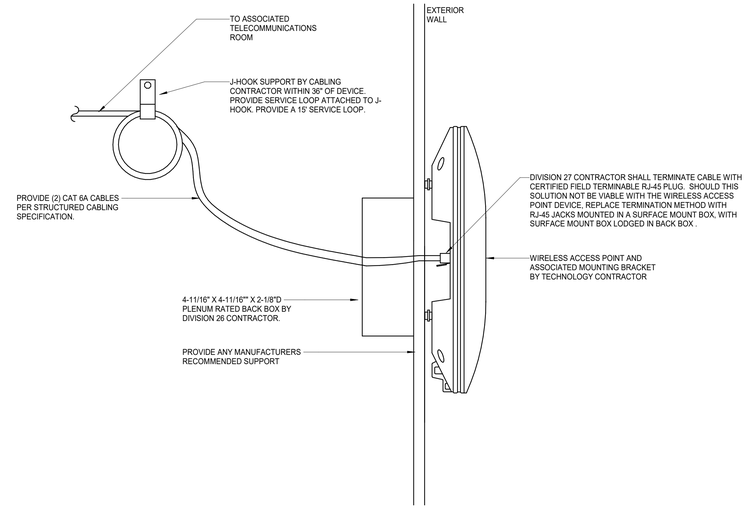
PLOT DATE: 9/25/2025 8:41:38 AM TEMPLATE VERSION: 23.0.4



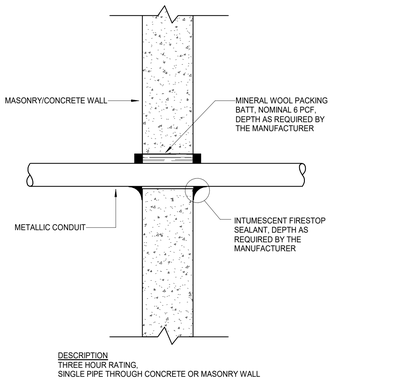
7 EXTERIOR CAMERA MOUNTING AND CABLING DETAIL
SCALE: NONE



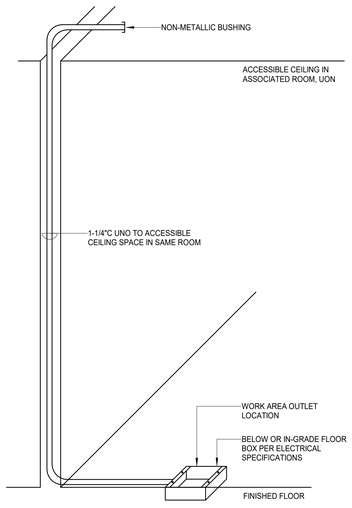
8 INTERIOR CAMERA MOUNTING AND CABLING DETAIL
SCALE: NONE



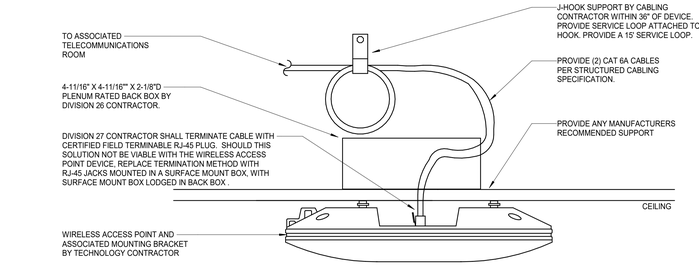
9 WIRELESS ACCESS POINT (WAP) MOUNTING AND CABLING DETAIL
SCALE: NONE



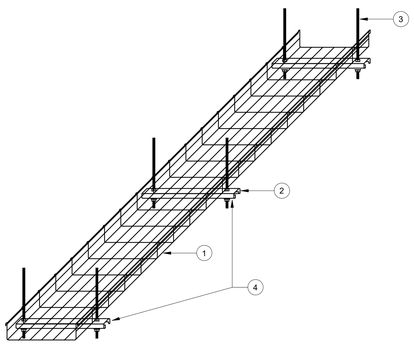
4 FIRESTOP DETAIL #2
SCALE: NONE



5 FLOOR BOX ROUGH-IN DETAIL
SCALE: NONE



6 WIRELESS ACCESS POINT (WAP) MOUNTING AND CABLING DETAIL_TO STRUCTURE
SCALE: NONE



1 TYPICAL CABLE TRAY MOUNTING DETAIL
SCALE: NONE

CABLE TRAY NOTES:

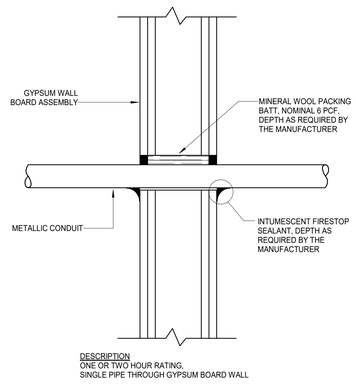
1. VERIFY CABLE TRAY TYPE AND SIZE WITH DRAWINGS AND SPECIFICATIONS. REFER TO SPECIFICATIONS FOR ADDITIONAL MOUNTING REQUIREMENTS.
2. 3/4"H UNISTRUT. TO FASTEN, FIELD DRILL AND ATTACH STRUT DIRECTLY TO UNDERSIDE OF TRAY BY MEANS OF NUT, BOLT AND APPROPRIATE CLAMPING HARDWARE AS RECOMMENDED BY MANUFACTURER.
3. TYPICAL (2) 1/2" (MIN.) THREADED RODS PER UNISTRUT TRAPEZE. UTILIZE A DOUBLE NUT CONFIGURATION TO ASSURE MAINTENANCE OF SUPPORT. PROVIDE ANCHOR HARDWARE CAPABLE OF SUPPORTING THE CABLE TRAY AS RECOMMENDED BY THE MANUFACTURER.
4. PROVIDE A UNISTRUT TRAPEZE EVERY FIVE FEET, OR AT A SPAN NO GREATER THAN THE MAXIMUM SPAN RECOMMENDED BY MANUFACTURER WHICHEVER IS LESS.

CABLE TRAY GROUNDING NOTE:

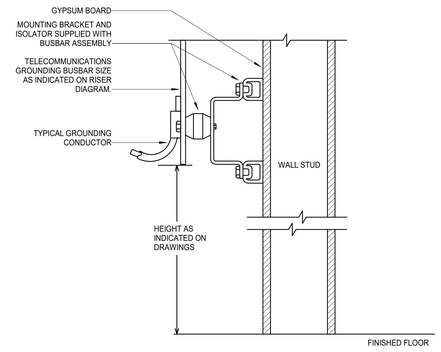
CONTRACTOR SHALL BOND ALL CABLE TRAY SO AS TO ASSURE A CONTINUOUS GROUND THROUGHOUT THE CABLE TRAY SYSTEM. WHERE BONDING JUMPERS ARE UTILIZED THE CONTRACTOR SHALL UTILIZE PAINT PIERCING WASHERS AS SPECIFIED TO BRIDGE ANY DISCONTINUITIES. NOTE THAT GROUND MUST TEST OUT TO LESS THAN 5 OHMS PER TECHNOLOGY GROUNDING SPECIFICATIONS, AND SHALL BE CAPABLE OF BEARING A CONTINUOUS LOAD EQUIVALENT TO A #6 AWG WIRE.

CABLE TRAY GROUNDING NOTE:

CONTRACTOR SHALL COORDINATE CABLE TRAY PATHWAY WITH ANY POTENTIAL IMPEDIMENT, INCLUDING, BUT NOT LIMITED TO, CONDUIT, PLUMBING, HVAC, STRUCTURAL, AND OTHER CABLE TRAY. CONTRACTOR SHALL ADAPT CABLE TRAY PATHWAY AS REQUIRED. TO FULFILL THE INTENT OF THE DESIGN. THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHERE REROUTING OF THE CABLE TRAY DUE TO FIELD CONDITIONS PROVIDES A SIGNIFICANT IMPACT ON CABLE LENGTHS ROUTED IN CABLE TRAY. A SIGNIFICANT IMPACT SHALL BE CONSIDERED ANY INCREASE IN CABLE LENGTH OF MORE THAN 10 FEET. ADDITIONALLY, THE CONTRACTOR SHALL MAINTAIN THE FOLLOWING MINIMUM CLEARANCES WHEN ROUTING CABLE TRAY: 8 INCHES FROM ANY LIGHTING FIXTURE. 4 FEET FROM ANY TRANSFORMER OR LARGE MOTOR, 12 INCHES FROM ANY FEEDER, 6 INCH CLEARANCE ABOVE CABLE TRAY, AND CLEARANCE BELOW TO PROVIDE SUFFICIENT SPACE FOR MOUNTING HARDWARE AS INDICATED ON THIS DETAIL.



2 FIRESTOP DETAIL #1
SCALE: NONE



3 TELECOMMUNICATIONS GROUNDING BUSBAR DETAIL
SCALE: NONE

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STATE OF MICHIGAN
ANTHONY M WULK
ENGINEER
6201068656
LICENSED PROFESSIONAL ENGINEER

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY DETAIL PLAN - MOUNTING
SHEET NO.
T-502

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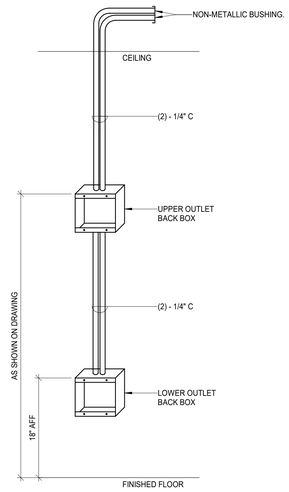
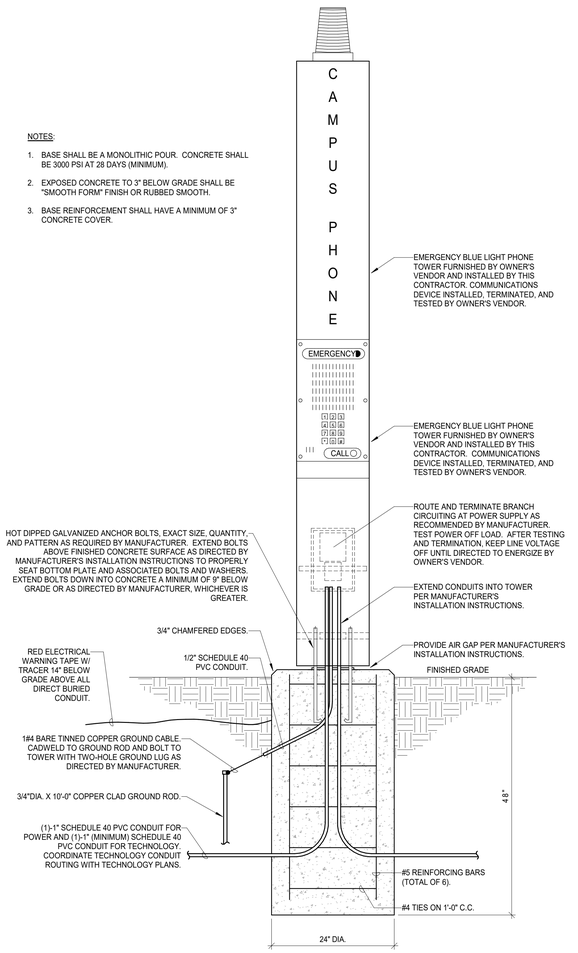


2 TECHNOLOGY TV WALL ROUGH-IN
SCALE: NONE

NOTES:

1. BASE SHALL BE A MONOLITHIC POUR. CONCRETE SHALL BE 3000 PSI AT 28 DAYS (MINIMUM).
2. EXPOSED CONCRETE TO 3" BELOW GRADE SHALL BE "SMOOTH FORM" FINISH OR RUBBED SMOOTH.
3. BASE REINFORCEMENT SHALL HAVE A MINIMUM OF 3" CONCRETE COVER.



