Public Safety Building Renovations

Canton Township Public Safety Department

1150 South Canton Center Road, Canton, MI 48188

PARTNERS

Architect:

PARTNERS in Architecture, PLC

65 Market Street
Mount Clemens, MI 48043
586-469-3600

Owner:

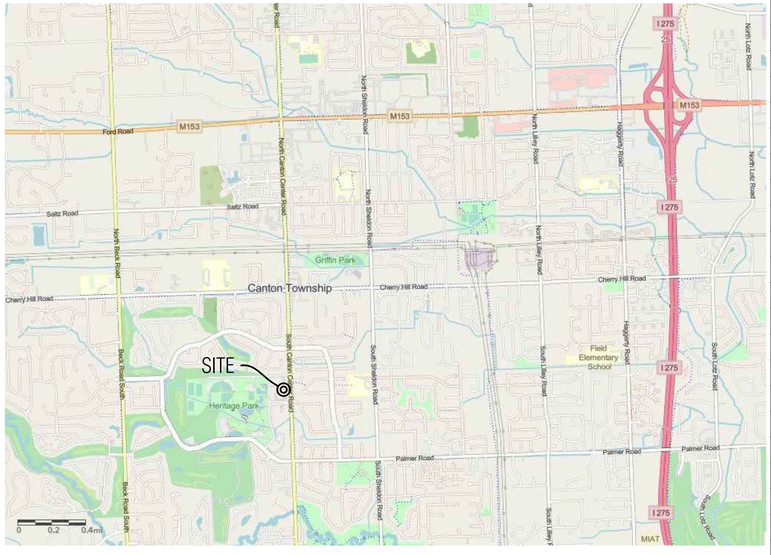
Charter Township of Canton

1150 South Canton Center Road
Canton, MI 48188
734-394-5100

Mechanical/Electrical Engineer:

Peter Basso Associates, Inc.

5145 Livernois St, Suite 100
Troy, MI 48098
248-879-5666



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PARTNERS

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CONSULTANT

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

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21-130

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SD-Owner Mtg	7/1/2021
SD Issue	9/20/2021
DD-Progress Review	10/12/2021
QAQC	2/18/2022
Bidding / Construction	3/9/2022

DRAWN BY

ASY, CJJ

CHECKED BY

JAV

APPROVED BY

MAM

SHEET NAME

COVER SHEET

SHEET NO.

A0-00

Abbreviations

A

AFF	ABOVE FINISHED FLOOR
ARF	ABOVE REFERENCE FLOOR
ACCT	ACCENT
AP	ACCESS PANEL
AC	ACOUSTICAL
ACT	ACOUSTICAL TILE (OR ACTIVE)
ADD	ADDENDUM
ADD'L	ADDITIONAL
ADJ	ADJACENT
AGG	AGGREGATE
A/C	AIR CONDITIONING
ALT	ALTERNATE OR ALTERNATIVE
AL,ALUM	ALUMINUM
ANCH	ANCHOR, ANCHORAGE
AB	ANCHOR BOLT
ANOD	ANODIZED
ARCH	ARCHITECT(URAL)
ASPH	ASPHALT
AUTO	AUTOMATIC

B

B.F.	BARRIER FREE
BP BP_L	BASE PLATE OR BEARING P_L
BRG	BEARING
BM	BENCH MARK OR BEAM
BETW	BETWEEN
BIT	BITUMINOUS
BLKG	BLOCKING
BD	BOARD
BS	BOTH SIDES
BOT	BOTTOM
BC	BOTTOM OF CURB
BRK	BRICK
BLDG	BUILDING
BL	BUILDING LINE

C

CABT	CABINET
CR	CARD READER
CPT	CARPET(ED)
CES	CARPET EDGE STRIP
CI	CAST IRON
CIP	CAST-IN-PLACE
CB	CATCH BASIN
CLG	CEILING
CEM	CEMENT
C TO C	CENTER TO CENTER
CM	CENTIMETER(S)
C°	DEGREES CENTIGRADE
CER	CERAMIC
CT	CERAMIC TILE
CHAN	CHANNEL
CHDK PL	CHECKERED PLATE
CL	CLEAR(ANCE)
CLOS	CLOSET
CO	CLEAN OUT
CHK	COAT HOOK
CW	COLD WATER
COL	COLUMN
COMB	COMBINATION
COMP	COMPRESS(ED),(ION),(IBLE)
CONCE	CONCEALED
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT (CONCRETE BLOCK)
CONN	CONNECTION
CONST	CONSTRUCTION
CONST JT	CONSTRUCTION JOINT
CONT	CONTINUOUS OR CONTINUE
CONTR	CONTRACT(OR)
CJ	CONTROL JOINT
CORR	CORRUGATED OR CORRIDOR
CTR	CENTER
CTSK	COUNTERSUNK
CF	CUBIC FOOT
CY	CUBIC YARD
CYL	CYLINDER

D

DPR	DAMPER
DP	DAMPROOFING
DL	DEAD LOAD
DET	DETAIL
DIAG	DIAGONAL
∅	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
D/W	DISHWASHER
DO	DOOR OPENING
DN	DOWN
DT	DRAIN TILE
DWG	DRAWING
DF	DRINKING FOUNTAIN

E

EA	EACH
EF	EACH FACE
EW	EACH WAY
E	EAST
ELEC	ELECTRIC(AL)
EWC	ELECTRIC WATER COOLER
EL	ELEVATION
ELEV	ELEVATOR
EMER	EMERGENCY
ENC	ENCLOS(E), (URE)
EP	EPOXY
EQ	EQUAL
EQUIP	EQUIPMENT
ESC	ESCALATOR
EPDM	ETHYLENE PROPYLENE DIENE MONOMERS
EXH	EXHAUST
EB	EXPANSION BOLT
EJ	EXPANSION JOINT
EXP CONST	EXPOSED CONSTRUCTION
EXT	EXTERIOR
ETR	EXISTING TO REMAIN

F

FWP	FABRIC WRAPPED PANEL
FB	FACE BRICK
FOC	FACE OF CONCRETE
FF	FACTORY FINISH
FS	FAR SIDE
F°	DEGREES FAHRENHEIT
FT	FEET/FOOT
FIN	FINISH(ED)
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FVC	FIRE VALVE CABINET
FLD	FIELD
FHS	FIRE HOSE STATION
FPR	FIRE PROOFING
FL	FLOOR(ING)
FD	FLOOR DRAIN
FLUOR	FLUORESCENT
FTG	FOOTING
FDN	FOUNDATION
FA	FRESH AIR
FSRS	FULLY-ADHERED SHEET ROOFING SYSTEM
FURR	FURR(ED), (ING)

G

GA	GAGE, GAUGE
GAL	GALLON
GALV	GALVANIZED
GL	GLASS, GLAZING
GR	GRADE, GRADING
g	GRAM
GRD	GROUND
GYP	GYPSUM
GYP L	GYPSUM LATH
GP	GYPSUM PLASTER
GWB	GYPSUM WALL BOARD

H

HDCP	HANDICAP(PED)
HDBD	HARDBOARD
HDWE	HARDWARE
HWD	HARDWOOD
HTG	HEATING
H&V	HEATING & VENTILATING
HVAC	HEATING/VENTILATION/ AIR CONDITIONING
HT	HEIGHT
H	HIGH
HP	HIGH POINT
HS	HIGH STRENGTH
HC	HOLLOW CORE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HORSE POWER
HB	HOSE BIBB
HW	HOT WATER
HWH	HOT WATER HEATER
HR	HOUR

I

IN(")	INCH(ES)
INCL	INCLUDE(D), (ING)
INFO	INFORMATION
ID	INSIDE DIMENSION
INSUL	INSULATE(D), (ION)
ICA	INTEGRAL COLOR ANODIZED
INT	INTERIOR/INTERNAL
INTERM	INTERMEDIATE
INV	INVERT
IRR	IRRIGATION

J

JC	JANITOR'S CLOSET
JT	JOINT
JST	JOIST
JB	JUNCTION BOX

K

kg	KILOGRAMS
KV	KILOVOLT
KVA	KILOVOLT/AMPERE
KW	KILOWATT(S)
KWH	KILOWATT-HOUR
kg/m	KILOGRAM PER METER
kg/cm^2	KILOGRAM PER SQUARE CENTIMETER
K	KIPS
KSI	KIPS PER SQUARE INCH
KIT	KITCHEN
KO	KNOCKOUT

L

LAB	LABORATORY
LAM	LAMINATE(D)
LAV	LAVATORY
LCC	LEAD COATED COPPER
LH	LEFT HAND
LHR	LEFT HAND REVERSE
L	LENGTH
LT	LIGHT
LTG	LIGHTING
LP	LIGHTING PANEL
LIN	LINEAR, LINEAL
LSWD	LINEAR SUSPENDED WOOD CEILING
LL	LIVE LOAD
LG	LONG
LLBB	LONG LEGS BACK TO BACK
LLH	LONG LEG HORIZONTAL
LLO	LONG LEG OUTSTANDING
LLV	LONG LEG VERTICAL
LOC	LOCATE/LOCATION
L.P.	LOW POINT
LV	LOW VOLTAGE

