WAYNE STATE UNIVERSITY

WAYNE STATE UNIVERSITY

MATTHAEI CENTER - HVAC AND ELECTRICAL UPGRADES

5101 JOHN C. LODGE FWY DETROIT , MI 48202

ISSUED FOR: BIDS

06/27/2023

DRAWING INDEX

PROJECT SUMMARY

PROJECT INCLUDES NEW ELECTRICAL DISTRIBUTION IN MATTHAEI TO PROVIDE CAPACITY FOR FUTURE AC AND REPLACE RUSTED EQUIPMENT IN BASEMENT.

NEW ELECTRICAL POWER DISTRIBUTION WILL BE PROVIDED IN STADIUM AUXILIARY BUILDING FOR STADIUM AND IM FIELD LIGHTING.

VICINITY MAP

NORTH

ALTERNATES

#1:
DEDUCT ALTERNATE TO REMOVE VRF SYSTEM, INCLUDING AC 1 THRU 14 AND CU 101. COST TO INCLUDE REMOVAL OF ALL EQUIPMENT, PIPING, ELECTRICAL AND CONTROLS.

#2:
DEDUCT ALTERNATE TO REMOVE REFURBISHMENT OF EXISTING H&V UNITS 1 ,2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 AND 14.

#3:
DEDUCT ALTERNATE TO REMOVE IM FIELD LIGHTING, INCLUDING POLES, LIGHTING FIXTURES, CONDUIT, WIRING AND LIGHTING CONTROLS. NEW PANEL FOR IM LIGHTING WILL REMAIN IN PROJECT SCOPE.

#4:
DEDUCT ALTERNATE TO REMOVE STADIUM FIELD LIGHTING, INCLUDING DEMOLITION OF EXISTING LIGHTING FIXTURES AND CONTROLS, NEW LIGHTING FIXTURES, CONDUIT, WIRING AND LIGHTING CONTROLS.

#5:
DEDUCT ALTERNATE FOR DEMOLITION OF EXISTING POOL/DIVE POOL LIGHTING FIXTURES AND CONTROLS AND INSTALLATION OF NEW POOL/DIVE POOL LIGHTING, JUNCTION BOXES, CONDUIT, WIRING AND CONTROLS.

OSBORN ENGINEERING
5000 Hagman Road | Bingham Farms, MI 48025
(313) 915-4014
www.osborn-eng.com

MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

TAG	ISSUED	DATE
TAG1	OWNER REVIEW	01/19/23
TAG2	CD REVIEW	05/19/23
TAG3	BIDS	06/27/23
TAG4		
TAG5		
TAG6		
TAG7		
TAG8		
TAG9		
AG10		
AG11		
AG12		
AG13		
AG14		
AG15		
AG16		
AG17		
AG18		
AG19		
AG20		

DRAWN BY: DWN
CHECKED BY CHK
CLIENT PROJ NO. -
OSBORN PROJ NO. J20190854.070

TITLE SHEET

DRAWING NO.

G-001

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6/27/2023 12:36 PM Fuentez, Bernard

ABBREVIATIONS

SYMBOLS

&	AND
@	AT
±	PLUS OR MINUS
∅	DIAMETER
d	PENNY WEIGHT
fc'	CONCRETE COMPRESSIVE STRENGTH
fm'	MASONRY COMPRESSIVE STRENGTH

A

AR	ANCHOR ROD
ACI	AMERICAN CONCRETE INSTITUTE
A/E	ARCHITECT/ENGINEER
ADD	ADDENDUM
ADDL	ADDITIONAL
ADJ	ADJACENT
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
AFF	ABOVE FINISH FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL	ALUMINUM
ALT	ALTERNATE
AOR	ARCHITECT OF RECORD
APPROX	APPROXIMATE
ARCH	ARCHITECT
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASD	ALLOWABLE STRENGTH DESIGN
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
AVE	AVERAGE
AWS	AMERICAN WELDING SOCIETY

B

B/	BOTTOM OF
BAL	BALANCE
BB	BOXED BEAM
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BN	BOUNDARY NAIL
BOT	BOTTOM
BRDG	BRIDGING
BRG	BEARING
BSMT	BASEMENT
BTW	BETWEEN
BULL	BULLETIN

C

C	CHANNEL
CA	CAISSON
C/C	CENTER TO CENTER
CALCS	CALCULATIONS
CANT	CANTILEVER
CDF	CONCRETE DENSITY FILL
CFMF	COLD FORM METAL FRAMING
CL	CENTERLINE
CLG	CEILING
CF	CUBIC FEET, CUBIC FOOT
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CLR	CLEAR
CM	CENTIMETER
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPOSITE
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CTR	CENTER
CY	CUBIC YARD

D

d	PENNY WEIGHT
DBL	DOUBLE
DEFL	DEFLECTION
DEG	DEGREE
DEMO	DEMOLITION
DEPR	DEPRESSION
DET	DETAIL
DF	DOUGLAS FIR
DFL	DOUGLAS FIR LARCH
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTANCE
DL	DEAD LOAD
DN	DOWN
do	DITTO
DP	DRILLED PIER
DR	DRAIN
DT	DRAIN TILE
DWG	DRAWING
DWL	DOWEL

E

EA	EACH
ECC	ECCENTRIC
EF	EACH FACE
EFP	EQUIVALENT FLUID PRESSURE
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMBED	EMBEDMENT
EN	EDGE NAIL
ENCL	ENCLOSURE
ENG	ENGINEER
EOD	EDGE OF DECK
EOR	ENGINEER OF RECORD
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EW EF	EACH WAY EACH FACE
EX	EXISTING
EXP	EXPANSION
EXP JT	EXPANSION JOINT
EXT	EXTERIOR

F

FAB	FABRICATE
FD	FLOOR DRAIN
FDN	FOUNDATION
FIN	FINISH
FLR	FLOOR
FRM	FRAMING
FS	FAR SIDE
FT	FOOT / FEET
FTG	FOOTING

G

GA	GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GLB	GLUE LAMINATED BEAM
GLC	GLUE LAMINATED COLUMN
GLULAM	GLUE LAMINATED
GR	GRADE
GRTG	GRATING
GT	GIRDER TRUSS
GYP	GYPSUM

H

HDR	HEADER
HEF	HORIZONTAL EACH FACE
HGR	HANGER
HORIZ	HORIZONTAL
HK	HOOK
HP	HIGH POINT
HSS	HOLLOW STRUCTURAL SHAPES
HT	HEIGHT
HVAC	HEATING, VENTILATION, AIR CONDITIONING

I

ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH
INCL	INCLUDE
INFO	INFORMATION
INT	INTERIOR
INV	INVERT

J

JG	JOIST GIRDER
JST	JOIST
JT	JOINT

K

K	KIP
KF	KIP FEET
KLF	KIPS PER LINEAL FOOT
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH

L

L	ANGLE
LBS	POUNDS
LG	LONG
LL	LIVE LOAD
LLBB	LONG LEGS BACK TO BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION(S)
LP	LOW POINT
LSL	LAMINATE STRAND LUMBER
LT GA	LIGHT GAUGE
LTWT	LIGHT WEIGHT
LVL	LAMINATE VENEER LUMBER

M

M	METER
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MC	MISCELLANEOUS CHANNEL
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETER
MTL	METAL

N

NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE

O

O/O	OUT TO OUT
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OPPOSITE HAND
OPG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
OWSJ	OPEN WEB STEEL JOIST

P

P/C	PRECAST CONCRETE
PAF	POWER ACTUATED FASTENER
PCF	POUNDS PER CUBIC FOOT
PCI	PRESTRESSED CONCRETE INSTITUTE
PDF	POWER DRIVEN FASTENER
PERP	PERPENDICULAR
PJP	PARTIAL JOINT PENETRATION
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PLMB	PLUMBING
PNT	POINT
PREFAB	PREFABRICATED
PROJ	PROJECTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PT	POST TENSIONED
PT	PRESSURE TREATED LUMBER
PUR	PURLIN
PVC	POLYVINYL CHLORIDE

Q

QTY	QUANTITY

R

R	RADIUS
RC	REINFORCED CONCRETE
RD	ROOF DRAIN
REF	REFERENCE
REINF	REINFORCING (REINFORCEMENT)
REQD	REQUIRED
REV	REVISION
RF	ROOF
RFI	REQUEST FOR INFORMATION
RM	ROOM
RO	ROUGH OPENING

S

SBC	SOIL BEARING CAPACITY
SC	SLIP CRITICAL (BOLTS)
SCHED	SCHEDULE
SDI	STEEL DECK INSTITUTE
SECT	SECTION
SEOR	STRUCTURAL ENGINEER OF RECORD
SF	SQUARE FEET
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SJI	STEEL JOIST INSTITUTE
SL	SNOW LOAD
SLBB	SHORT LEGS BACK TO BACK
SOG	SLAB ON GRADE
SPA	SPACE (S) / SPACING
SPECS	SPECIFICATIONS
SPF	SPRUCE PINE FIR
SQ	SQUARE
SQ FT	SQUARE FEET
SQ IN	SQUARE INCH
SS	STAINLESS STEEL
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STFR	STOREFRONT
STR	STRUCTURAL
SUP	SUPPORT
SY	SQUARE YARD
SYM	SYMMETRICAL
SYP	SOUTHERN YELLOW PINE

T

T	THICKNESS
T&B	TOP AND BOTTOM
T/	TOP OF
T/BM	TOP OF BEAM
TD	TRENCH DRAIN
T/SLAB	TOP OF SLAB
T/STL	TOP OF STEEL
THRU	THROUGH
TJ	TIE JOIST
TYP	TYPICAL

U

UNO	UNLESS NOTED OTHERWISE

V

VEF	VERTICAL EACH FACE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VOL	VOLUME

W

W	WIDE FLANGE
W/	WITH
W/O	WITH OUT
WD	WOOD
WL	WIND LOAD
WP	WORK POINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

X

X-BRACE	CROSS BRACING

Y

YD	YARD

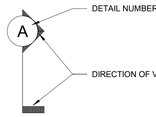
SEE STRUCTURAL SYMBOLS, LEGENDS, AND SCHEDULES FOR ADDITIONAL ABBREVIATIONS. ALL ABBREBREVIATIONS, SYMBOLS, AND LEGENDS SHOWN ARE NOT NECESSARILY USED.

MATERIAL INDICATIONS

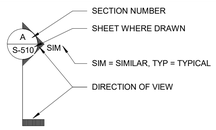
- EXISTING
- EARTH
- AGGREGATE BASE COURSE
- CONCRETE
- CONCRETE MASONRY UNIT
- CONCRETE MASONRY UNIT GROUTED SOLID
- VENEER
- PRECAST CONCRETE
- WOOD FRAMING

GENERAL REFERENCE SYMBOLS

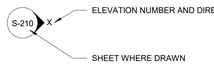
DETAIL VIEW



SECTION



FRAMING ELEVATION



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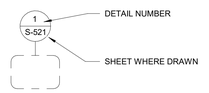
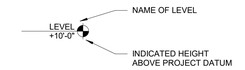
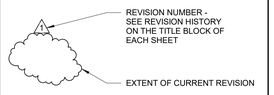


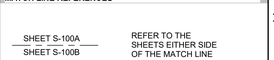
LEVEL LINE



REVISION NUMBER AND EXTENT

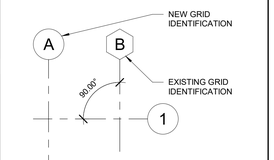


MATCH LINE REFERENCES

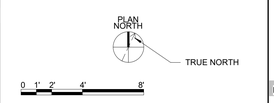


DRAWING TITLE SYMBOLS

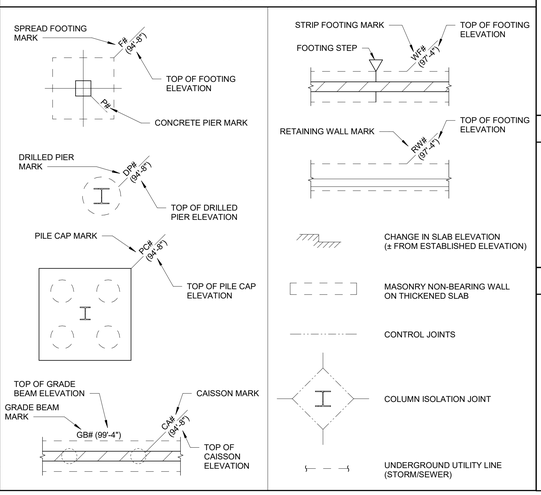
LAYOUT GRID LINES



NORTH ARROW

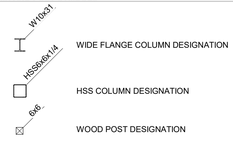


STRUCTURAL FOUNDATION PLAN SYMBOLS

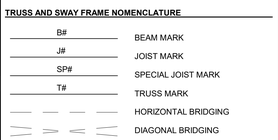


STRUCTURAL FRAMING PLAN SYMBOLS

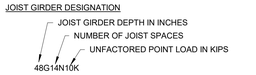
COLUMN AND POST SYMBOLS



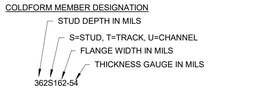
TRUSS AND SWAY FRAME NOMENCLATURE



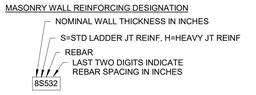
JOIST GIRDER DESIGNATION



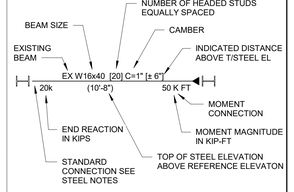
COLDFORM MEMBER DESIGNATION

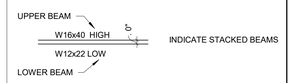


MASONRY WALL REINFORCING DESIGNATION

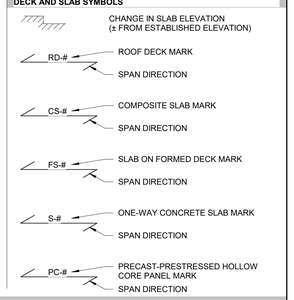


BEAM NOMENCLATURE

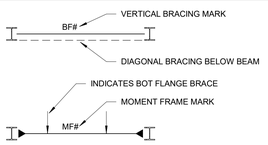


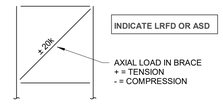


DECK AND SLAB SYMBOLS

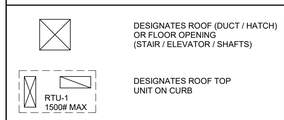


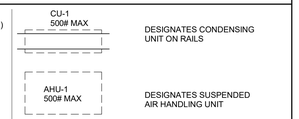
LATERAL FORCE RESISTING ELEMENT DESIGNATIONS



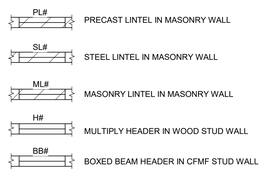


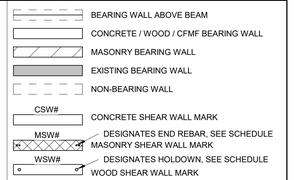
STRUCTURAL ROOF FRAMING PLAN SYMBOLS





STRUCTURAL WALL PLAN SYMBOLS





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TAG	ISSUED	DATE
1	FOR BIDDING	08/08/22
2	FOR RE-BIDDING	10/24/22
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	KC
CHECKED BY	JL
CLIENT PROJ NO	
OSBORN PROJ NO	J20220270.000

ABBREVIATIONS & SYMBOLS

DRAWING NO.

S-000

BUILDING DESIGN CRITERIA

GOVERNING CODE: 2015 MICHIGAN BUILDING CODE IN CONJUNCTION WITH ASCE 7-10

RISK CATEGORY: III

ROOF LIVE LOAD 20 PSF

SNOW LOAD:

GROUND SNOW LOAD, Pg:	20	PSF
FLAT ROOF SNOW LOAD, Pf:	20	PSF
SNOW EXPOSURE FACTOR, Ce:	1.0	
SNOW IMPORTANCE FACTOR:	1.0	
THERMAL FACTOR, Ct:	1.0	
SNOW DRIFT:	PER ASCE-7	

WIND LOAD:

ULTIMATE DESIGN WIND SPEED (Vult):	115	MPH
NOMINAL DESIGN WIND SPEED (Vasd):	90	MPH
WIND EXPOSURE:	C	
INTERNAL PRESSURE COEFFICIENT:	±0.18	

SEISMIC LOAD:

SEISMIC IMPORTANCE FACTOR	1.0
SITE SPECTRAL RESPONSE ACCELERATION (Ss):	0.096
SITE SPECTRAL RESPONSE ACCELERATION (S1):	0.047
SEISMIC SITE CLASS:	D (ASSUMED)
DESIGN SPECTRAL RESPONSE ACCELERATION (Sds):	0.077
DESIGN SPECTRAL RESPONSE ACCELERATION (Sd1):	0.053
SEISMIC DESIGN CATEGORY:	B

STRUCTURAL MODIFICATION DO NOT ALTER THE EXISTING LATERAL SYSTEMS AND ANY NEW LATERAL LOADS DO NOT EXCEED CODE ALLOWABLE 10% INCREASE

GENERAL CONDITIONS:

1. SEE SPECIFICATIONS FOR QUALITY OF CONSTRUCTION REQUIRED, QUALITY OF WORK, MANUFACTURING AND INDUSTRY STANDARDS, PHYSICAL PROPERTIES OF MATERIALS, CONFORMANCE TO CODES AND REGULATIONS GUARANTEE AND WARRANTY REQUIREMENTS.
2. SEE ARCHITECTURAL, HVAC, PLUMBING, ELEVATOR, FIRE PROTECTION & ELECTRICAL DRAWINGS FOR OTHER PERTINENT INFORMATION RELATED TO STRUCTURAL WORK AND COORDINATE AS REQUIRED. CONTRACTOR SHALL COORDINATE STRUCTURAL DRAWINGS WITH ALL OTHER DRAWINGS WITHIN THE CONTRACT DOCUMENTS.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS RELATED TO EXISTING CONSTRUCTION, EXISTING SERVICES, AND THE SITE BEFORE BEGINNING WORK.
4. CONSTRUCTION LOADS SHALL NOT EXCEED DESIGN LIVE LOADS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DESIGN REQUIRED TO SUPPORT CONSTRUCTION EQUIPMENT USED IN CONSTRUCTING THIS PROJECT. ALL EQUIPMENT SUPPORT DESIGN SHALL BE PERFORMED BY AN ENGINEER LICENSED IN THE STATE OF THE PROJECT. SHORING AND RESHORING IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE FOLLOWING ITEMS THAT WILL NOT BE REVIEWED BY THE OWNER, ARCHITECT OR ENGINEER:
   A. DEVIATIONS FROM CONTRACT DOCUMENTS.
   B. DIMENSIONS, ELEVATIONS AND CONDITIONS TO BE CONFIRMED AND CORRELATED AT THE SITE.
   C. FABRICATION PROCESS INFORMATION.
   D. MEANS, METHODS, TECHNIQUES, PROCEDURES OF CONSTRUCTION AND CONSTRUCTION SAFETY.
   E. COORDINATION OF THE WORK OF ALL TRADES.
7. THE EXISTING CONDITIONS INDICATED ON THE DRAWINGS ARE BASED ON EXISTING DRAWINGS BY ALDEN B DOW ASSOC. INC., HYDE & BOBBIO, AND ROBT J DAVIS, DATED FEBRUARY 19, 1965. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS AND DIMENSIONS. CONTRACTOR IS TO REPORT ANY DISCREPANCIES TO THE A/E PRIOR TO PROCEEDING.
8. THE INFORMATION SHOWN ON THE ARCHITECTURAL AND STRUCTURAL CONSTRUCTION DOCUMENTS IS BASED ON ASSUMPTIONS OF THE EXISTING BUILDING CONSTRUCTION. ORIGINAL CONSTRUCTION DOCUMENTS WERE NOT AVAILABLE FOR THE PREPARATION OF THESE DOCUMENTS. THE CONTRACTOR IS TO NOTIFY THE A/E IF CONDITIONS DIFFERING FROM THOSE STATED ARE UNCOVERED IN THE DEMOLITION PROCESS.
9. ANY CHANGES TO THE STRUCTURAL SYSTEMS SHALL BE REDESIGNED BY A PROFESSIONAL ENGINEER AT NO COST TO THE OWNER OR THE A/E AND SUBMITTED TO THE A/E FOR REVIEW. SUBMITTAL SHALL BE ACKNOWLEDGED IN WRITING BEFORE BEGINNING CONSTRUCTION. IF CHANGES ARE MADE WITHOUT WRITTEN APPROVAL SUCH CHANGES SHALL BE THE LEGAL AND FINANCIAL RESPONSIBILITY OF THE PARTY MAKING THE CHANGE TO REPLACE OR REPAIR THE CONDITION AS DIRECTED BY THE A/E.
10. CONTRACTOR IS RESPONSIBLE TO UNCOVER AND VISUALLY FIELD VERIFY THE EXISTING CONSTRUCTION PRIOR TO THE START OF ANY WORK AFFECTING THE EXISTING STRUCTURE. CONTRACTOR IS TO REPORT ANY CHANGES OR DISCREPANCIES FROM THOSE SHOWN TO THE A/E.

DEMOLITION:

1. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE DEMOLITION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING DEMOLITION AND FUTURE ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF ANY OR ALL TEMPORARY BRACING, GUYS OR TIE-DOWNS WHICH MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.
2. THE CONTRACTOR SHALL SUPPORT, BRACE AND SECURE EXISTING STRUCTURE AS REQUIRED. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF THE EXISTING BUILDING DURING DEMOLITION AND CONSTRUCTION. FIELD VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS WHICH AFFECT THE DEMOLITION AND NEW CONSTRUCTION.
3. THE EXTENT OF THE WORK SHOWN SHALL INCLUDE REMOVAL AND DISPOSAL, OFF SITE, OF THE ELEMENTS INDICATED WITHIN THESE DEMOLITION DRAWINGS UNO
4. THE EXISTING STRUCTURE SHALL BE DISASSEMBLED IN A MANNER WHICH DOES NOT DAMAGE OR DEFORM ANY EXISTING STRUCTURE TO REMAIN. EXISTING SLABS SHALL BE SAWCUT IN A MANNER WHICH DOES NOT CAUSE THE SLAB SUPPORTING MEMBER TO BE CUT OR DAMAGED.
5. CONFORM TO ALL APPLICABLE CODES FOR DEMOLITION OF STRUCTURES, SAFETY OF EXISTING AND ADJACENT STRUCTURES, DUST CONTROL, AND DISPOSAL.
6. USE OF EXPLOSIVES SHALL NOT BE PERMITTED.
7. EXISTING SLABS SHALL BE CORE DRILLED AT RE-ENTRANT CORNERS OF NEW FLOOR OPENINGS TO PREVENT OVER CUTTING.
8. THE DEMOLISHED STRUCTURE SHALL BE REDUCED TO A WEIGHT AND TRANSPORTED ACROSS THE EXISTING STRUCTURE IN A MANNER WHICH DOES NOT OVERSTRESS THE EXISTING BUILDING STRUCTURE.
9. FRAMING SHALL BE REMOVED ONLY AFTER THE LOAD SUPPORTED BY THAT FRAMING IS REMOVED. THE FRAMING REMOVAL PROCESS SHALL NOT DEFORM OR INDUCE STRESS TO EXISTING FRAMING TO REMAIN.

STRUCTURAL STEEL:

1. DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE LATEST AISC AND OTHER RELATED CODES, STANDARDS AND SPECIFICATIONS LISTED IN THE PROJECT SPECIFICATIONS, EXCEPT AS MODIFIED THEREIN OR ON THE DRAWINGS.
2. THE CONTRACTOR IS RESPONSIBLE FOR ALL MISCELLANEOUS/ORNAMENTAL STEEL NOT SHOWN ON THE STRUCTURAL DRAWINGS.
3. STRUCTURAL STEEL:
   A. ASTM A992 Fy = 50 KSI FOR ROLLED STEEL WIDE FLANGE SHAPES
   B. ASTM A36 Fy = 36 KSI FOR CHANNELS, ANGLES, PLATES, BARS, RODS, UNO
   C. ASTM A53 TYPE E OR S, GRADE B FOR STEEL PIPE Fy = 35 KSI
   D. ASTM A500 GRADE C FOR HSS TUBING Fy = 50 KSI FOR RECTANGULAR AND Fy = 46 KSI FOR ROUND
4. HIGH STRENGTH BOLTS: ASTM A325 OR A490, 3/4" DIAMETER MINIMUM UNO
5. WORK STRUCTURAL DRAWINGS WITH ARCHITECTURAL, HVAC, PLUMBING, FIRE PROTECTION & ELECTRICAL DRAWINGS FOR CLEARANCES, ATTACHMENTS, ETC.
6. ALL FABRICATION AND ERECTION WORK SHALL BE PERFORMED BY AISC CERTIFIED FABRICATORS AND ERECTORS.
7. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1 AND SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STANDARDS. PROVIDE MINIMUM 1/4" FILLET WELD, UNO.
8. CONTRACTOR SHALL ASSUME THAT ANY MODIFICATIONS TO EXISTING STEEL FRAMING SHALL REQUIRE AN ABATEMENT OF EXISTING LEAD PAINT IN CONFORMANCE WITH LOCAL CODES.
9. PROVIDE ANGLE WALL ANCHORS, PER PART 4, AISC MANUAL OF STEEL CONSTRUCTION, FOR BEAMS BEARING ON MASONRY WALLS. ANGLE ANCHORS SHALL BE WELDED TO BEAMS.

STRUCTURAL STEEL (CON'T):

10. CONNECTIONS: WELD OR BOLT CONNECTIONS, AS INDICATED:
    A. CONNECTIONS NOT DETAILED ON THE DRAWINGS SHALL CONFORM TO THE REQUIREMENTS OF THE CITED AISC SPECIFICATION.
    B. WHERE THE REACTION VALUES OF BEAMS ARE NOT SHOWN ON THE DRAWINGS, EACH END CONNECTION SHALL BE DESIGNED TO SUPPORT 55% OF THE TOTAL UNIFORM LOAD CAPACITY DERIVED FROM THE ASD VALUE OF THE TABLES AND FORMULA OF THE MAXIMUM TOTAL UNIFORM LOAD IN PART 3, FOURTEENTH EDITION, OF THE AISC MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN MEMBER SIZE, SPAN, AND YIELD STRENGTH. COMPOSITE BEAM CONNECTIONS MUST DEVELOP 75% OF THE TOTAL BEAM ALLOWABLE UNIFORM LOAD CAPACITY, AS GIVEN IN THE AISC TABLES BASED ON SIZE, SPAN, & YIELD STRENGTH.
    C. THE MINIMUM LENGTH OF CONNECTION ANGLES SHALL BE EQUAL TO ONE HALF THE DEPTH OF THE MEMBER TO BE SUPPORTED.
    D. ONE SIDED CONNECTIONS WILL NOT BE PERMITTED UNLESS SPECIFICALLY DETAILED ON THE DRAWINGS OR SEALED DESIGN CALCULATIONS ARE SUBMITTED WITH THE SHOP DRAWINGS.
    E. THE MINIMUM NUMBER OF BOLTS IN BOLTED CONNECTIONS SHALL BE TWO (2) BOLTS.
    F. MINIMUM 1/4" FILLET WELD SHALL APPLY UNLESS NOTED OTHERWISE.
    G. MINIMUM SIZE OF CLIP ANGLE SHALL BE L3x3x5/16" UNLESS NOTED OTHERWISE.
11. TRUSS AND BRACING MEMBER CONNECTIONS SHALL BE DESIGNED FOR THE FORCES INDICATED ON THE DRAWINGS.
12. TYPICAL CONNECTION DETAILS INDICATED ON THE STRUCTURAL DESIGN DRAWINGS SHALL DICTATE THE FORM AND GEOMETRY OF THE CONNECTIONS. THE FABRICATOR SHALL DETERMINE OR VERIFY TYPE, SIZE AND NUMBER OF BOLTS, PLATE THICKNESS AND SIZES, WELD SIZES AND LENGTHS, AND ALL REQUIRED INFORMATION NOT SPECIFIED ON THE TYPICAL CONNECTION DETAILS.
13. THE DESIGN OF ALL STEEL CONNECTIONS (EXCEPT PREDESIGNED CONNECTIONS THAT HAVE BEEN ENGINEERED ON THESE DRAWINGS) SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THE PROJECT, EMPLOYED BY THE FABRICATOR. THE FABRICATOR'S REGISTERED PROFESSIONAL ENGINEER SHALL SUBMIT COMPLETE DESIGN CALCULATIONS FOR EACH CONNECTION. SUCH CALCULATIONS SHALL SHOW DETAILS OF THE ASSEMBLED JOINT WITH ALL BOLTS AND WELDS REQUIRED.
14. ALL DESIGN CALCULATIONS SHALL BE SEALED BY THE FABRICATOR'S PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF [OHIO]. SHOP DRAWINGS SUBMITTED WITHOUT COMPLETE DESIGN CALCULATIONS WILL NOT BE REVIEWED.
15. WELDING ELECTRODES SHALL BE E 70XX OR BETTER. FOR WELDING SYMBOLS WITH NO LENGTH DIMENSION GIVEN, THE WELDING SHALL BE CONTINUOUS BETWEEN ABRUPT CHANGES IN DIRECTION.
16. UTILIZE SLIP CRITICAL BOLTS AT ALL MOMENT CONNECTIONS, HANGING CONNECTIONS, BRACING CONNECTIONS, AND COLUMN SPLICES.
17. ALL STRUCTURAL STEEL MEMBERS EXPOSED TO THE EXTERIOR SHALL BE GALVANIZED UNLESS NOTED OTHERWISE. THIS INCLUDES BUT IS NOT LIMITED TO MASONRY LINTELS AND SHELF ANGLES, INCLUDING BEARING PLATES AND ANCHOR BOLTS, AND ANY OTHER ITEM LISTED ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS.
18. THE FRAMING SHALL BE ERECTED TRUE AND PLUMB. TEMPORARY BRACING SHALL BE PROVIDED AND SHALL REMAIN IN PLACE UNTIL THE LATERAL BRACING SYSTEM IS IN PLACE AND CONNECTIONS OF ALL MEMBERS ARE FINAL AND ALL DECK IS COMPLETELY ERECTED, WELDED AND SCREWED IN PLACE.
19. NON-METALLIC, NON-SHRINK, NON-STAINING GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES SHALL CONSIST OF A PREMIXED PRODUCT COMPLYING WITH ALL REQUIREMENTS OF CRD-C621, ASTM C827, AND C109.
20. STUD TYPE EXPANSION ANCHORS SHALL BE CARBON STEEL (UNLESS NOTED OTHERWISE ON DRAWINGS) CONFORMING TO THE REQUIREMENTS OF THE MANUFACTURER'S RECOMMENDATIONS. SEE DRAWINGS FOR LOCATIONS AND TYPE.
21. ALL STRUCTURAL STEEL MEMBERS (BEAMS AND COLUMNS) ADJACENT TO OR BUILT INTO MASONRY CONSTRUCTION SHALL BE PROVIDED WITH 12 GAUGE GALVANIZED WELD-ON CHANNEL SLOTS AND 3/16" x 1 1/4" HOOKED GALVANIZED ANCHORS, SPACED 16" ON CENTER VERTICALLY AND 24" ON CENTER HORIZONTALLY, MAXIMUM.
22. ALL DISSIMILAR METALS TO BE SEPARATED BY ELECTROLYTIC SEPARATORS.
23. DO NOT PAINT:
    A. SURFACES OF CONNECTIONS INDICATED AS SLIP CRITICAL.
    B. SURFACES OF CONNECTIONS TO BE FIELD WELDED.
    C. SURFACES TO RECEIVE HEADED SHEAR CONNECTIONS.
    D. MEMBERS TO BE EMBEDDED IN CONCRETE OR MASONRY.
    E. SURFACES TO RECEIVE SPRAYED ON INSULATION,
    F. MEMBERS TO BE GALVANIZED.

STEEL DECK:

1. DETAIL, FABRICATE AND ERECT STEEL DECK IN ACCORDANCE WITH THE LATEST STEEL DECK INSTITUTE SPECIFICATIONS, AWS AND CONTRACT DOCUMENTS. DECK SHALL CONFORM TO "BASIC DESIGN SPECIFICATIONS" AS ADOPTED BY THE STEEL DECK INSTITUTE.
2. ROOF DECK PROFILE SHALL CONFORM TO FACTORY MUTUAL REQUIREMENTS.
3. ROOF DECK SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM A611 GRADE C, D OR E, GR 33 OR HIGHER.
4. COMPOSITE FLOOR DECK SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM A653-94, GR 33 OR HIGHER.
5. COMPOSITE FLOOR DECK SHALL GALVANIZED & CONFORM TO ASTM A924-94, CLASS G-90.
6. ROOF DECK SHALL BE [GALVANIZED AND SHOP PRIMED][GALVANIZED] [PRIMED].
7. ROOF DECK SHALL BE CONNECTED TO SUPPORTING STRUCTURAL STEEL MEMBERS WITH A [36/4] PATTERN WITH [HILTI X-HSN24 POWDER ACTUATED FASTENERS] WITH THE FIRST AND LAST RIBS OF EACH SHEET ATTACHED TO THE SUPPORTS. SIDELAPS SHALL BE SCREWED WITH (3) #10 SELF TAPPING SCREWS.
8. DECK SHALL INCLUDE ANY MISCELLANEOUS CLOSURE PIECES, POUR STOPS, DRAIN SUMP PANS, REINFORCING AROUND OPENINGS, ETC., REQUIRED TO MAKE A COMPLETE JOB. MISCELLANEOUS ITEMS SHALL BE GALVANIZED G90.
9. NO LOADS SHALL BE HUNG FROM THE ROOF DECK.
10. ALL DECK LIGHTER THAN 22 GA SHALL USE WELDING WASHERS FOR CONNECTION OF DECK TO STEEL SUPPORT.
11. PLACE DECK UNITS ON SUPPORTING STEEL FRAMEWORK IN LENGTHS TO SPAN 4 OR MORE SUPPORTS (3 SPANS). LAP ENDS OF DECK NOT LESS THAN 2". SIDE LAP INTERLOCKS SHALL NOT BE STRETCHED OR CONTRACTED. DECK SHALL BEAR A MINIMUM OF 3" ON SUPPORTS.
12. MAXIMUM SIZE OF OPENINGS IN DECK WITHOUT STRUCTURAL FRAMING SUPPORT SHALL NOT EXCEED 10". OPENINGS GREATER THAN 10" MUST HAVE STRUCTURAL SUPPORT ON ALL SIDES OF THE OPENING.
13. FOR SLOPING DECK PROVIDE CONTINUOUS SHIMS, AS REQUIRED TO ACHIEVE FULL DECK BEARING ON SUPPORTING MEMBERS.

DEFERRED STRUCTURAL SUBMITTALS:

1. SOME STRUCTURAL SYSTEMS ARE DEFINED AS VENDOR-DESIGNED COMPONENTS PER THE STRUCTURAL DOCUMENTS. THESE ELEMENTS OF THE DESIGN ARE DEFERRED SUBMITTAL COMPONENTS AND HAVE NOT BEEN PERMITTED UNDER THE BASE BUILDING APPLICATION.
2. DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT, WHO SHALL REVIEW THEM FOR GENERAL CONFORMANCE TO THE DESIGN OF THE BUILDING. THE CONTRACTOR SHALL SUBMIT THESE REVIEWED DEFERRED SUBMITTAL DOCUMENTS TO THE BUILDING OFFICIAL. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL. DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
3. THE FOLLOWING LIST INCLUDES THE ITEMS THAT DEFINED AS DEFERRED STRUCTURAL SUBMITTAL COMPONENTS. REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND CIVIL DRAWINGS FOR ADDITIONAL SUBMITTAL COMPONENTS.
   A. EXTERIOR CLADDING
   B. METAL STAIRS

SPECIAL INSPECTIONS:

1. THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION AND TESTING PER IBC SECTION 1704.
2. THIS WORK SHALL BE PERFORMED BY A SPECIAL INSPECTOR CERTIFIED BY THE GOVERNING MUNICIPALITY WHERE THE PROJECT IS LOCATED TO PERFORM THE TYPES OF INSPECTIONS AND TESTS SPECIFIED.
3. THE FREQUENCY OF INSPECTIONS AND TESTING SHALL BE AS OUTLINED IN THE IBC TABLE ITEMS LISTED BELOW.
   A. DEFICIENCIES SHALL BE REPORTED DAILY TO THE CONTRACTOR.
   B. SUMMARY REPORTS SHALL BE DISTRIBUTED WEEKLY TO THE OWNER, ARCHITECT, CONTRACTOR, BUILDING OFFICIAL AND STRUCTURAL ENGINEER.
4. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR SPECIAL INSPECTION AND TESTING.

STRUCTURAL TESTS AND SPECIAL INSPECTIONS

(PER IBC CHAPTER 17)

CONSTRUCTION MATERIAL	APPLICABLE OBC SECTION /TABLE	ITEMS REQUIRING VERIFICATION AND INSPECTION
STRUCTURAL STEEL	SECTION 1705.2.1	PER ASCI 360 - CHAPTER N

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MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

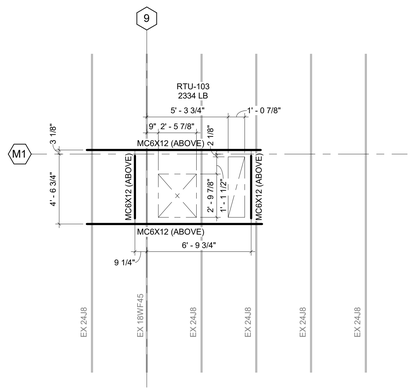
TAG	ISSUED	DATE
1	FOR BIDDING	08/08/22
2	FOR RE-BIDDING	10/24/22
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	KC
CHECKED BY	JL
CLIENT PROJ NO	
OSBORN PROJ NO	J20220270.000

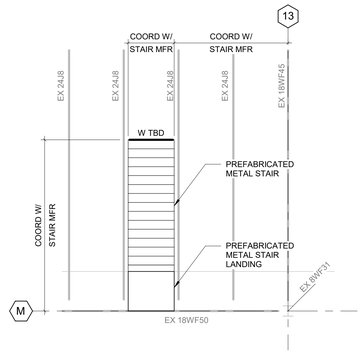
GENERAL NOTES

DRAWING NO.