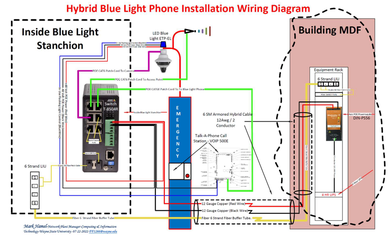
1 EMERGENCY PHONE BASE DETAIL
SCALE: NONE

ADDENDUM A - Hybrid Blue Light Phone (BLP) Components

General

1. All BLP components require submittals and CIT approval prior to purchase.
2. All requirements for BLPs called out in other sections of the Standards may apply and shall be coordinated into final design as required.
3. All BLP components shall be provided and installed by the contractor.
4. BLP components, part numbers and descriptions may change based on availability and final design.
   a. CIT requires final review of all items prior to purchase.
   b. Any items purchased without submittals, review and approval will be at the contractor's expense and not subject to reimbursement.
5. Hybrid Wiring Diagram:

Hybrid Blue Light Phone Installation Wiring Diagram



Components

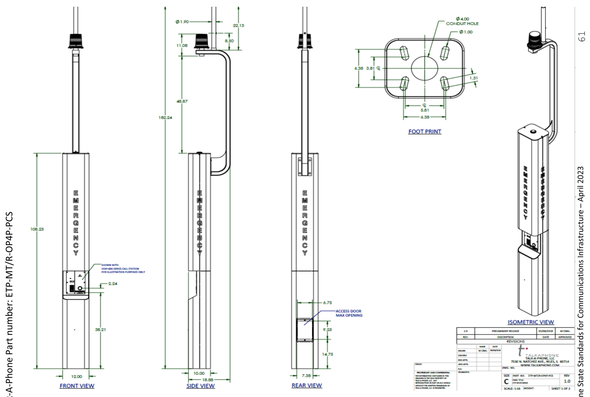
1. Talk-A-Phone Call Station VOIP-500E
2. Talk-A-Phone ETP-MT/R Tower (Part number: ETP-MT/R-OP4P-PCS)
3. Talk-A-Phone LED Blue Light (Part Number: ETP-EL)
4. Axis Q6020-E IP Camera or better / approved by C&IT
5. Axis Q6075-E IP PTZ Camera or better / approved by C&IT
6. Axis T8504-R 4 Port Switch
7. Axis 56V 240W Power Supply
8. Axis Pendant Kit
9. Axis Threaded Coupler
10. Axis Attachment Kit
11. Manufacturer Terminated Cat6A 5m Push Pull Patch Cord / Or Equivalent outdoor connection at camera depending on camera manufacturer
12. Cat6A patch cables outdoor rated for the wireless device and VOIP phone inside stanchion
13. (2)- 1M Fiber Patch Cords with like connectors LC/LC / Rack side & Stanchion
14. Stanchion side - Din Rail with Construction Adhesive
15. IT closet side - Din Rail Kit Triplite SRDINRAIL2U (AC8A79)
16. Armored Six Strand SM/12 AWG two conductor Hybrid Cable or Similar.
17. Small Fiber wall mounted LIU Termination Box for Stanchion and 2U rack mounted LIU loaded with bulk heads
18. (2) Single Mode Network GBIC's / One for each end / Consult C&IT Network Engineer & Project Management for manufacturer type
19. Preterm LC Single Mode pigtail connectors (Quantity to match fiber cable)
20. Underground conduit to BLP / Minimum 1"
21. Concrete mounting pad
22. Grounding Rod installed at stanchion location / BLP must be grounded properly
23. Sonnet Tube Conduit Sleeve, Grounding and Concrete Industrial Plastics - Clear polycarbonate tubing – Part # 2.00X2.250X95
24. Any missing or wrong components are the responsibility of the installation contractor to correct
25. Stanchion Color is Midnight Blue / Confirm order for WSU with Talk-A-Phone

BLUE LIGHT PHONE (BLP) - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR CAMERA AND CARD READER DEVICE, LABELING, AND PRODUCT REQUIREMENTS.

Top of BLP Example

Talk-A-Phone Part number: ETP-MT/R-OP4P-PCS



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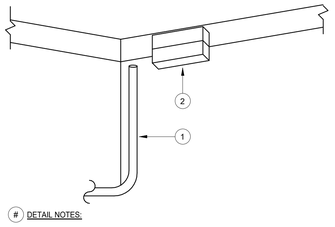
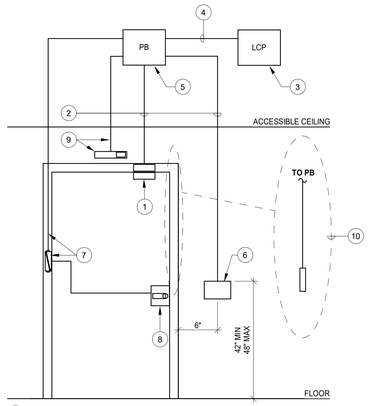


(#) DETAIL NOTES:

1. PROVIDE 3/4" CONDUIT MOUNTED WITHIN SIDEWALL OF ROOF ACCESS STRUCTURE. ROUTE CONDUIT THROUGH SECURE PATHWAY TO LOCAL CONTROL PANEL LOCATED IN TELECOMMUNICATION ROOM, UON. PROVIDE PULL STRING TO LOCATION OF DEVICE.
2. PROVIDE SURFACE MOUNTED DOOR POSITION SWITCH. COORDINATE LOCATION WITH ACCESS DOOR CONTRACTOR.

5 SECURITY ROOF HATCH DETAIL 5
SCALE: NONE



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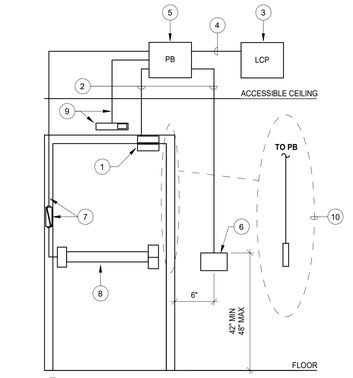
2. PROVIDE 1" CONDUIT.
3. LOCAL CONTROL PANEL LOCATED IN TELECOMMUNICATIONS ROOM, UON.
4. WHERE CABLING MUST BE ROUTED ABOVE AN INACCESSIBLE CEILING OR UNSECURE PATHWAY PROVIDE 1-1/4" CONDUIT.
5. PROVIDE 6" X 6" X 4" JUNCTION BOX ON THE SECURE SIDE OF DOOR ABOVE ACCESSIBLE CEILING AND LOCATED FOR EASY ACCESS.
6. READER LOCATED OUTSIDE SECURED PERIMETER. VERIFY CREDENTIAL READER BACKBOX REQUIREMENTS WITH ACCESS CONTROL CONTRACTOR AND ADAPT ROUGH-IN AS DIRECTED BY CARD READER MANUFACTURER. PROVIDE 4" X 4" X 2-1/8" DEEP OUTLET BOX WITH SINGLE GANG PLASTER RING "FLUSH" WITH OUTSIDE WALL SURFACE, UON. COORDINATE EXACT HEIGHT WITH ARCHITECTURAL ELEVATIONS AND OTHER TRADES.
7. POWER TRANSFER HINGE BY OTHERS. COORDINATE AND VERIFY CABLING REQUIREMENTS AND PATHWAY TO ABOVE CEILING ACCESS CONTROL JUNCTION BOX WITH DOOR HARDWARE PROVIDER.
8. ELECTRIFIED LOCKSET, WITH INTEGRAL REQUEST TO EXIT, BY OTHERS.
9. APPROXIMATE LOCATION OF REQUEST TO EXIT MOTION DETECTOR LOCATED INSIDE THE SECURED PERIMETER, AS NECESSARY, IF NOT INTEGRAL TO ELECTRIFIED HARDWARE SPECIFIED BY DIVISION 8. COORDINATE ROUGH-IN REQUIREMENTS WITH ACCESS CONTROL CONTRACTOR AND DOOR HARDWARE SCHEDULE.
10. ALTERNATE: PROVIDE 3/4" PENETRATION IN DOOR FRAME FOR MULLION MOUNTED CARD READER LOCATED OUTSIDE THE SECURED PERIMETER. PROVIDE NON-METALLIC BUSHING AROUND THE PENETRATION. VERIFY ACTUAL ROUGH-IN REQUIREMENT WITH ACCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN.

6 SECURITY DOOR DETAIL 6
SCALE: 1/8" = 1'-0"



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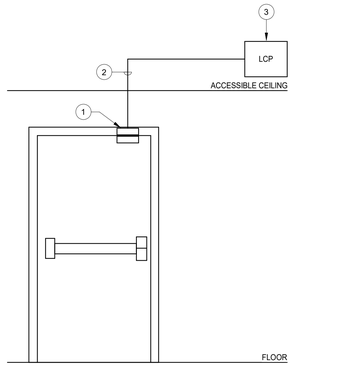
7 SECURITY DOOR DETAIL 7
SCALE: NONE



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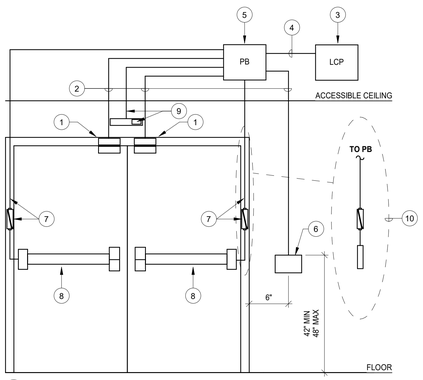
8 SECURITY DOOR DETAIL 8
SCALE: NONE



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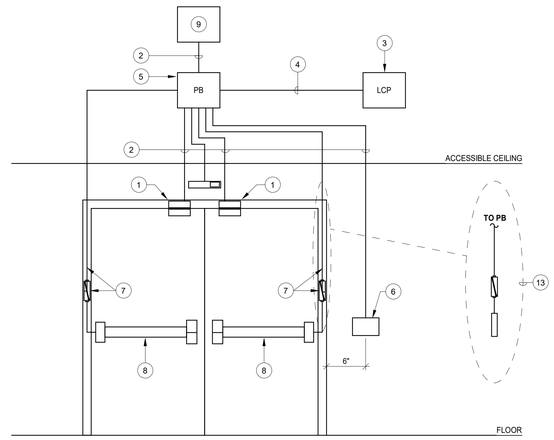
ACCESS CONTROL NOTE:
ACCESS CONTROL CONTRACTOR SHALL COORDINATE WITH DOOR OPERATOR PROVIDER FOR MAGNETICALLY HELD OPEN DOORS BEING INTERFACED TO THE ACCESS CONTROL SYSTEM. ACCESS CONTROL CONTRACTOR SHALL PROVIDE ANY REQUIRED RELAY INTERFACE, TIME DELAY CIRCUIT AND/OR OTHER RELATED DEVICES AND CABLING TO FULLY INTERFACE THE ACCESS CONTROL SYSTEM WITH THE DOOR CONTROLLER/OPERATOR. ACCESS CONTROL CONTRACTOR SHALL COORDINATE SEQUENCE OF OPERATION WITH DOOR VENDOR TO ASSURE PROPER OPERATION.