M

MAG	MAGNETIC
MH	MANHOLE
MFR	MANUFACTURE(R)
MAR	MARBLE
MAR T.	MARBLE THRESHOLD
MKB	MARKER BOARD
MAS	MASONRY
MO	MASONRY OPENING
MAT	MATERIAL(S)
MAX	MAXIMUM
MECH	MECHANICAL
MC	MEDICINE CABINET
MED	MEDIUM
MEM	MEMBER
MEMB	MEMBRANE
MET	METAL
MDS	METAL DIVIDER STRIP
ML	METAL LATH
MET T.	METAL THRESHOLD
MEZZ	MEZZANINE
mm	MILLIMETER(S)
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MISC	MISCELLANEOUS IRON
MON.	MONITOR(ED)
MCC	MOTOR CONTROL CENTER
MTD	MOUNT(ED), (ING)
MULL	MULLION

N

NAT	NATURAL
NCA	NATURAL COLOR ANODIZED
NEG	NEGATIVE
NRC	NOISE REDUCTION COEFFICIENT
NONCOMB	NONCOMBUSTIBLE
NOM	NOMINAL
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO (#)	NUMBER

O

OFF	OFFICE
O/C	ON CENTER(S)
OPG	OPENING
OPP	OPPOSITE
OPP HD	OPPOSITE HAND
ORIG	ORIGINAL
Oz	OUNCE
OS	OUTSIDE
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
OH	OVERHEAD

P

PH	PHYSICALLY HANDICAPPED
PLC	POLISHED CONCRETE
PT	PAINT(ED) (OR POINT)
PR	PAIR
PNL	PANEL
PTD	PAPER TOWEL DISPENSER
PTD/R	PAPER TOWEL DISPENSER & RECEPTACLE COMBINATION
PKG	PARKING
PBD	PARTICLE BOARD
PARTN	PARTITION
PE	PASSENGER ELEVATOR
PERM	PERMANENT
PLAS	PLASTER
PL	PLASTIC LAMINATE
P_L	PLATE
PLBG	PLUMBING
PLWD	PLYWOOD
POL	POLISHED
PVC	POLYVINYL CHLORIDE
lb/#	POUND(S)
PCF	POUNDS PER CUBIC FOOT
PPF	POUNDS PER FOOT
PLF	POUNDS PER LINEAL FOOT
PSF	POUNDS PER SQUARE FOOT
PC	PRECAST CONCRETE
PRE-FAB	PREFABRICATE(D)
PTR	PRESERVATIVE TREATED WOOD

Q

QT	QUARRY TILE
QB	QUARRY TILE BASE
QTR	QUARTER

R

RAD	RADIUS, RADIATOR, RADIATION
RC	RAINWATER CONDUCTOR
RECVG	RECEIVING
REC	RECESS(ED)
REF	REFERENCE
REFL	REFLECT(ED), (IVE), (OR)
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCE(D), (ING)
REQD	REQUIRED
RESIL	RESILIENT
RT	RESILIENT TILE
RA	RETURN AIR
REV	REVISION(S), REVISED
RH	RIGHT HAND
RHR	RIGHT HAND REVERSE
ROW	RIGHT OF WAY
R	RISER
Rd	ROAD

R (CONT.)

RD	ROOF DRAIN
RS	ROOF SUMP
RFG	ROOFING
RM	ROOM
RO	ROUGH OPENING
RUB	RUBBER
RB	RUBBER BASE (OR RESILIENT BASE)

S

SAN	SANITARY
SND	SANITARY NAPKIN DISPENSER
SNWR	SANITARY NAPKIN WASTE RECEPTACLE
SCH	SCHEDULE
SJ	SCORED JOINT
S.CONC	SEALED CONCRETE
SEAL	SEALER
SECT	SECTION
SS	SERVICE SINK
SHT	SHEET
SLO	SHORT LEG OUTSTANDING
SIM	SIMILAR
SK	SINK
SB	SOIL BORING
STC	SOUND TRANSMISSION CLASS
S	SOUTH
SPC	SPACER, SPACING
SPK	SPEAKER
SPEC(S)	SPECIFICATION(S)
SPEC'D	SPECIFIED
SQ	SQUARE
cm^2	SQUARE CENTIMETER
SF	SQUARE FOOT (OR STOREFRONT) (OR SPORTS FLOORING)
STAG	STAGGERED
SST	STAINLESS STEEL
STD	STANDARD
STA	STATION
STL	STEEL
STN	STONE
STOR	STORAGE
SD	STORM DRAIN
ST	STREET
STRUCT	STRUCTURAL
SA	SUPPLY AIR
SUPP	SUPPORTS
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRY(ICAL)

T

TKB	TACKBOARD
TP	TANGENT POINT
TEL	TELEPHONE
TV	TELEVISION
TEMP	TEMPERATURE, TEMPERED
TERR	TERRAZZO
TT	TERRAZZO TILE
THERM	THERMOSTAT
THK	THICK(NESS)
THRES	THRESHOLD
THRU	THROUGH/THOUGHOUT
TOIL	TOILET
TPH	TOILET PAPER HOLDER
TOL	TOLERANCE
T&G	TONGUE AND GROOVE
T&B	TOP & BOTTOM
TE	TOP ELEVATION
TOC	TOP OF CONCRETE
TC	TOP OF CURB
TOS	TOP OF STEEL
TWC	TOWEL & WASTE CABINET
TRAN	TRANSFORMER
T	TREAD
TYP	TYPICAL

U

UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UR	URINAL

V

VA	VALVE
VB	VAPOR BARRIER
VR	VAPOR RETARDER
VAR	VARNISH
VERT	VERTICAL
VEST	VESTIBULE
VIN	VINYL
VCT	VINYL COMPOSITION TILE
VT	VINYL TILE
VWC	VINYL WALL COVERING
VIT	VITREOUS
VRS	VINYL RESILIENT STRIP

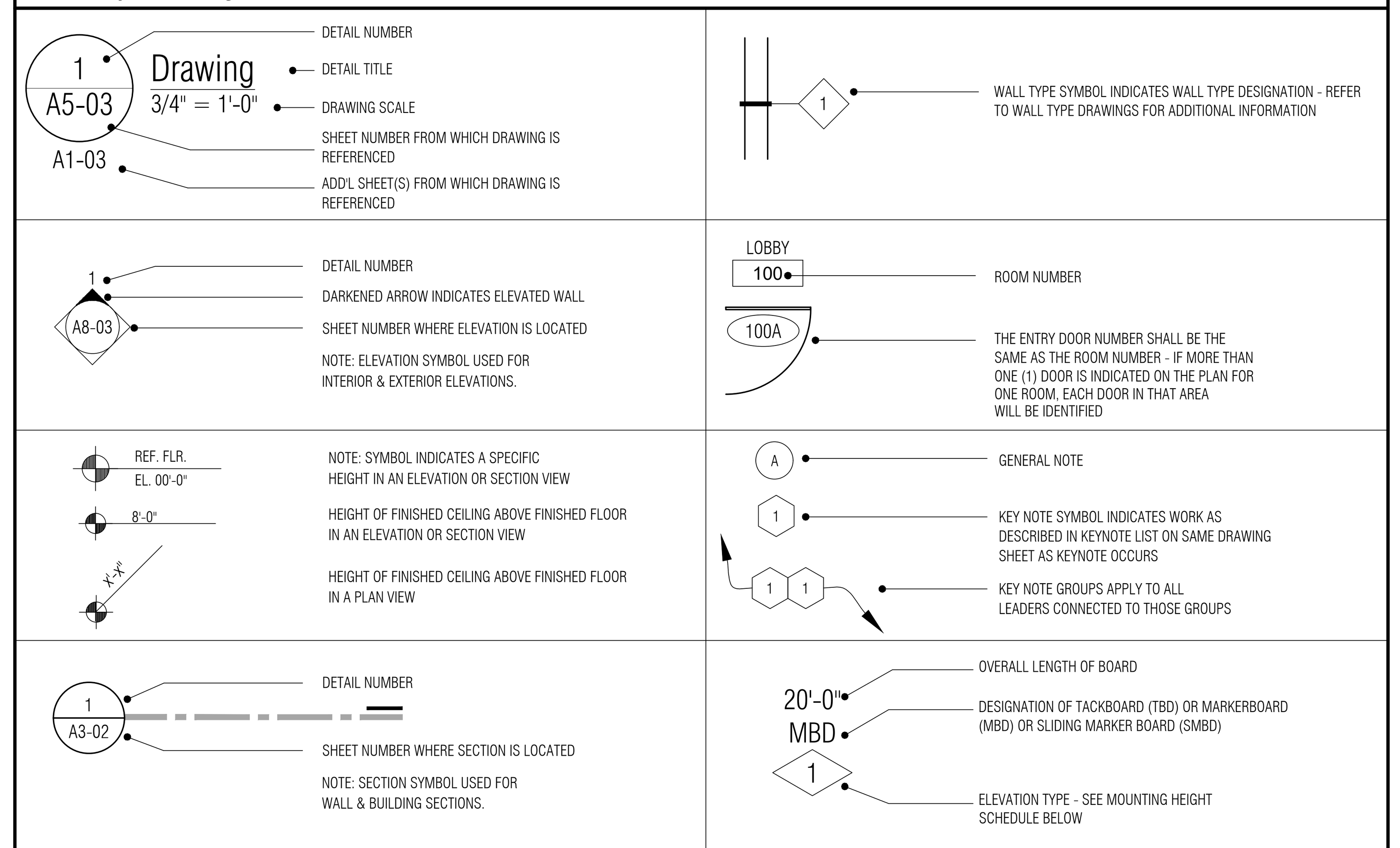
W

WAIN	WAINSCOT
WHYD	WALL HYDRANT
WH	WATER HEATER
WC	WATER CLOSET
WM	WATER MAIN
WP	WATERPROOFING
WR	WATER RESISTANT
WS	WATERSTOP
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
W	WIDTH, WIDE, WEST
W/	WITH
W/O	WITHOUT
WD	WOOD