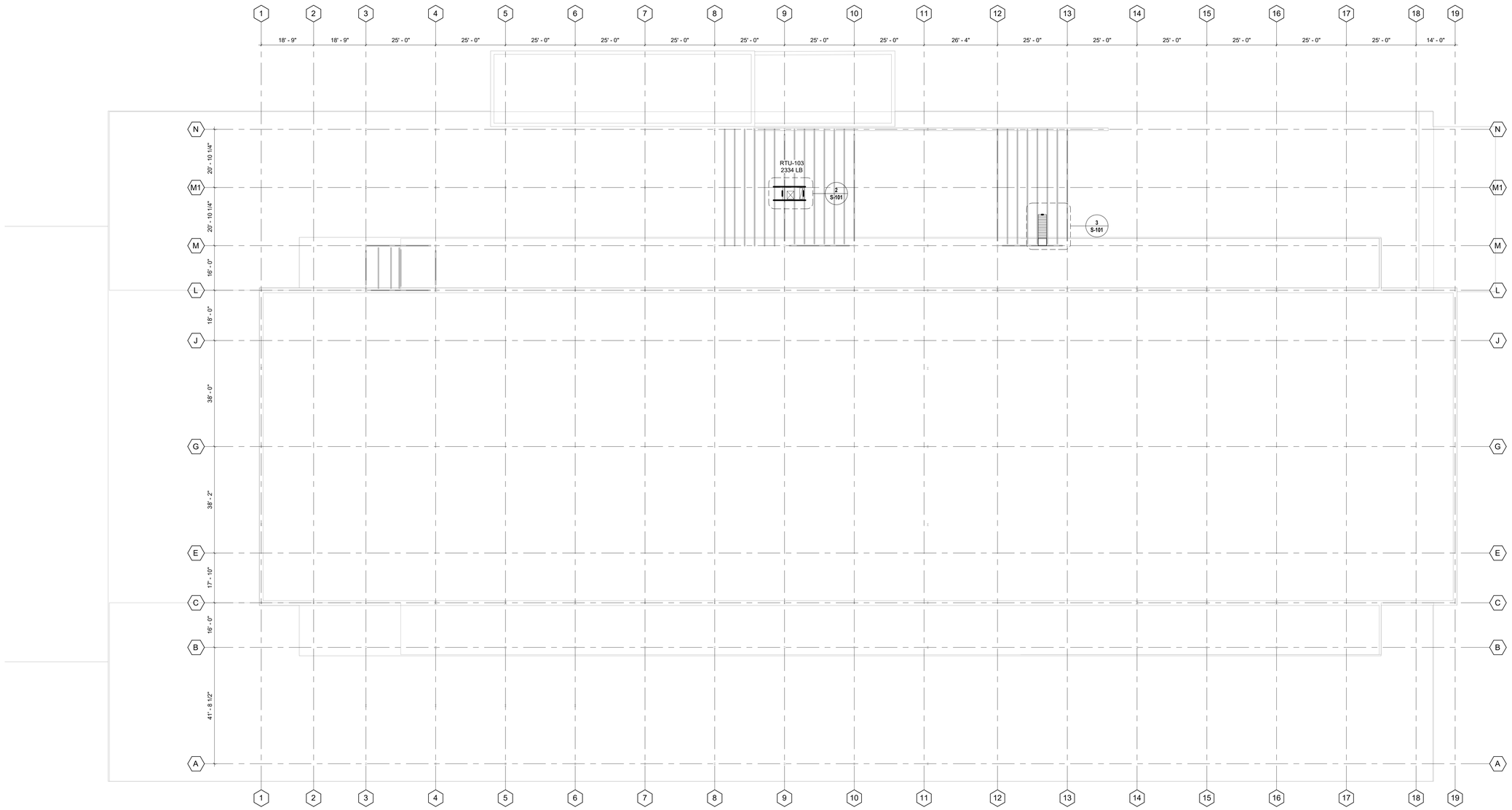
S-001



2 LOW ROOF ENLARGED FRAMING PLAN: RTU-103
SCALE: 1/4" = 1'-0"



3 LOW ROOF ENLARGED FRAMING PLAN: STAIR
SCALE: 1/4" = 1'-0"



1 LOW ROOF OVERALL FRAMING PLAN
SCALE: 1/16" = 1'-0"

ROOF FRAMING NOTES

1. REFERENCE: GENERAL NOTES - S-001
2. VERIFY ALL ELEVATIONS AND DIMENSIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT SUPPLIERS SHOP DRAWINGS PRIOR TO FABRICATION AND INSTALLATION OF STRUCTURAL STEEL
3. TOP OF STEEL ELEVATION = 112' - 9 1/2"
4. ROOF CONSTRUCTION:
   A. 1 1/2"x20GA GALVANIZED WIDE RIB METAL ROOF DECK
5. GENERAL CONTRACTOR SHALL COORDINATE ROOF TOP UNIT DIMENSIONS WITH APPROVED RTU MANUFACTURER DRAWINGS.
6. SUPPORT FRAMING SHOWN IS FOR THE RTU'S SPECIFIED ON MECHANICAL DRAWING. IF A DIFFERENT UNIT IS TO BE USED, CONTACT STRUCTURAL ENGINEER BEFORE PROCEEDING.
7. SET UNIT CURB ON EXISTING ROOF FRAMING MEMBERS OR SUPPORT MEMBERS RUNNING BETWEEN THEM. DO NOT PLACE CURB ON UNSUPPORTED ROOF DECK.
8. FIELD VERIFY ALL DIMENSIONS PRIOR TO FINAL DETAILING AND FABRICATION. IF ANY EXISTING CONDITION IS NOT AS SHOWN, CONTACT A/E BEFORE PROCEEDING WITH WORK.
9. COORDINATE LOCATION, SIZE, AND QUANTITY OF ROOF OPENINGS AND PENETRATIONS (HATCHES, EXHAUST FAN, ETC.) WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.
10. PROVIDE ROOF OPENING FRAMING FOR ALL OPENINGS AND PENETRATIONS THROUGH THE ROOF PER TYPICAL DETAIL.

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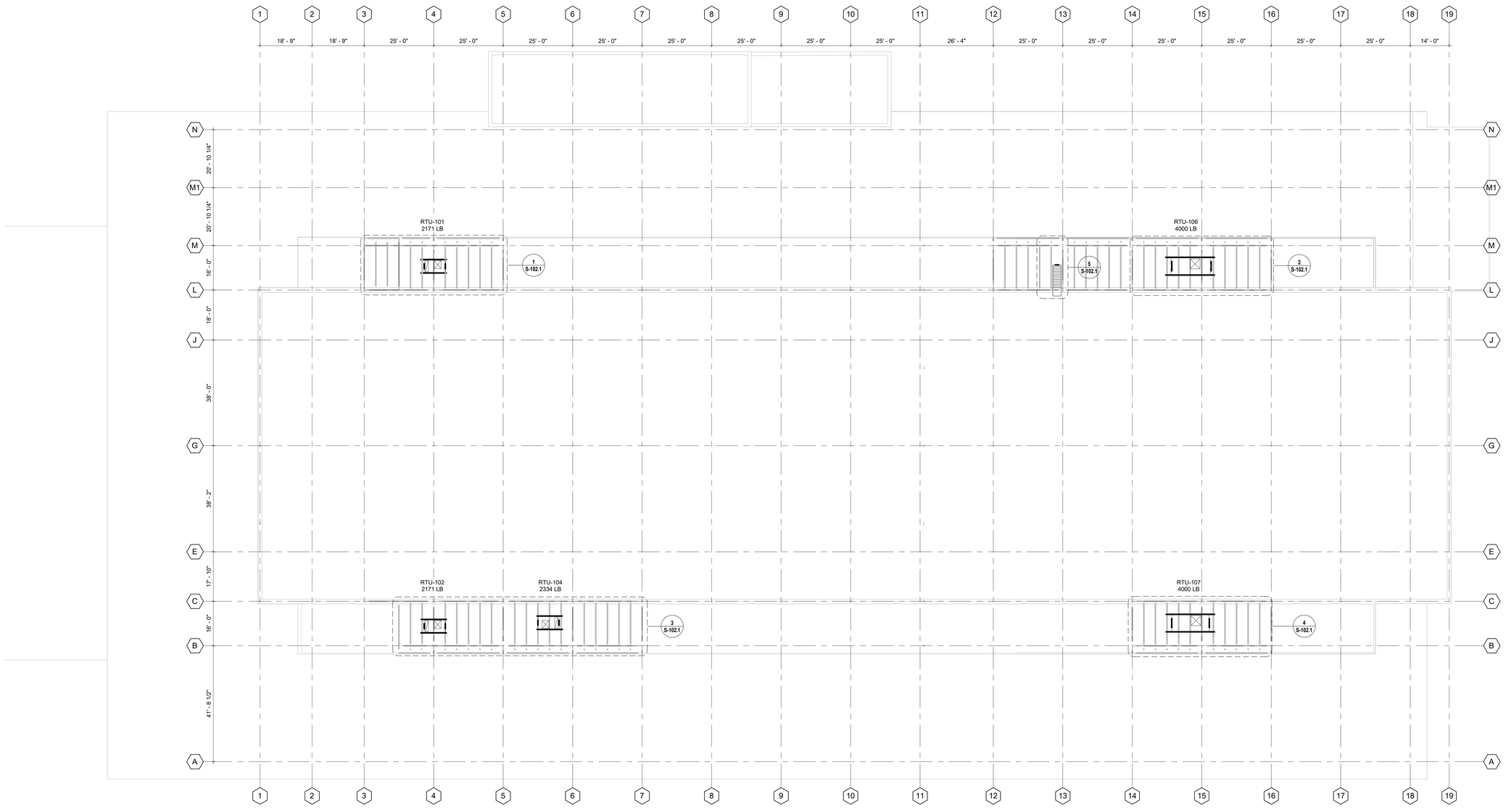
LOW ROOF FRAMING PLANS

DRAWING NO.

S-101

ROOF FRAMING NOTES

1. REFERENCE: GENERAL NOTES - S-001
2. VERIFY ALL ELEVATIONS AND DIMENSIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT SUPPLIERS SHOP DRAWINGS PRIOR TO FABRICATION AND INSTALLATION OF STRUCTURAL STEEL
3. TOP OF STEEL ELEVATION = 124' - 10 1/2"
4. ROOF CONSTRUCTION:
   A. 1 1/2"x20GA GALVANIZED WIDE RIB METAL ROOF DECK
5. GENERAL CONTRACTOR SHALL COORDINATE ROOF TOP UNIT DIMENSIONS WITH APPROVED RTU MANUFACTURER DRAWINGS.
6. SUPPORT FRAMING SHOWN IS FOR THE RTU'S SPECIFIED ON MECHANICAL DRAWING. IF A DIFFERENT UNIT IS TO BE USED, CONTACT STRUCTURAL ENGINEER BEFORE PROCEEDING.
7. SET UNIT CURB ON EXISTING ROOF FRAMING MEMBERS OR SUPPORT MEMBERS RUNNING BETWEEN THEM. DO NOT PLACE CURB ON UNSUPPORTED ROOF DECK.
8. FIELD VERIFY ALL DIMENSIONS PRIOR TO FINAL DETAILING AND FABRICATION. IF ANY EXISTING CONDITION IS NOT AS SHOWN, CONTACT A/E BEFORE PROCEEDING WITH WORK.
9. COORDINATE LOCATION, SIZE, AND QUANTITY OF ROOF OPENINGS AND PENETRATIONS (HATCHES, EXHAUST FAN, ETC.) WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.
10. PROVIDE ROOF OPENING FRAMING FOR ALL OPENINGS AND PENETRATIONS THROUGH THE ROOF PER TYPICAL DETAIL.



1 INTERMEDIATE ROOF T/STL
SCALE: 1/16" = 1'-0"

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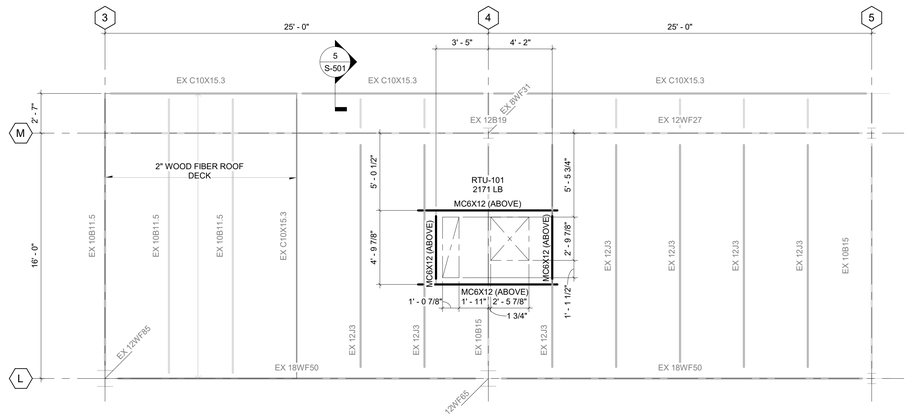
CLIENT PROJ NO	
OSBORN PROJ NO	J20220270.000

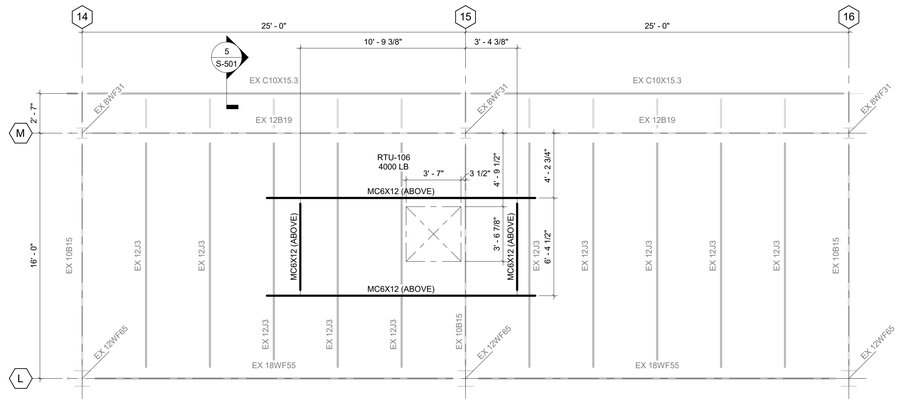
INTERMEDIATE ROOF FRAMING PLAN

DRAWING NO.

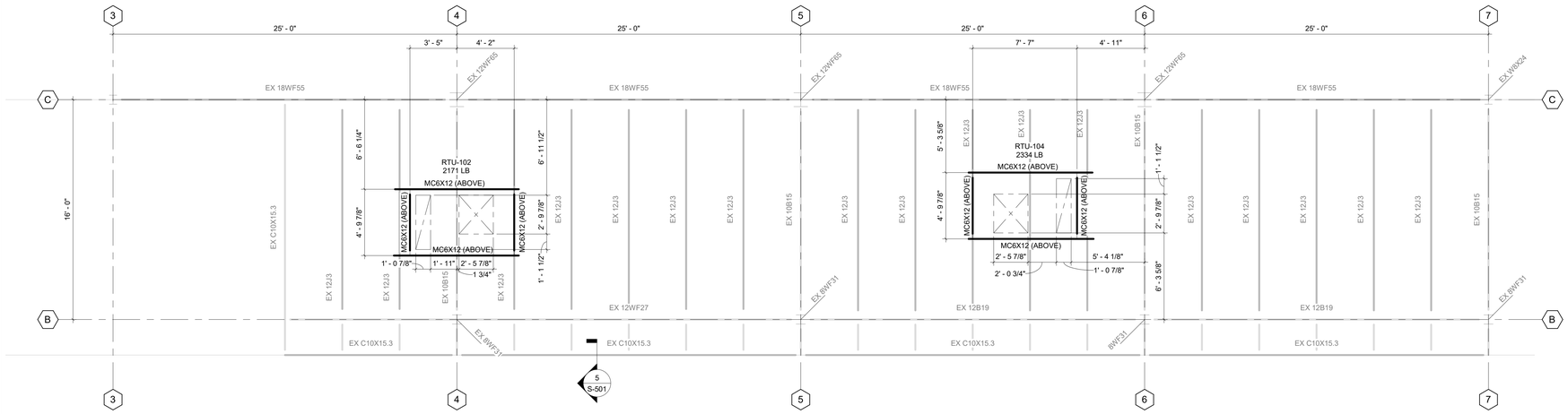
S-102



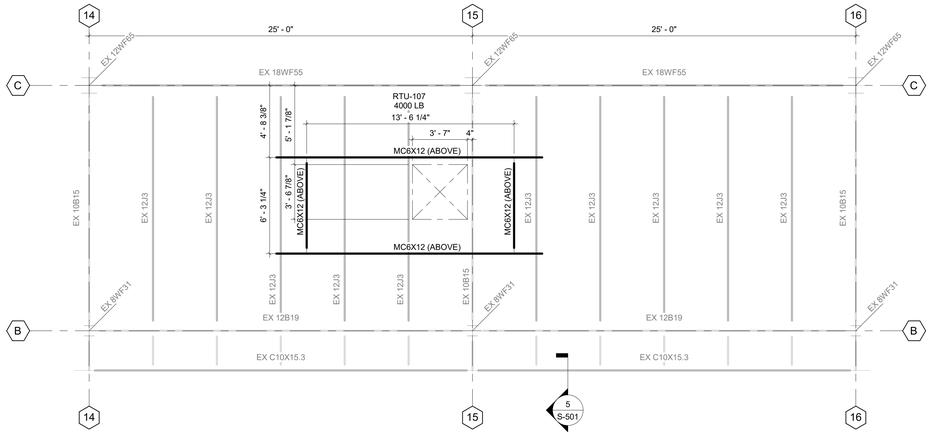
1 INTERMEDIATE ROOF ENLARGED FRAMING PLAN: RTU-101
SCALE: 1/4" = 1'-0"



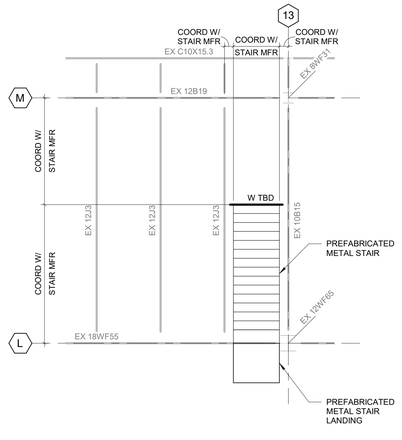
2 INTERMEDIATE ROOF ENLARGED FRAMING PLAN: RTU-106
SCALE: 1/4" = 1'-0"



3 INTERMEDIATE ROOF ENLARGED FRAMING PLAN: RTU-102 & RTU-104
SCALE: 1/4" = 1'-0"



4 INTERMEDIATE ROOF ENLARGED FRAMING PLAN: RTU-107
SCALE: 1/4" = 1'-0"



5 INTERMEDIATE ROOF ENLARGED FRAMING PLAN: STAIR
SCALE: 1/4" = 1'-0"

ROOF FRAMING NOTES

1. REFERENCE: GENERAL NOTES - S-001
2. VERIFY ALL ELEVATIONS AND DIMENSIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT SUPPLIERS SHOP DRAWINGS PRIOR TO FABRICATION AND INSTALLATION OF STRUCTURAL STEEL
3. TOP OF STEEL ELEVATION = 124' - 10 1/2"
4. ROOF CONSTRUCTION:
   A. 1 1/2"x20GA GALVANIZED WIDE RIB METAL ROOF DECK
5. GENERAL CONTRACTOR SHALL COORDINATE ROOF TOP UNIT DIMENSIONS WITH APPROVED RTU MANUFACTURER DRAWINGS.
6. SUPPORT FRAMING SHOWN IS FOR THE RTU'S SPECIFIED ON MECHANICAL DRAWING. IF A DIFFERENT UNIT IS TO BE USED, CONTACT STRUCTURAL ENGINEER BEFORE PROCEEDING.
7. SET UNIT CURB ON EXISTING ROOF FRAMING MEMBERS OR SUPPORT MEMBERS RUNNING BETWEEN THEM. DO NOT PLACE CURB ON UNSUPPORTED ROOF DECK.
8. FIELD VERIFY ALL DIMENSIONS PRIOR TO FINAL DETAILING AND FABRICATION. IF ANY EXISTING CONDITION IS NOT AS SHOWN, CONTACT A/E BEFORE PROCEEDING WITH WORK.
9. COORDINATE LOCATION, SIZE, AND QUANTITY OF ROOF OPENINGS AND PENETRATIONS (HATCHES, EXHAUST FAN, ETC.) WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.
10. PROVIDE ROOF OPENING FRAMING FOR ALL OPENINGS AND PENETRATIONS THROUGH THE ROOF PER TYPICAL DETAIL.

WAYNE STATE

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MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY
DETROIT, MI 48208

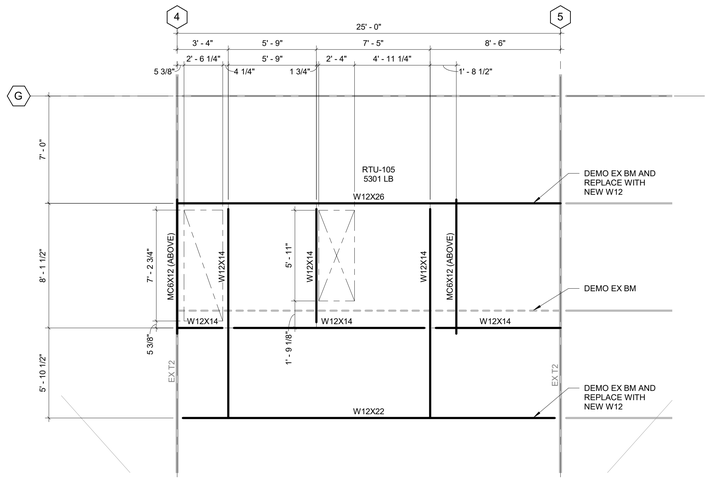
TAG	ISSUED	DATE
1	FOR BIDDING	08/08/22
2	FOR RE-BIDDING	10/24/22
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	KC
CHECKED BY	JL
CLIENT PROJ NO	
OSBORN PROJ NO	J20220270.000

ENLARGED INTERMEDIATE ROOF FRAMING PLANS

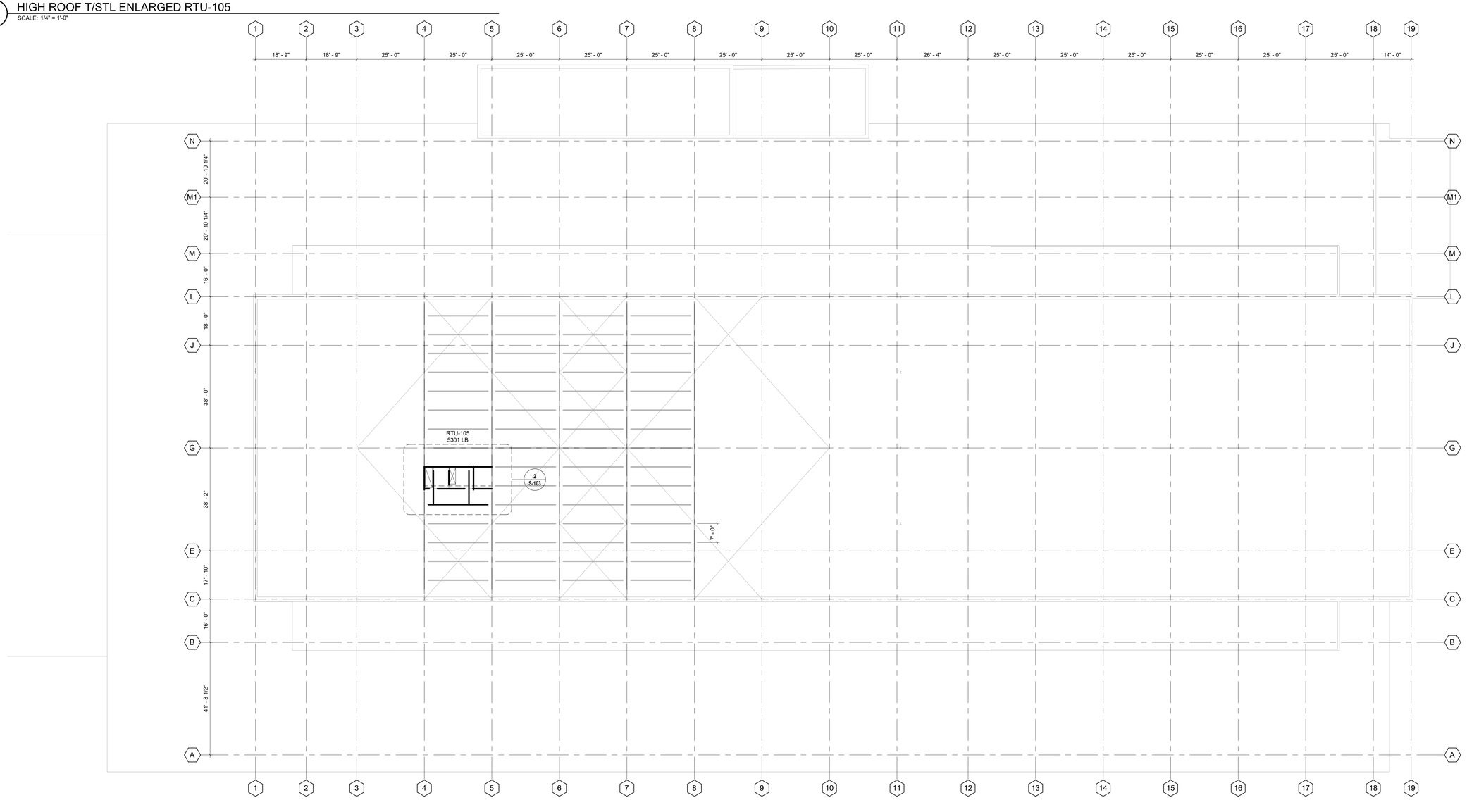
DRAWING NO.

S-102.1



2 HIGH ROOF T/STL ENLARGED RTU-105

SCALE: 1/4" = 1'-0"



1 HIGH ROOF T/STL

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

ROOF FRAMING NOTES

1. REFERENCE: GENERAL NOTES - S-001
2. VERIFY ALL ELEVATIONS AND DIMENSIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT SUPPLIERS SHOP DRAWINGS PRIOR TO FABRICATION AND INSTALLATION OF STRUCTURAL STEEL
3. TOP OF STEEL ELEVATION = 136' - 6"
4. ROOF CONSTRUCTION:
   A. 1 1/2"x20GA GALVANIZED WIDE RIB METAL ROOF DECK
5. GENERAL CONTRACTOR SHALL COORDINATE ROOF TOP UNIT DIMENSIONS WITH APPROVED RTU MANUFACTURER DRAWINGS.
6. SUPPORT FRAMING SHOWN IS FOR THE RTU'S SPECIFIED ON MECHANICAL DRAWING. IF A DIFFERENT UNIT IS TO BE USED, CONTACT STRUCTURAL ENGINEER BEFORE PROCEEDING.
7. SET UNIT CURB ON EXISTING ROOF FRAMING MEMBERS OR SUPPORT MEMBERS RUNNING BETWEEN THEM. DO NOT PLACE CURB ON UNSUPPORTED ROOF DECK.
8. FIELD VERIFY ALL DIMENSIONS PRIOR TO FINAL DETAILING AND FABRICATION. IF ANY EXISTING CONDITION IS NOT AS SHOWN, CONTACT A/E BEFORE PROCEEDING WITH WORK.
9. COORDINATE LOCATION, SIZE, AND QUANTITY OF ROOF OPENINGS AND PENETRATIONS (HATCHES, EXHAUST FAN, ETC.) WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.
10. PROVIDE ROOF OPENING FRAMING FOR ALL OPENINGS AND PENETRATIONS THROUGH THE ROOF PER TYPICAL DETAIL.

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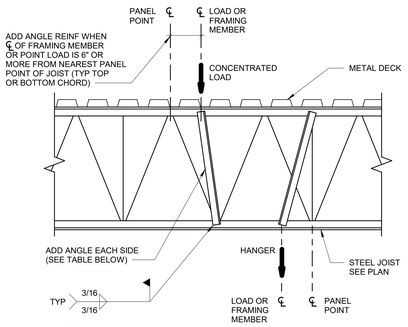
HIGH ROOF FRAMING PLAN

DRAWING NO.

S-103



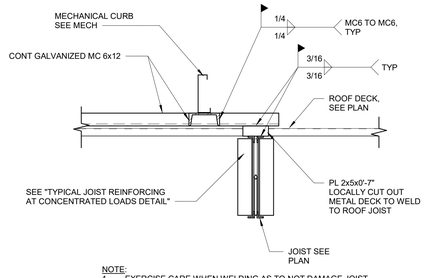
NOTE:
1. EXERCISE CARE WHEN WELDING AS TO NOT DAMAGE JOIST.

MODIFICATION IS TYPICAL FOR ALL JOISTS SUPPORTING LOAD FROM TOP OR BOTTOM CHORD BETWEEN PANEL POINTS VERIFY LOCATION AND NUMBER OF LOADS WITH ARCH, MECH, PLUMB AND ELECT DWGS. ANGLES NOT REQUIRED FOR CONCENTRATED LOADS LESS THEN 100 LBS

JOIST DEPTH	REINFORCING ANGLE SIZE
8" TO 24"	L 1 1/2 x 1 1/2 x 1/4
26" TO 48"	L 2 x 2 x 1/4
52" TO 72"	L 3 x 3 x 1/4

1 TYPICAL JOIST REINFORCING DETAIL AT CONCENTRATED LOADS

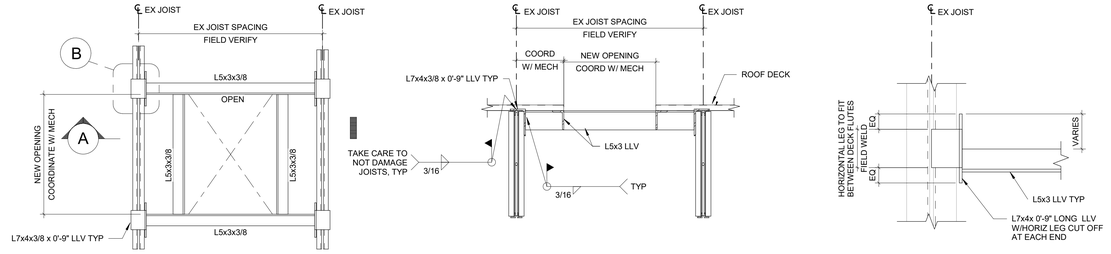
SCALE: 1" = 1'-0"



NOTE:
1. EXERCISE CARE WHEN WELDING AS TO NOT DAMAGE JOIST.

2 TYPICAL ROOFTOP EQUIPMENT SUPPORT DETAIL

SCALE: 1" = 1'-0"



NOTE:
PROVIDE THIS FRAMING FOR OPENINGS GREATER THAN 12"

PLAN

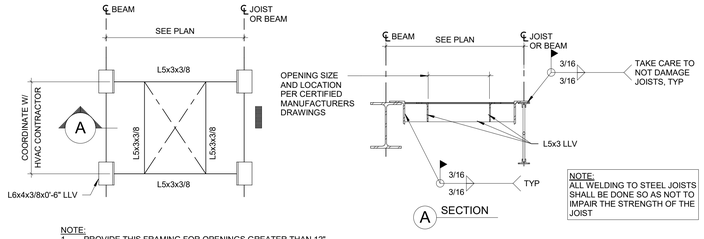
NOTE:
ALL WELDING TO STEEL JOISTS SHALL BE DONE SO AS NOT TO IMPAIR THE STRENGTH OF THE JOIST

A SECTION

B VIEW

3 TYPICAL METAL DECK SUPPORT AT STEEL JOISTS

SCALE: 3/4" = 1'-0"

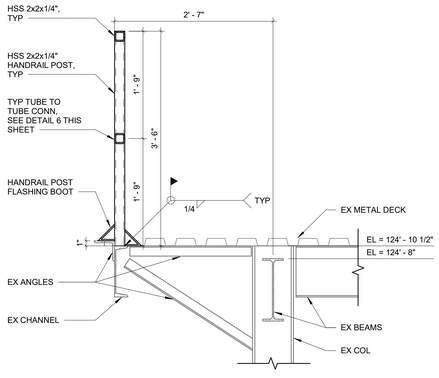


NOTE:
1. PROVIDE THIS FRAMING FOR OPENINGS GREATER THAN 12"

NOTE:
ALL WELDING TO STEEL JOISTS SHALL BE DONE SO AS NOT TO IMPAIR THE STRENGTH OF THE JOIST

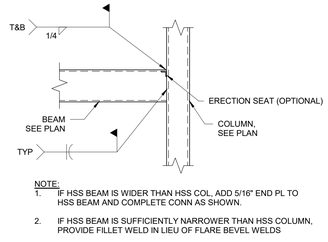
4 TYPICAL METAL DECK SUPPORT AT STEEL BEAMS

SCALE: 3/4" = 1'-0"



5 HANDRAIL POST DETAIL

SCALE: 1" = 1'-0"



NOTE:
1. IF HSS BEAM IS WIDER THAN HSS COL, ADD 5/16" END PL TO HSS BEAM AND COMPLETE CONN AS SHOWN.
2. IF HSS BEAM IS SUFFICIENTLY NARROWER THAN HSS COLUMN, PROVIDE FILLET WELD IN LIEU OF FLARE BEVEL WELDS

6 TYPICAL HSS TO HSS CONNECTION DETAIL

SCALE: 3/4" = 1'-0"

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STRUCTURAL DETAILS

DRAWING NO.

S-501

GENERAL MECHANICAL NOTES:

1. REFRIGERANT LINES SHOWN ARE DIAGRAMMATIC AND FOR SUGGESTED ROUTING ONLY. THE MECHANICAL CONTRACTOR SHALL PROVIDE REFRIGERANT LINE SIZES, FINAL LAYOUT, AND REQUIRED ACCESSORIES (SUCH AS SIGHT GLASS, EXPANSION VALVES, FILTER-DRIER, LIQUID LINE TRAPS, SUCTION ACCUMULATOR, ETC.) IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. FOR NATURAL GAS PIPING, SEE PLUMBING DRAWINGS.
3. FOR EXACT LOCATION OF DIFFUSERS AND GRILLES, SEE ARCHITECTURAL REFLECTED CEILING PLANS.
4. FOR ROOF PENETRATION DETAILS SEE ARCHITECTURAL AND STRUCTURAL DWGS.
5. FLEX DUCTWORK TO DIFFUSERS SHALL MATCH NECK SIZE OF DIFFUSER WHERE INDICATED.
6. 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.
7. INSTALL ALL NEW WORK IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
8. 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.
9. COORDINATE CONSTRUCTION OF ALL HVAC WORK WITH ARCHITECTURAL, STRUCTURAL, PLUMBING, CIVIL, ELECTRICAL, TECHNOLOGY, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
10. ALL HVAC WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO OWNER.
11. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE TO UNDERSIDE OF PIPES AND SUSPENDED EQUIPMENT THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
12. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
13. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.
14. COORDINATE ACCESS PANEL LOCATIONS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE VALVES, FIRE DAMPERS, VAV BOXES, AND OTHER CONCEALED HVAC EQUIPMENT.
15. ALL EQUIPMENT, PIPING, ETC. SHALL BE SUPPORTED AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
16. 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.
17. 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 NOTES ON SHEET SF-001 AND SPECIFICATION SECTION 22 05 29 FOR REQUIRED PRODUCTS AND INSTALLATION OF HANGERS AND SUPPORTS. HVAC EQUIPMENT AND PIPING SHALL NOT BE SUPPORTED FROM METAL DECK.
18. CONTRACTOR TO INFORM THE STRUCTURAL ENGINEER IN WRITING OF ANY SUSPENDED LOAD IN EXCESS OF 400 POUNDS.
19. IF THERE IS ANY DEVIATION BETWEEN THE SPECIFICATIONS AND DRAWINGS THE CONTRACTOR SHALL ADHERE TO THE MORE STRINGENT CONDITION.
20. 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.
21. EXHAUST ONLY ROOMS SUCH AS JANITORS CLOSETS, ELECTRICAL CLOSETS, AND STORAGE ROOMS SHALL HAVE DOOR UNDERCUTS OF 5/8" FOR MAKEUP AIR INDICATED WITH FLOW ARROW ON PLANS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
22. WHERE MULTIPLE MANUFACTURERS ARE NAMED THE DRAWINGS AND SPECIFICATIONS ARE BASED ON THE REQUIREMENTS AND LAYOUTS FOR THE EQUIPMENT OF THE FIRST NAMED MANUFACTURER. ANY CHANGE REQUIRED BY THE USE OF OTHER NAMED MANUFACTURERS SUCH AS REVISIONS TO FOUNDATIONS, BASES, PIPING, CONTROLS, WIRING, OPENINGS, AND APPURTENANCES SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

HVAC DUCTWORK LEGEND

	SUPPLY AIR DUCT
	RETURN OR OUTSIDE AIR DUCT
	EXHAUST AIR DUCT
	4-WAY CEILING DIFFUSER
	DUCT TRANSITION
BD	BALANCING DAMPER
FD	FIRE DAMPER
M	MOTORIZED DAMPER
S	DUCT SENSOR
DP	DIFFERENTIAL PRESSURE SWITCH
S	SMOKE DETECTOR (BY ELECTRICAL)
SP	STATIC PRESSURE SENSOR
SW	MANUAL TIMER ON/OFF SWITCH
CO2	CO2 SENSOR
S	TEMPERATURE SENSOR
T	THERMOSTAT
T1 XXX	ROOM TEMPERATURE SENSOR (ADJUSTABLE) "XXX" = VAV BOX SERVED
T2 XXX	ROOM TEMPERATURE & CO2 SENSOR (ADJ.) "XXX" = VAV BOX SERVED
T3 XXX	ROOM TEMP. & HUMIDITY SENSOR (ADJ.) "XXX" = VAV BOX SERVED
T4 XXX	ROOM TEMP. CO2, & HUMIDITY SENSOR (ADJ.) "XXX" = VAV BOX SERVED
T5 XXX	ROOM NON-ADJUSTABLE TEMPERATURE SENSOR "XXX" = VAV BOX SERVED
	AIRFLOW
	RECTANGULAR DUCT BREAK
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW
	CONNECT TO EXISTING
	LIMIT OF DEMOLITION

* CERTAIN ABBREVIATIONS LISTED ABOVE MAY NOT APPLY TO THIS PROJECT.