1 SECURITY DOOR DETAIL 1
SCALE: 1/8" = 1'-0"



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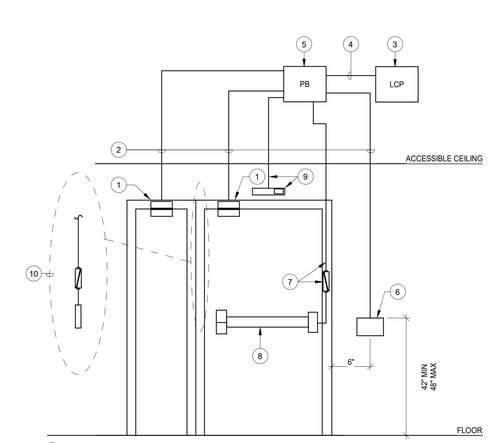

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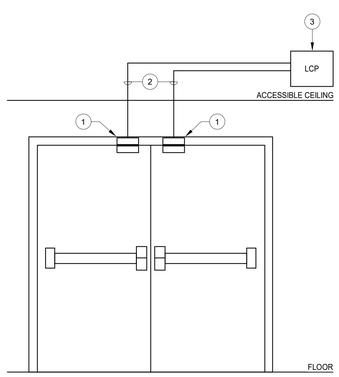

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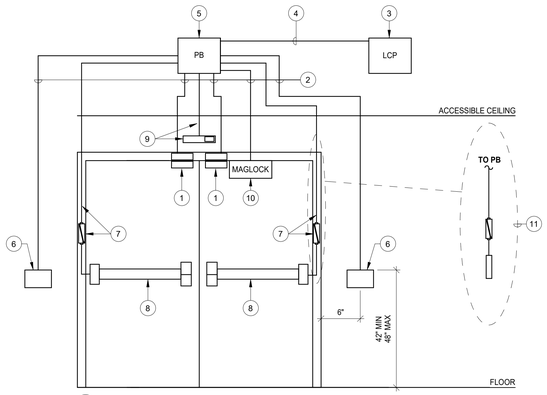

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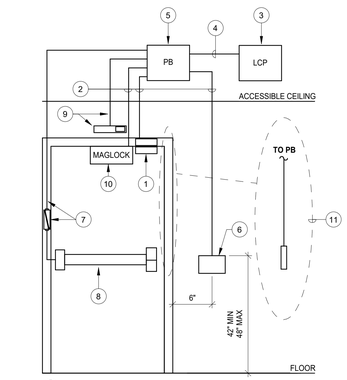
2. PROVIDE 1" CONDUIT.
3. LOCAL CONTROL PANEL LOCATED IN TELECOMMUNICATIONS ROOM, UON.
4. WHERE CABLING MUST BE ROUTED ABOVE AN INACCESSIBLE CEILING OR UNSECURE PATHWAY PROVIDE 1-1/4" CONDUIT.
5. PROVIDE 6" X 6" X 4" JUNCTION BOX ON THE SECURE SIDE OF DOOR ABOVE ACCESSIBLE CEILING AND LOCATED FOR EASY ACCESS.
6. READER LOCATED OUTSIDE SECURED PERIMETER. VERIFY CREDENTIAL READER BACKBOX REQUIREMENTS WITH ACCESS CONTROL CONTRACTOR AND ADAPT ROUGH-IN AS DIRECTED BY READER MANUFACTURER. PROVIDE 4" X 4" X 2-1/8" DEEP OUTLET BOX WITH SINGLE GANG PLASTER RING "FLUSH" WITH OUTSIDE WALL SURFACE, UON. COORDINATE EXACT HEIGHT WITH ARCHITECTURAL ELEVATIONS AND OTHER TRADES.
7. POWER TRANSFER HINGE BY OTHERS. COORDINATE AND VERIFY CABLING AND PATHWAY TO ABOVE CEILING ACCESS CONTROL JUNCTION BOX REQUIREMENTS WITH DOOR HARDWARE PROVIDER.
8. ELECTRICALLY HELD PANIC HARDWARE, WITH INTEGRAL REQUEST TO EXIT AND LATCH BOLT MONITORING, BY OTHERS.
9. APPROXIMATE LOCATION OF REQUEST TO EXIT MOTION DETECTOR LOCATED INSIDE THE SECURED PERIMETER, AS NECESSARY, IF NOT INTEGRAL TO ELECTRIFIED HARDWARE SPECIFIED BY DIVISION 8. COORDINATE ROUGH-IN REQUIREMENTS WITH HARDWARE SCHEDULE AND ACCESS CONTROL CONTRACTOR.
10. PROVIDE MAGNETIC LOCK WITHIN THE SECURED PERIMETER, SIZED APPROPRIATELY FOR STRENGTH OF DOOR APPLICATION. SEE MOUNTING INSTRUCTIONS PROVIDED WITH LOCKS. COORDINATE MAGNETIC LOCK LOCATION WITH ACCESS CONTROL CONTRACTOR.
11. ALTERNATE: PROVIDE 3/4" PENETRATION FOR MULLION MOUNTED CARD READER LOCATED OUTSIDE THE SECURED PERIMETER. PROVIDE NON-METALLIC BUSHING AROUND THE PENETRATION. VERIFY ACTUAL ROUGH-IN REQUIREMENT WITH ACCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN.

12 SECURITY DOOR DETAIL 12

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

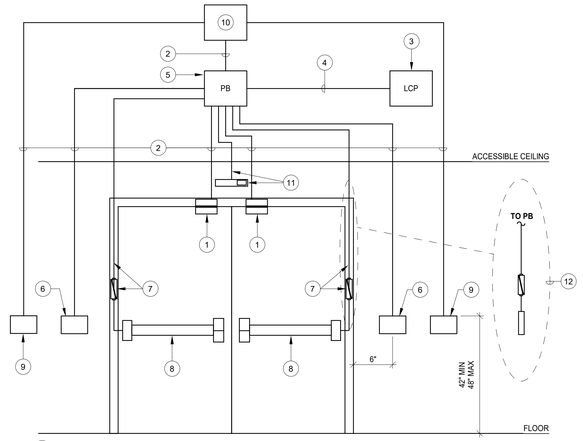


DETAIL NOTES:

1. PROVIDE DOOR POSITION SWITCH(ES) IN DOOR FRAME. COORDINATE LOCATION IN DOOR FRAME WITH ACCESS CONTROL CONTRACTOR.
2. PROVIDE 1" CONDUIT.
3. LOCAL CONTROL PANEL LOCATED IN TELECOMMUNICATIONS ROOM, UON.
4. WHERE CABLING MUST BE ROUTED ABOVE AN INACCESSIBLE CEILING OR UNSECURE PATHWAY PROVIDE 1-1/4" CONDUIT.
5. PROVIDE 6" X 6" X 4" JUNCTION BOX ON THE SECURE SIDE OF DOOR ABOVE ACCESSIBLE CEILING AND LOCATED FOR EASY ACCESS.
6. READER LOCATED OUTSIDE SECURED PERIMETER. VERIFY CREDENTIAL READER BACKBOX REQUIREMENTS WITH ACCESS CONTROL CONTRACTOR AND ADAPT ROUGH-IN AS DIRECTED BY CARD READER MANUFACTURER. PROVIDE 4" X 4" X 2-1/8" DEEP OUTLET BOX WITH SINGLE GANG PLASTER RING "FLUSH" WITH OUTSIDE WALL SURFACE, UON. COORDINATE EXACT HEIGHT WITH ARCHITECTURAL ELEVATIONS AND OTHER TRADES.
7. POWER TRANSFER HINGE BY OTHERS. COORDINATE AND VERIFY CABLING REQUIREMENTS AND PATHWAY TO ABOVE CEILING ACCESS CONTROL JUNCTION BOX WITH DOOR HARDWARE PROVIDER.
8. ELECTRICALLY HELD PANIC HARDWARE, WITH INTEGRAL REQUEST TO EXIT AND LATCH BOLT MONITORING, BY OTHERS.
9. APPROXIMATE LOCATION OF REQUEST TO EXIT MOTION DETECTOR LOCATED INSIDE THE SECURED PERIMETER, AS NECESSARY, IF NOT INTEGRAL TO ELECTRIFIED HARDWARE SPECIFIED BY DIVISION 8. COORDINATE ROUGH-IN REQUIREMENTS WITH HARDWARE SCHEDULE AND ACCESS CONTROL CONTRACTOR.
10. PROVIDE MAGNETIC LOCK WITHIN THE SECURED PERIMETER, SIZED APPROPRIATELY FOR STRENGTH OF DOOR APPLICATION. SEE MOUNTING INSTRUCTIONS PROVIDED WITH LOCKS. COORDINATE MAGNETIC LOCK LOCATION WITH ACCESS CONTROL CONTRACTOR.
11. ALTERNATE: PROVIDE 3/4" PENETRATION IN DOOR FRAME FOR MULLION MOUNTED CARD READER LOCATED OUTSIDE THE SECURED PERIMETER. PROVIDE NON-METALLIC BUSHING AROUND THE PENETRATION. VERIFY ACTUAL ROUGH-IN REQUIREMENT WITH ACCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN.

13 SECURITY DOOR DETAIL 13

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



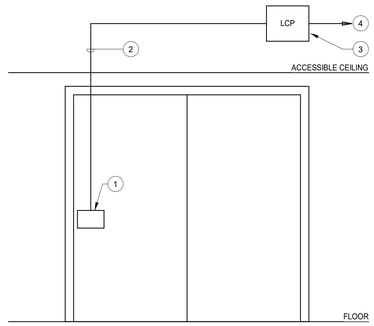
DETAIL NOTES:

1. PROVIDE DOOR POSITION SWITCH(ES) IN DOOR FRAME. COORDINATE LOCATION IN DOOR FRAME WITH ACCESS CONTROL CONTRACTOR AND DOOR FRAME CONTRACTOR.
2. PROVIDE 1" CONDUIT.
3. LOCAL CONTROL PANEL LOCATED IN TELECOMMUNICATIONS ROOM, UON.
4. WHERE CABLING MUST BE ROUTED ABOVE AN INACCESSIBLE CEILING OR UNSECURE PATHWAY PROVIDE 1-1/4" CONDUIT.
5. PROVIDE 6" X 6" X 4" JUNCTION BOX ON THE SECURE SIDE OF DOOR ABOVE ACCESSIBLE CEILING AND LOCATED FOR EASY ACCESS.
6. READER LOCATED INSIDE/OUTSIDE SECURED PERIMETER. VERIFY CREDENTIAL READER BACKBOX REQUIREMENTS WITH ACCESS CONTROL CONTRACTOR AND ADAPT ROUGH-IN AS DIRECTED BY READER MANUFACTURER. PROVIDE 4" X 4" X 2-1/8" DEEP OUTLET BOX WITH SINGLE GANG PLASTER RING "FLUSH" WITH OUTSIDE WALL SURFACE, UON. COORDINATE EXACT HEIGHT WITH ARCHITECTURAL ELEVATIONS AND OTHER TRADES
7. POWER TRANSFER HINGE BY OTHERS. COORDINATE AND VERIFY CABLING REQUIREMENTS AND PATHWAY TO ABOVE CEILING ACCESS CONTROL JUNCTION BOX WITH DOOR HARDWARE PROVIDER.
8. ELECTRICALLY HELD PANIC HARDWARE, WITH INTEGRAL REQUEST TO EXIT AND LATCH BOLT MONITORING, BY OTHERS.
9. HAND WAVE OPERATOR, BY OTHERS. SEE ACCESS CONTROL NOTE BELOW.
10. DOOR POWER SUPPLY AND OPERATOR CONTROLLER BY DOOR SUPPLIER.
11. APPROXIMATE LOCATION OF REQUEST TO EXIT MOTION DETECTOR LOCATED INSIDE THE SECURED PERIMETER, AS NECESSARY, IF NOT INTEGRAL TO ELECTRIFIED HARDWARE SPECIFIED BY DIVISION 8. COORDINATE ROUGH-IN REQUIREMENTS WITH ACCESS CONTROL CONTRACTOR.
12. ALTERNATE: PROVIDE 3/4" PENETRATION IN DOOR FRAME FOR MULLION MOUNTED CARD READER LOCATED OUTSIDE THE SECURED PERIMETER. PROVIDE NON-METALLIC BUSHING AROUND THE PENETRATION. VERIFY ACTUAL ROUGH-IN REQUIREMENT WITH ACCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN.