Y

YD	YARD

Graphic Symbols



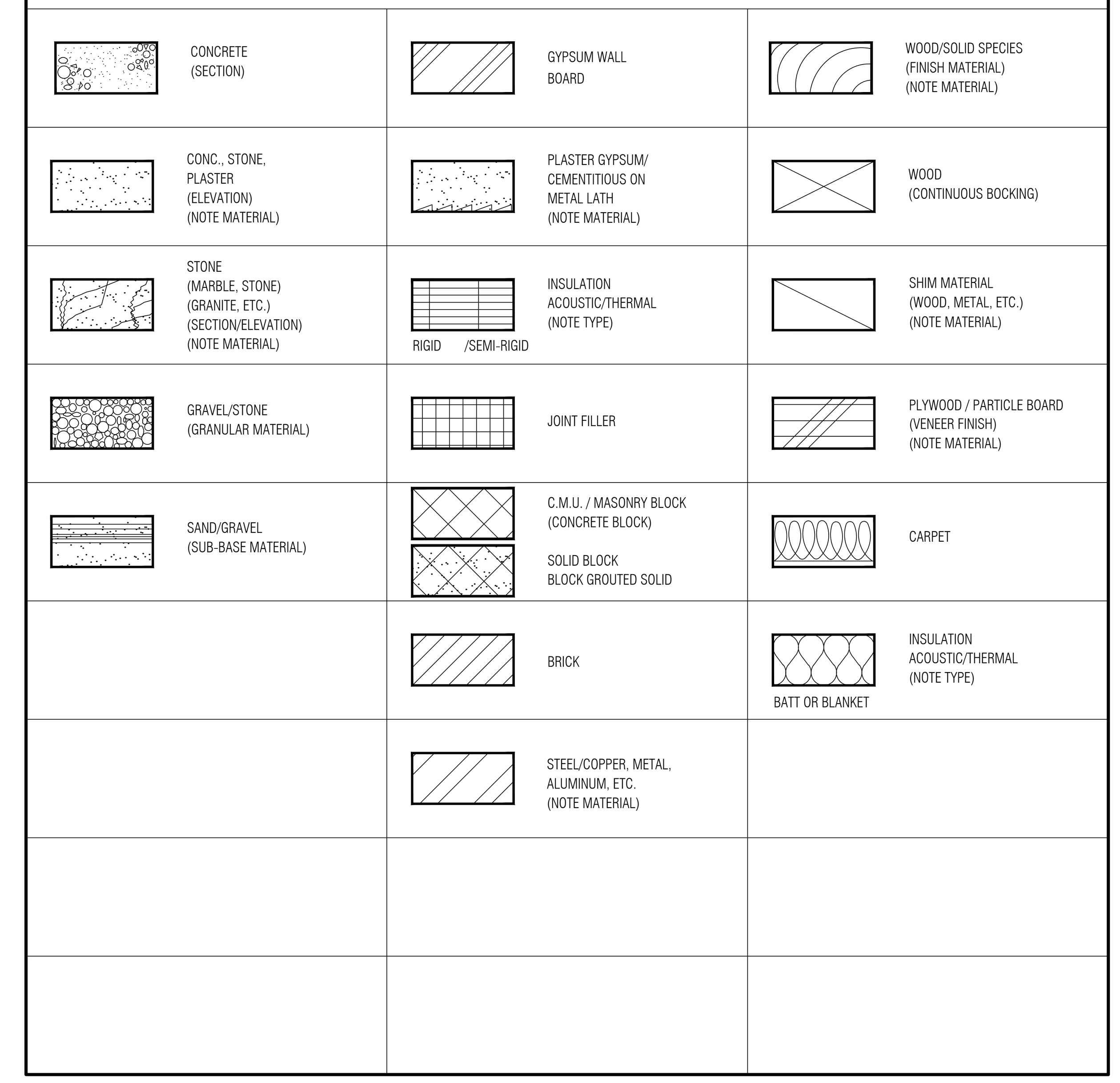
Text Symbols

∠	ANGLE	P_L	PLATE
℄	CENTERLINE	Ø	ROUND / DIAMETER
⊏	CHANNEL	&	AND
⊥	PERPENDICULAR	@	AT

Line Type Designation

── (thin)	EXISTING ITEM TO REMAIN
– – – – –	EXISTING ITEM TO BE REMOVED
━━	NEW ITEM AS NOTED

Material Poche Indications

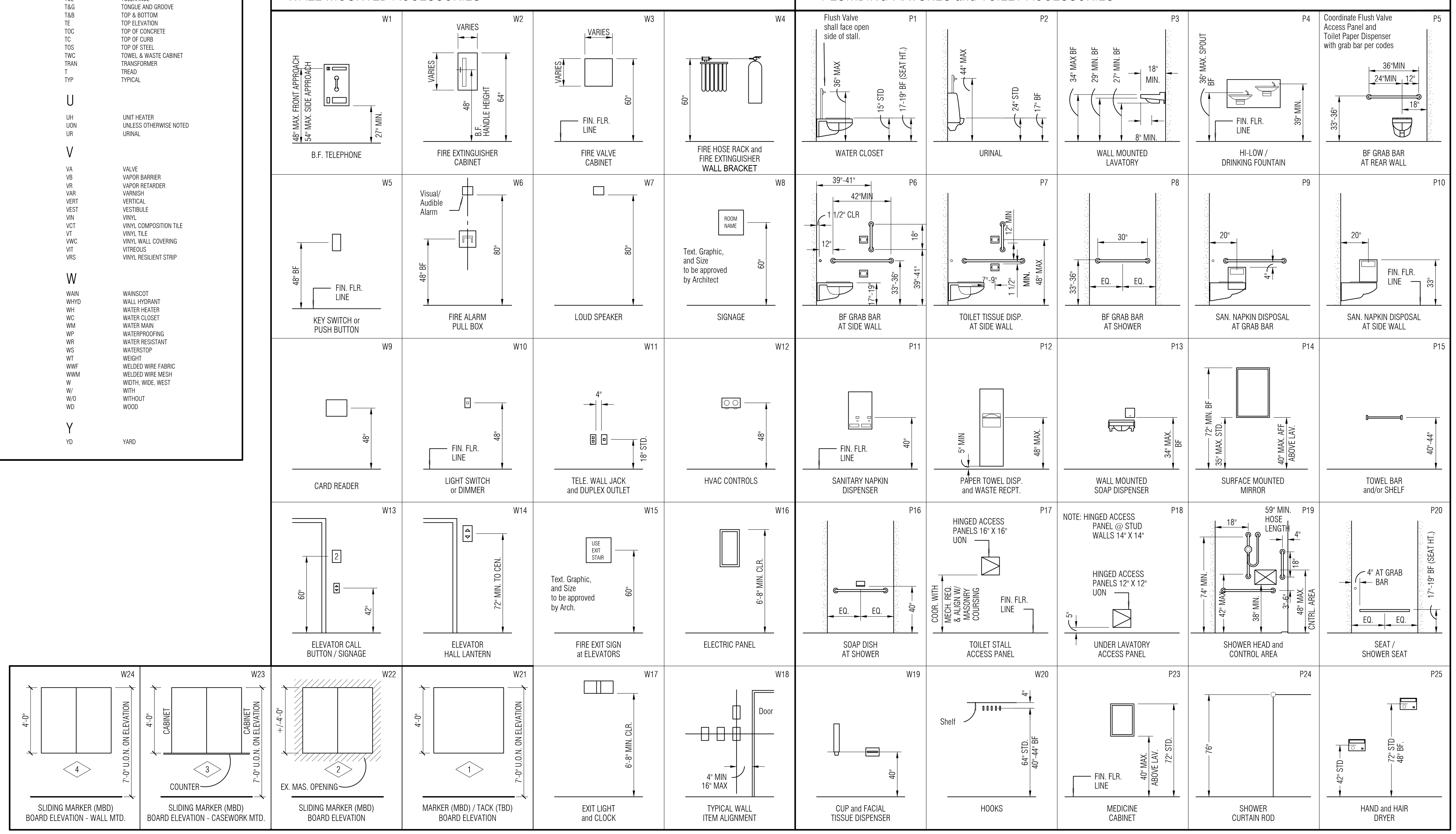


Mounting Height Schedule

NOTE:
- NOT ALL HEIGHTS SHOWN ARE TYPICAL FOR ALL ITEMS WHERE THEY OCCUR
- UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS, (B.F. DENOTES BARRIER FREE REQUIREMENTS)
- NOT ALL ITEMS SHOWN ON THIS DRAWING MAY OCCUR ON THIS PROJECT