HVAC ABBREVIATIONS

AAV	AUTOMATIC AIR VENT	F	FAHRENHEIT	PSI	POUNDS PER SQUARE INCH
AC	ALTERNATING CURRENT	FCU	FAN COIL UNIT	PSIG	POUNDS PER SQUARE INCH GAUGE
ACB	ACTIVE CHILLED BEAM	FD	FIRE DAMPER	PVC	POLYVINYL CHLORIDE
ACC	AIR COOLED CHILLER	FDA	U.S. FOOD AND DRUG ADMINISTRATION	R	RELOCATED
ACD	AUTOMATIC CONTROL DAMPER			RA	RETURN AIR
ACCU	AIR COOLED CONDENSING UNIT	FF	FINISHED FLOOR	REQ'D	REQUIRED
ACU	AIR CONDITIONING UNIT	FG	FINISHED GRADE	RF	RETURN FAN
AD	ACCESS DOOR	FLA	FULL LOAD AMPS	RG	RETURN GRILLE
ADJ	ADJUSTABLE	FLEX	FLEXIBLE	RH	RELATIVE HUMIDITY
AFF	ABOVE FINISHED FLOOR	FPB	FAN POWERED BOX	RHC	REHEAT COIL
AFG	ABOVE FINISHED GRADE	FPM	FEET PER MINUTE	RHG	REFRIGERANT HOT GAS
AHRI	AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE	FT	FLASH TANK	RL	REFRIGERANT LIQUID
		F&T	FLOAT AND THERMOSTATIC	RM	ROOM
AHU	AIR HANDLING UNIT	FTR	FIN TUBE RADIATION	RPM	REVOLUTIONS PER MINUTE
AMCA	AIR MOVEMENT AND CONTROL ASSOCIATION	G	GAS	RR	RETURN REGISTER
		GA	GAUGE	R&R	REMOVE AND RELOCATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	GAL	GALLON	RS	REFRIGERANT SUCTION
		GALV	GALVANIZED	RTD	RESISTANCE TEMPERATURE DETECTOR
AP	ACCESS PANEL	GPH	GALLONS PER HOUR		
APD	AIR PRESSURE DROP	GPM	GALLONS PER MINUTE	RTU	ROOF TOP UNIT
ASJ	ALL SERVICE JACKET	HB	HOSE BIB (CONNECTION)	SA	SUPPLY AIR
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	HX	HEAT EXCHANGER	SD	SMOKE DAMPER
		HP	HORSEPOWER	SEN	SENSIBLE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	HPS	HIGH PRESSURE STEAM	SF	SUPPLY FAN
		HUM	HUMIDIFIER	SFD	COMBINATION SMOKE AND FIRE
BAS	BUILDING AUTOMATION SYSTEM	HVAC	HEATING VENTILATION AND AIR CONDITIONING		
BD	BACK-DRAFT DAMPER			SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
BFF	BELOW FINISHED FLOOR	HWR	HOT WATER RETURN		
BFG	BELOW FINISHED GRADE	HWS	HOT WATER SUPPLY		
BHP	BRAKE HORSE POWER	HZ	HERTZ	SP	STATIC PRESSURE
BOD	BOTTOM OF DUCT	IAQ	INDOOR AIR QUALITY	SR	SUPPLY REGISTER
BTU	BRITISH THERMAL UNIT	ID	INSIDE DIAMETER	SAR	SUPPLY AIR REGISTER
BTUH	BTU PER HOUR	IFB	INTEGRAL FACE AND BYPASS	SQ	SQUARE
C	CELSIUS	IN	INCHES	SQ FT	SQUARE FEET
CD	CEILING DIFFUSER	I/O	INPUT/OUTPUT	STD	STANDARD
CF	CUBIC FEET	KW	KILOWATT	STM	STEAM
CFM	CUBIC FEET PER MINUTE	LAT	LEAVING AIR TEMPERATURE	T	THERMOSTAT
CH	CHILLER (WATER-COOLED)	LBS	POUNDS	TCP/IP	TRANSMISSION CONTROL PROTOCOL/INTERNET PROTOCOL
CHW	CHILLED WATER	LD	LINEAR DIFFUSER		
CHWP	CHILLED WATER PUMP	LPS	LOW PRESSURE STEAM	TD	TRANSFER AIR DUCT
CHWR	CHILLED WATER RETURN	LVR	LOUVER	TEAO	TOTALLY ENCLOSED AIR OVER
CHWS	CHILLED WATER SUPPLY	LWT	LEAVING WATER TEMPERATURE	TEFC	TOTALLY ENCLOSED FAN COOLED
CM	CENTIMETERS	MA	MAKE-UP AIR OR MILLIAMPS	TEMP	TEMPERATURE
CO	CARBON MONOXIDE	MAU	MAKE-UP AIR UNIT	TG	TRANSFER GRILLE
CONN	CONNECTION	MAX	MAXIMUM	TON	12,000 BTU (COOLING CAPACITY)
CT	COOLING TOWER	MBH	1000 BTUH	TYP	TYPICAL
CUH	CABINET UNIT HEATER	MC	MECHANICAL CONTRACTOR	UC	UNDERCUT
CWP	CONDENSER WATER PUMP	MERV	MINIMUM EFFICIENCY REPORTING VALUE	UH	UNIT HEATER
CWR	CONDENSER WATER RETURN			UL	UNDERWRITERS LABRATORIES
CWS	CONDENSER WATER SUPPLY	MIN	MINIMUM	V	VOLTS
D	DRAIN	MM	MILLIMETERS	VA	VOLT AMPS
DB	DRY BULB	MPH	MILES PER HOUR	VAV	VARIABLE AIR VOLUME
DC	DIRECT CURRENT	N	NEW WORK	VFD	VARIABLE FREQUENCY DRIVE
DDC	DIRECT DIGITAL CONTROL	NC	NORMALLY CLOSED	VTR	VENT THRU ROOF
DEG	DEGREE	NEC	NATIONAL ELECTRIC CODE	VVT	VARIABLE VOLUME AND TEMPERATURE
DIA	DIAMETER	NEMA	NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION		
DIM	DIMENSION			WB	WET BULB
DN	DOWN	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	WC	WATER COLUMN
DP	DIFFERENTIAL PRESSURE			WFS	WATER FLOW SWITCH
D&R	DISCONNECT AND REMOVE	NIC	NOT IN CONTRACT	WG	WATER GAUGE
DWG(S)	DRAWING(S)	NO	NORMALLY OPEN	WPD	WATER PRESSURE DROP
DWH	DOMESTIC WATER HEATER	NPS	NOMINAL PIPE SIZE		
E	EXISTING	NPT	NATIONAL PIPE THREAD		
EA	EXHAUST AIR	OA	OUTSIDE AIR		
EAT	ENTERING AIR TEMPERATURE	OD	OUTSIDE DIAMETER		
EC	ELECTRICAL CONTRACTOR	ODP	OPEN DRIP PROOF		
EF	EXHAUST FAN	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION		
EPDM	ETHYLENE PROPYLENE DIENE MONOMER				
		OS&Y	OUTSIDE SCREW AND YOKE		
ER	EXHAUST REGISTER	PCB	PASSIVE CHILLED BEAM		
EG	EXHAUST GRILLE	PCF	POUNDS PER CUBIC FOOT		
ERU	ENERGY RECOVERY UNIT	PD	PRESSURE DROP		
EUH	ELECTRONIC UNIT HEATER	PDF	PORTABLE DOCUMENT FORMAT		
EWT	ENTERING WATER TEMPERATURE	PRV	PRESSURE REDUCING VALVE		
EXH	EXHAUST				

* CERTAIN ABBREVIATIONS LISTED ABOVE MAY NOT APPLY TO THIS PROJECT.

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OSBORN PROJ NO.	J20190854.070

HVAC NOTES & LEGENDS

DRAWING NO.

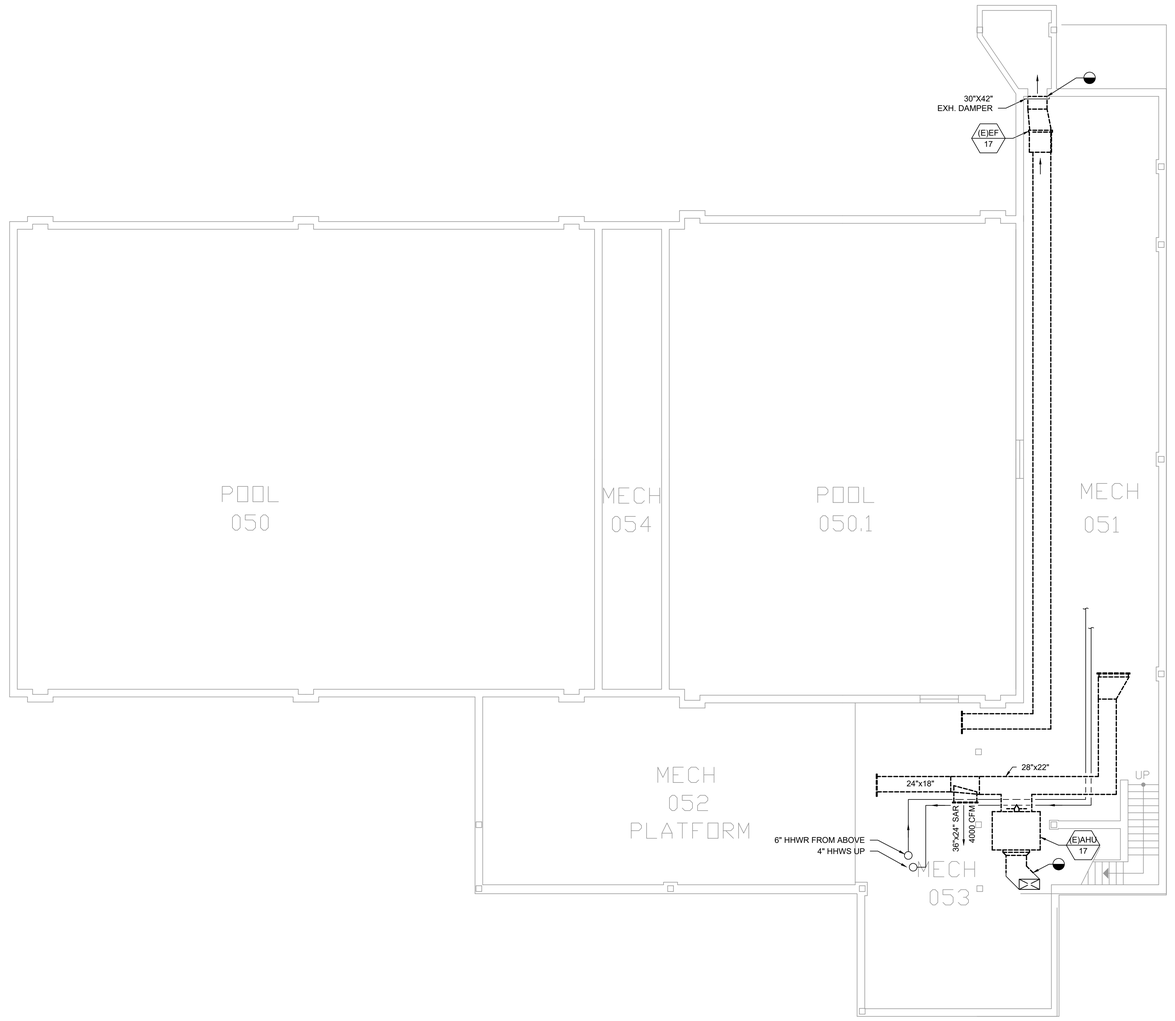
M-001

HVAC DEMO NOTES

1. IN EVERY INSTANCE OF DEMOLITION AND/OR REMODELING, THE CONTRACTOR SHALL FIGURE A COMPLETE JOB AS NONE OTHER SHALL BE ACCEPTED.
2. THE DRAWINGS ARE TO BE USED ONLY AS A GUIDELINE FOR DEMOLITION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO BIDDING TO VERIFY ALL WORK REQUIRED FOR A COMPLETE JOB & INCLUDE THE COST OF SUCH WORK IN HIS BID.
3. THE CONTRACTOR SHALL MAINTAIN EXISTING SERVICES TO & IN THE EXISTING AREA AS REQUIRED.
4. IF NECESSARY, THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES IN THE EXISTING AREAS.
5. ANY MECHANICAL EQUIPMENT & DEVICES SHOWN AS BEING REMOVED SHALL BE REMOVED COMPLETE INCLUDING SUPPORTING STEEL AND TEMPERATURE CONTROLS.
6. ALL WALLS, CEILINGS, FLOORS, ETC., BEING DISTURBED BY THE WORK SHALL BE RETURNED TO FINISHED CONDITIONS TO MATCH EXISTING BY THE CONTRACTOR & HE SHALL DO HIS OWN CUTTING & PATCHING AS NECESSARY UNDER HIS CONTRACT.
7. EXISTING EQUIPMENT AND MATERIALS SHALL BE TURNED OVER TO THE OWNER. IF NOT REQUIRED BY OWNER, THE CONTRACTOR SHALL REMOVE SAID EQUIPMENT AND MATERIALS FROM THE PREMISES DISPOSE OF IN A LEGAL MANNER.
8. REMOVE ALL AIR CEILING DEVICES IN AREA OF WORK UNLESS OTHERWISE NOTED.

SHEET KEYNOTES

1. NONE



PLAN NORTH

1 HVAC BASEMENT DEMO PLAN

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

0' 2' 4' 8' 16'

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BASEMENT FLOOR DEMO PLAN

DRAWING NO.

MD-100

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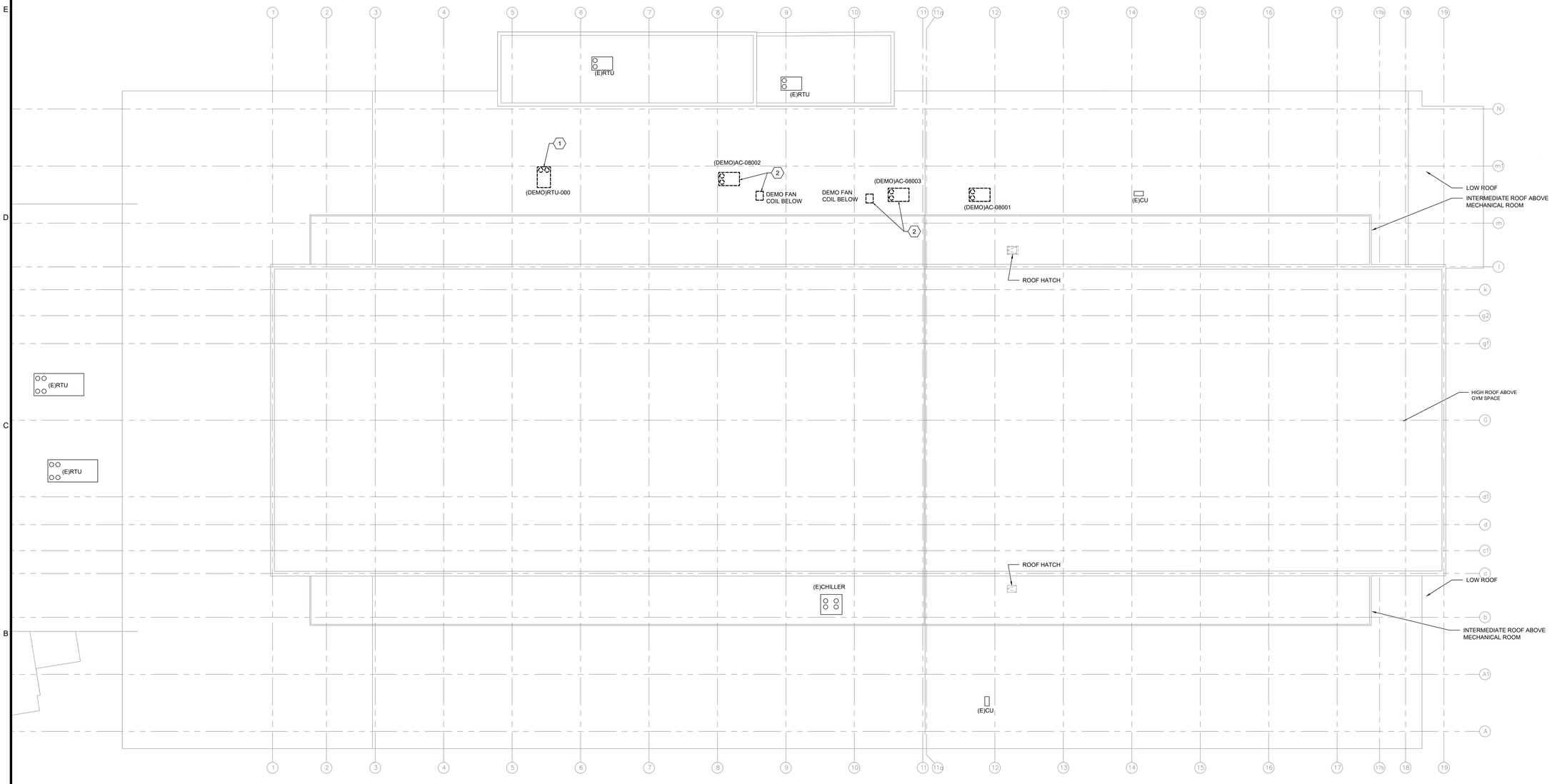
6/29/2023 11:55 AM Schaefer, Colton

GENERAL DEMOLITION NOTES

1. IN EVERY INSTANCE OF DEMOLITION AND/OR REMODELING, THE MECHANICAL CONTRACTOR SHALL FIGURE A COMPLETE JOB 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 JOB 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. ANY MECHANICAL EQUIPMENT AND DEVICES SHOWN AS BEING REMOVED SHALL BE REMOVED COMPLETE INCLUDING SUPPORTING STEEL AND TEMPERATURE CONTROLS. ALL EXISTING RECESSED CONTROLS REMOVED SHALL BE REPLACED WITH 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 UNIVERSITY. IF NOT REQUIRED BY THE UNIVERSITY, THE CONTRACTOR SHALL REMOVE SAID EQUIPMENT AND MATERIALS FROM THE PREMISES AND DISPOSE OF IN A LEGAL MANNER.
8. CONTRACTOR SHALL COORDINATE WITH CONSTRUCTION MANAGER AND OWNER'S REPRESENTATIVE REGARDING TESTING AND ABATEMENT OF ANY HAZARDOUS MATERIAL PRIOR TO STARTING ANY DEMOLITION WORK.
9. CONTRACTOR TO PROTECT ALL EXISTING EQUIPMENT TO REMAIN DURING CONSTRUCTION.

SHEET KEYNOTES

1. REMOVE EXISTING RTU AND CAP EXISTING CURB.
2. REMOVE EXISTING AC AND ASSOCIATED FCU INSIDE. CAP EXISTING PITCH POCKET.



PLAN NORTH

1 HVAC ROOF DEMOLITION PLAN

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

0 4" 8" 16" 32"

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HVAC ROOF DEMOLITION PLAN

DRAWING NO.

MD-102

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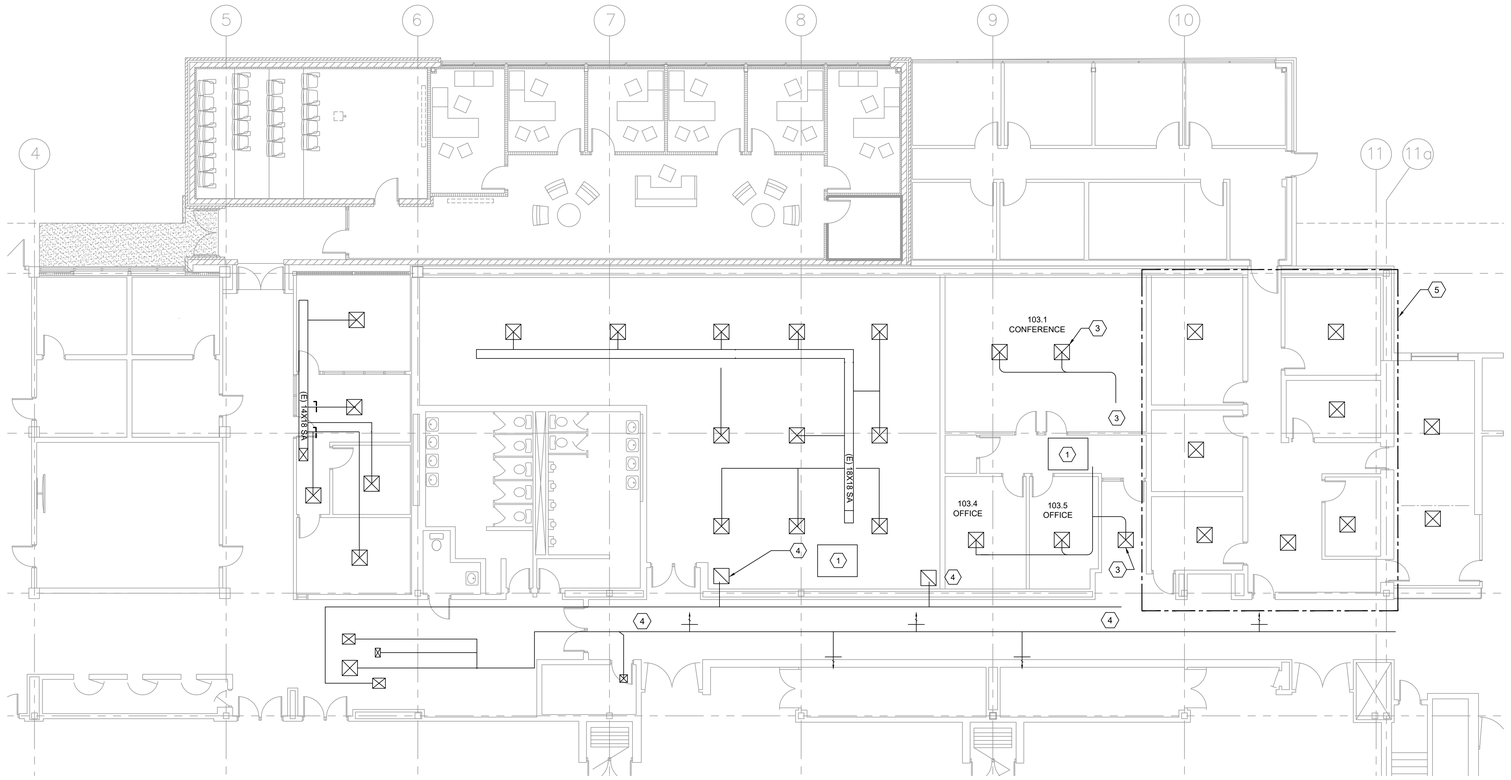
6/26/2023 11:56 AM Schaefer, Colton

GENERAL DEMOLITION NOTES

1. IN EVERY INSTANCE OF DEMOLITION AND/OR REMODELING, THE MECHANICAL CONTRACTOR SHALL FIGURE A COMPLETE JOB 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 JOB 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. ANY MECHANICAL EQUIPMENT AND DEVICES SHOWN AS BEING REMOVED SHALL BE REMOVED COMPLETE INCLUDING SUPPORTING STEEL AND TEMPERATURE CONTROLS. ALL EXISTING RECESSED CONTROLS REMOVED SHALL BE REPLACED WITH 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 UNIVERSITY. IF NOT REQUIRED BY THE UNIVERSITY, THE CONTRACTOR SHALL REMOVE SAID EQUIPMENT AND MATERIALS FROM THE PREMISES AND DISPOSE OF IN A LEGAL MANNER.
8. CONTRACTOR SHALL COORDINATE WITH CONSTRUCTION MANAGER AND OWNER'S REPRESENTATIVE REGARDING TESTING AND ABATEMENT OF ANY HAZARDOUS MATERIAL PRIOR TO STARTING ANY DEMOLITION WORK.
9. CONTRACTOR TO PROTECT ALL EXISTING EQUIPMENT TO REMAIN DURING CONSTRUCTION.

SHEET KEYNOTES

1. REMOVE FAN COIL UNIT AND ALL ASSOCIATED REFRIGERANT PIPING. CONTRACTOR RESPONSIBLE FOR ALL DEMOLITION OF EXISITNG CEILINGS TO REMOVE UNIT.
2. NOT USED
3. SUPPLY BRANCH DUCTS, RUNOUTS TO DIFFUSERS , AND DIFFUSERS TO REMAIN. PREPARE DUCTWOTK FOR RECONNECTION UNDER NEW WORK SCOPE.
4. ALL DUCTWORK ASSOCIATED WITH HV-7 TO BE ABANDONED IN PLACE.
5. ALL DUCTWORK AND DIFFUSERS WITH-IN ATHLETIC ADMINISTRATION TO REMAIN.



PLAN NORTH

1 HVAC ENLARGED DEMOLITION FLOOR PLAN

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

0' 2" 4" 8" 16"

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HVAC ENLARGED ADDITION FLOOR PLAN

DRAWING NO.

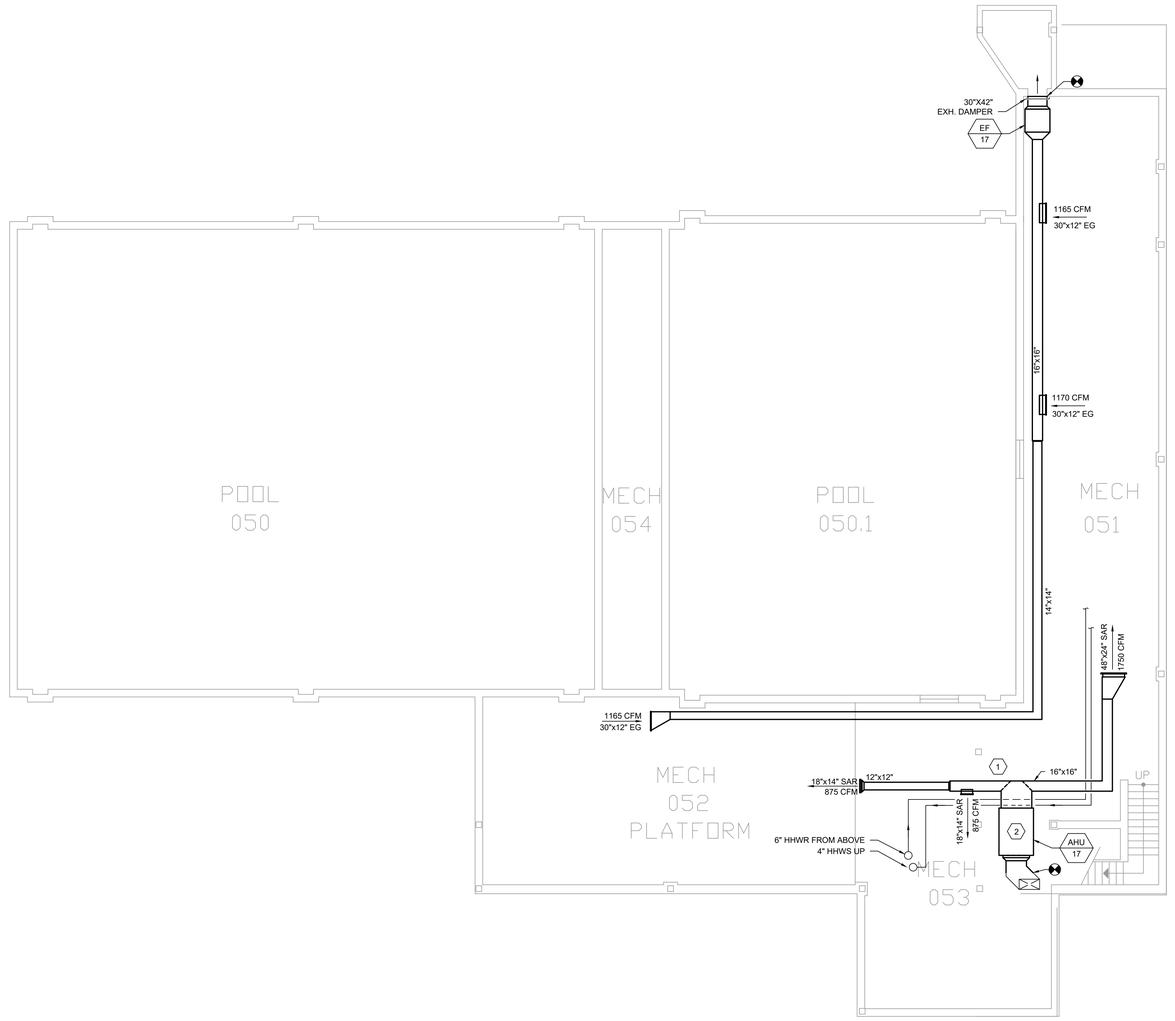
MD-103

GENERAL HVAC 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 FLOOR, WALL AND ROOF PENETRATIONS, LOUVER SIZES, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO 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.
7. DUCTWORK 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.
9. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SOME DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE INSTALLED WITHIN 2FT OF THE FINISHED CEILING HEIGHT.

SHEET KEYNOTES

1. INSTALL DUCT IN SAME LOCATION AS EXISTING DUCT. PROVIDE NEW STRAPS FOR SUPPORT.



PLAN NORTH

1 HVAC BASEMENT PLAN

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

0' 2' 4' 8' 16'

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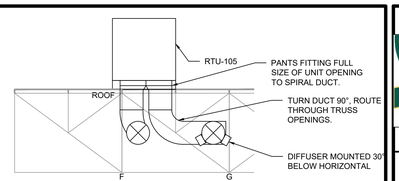
HVAC BASEMENT FLOOR PLAN

DRAWING NO.

M-100

GENERAL NOTES

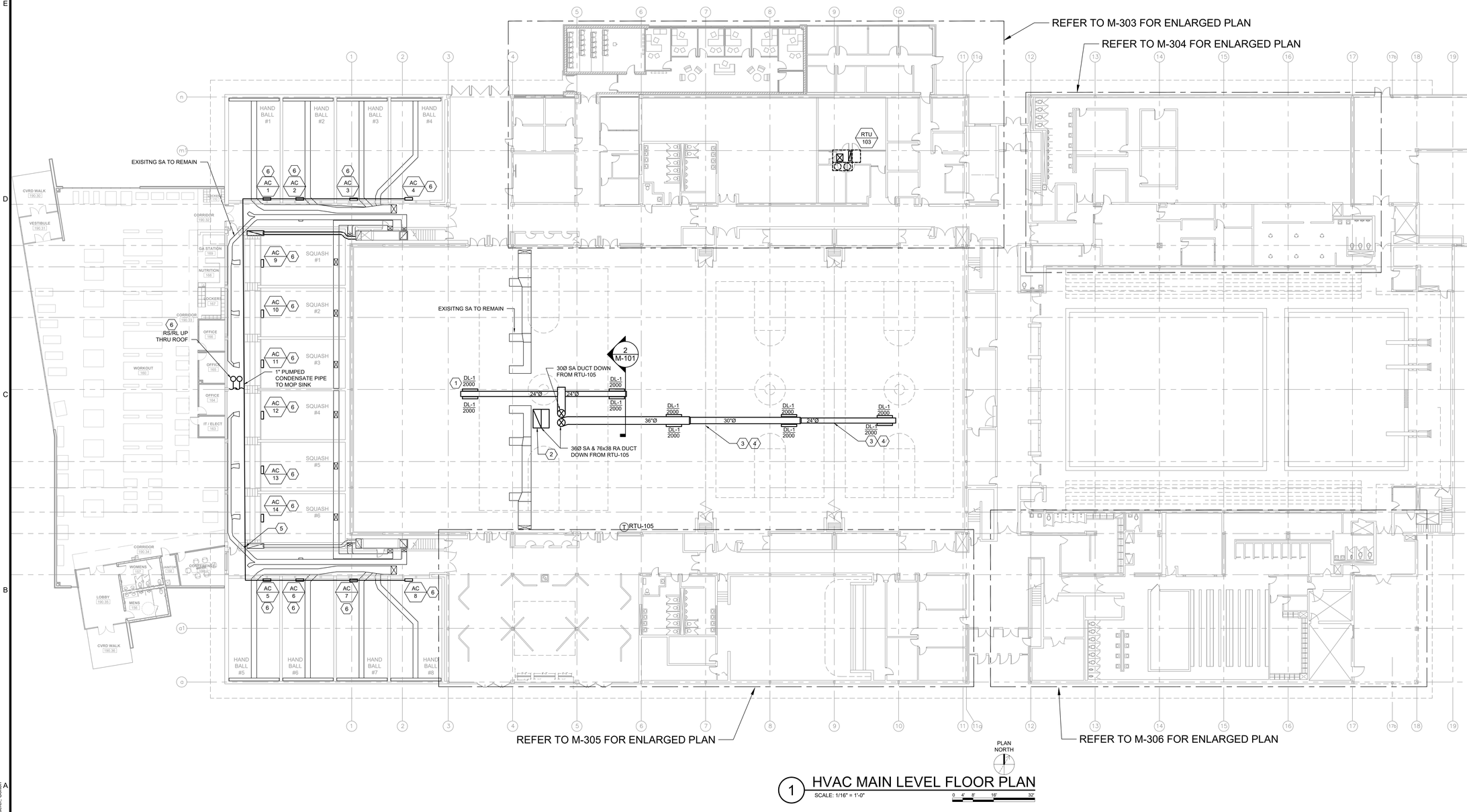
1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR 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 FLOOR, WALL AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. DUCTWORK SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
7. 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.
8. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE INSTALLED WITHIN 2FT OF THE FINISHED CEILING HEIGHT.
9. CONTRACTOR SHALL ENSURE THAT ALL MATERIALS USED IN RETURN AIR PLENUMS ARE PLENUM-RATED.
10. DUCT SIZES ON THE DRAWINGS DESIGNATE THE FREE AREA DIMENSIONS. THE ACTUAL SHEET METAL SIZES SHALL BE INCREASED TO ACCOUNT FOR LINING WHERE REQUIRED. REFER TO DETAILS AND SPECIFICATIONS FOR LINING REQUIREMENTS.
11. DEDUCT ALTERNATE 2: DEDUCT ALTERNATE TO REMOVE REFURBISHMENT OF EXISTING H & V UNITS 1,2,3,4,5,6,7,8,9,10,11,12,13,AND 14.



2 SECTION THRU RTU-105
NOT TO SCALE

SHEET KEYNOTES

1. DRUM LOUVER TO BE MOUNTED 30" BELOW HORIZONTAL, TYPICAL ALL DRUM LOUVERS.
2. RETURN AIR DUCT, FULL SIZE OF UNIT OPENING, 1" INTERNALLY LINED DUCT WITH 90° ELBOW.
3. MC TO FIELD VERIFY PENETRATION OF PARTITION TO AVOID STRUCTURAL MEMBERS.
4. FABRIC COVERING OF SUPPORT FOR CURTAIN TRACK MC TO VERIFY DUCT OPENING THROUGH FABRIC WILL NOT WITH CABLING. MC TO VERIFY WITH CURTAIN MANUFACTURER ACCEPTABLE MEANS OF PENETRATION.
5. 1" CONDENSATE PIPE DOWN TO DRAIN MECHANICAL ROOM 33.1 ON LOWER LEVEL.
6. VRF SYSTEM IS TO SUBMITTED AS DEDUCT ALTERNATE 1.



PLAN NORTH

1 HVAC MAIN LEVEL FLOOR PLAN
SCALE: 1/16" = 1'-0"
0 4' 8' 16' 32'

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HVAC MAIN LEVEL FLOOR PLAN

DRAWING NO.

M-101

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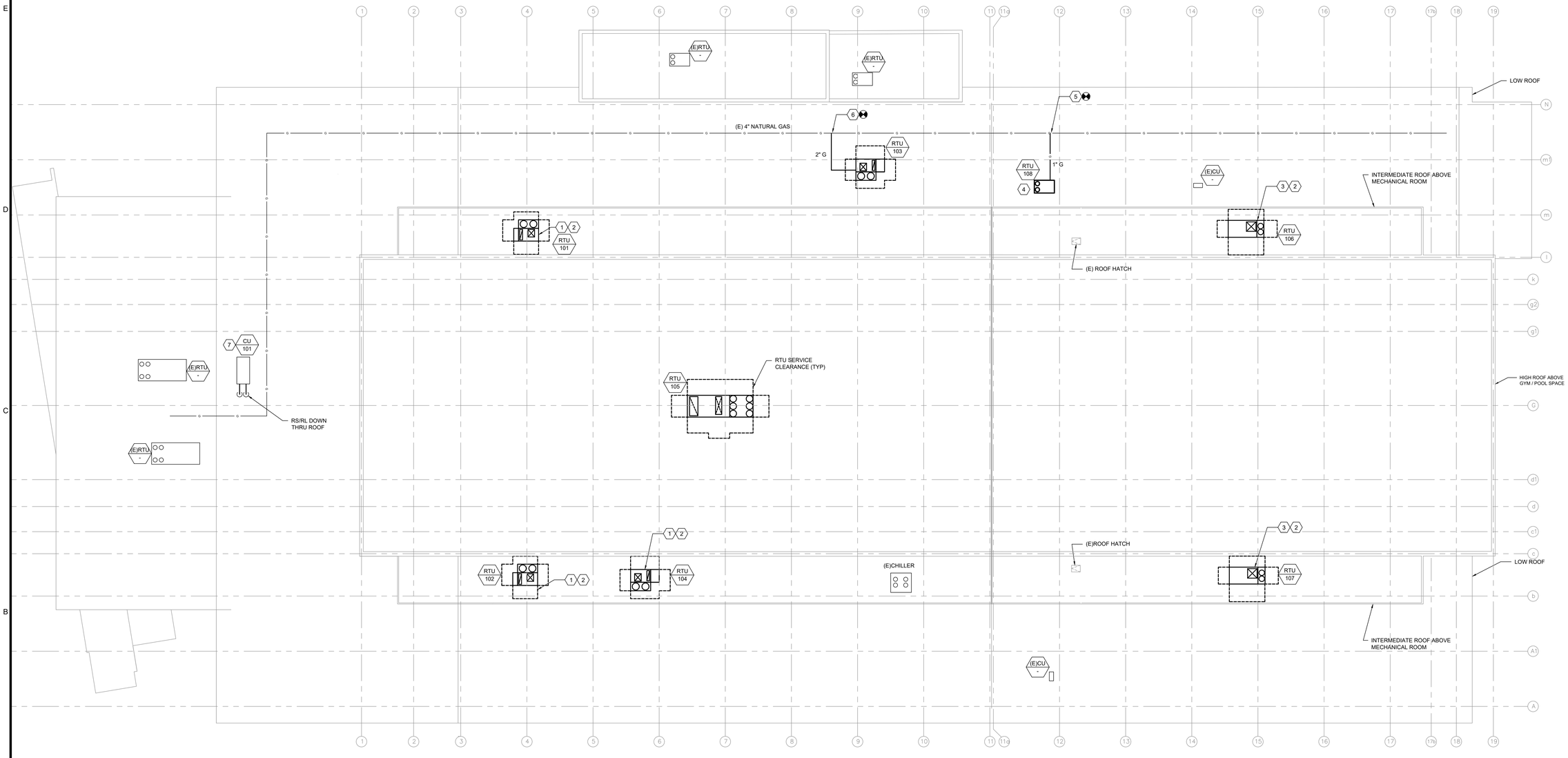
GENERAL NOTES

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 FLOOR, WALL AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. DUCTWORK SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
7. 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.
8. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE INSTALLED WITHIN 2FT OF THE FINISHED CEILING HEIGHT.
9. CONTRACTOR SHALL ENSURE THAT ALL MATERIALS USED IN RETURN AIR PLENUMS ARE PLENUM-RATED.
10. DUCT SIZES ON THE DRAWINGS DESIGNATE THE FREE AREA DIMENSIONS. THE ACTUAL SHEET METAL SIZES SHALL BE INCREASED TO ACCOUNT FOR LINING WHERE REQUIRED. REFER TO DETAILS AND SPECIFICATIONS FOR LINING REQUIREMENTS.
11. DEDUCT ALTERNATE 2: DEDUCT ALTERNATE TO REMOVE REFURBISHMENT OF EXISTING H & V UNITS 1,2,3,4,5,6,7,8,9,10,11,12,13,AND 14.
12. DEDUCT ALTERNATE 1 : REMOVE VRF SYSTEM INCLUDING AC-1 THRU AC-14 ,AND CU101. COST IS TO INCLUDE REMOVAL OF ALL EQUIPMENT, PIPING, ELECTRICAL, AND CONTROLS FROM THE BID..

SHEET KEYNOTES

1. SA & RA DOWN THRU ROOF CONNECTING TO EXISTING DUCTWORK IN MECHANICAL ROOM. REFER TO ENLARGED PLANS
2. PROVIDE SAFETY RAIL AS REQUIRED.
3. SA DOWN THRU ROOF CONNECTING TO EXISTING SUPPLY DUCTWORK IN MECHANICAL ROOM. REFER TO ENLARGED PLANS
4. PROVIDE CURB ADAPTER FOR NEW ROOFTOP UNIT.
5. CONNECT 1" G TO EXISTING 4" NATURAL GAS LINE ON ROOF AND ROUTE TO RTU-108.
6. CONNECT 2" G TO EXISTING 4" NATURAL GAS LINE ON ROOF AND ROUTE TO RTU-103.
7. DEDUCT ALTERNATE 1 : REMOVE VRF SYSTEM INCLUDING AC-1 THRU AC-14 ,AND CU101. COST IS TO INCLUDE REMOVAL OF ALL EQUIPMENT, PIPING, ELECTRICAL, AND CONTROLS FROM THE BID..



1 HVAC ROOF PLAN
SCALE: 1/16" = 1'-0"
0 4' 8' 16' 32'

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HVAC ROOF PLAN

DRAWING NO.