ACCESS CONTROL NOTE:
ACCESS CONTROL CONTRACTOR SHALL COORDINATE WITH DOOR OPERATOR PROVIDER FOR ALL AUTOMATICALLY OPERATED DOORS BEING INTERFACED TO THE ACCESS CONTROL SYSTEM. ACCESS CONTROL CONTRACTOR SHALL PROVIDE ANY REQUIRED RELAY INTERFACE. TIME DELAY CIRCUIT AND/OR OTHER RELATED DEVICES AND CABLING TO FULLY INTERFACE THE ACCESS CONTROL SYSTEM WITH THE DOOR CONTROLLER/OPERATOR. ACCESS CONTROL CONTRACTOR SHALL COORDINATE SEQUENCE OF OPERATION WITH DOOR VENDOR TO ASSURE PROPER OPERATION.

9 SECURITY DOOR DETAIL 9

SCALE: NONE

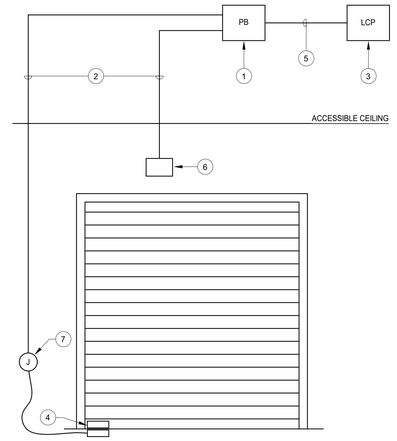


DETAIL NOTES:

1. READER LOCATED INSIDE ELEVATOR CAB. VERIFY CREDENTIAL READER BACKBOX REQUIREMENTS WITH ACCESS CONTROL CONTRACTOR AND ADAPT ROUGH-IN AS DIRECTED BY READER MANUFACTURER. COORDINATE EXACT LOCATION AND CABLING REQUIREMENTS IN CAB WITH ELEVATOR MANUFACTURER PRIOR TO INSTALLATION.
2. WHERE CABLING MUST BE ROUTED ABOVE AN INACCESSIBLE CEILING OR UNSECURE PATHWAY PROVIDE 1-1/4" CONDUIT.
3. LOCAL CONTROL PANEL LOCATED IN TELECOMMUNICATIONS ROOM, UON.
4. REQUIRED CABLING TO ELEVATOR CONTROL PANEL. COORDINATE EXACT REQUIREMENTS WITH ELEVATOR MANUFACTURER AND ACCESS CONTROL CONTRACTOR.

10 SECURITY DOOR DETAIL 10

SCALE: NONE



DETAIL NOTES:

1. PROVIDE 6" X 6" X 4" JUNCTION BOX ON THE SECURE SIDE OF DOOR ABOVE ACCESSIBLE CEILING AND LOCATED FOR EASY ACCESS.
2. PROVIDE 1" CONDUIT.
3. LOCAL CONTROL PANEL LOCATED IN TELECOMMUNICATIONS ROOM, UON.
4. APPROXIMATE LOCATION OF RUGGEDIZED PAVEMENT MOUNTED DOOR POSITION SWITCH WITH ARMORED PIGTAIL AT DOOR/FLOOR INTERFACE. PIGTAIL SHALL BE ROUTED TO PULLBOX AND CABLING EXTENDED BACK VIA SECURE PATHWAY TO LOCAL CONTROL PANEL. PROVIDE BOX CONNECTOR/STRAIN RELIEF FOR CABLE ENTRY.
5. WHERE CABLING MUST BE ROUTED ABOVE AN INACCESSIBLE CEILING OR UNSECURE PATHWAY PROVIDE 1-1/4" CONDUIT.
6. DOOR CONTROLLER BY OTHERS. PROVIDE REQUIRED CABLING TO GARAGE DOOR OPERATOR FOR DOOR CONTROL INTERFACE. COORDINATE EXACT REQUIREMENTS WITH DOOR MANUFACTURER AND ACCESS CONTROL CONTRACTOR.
7. PROVIDE 4" X 4" X 2 1/8 " DEEP OUTLET BOX WITHIN THE SECURED PERIMETER IN A LOCATION THAT PROVIDES EASY ACCESS FOR CONNECTING AND SERVICE.

11 SECURITY DOOR DETAIL 11

SCALE: NONE

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REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
TECHNOLOGY DETAIL PLAN - DOOR DETAILS

SHEET NO.
T-505

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
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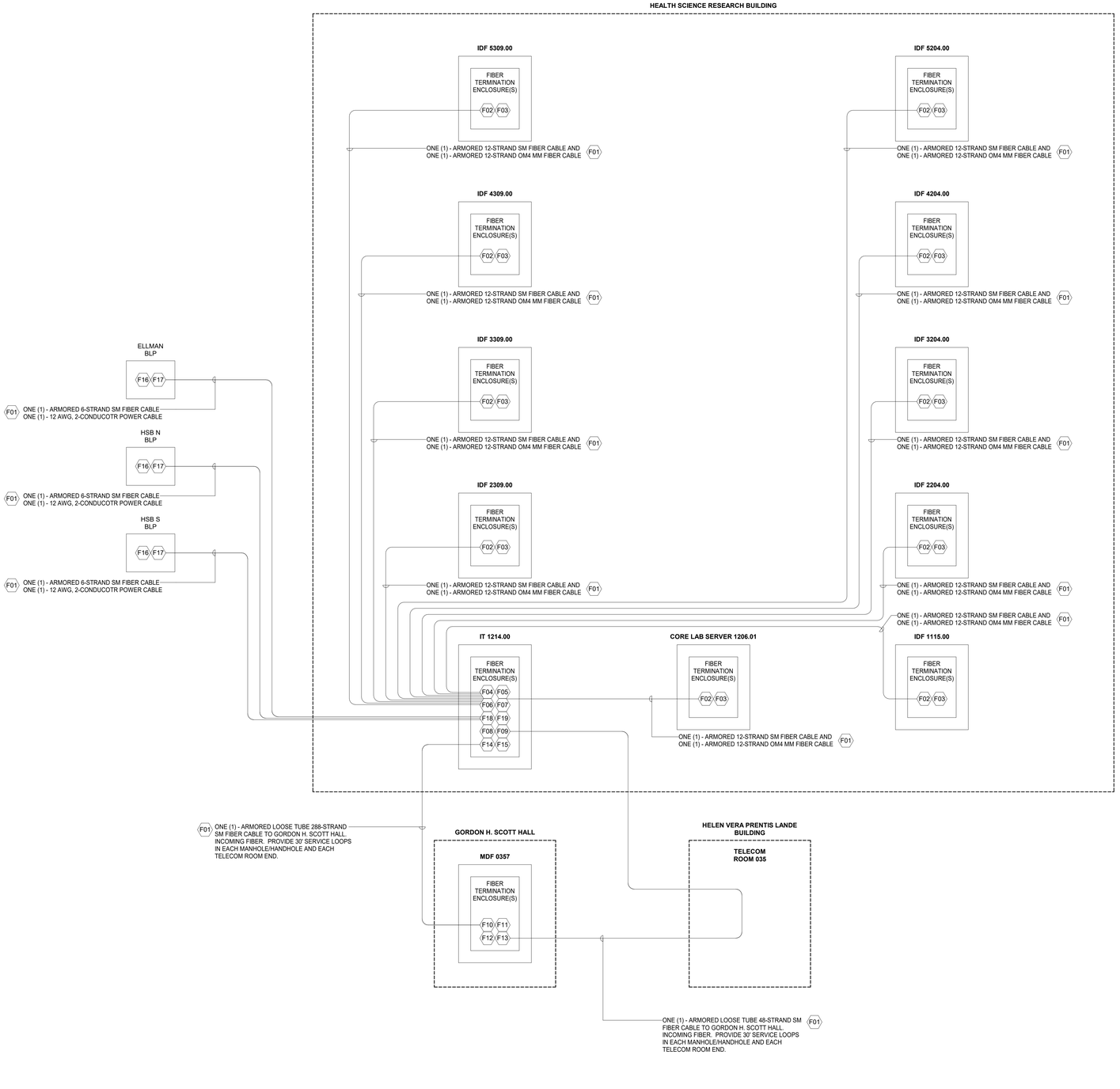

1 TECHNOLOGY RISER DIAGRAM - FIBER

SCALE: NONE

TECHNOLOGY FIBER RISER DIAGRAM - SHEET GENERAL NOTES:

A. REFER TO RACK ELEVATION PLANS FOR INSTALLATION LOCATION OF FIBER TERMINATION ENCLOSURES IN DATA RACKS.
B. REFER TO WAYNE STATE UNIVERSITY'S STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR FIBER CABLE, CONNECTOR, EQUIPMENT AND LABELING PRODUCTS AND REQUIREMENTS.

TECHNOLOGY FIBER RISER DIAGRAM - SHEET CODED NOTES:

F01 PROVIDE AND INSTALL FIBER BACKBONE CABLE IN QUANTITY, TYPE, AND STRAND COUNT AS INDICATED IN THE FIBER RISER DIAGRAM.

F02 PROVIDE AND INSTALL ONE (1) RACK MOUNTED, 4 BAY, 2RU FIBER TERMINATION ENCLOSURE FOR IT 1214 TO IDF SM AND MM FIBER CABLE TERMINATIONS. PROVIDE AND INSTALL BLANK PANELS IN ALL UNUSED FIBER ENCLOSURE TERMINATION BAYS.

F03 TERMINATE ALL FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- IT 1214 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY A/12.
- IT 1214 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY B/2.

F04 PROVIDE AND INSTALL ONE (1) RACK MOUNTED, 12 BAY, 4RU FIBER TERMINATION ENCLOSURE FOR IT 1214 TO IDF SM FIBER CABLE TERMINATIONS. PROVIDE AND INSTALL BLANK PANELS IN ALL UNUSED FIBER ENCLOSURE TERMINATION BAYS.

F05 TERMINATE ALL SM CABLE FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- IDF 1115 SM MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY A/1.
- IDF 2309 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY B/2.
- IDF 2204 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY C/3.
- IDF 3309 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY D/4.
- IDF 3204 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY E/5.
- IDF 4309 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY F/6.
- IDF 4204 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY G/7.
- IDF 5309 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY H/8.
- IDF 5204 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY J/9.
- CORE LAB SERVER 1206 SM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY K/10.

F06 PROVIDE AND INSTALL ONE (1) RACK MOUNTED, 12 BAY, 4RU FIBER TERMINATION ENCLOSURE FOR IT 1214 TO IDF OM4 MM FIBER CABLE TERMINATIONS. PROVIDE AND INSTALL BLANK PANELS IN ALL UNUSED FIBER ENCLOSURE TERMINATION BAYS.

F07 TERMINATE ALL OM4 MM CABLE FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- IDF 1115 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY A/1.
- IDF 2309 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY B/2.
- IDF 2204 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY C/3.
- IDF 3309 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY D/4.
- IDF 3204 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY E/5.
- IDF 4309 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY F/6.
- IDF 4204 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY G/7.
- IDF 5309 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY H/8.
- IDF 5204 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY J/9.
- CORE LAB SERVER 12064 OM4 MM FIBER CABLE ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL OM4 MM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY K/10.

F08 PROVIDE AND INSTALL ONE (1) RACK MOUNTED, 12 BAY, 4RU FIBER TERMINATION ENCLOSURE FOR GORDON H. SCOTT HALL SM FIBER CABLE TERMINATIONS. PROVIDE AND INSTALL BLANK PANELS IN ALL UNUSED FIBER ENCLOSURE TERMINATION BAYS.