WALL MOUNTED ACCESSORIES

PLUMBING FIXTURES and TOILET ACCESSORIES



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CONSULTANT

KEY PLAN

OWNER

Canton Township Public Safety

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Addendum #5	03/28/2022

DRAWN BY
ASY

CHECKED BY
JAV

APPROVED BY
MAM

SHEET NAME

GENERAL INFORMATION

SHEET NO.
A0-01

BUILDING CODE INFORMATION

GENERAL PROJECT INFORMATION

OWNER: CHARTER TOWNSHIP OF CANTON
PROJECT: PUBLIC SAFETY BUILDING INTERIOR RENOVATIONS
ADDRESS: 1150 S CANTON CENTER ROAD, CANTON, MI

GOVERNING CODES:

2015 MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS (MRCEB)
2015 MICHIGAN BUILDING CODE (MBC)
2015 MICHIGAN MECHANICAL CODE (MMC)
2015 MICHIGAN PLUMBING CODE (MPC)
2015 MICHIGAN UNIFORM ENERGY CODE (MUEC)
2017 NATIONAL ELECTRIC CODE (NEC)
2015 ICC / ANSI A117.1

2015 MICHIGAN BUILDING CODE

AREA OF EXISTING BUILDING:

BASEMENT FLOOR (TWP HALL):	31,165 SF
GROUND FLOOR AREA A (TWP HALL):	30,855 SF
GROUND FLOOR AREA B (PUBLIC SAFETY):	20,520 SF
SECOND FLOOR AREA A (TWP HALL):	29,560 SF
SECOND FLOOR AREA B (PUBLIC SAFETY):	17,190 SF
THIRD FLOOR (TWP HALL):	29,325 SF
TOTAL BUILDING AREA:	158,615 SF

CHAPTER 3: USE AND OCCUPANCY CLASSIFICATION

[304.1] PRIMARY USE GROUP: BUSINESS (B)
[308.5] INCIDENTAL USE GROUP: INSTITUTIONAL (I-3), OCCUPANCY CONDITION 5

CHAPTER 4: SPECIAL DETAIL REQUIREMENTS

SECTION 408: GROUP I-3
[408.3.7] EGRESS IS PERMITTED THROUGH A SALLYPORT IF UNOBSTRUCTED PASSAGE IS PROVIDED
[408.6] I-3 OCCUPANCIES SHALL HAVE SMOKE BARRIERS TO DIVIDE EVERY STORY.
[408.6.1] SMOKE COMPARTMENTS SHALL NOT ALLOW MORE THAN 200 OCCUPANTS EACH.
[408.7] SECURITY GLAZING
[408.9] WINDOWLESS BUILDINGS ARE REQUIRED TO HAVE AN ENGINEERED SMOKE CONTROL SYSTEM
[408.10] A FIRE ALARM SYSTEM IS REQUIRED
[408.11] A FIRE SPRINKLER SYSTEM IS REQUIRED

CHAPTER 5: GENERAL BUILDING HEIGHTS AND AREAS

ALLOWABLE BUILDING HEIGHT AND AREA
[TABLE 504.3] ALLOWABLE HEIGHT: 75'-0" (SPRINKLERED),± 41'-6" EXISTING (TOP OF PARAPET)
[TABLE 504.4] ALLOWABLE STORIES: 4 (SPRINKLERED),3 ACTUAL

[TABLE 506.2] ALLOWABLE AREA:
[506.2.4] - A_t = [69,000+(23,000 x 0.62)] = 83,260 SF ALLOWED PER STORY
51,375 EXST'G GROUND FLOOR AREA

[509] INCIDENTAL USES
[509.3] INCIDENTAL USES SHALL NOT EXCEED 10% OF FLOOR AREA (4113/51375)=8%
[TABLE 509] GROUP I-3: 1 HOUR FIRE SEPARATION REQUIRED

CHAPTER 6: TYPES OF CONSTRUCTION

[602.5] CONSTRUCTION CLASSIFICATION: TYPE II-B

[TABLE 601] FIRE RESISTANCE RATING REQUIREMENTS

PRIMARY STRUCTURAL FRAME	0 HR
BEARING WALLS	
INTERIOR	0 HR
EXTERIOR	0 HR
NONBEARING WALLS & PARTITIONS	
INTERIOR	0 HR
EXTERIOR	0 HR
FLOOR CONSTRUCTION	0 HR
ROOF CONSTRUCTION	0 HR

CHAPTER 7: FIRE AND SMOKE PROTECTION FEATURES

[706] FIRE WALLS: NOT REQUIRED
[707] FIRE BARRIERS REQUIRED. REFER TO CODE PLAN FOR LOCATIONS.
[708] FIRE PARTITIONS: NOT REQUIRED
[709] SMOKE BARRIERS REQUIRED. GROUP I-3 USE SHALL BE A SEPARATE SMOKE COMPARTMENT.
[710] SMOKE PARTITIONS: NOT REQUIRED
[713.14.1] ENCLOSED ELEVATOR LOBBY: NOT REQUIRED, AS BUILDING HAS LESS THAN 3 FLOORS

CHAPTER 8: INTERIOR FINISHES

[TABLE 803.11] INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY (SPRINKLERED)

BUSINESS USE GROUP AREAS
- INTERIOR EXIT STAIRWAYS, RAMPS, PASSAGEWAYS: CLASS B
- EXIT ACCESS CORRIDORS, STAIRS, RAMPS: CLASS C
- ROOMS & ENCLOSED SPACES: CLASS C

CHAPTER 8: INTERIOR FINISHES (CONTINUED)

INSTITUTIONAL I-3 USE GROUP AREAS
- INTERIOR EXIT STAIRWAYS, RAMPS, PASSAGEWAYS: CLASS A
- EXIT ACCESS CORRIDORS, STAIRS, RAMPS: CLASS A
- ROOMS & ENCLOSED SPACES: CLASS C

CHAPTER 9: FIRE PROTECTION SYSTEMS

[903] AN EXISTING AUTOMATIC SPRINKLER SYSTEM IS PRESENT.
THE SYSTEM WILL BE MODIFIED AS REQUIRED TO ACCOMMODATE THE NEW WORK.

[TABLE 906.3(1)] FIRE EXTINGUISHERS FOR CLASS A FIRE HAZARDS (ORDINARY HAZARDS):
- MIN. RATED SINGLE EXTINGUISHER - 2-A
- MAX. FLOOR AREA PER UNIT OF A - 1,500 SF
- MAX. FLOOR AREA FOR EXTINGUISHER - 11,250 SF
- MAX. DISTANCE OF TRAVEL TO EXTINGUISHER - 75'-0"

[907.2.2] A MANUAL FIRE ALARM SYSTEM IS REQUIRED.
[907.2.6] AUTOMATIC SMOKE DETECTION IS REQUIRED IN THE I-3 USE GROUP AREA.
[909] A SMOKE CONTROL SYSTEM COMPLIANT WITH SECTION 909 IS REQUIRED IN THE I-3 USE AREA.

CHAPTER 10: MEANS OF EGRESS

[TABLE 1004.1.2] MAXIMUM FLOOR AREA ALLOWANCE PER OCCUPANT:

- BUSINESS & ACCESSORY SPACES:	100 SF / OCCUPANT
- MULTIPURPOSE / CONFERENCE SPACES:	15 SF / OCCUPANT
- STORAGE & MECH./ELEC. SPACES:	300 SF / OCCUPANT
- LOCKER ROOMS	50 SF / OCCUPANT
- INSTITUTIONAL I-3 (GENERAL):	240 SF / OCCUPANT
- INSTITUTIONAL I-3 (SINGLE OCCUPANT CELLS):	1 OCCUPANT
- INSTITUTIONAL I-3 (GROUP HOLDING CELLS):	15 SF / OCCUPANT

CITY HALL (AREA A) IS OUTSIDE THE SCOPE OF WORK, OCCUPANCY LOADS REMAIN UNCHANGED.