M-102

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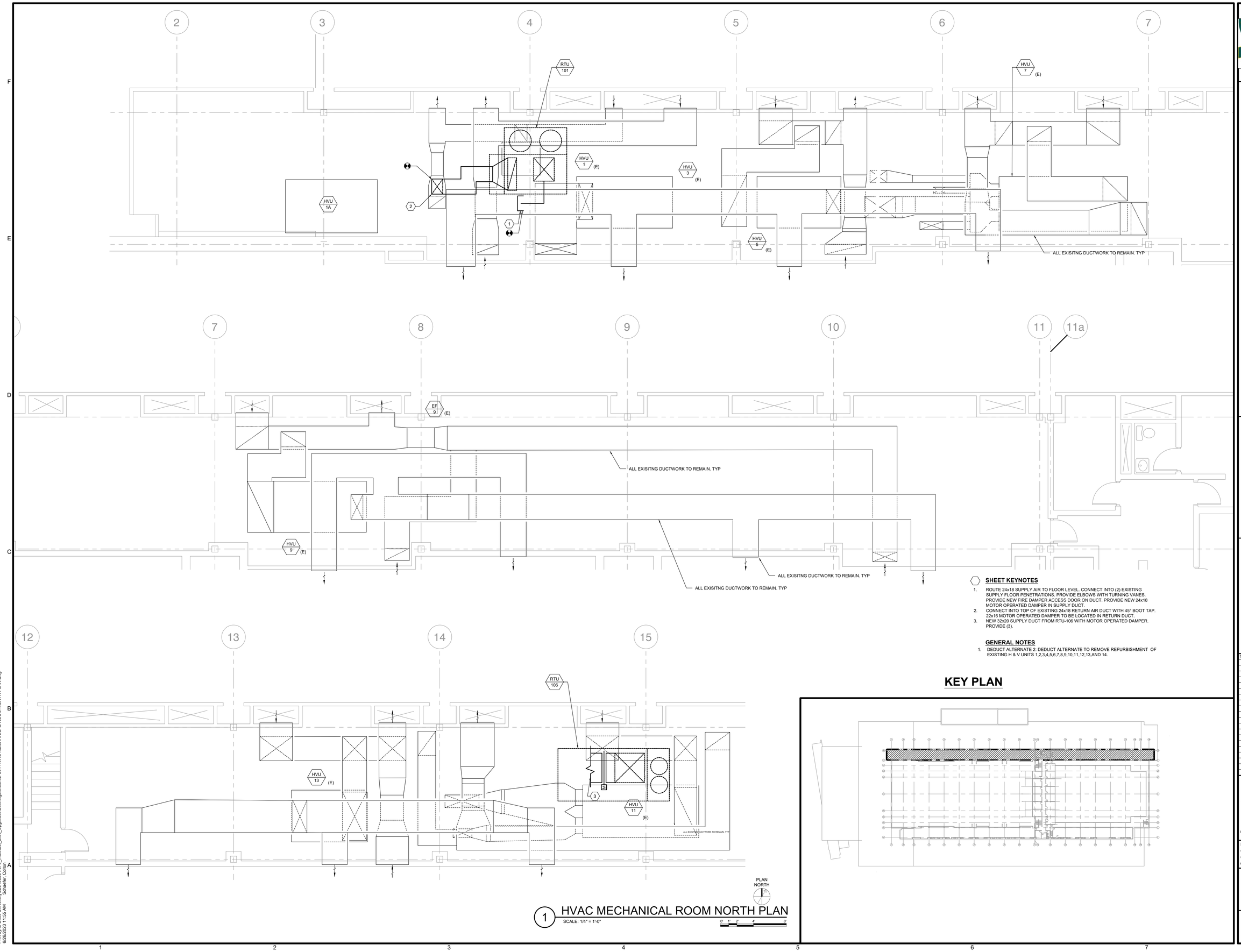

1 HVAC MECHANICAL ROOM NORTH PLAN
SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8'

SHEET KEYNOTES

1. ROUTE 24x18 SUPPLY AIR TO FLOOR LEVEL. CONNECT INTO (2) EXISTING SUPPLY FLOOR PENETRATIONS. PROVIDE ELBOWS WITH TURNING VANES. PROVIDE NEW FIRE DAMPER ACCESS DOOR ON DUCT. PROVIDE NEW 24x18 MOTOR OPERATED DAMPER IN SUPPLY DUCT.
2. CONNECT INTO TOP OF EXISTING 24x18 RETURN AIR DUCT WITH 45° BOOT TAP. 22x16 MOTOR OPERATED DAMPER TO BE LOCATED IN RETURN DUCT.
3. NEW 32x20 SUPPLY DUCT FROM RTU-106 WITH MOTOR OPERATED DAMPER. PROVIDE (3).

GENERAL NOTES

1. DEDUCT ALTERNATE 2: DEDUCT ALTERNATE TO REMOVE REFURBISHMENT OF EXISTING H & V UNITS 1,2,3,4,5,6,7,8,9,10,11,12,13,AND 14.

KEY PLAN

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MECHANICAL ROOM NORTH PLAN

DRAWING NO.

M-301

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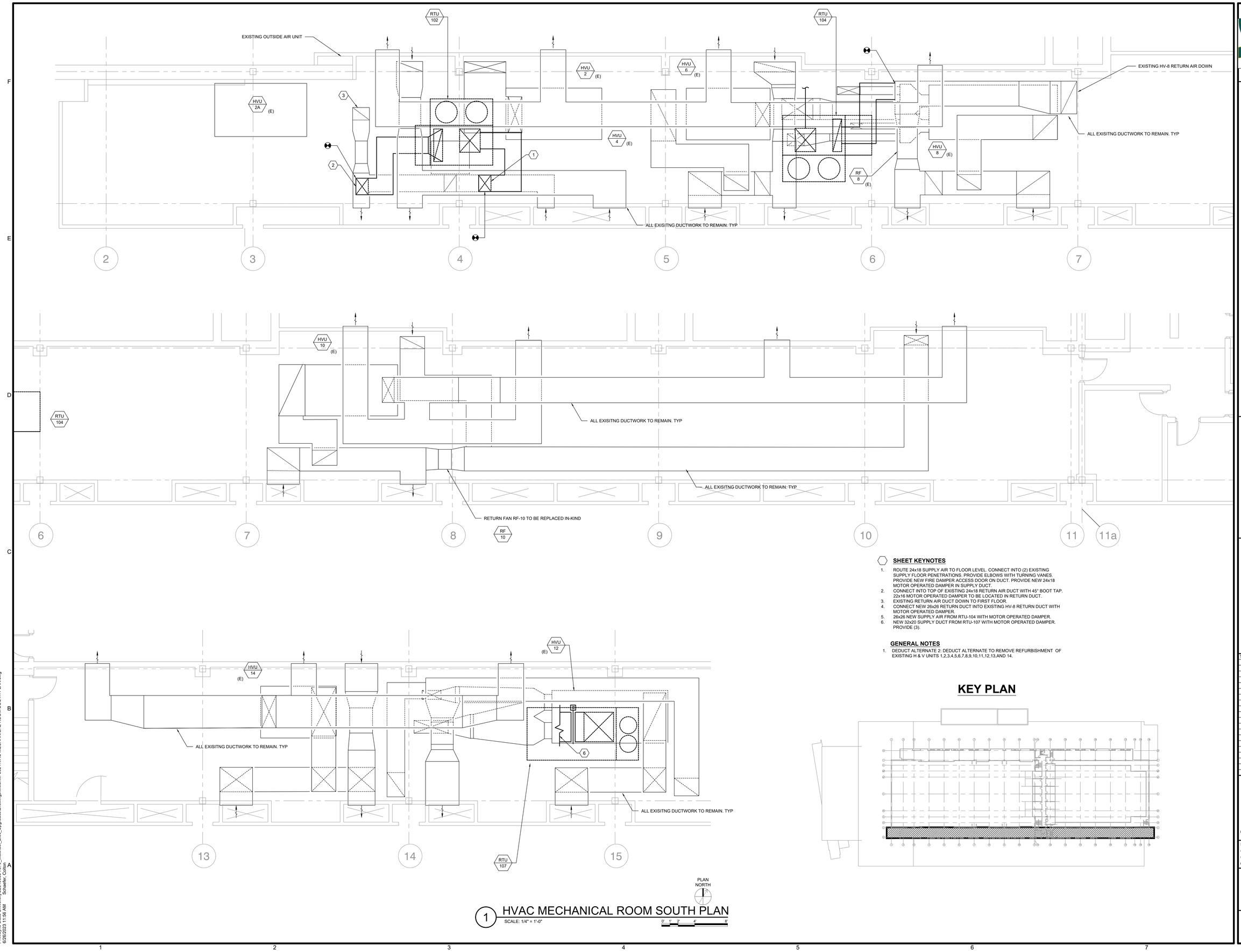

SHEET KEYNOTES

1. ROUTE 24x18 SUPPLY AIR TO FLOOR LEVEL. CONNECT INTO (2) EXISTING SUPPLY FLOOR PENETRATIONS. PROVIDE ELBOWS WITH TURNING VANES. PROVIDE NEW FIRE DAMPER ACCESS DOOR ON DUCT. PROVIDE NEW 24x18 MOTOR OPERATED DAMPER IN SUPPLY DUCT.
2. CONNECT INTO TOP OF EXISTING 24x18 RETURN AIR DUCT WITH 45° BOOT TAP. 22x16 MOTOR OPERATED DAMPER TO BE LOCATED IN RETURN DUCT.
3. EXISTING RETURN AIR DUCT DOWN TO FIRST FLOOR.
4. CONNECT NEW 26x26 RETURN DUCT INTO EXISTING HV-8 RETURN DUCT WITH MOTOR OPERATED DAMPER.
5. 26x26 NEW SUPPLY AIR FROM RTU-104 WITH MOTOR OPERATED DAMPER.
6. NEW 32x20 SUPPLY DUCT FROM RTU-107 WITH MOTOR OPERATED DAMPER. PROVIDE (3).

GENERAL NOTES

1. DEDUCT ALTERNATE 2: DEDUCT ALTERNATE TO REMOVE REFURBISHMENT OF EXISTING H & V UNITS 1,2,3,4,5,6,7,8,9,10,11,12,13,AND 14.

KEY PLAN

1 HVAC MECHANICAL ROOM SOUTH PLAN

SCALE: 1/4" = 1'-0"

0" 1" 2" 4" 8"

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MECHANICAL ROOM SOUTH PLAN

DRAWING NO.

M-302

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GENERAL NOTES

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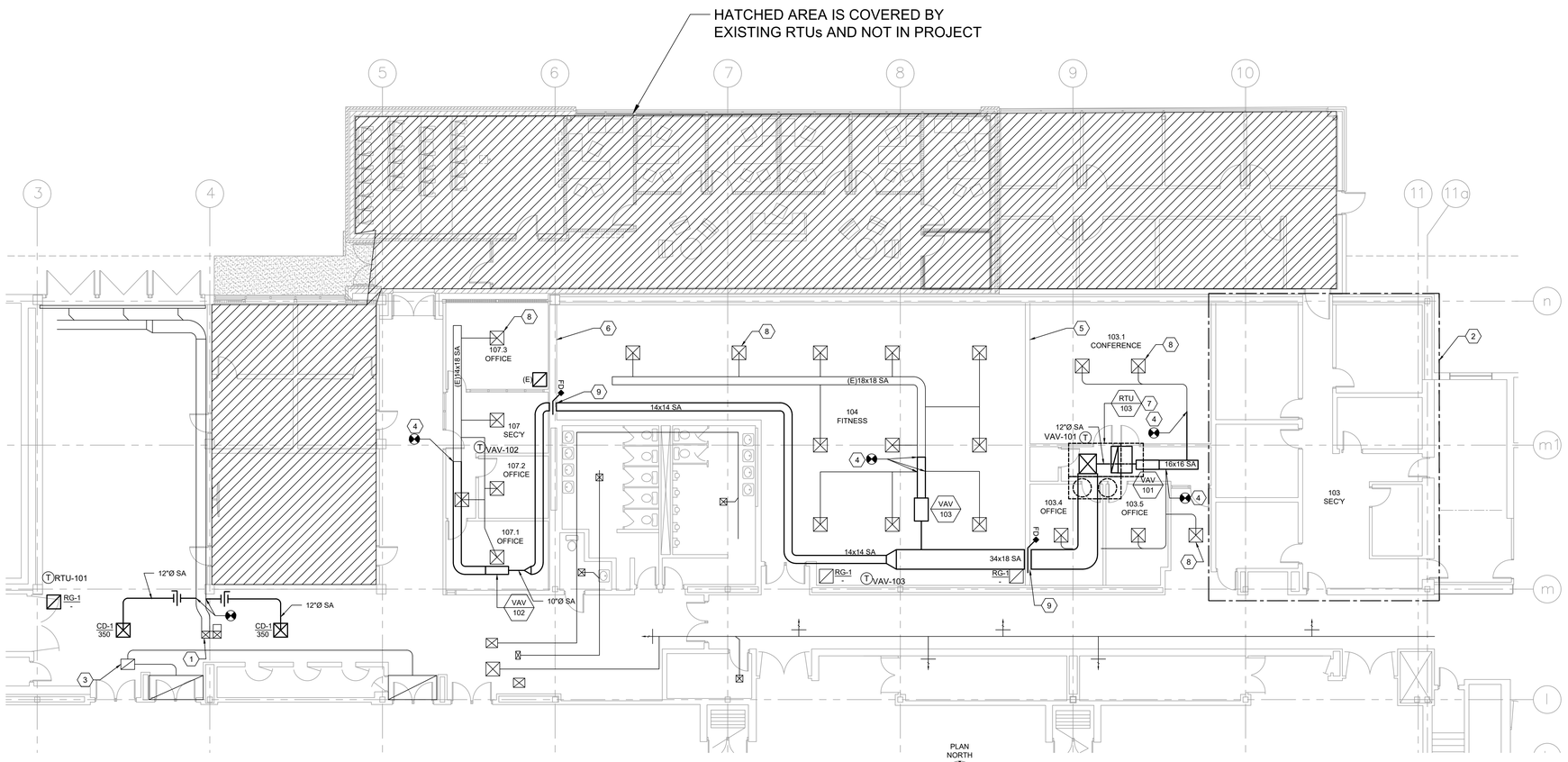
7. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC.
8. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE INSTALLED WITHIN 2FT OF THE FINISHED CEILING HEIGHT.
9. CONTRACTOR SHALL ENSURE THAT ALL MATERIALS USED IN RETURN AIR PLENUMS ARE PLENUM-RATED.
10. DUCT SIZES ON THE DRAWINGS DESIGNATE THE FREE AREA DIMENSIONS. THE ACTUAL SHEET METAL SIZES SHALL BE INCREASED TO ACCOUNT FOR LINING WHERE REQUIRED. REFER TO DETAILS AND SPECIFICATIONS FOR LINING REQUIREMENTS.
11. DEDUCT ALTERNATE 1 : REMOVE VRF SYSTEM INCLUDING AC-1 THRU AC-14 ,AND CU101. COST IS TO INCLUDE REMOVAL OF ALL EQUIPMENT, PIPING, ELECTRICAL, AND CONTROLS FROM THE BID.
12. DEDUCT ALTERNATE 2: DEDUCT ALTERNATE TO REMOVE REFURBISHMENT OF EXISTING H & V UNITS 1,2,3,4,5,6,7,8,9,10,11,12,13,AND 14.

SHEET KEYNOTES

1. EXISTING SUPPLY AIR DUCTWORK UP TO HV-1 AND RTU-101.
2. ALL AIR DISTRIBUTION IN ATHLETIC ADMINISTRATION SUITE TO REMAIN. ROOF TOP UNIT RTU-108 TO REPLACE EXISTING UNIT. EXISTING THERMOSTAT TO REMAIN.
3. EXISTING RETURN AIR DUCTWORK UP TO HV-1 AND RTU-101.
4. CONNECT TO EXISTING DUCT MAIN, EXISTING BRANCH DUCTS AND DIFFUSERS TO REMAIN.
5. PROVIDE OPENING IN BLOCK WALL WITH FIRE DAMPER FOR TRANSFER AIR 68"x18" MINIMUM OPENING.
6. PROVIDE OPENING IN BLOCK WALL WITH FIRE DAMPER FOR TRANSFER AIR 28"X14" MINIMUM OPENING.
7. RTU-103 ON ROOF. SUPPLY AIR DOWN THRU ROOF, RETURN AIR DOWN THRU ROOF DUCT LINED FULL SIZE OF OPENING WITH 90° ELBOW.
8. ALL EXISTING DIFFUSERS TO BE BALANCED DOWNSTREAM OF NEW VAV BOX.
9. CONTRACTOR TO PROVIDE OPENINGS AS REQUIRED IN BLOCK WALL. REFER TO STRUCTURAL DRAWINGS FOR LINTEL SCHEDULE.
10. CONTRACTOR RESPONSIBLE FOR REMOVAL OF EXISTING CEILING TO PERFORM WORK. REPLACE ALL DEVICES TO AS-IS CONDITION AT THE END OF THE INSTALLATION.

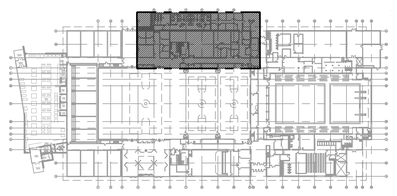


1 HVAC ENLARGED NORTH WEST FLOOR PLAN

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

0' 2' 4' 8' 16'

KEY PLAN



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MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	KAJ
CHECKED BY	DVL
CLIENT PROJ NO.	-
OSBORN PROJ NO.	J20190854.070

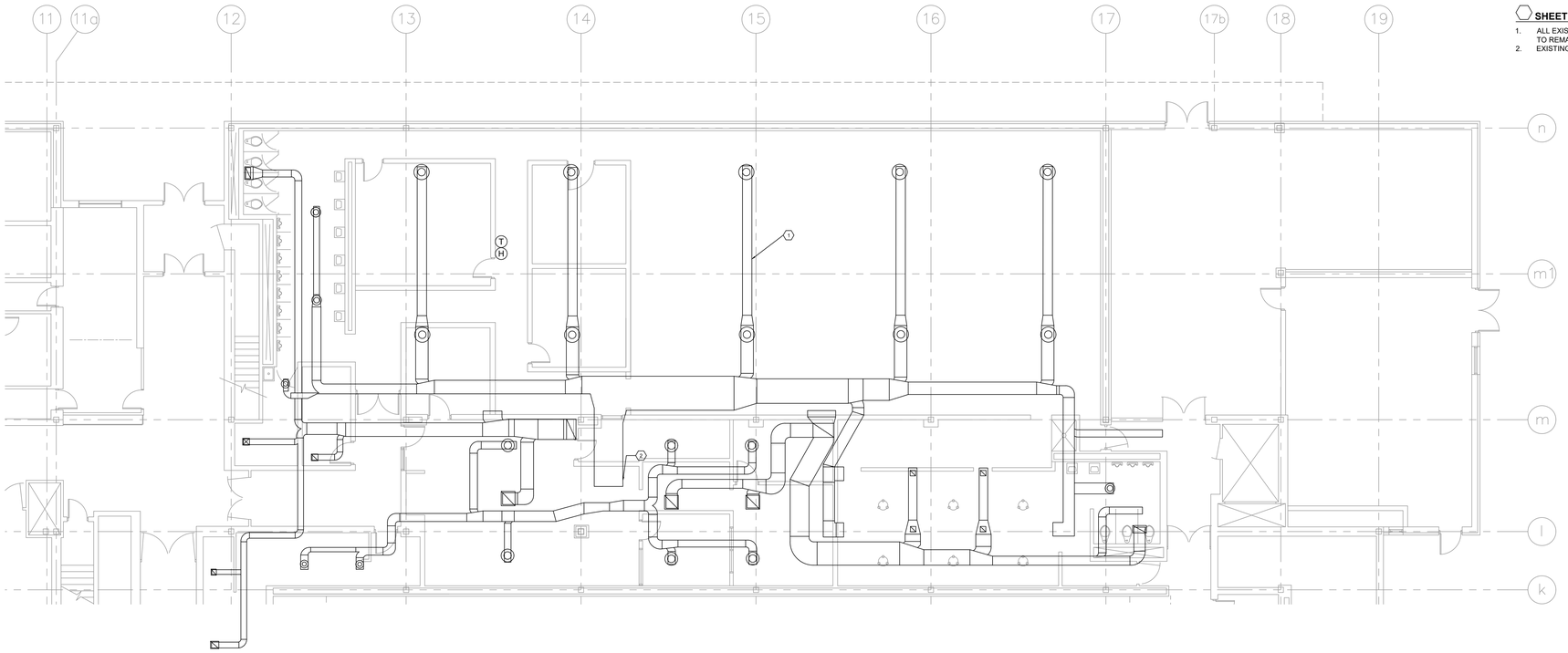
HVAC ENLARGED NORTH WEST FLOOR PLAN

DRAWING NO.

M-303

GENERAL 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 FLOOR, WALL AND ROOF PENETRATIONS, ETC. WITH GENERAL TRADES.
4. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
6. DUCTWORK SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.
7. 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.
8. ALL MECHANICAL EQUIPMENT, PIPING, VALVES, DAMPERS, SMOKE DETECTORS ETC. WHICH REQUIRE ROUTINE MAINTENANCE OR INSPECTION SHALL BE INSTALLED WITHIN 2FT OF THE FINISHED CEILING HEIGHT.
9. CONTRACTOR SHALL ENSURE THAT ALL MATERIALS USED IN RETURN AIR PLENUMS ARE PLENUM-RATED.
10. DUCT SIZES ON THE DRAWINGS DESIGNATE THE FREE AREA DIMENSIONS. THE ACTUAL SHEET METAL SIZES SHALL BE INCREASED TO ACCOUNT FOR LINING WHERE REQUIRED. REFER TO DETAILS AND SPECIFICATIONS FOR LINING REQUIREMENTS.



SHEET KEYNOTES

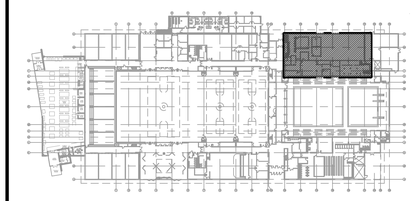
1. ALL EXISTING SUPPLY AND EXHAUST DUCT FROM HV-11 TO REMAIN.
2. EXISTING SUPPLY AIR DUCT UP TO HV-11 AND RTU-16.

PLAN NORTH

1 HVAC ENLARGED NORTH EAST FLOOR PLAN
SCALE: 1/8" = 1'-0"

0' 2' 4' 8' 16'

KEY PLAN



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HVAC ENLARGED NORTH EAST FLOOR PLAN

DRAWING NO.

M-304

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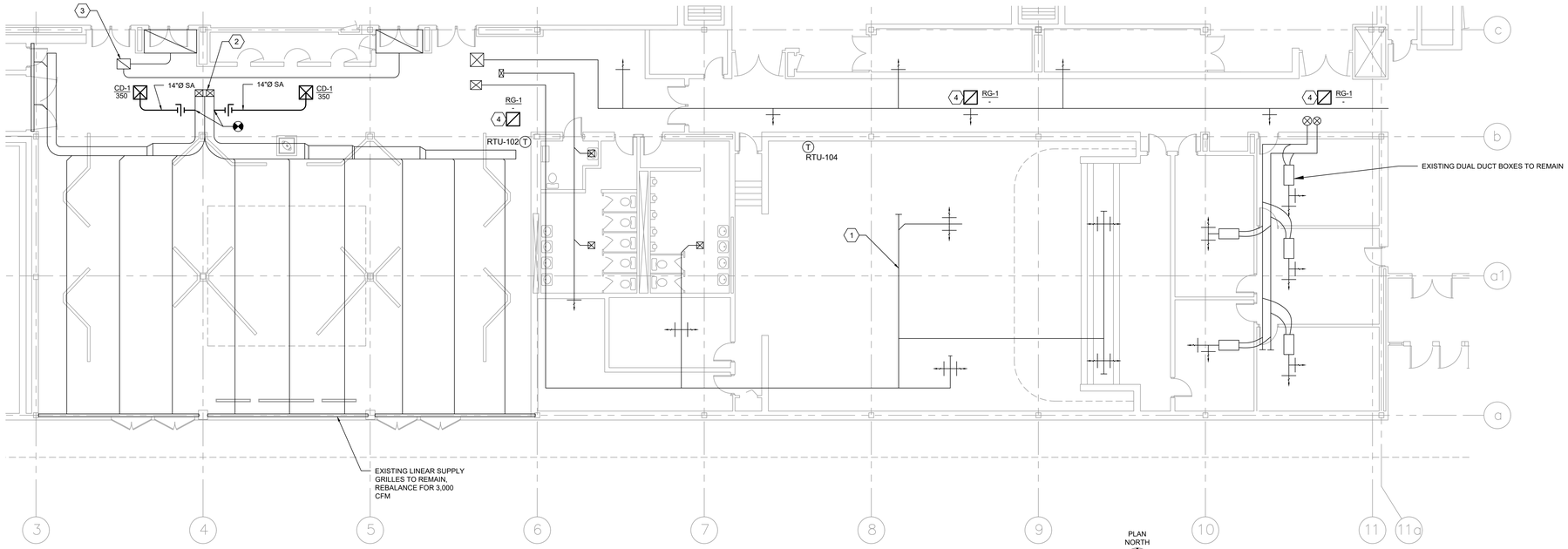
SHEET KEYNOTES

1. ALL EXISTING SUPPLY, RETURN AND EXHAUST AIR DUCTWORK TO REMAIN FROM EXISTING HV UNITS.
2. EXISTING SUPPLY AIR DUCTWORK UP TO HV-2 AND RTU-102.
3. EXISTING RETURN AIR DUCTWORK UP TO HV-2 AND RTU-102.
4. NEW RETURN AIR GRILLE IN EXISTING LAY-IN CEILING.

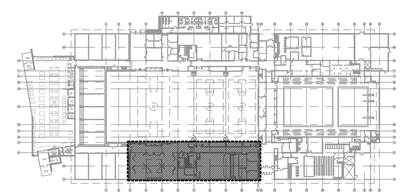


1 HVAC ENLARGED SOUTH WEST FLOOR PLAN

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

0' 2' 4' 8' 16'

KEY PLAN



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HVAC ENLARGED SOUTH WEST FLOOR PLAN

DRAWING NO.

M-305

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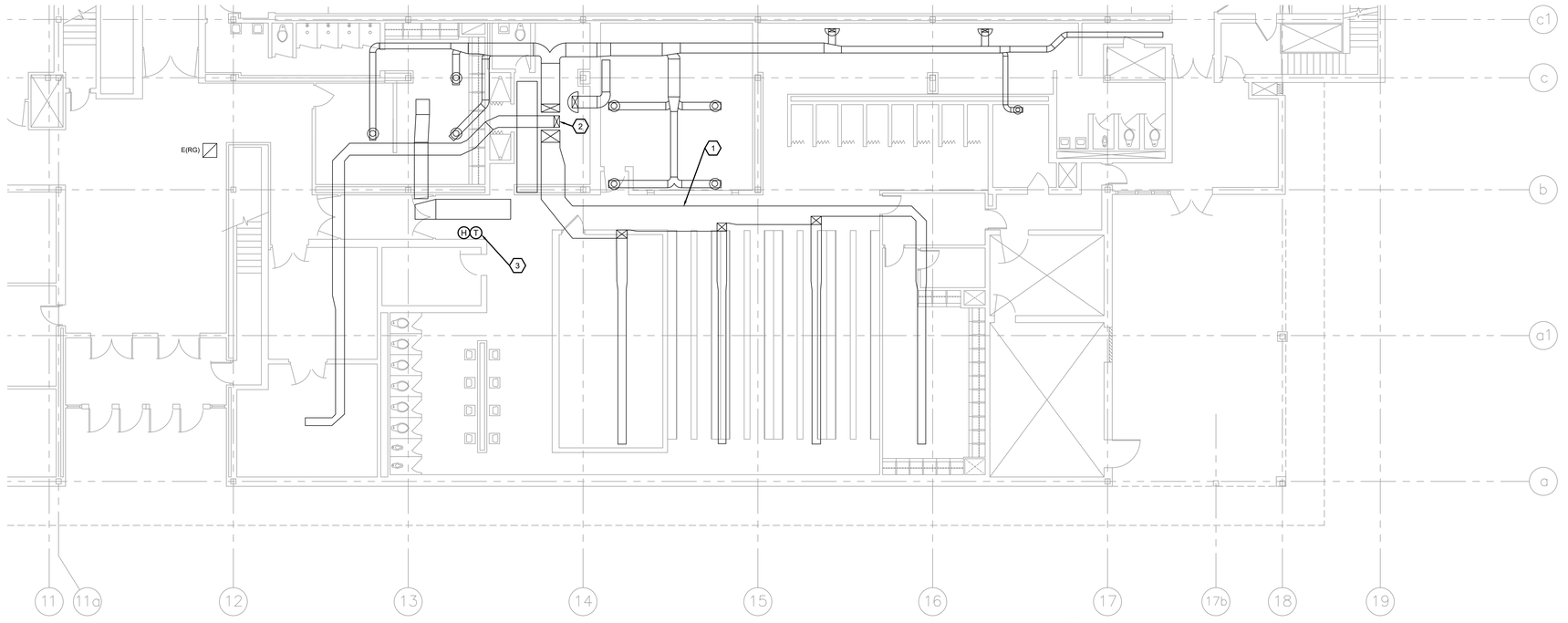
SHEET KEYNOTES

1. ALL EXISTING SUPPLY AND EXHAUST DUCT FROM HV-12 TO REMAIN.
2. EXISTING SUPPLY AIR DUCT UP TO HV-12 AND RTU-107.
3. LOCATION OF NEW TEMPERATURE AND HUMIDITY SENSOR FOR DEDICATED OUTSIDE AIR UNIT.



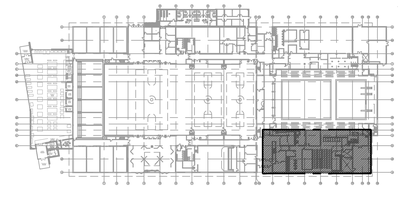
PLAN NORTH

1 HVAC ENLARGED SOUTH EAST FLOOR PLAN

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

0' 2' 4' 8' 16'

KEY PLAN



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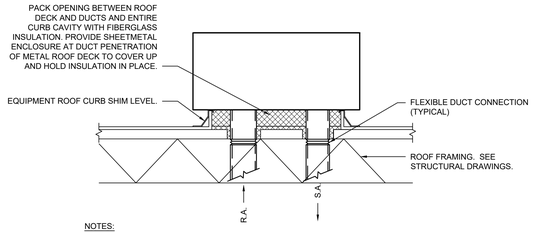
HVAC ENLARGED SOUTH EAST FLOOR PLAN

DRAWING NO.

M-306

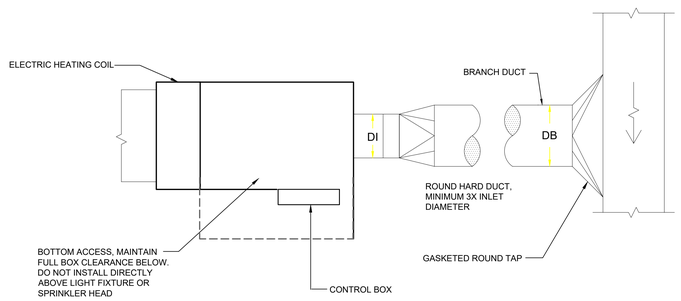
P:\Wayne State University\J20190854.070_Matthaei_Elec_Upgrades\Drawings\Mech\M-306 HVAC ENLARGED SOUTH EAST FLOOR PLAN.dwg
6/26/2023 11:55 AM Schaefer, Colton



NOTES:

1. FOR UNITS NOT SUPPLIED WITH SMOKE DETECTORS INSTALL SMOKE DETECTORS, PROVIDED BY THE ELECTRICAL CONTRACTOR, IN DUCTWORK WHERE INDICATED ON PLANS.
2. PROVIDE 1" ACOUSTICAL DUCT LINING IN SUPPLY AND RETURN DUCTS FROM UNIT CONNECTION TO POINTS INDICATED ON PLANS.
3. TRANSITION SUPPLY AND RETURN UNIT CONNECTION TO SIZES INDICATED ON PLANS.

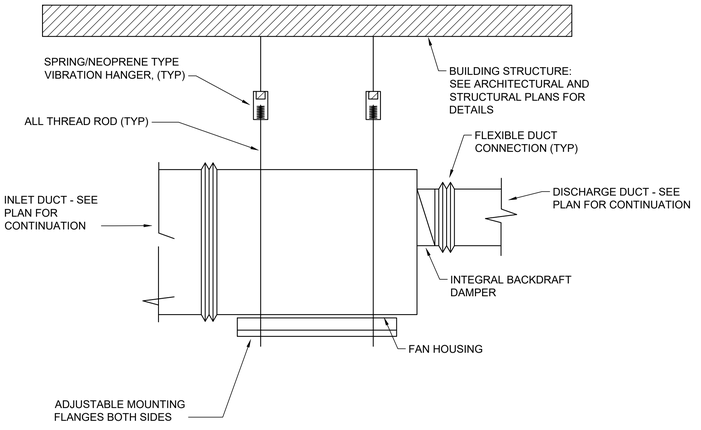
8 ROOFTOP UNIT INSTALLATION DETAIL
NOT TO SCALE



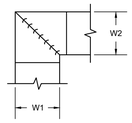
NOTES:

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 - TYPICALLY ROUND.
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. SHUT-OFF 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

9 TERMINAL BOX INSTALLATION AND CLEARANCE
NOT TO SCALE



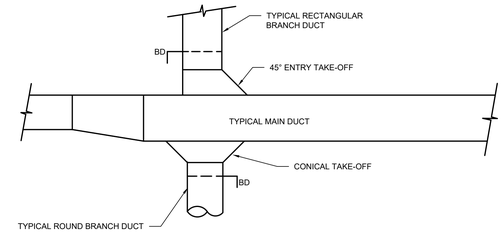
1 CABINET FAN
NOT TO SCALE



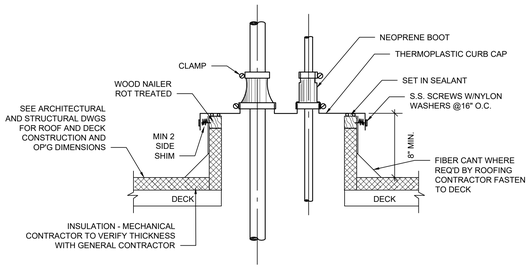
NOTE:

1. ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" RADIUS, 1 1/2" MAXIMUM SPACE BETWEEN VANES AND A 3/4" TRAILING EDGE.
4. WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" VANES SHALL BE DOUBLE VANE TYPE.

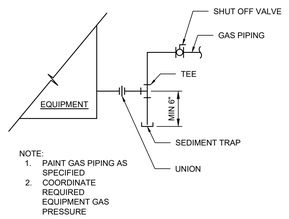
6 MITERED ELBOW VANE
NOT TO SCALE



1 TYPICAL BRANCH DUCT TAKE-OFF
NOT TO SCALE



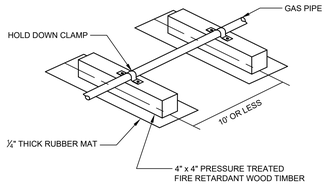
2 ROOF CURB WITH PIPE PENETRATIONS
NOT TO SCALE



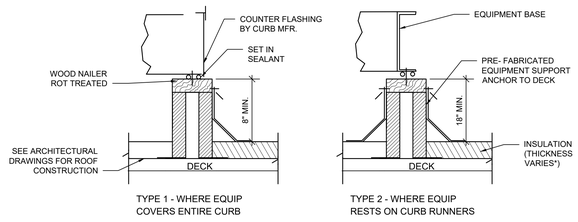
NOTE:

1. PAINT GAS PIPING AS SPECIFIED
2. COORDINATE REQUIRED EQUIPMENT GAS PRESSURE

11 GAS EQUIPMENT CONNECTION
NOT TO SCALE



4 ROOFTOP GAS PIPING SUPPORT
NOT TO SCALE

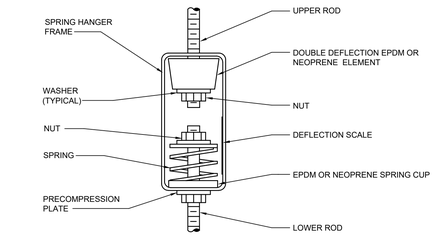


TYPE 1 - WHERE EQUIP COVERS ENTIRE CURB

TYPE 2 - WHERE EQUIP RESTS ON CURB RUNNERS

* MECH CONTRACTOR TO VERIFY INSULATION THICKNESS W/ GENERAL CONTRACTOR

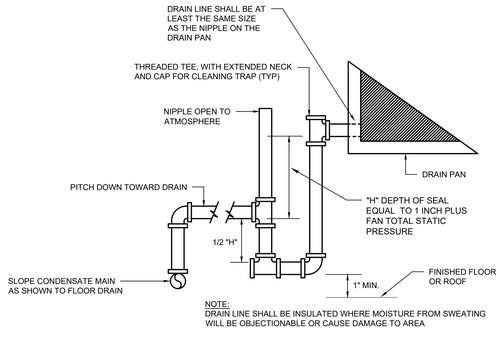
3 ROOF MOUNTED EQUIPMENT SUPPORTS
NOT TO SCALE



NOTES:

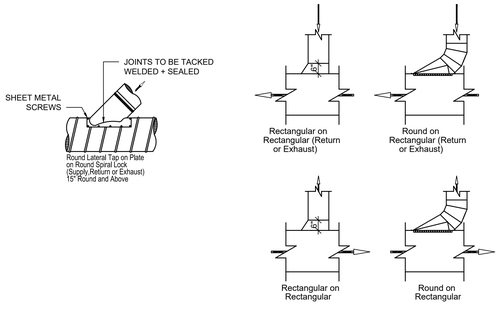
1. THE SPRING SHALL BE PRE-COMPRESSED SO THAT WHEN PROPERLY INSTALLED AND LOADED, THE SPRING IS ADJUSTED TO THE MIDPOINT OF THE DEFLECTION SCALE.
2. REFER TO THE SPECIFICATIONS FOR THE DEFLECTION REQUIREMENTS.

2 SPRING ISOLATED HANGER FOR PIPE OR EQUIPMENT
NOT TO SCALE

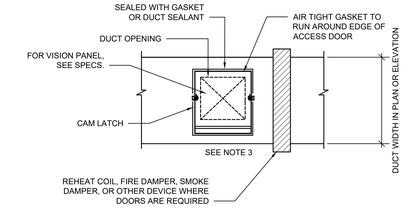


NOTE:
DRAIN LINE SHALL BE INSULATED WHERE MOISTURE FROM SWEATING WILL BE OBJECTIONABLE OR CAUSE DAMAGE TO AREA

10 DRAW-THRU CONFIGURATION CONDENSATE TRAP
NOT TO SCALE



7 BRANCH CONNECTIONS
NOT TO SCALE



ACCESS DOOR SIZE SCHEDULE	
DUCT WIDTH	ACCESS DOOR SIZE
6" TO 10"	6" x 6" MINIMUM
10" TO 12"	8" x 8" MINIMUM
12" TO 21"	12" x 12" MINIMUM, SEE NOTE 1
21" & ABOVE	18" x 18" MINIMUM, SEE NOTE 2

ACCESS DOORS TO 16"x16" WHERE DUCT SIZE AND SPACES ALLOWS WITH 4 CAM LOCKS, DOORS TO BE INSTALLED ON BOTTOM OF DUCT WITH BEST ACCESS.