F09 TERMINATE ALL SM CABLE FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 1-24 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY A/1.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 25-48 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY B/2.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 49-72 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY C/3.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 73-96 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY D/4.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 97-120 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY E/5.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 121-144 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY F/6.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 145-168 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY G/7.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 169-192 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY H/8.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 193-216 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY J/9.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 217-240 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY K/10.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 241-264 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY L/11.
- SCOTT HALL MDF 0357 SM FIBER CABLE STRANDS 265-288 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY M/12.

TECHNOLOGY FIBER RISER DIAGRAM - SHEET CODED NOTES CONTINUED:

F10 PROVIDE AND INSTALL ONE (1) RACK MOUNTED, 12 BAY, 4RU FIBER TERMINATION ENCLOSURE FOR GORDON H. SCOTT HALL TO HSRB SM FIBER CABLE TERMINATIONS. PROVIDE AND INSTALL BLANK PANELS IN ALL UNUSED FIBER ENCLOSURE TERMINATION BAYS. COORDINATE FIBER TERMINATION PANEL LOCATION IN SCOTT HALL MDF WITH WSU C&IT.

F11 TERMINATE 96-STRANDS SM CABLE FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- SM FIBER CABLE STRANDS 1-24 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY A/1.
- SM FIBER CABLE STRANDS 25-48 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY B/2.
- SM FIBER CABLE STRANDS 49-72 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY C/3.
- SM FIBER CABLE STRANDS 73-96 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY D/4.
- SM FIBER CABLE STRANDS 97-120 SPARED OFF, WITH 3' SERVICE LOOP, AND STORED IN FIBER TERMINATION ENCLOSURE.
- SM FIBER CABLE STRANDS 121-144 SPARED OFF, WITH 3' SERVICE LOOP, AND STORED IN FIBER TERMINATION ENCLOSURE.
- SM FIBER CABLE STRANDS 145-168 SPARED OFF, WITH 3' SERVICE LOOP, AND STORED IN FIBER TERMINATION ENCLOSURE.
- SM FIBER CABLE STRANDS 169-192 SPARED OFF, WITH 3' SERVICE LOOP, AND STORED IN FIBER TERMINATION ENCLOSURE.
- SM FIBER CABLE STRANDS 193-216 SPARED OFF, WITH 3' SERVICE LOOP, AND STORED IN FIBER TERMINATION ENCLOSURE.
- SM FIBER CABLE STRANDS 217-240 SPARED OFF, WITH 3' SERVICE LOOP, AND STORED IN FIBER TERMINATION ENCLOSURE.
- SM FIBER CABLE STRANDS 241-264 SPARED OFF, WITH 3' SERVICE LOOP, AND STORED IN FIBER TERMINATION ENCLOSURE.
- SM FIBER CABLE STRANDS 265-288 SPARED OFF, WITH 3' SERVICE LOOP, AND STORED IN FIBER TERMINATION ENCLOSURE.

F12 PROVIDE AND INSTALL ONE (1) RACK MOUNTED, 4 BAY, 2RU FIBER TERMINATION ENCLOSURE FOR GORDON H. SCOTT HALL TO HSRB REDUNDANT SM FIBER CABLE TERMINATIONS. PROVIDE AND INSTALL BLANK PANELS IN ALL UNUSED FIBER ENCLOSURE TERMINATION BAYS. COORDINATE FIBER TERMINATION PANEL LOCATION IN SCOTT HALL MDF WITH WSU C&IT.

F13 TERMINATE ALL SM CABLE FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- SM FIBER CABLE STRANDS 1-24 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY A/1.
- SM FIBER CABLE STRANDS 25-48 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY B/2.

F14 PROVIDE AND INSTALL ONE (1) RACK MOUNTED, 4 BAY, 2RU FIBER TERMINATION ENCLOSURE FOR GORDON H. SCOTT HALL TO HSRB REDUNDANT SM FIBER CABLE TERMINATIONS. PROVIDE AND INSTALL BLANK PANELS IN ALL UNUSED FIBER ENCLOSURE TERMINATION BAYS.

F15 TERMINATE ALL SM CABLE FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- SM FIBER CABLE STRANDS 1-24 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY A/1.
- SM FIBER CABLE STRANDS 25-48 ON ONE (1) 12-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY B/2.

F16 PROVIDE AND INSTALL ONE (1) 6-PORT, SURFACE MOUNT FIBER TERMINATION ENCLOSURE FOR BLUE LIGHT PHONE SM FIBER CABLE TERMINATIONS. SECURE AND LODGE FIBER TERMINATION ENCLOSURE IN BLUE LIGHT PHONE STANCHION.

F17 TERMINATE ALL FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- BLP SM FIBER CABLE ON ONE (1) 6-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE.
- BLP POWER CABLE FIELD CONNECTED TO BLP STANCHION SWITCH POWER PORT.

F18 PROVIDE AND INSTALL ONE (1) RACK MOUNTED, 4 BAY, 2RU FIBER TERMINATION ENCLOSURE FOR BLUE LIGHT PHONE SM FIBER CABLE TERMINATIONS. PROVIDE AND INSTALL BLANK PANELS IN ALL UNUSED FIBER ENCLOSURE TERMINATION BAYS.

F19 TERMINATE ALL FIBER STRANDS WITH PRE-MANUFACTURED, LC-STYLE SPLICE CASSETTE, AS APPROPRIATE FOR USE WITH FIBER TERMINATION ENCLOSURE AND MATCHING FIBER CABLE CLASSIFICATION. MATCH FIBER STRAND COLOR TO SPLICE CASSETTE PIGTAIL STRAND COLOR. FURNISH AND INSTALL DUST COVERS ON ALL LC CONNECTORS. PROVIDE AND INSTALL LC-STYLE FIBER SPLICE CASSETTE PANELS AS FOLLOWS:
- ELLMAN BLP SM FIBER CABLE ON ONE (1) 6-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY A/1.
- ELLMAN BLP POWER CABLE FIELD CONNECTED TO ELLMAN BLP PoE POWER SUPPLY IN DATA RACK.
- HSB N BLP SM MM FIBER CABLE ON ONE (1) 6-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY B/2.
- HSB N BLP POWER CABLE FIELD CONNECTED TO ELLMAN BLP PoE POWER SUPPLY IN DATA RACK.
- HSN S BLP SM MM FIBER CABLE ON ONE (1) 6-PORT LC-STYLE DUPLEX FIBER SPLICE CASSETTE. INSTALL SM FIBER SPLICE CASSETTE IN FIBER TERMINATION ENCLOSURE BAY C/3.
- HSB S BLP POWER CABLE FIELD CONNECTED TO ELLMAN BLP PoE POWER SUPPLY IN DATA RACK.

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REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY RISER DIAGRAMS

SHEET NO.
T-600

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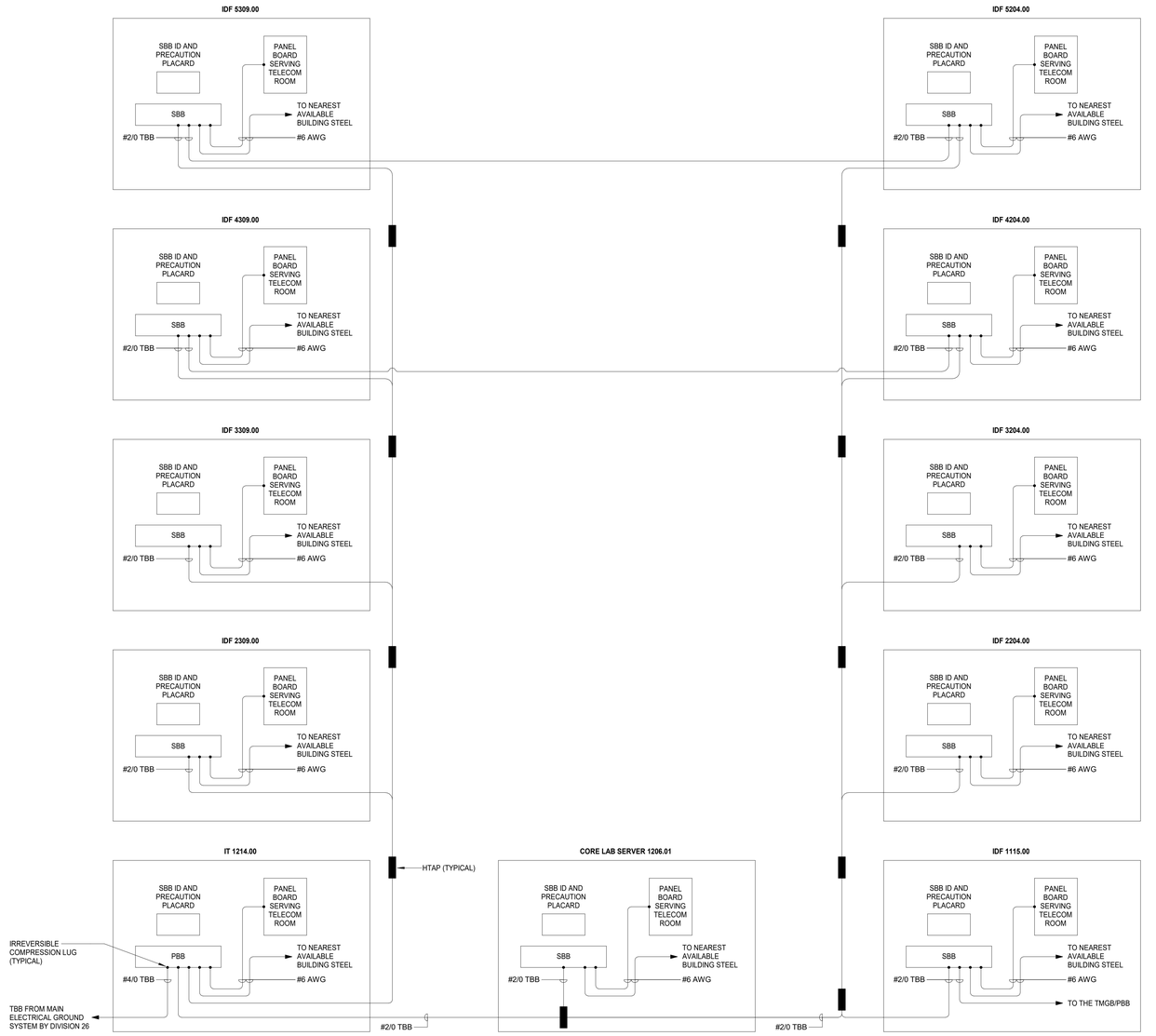
TECHNOLOGY RISER PLAN - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY's STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR GROUNDING REQUIREMENTS.
B. CONTRACTOR SHALL REVIEW THE GROUNDING DETAILS ON DRAWINGS T-502 AND COMPLY WITH ALL REQUIREMENTS INDICATED ON SAME.
C. ALL TELECOMMUNICATIONS BUSBARS SHALL HAVE A LAMINATED IDENTIFICATION TAG PERMANENTLY AFFIXED DIRECTLY ABOVE THE BUSBAR STATING
"WARNING: TELECOMMUNICATIONS GROUNDING BUSBAR FOR DATA AND COMMUNICATIONS EQUIPMENT ONLY. NOT TO BE USED AS AN ELECTRICAL SYSTEMS GROUND. IF CONNECTORS OR CABLES SHOW SIGNS OF LOOSENING, OR REQUIRE REMOVAL, CONTACT WSU C&IT IMMEDIATELY."