PUBLIC SAFETY (AREA B) CALCULATED OCCUPANCY: (N/S = NON-SIMULTANEOUS OCCUPANCY)

		ALLOW.	ACTUAL
GROUND FLOOR:			
BUSINESS -	9900 SF @ 100 SF / OCC =	39	27
MEETING/CONF. SPACES -	751 SF @ 15 SF / OCC =	50	20
LOCKER ROOMS -	2050 SF @ 50 SF / OCC =	41	20/SHIFT
INSTITUTIONAL (GENERAL) -	2827 SF @ 240 SF / OCC =	12	UNCHANGED
INSTITUTIONAL (SINGLE CELLS) -	4 CELLS @ 1 OCC EACH =	4	
INSTITUTIONAL (GROUP CELLS) -	930 SF @ 15 SF / OCC =	62	
GARAGE (SALLY PORT) -	1736 SF @ 240 SF / OCC =	8	
STORAGE & MECH./ELEC. -	2639 SF @ 300 SF / OCC =	9	8
TOTAL		225	75
SECOND FLOOR:			
BUSINESS -	11600 SF @ 100 SF / OCC =	89	55
MEETING/CONF. SPACES -	1350 SF @ 15 SF / OCC =	90	N/S
STORAGE & MECH./ELEC. -	2400 SF @ 300 SF / OCC =	6	5
TOTAL		185	60
GRAND TOTAL (AREA B)		410	135

[1005.3.1 & 2] MEANS OF EGRESS SIZING:
STAIRWAYS: 0.2 PER OCCUPANT
OTHER ELEMENTS: 0.15 PER OCCUPANT

[1006.2.1] MIN. NUMBER OF EXITS WITHIN MEANS OF EGRESS SYSTEM:
[TABLE 1006.2.1] SPACES
OCCUPANT LOADS >49: YES; MIN. EXITS REQ'D: 2; EXITS PROVIDED: 5
COMMON PATH OF EGRESS TRAVEL: 100' MAX.; 100' ACTUAL

[1006.3.1] MINIMUM NUMBER OF EXITS FROM MEANS OF EGRESS SYSTEM:
[TABLE 1006.3.1] STORIES
OCCUPANT LOAD: 237 PERSONS MAX.
EXITS: 2 REQ'D.; 2 MIN. PROVIDED

[1007.1.1] DISTANCE APART OF REQUIRED EXITS:
70'-0" (½) LENGTH OF MAX. DIAGONAL DIM. OF BUILDING
[1009.1] NO. OF ACCESSIBLE MEANS OF EGRESS: 2 REQ'D.; 3 PROVIDED

[1009.3] STAIRWAYS - ACCESSIBLE
CLEAR WIDTH: 44" MIN.; 48" PROVIDED
AREAS OF REFUGE INCORPORATED: YES
[1009.6.3] NO. OF SPACES: 2 PER FLOOR

MIN. REQUIRED CLEAR DOOR OPENING WIDTH: 32"

[TABLE 1017.2] EXIT ACCESS TRAVEL DISTANCE: 300'-0" MAX.; 130'-0" ACTUAL
CORRIDOR:
[TABLE 1020.1] RATINGS: 0 HR. MIN.; 0 HR. ACTUAL
[TABLES 1020.2] WIDTHS: 44" MIN.; 4'-8" ACTUAL
DEAD END CORRIDORS: 50'-0" MAX.; 50'-0" ACTUAL

INTERIOR EXIT STAIRWAYS:
[1023.2] FIRE RESISTANCE RATING: 1 HR REQ'D. (LESS THAN 4 STORIES); 1 & 2 HRS EXISTING

CHAPTER 11: ACCESSIBILITY

[1103.2.2] REQUIRED: YES; EMPLOYEE WORK AREAS
[1104.1] ACCESSIBLE ROUTE PROVIDED: YES
[1105.1] 60% OF PUBLIC ENTRANCES ACCESSIBLE: YES

TOILET & BATH FACILITIES
[1109.2] NO. OF EACH ACCESSIBLE TOILET FACILITY: 7
[1109.2.2] W.C. COMPARTMENTS: 5% MIN. REQ'D.; 33% (5) PROVIDED
[1109.2.3] LAVATORIES: 5% MIN. REQ'D.; 66% (5) PROVIDED
[1109.3] SINKS: 5% MIN. REQ'D.; 66% (2) PROVIDED
[1109.5.1] B.F. DRINKING FOUNTAINS: 1 MIN. REQ'D.; 4 PROVIDED

2015 MICHIGAN REHAB CODE:

[301.1.2] COMPLIANCE METHOD UTILIZED: WORK AREA
TYPE: ALTERATIONS

WORK AREA COMPLIANCE

(501.2) WORK AREA/S DEFINED: 26,469 SQ.FT.
(505.1) ALTERATION LEVEL #3 UTILIZED: YES
(506.1) CHANGE IN OCCUPANCY: NO
(507.1) ADDITION/S: NO
(508.1) CLASSIFIED HISTORIC BUILDING: NO

(701) ALTERATIONS - LEVEL #1: YES
(702.1) NEW INTERIOR FINISHES: YES
(702.2) NEW INTERIOR FLOOR FINISHES: YES
(702.3) NEW INTERIOR TRIM: YES

(801) ALTERATIONS - LEVEL #2 (PLUS LEVEL #1): YES
WORK AREA >50% OF EXISTING FLOOR: YES
(803.2) EXISTING VERTICAL OPENINGS CONNECTING >2 FLOORS: NO
ENCLOSURE RATING: 2 HR REQ'D. 2 HR PROVIDED
(803.1.2) ADDITIONAL EXISTING VERTICAL OPENINGS ENCLOSED: YES
(804.1.2) AUTOMATIC SPRINKLER SYSTEM PROVIDED: YES
LIMITED TO WORK AREA: NO
(804.4) FIRE ALARM & DETECTION PROVIDED: YES
(805.6) DEAD END CORRIDORS IN WORK AREA: 50'-0" MAX., 50'-0" ACTUAL
(807.4) INCREASE IN EXISTING DESIGN GRAVITY LOAD OF 5%: NO
(807.5) LATERAL LOAD DESIGN DEMAND CAPACITY RATIO >10%: NO

(901) ALTERATIONS - LEVEL #3 (PLUS #1 & #2): YES
(903.1) EXISTING STAIRWAYS PART OF MEANS OF EGRESS:
ENCLOSED FROM HIGHEST WORK AREA TO LEVEL OF EXIT DISCHARGE: YES
(903.3) NEW INT. FINISHES IN EXISTING EXITS & CORRIDORS SERVING WORK AREA: YES

(903.1) EXISTING MEANS OF EGRESS HAZARD CATEGORY:
HIGHER THAN ORIGINAL: NO, LOWER THAN ORIGINAL: NO

PLUMBING FIXTURE CALCULATION (PER 2015 MICHIGAN PLUMBING CODE - TABLE 403.1)

REFER TO OCCUPANT LOAD CALCULATIONS ABOVE FOR TOTAL BUILDING OCCUPANT LOADS (PER 2015 MBC TABLE 1004.1.2)

CLASSIFICATION / OCCUPANCY		WATER CLOSETS		LAVATORIES		DRINKING FOUNTAINS	SERVICE SINKS
		MALE	FEMALE	MALE	FEMALE		
B / BUSINESS USE (383 TOTAL, 192 M/F)	REQUIRED RATIO	1 / 25 UP TO 50 OCC. & 1/50 AFTER	1 / 25 UP TO 50 OCC. & 1/50 AFTER	1 / 40 UP TO 80 OCC. & 1/80 AFTER	1 / 40 UP TO 80 OCC. & 1/80 AFTER	1 / 1000	1
	# REQUIRED	5	5	4	4	1	1
	# PROVIDED	4 GF 2 SF	2 GF 2 SF	2 GF 1 SF	2 GF 1 SF	2 GF 1 SF	2
I-3 / INSTITUTIONAL (86 OCC)		EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN		

OF SINGLE OCCUPANT UNISEX TOILET ROOMS IN ADDITION TO M/F FIXTURES LISTED ABOVE: 2 GF, 3 SF

PARTNERS

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MOUNT CLEMENS, MI 48043
P 586.469.3600

CONSULTANT

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD-Owner Mtg	6/16/2021
SD-Owner Mtg	7/1/2021
SD Issue	9/20/2021
DD-Progress Review	10/12/2021
QAQC	2/18/2022
Bidding / Construction	3/9/2022
Permit Resubmittal	1/3/2023
Proposal request #4	1/18/2023