5 DUCT ACCESS DOOR AND SCHEDULE
NOT TO SCALE

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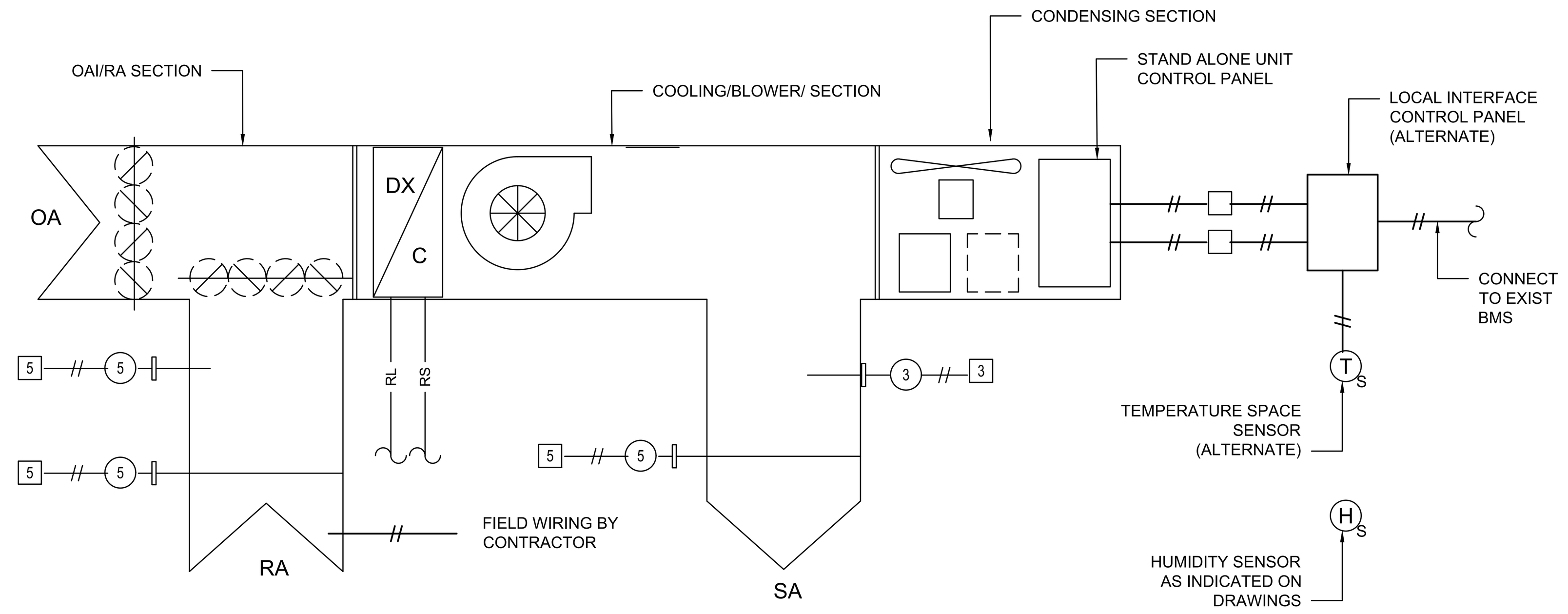
HVAC DETAILS

DRAWING NO.

M-501



PACKAGE ROOFTOP UNIT SYSTEM						
ITEM	DESCRIPTION	POINT TYPE	ADJ	ALARM	HOA POSITION	REMARKS
1	SUPPLY FAN START/STOP	BO				
2	TEMPERATURE SETPOINT	AI				
3	SUPPLY AIR TEMPERATURE	AO				
4	RETURN AIR TEMPERATURE	BI		X		
5	MOTOR OPERATED DAMPER	BI		X		INTERLOCK WITH EXISITNG HV UNIT

3 PACKAGED RTU COIL CONTROL DIAGRAM (RTU-101,102,104)

NOT TO SCALE

ROOFTOP UNIT 101,102,104

ROOFTOP UNIT SHALL BE SCHEDULED FOR AUTOMATIC OPERATION WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 60 DEGREES (ADJUSTABLE) CONTRACTOR SHALL PROVIDE AN E-P SWITCH TO DISABLE THE EXSITNG PNEUMATIC SYSTEM AND THE HV UNITS SHALL BE TURNED OFF AND ALL DAMPERS CLOSED TO AIRFLOW. THE EXISITNG HEATING AND VENTILATING UNITS SHALL OPERATION IN THE HEATING MODE WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 60 DEG F.

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. ALL SYSTEM COMMUNICATIONS SHALL BE. THE CONTROLS SHALL BE DDC USING ELECTRIC ACTUATION AND PID CONTROL LOGIC. ALL CONTROL, MONITORING AND ALARM POINTS SHALL BE AVAILABLE AT CONTROL PANEL LOCATED IN THE JANITORS CLOSET.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.

ECONOMIZER CONTROL. WHEN THE OUTDOOR AIR DRY BULB TEMPERATURE IS BELOW THE ECONOMIZER CHANGEOVER VALUE OF 60°F, THE HEATING SECTION AND THE MIXED AIR DAMPERS SHALL MODULATE IN SEQUENCE WITHOUT OVERLAP TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT WITH A LOW LIMIT OF 42°F AT THE MIXED AIR SENSOR. THE MIXING DAMPERS SHALL RAMP OPEN SLOWLY TO AVOID OVERSHOOTING. WHEN THE OUTSIDE DRY BULB TEMPERATURE IS ABOVE THE ECONOMIZER CHANGEOVER VALUE, THE MIXING DAMPERS ARE PLACED, IN MINIMUM OUTDOOR AIR POSITION AS DETERMINED BY THE VENTILATION SET POINT AND THE COOLING SECTION MODULATES TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT.

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.

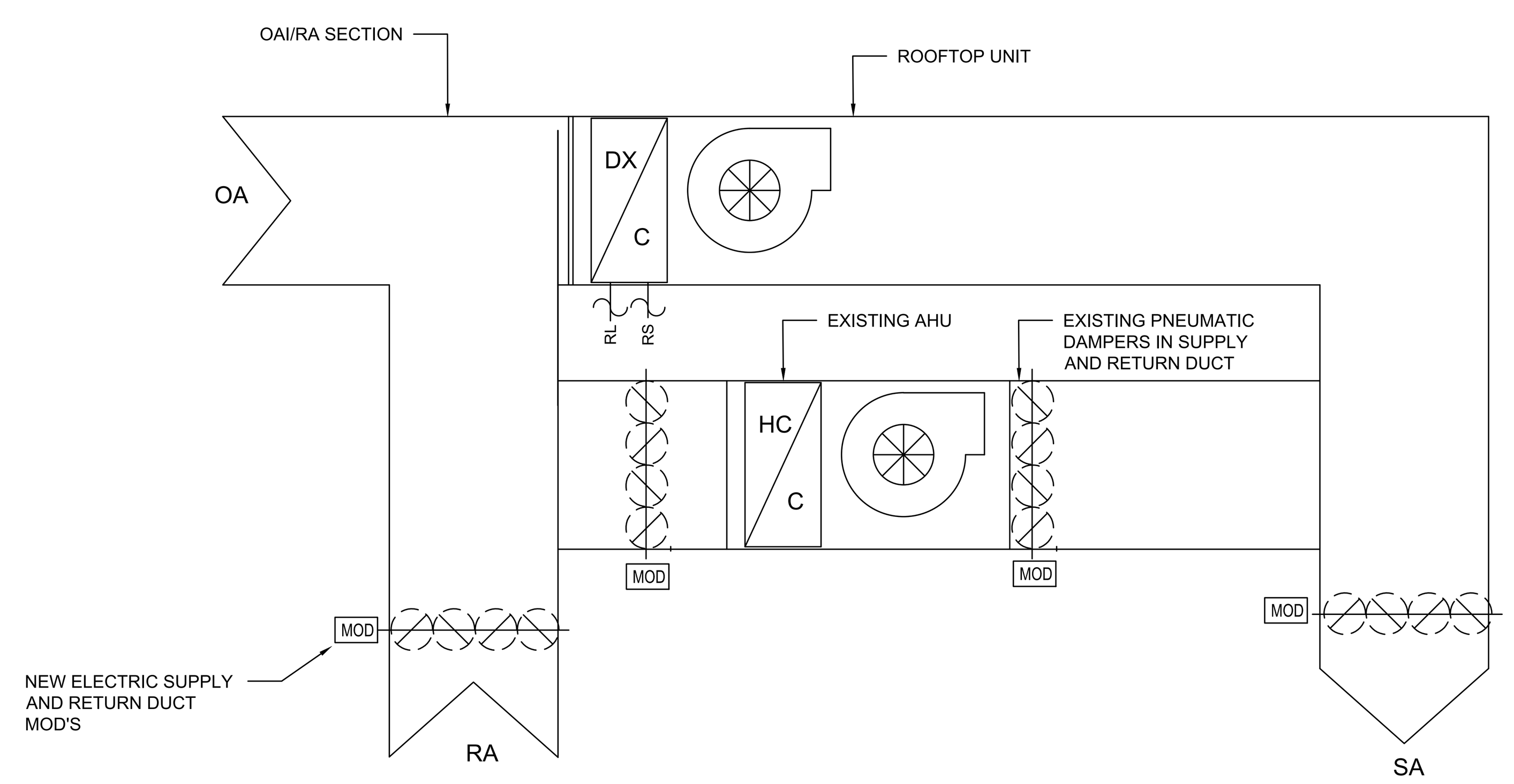
UNOCCUPIED MODE

THE SUPPLY FAN IS OFF AND THE MIXED AIR DAMPERS CLOSE TO THE OUTDOOR AIR.

SAFETY:

END SWITCHES. END SWITCHES INSTALLED ON DAMPERS SHALL ENSURE THE DAMPERS ARE FULLY OPENED BEFORE THE FANS ARE ALLOWED TO START.

CURRENT SWITCHES. CURRENT SWITCHES ARE INSTALLED AT THE SUPPLY FAN. 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



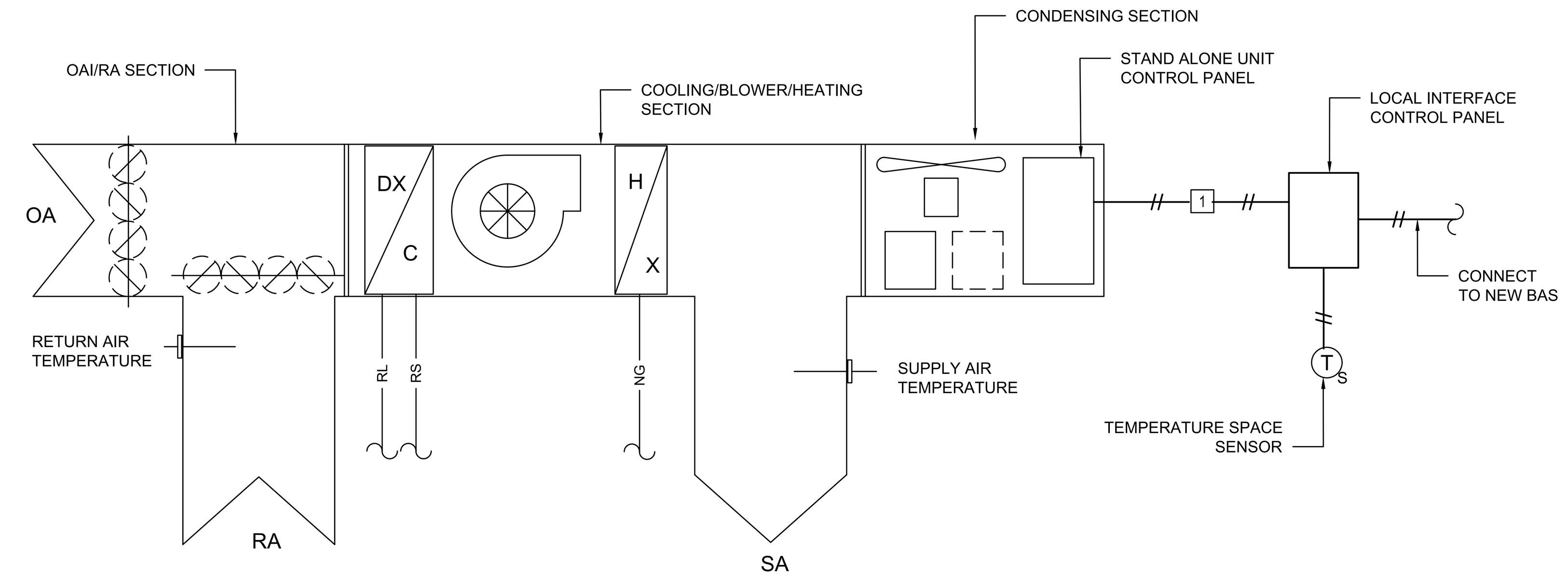
5 PACKAGED RTU (RTU-101-108) CONTROL DIAGRAM

NOT TO SCALE

ROOFTOP / EXISITNG AHU SEQUENCE OF OPERTION

UPON A CALL FOR COOLING , THE EXISITNG AHU SHALL SHUT DOWN , THE NEW COOLING ONLY ROOFTOP UNITS' RESPECTIVE SUPPLY AND RETURN DUCT MOTOR OPERATED DAMPER SHALL OPEN, THE EXISITNG SUPPLY AND RETURN PNEUMATIC MOTOR OPERATED DAMPER SHALL CLOSE , AND THE NEW ROOFTOP UNIT SHALL START.

WHEN THE SPACE IS SATISFIED IN FOR THE COOLING SYSTEM, THE ROOFTOP SHALL DEACTIVATE AND UNIT RETURN TO NORMAL OPERATION.



2 PACKAGED RTU (RTU-103) CONTROL DIAGRAM

NOT TO SCALE

ROOFTOP UNIT

ROOFTOP UNIT SHALL BE SCHEDULED FOR AUTOMATIC OPERATION WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 60 DEGREES (ADJUSTABLE) CONTRACTOR SHALL PROVIDE AN E-P SWITCH TO DISABLE THE EXSITNG PNEUMATIC SYSTEM AND THE HV UNITS SHALL BE TURNED OFF AND ALL DAMPERS CLOSED TO AIRFLOW. THE EXISITNG HEATING AND VENTILATING UNITS SHALL OPERATION IN THE HEATING MODE WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 60 DEG F.

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. ALL SYSTEM COMMUNICATIONS SHALL BE. THE CONTROLS SHALL BE DDC USING ELECTRIC ACTUATION AND PID CONTROL LOGIC. ALL CONTROL, MONITORING AND ALARM POINTS SHALL BE AVAILABLE AT CONTROL PANEL LOCATED IN THE JANITORS CLOSET.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.

ECONOMIZER CONTROL. WHEN THE OUTDOOR AIR DRY BULB TEMPERATURE IS BELOW THE ECONOMIZER CHANGEOVER VALUE OF 60°F, THE HEATING SECTION AND THE MIXED AIR DAMPERS SHALL MODULATE IN SEQUENCE WITHOUT OVERLAP TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT WITH A LOW LIMIT OF 42°F AT THE MIXED AIR SENSOR. THE MIXING DAMPERS SHALL RAMP OPEN SLOWLY TO AVOID OVERSHOOTING. WHEN THE OUTSIDE DRY BULB TEMPERATURE IS ABOVE THE ECONOMIZER CHANGEOVER VALUE, THE MIXING DAMPERS ARE PLACED, IN MINIMUM OUTDOOR AIR POSITION AS DETERMINED BY THE VENTILATION SET POINT AND THE COOLING SECTION MODULATES TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT.

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.

UNOCCUPIED MODE

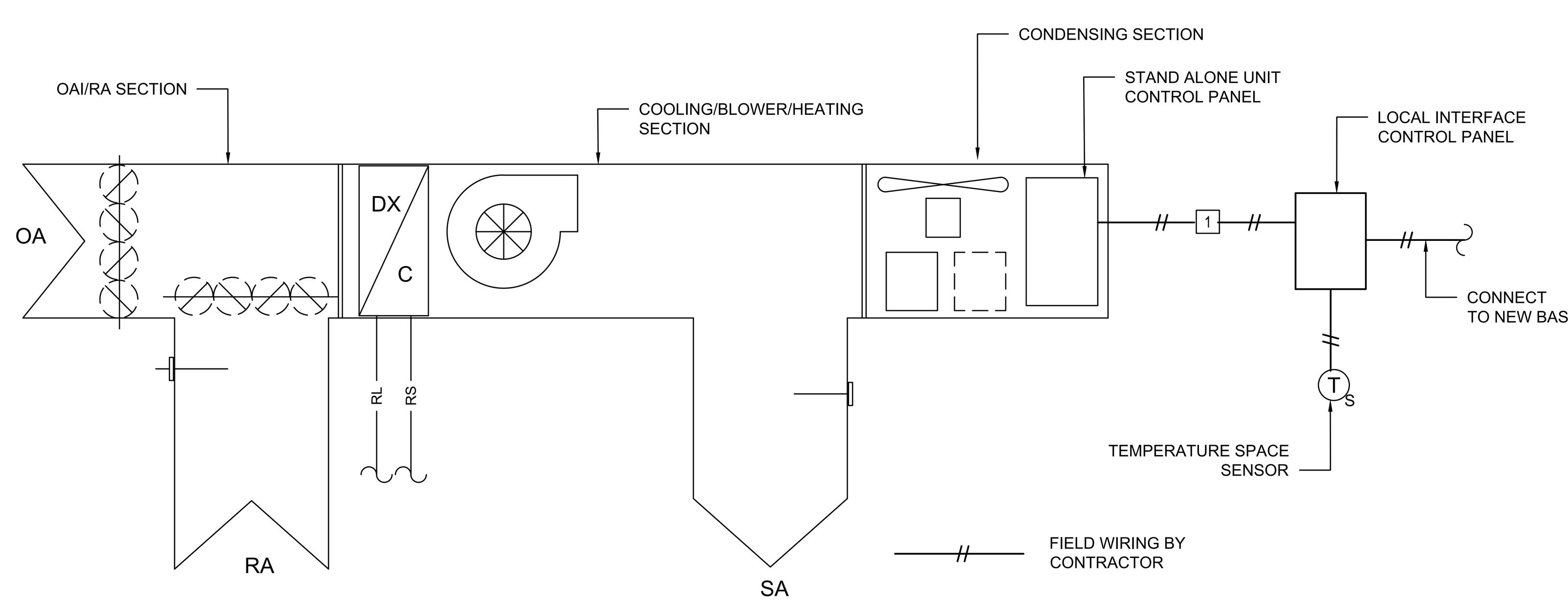
THE SUPPLY FAN IS OFF AND THE MIXED AIR DAMPERS CLOSE TO THE OUTDOOR AIR.

SAFETY:

SMOKE DETECTORS. SMOKE DETECTORS INSTALLED IN THE 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.

CURRENT SWITCHES. CURRENT SWITCHES ARE INSTALLED AT THE SUPPLY FAN. 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



4 PACKAGED RTU (RTU-105) CONTROL DIAGRAM

NOT TO SCALE

ROOFTOP UNIT 105 GYMNASIUM

ROOFTOP UNIT SHALL BE SCHEDULED FOR AUTOMATIC OPERATION WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 60 DEGREES (ADJUSTABLE) CONTRACTOR SHALL PROVIDE AN E-P SWITCH TO DISABLE THE EXSITNG PNEUMATIC SYSTEM FOR UNITS HV 3,4,5,6,9,10 AND THE HV UNITS SHALL BE TURNED OFF AND ALL DAMPERS CLOSED TO AIRFLOW. THE EXISITNG HEATING AND VENTILATING UNITS SHALL OPERATION IN THE HEATING MODE WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 60 DEG F.

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.

ECONOMIZER CONTROL. WHEN THE OUTDOOR AIR DRY BULB TEMPERATURE IS BELOW THE ECONOMIZER CHANGEOVER VALUE OF 60°F, THE THE MIXED AIR DAMPERS SHALL MODULATE IN SEQUENCE WITHOUT OVERLAP TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT WITH A LOW LIMIT OF 42°F AT THE MIXED AIR SENSOR. THE MIXING DAMPERS SHALL RAMP OPEN SLOWLY TO AVOID OVERSHOOTING. WHEN THE OUTSIDE DRY BULB TEMPERATURE IS ABOVE THE ECONOMIZER CHANGEOVER VALUE, THE MIXING DAMPERS ARE PLACED, IN MINIMUM OUTDOOR AIR POSITION AS DETERMINED BY THE VENTILATION SET POINT AND THE COOLING SECTION MODULATES TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT.

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.

UNOCCUPIED MODE

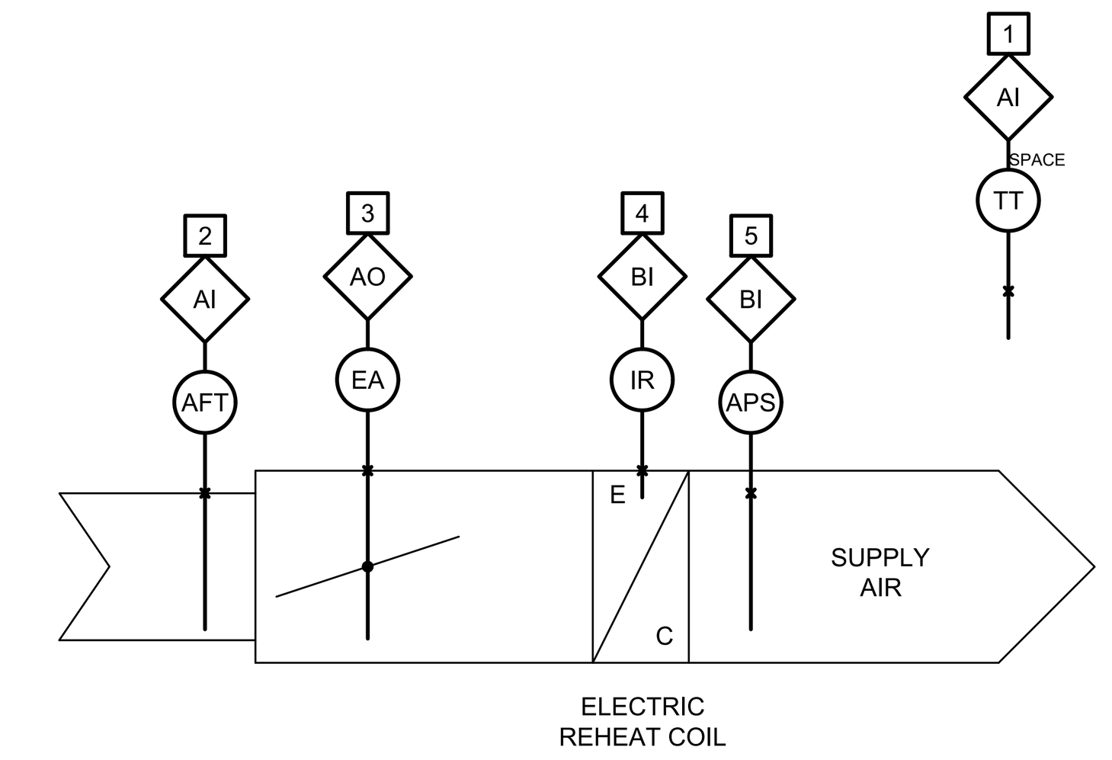
THE SUPPLY FAN IS OFF AND THE MIXED AIR DAMPERS CLOSE TO THE OUTDOOR AIR.

SAFETY:

SMOKE DETECTORS. SMOKE DETECTORS FURNISHED BY THE FIRE ALARM CONTRACTOR (INSTALLED BY MC) IN THE 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.

CURRENT SWITCHES. CURRENT SWITCHES ARE INSTALLED AT THE SUPPLY FAN. 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



1 VAV BOX WITH REHEAT CONTROL DIAGRAM

TERMINAL UNIT

SCALE: NONE

SINGLE DUCT TERMINAL UNIT WITH ELECTRIC 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 ELECTRIC HEATING CONTROL COIL OPENS 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 +/- 3°F. 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 AND THE ELECTRIC REHEAT CONTROL IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE PRIMARY AIR DAMPER IS ALLOWED TO MODULATE CLOSED.

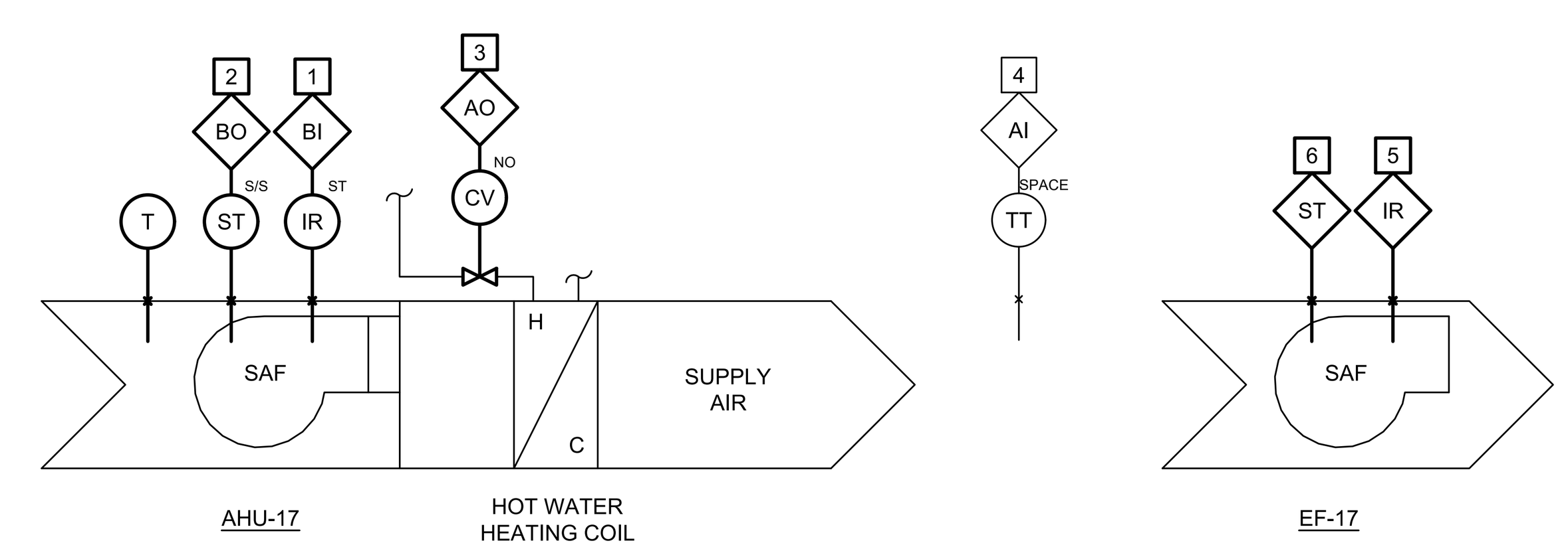
NIGHT COOLING: THE VAV DAMPER IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE COOL AIR TO THE SPACE AND THE ELECTRIC REHEAT CONTROL IS CLOSED. ONCE ZONE SPACE TEMPERATURE SET POINT IS SATISFIED THE PRIMARY AIR DAMPER IS ALLOWED TO MODULATE CLOSED.

WARM-UP MODE: THE VAV TERMINAL IS MODULATED TO MAXIMUM AIR FLOW VALUE TO PROVIDE WARM AIR TO THE SPACE AND THE ELECTRIC REHEAT CONTROL 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 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 AND THE ELECTRIC REHEAT CONTROL 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.

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	ELECTRIC REHEAT COIL STATUS			X		ON / OFF
5	AIRFLOW PROVING SWITCH			X		NORMAL / ALARM



6 AHU-17 CONTROL DIAGRAM

SCALE: NONE

UNIT HEATER

THE AIR HANDLING UNIT SHALL BE ENABLED AND DISABLED THRU THE BAS. WHERE ENABLED, EF-17 SHALL START AND AHU-17 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.

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 SENSOR	X				°F
5	SUPPLY FAN MOTOR STATUS			X		ON/OFF
6	SUPPLY FAN STARTER				X	ENABLE/DISABLE

WAYNE STATE

OSBORN ENGINEERING

MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

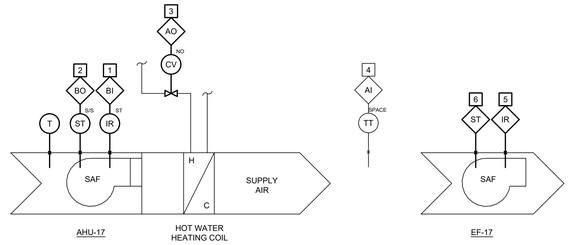
TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY KAJ
CHECKED BY DVL
CLIENT PROJ NO. -
OSBORN PROJ NO. J20190854.070

HVAC CONTROL DIAGRAMS

DRAWING NO.

M-601



6 AHU-17/ EF-17 CONTROL DIAGRAM

SCALE: NONE

UNIT HEATER

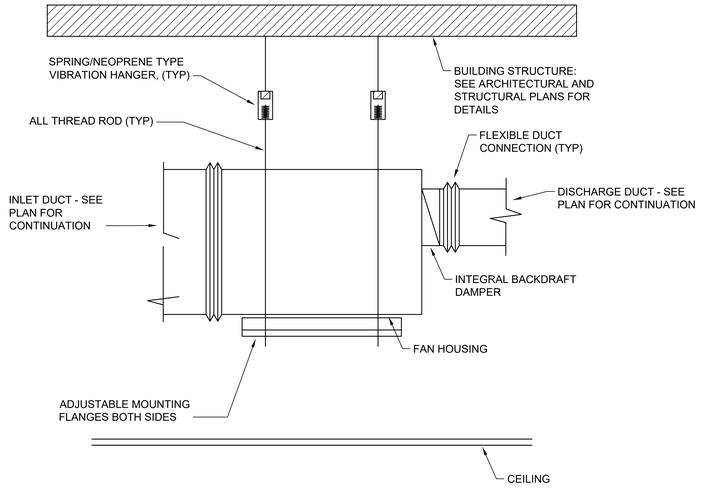
THE AIR HANDLING UNIT SHALL BE ENABLED AND DISABLED THRU THE BAS. WHERE ENABLED, EF-17 SHALL START AND AHU-17 SHALL CYCLE AND HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT AS SENSED BY INTEGRAL UNIT THERMOSTAT.

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.

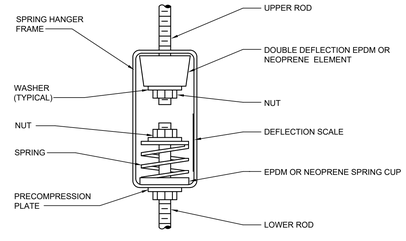
UH CONTROL POINTS

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 SENSOR	X				°F
5	SUPPLY FAN MOTOR STATUS			X		ON/OFF
6	SUPPLY FAN STARTER				X	ENABLE/DISABLE



1 CABINET FAN

NOT TO SCALE



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.

2 SPRING ISOLATED HANGER FOR PIPE OR EQUIPMENT

NOT TO SCALE

OSBORN ENGINEERING
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MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

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DETROIT, MI 48208

TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	KAJ
CHECKED BY	DVL
CLIENT PROJ NO.	-
OSBORN PROJ NO.	J20190854.070

HVAC DETAILS

DRAWING NO.

M-701

ROOFTOP UNIT SCHEDULE

GENERAL					SUPPLY FAN DATA						COOLING DATA									HEATING DATA							UNIT ELECTRICAL DATA			OPER. WEIGHT (LBS)	MANUFACTURER / MODEL	NOTES
MARK	NOMINAL TONS	SERVES	EER	OA CFM	UNIT TYPE	QTY	TOTAL CFM	ESP, IN. W.G.	MOTOR HP	DISCHARGE POSITION	REFRIGERANT TYPE	OA DB/WB °F	EAT DB/WB °F	LAT DB/WB °F	SENSIBLE MBH	TOTAL MBH	COMPRESSOR QTY	NO. OF STAGES	CONDENSER QTY OF FANS	BURNER TYPE	OAT °F DB/WB	GAS INPUT MBH	GAS OUTPUT MBH	GAS PRESSURE IN. W.C.	TEMP RISE °F	NO. OF STAGES	VOLT/PH	MCA	MOCP			
RTU-101	10	HV-1	12.4	1,000	CONSTANT	1	3,750	1.5	8	DOWN	R410A	95 / 75	80 / 67	57.5 / 57.1	98.31	125.17	2	MODULATING	2	-	-	-	-	-	-	-	460 / 3	23.5	30	2171	DAIKIN DPS010A	1-10
RTU-102	10	HV-2	12.4	1,000	CONSTANT	1	3,750	1.5	8	DOWN	R410A	95 / 75	80 / 67	57.5 / 57.1	98.31	125.17	2	MODULATING	2	-	-	-	-	-	-	-	460 / 3	23.5	30	2171	DAIKIN DPS010A	1-10
RTU-103	15	AC-0802,3	11.1	1,500	VAV	1	6,000	2.00	8	DOWN	R410A	95 / 75	80 / 67	57.5 / 57.5	147.48	181.93	2	MODULATING	2	MODULATING	0	400	320	7-11	-	MODULATING	460 / 3	33.0	45	2334	DAIKIN DPS015A	1-10,12
RTU-104	15	HV-8	11.1	1,500	CONSTANT	1	6,000	1.5	8	DOWN	R410A	95 / 75	80 / 67	57.5 / 57.5	147.48	181.93	2	MODULATING	2	-	-	-	-	-	-	-	460 / 3	33.0	45	2334	DAIKIN DPS015A	1-10
RTU-105	50	HV-3,4,5,6	10.3	5,500	CONSTANT	1	20,000	1.0	15	DOWN	R410A	95 / 75	80 / 67	55.4 / 55.0	482.01	571.72	4	MODULATING	4	-	-	-	-	-	-	-	460 / 3	110.8	125	5800	DAIKIN MPS050F	1-10
RTU-106	25	HV-11	11.3	5,500	DOAS	1	5,500	1.5	5	DOWN	R410A	95 / 75	95 / 75	56.5/56.5	219.3	318.2	2	MODULATING	2	-	=	-	-	-	-	-	460 / 3	58.3	80	4000	DAIKIN DPS025A	1-10,11
RTU-107	25	HV-12	11.3	5,500	DOAS	1	5,500	1.5	5	DOWN	R410A	95 / 75	95 / 75	56.5/56.5	219.3	318.2	2	MODULATING	4		-	-	-	-	-	-	460 / 3	58.3	80	4000	DAIKIN DPS025A	1-10,11
RTU-108	7.5	AC-8001	12.2	3000	CONSTANT	1	500	1.0	2	DOWN	R410A	95 / 75	80 / 67	59.8 / 57.6	66.9	90.0	2	2	2	MODULATING	0	200	160	7-11		MODULATING	460 / 3	20.8	25	1500	DAIKEN DRG090	1-10

1. PROVIDE UNIT WITH 100% COMPARATIVE DRYBULB ECONOMIZER, MAXIMUM TEMERATURE OF 65 DEGREES F.
2. PROVIDE UNIT HAIL GUARD
3. PROVIDE ROOF CURB WITH 16" HEIGHT ABOVE ROOF.
4. FACTORY NON-FUSED DISCONNECT.
5. 2" MERV 8 PREFILTER.
6. CLOGGED FILTER SWITCH.
7. 115V GFI OUTLET.
8. DOUBLE WALL CONSTRUCTION.
9. BACNET CARD
10. PHASE FAILURE AND GROUND FAULT.
11. PROVIDE UNIT WITH HOT GAS REHEAT COIL.
12. PROVIDE FACTORY INSTALLED VFD

VRF OUTDOOR UNIT SCHEDULE - DEDUCT ALTERNATE 1

MARK	GENERAL								COOLING DATA		HEATING DATA		CONNECTED INDOOR UNITS	ELECTRICAL DATA			OPER. WEIGHT (LB)	MANUFACTURER	MODEL	REMARKS
	TYPE	NOMINAL TONS	REFRIGERANT TYPE	COMPRESSOR DATA QTY	COMPRESSOR DATA TYPE	REFRIGERANT PIPING MAX LENGTH (FT)	REFRIGERANT PIPING MAX VERTICAL LENGTH (FT)	EFFICIENCY EER / IEER / COP@17F (ALL NON DUCTED)	AMBIENT TEMP (°F) COOLING (DB°F) / HEATING (DB°F)	CAPACITY @ AMBIENT (MBH)	TOTAL CONNECTED (MBH) / %	CAPACITY @ AMBIENT (MBH)	TOTAL CONNECTED (MBH) / %		V / PH / HZ	MCA (AMPS)	MOCP (AMPS)				
CU-101	HEAT PUMP	14 - TONS	R410A	1	INVERTER	540	295	10.6/22.6/2.34	95 / 32	133	168 / 107.7	176	189 / 107.4	AC-1 THRU 14	460 / 3 / 60	25.9	35	794	DAIKIN	REYQ168TYDN	ALL

REMARKS:

1. BACNET DEVICE DCM601A71
2. DCM601A71 INTELLIGENT TOUCH MANAGER, OR APPROVED EQUAL, COORDINATE LOCATION WITH OWNER.
3. MANUFACTURER MUST BE CERTIFIED, LISTED, AND LABELED PER AHRI 1230.
4. CONDENSING UNITS MUST HAVE FULLY MODULATING COMPRESSORS.
5. CONDENSING UNITS MUST HAVE AUTO CHANGEOVER FUNCTIONS.
6. EEV ACTUATORS MUST BE REMOVABLE FROM VALVE BODY WITHOUT DISTURBING THE REFRIGERANT SYSTEM.
7. MANUFACTURERS SUBMITTAL MUST INCLUDE REFRIGERANT PIPING DIAGRAM WITH PIPE DIAMETERS, LENGTHS, AND REFRIGERANT VOLUME.
8. REFNET BRANCH PIPING KIT.
9. VRF SYSTEM IS TO SUBMITTED AS DEDUCT ALTERNATE 1.

VRF INDOOR UNIT SCHEDULE - DEDUCT ALTERNATE 1

MARK	GENERAL		FAN DATA		COOLING DATA		HEATING DATA			ELECTRICAL DATA			OPER. WEIGHT (LB)	MANUFACTURER	MODEL	REMARKS
	ASSOCIATED OUTDOOR UNIT	TYPE	FLOW (CFM)	MAX ESP ("wg)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	CAPACITY (MBH)	AUX. HEAT kW	AUX. HEAT MODEL	V / PH / HZ	MCA (AMPS)	MOCP (AMPS)				
AC-1	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	15	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-2	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	16	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-3	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	17	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-4	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	18	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-5	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	19	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-6	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	20	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-7	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	21	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-8	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	22	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-9	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	23	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-10	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	24	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-11	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	25	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-12	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	26	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-13	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	27	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4
AC-14	CU-101	WALL MOUNT	180	-	12.0	8.9	13.5	-	-	208 / 1 / 60	0.4	28	26	DAIKIN	FXAQ12PVJU	1, 2, 3, 4

REMARKS:

1. UNITS REQUIRE SEPARATE POWER SUPPLY, THEY ARE NOT POWERED BY CU.
2. DISCONNECT BY EC. PROVIDE WITH LONG LIFE FILTER AND BRC1E73 NAVIGATOR REMOTE CONTROL
3. PROVIDE CONDENSATE PUMP EQUAL TO LITTLE GIANT VCMA-20ULS, 115 VOLT/60HZ, 1.5 AMPS, 20' SHUT-OFF HEAD, OVERFLOW DETECTION SWITCH.
4. MC TO PROVIDE ⅜" I.D. VINYL DISCHARGE TUBING ROUTED TO CONDENSATE DRAIN LINE-SEE PLAN.
5. VRF SYSTEM IS TO SUBMITTED AS DEDUCT ALTERNATE 1.