1 TECHNOLOGY RISER DIAGRAM - GROUNDING
SCALE: NONE

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SHEET NO.
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SECURITY CAMERA SCHEDULE

CAMERA ID	DRAWING NUMBER	CAMERA LOCATION	CAMERA PART NUMBER	TELECOM ROOM	CAMERA VIEW
CAM 101	TY-201	1ST FLOOR LOBBY	AXIS P3735-PLE	IDF 1115	N/S OF LOBBY; NE AT ELEVATOR; E AT VENDING
CAM 102	TY-201	1ST FLOOR SE HALL	AXIS P4705-PLVE	IDF 1115	E/W HALLWAY
CAM 103	TY-201	1ST FLOOR EAST IDF	AXIS M4216-LV	IDF 1115	IDF 1115 DOOR
CAM 104	TY-201	1ST FLOOR EAST HALL	AXIS M4216-LV	IDF 1115	S ALONG HALL
CAM 105	TY-201	1ST FLOOR NE STAIR	AXIS M4216-LV	IDF 1115	NE DOOR INTERIOR LOOKING E
CAM 106	TY-201	1ST FLOOR NE STAIR	AXIS M4216-LV	IDF 1115	NE STAIR 1ST/2ND MID LEVEL LOOKING U/D
CAM 107	TY-201	1ST FLOOR NE HALL	AXIS M4216-LV	IDF 1115	E ALONG HALL
CAM 108	TY-201	1ST FLOOR WEST MDF	AXIS M4216-LV	IT 1214	IT 1214 DOOR
CAM 109	TY-201	1ST FLOOR WEST HALL	AXIS P3735-PLE	IT 1214	N/S HALLL; NW ELEVATOR; SE HALL DOOR
CAM 110	TY-201	1ST FLOOR SW HALL	AXIS P4705-PLVE	IT 1214	E/W HALLWAY
CAM 111	TY-201	1ST FLOOR SW STAIR	AXIS M4216-LV	IT 1214	SW DOOR INTERIOR LOOKING WEST
CAM 112	TY-201	1ST FLOOR SW STAIR	AXIS M4216-LV	IT 1214	SW STAIR 1ST / 2ND MID LEVEL LOOKING U/D
CAM 113	TY-201.2	1ST FLOOR LOADING DOCK	AXIS P4705-PLVE	IT 1214	E INTO HSRB; W INTO LOADING DOCK
CAM 114	TY-201.2	1ST FLOOR ELLIMAN CORRIDOR	AXIS P4705-PLVE	IT 1214	E TOWARDS ELLIMAN; W TOWARDS HSRB
CAM 201	TY-202	2ND FLOOR SE HALL	AXIS M4216-LV	IDF 2204	N ALONG HALL TOWARD ACCESS DOOR
CAM 202	TY-202	2ND FLOOR SC HALL	AXIS P3735-PLE	IDF 2204	N ALONG HALL TOWARD ACCESS DOOR; E/W ALONG HALL
CAM 203	TY-202	2ND FLOOR NW WORKSPACE	AXIS M4216-LV	IDF 2309	S OVER WORKSPACE AND ACCESS DOOR
CAM 204	TY-202	2ND FLOOR NE WORKSPACE	AXIS M4216-LV	IDF 2204	S OVER WORKSPACE AND ACCESS DOOR
CAM 205	TY-202	2ND FLOOR EAST IDF	AXIS M4216-LV	IDF 2204	IDF 2204 DOOR
CAM 206	TY-202	2ND FLOOR WEST IDF	AXIS M4216-LV	IDF 2309	IDF 2309 DOOR
CAM 207	TY-202	2ND FLOOR LOBBY	AXIS P3735-PLE	IDF 2204	N TOWARDS COLLAB/STAIR; E/W ALONG HALLS; S TOWARDS ELEVATOR LOBBY
CAM 208	TY-202	2ND FLOOR SERVICE AREA	AXIS P3735-PLE	IDF 2309	N/S/E ALONG HALLS, ACCESS DOORS; W TOWARDS SERVICE ELEVATOR
CAM 209	TY-202	2ND FLOOR SW STAIR	AXIS M4216-LV	IDF 2309	2ND/3RD MID LEVEL LOOKING U/D
CAM 210	TY-202	2ND FLOOR NC STAIR	AXIS M4216-LV	IDF 2204	2ND/3RD MID LEVEL LOOKING U/D
CAM 301	TY-203	3RD FLOOR NW WORKSPACE	AXIS M4216-LV	IDF 3309	S INTO WORKSPACE, ACCESS DOOR
CAM 302	TY-203	3RD FLOOR SERVICE AREA	AXIS P3735-PLE	IDF 3309	N/S/E ALONG HALLS, ACCESS DOORS; W TOWARDS SERVICE ELEVATOR
CAM 303	TY-203	3RD FLOOR SE HALL	AXIS M4216-LV	IDF 3204	N ALONG HALL. TOWARDS ACCESS DOOR
CAM 304	TY-203	3RD FLOOR NE WORKSPACE	AXIS M4216-LV	IDF 3204	S INTO WORKSPACE, ACCESS DOOR
CAM 305	TY-203	3RD FLOOR SC HALL	AXIS P3735-PLE	IDF 3204	N ALONG HALL TOWARD ACCESS DOOR; E/W ALONG HALL
CAM 306	TY-203	3RD FLOOR LOBBY	AXIS P3735-PLE	IDF 3204	N TOWARDS COLLAB&STAIRS; E/W ALONG HALLS; S TOWARDS ELEVATOR LOBBY
CAM 307	TY-203	3RD FLOOR EAST IDF	AXIS M4216-LV	IDF 3204	IDF 3204 DOOR
CAM 308	TY-203	3RD FLOOR WEST IDF	AXIS M4216-LV	IDF 3309	IDF 3309 DOOR
CAM 309	TY-203	3RD FLOOR SW STAIR	AXIS M4216-LV	IDF 3309	3RD/4TH MID LEVEL LOOKING U/D
CAM 310	TY-203	3RD FLOOR NC STAIR	AXIS M4216-LV	IDF 3204	3RD/4TH MID LEVEL LOOKING U/D
CAM 311	TY-203.1	3RD FLOOR SCOTT HALL BRIDGE	AXIS P4705-PLVE	IDF 3309	N/S ALONG BRIDGE
CAM 401	TY-204	4TH FLOOR SW STAIR	AXIS M4216-LV	IDF 4309	4TH/5TH MID LEVEL LOOKING U/D
CAM 402	TY-204	4TH FLOOR SERVICE AREA	AXIS P3735-PLE	IDF 4309	N/S/E ALONG HALLS, ACCESS DOORS; W TOWARDS SERVICE ELEVATOR
CAM 403	TY-204	4TH FLOOR NW WORKSPACE	AXIS M4216-LV	IDF 4309	S INTO WORKSPACE, ACCESS DOOR
CAM 404	TY-204	4TH FLOOR WEST IDF	AXIS M4216-LV	IDF 4309	IDF 4309 DOOR
CAM 405	TY-204	4TH FLOOR SE HALL	AXIS M4216-LV	IDF 4204	N ALONG HALL TOWARD ACCESS DOOR
CAM 406	TY-204	4TH FLOOR SC HALL	AXIS P3735-PLE	IDF 4204	N ALONG HALL TOWARD ACCESS DOOR; E/W ALONG HALL
CAM 407	TY-204	4TH FLOOR LOBBY	AXIS P3735-PLE	IDF 4204	N TOWARDS COLLAB/STAIR; E/W ALONG HALLS; S TOWARDS ELEVATOR LOBBY
CAM 408	TY-204	4TH FLOOR EAST IDF	AXIS M4216-LV	IDF 4204	IDF 4204 DOOR
CAM 409	TY-204	4TH FLOOR NE WORKSPACE	AXIS M4216-LV	IDF 4204	S INTO WORKSPACE, ACCESS DOOR
CAM 410	TY-204	4TH FLOOR NC STAIR	AXIS M4216-LV	IDF 4204	4TH/5TH MID LEVEL LOOKING U/D
CAM 501	TY-205	5TH FLOOR NW WORKSPACE	AXIS M4216-LV	IDF 5309	S INTO WORKSPACE, ACCESS DOOR
CAM 502	TY-205	5TH FLOOR SERVICE AREA	AXIS P3735-PLE	IDF 5309	N/S/E ALONG HALLS, ACCESS DOORS; W TOWARDS SERVICE ELEVATOR
CAM 503	TY-205	5TH FLOOR SC HALL	AXIS P3735-PLE	IDF 5204	N ALONG HALL TOWARD ACCESS DOOR; E/W ALONG HALL
CAM 504	TY-205	5TH FLOOR SE HALL	AXIS M4216-LV	IDF 5204	N ALONG HALL TOWARD ACCESS DOOR
CAM 505	TY-205	5TH FLOOR NE HALL	AXIS M4216-LV	IDF 5204	S INTO WORKSPACE, ACCESS DOOR
CAM 506	TY-205	5TH FLOOR WEST IDF	AXIS M4216-LV	IDF 5309	IDF 5309 DOOR
CAM 507	TY-205	5TH FLOOR EAST IDF	AXIS M4216-LV	IDF 5204	IDF 5204 DOOR
CAM 508	TY-205	5TH FLOOR LOBBY	AXIS P3735-PLE	IDF 5204	N TOWARDS COLLAB&STAIRS; E/W ALONG HALLS; S TOWARDS ELEVATOR LOBBY
CAM 509	TY-205	5TH FLOOR SW STAIR	AXIS M4216-LV	IDF 5309	5TH MID LEVEL LOOKING U/D
CAM 601	TY-206	INSIDE ELEVATOR CAB	AXIS Q9216-SLV STEEL	IDF 5204	INSIDE ELEVATOR #1 CAB
CAM 602	TY-206	INSIDE ELEVATOR CAB	AXIS Q9216-SLV STEEL	IDF 5204	INSIDE ELEVATOR #2 CAB
CAM 603	TY-206	INSIDE ELEVATOR CAB	AXIS Q9216-SLV STEEL	IDF 5309	INSIDE ELEVATOR CAB
CAM A	TS-100	LOADING DOCK EXTERIOR	AXIS P3827-PVE	IT 1214	180 DEG VIEW OF DOCK AREA
CAM B	TS-100	SW CORNER EXTERIOR	AXIS P3735-PLE	IT 1214	270 DEGREE OF SW AREA
CAM C	TS-100	NW CORNER EXTERIOR	AXIS P3735-PLE	IT 1214	270 DEG VIEW OF NW AREA
CAM D	TS-100	NC ENTRY EXTERIOR	AXIS P3735-PLE	IDF 1115	270 DEG VIEW OF N ENTRY AREA
CAM E	TS-100	SC ENTRY EXTERIOR	AXIS P3735-PLE	IDF 1115	270 DEG VIEW OF S ENTRY AREA
CAM F	TS-100	SE CORNER EXTERIOR	AXIS P3735-PLE	IDF 1115	270 DEG VIEW OF SE AREA
CAM G	TS-100	NE CORNER EXTERIOR	AXIS P3735-PLE	IDF 1115	270 DEG VIEW OF NE AREA
ELLIMAN BLP 360	TS-100	N EXTERIOR OF ELLIMAN BLUE LIGHT STANCHION	AXIS Q6010-E	IT 1214	360 DEG VIEW OF LOT, BRUSH ENTRY, LOADING DOCK, N EXT OF ELLIMAN
ELLIMAN BLP PTZ	TS-100	N EXTERIOR OF ELLIMAN BLUE LIGHT STANCHION	AXIS Q6075-E	IT 1214	PTZ DEG VIEW OF LOT, BRUSH ENTRY, LOADING DOCK, N EXT OF ELLIMAN
HSB N BLP 360	TS-100	N EXTERIOR BLUE LIGHT STANCHION	AXIS Q6010-E	IDF 1115	360 DEG VIEW OF LOT AND COMMON AREA
HSB N BLP PTZ	TS-100	N EXTERIOR BLUE LIGHT STANCHION	AXIS Q6075-E	IDF 1115	PTZ FOR LOT, COMMON AREA, BUILDING ENTRY
HSB S BLP 360	TS-100	S EXTERIOR BLUE LIGHT STANCHION	AXIS Q6010-E	IT 1214	360 DEG VIEW OF CANFIELD, BUILDING ENTRY
HSB S BLP PTZ	TS-100	S EXTERIOR BLUE LIGHT STANCHION	AXIS Q6075-E	IT 1214	PTZ FOR CANFIELD, BUILDING ENTRY