DRAWN BY
JAV

CHECKED BY
JAV

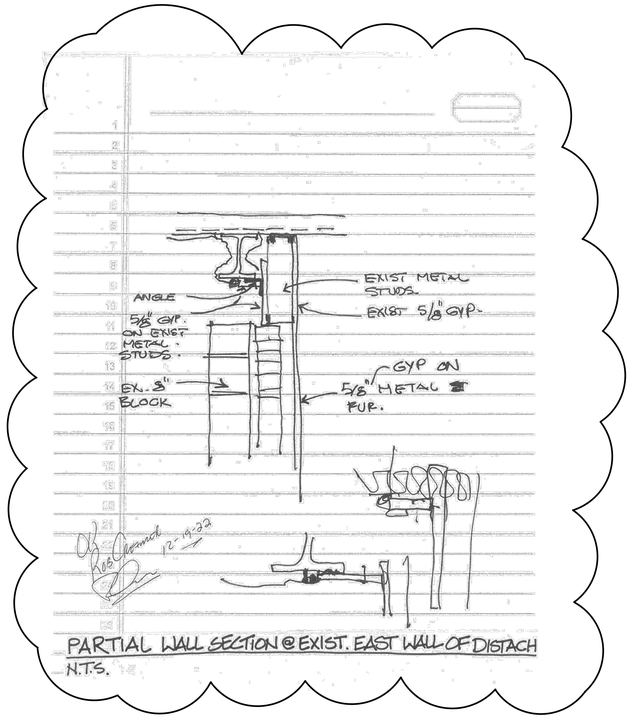
APPROVED BY
MAM

SHEET NAME

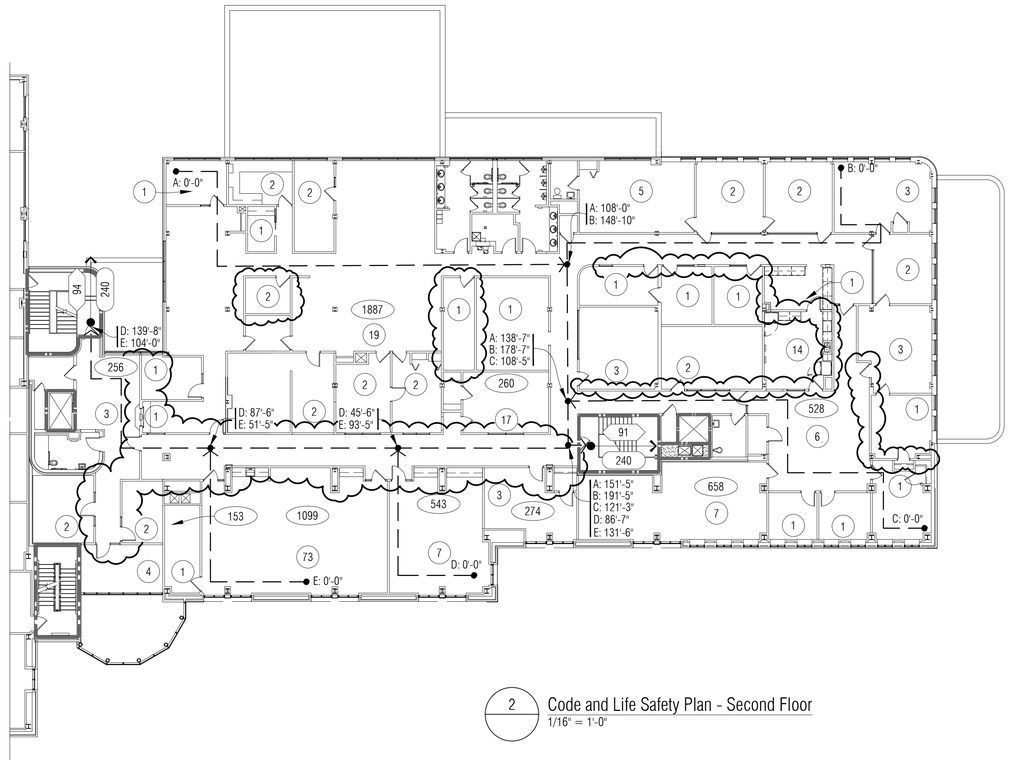
CODE SUMMARY

SHEET NO.

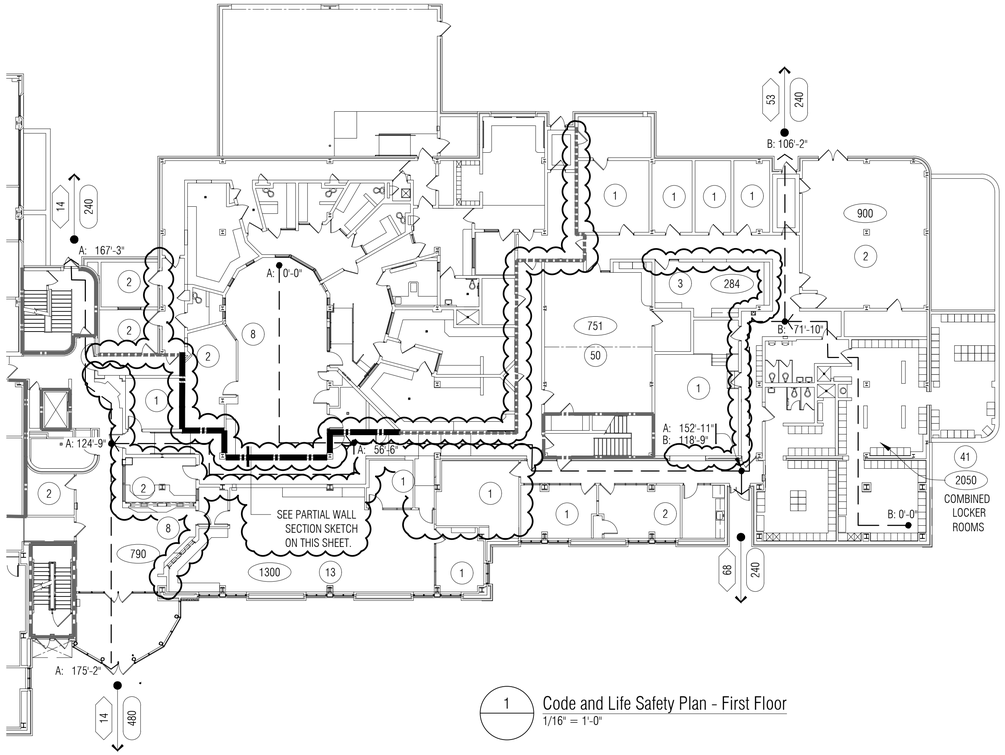
A0-02



PARTIAL WALL SECTION @ EXIST. EAST WALL OF DISTACH
N.T.S.



2 Code and Life Safety Plan - Second Floor
1/16" = 1'-0"



1 Code and Life Safety Plan - First Floor
1/16" = 1'-0"

FLOOR PLAN GENERAL NOTES:

A. ALL FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS SHALL BE IDENTIFIED WITH SIGNS OF STENCILING (WHERE WALL AREAS ARE CONCEALED FROM VIEW) LETTERS MUST BE A MIN. 1/2" HEIGHT AND READ "FIRE AND/OR SMOKE BARRIER. PROTECT ALL OPENINGS" - SPACED AT 30'-0" O.C.

B. THESE CODE ANALYSIS DRAWINGS (SHEET A0-03), NOTES, PLANS AND WALL IDENTIFICATION TYPES AND LOCATIONS ARE FOR FIRE RATINGS AND / OR SMOKE BARRIERS AS REQUIRED FOR LIFE SAFETY AND BUILDING CODE COMPLIANCE. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL CONSTRUCTION REQUIREMENTS.

C. ALL FIRE RATED WALLS OF ANY TYPE SHALL BE SEALED TIGHT TO ROOF DECK SYSTEM ABOVE AND ALL PENETRATIONS SHALL BE PROPERLY SEALED WITH UL APPROVED FIRE SEALANT SYSTEM. REFER TO SPECIFICATION SECTIONS 078413 AND 078446. EACH BID CATEGORY CONTRACTOR RESPONSIBLE FOR SEALING THEIR OWN PENETRATIONS. SEALANT CONTRACTOR RESPONSIBLE FOR INSTALLATION OF APPROVED FIRE SEALANT SYSTEM AT TOPS OF WALLS AND ROOF DECK JUNCTIONS.

CODE & LIFE SAFETY PLAN LEGEND

- EXIT ACCESS TRAVEL DISTANCE
- COMMON PATH OF EGRESS TRAVEL DISTANCE
- SMOKE TIGHT PARTITION (EXISTING)
- SMOKE TIGHT PARTITION (NEW)
- 1-HOUR RATED WALL CONSTRUCTION -FIRE STOP ALL PENETRATIONS (EXISTING)
- EXISTING MIN. 1-HR RATED WALL CONSTRUCTION - FIRE STOP ALL PENETRATIONS
- 1-HOUR RATED WALL CONSTRUCTION -FIRE STOP ALL PENETRATIONS (NEW)
- 2-HOUR RATED FIREWALL CONSTRUCTION -FIRE STOP ALL PENETRATIONS (EXISTING)
- (#) AREA OF ROOM OR SPACE (SQUARE FEET)
- (#) OCCUPANT LOAD EXITING THROUGH EGRESS
- (#) COMPONENT OCCUPANT CAPACITY OF EGRESS COMPONENT
- FEC PORTABLE FIRE EXTINGUISHER / CABINET
- (#) OCCUPANT LOAD OF ROOM OR AREA
- A: 0'-0" DENOTES INDIVIDUAL EGRESS PATH AND DISTANCE OF TRAVEL BY SEGMENT

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THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ISSUED BELOW SPECIFICALLY FOR "BIDDING / CONSTRUCTION"

CONSULTANT

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

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Proposal Request #4	1/18/2023