VAV BOX WITH ELECTRIC REHEAT SCHEDULE

MARK	SERVE	MAXIMUM COOLING CFM	HEATING CFM	MINIMUM CFM	INLET SIZE	ELECTRIC REHEAT COIL KW	EAT °F	LAT °F	V/PH/HZ	MCA	MOP	UNIT SELECTION BASED ON:	NOTES:
VAV-1	OFFICE	1375	450	325	12	2	55	69.0	208/1/60	12.0	15	TITUS DESV	1, 2, 3, 4, 5
VAV-2	OFFICE	1025	300	230	10	2	55	71.0	208/3/60	5.2	15	TITUS DESV	1, 2, 3, 4, 5
VAV-3	FITNESS	3600	1400	1400	24X16	6	55	71.0	208/3/60	20.8	25	TITUS DESV	1, 2, 3, 4, 5

NOTES:

1. BOX SHALL BE SINGLE-DUCT AND PRESSURE-INDEPENDENT, WITH ELECTRIC REHEAT COIL . PROVIDE ROOM THERMOSTAT AND CONTROLS NECESSARY FOR COMMUNICATION WITH, AND CONTROL BY, NEW VERSAYS BUILDING AUTOMATION SYSTEM.
2. SELECTIONS BASED ON 1.00 IN. W.C. PRIMARY INLET STATIC PRESSURE, 0.25 IN. W.C. DOWNSTREAM STATIC PRESSURE.
3. COORDINATE L/R HAND ORIENTATION WITH FINAL INSTALLATION CONDITIONS.
4. PROVIDE SCR CONTROL ON HEATING COIL. PROVIDE 24 V TRANSFORMER FOR CONTROLS.
5. PROVIDE DOOR INTERLOCK DISCONNECT SWITCH AND FUSE BLOCK. COORDINATE FUSING WITH ELECTRICAL CONTRACTOR.

FAN-COIL UNIT SCHEDULE

GENERAL					FAN DATA				HEATING DATA					UNIT SELECTION BASED ON:	NOTES
MARK	ROOM SERVED	REFERENCE DRAWING	TYPE	STYLE	CFM	HP	ESP, IN. W.G.	V/PH/HZ	MBH	GPM	EAT °F DB/WB	EWT °F	LWT °F		
FCU-1	BASEMENT POOL EQIP. ROOM	M-100	2-PIPE	CONCEALED	3500	1.5	0.5	230/1/60	37.9	12.4	0.0	180	120	AH040W2D024R000	1, 2, 3

NOTES:

1. PROVIDE SECONDARY DRAIN PAN WITH WATER ALARM TO SHUT DOWN UNIT AND SEND ALARM TO BAS.
2. FACTORY-INSTALLED DISCONNECT
3. MOUNT ABOVE DOOR AT HEIGHT TO ALLOW GRAVITY CONDENSATE DRAIN ABOVE CEILING TO XXXXX LOCATED IN ROOM XXXXX.

AIR DISTRIBUTION DEVICE SCHEDULE

MARK	TYPE	FRAME TYPE	DAMPER TYPE	NOMINAL SIZE IN.	UNIT SELECTION BASED ON:	NOTES
CD-1	SUPPLY DIFFUSER	LAY-IN	NONE	24x24	PRICE SPD	1, 2, 3
DL-1	DRUM	SURFACE-MOUNT	NONE	SEE PLANS	PRICE HCD	5
SD-1	SUPPLY GRILLE	SURFACE-MOUNT	OBD	24x12	PRICE HCD	2,3,4
SD-2	SUPPLY GRILLE	SURFACE-MOUNT	OBD	36x24	PRICE HCD	2,3,4
SD-3	SUPPLY GRILLE	SURFACE-MOUNT	OBD	48x24	PRICE HCD	2,3,4
RG-1	RETURN GRILLE	SURFACE-MOUNT	NONE	SEE PLANS	PRICE 630	3, 4
RG-2	RETURN GRILLE	SURFACE-MOUNT	NONE	SEE PLANS	PRICE 530	3, 4

NOTES:

1. DIFFUSERS SHALL BE WHITE WITH ALUMINUM CONSTRUCTION. FACE SIZE IS 24x24, UNLESS OTHERWISE NOTED. SEE PLANS FOR NECK SIZE. BRANCH RUNOUT TO BE SAME SIZE AS DIFFUSER CONNECTION, UNLESS OTHERWISE NOTED.
2. SEE PLANS FOR DUCT CONNECTION AND DUCT BRANCH SIZE.
3. FRAME TYPE TO BE COMPATIBLE WITH CEILING TYPE.
4. GRILLES TO BE WHITE WITH ALUMINUM BORDER AND CORE. SEE PLANS FOR DUCT CONNECTION AND DUCT BRANCH SIZE.
5. PROVIDE WITH SPIRAL DUCT FRAME, STANDARD WHITE FINISH.

FAN SCHEDULE

MARK	REFERENCE DRAWING	SERVICE	TYPE	CFM	ESP, IN. W.G.	MOTOR DATA DRIVE	MOTOR DATA MIN. MOTOR HP	MOTOR DATA VOLTAGE/PH	UNIT SELECTION BASED ON:	NOTES
EF-17	M-100	AHU-17	MIXED FLOW	13100	0.5	DIRECT	5	460/60/3	GREENHECK-SQ-24-M2-VG	1

NOTES:

1. PROVIDE DISCONNECT

FAN SCHEDULE

MARK	REFERENCE DRAWING	SERVICE	TYPE	CFM	ESP, IN. W.G.	MOTOR DATA DRIVE	MOTOR DATA MIN. MOTOR HP	MOTOR DATA VOLTAGE/PH	UNIT SELECTION BASED ON:	NOTES
RF-10	M-1.1	HV-10	MIXED FLOW	9400	1.8	BELT	5	480-3	GREENHECK-QEI-24	1
EF-17		AHU-17		13100	0.5	DIRECT	5	480-3	GREENHECK-SQ-24-M2-VG	1
EF-17										

NOTES:

1. PROVIDE DISCONNECT

FAN-COIL UNIT SCHEDULE

GENERAL					FAN DATA				HEATING DATA					UNIT SELECTION BASED ON:	NOTES
MARK	ROOM SERVED	REFERENCE DRAWING	TYPE	STYLE	CFM	HP	ESP, IN. W.G.	V/PH/HZ	MBH	GPM	EAT °F DB/WB	EWT °F	LWT °F		
FCU-1	BASEMENT POOL EQIP. ROOM	M-100	2-PIPE	CONCEALED	3500	1.5	0.5	230/1/60	37.9	12.4	0.0	180	120	AH040W2D024R000	1, 2, 3

NOTES:

1. PROVIDE SECONDARY DRAIN PAN WITH WATER ALARM TO SHUT DOWN UNIT AND SEND ALARM TO BAS.
2. FACTORY-INSTALLED DISCONNECT
3. MOUNT ABOVE DOOR AT HEIGHT TO ALLOW GRAVITY CONDENSATE DRAIN ABOVE CEILING TO XXXXX LOCATED IN ROOM XXXXX.

WAYNE STATE

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MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY KAJ
CHECKED BY DVL
CLIENT PROJ NO. -
OSBORN PROJ NO. J20190854.070

HVAC SCHEDULES

DRAWING NO.

M-702

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
HALF TONE LINE (40%)	DENOTES BACKGROUND.
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. UNDERGROUNG OR BELOW GRADE.
HALF TONE LINE (60%)	DENOTES POWERED EQUIPMENT FURNISHED OR PROVIDED BY OTHER DIVISIONS OR OWNER.
	BRANCH CIRCUIT TURNING UP. BRANCH CIRCUIT TURNING DOWN. BRANCH CIRCUIT TURNING UP & DOWN.
UE / UT	UNDERGROUND, UNDER FLOOR/SLAB DUCTBANK, DIRECT BURIED CABLE, CONDUIT/CONDUCTOR: UE=ELECTRICAL UT=TELECOM
HOT / GROUND / NEUTRAL / #	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).
ZZZ / #,#,#	ROOM CIRCUIT TAG. ALL FIXTURES/DEVICES IN ROOM/SPACE TO BE CIRCUITED TO PANEL "ZZZ" / CIRCUIT NUMBER(S) "#,#,#" AS INDICATED, UNLESS OTHERWISE NOTED.

POWER & EQUIPMENT SYMBOL LEGEND

SYMBOL	DESCRIPTION
	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.
$m	FRACTIONAL HORSEPOWER MOTOR STARTER - 120 VOLT, 20 AMP, 1 POLE, PILOT LIGHT, UNLESS OTHERWISE NOTED.
AS WP	NON-FUSED DISCONNECT SWITCH. "X" 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

ONE-LINE DIAGRAM SYMBOL LEGEND

SYMBOL	DESCRIPTION
HEAVY SOLID LINES	DENOTES NEW (N) OR RELOCATED (R) BUSSING, FEEDER, ETC.
	AUTOMATIC TRANSFER SWITCH. NUMBER OF POLES AND AMPERAGE RATING AS NOTED OR SCHEDULED.
	DRY TYPE TRANSFORMER. kVA, PHASE, PRIMARY AND SECONDARY RATING AS NOTED OR SCHEDULED.
NAME	PANELBOARD. DESIGNATION AS NOTED. SEE PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION.
TRIP FRAME	MOLDED CASE CIRCUIT BREAKER. FRAME AND TRIP SIZES AS NOTED.
TRIP FRAME ST	MOLDED CASE CIRCUIT BREAKER WITH SHUNT TRIP OPERATOR. FRAME AND TRIP SIZES AS NOTED.
SWITCH FUSE	LOW VOLTAGE FUSED DISCONNECT SWITCH. FUSE AND DISCONNECT SWITCH SIZES AS NOTED.
SWITCH	LOW VOLTAGE NON-FUSED DISCONNECT SWITCH. DISCONNECT SWITCH SIZE AS NOTED.
FUSE	LOW VOLTAGE FUSE. SIZE AS NOTED.

SYMBOL	DESCRIPTION
G N	NEUTRAL BUS TO GROUND BUS BONDING.
FUSE	MEDIUM VOLTAGE FUSE. SIZE AS NOTED.
	CURRENT TRANSFORMER. SIZE AS REQUIRED.
	WYE CONNECTED WIRING.
SPACE	SPACE IN CIRCUIT BREAKER OR FUSED SWITCH DISTRIBUTION PANELBOARD. FRAME SIZE AS NOTED.
	DELTA CONNECTED WIRING.
SPD	SURGE SUPPRESSION DEVICE.
GFP	GROUND FAULT PROTECTION.
M	METERING.

OUTLET SYMBOL LEGEND

SYMBOL	DESCRIPTION
+"H" ZZ/##	SINGLE RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R, MOUNTED 18"A.F.F. UNLESS OTHERWISE NOTED. "+H" INDICATES MOUNTING HEIGHT OTHER THAN 18". "ZZ / ##" INDICATES BRANCH CIRCUITING.
+"H" ZZ/##	DUPLEX 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.
+"H" 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.
G +"H" ZZ/##	GROUND FAULT INTERRUPTER TYPE DUPLEX 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.
X +"H" ZZ/##	SPECIAL PURPOSE RECEPTACLE. REFER TO ABOVE FOR MOUNTING HEIGHT AND CIRCUITING INFORMATION. "X" INDICATES THE FOLLOWING: A 125 VOLT, 2 POLE, 3 WIRE, 30 AMP (NEMA 5-30R) B 125 VOLT, 2 POLE, 3 WIRE, 50 AMP (NEMA 5-50R) C 250 VOLT, 2 POLE, 3 WIRE, 15 AMP (NEMA 6-15R) D 250 VOLT, 2 POLE, 3 WIRE, 20 AMP (NEMA 6-20R) E 250 VOLT, 2 POLE, 3 WIRE, 30 AMP (NEMA 6-30R) F 250 VOLT, 2 POLE, 3 WIRE, 50 AMP (NEMA 6-50R) G 125/250 VOLT, 3 POLE, 4 WIRE, 15 AMP (NEMA 14-15R) H 125/250 VOLT, 3 POLE, 4 WIRE, 20 AMP (NEMA 14-20R) J 125/250 VOLT, 3 POLE, 4 WIRE, 30 AMP (NEMA 14-30R) K 125/250 VOLT, 3 POLE, 4 WIRE, 50 AMP (NEMA 14-50R) L 125/250 VOLT, 3 POLE, 4 WIRE, 60 AMP (NEMA 14-60R) M 250 VOLT, 3 POLE, 4 WIRE, 15 AMP (NEMA 15-15R) N 250 VOLT, 3 POLE, 4 WIRE, 20 AMP (NEMA 15-20R) P 250 VOLT, 3 POLE, 4 WIRE, 30 AMP (NEMA 15-30R) Q 250 VOLT, 3 POLE, 4 WIRE, 50 AMP (NEMA 15-50R) R 250 VOLT, 3 POLE, 4 WIRE, 60 AMP (NEMA 15-60R) COORDINATE EXACT NEMA CONFIGURATION WITH EQUIPMENT PRIOR TO ROUGH-IN.
ZZ/##	CEILING MOUNTED DUPLEX OR DOUBLE DUPLEX (QUAD) RECEPTACLE, 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING TYPE, NEMA 5-20R. REFER TO ABOVE FOR MOUNTING HEIGHT AND CIRCUITING INFORMATION.
	RECEPTACLES WITH ADDITIONAL SUBSCRIPT DESIGNATES TYPE OR SPECIFIC REQUIREMENTS AS FOLLOWS: G GROUND FAULT CIRCUIT INTERRUPTER TYPE E EMERGENCY RED IN COLOR H HOSPITAL GRADE TYPE IG ISOLATED GROUND TR TAMPER RESISTANT TYPE WP WEATHERPROOF "WHILE-IN-USE" (HUBBELL #WP26E) COVER
J	JUNCTION BOX (SIZED AS REQUIRED PER N.E.C. ARTICLE 314).
PB / TB	PULL BOX OR TAP BOX (SIZED AS REQUIRED PER N.E.C. ARTICLE 314).
	TELECOM ROUGH-IN. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
A/V	AUDIO/VIDEO ROUGH-IN. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
CR	SECURITY ROUGH-IN. REFER TO DETAILS E5.01 FOR ADDITIONAL INFORMATION.
	PUSHBUTTON STATION. "X" INDICATES THE FOLLOWING: DO AUTOMATIC DOOR OPERATOR. EPO EMERGENCY POWER OFF.
	DATA/VOICE OUTLET BOX AT 18" AFF, UON. FURNISH WITH (2) 8 PIN RJ-45 CONNECTOR FACEPLATE AND 3-4 PAIR #18 CAT. 6 CABLES (PLENUM RATED), PROPERLY SUPPORTED WITH J-HOOKS, ROUTED BACK TO DATA/COMMUNICATIONS RACK. TERMINATE CABLES AT BOTH ENDS AS REQUIRED.
FACP	FIRE ALARM CONTROL PANEL.
S	DUCT DETECTOR.

LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION
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.
	LINEAR PENDANT MOUNTED LUMINAIRE. SEE LUMINAIRE SCHEDULE.
Z/# $X,y	SINGLE POLE, 120/277V, 20A TOGGLE SWITCH. "X" INDICATES THE FOLLOWING: 3 THREE WAY; Z/# INDICATES CIRCUIT BEING CONTROLLED (VIA LOW VOLTAGE, RELAY CONTROL TYPE SWITCH) y LOWERCASE LETTER INDICATES CONTROL OF SPECIFIC LUMINAIRES.
OS X	CEILING MOUNTED OCCUPANCY SENSOR WITH 20 AMP RATED POWER PACK. "X" DENOTES THE FOLLOWING: DT DUAL TECHNOLOGY. PI PASSIVE INFRARED. US ULTRASONIC.

ABBREVIATIONS

GENERAL	
AC	ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CP	CONTROL PANEL
CR	CRITICAL BRANCH
CT	CURRENT TRANSFORMER
CU	COPPER
EG	EQUIPMENT GROUND
ELEV	ELEVATOR
EM	EMERGENCY
GAP	GENERATOR ANNUNCIATOR PANEL
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
IG	ISOLATED GROUND
IPP	ISOLATED POWER PANEL
LCP	LIGHTING CONTROL PANEL
LS	LIFE SAFETY
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MEGB	MAIN ELECTRICAL GROUND BUS
MLO	MAIN LUG ONLY
MTGB	MAIN TECHNOLOGY GROUND BUS
MTS	MANUAL TRANSFER SWITCH
NL	NIGHT LIGHT
OS	OCCUPANCY SENSOR
PNL	PANELBOARD
REC	RECEPTACLE
SB	OPTIONAL STAND-BY
SE	SERVICE ENTRANCE
SW	SWITCH
SWBD	SWITCHBOARD
UC	UNDER COUNTER
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
VFD	VARIABLE FREQUENCY DRIVE
VP	VANDAL PROOF
VT	VOLTAGE TRANSFORMER
WIU	WHILE IN USE
WP	WEATHERPROOF

RACEWAY TYPES	
AC	ARMORED CABLE
C	CONDUIT
EMT	ELECTRIC METALLIC 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
BAS	BUILDING AUTOMATION SYSTEM
CH	CHILLER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
DDC	DIGITAL DIRECT CONTROL
EF	EXHAUST FAN
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
F	FURNACE
FCU	FAN COIL UNIT
FPVAV	FAN-POWERED VARIABLE AIR VOLUME
HP	HEAT PUMP
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
SCOPE OF WORK / TRADES	
(N.I.C.)	NOT IN CONTRACT
EC	ELECTRICAL CONTRACTOR
GC	GENERAL CONTRACTOR
MC	MECHANICAL CONTRACTOR
TC	TECHNOLOGY CONTRACTOR
PANELBOARD NAMING	
DP	DISTRIBUTION PANEL
HP	HVAC PANEL
HSP	HOUSE SERVICE PANEL
IP	INVERTER PANEL
LP	LIGHTING PANEL
MP	MECHANICAL PANEL
PP	POWER PANEL
RP	RECEPTACLE PANEL
TP	TECHNOLOGY PANEL

DEMO/NEW WORK ANNOTATION LEGEND:

(E) DENOTES EXISTING DEVICE/EQUIPMENT TO BE MAINTAINED.

(REP) DENOTES EXISTING DEVICE/EQUIPMENT TO BE REMOVED IN ITS ENTIRETY. MAINTAIN JUNCTION BOXES, CONDUITS AND CIRCUITRY, ETC. FOR RE-USE AND/OR EXTENSION TO NEW DEVICE/EQUIPMENT INSTALLED AT SAME LOCATION.

(D&R) DENOTES EXISTING DEVICE/EQUIPMENT TO BE REMOVED IN ITS ENTIRETY INCLUDING JUNCTION BOXES, CONDUITS AND CIRCUITRY, ETC. COMPLETE BACK TO SOURCE OR NEXT ACTIVE DEVICE BEING MAINTAINED ON CIRCUIT.

(R&R) DENOTES EXISTING DEVICE/EQUIPMENT TO BE REMOVED AND RELOCATED IN ITS ENTIRETY. MAINTAIN ALL BRANCH CIRCUIT WIRING, CONDUIT, ETC. AS REQUIRED FOR RELOCATION TO NEW LOCATION (R) INDICATED ON "NEW WORK" DRAWINGS.

(R) DENOTES NEW LOCATION OF REMOVED AND RELOCATED (R&R) DEVICE/EQUIPMENT. DEVICE SHALL BE CLEANED PRIOR TO REINSTALLATION. EXTEND/REWORK ALL BRANCH CIRCUITING TO NEW LOCATION AS REQUIRED FOR PROPER OPERATION. NEW BRANCH CIRCUITING SHALL MATCH EXISTING IN SIZE, TYPE, AND/OR MATERIAL.

(N) DENOTES NEW DEVICE/EQUIPMENT TO BE PROVIDED IN ITS ENTIRETY, INCLUDING ALL FEEDER/BRANCH CIRCUIT WIRING, CONDUIT, ETC. AS REQUIRED FOR COMPLETE AND OPERATIONAL INSTALLATION.

GENERAL ELECTRICAL NOTES

1. ANY AND ALL "BUILDING STANDARDS" AND/OR "BUILDING" SPECIFICATIONS" SHALL BE CONSIDERED AN INTEGRAL PART OF THESE DOCUMENTS AND THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN A COPY OF THESE DOCUMENTS AND COMPLY WITH ALL REQUIREMENTS AND STANDARDS CONTAINED WITHIN.
2. REFER TO THE FOLLOWING: SYMBOL LEGEND(S) AND NOTES: DWG. E-001; ELECTRICAL SPECIFICATIONS: DWG's E-002 THRU E-00XX; ELECTRICAL DETAILS: DWG. SERIES E-500's; ELECTRICAL ONE LINE DIAGRAM(S): DWG. SERIES E-600's; AND ELECTRICAL SCHEDULES: DWG. SERIES E-700's FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT, PROFESSIONAL AND WORKMANLIKE MANNER, RECTILINEAR TO FINISHES AND BUILDING STRUCTURE.
9. 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.
10. 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.
11. 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.
12. THE ELECTRICAL CONTRACTOR SHALL SECURE ALL PERMITS AND PAY ALL FEES THAT ARE REQUIRED BY THE APPLICABLE LOCAL AND STATE LAWS.
13. 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.
14. A CONTINUOUS CONDUIT SHALL NOT BE CONSTRUED TO SATISFY THE REQUIREMENTS FOR AN EQUIPMENT GROUNDING SYSTEM. A SEPARATE EQUIPMENT GROUND WIRE SHALL BE PROVIDED INTERCONNECTING ALL EXPOSED CONDUCTIVE EQUIPMENT, TO THE COMMON GROUND BUS USING APPROPRIATE GROUND FITTINGS. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC TABLE 250.122. THE EQUIPMENT GROUNDING CONDUCTOR MUST BE RUN WITHIN THE SAME RACEWAY AS THE PHASE CONDUCTOR.
15. 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.
16. 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.
17. 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.
18. 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.
19. 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.
20. WHERE MULTIPLE DEVICES OF THE SAME TYPE/STYLE ARE SHOWN NEXT TO EACH OTHER, GANG INTO A SINGLE COVER PLATE.
21. ALL RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH APPROPRIATE EXPANSION FITTINGS.
22. IDENTIFY WITH LEGIBLE AND DURABLE MARKING, EACH DISCONNECTING MEANS INDICATING ITS PURPOSE.
23. 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.
24. 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.
25. ALL EQUIPMENT GROUNDS SHALL BE TERMINATED WITH COMPRESSION FITTINGS AND STAINLESS STEEL BOLTS OR IN PANEL GROUND BAR.
26. 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.
27. PROVIDE UL LISTED FIRE STOP ASSEMBLY AT ALL NEW AND EXISTING PENETRATIONS IN FIRE RATED STRUCTURES.
28. ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE RECEPTACLE OUTLETS USED BY THE WORKMEN SHALL BE PROTECTED BY A "GROUND FAULT INTERRUPTER".

WAYNE STATE

OSBORN ENGINEERING
3020 Telegraph Road | Bingham Farms, MI 48025
(313) 915-4014 www.osborn-eng.com

MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	BTF
CHECKED BY	JRB
CLIENT PROJ NO.	-
OSBORN PROJ NO.	J20190854.070

ELECTRICAL SYMBOLS, LEGENDS, AND NOTES

DRAWING NO.

E-001

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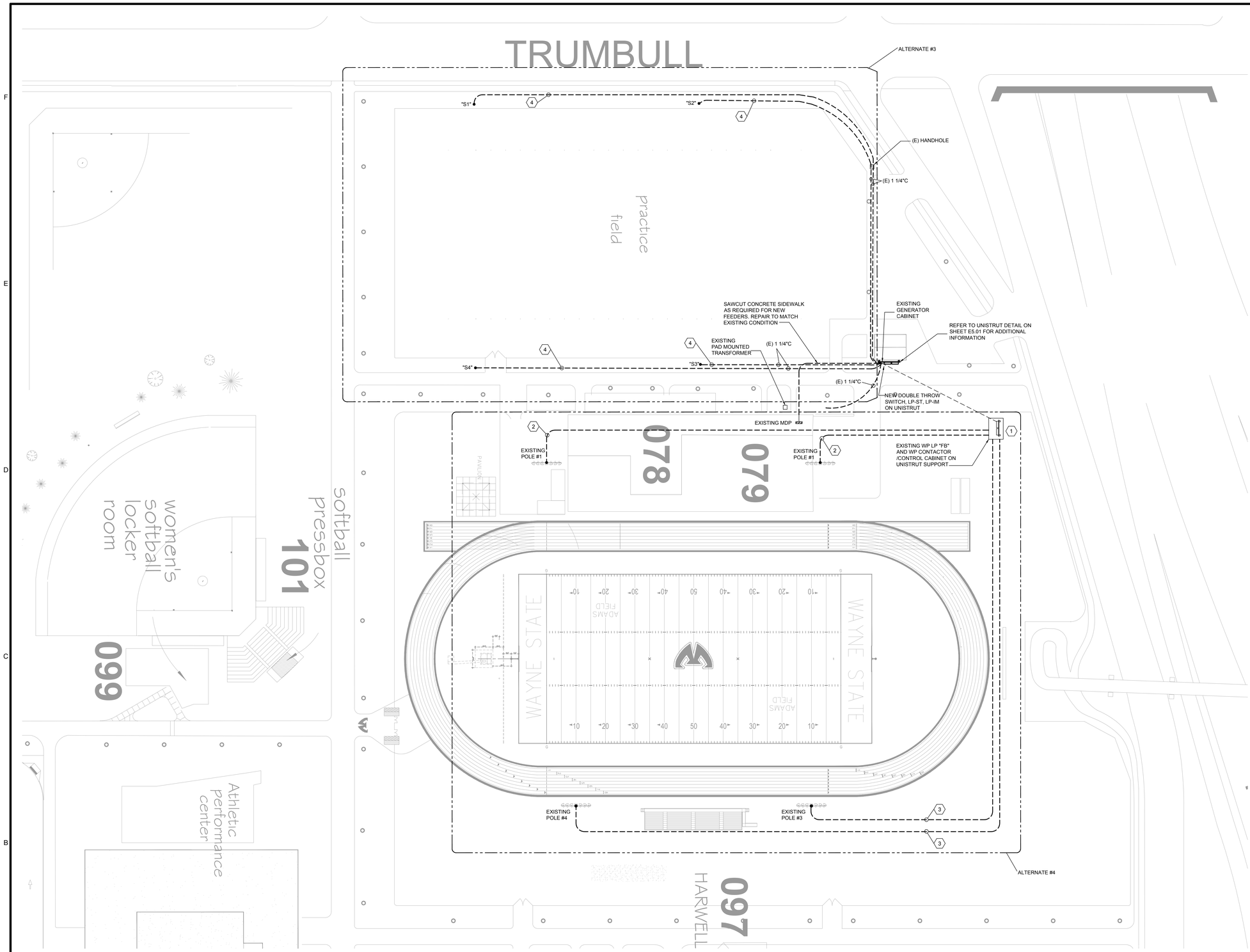

KEY NOTES

1. REMOVE EXISTING FOOTBALL STADIUM LIGHT CONTROLS AND PROVIDE NEW CONTROLS. CONNECT TO EXISTING 120V CONTROL POWER TRANSFORMER.
2. REMOVE EXISTING WIRING. PROVIDE 3#1/0+1#3EG (60A), 3#6+1#4EG (30A) IN EXISTING 3"C.
3. REMOVE EXISTING WIRING. PROVIDE 3#1/0+1#3EG (60A), 3#6+1#4EG (30A) IN EXISTING 3"C. PROVIDE NEW 60A,3P CIRCUIT BREAKER IN LP-FB.
4. PROVIDE 3#4, 1#3EG IN EXISTING 1 1/4"C. FOR NEW IM FIELD LIGHTING.
5. PROVIDE NEW PANEL, CONTACTORS, CONTROL TRANFORMER AND WIRING FOR IM FIELD LIGHTING.

1 ELECTRICAL SITE PLAN
SCALE: 1" = 40'

PLAN NORTH

0 20' 40' 80'

WAYNE STATE UNIVERSITY

OSBORN ENGINEERING
30200 Telegraph Road | Bingham Farms, MI 48025
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www.osborn-eng.com

MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY
DETROIT, MI 48208

TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY DWN
CHECKED BY CHK
CLIENT PROJ NO. -
OSBORN PROJ NO. J20190854.070

ELECTRICAL SITE PLAN

DRAWING NO.
E-002

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	S1-S2	70'	-	70'	TLC-LED-1200	2	2	0
				15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	6	6	0
2	S3-S4	70'	-	70'	TLC-LED-1200	2	2	0
				70'	TLC-LED-550	2*	2	0
				15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	6	6	0
4	TOTALS					44	44	0

* This structure utilizes a back-to-back mounting configuration

SCALE IN FEET 1 : 60
0' 60' 120'

Pole location(s) ✚ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Curt Lamberson · File #200226E · 09-Jun-23

Wayne State Intramural Fields

Detroit,MI

GRID SUMMARY

Name:	Multipurpose Field
Size:	360' x 225'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid

Guaranteed Average:	**50**
Scan Average:	51.53
Maximum:	65
Minimum:	40
Avg / Min:	1.29
Guaranteed Max / Min:	**3**
Max / Min:	1.62
UG (adjacent pts):	1.34
CU:	0.71
CV:	0.12
No. of Points:	96

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**44**
Total Load:	49.96 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

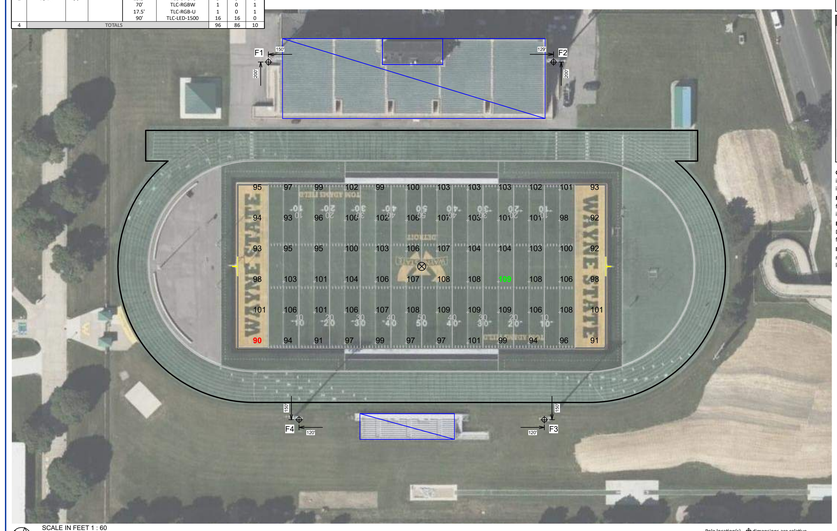
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	100'	-	35'	TLC-BT-575	3	3	0
				80'	TLC-RGBW	2	0	2
				37'	TLC-RGB-U	1	0	1
				100'	TLC-LED-1500	21	21	0
2	F3-F4	90'	-	90'	TLC-LED-1500	16	16	0
				18'	TLC-RGBW	1	0	1
				17.5'	TLC-RGB-U	1	0	1
				90'	TLC-LED-1500	16	0	16
4	TOTALS					96	86	10



SCALE IN FEET 1 : 60
0' 60' 120'

Pole location(s) ✚ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Curt Lamberson · File #223407B · 08-Jun-23

Wayne State University Football

Detroit,MI

GRID SUMMARY

Name:	Football
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid

Guaranteed Average:	**100**
Scan Average:	100.95
Maximum:	109
Minimum:	90
Avg / Min:	1.12
Guaranteed Max / Min:	**1.7**
Max / Min:	1.21
UG (adjacent pts):	1.13
CU:	0.46
CV:	0.05
No. of Points:	72

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**86**
Total Load:	111.24 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

ILLUMINATION SUMMARY

Wayne State Intramural Fields

Detroit,MI

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
S1-S2	70'	70'	2	TLC-LED-1200	2.34 kW	A
		70'	6	TLC-LED-1500	8.46 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
S3-S4	70'	70'	2	TLC-LED-1200	2.34 kW	A
		70'	6	TLC-LED-1500	8.46 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
		70'	2	TLC-LED-550	1.08 kW	A
4			***44***		***49.96 kW***	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Multipurpose Field	49.96 kW	44

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-550	LED 5700K - 75 CRI	540W	67,000	>120,000	>120,000	>120,000	4
TLC-LED-1500	LED 5700K - 75 CRI	1410W	181,000	>120,000	>120,000	>120,000	24
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	8
TLC-LED-1200	LED 5700K - 75 CRI	1170W	150,000	>120,000	>120,000	>120,000	8

Single Luminaire Amperage Draw Chart

Driver (.90 min power factor)	Max Line Amperage Per Luminaire						
Single Phase Voltage	208 (00)	220 (00)	240 (00)	277 (00)	347 (00)	380 (00)	480 (00)
TLC-LED-550	3.2	3.0	2.8	2.4	1.9	1.8	1.4
TLC-LED-1500	8.4	7.9	7.3	6.3	5.0	4.6	3.6
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-1200	6.9	6.5	6.0	5.2	4.2	3.8	3.0

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination Ave	Min	Max	Max/Min	Ave/Min	Circuits	Fixture Qty
Multipurpose Field	Horizontal Illuminance	51.5	40	65	1.62	1.29	A	44

System Requirements: Control System Summary

Project Name: Wayne State Intramural Fields | Project #: 200226
Control System ID: 1 of 1
Distribution Panel Location/ID: Multipurpose Field

Project Information

Control System

Control System ID: 1 of 1
Control System Type: Control-Link ® Control and Monitoring System
Communication Type: PowerLine-ST

Power Requirements

Control cabinet(s):

Control voltage (phase to neutral)	120/60
VA loading - Inrush	1553.0
VA loading - Sealed	180.0

Lighting Circuits:

Voltage/Hertz/Phase	480/60/3

Project Notes:

Equipment Listing

Description	Qty	Size (in)
Control and monitoring cabinet - primary	1	24 X 48

Important Notes:

1. Please confirm that the lighting circuit voltage listed above is accurate for this facility. This is the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole location. Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each circuit at each pole location. Contactors are 3 pole and 100% rated for the published continuous load.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. Size overcurrent devices using the full load amps column of the Circuit Summary by Switch chart (Minimum power factor is 0.9). Size conduit per code unless otherwise specified as larger to allow for harness connectors.
6. Avoid use of in-ground junction/pull boxes when possible. If used, all wire connectors must be UL listed for Wet Locations to prevent leakage current.
7. Control power wiring must be in separate conduit from line or load power wiring. Communication cables must be in separate conduit from any power wiring.
8. Refer to Installation Instructions for more details on equipment information and the installation requirements.

System Requirements: Control System Summary

Project Name: Wayne State Intramural Fields | Project #: 200226
Control System ID: 1 of 1
Distribution Panel Location/ID: Multipurpose Field

Circuit Summary

Switching Schedule

Field/Switch Description	Switches
Multipurpose Field	1

Control Module ID: 1 — **Lighting Circuit Voltage: 480/60/3**

Circuit Summary by Switch

Switch	Zone Description	Pole ID	Qty of Fixtures	Full load amperes	Contactor Size (Amps)	Cabinet #	Contactor ID
1	Multipurpose Field	S1	10	19.03	30	1	C1
	Multipurpose Field	S2	10	19.03	30	1	C2
	Multipurpose Field	S3	12	20.23	30	1	C3
	Multipurpose Field	S4	12	20.23	30	1	C4

Equipment Layout and Connection Details

Connection Details

ID	Description
1a	Line power to contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop.
1b	Load power from contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop.
2a	Control power with equipment ground to control cabinet. Requires dedicated 20 A circuit. Provide transformer if control voltage not present.

Equipment

ID	Description
1	Control and monitoring cabinet - primary

ALTERNATE #3

Wayne State University Football

Detroit,MI

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
F1-F2	100'	100'	21	TLC-LED-1500	29.61 kW	A
		35'	3	TLC-BT-575	1.73 kW	A
		80'	2	TLC-RGBW	1.28 kW	B
		37'	1	TLC-RGB-U	0.43 kW	B
F3-F4	90'	90'	16	TLC-LED-1500	22.56 kW	A
		16'	3	TLC-BT-575	1.73 kW	A
		70'	1	TLC-RGBW	0.64 kW	B
		18'	1	TLC-RGB-U	0.43 kW	B
4			***96***		***116.80 kW***	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Football	111.24 kW	86
B	Accent	5.56 kW	10

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	12
TLC-RGB-U	RED-GREEN (Shown)-BLUE	430W	16,000	21,300	>36,300	>36,300	4
TLC-LED-1500	LED 5700K - 75 CRI	1410W	181,000	>120,000	>120,000	>120,000	74
TLC-RGBW	LED 5700K - 75 CRI	640W	28,500	>120,000	>120,000	>120,000	6

Single Luminaire Amperage Draw Chart

Driver (.90 min power factor)	Max Line Amperage Per Luminaire						
Single Phase Voltage	208 (00)	220 (00)	240 (00)	277 (00)	347 (00)	380 (00)	480 (00)
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-RGB-U	3.0	2.8	2.6	2.2	1.8	1.3	1.3
TLC-LED-1500	8.4	7.9	7.3	6.3	5.0	4.6	3.6
TLC-RGBW	4.5	4.3	3.8	3.3	2.7	1.9	1.9

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination Ave	Min	Max	Max/Min	Ave/Min	Circuits	Fixture Qty
Football	Horizontal Illuminance	101	90	109	1.21	1.12	A	86
Home Bleacher- RGBW	Horizontal	4.34	0	12	38.34		B	10
Visitor Bleacher- RGBW	Horizontal	3.68	3	5	1.88	1.23	B	10

System Requirements: Control System Summary

Project Name: Wayne State University Football | Project #: 223407
Control System ID: 1 of 1
Distribution Panel Location/ID: Football

Project Information

Control System

Control System ID: 1 of 1
Control System Type: Control-Link ® Control and Monitoring System with Show-Link ® Special Effects
Communication Type: PowerLine-ST

Power Requirements

Control cabinet(s):

Control voltage (phase to neutral)	120/60
VA loading - Inrush	2643.0
VA loading - Sealed	250.0

Lighting Circuits:

Voltage/Hertz/Phase	480/60/3

Communication cabinet(s):

Cabinet voltage (phase to neutral)	120/60

Touchscreen(s):

Touchscreen power (receptacle)	120/60

Project Notes:

Equipment Listing

Description	Qty	Size (in)
Control and monitoring cabinet - primary	1	24 X 48
Communication cabinet	1	-
Touchscreen	1	-

Important Notes:

1. Please confirm that the lighting circuit voltage listed above is accurate for this facility. This is the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole location. Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each circuit at each pole location. Contactors are 3 pole and 100% rated for the published continuous load.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. Size overcurrent devices using the full load amps column of the Circuit Summary by Switch chart (Minimum power factor is 0.9). Size conduit per code unless otherwise specified as larger to allow for harness connectors.
6. Avoid use of in-ground junction/pull boxes when possible. If used, all wire connectors must be UL listed for Wet Locations to prevent leakage current.
7. Control power wiring must be in separate conduit from line or load power wiring. Communication cables must be in separate conduit from any power wiring.
8. Refer to Installation Instructions for more details on equipment information and the installation requirements.

System Requirements: Control System Summary

Project Name: Wayne State University Football | Project #: 223407
Control System ID: 1 of 1
Distribution Panel Location/ID: Football

Equipment Layout and Connection Details

Connection Details

ID	Description
1a	Line power to contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop.
1b	Load power from contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop.
2a	Control power with equipment ground to control cabinet. Requires dedicated 20 A circuit. Provide transformer if control voltage not present.
2b	Power cord for touchscreen. Requires standard receptacle.
2c	Earth ground connection at communication cabinet location. Requires installation of ground electrode if existing earth gound not present.
2e	Control power with equipment ground.
4a	Communication cable - Communication cabinet to primary control cabinet. Requires Cat5e cable (Belden 7937A or equal), maximum of 1500 feet.
4b	Communication cable - Communication cabinet to touchscreen. 10-foot ethernet cable provided by Musco. Ethernet cable provided by contractor if longer length is needed. Maximum cable length is 300 feet.