SECURITY DOOR SCHEDULE - LEVEL 01

ACCESS DOOR ID	DEVICE TYPE	DRAWING NUMBER	ROUGH-IN DETAIL	TELECOM ROOM	HARDWARE SCHEDULE	HARWWARE SET	NOTES
1090.01A	CARD READER	TY-201	9	IDF 1115			ALT, HW
1090.02	CARD READER	TY-201	7	IDF 1115			
1090.04A	CARD READER	TY-201	7	IDF 1115			
1090.04C	DOOR CONTACT	TY-201	8	IDF 1115			MO
1090.13A	CARD READER	TY-201	7	IDF 1115			
1090.13B	CARD READER	TY-201	6	IDF 1115			
1102.00A	CARD READER	TY-201	6	IDF 1115			
1102.00B	CARD READER	TY-201	6	IDF 1115			
1103.00	CARD READER	TY-201	6	IDF 1115			
1106.00	MULLION CARD READER	TY-201	6	IDF 1115			ALT
1108.00	MULLION CARD READER	TY-201	6	IDF 1115			ALT
1115.00	CARD READER	TY-201	6	IDF 1115			
1117.00	CARD READER	TY-201	6	IDF 1115			
1119.00	CARD READER	TY-201	6	IDF 1115			
1121.00	CARD READER	TY-201	6	IDF 1115			
1122.00A	MULLION CARD READER	TY-201	7	IDF 1115			ALT
1122.00B	DOOR CONTACT	TY-201	4	IDF 1115			MO
1122.00C	DOOR CONTACT	TY-201	4	IDF 1115			MO
1122.00D	MULLION CARD READER	TY-201	7	IDF 1115			ALT
1123.00A	CARD READER	TY-201	6	IDF 1115			
1124.01	CARD READER	TY-201	6	IDF 1115			
1126.00	CARD READER	TY-201	6	IDF 1115			
ELEV 01 1075.01	CARD READER	TY-201	10	IDF 1115			ELEV
ELEV 02 1075.02	CARD READER	TY-201	10	IDF 1115			ELEV
1090.05B	MULLION CARD READER	TY-201	9	IT 1214			ALT, HW
1090.06	CARD READER	TY-201	3	IT 1214			
1090.08A	MULLION CARD READER	TY-201	7	IT 1214			ALT
1090.09A	CARD READER	TY-201	7	IT 1214			
1090.09B	CARD READER	TY-201	6	IT 1214			
1090.11A	CARD READER	TY-201	6	IT 1214			
1090.11B	CARD READER	TY-201	2	IT 1214			
1090.12A	MULLION CARD READER	TY-201	12	IT 1214			ALT, DE
1090.12A	CARD READER	TY-201	12	IT 1214			
1202.00	CARD READER	TY-201	1	IT 1214			
1202.02B	CARD READER	TY-201	6	IT 1214			
1204.00A	CARD READER	TY-201	1	IT 1214			
1206.01	CARD READER	TY-201	6	IT 1214			
1214.00	CARD READER	TY-201	6	IT 1214			
1219.00A	CARD READER	TY-201	7	IT 1214			
1221.00A	CARD READER	TY-201	7	IT 1214			
1223.00	CARD READER	TY-201	6	IT 1214			
SERVICE ELEV 1075.03	CARD READER	TY-201	10	IT 1214			ELEV
1090.12B	CARD READER	TY-201.2	9	IT 1214			HW
1090.12D	CARD READER	TY-201.2	7	IT 1214			
1302.00A	CARD READER	TY-201.2	9	IT 1214			HW
1302.00C	DOOR CONTACT	TY-201.2	11	IT 1214			
1302.00C	CARD READER	TY-201.2	7	IT 1214			
1302.00D	DOOR CONTACT	TY-201.2	11	IT 1214			

SECURITY DOOR SCHEDULE - LEVEL 02

ACCESS DOOR ID	DEVICE TYPE	DRAWING NUMBER	ROUGH-IN DETAIL	TELECOM ROOM	HARDWARE SCHEDULE	HARDWARE SET	NOTES
2090.08	MULLION CARD READER	TY-202	7	IDF 2204			ALT
2090.10	MULLION CARD READER	TY-202	7	IDF 2204			ALT
2204.00	CARD READER	TY-202	6	IDF 2204			
2206.00	CARD READER	TY-202	6	IDF 2204			
2090.02	MULLION CARD READER	TY-202	7	IDF 2309			ALT
2090.03	MULLION CARD READER	TY-202	7	IDF 2309			ALT
2303.00	MULLION CARD READER	TY-202	6	IDF 2309			ALT
2309.00	CARD READER	TY-202	6	IDF 2309			
2311.00	CARD READER	TY-202	6	IDF 2309			
2402.00	CARD READER	TY-202	6	IDF 2309			

SECURITY DOOR SCHEDULE - LEVEL 03

ACCESS DOOR ID	DEVICE TYPE	DRAWING NUMBER	ROUGH-IN DETAIL	TELECOM ROOM	HARDWARE SCHEDULE	HARDWARE SET	NOTES
3090.08	MULLION CARD READER	TY-203	7	IDF 3204			ALT
3090.10	MULLION CARD READER	TY-203	7	IDF 3204			ALT
3204.00	CARD READER	TY-203	6	IDF 3204			
3206.00	CARD READER	TY-203	6	IDF 3204			
3090.02A	MULLION CARD READER	TY-203	7	IDF 3309			ALT
3090.02B	MULLION CARD READER	TY-203	7	IDF 3309			ALT
3090.12A	CARD READER	TY-203	9	IDF 3309			HW
3303.00	MULLION CARD READER	TY-203	6	IDF 3309			ALT
3309.00	CARD READER	TY-203	6	IDF 3309			
3311.00	CARD READER	TY-203	6	IDF 3309			
3402.00	CARD READER	TY-203	6	IDF 3309			
3090.12	MULLION CARD READER	TY-203.1	9	IDF 3309			ALT, HW

SECURITY DOOR SCHEDULE - LEVEL 04

ACCESS DOOR ID	DEVICE TYPE	DRAWING NUMBER	ROUGH-IN DETAIL	TELECOM ROOM	HARDWARE SCHEDULE	HARDWARE SET	NOTES
4090.08	MULLION CARD READER	TY-204	7	IDF 4204			ALT
4090.10	MULLION CARD READER	TY-204	7	IDF 4204			ALT
4115.00	CARD READER	TY-204	13	IDF 4204			
4204.00	CARD READER	TY-204	6	IDF 4204			
4206.00	CARD READER	TY-204	6	IDF 4204			
4090.02	MULLION CARD READER	TY-204	7	IDF 4309			ALT
4090.02A	MULLION CARD READER	TY-204	7	IDF 4309			ALT
4303.00	MULLION CARD READER	TY-204	6	IDF 4309			ALT
4309.00	CARD READER	TY-204	6	IDF 4309			
4311.00	CARD READER	TY-204	6	IDF 4309			
4402.00	CARD READER	TY-204	6	IDF 4309			

SECURITY DOOR SCHEDULE - LEVEL 05

ACCESS DOOR ID	DEVICE TYPE	DRAWING NUMBER	ROUGH-IN DETAIL	TELECOM ROOM	HARDWARE SCHEDULE	HARDWARE SET	NOTES
5090.08	MULLION CARD READER	TY-205	7	IDF 5204			ALT
5090.10	MULLION CARD READER	TY-205	7	IDF 5204			ALT
5115.00A	CARD READER	TY-205	13	IDF 5204			
5204.00	CARD READER	TY-205	6	IDF 5204			
5206.00	CARD READER	TY-205	6	IDF 5204			
5210.01	CARD READER	TY-205	6	IDF 5204			
5090.02A	MULLION CARD READER	TY-205	7	IDF 5309			ALT
5090.02B	MULLION CARD READER	TY-205	7	IDF 5309			ALT
5303.00	MULLION CARD READER	TY-205	6	IDF 5309			ALT
5309.00	CARD READER	TY-205	6	IDF 5309			
5311.00	CARD READER	TY-205	6	IDF 5309			
5402.00	CARD READER	TY-205	6	IDF 5309			

SECURITY DOOR SCHEDULE - PENTHOUSE

ACCESS DOOR ID	DEVICE TYPE	DRAWING NUMBER	ROUGH-IN DETTAIL	TELECOM ROOM	HARDWARE SCHEDULE	HARDWARE SET	NOTES
6000.00	DOOR CONTACT	TY-206	8	IDF 5204			MO
ROOF HATCH	DOOR CONTACT	TY-206	5	IDF 5204			MO
6075.01	CARD READER	TY-206	6	IDF 5309			
6090.01	CARD READER	TY-206	6	IDF 5309			

SECURITY DOOR SCHEDULE - ROOF

ACCESS DOOR ID	DEVICE TYPE	DRAWING NUMBER	ROUGH-IN DETAIL	TELECOM ROOM	HARDWARE SCHEDULE	HARDWARE SET	NOTES
7075.01	CARD READER	TY-207	6	IDF 5309			
ROOF HATCH	DOOR CONTACT	TY-207	5	IDF 5309			MO

SECURITY SCHEDULE PLAN - SHEET GENERAL NOTES:

A. REFER TO WAYNE STATE UNIVERSITY'S STANDARDS FOR COMMUNICATIONS INFRASTRUCTURE (https://tech.wayne.edu/docs/wsu-communications-standards.pdf) FOR CAMERA AND CARD READER DEVICE, LABELING, AND PRODUCT REQUIREMENTS.

SECURITY DOOR SCHEDULE KEY:

ALT PROVIDE ALTERNATIVE MULLION MOUNT CARD READER ROUGH-IN.

DE DELAYED EGRESS DEVICE.

ELEV COORDINATE ROUGH-IN, CABLE CONNECTIONS, AND DEVICE CONNECTIONS WITH ELEVATOR CONTRACTOR.

HW HAND WAVE AUTOMATIC OPERATOR. THIS CONTRACTOR SHALL COORDINATE WITH THE DOOR HARDWARE PROVIDER AND PROVIDE ALL REQUIRED TIME DELAYS AND OTHER OPERABILITY FOR ACCESS CONTROL TO PROPERLY FUNCTION WITH DOOR OPERATOR.

MO MONITOR ONLY.