DRAWN BY
JAV, CJJ

CHECKED BY
JAV

APPROVED BY
MAM

SHEET NAME

LIFE SAFETY PLANS

SHEET NO.
A0-03

Room Finish Schedule

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS				CEILING FINISH	ROOM FINISH KEY NOTES
				NORTH	EAST	SOUTH	WEST		
SECOND FLOOR									
200A	SECURE LOBBY	CPT-1	PB-1	PWP-1	PNT-2	PNT-2	PNT-2	ACT-1	5
200B		--	--	--	--	--	--	--	
201	TOILET	PT-4 / PT-5	PT-3	PT-6 / PT-7	PT-6 / PT-7	PT-6 / PT-7	PT-6 / PT-7	ACT-1	
202	CORRIDOR	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
203	HOTELING OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-4	PNT-2	ACT-1	5
204	SOCIAL WORK OFFICE	CPT-1	RB-1	PNT-4	PNT-2	PNT-4	PNT-2	ACT-1	5
205	FLEX OFFICE	CPT-1	RB-1	PNT-4	PNT-2	PNT-2	PNT-2	ACT-1	5
206	RECEPTION	CPT-1	RB-1	PNT-4	PNT-2	PNT-2	PNT-2	ACT-1	5
207	DB SERGEANT OFFICE	CPT-1	RB-1	PNT-4	PNT-2	PNT-2	PNT-2	ACT-1	
208	STORAGE	CPT-1	RB-1	--	--	--	--	--	
209	CONFERENCE	CPT-1	RB-1	WC-1	WC-1	WC-1	WC-1	ACT-1	3, 5
210	EXISTING CORRIDOR	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
211	EXISTING I.T. ROOM	ESD-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
212	I.T. ROOM	ESD-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
213	TEMP. DISPATCH/MEETING	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	3, 5
214	NEW OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-4	PNT-2	ACT-1	1, 3, 5
215	CLOSET	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
216	FILE STOR./OPEN WORK AREA	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	3, 5
217	NEW OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-4	PNT-2	ACT-1	3, 5
218	NEW OFFICE	CPT-1	RB-1	PNT-4	PNT-2	PNT-2	PNT-2	ACT-1	3, 5
219	FIRE MARSHAL OFFICE	CPT-1	RB-1	PNT-4	PNT-2	PNT-2	PNT-2	ACT-1	3, 5
220	CLOSET	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
221	CLOSET	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
222	OFFICE	CPT-1	RB-1	PNT-4	PNT-2	PNT-2	PNT-2	ACT-1	5
223	NEW OPEN OFFICE AREA	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
224	CLOSET	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
225	BREAK ROOM	LVT-1	RB-1	PNT-4	PNT-2	PNT-2	PNT-4	ACT-1	5
226	WORK ROOM	LVT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
227	STORAGE ROOM	--	--	--	--	--	--	--	
228	ORDINANCE OFFICERS	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	--	
229	MEETING ROOM	--	--	--	--	--	--	ACT-1	
229A	CLOSET	--	--	--	--	--	--	ACT-1	
230	CORRIDOR	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
231	EXISTING OPEN OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
232	MEN'S RESTROOM	PT-5	PT-3	PT-6 / PT-7	PT-6 / PT-7	PT-6 / PT-7	PT-6 / PT-7	ACT-1	
233	JANITOR'S CLOSET	LVT-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	
234	WOMEN'S RESTROOM	PT-5	PT-3	PT-6 / PT-7	PT-6 / PT-7	PT-6 / PT-7	PT-6 / PT-7	ACT-1	
235	TOILET ROOM	--	--	--	--	--	--	--	
236	OFFICE	--	--	--	--	--	--	ACT-1	
237	OFFICE	--	--	--	--	--	--	ACT-1	
238	OFFICE	--	--	--	--	--	--	ACT-1	
239	OFFICE	--	--	--	--	--	--	ACT-1	
240	OFFICE	--	--	--	--	--	--	ACT-1	
241	OFFICE	--	--	--	--	--	--	ACT-1	
241A	CLOSET	--	--	--	--	--	--	--	
242	TOILET	--	--	--	--	--	--	--	
243	CLOSET	--	--	--	--	--	--	--	
244	CORRIDOR	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
245	CORRIDOR	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
245.1	CORRIDOR	CPT-1	RB-1	PNT-2	PNT-2	--	PNT-2	ACT-1	5
246	OFFICE	--	--	--	--	--	--	--	
247	SPC SERVICES LIEUTENANT	--	--	--	--	--	--	--	
248	SPC SERVICES	--	--	--	--	--	--	ACT-1	
249	MECHANICAL	--	--	--	--	--	--	--	
250	STORAGE	--	--	--	--	--	--	ACT-1	
251	OFFICE	--	--	--	--	--	--	ACT-1	
252	OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-4	PNT-2	ACT-1	5
253	OFFICE	--	--	--	--	--	--	ACT-1	
254	LAB	--	--	--	--	--	--	ACT-1	
255	COPY ROOM	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	--	5
256	PASSAGE	CPT-1	RB-1	PNT-2	--	PNT-2	PNT-2	ACT-1	5
257	OFFICE	--	--	--	--	--	--	ACT-1	
258	OPEN OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	5
259	INTERIVEW ROOM	--	--	--	--	--	--	--	
260	INTERVIEW ROOM	--	--	--	--	--	--	ACT-1	

Room Finish Key Notes:

1. NORTH PLAIN ONLY (PNT-4) DO NOT INCLUDE COLUMNS OR CLOSE).
2. INSTALL NEW GYP BOARD CEILING TO MATCH EXISTING, REQUIRED FOR MEP WORK. MATCH ANY SECURITY PROVISIONS, INCLUDING THICKNESS, FRAMING & SUPPORT AS REQUIRED TO MAINTAIN SECURITY REQUIREMENTS
3. INSTALL NEW ROLLER SHADES (RS-1) AT EXTERIOR WINDOWS ALONG EAST ELEVATION ONLY. REMOVE EXISTING SHADES WHERE PRESENT.
4. PT-1 ONLY AT PORTION OF CORRIDOR NEAR DOOR #101B. BALANCE OF AREA TO BE POLISHED CONCRETE (RAMPS & RAISED FLOOR).
5. PAINT EXISTING VINYL WALL COVERING. PREP & PATCH WALL TO RECEIVE NEW PAINT.
6. PROVIDE RUBBER REDUCER EDGE AT TRANSITION BETWEEN WALK-OFF TILE AND POLISHED CONCRETE.
7. REPLACE EXISTING FLOOR GRILLE WITH NEW METAL FLOOR GRILLE SIZED TO FIT EXISTING FRAME.

Room Finish Schedule

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS				CEILING FINISH	ROOM FINISH KEY NOTES
				NORTH	EAST	SOUTH	WEST		
FIRST FLOOR									
100	VESTIBULE	CPT-2	--	--	--	--	--		
101	LOBBY	CPT-2 / PT-1 / PT-2	PT-3	PWP-1	PWP-1	PWP-1	PWP-1	ACT-1 / LWC-1 / PNT-1	
102	INTERVIEW	PT-1	PT-2	PNT-2	PNT-2	PNT-2	PNT-2	PNT-1	
103	PUBLIC RESTROOM	PT-5	PT-3	PT-7 / PT-8	PT-7 / PT-8	PT-7 / PT-8	PT-7 / PT-8	PNT-1	
104	ELEVATOR LOBBY	PT-1	PT-3	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
105	VENDING	PT-1	PT-3	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1 / PNT-1	
106	INTERVIEW ROOM	CPT-1	RB-1	AWP-1 / AWP-2	AWP-1 / AWP-2	AWP-1 / AWP-2	AWP-1 / AWP-2	PNT-1	
107	INTERVIEW ROOM	CPT-1	RB-1	AWP-1 / AWP-2	AWP-1 / AWP-2	AWP-1 / AWP-2	AWP-1 / AWP-2	PNT-1	
108	CORRIDOR	PT-1	PT-3	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
109	OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-4	ACT-1	
110	CORRIDOR	PT-1 / PLC-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	4
110.1	CORRIDOR	PLC-1	RB-1	PNT-2	PNT-2	PNT-2		ACT-1	
111	CORRIDOR	PLC-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
112	DESK OFFICER	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-4	ACT-1	
113	FINGER PRINTING	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
114	RECORDS/CLERK	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-4	ACT-1	3
115	OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-4	ACT-1	3
116	OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-4	ACT-1	
117	CENTRAL VACUUM	SC-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	--	
118	DISPATCH	ESD-2	RB-2	AWP-3	AWP-3	PNT-2	AWP-3	ACT-1	
119	SUPERVISORS OFFICE	ESD-2	RB-2	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
120	RESTROOM	PT-5	PT-6	PT-7 / PT-8	PT-7 / PT-8	PT-7 / PT-8	PT-7 / PT-8	ACT-1	
121	CORRIDOR	PLC-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
122	OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	3
123	BREAK ROOM	LVT-1	RB-1	PNT-4	PNT-2	PNT-2	PNT-2	ACT-1	
124	MECHANICAL ROOM	--	--	--	--	--	--	ACT-1	
125A	CLOSET	CPT-2	RB-2	PNT-2	PNT-2	PNT-2	PNT-2	--	
125B	IT CLOSET	--	--	PNT-2	PNT-2	PNT-2	PNT-2	--	
126	SECURE CORRIDOR	RSF-1	RB-2	MATCH EXST	MATCH EXST	MATCH EXST	MATCH EXST	ACT-1	
127	CORRIDOR	PLC-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
128	WOMEN'S LOCKER ROOM	--	--	--	--	--	--	ACT-1	
129	WOMEN'S TOILET	--	--	--	--	--	--	ACT-1	
130	MEN'S LOCKER ROOM	--	--	--	--	--	--	ACT-1	
131	MEN'S LOCKER ROOM	--	--	--	--	--	--	ACT-1	
132	MEN'S LOCKER ROOM	--	--	--	--	--	--	ACT-1	
133	MEN'S TOILET	--	--	--	--	--	--	ACT-1	
134	PROPERTY STORAGE	--	--	--	--	--	--	ACT-1	
135	STORAGE	--	--	--	--	--	--	ACT-1	
136	CORRIDOR	PLC-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	
137	VESTIBULE	CPT-2	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	--	6, 7
138	PATROL EQUIPMENT	--	--	--	--	--	--	--	
139	ARSENAL	--	--	--	--	--	--	--	
140	ELECTRICAL EQUIPMENT	--	--	--	--	--	--	--	
141	BOILER ROOM	--	--	--	--	--	--	--	
142	MECHANICAL EQUIPMENT	--	--	--	--	--	--	--	
143	LUNCHROOM/LIBRARY	--	--	--	--	--	--	ACT-1	
144A	DEBRIEFING	PLC-1	RB-1	PNT-2	PNT-2	PNT-4	PNT-2	ACT-1	
144B	STORAGE	--	--	--	--	--	--	ACT-1	
144C	STORAGE	PLC-1	RB-1	--	--	--	--	--	
145	CORRIDOR	PLC-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	--	
146	VESTIBULE	CPT-2	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	--	6, 7
147	STAFF SPACE	--	--	--	--	--	--	PNT-1	2
148	KITCHEN	--	--	--	--	--	--	PNT-1	2
149	MECH. EQUIPMENT	--	--	--	--	--	--	--	
150	CORRIDOR	--	--	--	--	--	--	PNT-1	2
151	TOILET	--	--	--	--	--	--	--	
152	STORAGE	--	--	--	--	--	--	PNT-1	2
153	VESTIBULE	--	--	--	--	--	--	PNT-1	
154	JANITOR'S CLOSET	--	--	--	--	--	--	--	
155	SECURE CORRIDOR	--	--	--	--	--	--	--	
156	HOLDING CELL	--	--	--	--	--	--	--	
157	VESTIBULE	--	--	--	--	--	--	--	
158	DETOX CELL	--	--	--	--	--	--	--	
159	BOOKING	--	--	--	--	--	--	--	
160	DAYROOM	--	--	--	--	--	--	--	
161	CELL 4	--	--	--	--	--	--	--	
162	CELL 3	--	--	--	--	--	--	--	
163	CELL 2	--	--	--	--	--	--	--	
164	CELL 1	--	--	--	--	--	--	--	
165	FEMALE HOLDING	--	--	--	--	--	--	--	
166	JUVENILE HOLDING	--	--	--	--	--	--	--	
167	CORRIDOR	--	--	--	--	--	--	--	
168		--	--	--	--	--	--	--	
169	SALLY PORT	--	--	--	--	--	--	--	
170	OFFICE	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	--	
171	OFFICE	--	--	--	--	--	--	--	3
172	CLOSET	CPT-1	RB-1	PNT-2	PNT-2	PNT-2	PNT-2	--	