Equipment

ID	Description
1	Control and monitoring cabinet - primary
2	Communication cabinet
3	Touchscreen

Connection Details - Cont'd

ID	Description
4c	Audio cable - Communication cabinet to audio system, provided by contractor. Requires audio cable with 3.5 mm audio plug.

Equipment - Cont'd

ID	Description

System Requirements: Control System Summary

Project Name: Wayne State University Football | Project #: 223407
Control System ID: 1 of 1
Distribution Panel Location/ID: Football

Circuit Summary

Switching Schedule

Field/Switch Description	Switches
Football	1
Bleacher Accent	2

Control Module ID: 1 — **Lighting Circuit Voltage: 480/60/3**

Circuit Summary by Switch

Switch	Zone Description	Pole ID	Qty of Fixtures	Full load amperes	Contactor Size (Amps)	Cabinet #	Contactor ID
1	Football	F1	24	46.52	60	1	C1
	Football	F2	24	46.52	60	1	C2
	Football	F3	19	37.09	60	1	C3
	Football	F4	19	37.09	60	1	C4
2	Bleacher Accent	F1, F2	6	8.89	30	1	C5
	Bleacher Accent	F3, F4	4	5.56	30	1	C6

ALTERNATE #4

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IM / STADIUM LIGHTING DETAILS

DRAWING NO.

E-003

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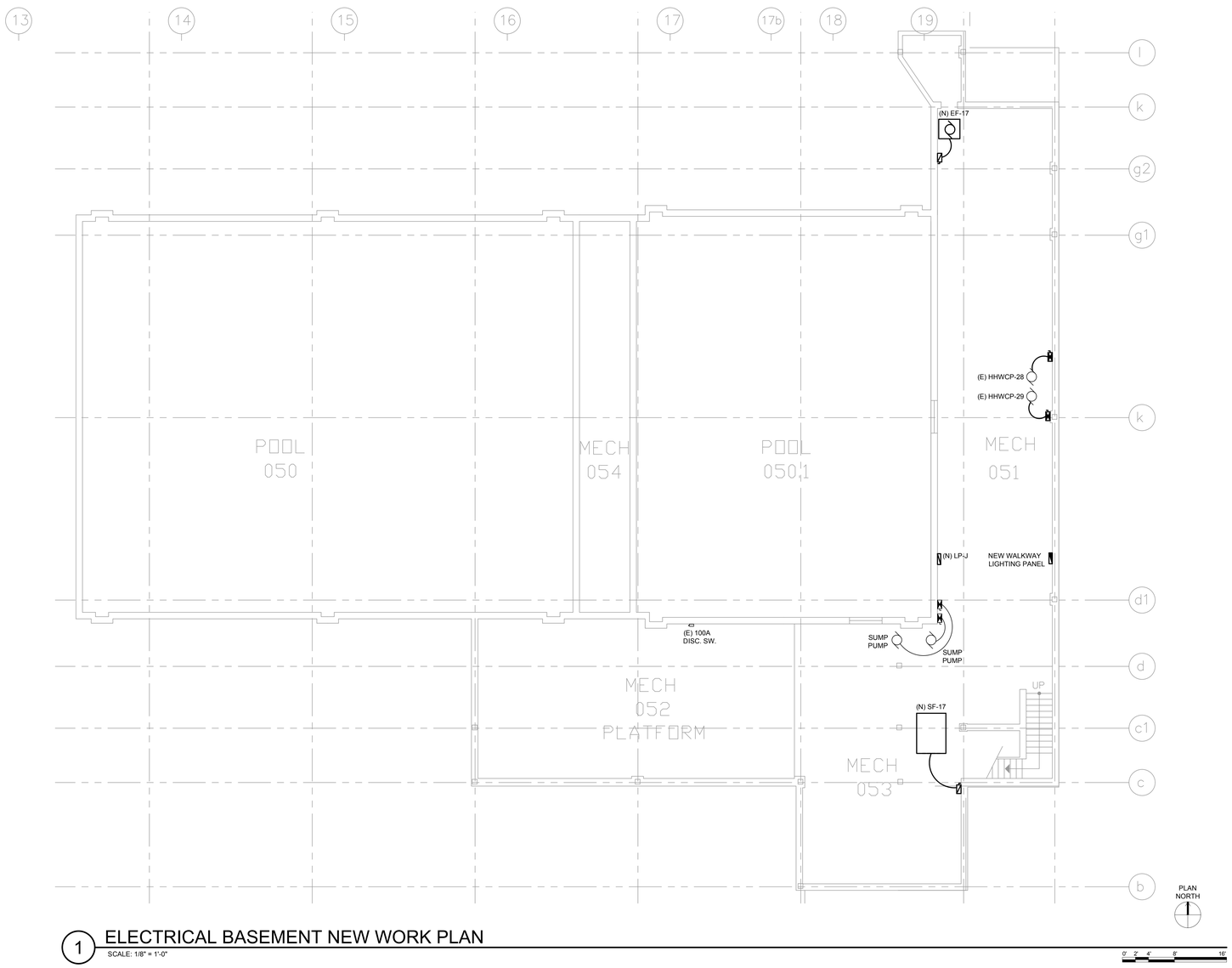

1 ELECTRICAL BASEMENT NEW WORK PLAN

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

0' 2' 4' 8' 16'

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, (1)#12 EG, IN 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.
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.
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ELECTRICAL BASEMENT NEW WORK PLAN

DRAWING NO.

E-100

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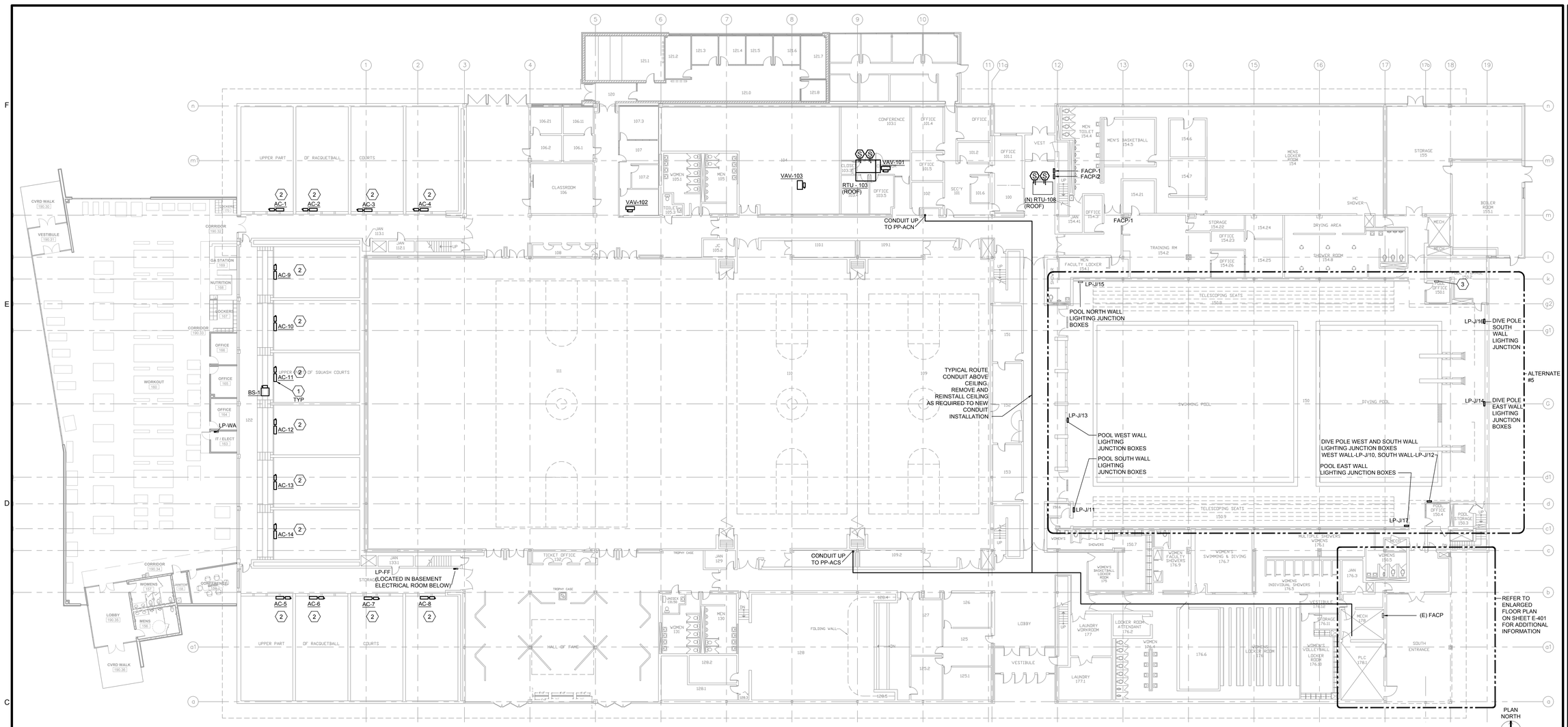

1 ELECTRICAL FIRST FLOOR PLAN

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

0 4" 8" 16" 32"

KEY NOTES

1. REFER TO EQUIPMENT ELECTRICAL CONNECTION SCHEDULE ON SHEET E-701 FOR ADDITIONAL INFORMATION.
2. VRF SYSTEM IS TO BE SUBMITTED AS DEDUCT ALTERNATE 1. PROVIDE DISCONNECTS FOR AC UNIT AND CORRESPONDING CONDENSATE PUMP PER EQUIPMENT CONNECTION SCHEDULE ON SHEET E-701.
3. CONNECT SWIMMING POOL (4 SWITCHES) AND DIVING POOL (4 SWITCHES) LIGHTING TO NEW TOGGLE SWITCHES IN EXISTING CABINET. LABEL SWITCHES.

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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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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ELECTRICAL FIRST FLOOR PLAN

DRAWING NO.

E-101

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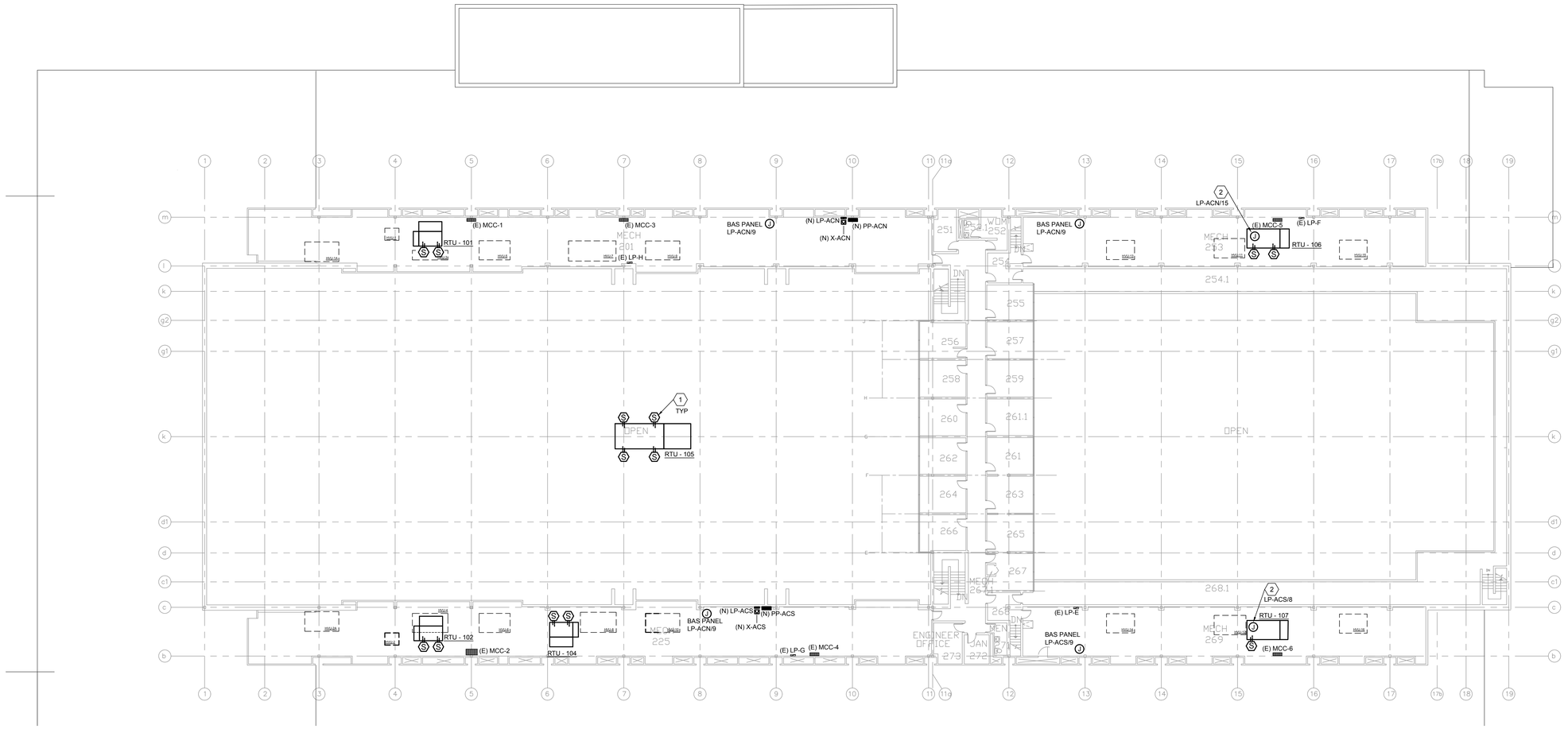

PLAN NORTH

0 4' 8' 16' 32'

1 ELECTRICAL SECOND FLOOR PLAN

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

KEY NOTES

1. SUPPLY AND INSTALL NEW DUCT DETECTOR. PROVIDE ADDRESSABLE MODULE FOR EACH DETECTOR, CONNECT TO EXISTING FIRE ALARM SYSTEM AND PROGRAM THIS TO PRODUCE A TROUBLE SIGNAL.
2. NEW 120V CIRCUIT FOR MOTORIZED DAMPERS. SEE MECHANICAL DRAWINGS FOR QUANTITY OF DAMPERS.

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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ELECTRICAL SECOND FLOOR PLAN

DRAWING NO.

E-102

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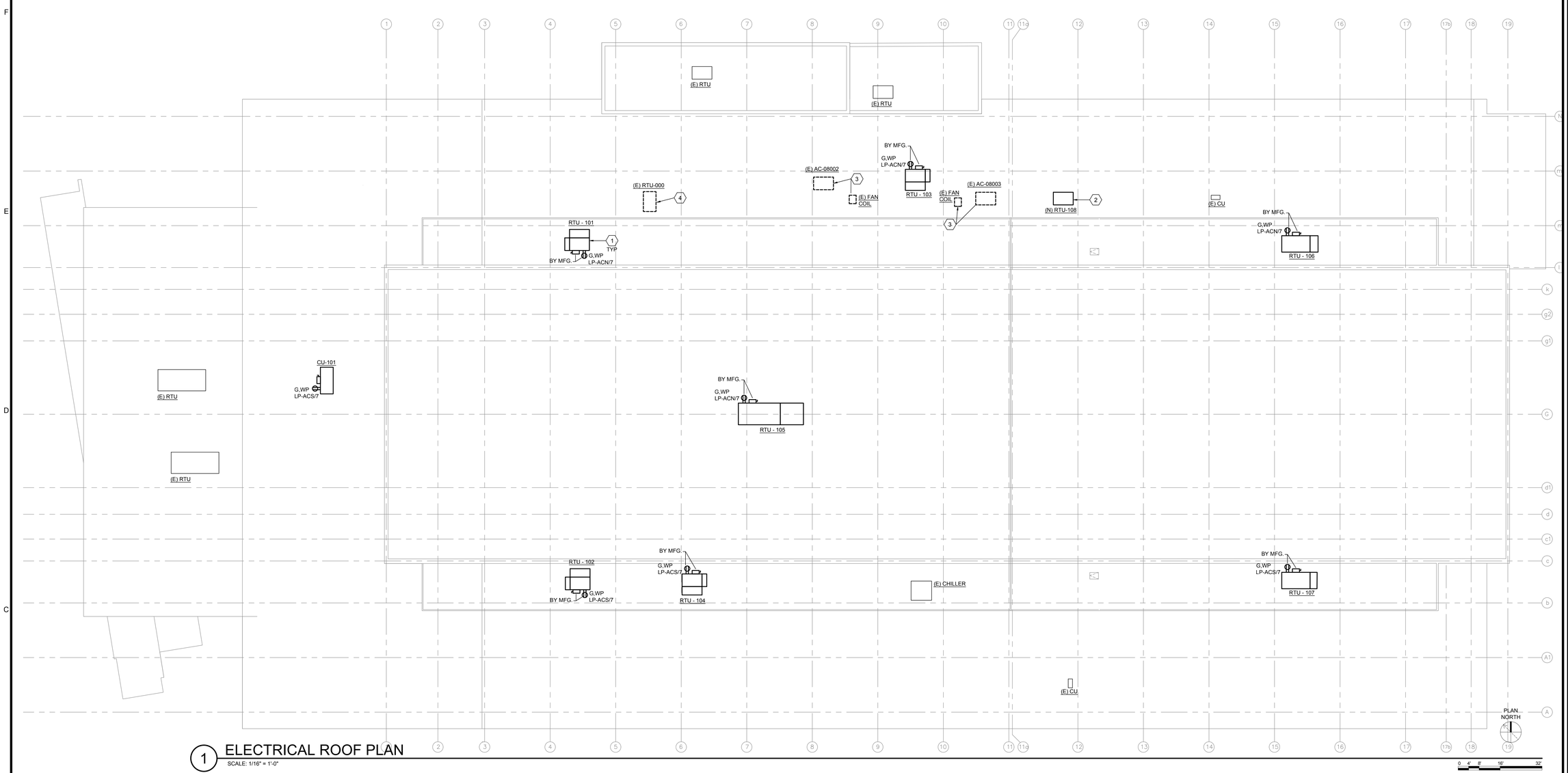

1 ELECTRICAL ROOF PLAN

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

KEY NOTES

1. REFER TO EQUIPMENT ELECTRICAL CONNECTION SCHEDULE ON SHEET E-701 FOR ADDITIONAL INFORMATION.
2. DISCONNECT CONDUIT AND WIRE TO EXISTING RTU AND RECONNECT TO NEW RTU. COORDINATE WITH MECHANICAL TRADES.
3. DISCONNECT AND REMOVE EXISTING AC UNIT AND FAN COIL UNIT BELOW AND ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE.
4. DISCONNECT AND REMOVE EXISTING RTU AND ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE.

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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ELECTRICAL ROOF PLAN

DRAWING NO.

E-103

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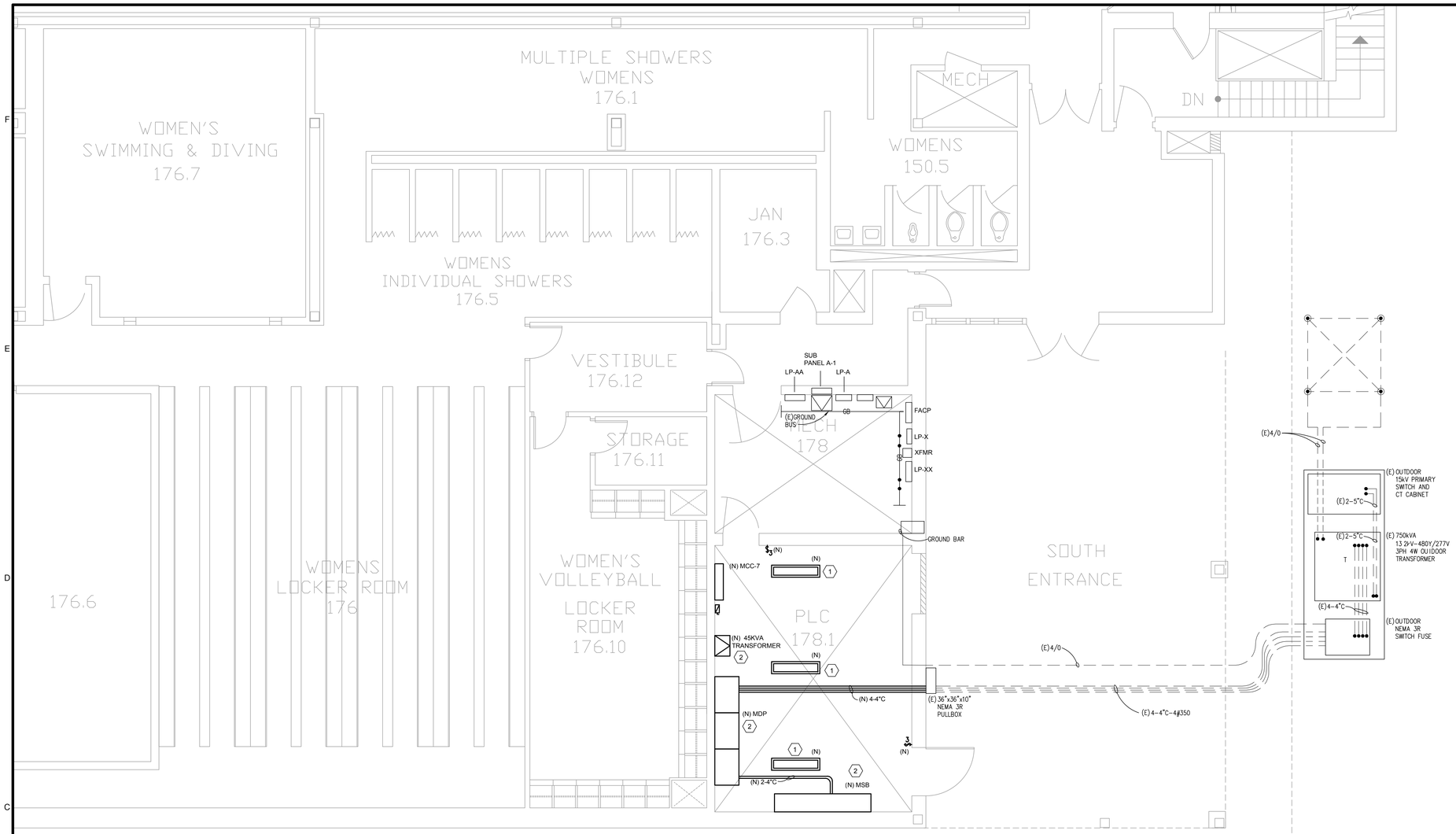

1 ENLARGED ELECTRICAL NEW WORK PLAN

SCALE: 1/4" = 1'-0"

0' 1' 2' 4' 8'

KEY NOTES

1. NEW 1X4 VAPOR TIGHT FROSTED POLYCARBONATE LENS SUSPENDED MOUNTED LED STRIP LIGHT. LITHONIA CATALOG NUMBER CVST L48 5000LM MVOLT 40K 80CRI. CONNECT TO EXISTING LIGHTING CIRCUIT.
2. PROVIDE 4"H CONCRETE PAD.

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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ELECTRICAL ENLARGED NEW WORK PLAN

DRAWING NO.

E-401

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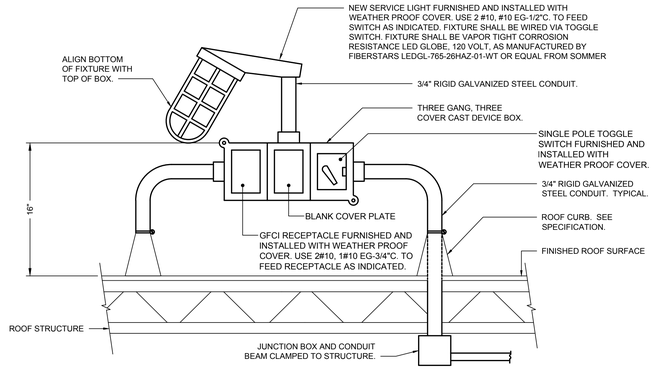
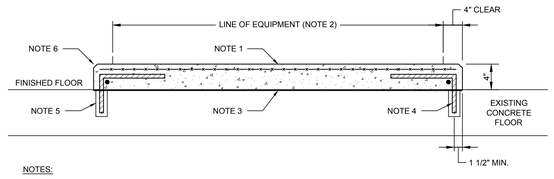


3 WEATHERPROOF ROOFTOP LIGHT/RECEPTACLE DETAIL

NOT TO SCALE

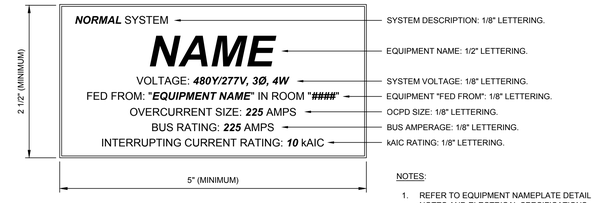


NOTES:

1. PROVIDE CONCRETE WORK PAD REINFORCED WITH 6 X 6 - W2.9 X W2.9 WELDED WIRE FABRIC. CONCRETE SHALL BE 4000 PSI AT 28 DAYS.
2. VERIFY ALL PAD CONSTRUCTION DIMENSIONS WITH EQUIPMENT SHOP DRAWINGS PRIOR TO INSTALLATION. PAD SHALL EXTEND 4" BEYOND EQUIPMENT / ENCLOSURE ON ALL SIDES. VERIFY WORK PAD HEIGHT WITH EQUIPMENT REQUIREMENTS.
3. EXISTING FLOOR IN AREA OF NEW WORK PAD SHALL BE CLEANED OF EXISTING SOLVENTS AND PAINT. ROUGHEN EXISTING FLOOR AT LOCATION OF WORK PAD. APPLY BONDING AGENT PRIOR TO PLACING CONCRETE.
4. DRILL INTO EXISTING CONCRETE FLOOR SLAB A MINIMUM OF 2" BEYON TOPPING. USE #4 BENT BAR @ 12" O.C., HOLD A MINIMUM OF 1" BELOW TOP OF SLAB.
5. PROVIDE HILTI ADHESIVE INJECTION SYSTEM OR APPROVED EQUAL.
6. CHAMFER ALL EXPOSED EDGES WITH 1" CHAMFER AT 45-DEGREES.

2 INTERIOR CONCRETE PAD DETAIL

NOT TO SCALE

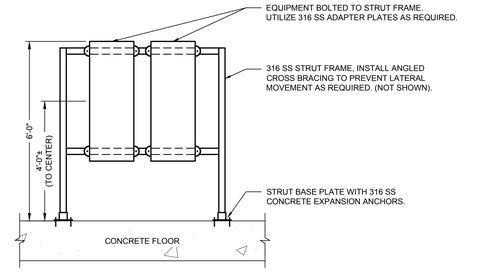


NOTES:

1. REFER TO EQUIPMENT NAMEPLATE DETAIL NOTES AND ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

1 TYPICAL PANEL NAMEPLATE DETAIL

NOT TO SCALE

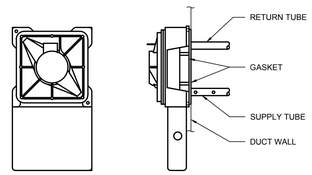


NOTES:

1. ALL NUTS, BOLTS, STUDS, WASHERS, ETC. SHALL BE 316 SS.

5 EQUIPMENT SUPPORT RACK DETAIL

NOT TO SCALE



4 TYPICAL DUCT DETECTOR MOUNTING DETAIL

NOT TO SCALE

OSBORN ENGINEERING
5000 Telegraph Road | Bingham Farms, MI 48025
(313) 955-4014
www.osborn-eng.com

MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	BTF
CHECKED BY	JRB
CLIENT PROJ NO.	-
OSBORN PROJ NO.	J20190854.070

ELECTRICAL DETAILS

DRAWING NO.

E-501

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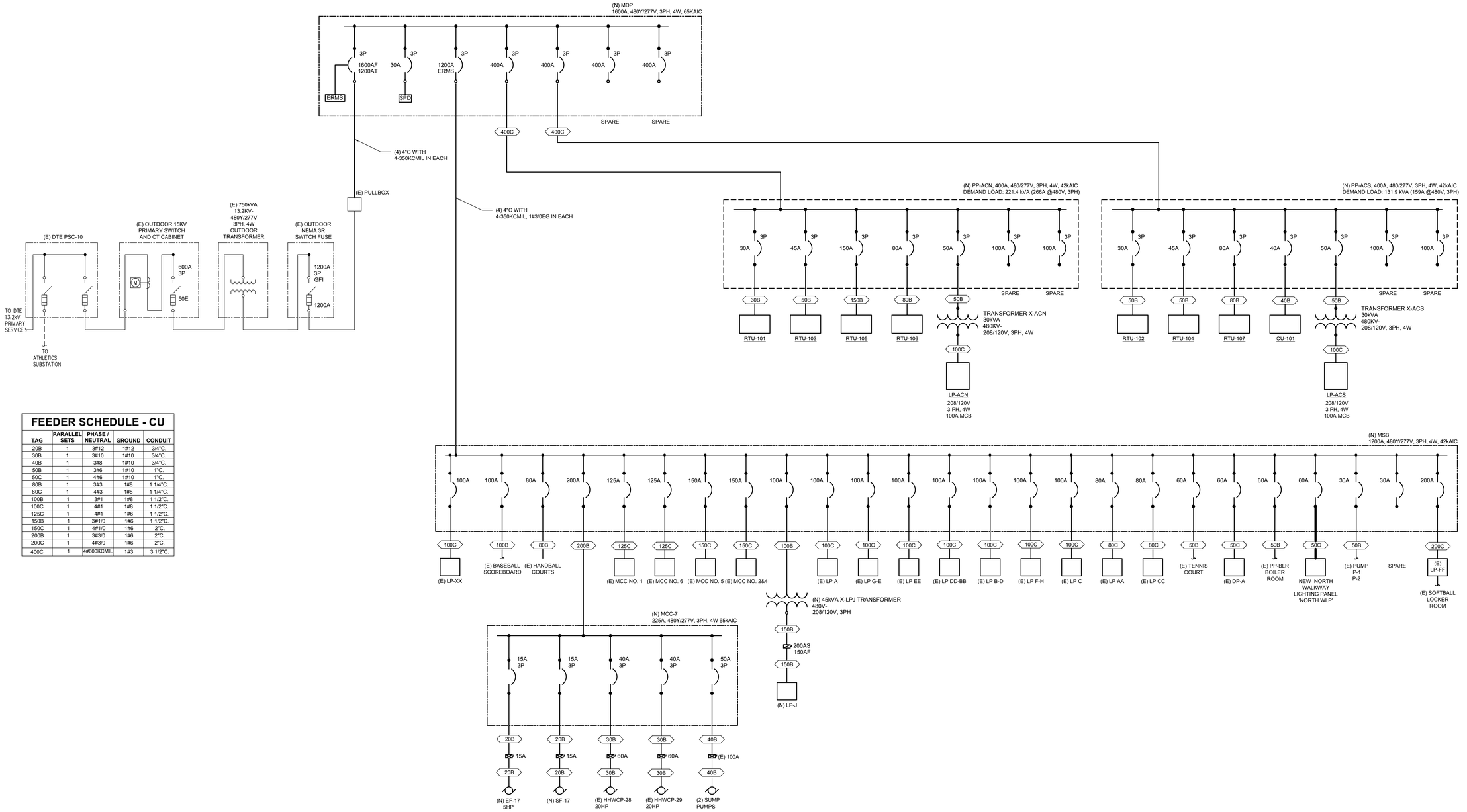
6/27/2023 9:53 AM Hamza Abdel-Sater



FEEDER SCHEDULE - CU

TAG	PARALLEL SETS	PHASE / NEUTRAL	GROUND	CONDUIT
20B	1	3#12	1#12	3/4"C.
30B	1	3#10	1#10	3/4"C.
40B	1	3#8	1#10	3/4"C.
50B	1	3#6	1#10	1"C.
50C	1	4#6	1#10	1"C.
80B	1	3#3	1#8	1 1/4"C.
80C	1	4#3	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.
125C	1	4#1	1#6	1 1/2"C.
150B	1	3#1/0	1#6	1 1/2"C.
150C	1	4#1/0	1#6	2"C.
200B	1	3#3/0	1#6	2"C.
200C	1	4#3/0	1#6	2"C.
400C	1	4#600KCMIL	1#3	3 1/2"C.

1 ELECTRICAL ONE LINE DIAGRAM - NEW WORK

NOT TO SCALE

OSBORN ENGINEERING
30200 Telegraph Road | Bingham Farms, MI 48025
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MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	BTF
CHECKED BY	JRB
CLIENT PROJ NO.	-
OSBORN PROJ NO.	J20190854.070

ELECTRICAL ONE LINE DIAGRAM - NEW WORK

DRAWING NO.

E-601

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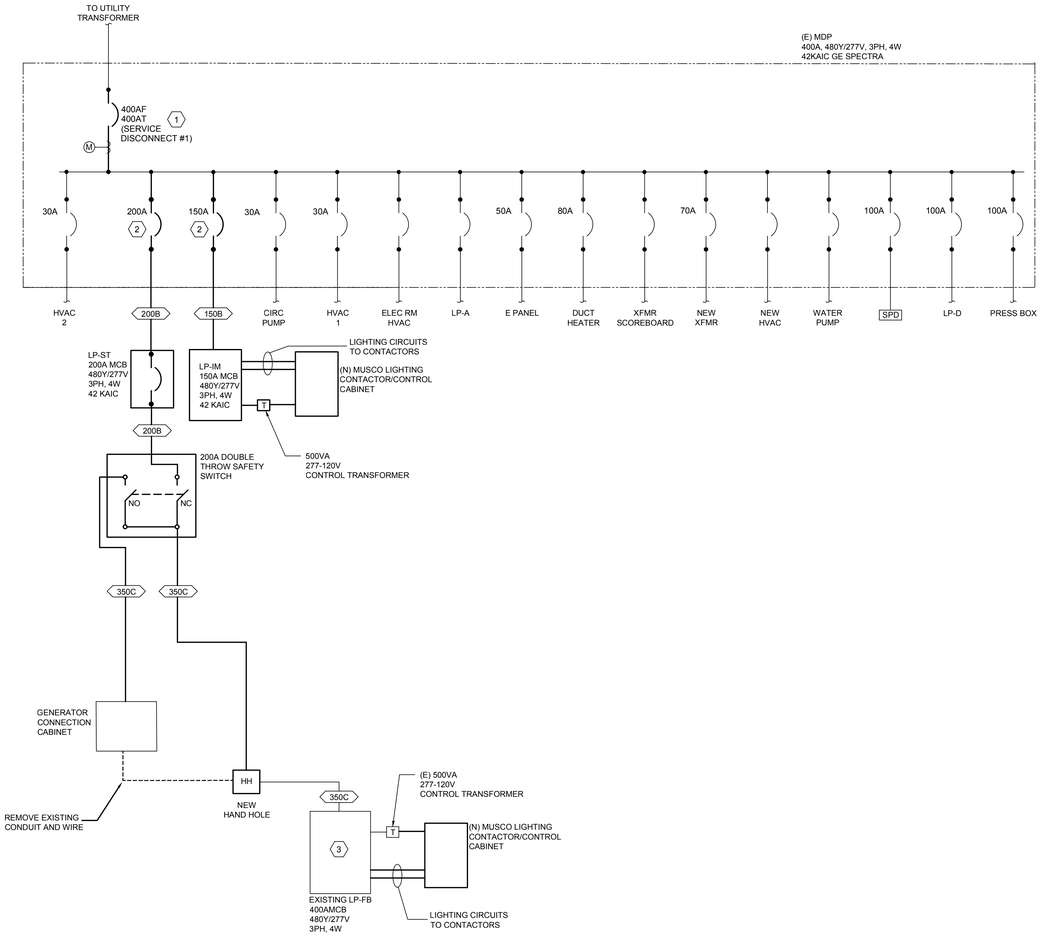
6/27/2023 9:55 AM Hamza Abdel-Sater



MDP

MAX. DEMAND LOAD:	101.2 kVA
IM FIELD LIGHTING LOAD:	49.96 kVA
FOOTBALL FIELD LIGHTING:	116.8 kVA
TOTAL DEMAND LOAD:	267.96 kVA (322.5A @ 480Y/277V,3P)

KEYNOTES

1. REMOVE EXISTING 400AF.400AT MAIN CIRCUIT BREAKER. PROVIDE NEW 100% RATED 400AF/400AT CIRCUIT BREAKER, ECB SPECTRA MET, SGLL3604L4XX, 65 KAIC, LSIG. CONNECT NEW MAIN CIRCUIT BREAKER TO EXISTING SWITCHBOARD AND METERING AS REQUIRED.
2. PROVIDE NEW CIRCUIT BREAKERS IN EXISTING SPACE.
3. PROVIDE LABEL: PANEL IS FED BY AN UPSTREAM 200A BREAKER.

FEEDER SCHEDULE - CU

TAG	PARALLEL SETS	PHASE / NEUTRAL	GROUND	CONDUIT
150B	1	3#1/0	1#6	1 1/2"C.
200B	1	3#3/0	1#6	2"C.
350C	1	4#500kcmil	1#3	3 1/2"C.

1 STADIUM LIGHTING ONE LINE DIAGRAM

NOT TO SCALE

OSBORN ENGINEERING
5200 Telegraph Road | Bingham Farms, MI 48025
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MATTHAEI CENTER HVAC AND ELECTRICAL UPGRADES

WAYNE STATE UNIVERSITY

DETROIT, MI 48208

TAG	ISSUED	DATE
	OWNER REVIEW	01/19/23
	CD REVIEW	05/19/23
	BIDS	06/27/23

DRAWN BY	BTF
CHECKED BY	JRB
CLIENT PROJ NO.	-
OSBORN PROJ NO.	J20190854.070

STADIUM LIGHTING ONE LINE DIAGRAM

DRAWING NO.

E-602

MFR ______ TYPE ______ BUS COPPER

PANEL ID: **LP-FB**

SERVICE: L-L 208 L-N 120

LOCATION ______ MOUNTING SURFACE DWG. NO. ______

NOTES	CIRCUIT DESCRIPTION	LOAD AMPS	BREAKER POLE	BREAKER TRIP	KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C			KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C	BREAKER POLE	BREAKER TRIP	LOAD AMPS	DESCRIPTION	NOTES
	POLE 1	44.2	3	60	5.30			1	2	3.94			3	60	32.8	POLE 3	1
	-	44.2	-	-		5.30		3	4		3.94		-	-	32.8	-	
	-	44.2	-	-			5.30	5	6			3.94	-	-	32.8	-	
	POLE 1 & 2	5.0	3	30	0.60			7	8	0.60			3	30	5.0	POLE 3 & 4	
	-	5.0	-	-		0.60		9	10		0.60		-	-	5.0	-	
	-	5.0	-	-			0.60	11	12			0.60	-	-	5.0	-	
	SPARE	0.0	3	15	0.00			13	14	0.00			3	15	0.0	SPARE	
	-	0.0	-	-		0.00		15	16		0.00		-	-	0.0	-	
	-	0.0	-	-			0.00	17	18			0.00	-	-	0.0	-	
	POLE 2	44.2	3	60	5.30			19	20	3.94			3	60	32.8	POLE 4	1
	-	44.2	-	-		5.30		21	22		3.94		-	-	32.8	-	
	-	44.2	-	-			5.30	23	24			3.94	-	-	32.8	-	
	SPARE	0.0	3	30	0.00			25	26	0.00			3	30	0.0	SPARE	
	-	0.0	-	-		0.00		27	28		0.00		-	-	0.0	-	
	-	0.0	-	-			0.00	29	30			0.00	-	-	0.0	-	
	SPARE	0.0	3	15	0.00			31	32	0.00			2	15	0.0	SPARE	
	-	0.0	-	-		0.00		33	34		0.00		-	-	0.0	-	
	-	0.0	-	-			0.00	35	36			0.00	1	-	0.0	SPACE	
	CONTROL TRANSF.	4.2	1	20	0.50			37	38	0.00			1	-	0.0	SPACE	
	SPARE	0.0	1	20		0.00		39	40		0.00		1	-	0.0	SPACE	
	SPARE	0.0	1	20			0.00	41	42			0.00	1	-	0.0	SPACE	

TOTAL:	AMPS	kVA
BUS A	168.2	20.180
BUS B	164.0	19.680
BUS C	164.0	19.680

MAIN BREAKER MLO
CONDUIT SIZE 1 1/4"
FEEDER SIZE 1
SOURCE MSB

BUS RATING 150A
A.I.C. SYM. 22,000
Total Connected Load 165.3 A 59.540 kVA
Estimated Demand Load 165.3 A 59.540 kVA

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER.