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REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000

DATE
29 SEPTEMBER 2025

ISSUE
CONSTRUCTION DOCUMENTS

SHEET TITLE
SECURITY SCHEDULES PLAN

SHEET NO.
T-602

OSBORN ENGINEERING
1420 Washington Blvd., Suite 301 | Detroit, MI 48226
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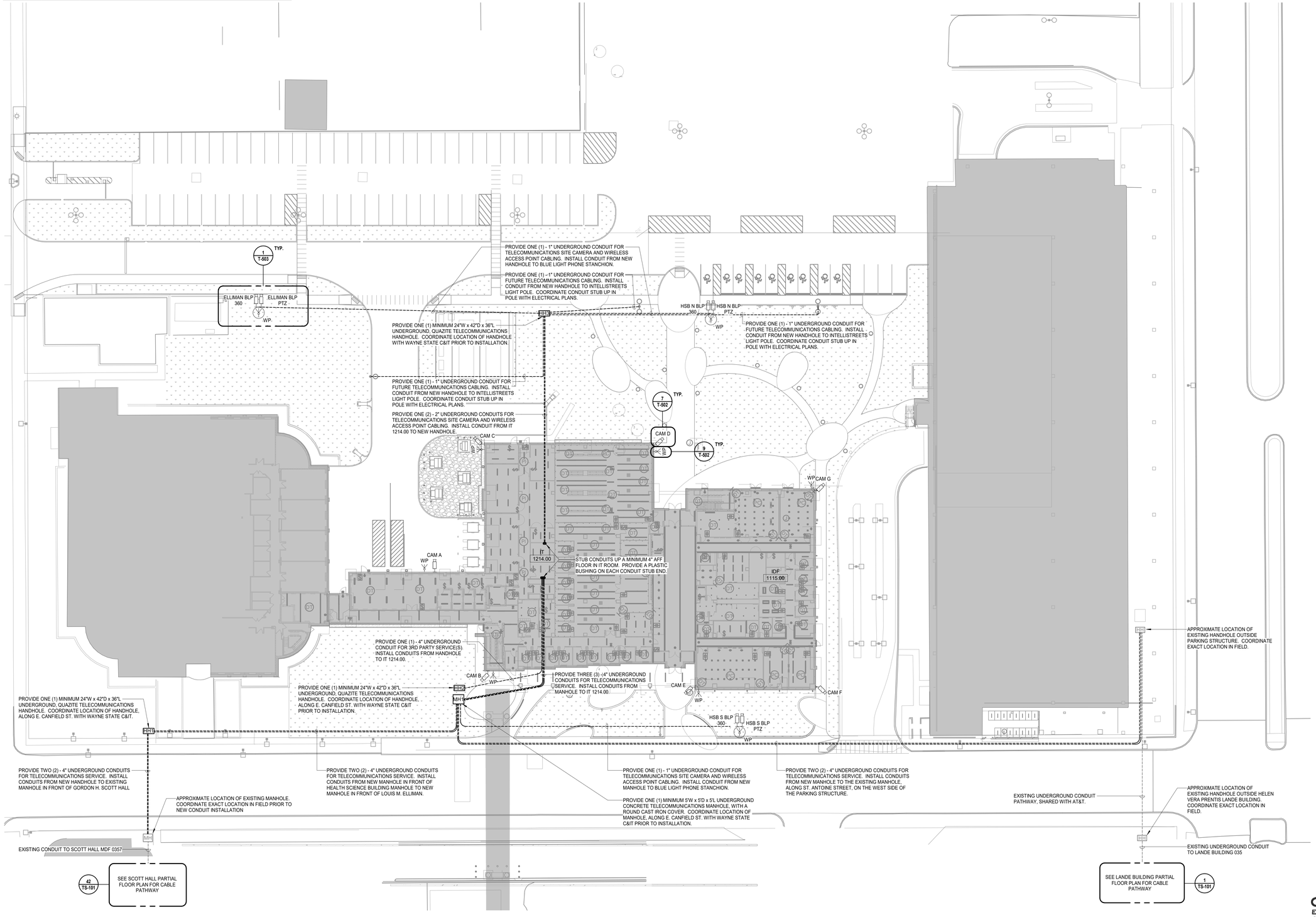
OSP CABLE PATHWAY SCHEDULE			
FIBER CABLE	**START**	**PATHWAY**	**END**
288-STRAND	HSB IT 1214	MH1, HH1, EXISTING SCOTT HALL HH, EXISTING CONDUIT TO SCOTT HALL MDF 0357	SCOTT HALL MDF 0357
48-STRAND	HSB IT 1214	MH1, EXISTING WSU PARKING STRUCTURE 4 HH, EXISTING LANDE BUILDING HH, EXISTING CONDUIT TO LANDE BUILDING TELECOM ROOM 035, EXISTING 2" TO SCOTT HALL, NEW ORANGE INNERDUCT CONDUIT TO SCOTT HALL MDF 0357	SCOTT HALL MDF 0357
ELLMAN BLP	HSB IT 1214	HH3	ELLMAN BLP
HSB N BLP	HSB IT 1214	HH3	HSB N BLP
HSB S BLP	HSB IT 1214	MH1	HSB S BLP

TECHNOLOGY SITE PLAN - SHEET GENERAL NOTES:

A. SEE SHEET T-400 FOR IT ROOM LAYOUT AND INFORMATION.
B. ALL UNDERGROUND CONDUITS SHALL SLOPE FROM BUILDING TOWARDS THE HANDHOLE OR MANHOLE WHICH THE CONDUIT IS INSTALLED.
C. ALL UNDERGROUND CONDUITS SHALL HAVE A #12 AWG TRACER WIRE INSTALLED FROM END-TO-END. SECURE THE TRACER WIRE, AT BOTH ENDS, TO PREVENT THE TRACER WIRE FROM RETRACTING BACK INTO THE CONDUIT.
D. ALL UNDERGROUND CONDUITS SHALL HAVE A 1/4" PULL-TAPE, WITH 900 TENSILE RATING, INSTALLED FROM END-TO-END. SECURE THE PULL-TAPE, AT BOTH ENDS, TO PREVENT THE PULL-TAPE FROM RETRACTING BACK INTO THE CONDUIT.
E. KEEP ALL HANDHOLES, MANHOLES, AND CONDUIT ON WAYNE STATE PROPERTY WHERE POSSIBLE.
F. COORDINATE EXACT LOCATIONS OF HANDHOLES AND MANHOLES WITH WAYNE STATE UNIVERSITY C&IT.



1 TECHNOLOGY SITE PLAN - SITE
SCALE: 1 : 300

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KEY PLAN

PLAN NORTH
TRUE NORTH

REVISION NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
26234.000
DATE
29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY SITE PLAN

SHEET NO.
TS-100

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TECHNOLOGY SITE PLAN - SHEET GENERAL NOTES:

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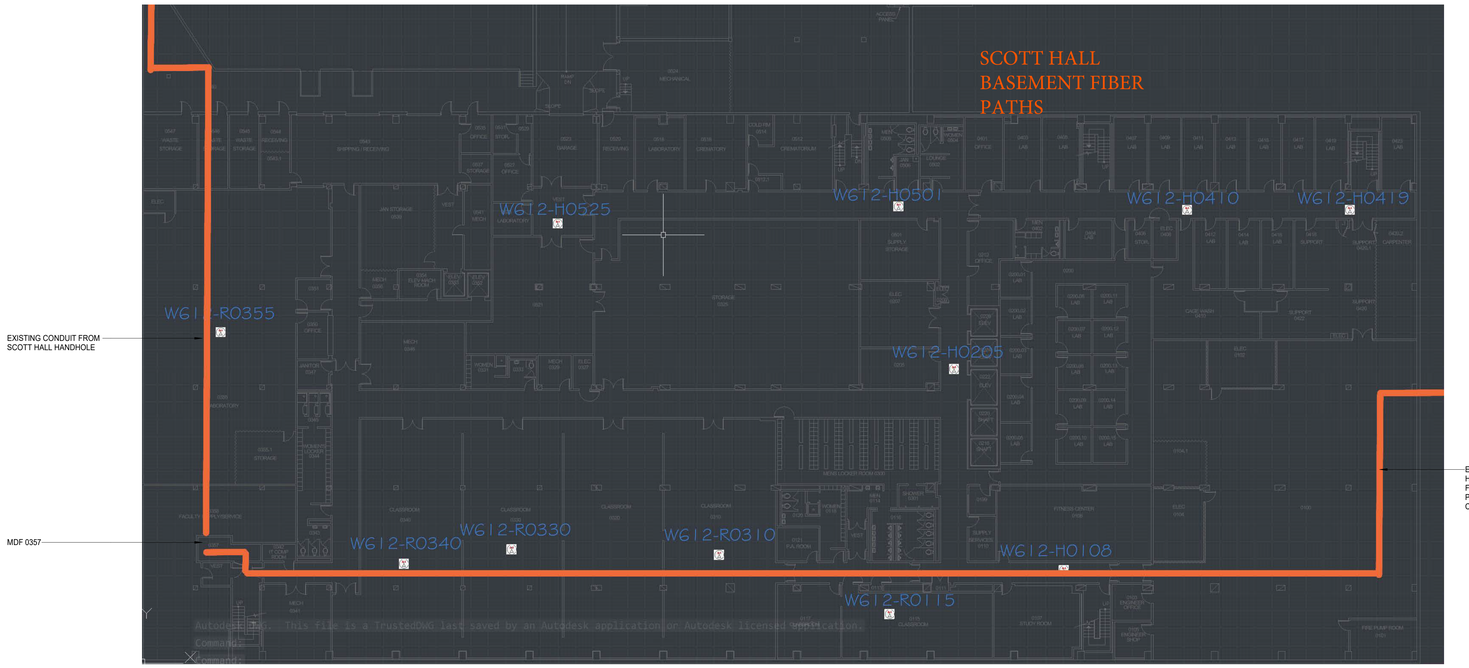
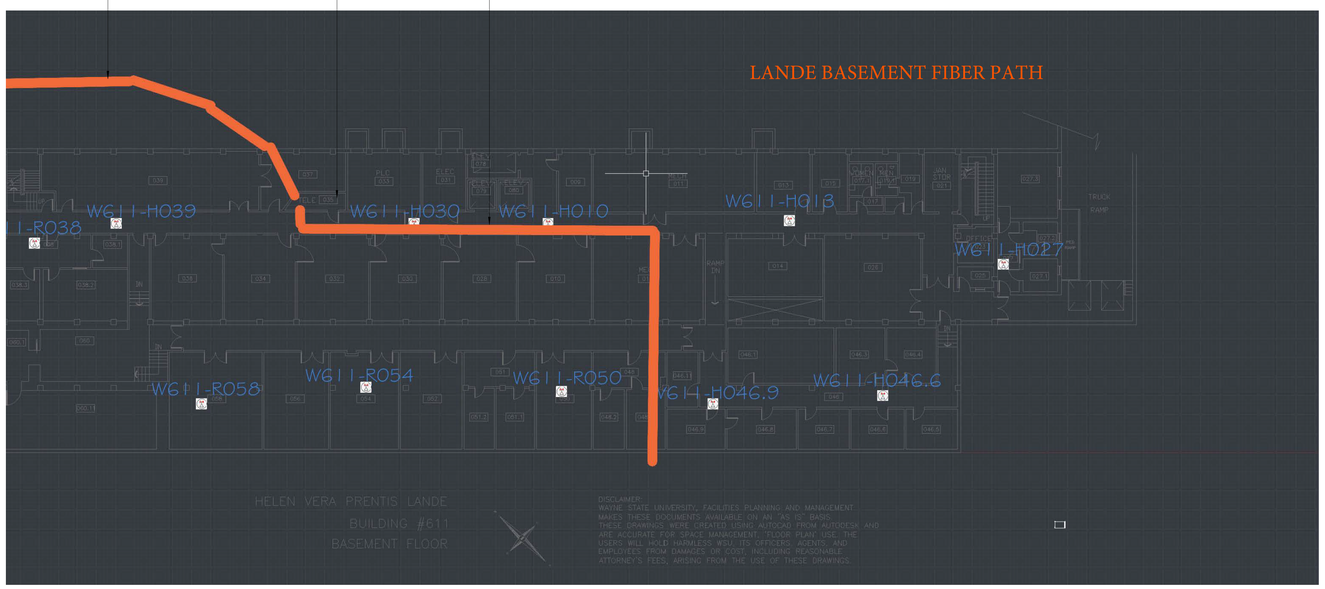


42 SCOTT HALL PARTIAL FLOOR PLAN
SCALE: NONE



1 LANDE BUILDING PARTIAL FLOOR PLAN
SCALE: NONE

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KEY PLAN

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TRUE NORTH

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HKS PROJECT NUMBER
26234.000
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29 SEPTEMBER 2025
ISSUE
CONSTRUCTION DOCUMENTS
SHEET TITLE
TECHNOLOGY SITE PLAN - BUILDING PATHWAYS
SHEET NO.
TS-101

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