ADDITIONAL REQUIREMENTS:

MFR ______ TYPE ______ BUS COPPER

PANEL ID: **NORTH WLP**

SERVICE: L-L 480 L-N 277

LOCATION ______ MOUNTING ______ DWG. NO. ______

NOTES	CIRCUIT DESCRIPTION	LOAD AMPS	BREAKER POLE	BREAKER TRIP	KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C			KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C	BREAKER POLE	BREAKER TRIP	LOAD AMPS	DESCRIPTION	NOTES
1	EXISTING LOAD	0.0	1	20	0.00			1	2	0.00			1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20		0.00		3	4		0.00		1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20			0.00	5	6			0.00	1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20	0.00			7	8	0.00			1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20		0.00		9	10		0.00		1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20			0.00	11	12			0.00	1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20	0.00			13	14	0.00			1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20		0.00		15	16		0.00		1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20			0.00	17	18			0.00	1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20	0.00			19	20	0.00			1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20		0.00		21	22		0.00		1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20			0.00	23	24			0.00	1	20	0.0	EXISTING LOAD	1
	SPARE	0.0	1	20	0.00			25	26	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		27	28		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	29	30			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			31	32	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		33	34		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	35	36			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			37	38	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		39	40		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	41	42			0.00	1	20	0.0	SPARE	

TOTAL:	AMPS	kVA
BUS A	0.0	0.000
BUS B	0.0	0.000
BUS C	0.0	0.000

MAIN BREAKER 60A
CONDUIT SIZE 3/4"
FEEDER SIZE 6
SOURCE MSB

BUS RATING 100A
A.I.C. SYM. 10,000
Total Connected Load 0.0 A 0.000 kVA
Estimated Demand Load 0.0 A 0.000 kVA

NOTES:
1. EXTEND AND CONNECT EXISTING LOAD TO NEW PANEL.

ADDITIONAL REQUIREMENTS:

MFR ______ TYPE ______ BUS COPPER

PANEL ID: **LP-J**

SERVICE: L-L 208 L-N 120

LOCATION ______ MOUNTING SURFACE DWG. NO. ______

NOTES	CIRCUIT DESCRIPTION	LOAD AMPS	BREAKER POLE	BREAKER TRIP	KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C			KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C	BREAKER POLE	BREAKER TRIP	LOAD AMPS	DESCRIPTION	NOTES
1	EXISTING LOAD	0.0	1	20	0.00			1	2	0.00			1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20		0.00		3	4		0.00		1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20			0.00	5	6			0.00	1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20	0.00			7	8	0.00			1	20	0.0	EXISTING LOAD	1
1	EXISTING LOAD	0.0	1	20		0.00		9	10		1.50		1	20	12.5	DIVE POOL WEST LTG JB	
	POOL SOUTH WALL LTG JB	12.5	1	20			1.50	11	12			1.50	1	20	12.5	DIVE POOL SOUTH LTG JB	
	POOL WET WALL LTG JB	12.5	1	20	1.50			13	14	1.50			1	20	12.5	DIVE POOL EAST LTG JB	
	POOL NORTH WALL LTG JB	12.5	1	20		1.50		15	16		1.50		1	20	12.5	DIVE POOL SOUTH LTG JB	
	SPARE	0.0	1	20			0.00	17	18			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			19	20	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		21	22		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	23	24			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			25	26	0.00			2	40	0.0	BASEBALL SCOREBOARD	
	SPARE	0.0	1	20		0.00		27	28		0.00		-	-	0.0	-	
	SPARE	0.0	1	20			0.00	29	30			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			31	32	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		33	34		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	35	36			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			37	38	0.00			3	40	0.0	POOL UV	
	SPARE	0.0	1	20		0.00		39	40		0.00		-	-	0.0	-	
	SPARE	0.0	1	20			0.00	41	42			0.00	-	-	0.0	-	

TOTAL:	AMPS	kVA
BUS A	25.0	3.000
BUS B	37.5	4.500
BUS C	25.0	3.000

MAIN BREAKER MLO
CONDUIT SIZE 1 1/4"
FEEDER SIZE 1
SOURCE MSB

BUS RATING 150A
A.I.C. SYM. 22,000
Total Connected Load 29.1 A 10.500 kVA
Estimated Demand Load 29.1 A 10.500 kVA

NOTES:
1. EXTEND AND CONNECT EXISTING LOAD TO NEW PANEL.

ADDITIONAL REQUIREMENTS:
1. PROVIDE STAINLESS STEEL COVER

MFR ______ TYPE ______ BUS COPPER

PANEL ID: **LP-IM**

SERVICE: L-L 208 L-N 120

LOCATION ______ MOUNTING SURFACE DWG. NO. ______

NOTES	CIRCUIT DESCRIPTION	LOAD AMPS	BREAKER POLE	BREAKER TRIP	KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C			KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C	BREAKER POLE	BREAKER TRIP	LOAD AMPS	DESCRIPTION	NOTES
	POLE S1	16.7	3	30	2.00			1	2	2.20			3	30	18.3	POLE S3	
	-	16.7	-	-		2.00		3	4		2.20		-	-	18.3	-	
	-	16.7	-	-			2.00	5	6			2.20	-	-	18.3	-	
	POLE S2	16.7	3	30	2.00			7	8	2.20			3	30	18.3	POLE S4	
	-	16.7	-	-		2.00		9	10		2.20		-	-	18.3	-	
	-	16.7	-	-			2.00	11	12			2.20	-	-	18.3	-	
	SPARE	0.0	3	30	0.00			13	14	0.00			3	30	0.0	SPARE	
	-	0.0	-	-		0.00		15	16		0.00		-	-	0.0	-	
	-	0.0	-	-			0.00	17	18			0.00	-	-	0.0	-	
	CONTROL TRANSFORMER	4.2	1	20	0.50			19	20	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		21	22		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	23	24			0.00	1	20	0.0	SPARE	

TOTAL:	AMPS	kVA
BUS A	74.2	8.900
BUS B	70.0	8.400
BUS C	70.0	8.400

MAIN BREAKER MLO
CONDUIT SIZE 1 1/4"
FEEDER SIZE 1
SOURCE MSB

BUS RATING 150A
A.I.C. SYM. 22,000
Total Connected Load 71.3 A 25.700 kVA
Estimated Demand Load 71.3 A 25.700 kVA

NOTES:

ADDITIONAL REQUIREMENTS:

MFR SQUARE D TYPE ______ BUS COPPER

PANEL ID: **LP-ACN**

SERVICE: L-L 208 L-N 120

LOCATION MECH RM NORTH MOUNTING SURFACE DWG. NO. ______

NOTES	CIRCUIT DESCRIPTION	LOAD AMPS	BREAKER POLE	BREAKER TRIP	KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C			KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C	BREAKER POLE	BREAKER TRIP	LOAD AMPS	DESCRIPTION	NOTES
	AC-1,2,3,4	1.6	2	20	0.17			1	2	0.12			2	20	1.2	AC-9,10,11	
	-	1.6	-	-		0.17		3	4		0.12		-	-	1.2	-	
	AC-1,2,3,4 PUMPS	6.0	1	20			0.72	5	6			0.72	1	20	6.0	AC-9,10,11 PUMPS	
	RTU RECEPTS	6.0	1	20	0.72			7	8	0.14			1	20	1.2	BS-1	
	BAS PANELS	3.0	1	20		0.36		9	10		0.50		3	20	4.2	VAV-102	
	VAV-101	9.6	2	20			1.00	11	12			0.50	-	-	4.2	-	
	-	9.6	-	-	1.00			13	14	0.50			-	-	4.2	-	
	MOTOR DAMPERS	1.7	1	20		0.20		15	16		2.00		3	25	16.7	VAV-103	
	SPARE	0.0	1	20			0.00	17	18			2.00	-	-	16.7	-	
	SPARE	0.0	1	20	0.00			19	20	2.00			-	-	16.7	-	
	SPARE	0.0	1	20		0.00		21	22		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	23	24			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			25	26	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		27	28		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	29	30			0.00	1	20	0.0	SPARE	
	SPACE	0.0	1	20	0.00			31	32	0.00			1	20	0.0	SPACE	
	SPACE	0.0	1	20		0.00		33	34		0.00		1	20	0.0	SPACE	
	SPACE	0.0	1	20			0.00	35	36			0.00	1	20	0.0	SPACE	
	SPACE	0.0	1	20	0.00			37	38	0.00			1	20	0.0	SPACE	
	SPACE	0.0	1	20		0.00		39	40		0.00		1	20	0.0	SPACE	
	SPACE	0.0	1	20			0.00	41	42			0.00	1	20	0.0	SPACE	

TOTAL:	AMPS	kVA
BUS A	38.8	4.650
BUS B	27.9	3.350
BUS C	41.2	4.940

MAIN BREAKER 100A
CONDUIT SIZE 1 1/4"
FEEDER SIZE 1
SOURCE PP-CAN

BUS RATING 100A
A.I.C. SYM. 10,000
Total Connected Load 35.9 A 12.940 kVA
Estimated Demand Load 35.4 A 12.740 kVA

NOTES:

ADDITIONAL REQUIREMENTS:

MFR SQUARE D TYPE ______ BUS COPPER

PANEL ID: **LP-ACS**

SERVICE: L-L 208 L-N 120

LOCATION MECH RM SOUTH MOUNTING SURFACE DWG. NO. ______

NOTES	CIRCUIT DESCRIPTION	LOAD AMPS	BREAKER POLE	BREAKER TRIP	KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C			KILOVOLT-AMPS A	KILOVOLT-AMPS B	KILOVOLT-AMPS C	BREAKER POLE	BREAKER TRIP	LOAD AMPS	DESCRIPTION	NOTES
	AC-5,6,7,8	1.6	2	20	0.17			1	2	0.12			2	20	1.2	AC-12,13,14	
	-	1.6	-	-		0.17		3	4		0.12		-	-	1.2	-	
	AC-5,6,7,8 PUMPS	6.0	1	20			0.72	5	6			0.72	1	20	6.0	AC-12,13,14 PUMPS	
	RTU RECEPTS	4.5	1	20	0.54			7	8	0.00			1	20	0.0	SPARE	
	BAS PANELS	3.0	1	20		0.36		9	10		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	11	12			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			13	14	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		15	16		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	17	18			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			19	20	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		21	22		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	23	24			0.00	1	20	0.0	SPARE	
	SPARE	0.0	1	20	0.00			25	26	0.00			1	20	0.0	SPARE	
	SPARE	0.0	1	20		0.00		27	28		0.00		1	20	0.0	SPARE	
	SPARE	0.0	1	20			0.00	29	30			0.00	1	20	0.0	SPARE	
	SPACE	0.0	1	20	0.00			31	32	0.00			1	20	0.0	SPACE	
	SPACE	0.0	1	20		0.00		33	34		0.00		1	20	0.0	SPACE	
	SPACE	0.0	1	20			0.00	35	36			0.00	1	20	0.0	SPACE	
	SPACE	0.0	1	20	0.00			37	38	0.00			1	20	0.0	SPACE	
	SPACE	0.0	1	20		0.00		39	40		0.00		1	20	0.0	SPACE	
	SPACE	0.0	1	20			0.00	41	42			0.00	1	20	0.0	SPACE	

TOTAL:	AMPS	kVA
BUS A	6.9	0.830
BUS B	5.4	0.650
BUS C	12.0	1.440

MAIN BREAKER 100A
CONDUIT SIZE 1 1/4"
FEEDER SIZE 1
SOURCE PP-ACS

BUS RATING 100A
A.I.C. SYM. 10,000
Total Connected Load 8.1 A 2.920 kVA
Estimated Demand Load 8.1 A 2.920 kVA

NOTES:

ADDITIONAL REQUIREMENTS:

EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

EQUIPMENT DESIGNATION	EQUIPMENT DESCRIPTION	MOTOR / EQUIPMENT					BRANCH CIRCUIT			REMARKS
		HP	kVA	VOLTAGE	PHASE	LOCATION	OCPD SIZE	CONDUCTORS / CONDUIT	PANEL / CKT. #	
RTU-101	ROOF TOP UNIT	-	19.5 kVA	480V	3Ø	ROOF	30A	3#10, 1#10 EG - 3/4"C.	PP-ACN	FACTORY NON-FUSED DISCONNECT, 115V GFI OUTLET
RTU-102	ROOF TOP UNIT	-	19.5 kVA	480V	3Ø	ROOF	30A	3#10, 1#10 EG - 3/4"C.	PP-ACS	FACTORY NON-FUSED DISCONNECT, 115V GFI OUTLET
RTU-103	ROOF TOP UNIT	-	27.4 kVA	480V	3Ø	ROOF	45A	3#8, 1#10 EG - 3/4"C.	PP-ACN	FACTORY NON-FUSED DISCONNECT, 115V GFI OUTLET
RTU-104	ROOF TOP UNIT	-	27.4 kVA	480V	3Ø	ROOF	45A	3#8, 1#10 EG - 3/4"C.	PP-ACS	FACTORY NON-FUSED DISCONNECT, 115V GFI OUTLET
RTU-105	ROOF TOP UNIT	-	92 kVA	480V	3Ø	ROOF	125A	3#1, 1#6 EG - 1 1/2"C.	PP-ACN	FACTORY NON-FUSED DISCONNECT, 115V GFI OUTLET
RTU-106	ROOF TOP UNIT	-	48.4 kVA	480V	3Ø	ROOF	80A	3#8, 1#10 EG - 3/4"C.	PP-ACN	FACTORY NON-FUSED DISCONNECT, 115V GFI OUTLET
RTU-107	ROOF TOP UNIT	-	48.4 kVA	480V	3Ø	ROOF	80A	3#8, 1#10 EG - 3/4"C.	PP-ACS	FACTORY NON-FUSED DISCONNECT, 115V GFI OUTLET
RTU-108	ROOF TOP UNIT	-	17.3kVA	480V	3Ø	ROOF	25A	3#10, 1#10 EG - 3/4"C.	-	CONNECT NEW RTU TO EXISTING CIRCUIT.
CU-101	VRF OUTDOOR UNIT	-	30 kVA	480V	3Ø	ROOF	60A	3#8, 1#10 EG - 3/4"C.	PP-ACS	DISCONNECT BY EC
AC-1	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR NORTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/1,3	DISCONNECT BY EC
AC-2	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR NORTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/1,3	DISCONNECT BY EC
AC-3	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR NORTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/1,3	DISCONNECT BY EC
AC-4	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR NORTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/1,3	DISCONNECT BY EC
AC-5	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR SOUTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/1,3	DISCONNECT BY EC
AC-6	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR SOUTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/1,3	DISCONNECT BY EC
AC-7	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR SOUTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/1,3	DISCONNECT BY EC
AC-8	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR SOUTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/1,3	DISCONNECT BY EC
AC-9	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR WEST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/2,4	DISCONNECT BY EC
AC-10	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR WEST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/2,4	DISCONNECT BY EC
AC-11	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR WEST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/2,4	DISCONNECT BY EC
AC-12	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR EAST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/2,4	DISCONNECT BY EC
AC-13	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR EAST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/2,4	DISCONNECT BY EC
AC-14	VRF INDOOR UNIT	-	0.144 kVA	208V	1Ø	FIRST FLOOR EAST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/2,4	DISCONNECT BY EC
AC-1 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR NORTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/5	DISCONNECT BY EC
AC-2 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR NORTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/5	DISCONNECT BY EC
AC-3 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR NORTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/5	DISCONNECT BY EC
AC-4 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR NORTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/5	DISCONNECT BY EC
AC-5 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR SOUTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/5	DISCONNECT BY EC
AC-6 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR SOUTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/5	DISCONNECT BY EC
AC-7 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR SOUTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/5	DISCONNECT BY EC
AC-8 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR SOUTH	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/5	DISCONNECT BY EC
AC-9 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR WEST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/6	DISCONNECT BY EC
AC-10 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR WEST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/6	DISCONNECT BY EC
AC-11 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR WEST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/6	DISCONNECT BY EC
AC-12 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR EAST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/6	DISCONNECT BY EC
AC-13 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR EAST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/6	DISCONNECT BY EC
AC-14 PUMP	VRF INDOOR UNIT PUMP	-	0.18 kVA	115V	1Ø	FIRST FLOOR EAST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACS/6	DISCONNECT BY EC
BS-1	BRANCH SELECTOR BOX	-	0.14 kVA	208V	1Ø	FIRST FLOOR EAST	15A	2#12, 1#12 EG - 3/4"C.	LP-ACN/8	DISCONNECT BY EC
VAV-101	SINGLE DUCT TERMINAL UNIT	-	2KW	208V	1Ø	FIRST FLOOR WEST	20A	2#12, 1#12 EG - 3/4"C.	LP-ACN/11,13	DISCONNECT BY MFG
VAV-102	SINGLE DUCT TERMINAL UNIT	-	1.5KW	208V	3Ø	FIRST FLOOR WEST	20A	3#12, 1#12 EG - 3/4"C.	LP-ACN/10,12,14	DISCONNECT BY MFG
VAV-103	SINGLE DUCT TERMINAL UNIT	-	6KW	208V	3Ø	FIRST FLOOR WEST	25A	3#10, 1#10 EG - 3/4"C.	LP-ACN/16,18,20	DISCONNECT BY MFG

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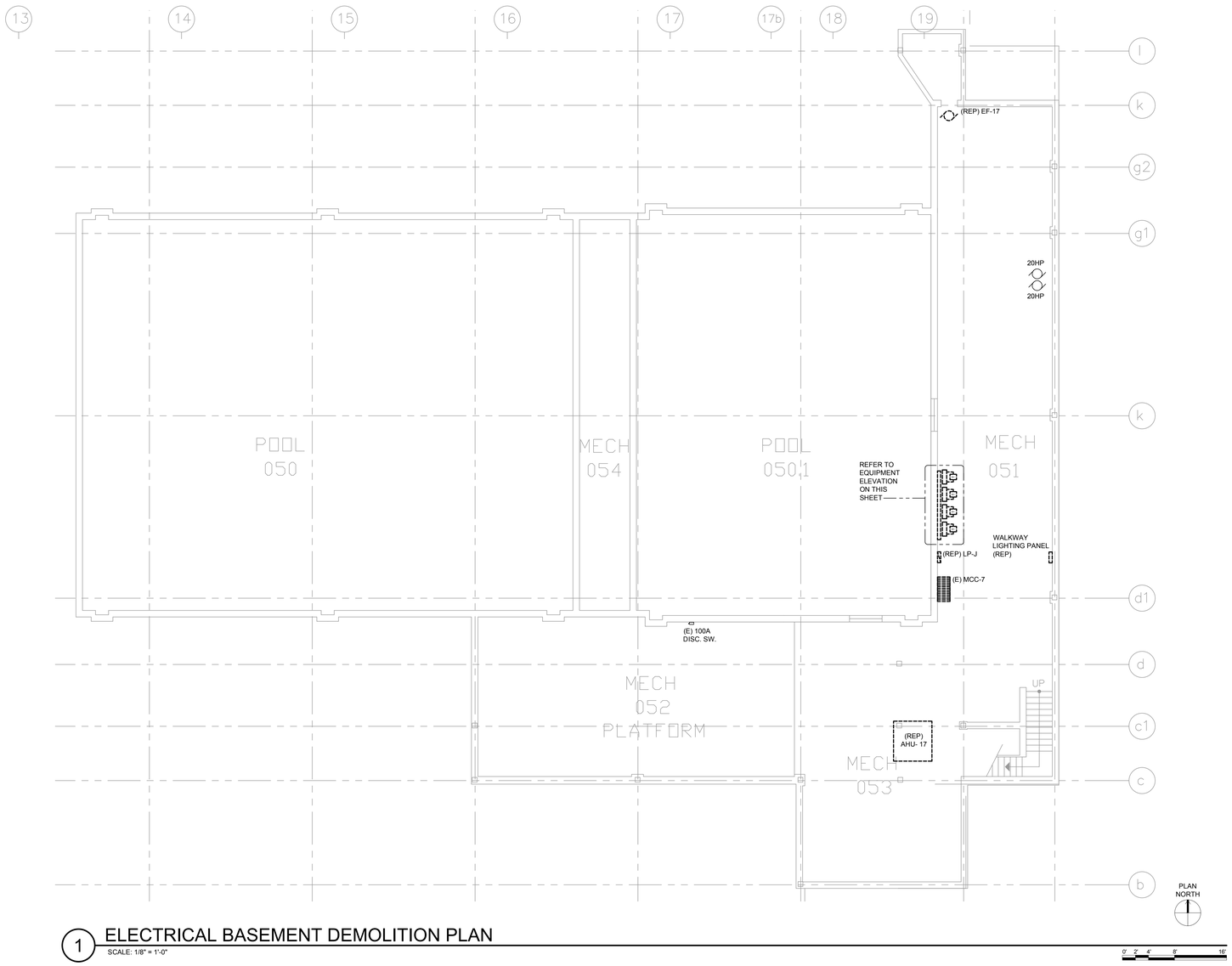
ELECTRICAL PANEL SCHEDULES

DRAWING NO.

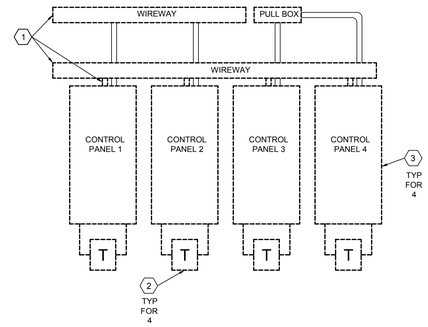
E-701



1 ELECTRICAL BASEMENT DEMOLITION PLAN

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

0' 2' 4' 8' 16'



2 EQUIPMENT ELEVATION

NOT TO SCALE

DEMOLITION SHEET GENERAL NOTES

1. FOR ANY WIRES THAT REMAIN IN JUNCTION BOXES, LABEL THE SOURCE AND CAP WIRES.
2. IN AREAS OF DEMOLITION WHERE EXISTING BRANCH CIRCUITS ARE TO BE RE-USED FOR NEW WORK, CAP ALL DISCONNECTED ELECTRICAL CIRCUITRY IN JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS, WITHIN EXISTING WALLS, ETC. AND MAINTAIN FOR EXTENSION.
3. REFER TO NEW WORK DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

KEY NOTES

1. REMOVE CONDUIT, WIRING AND WIREWAYS AND REPLACE WITH NEW.
2. REMOVE ISOLATION TRANSFORMER AND REPLACE WITH NEW. CONTRACTOR TO FIELD VERIFY AND MATCH EXISTING TRANSFORMER KVA.
3. REMOVE AND REINSTALL INTERIOR COMPONENTS IN NEW ENCLOSURE.

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ELECTRICAL BASEMENT DEMOLITION PLAN

DRAWING NO.

ED-100

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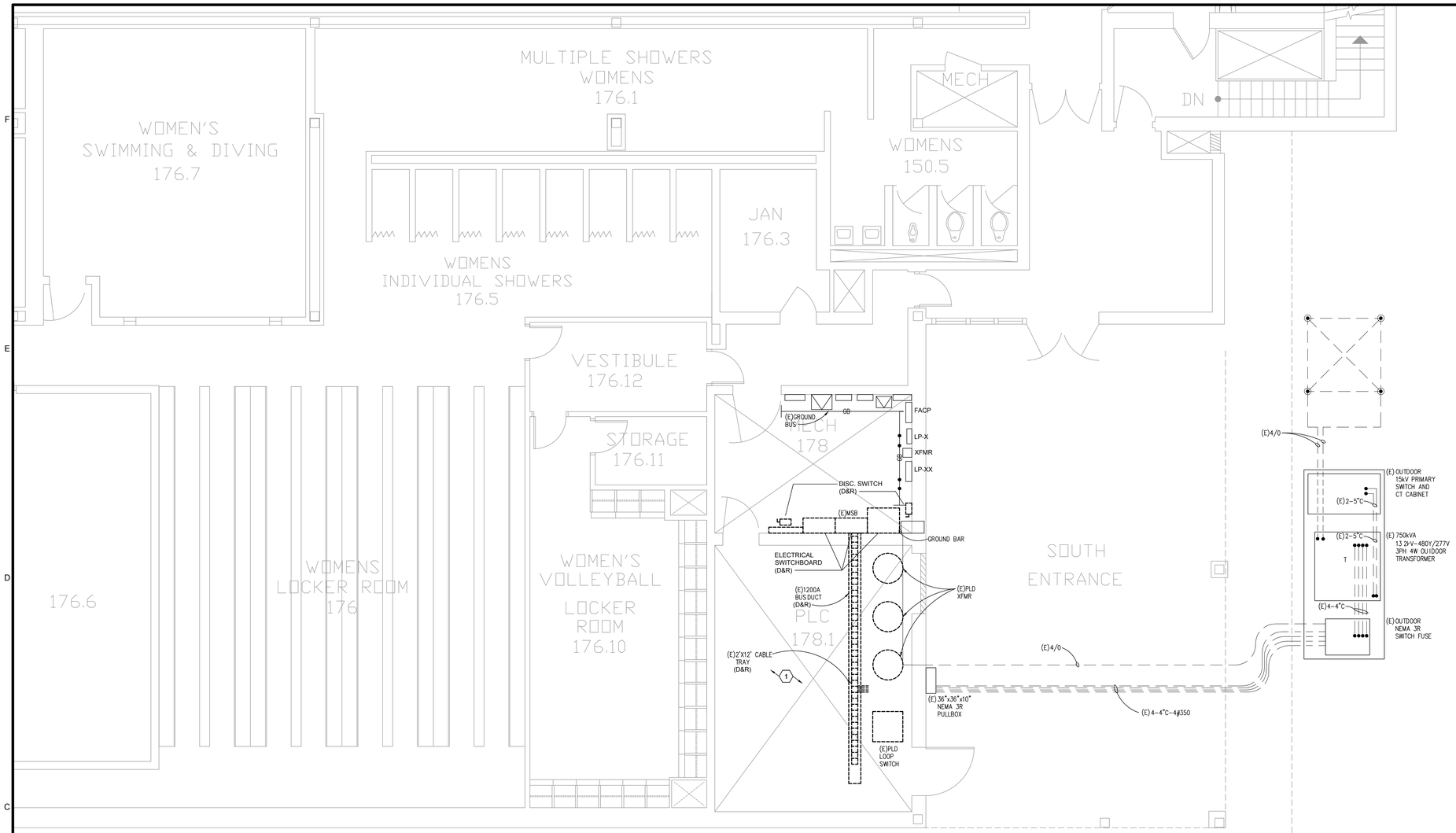

1 ENLARGED FIRST FLOOR ELECTRICAL DEMO PLAN

SCALE: 1/4" = 1'-0"

0" 1" 2" 4" 8"

KEY NOTES

1. REMOVE ALL BUSSING, SUPPORTS, LIGHTING AND ABANDONED EQUIPMENT IN THE ROOM.

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, (1)#12 EG, IN 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.
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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ENLARGED FIRST FLOOR ELECTRICAL DEMO PLAN

DRAWING NO.

ED-401

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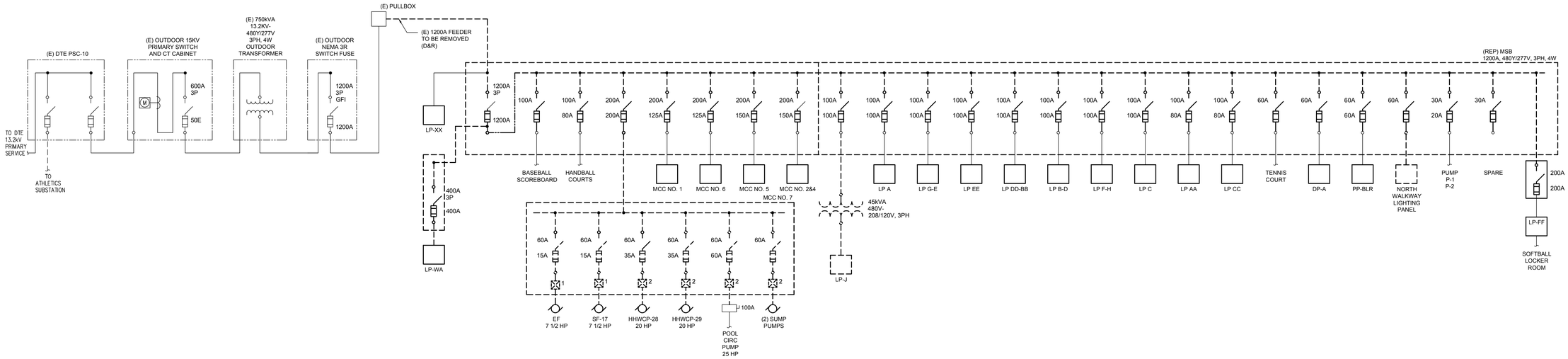

1 ELECTRICAL ONE LINE DIAGRAM - DEMOLITION

NOT TO SCALE

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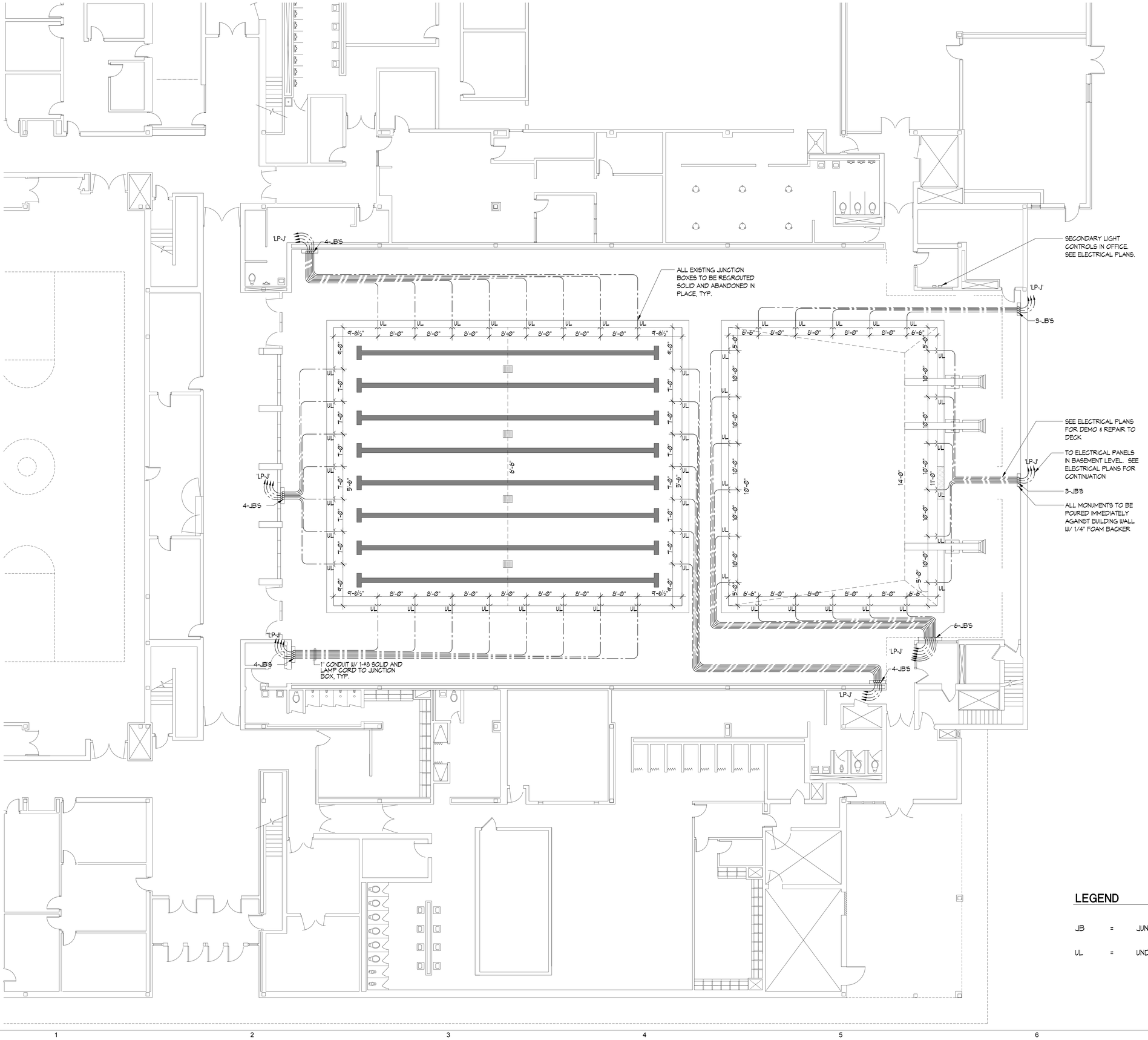
ELECTRICAL ONE LINE DIAGRAM - DEMOLITION

DRAWING NO.

ED-601



LEGEND

JB = JUNCTION BOX — 4 / SP-2

UL = UNDERWATER LIGHT — 1 / SP-2 ; 3 / SP-2

ALTERNATE #5

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POOL LIGHTING PLAN

DRAWING NO.

SP-1

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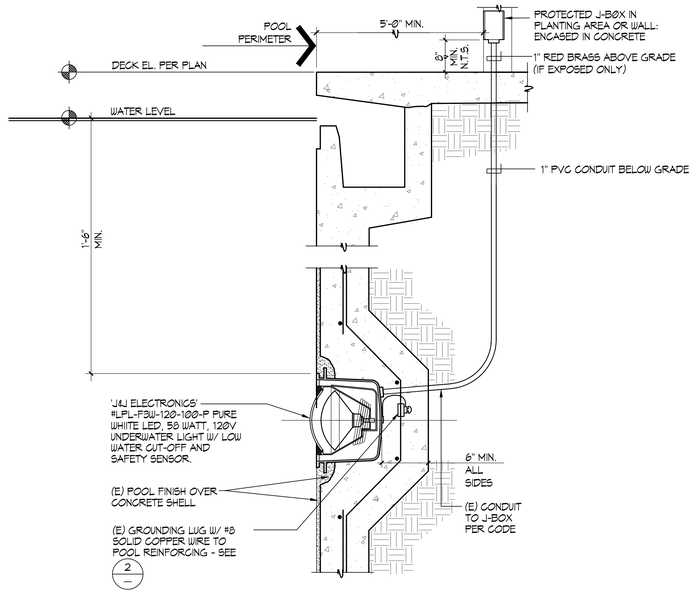
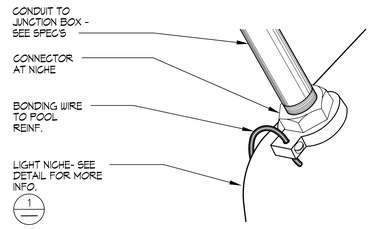


1 UNDERWATER LED LIGHT 1½"=1'-0"

UNDERWATER LIGHT NOTES:

1. ALL CONDUITS IN POOL LIGHTING SYSTEM TO BE A MINIMUM OF 1"Ø.
2. CONDUCTORS TO POOL, J-BOXES SHALL BE MINIMUM 2-#8 & 1#8 (SEE UNDERWATER LIGHT PLAN) SOLID UNBROKEN TO MAIN PANEL ISOLATED GROUND BUSS. THIS BUSS IS TO BE CONNECTED WITH SOLID INSULATED #8 COPPER WIRE TO LIFER 1 COLDWATER GROUNDING LUG ON GROUNDING BUSS. UPSIZE CONDUCTORS AS REQUIRED FOR HOMERUNS EXCEEDING 100'.
3. ALL BRASS POOL J-BOXES SHALL BE FLUSH MOUNTED IN WALLS. IF FLUSH MOUNTING IS NOT POSSIBLE THEN MOUNTING SHALL BE SURFACE MOUNTED AND CONCRETE ENCASED.
4. CONDUITS WHERE ALLOWED BY CODE SHALL BE P.V.C. (POLYVINYL CHLORIDE) FROM WET NICHES TO BRASS J-BOXES TO LIGHTING PANEL. ALL CONDUITS IN FREE AIR SPACE AND ALL RISERS SHALL BE RED BRASS TYPICAL. PVC CONDUITS SHALL BE SOLVENT WELDED WITH P-70 PURPLE PRIMER AND 2711 GRAY HEAVY BODIED GLUE.
5. LIGHTING CONTACTORS SHALL BE "ALLEN-BRADLEY" #500 L; OR EQUAL MOUNTED IN A NEMA 12 HINGED COVER - LOCKABLE ENCLOSURE. CONTACTORS TO BE SWITCHED BY MOMENTARY SWITCH EQUAL TO "HUBBELL" #1557 MOUNTED IN J-BOX IN MECHANICAL EQUIPMENT ROOM. PROVIDE REMOTE UNDERWATER LIGHT SWITCH IN POOL BUILDING CONTROL ROOM.
6. BRASS POOL J-BOXES SHALL BE "HYDREL" #1719 ; W/1" HUBS OR EQUAL. (NO DIE CAST BOXES).
7. STRINGS SHALL BE PULLED IN ALL CONDUITS PRIOR TO PLACEMENT OF CONCRETE.
8. LOCAL, COUNTY OR CITY CODES SHALL BE ADHERED TO. SPECIFICATIONS TO BE IN ACCORDANCE WITH SECTION 680 OF LATEST N.E.C. BOOK.
9. PROVIDE PULL BOXES AS MAY BE REQUIRED FOR RUNS EXCEEDING 150 FT. OR DUE TO CHANGES IN GRADE OR DIRECTION.
10. CONTRACTOR SHALL TEST UNDERWATER POOL LIGHT GFIC CIRCUITS AND PROVIDE LETTER TO ARCHITECT AND OWNER UPON SUCCESSFUL TEST.
11. SEAL CONDUIT OPENING IN LIGHT NICHE WITH SILICON CAULKING AFTER LIGHT IS INSTALLED.
12. PRIOR TO LIGHT INSTALLATION, PROVIDE MINIMUM 10 PSI PRESSURE TEST ON ALL POOL LIGHT CONDUITS FOR FOUR (4) HOURS OBSERVED BY INSPECTOR OF RECORD. MAINTAIN PRESSURE UNTIL ALL DECKS ARE POURED.



NICHE CONNECTOR
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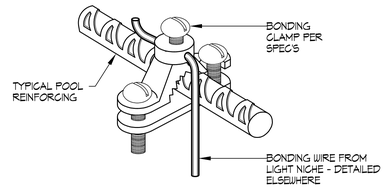

BONDING CLAMP
NO SCALE

2 BONDING DETAILS AS NOTED

FRONT ELEVATION

RIGHT SIDE ELEVATION

NOTE:
PROVIDE ½" RADIUS ON ALL CONCRETE CORNERS.

3 UNDERWATER LIGHT JUNCTION BOX CONCRETE SURROUND DETAIL 1"=1'-0"

4

5

6

7

8

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SP-2