PARTNERS

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CONSULTANT

KEY PLAN

N

Area A
Twp. Hall

Area B
Public Safety

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD-Owner Mtg	6/16/2021
SD-Owner Mtg	7/1/2021
SD Issue	9/20/2021
DD-Progress Review	10/12/2021
QAQC	2/18/2022
Bidding / Construction	3/9/2022
Addendum #1	3/18/2022
Addendum #5	3/28/2022
Proposal Request #1	6/10/2022
Proposal Request #4	1/18/2023

DRAWN BY

ASY, CJJ

CHECKED BY

JAV

APPROVED BY

MAM

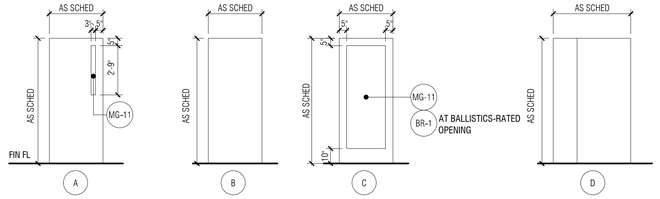
SHEET NAME

ROOM FINISH SCHEDULE

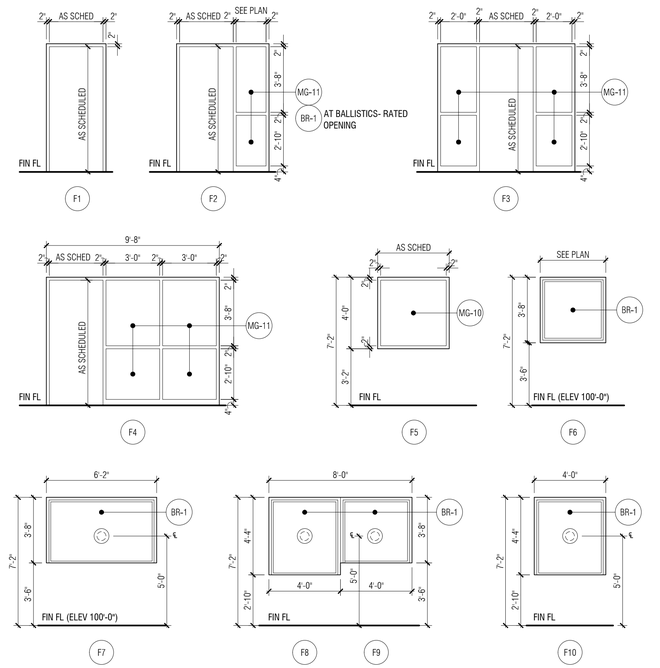
SHEET NO.

A0-04

Door Types



Frame Types



Door / Opening General Notes:

A. FIELD VERIFY ALL OPENINGS PRIOR TO DOOR/FRAME FABRICATION

Door / Opening Key Notes:

1. REINSTALL SALVAGED DOOR & FRAME
2. FRAME TO HAVE / 1/4" THROAT
3. EXTEND FRAME DOWN TO EXISTING CONCRETE SLAB BELOW RAISED ACCESS FLOORING
4. BALLISTICS-RATED OPENING

Door / Opening Schedule

DOOR NO.	DOOR / OPENING SIZE (W X H) (CONTRACTOR TO VERIFY DOOR SIZE IF OPENING IS EXISTING)	DOOR			FRAME			DETAILS			HARDWARE SET #	LABEL (MIN.)	DOOR / OPENING KEY NOTES
		TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	HEAD	JAMB	THRES. / SILL			
FIRST FLOOR													
100	EXISTING PAIR	--	ALUM.	--	--	ALUM.	--	--	--	--	--	--	
101A	EXISTING PAIR	--	ALUM.	--	--	ALUM.	--	--	--	T2	--	--	
101B	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D3	D4	--	1	--	4
102	NOT USED	--	--	--	--	--	PNT	--	--	--	--	--	
103	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D3	D4	T8	6	--	
104	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
105	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
106	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
107	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
108	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D3	D4	--	2	--	4
109	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D3	D4	T2	8	--	
110	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
111	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
112A	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D5	D6	T14	9	--	
112L	4'-0" X 3'-8"	--	--	--	F6	HM	PNT	D8	D8	D9	--	--	4
112M	6'-2" X 3'-8"	--	--	--	F7	HM	PNT	8/A6-10	7/A3-10, D8	7/A6-10	--	--	4
112N	6'-2" X 3'-8"	--	--	--	F7	HM	PNT	8/A6-10	D8	7/A6-10	--	--	4
112P	2'-8" X 3'-8"	--	--	--	F6	HM	PNT	D8	D8	D9	--	--	4
113A	3'-0" X 7'-0"	C	WD	WD-1	F1	HM	PNT	D3	D4	T2	3	--	4
113B	3'-0" X 7'-0"	C	WD	WD-1	F1	HM	PNT	D1	D2	--	3	--	
114A	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	T14	4	--	
114L	4'-0" X 4'-4"	--	--	--	F8	HM	PNT	11/A6-10	3/A3-10	9/A6-10	--	--	4
114M	4'-0" X 3'-8"	--	--	--	F9	HM	PNT	11/A6-10	2/A3-10	10/A6-10	--	--	4
115	NOT USED	--	--	--	--	--	PNT	--	--	--	--	--	
116	3'-0" X 7'-0"	B	WD	WD-1	F4	HM	PNT	D1	D2	--	10	--	
117	2'-4" X 7'-0"	B	HM	PNT	F1	HM	PNT	D3	D4	T3	15	--	
118A	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D3	D4	T10	11	--	
118B	REINSTALL EXISTING	--	--	PNT	--	--	PNT	D10	D4 / D7	T12	12	--	1
118L	5'-4" X 4'-0"	--	--	--	F5	HM	PNT	D3	D4	D4	--	--	
119A	3'-0" X 7'-0"	A	WD	WD-1	F1	HM	PNT	D1	D2	T11	24	--	
119L	4'-0" X 4'-0"	--	--	--	F5	HM	PNT	D1	D2	D2	--	--	
120	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	T6	13	--	2
121	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
122	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
123	REINSTALL EXISTING	--	--		--	--	PNT	D1	D2	T13	14	--	1
124	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
125A	2'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D4 (SIM), 12/A3-10	T11	15	--	2
125B	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2, 12/A3-10	T7	25	--	2, 3
172	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	--	10	--	
173	PR. 3'-0" X 7'-4" & 1'-4" X 7'-4"	D	HM	PNT	B	HM	PNT	11/A0-06	9, 10/A0-06	T15		--	
SECOND FLOOR													
200	3'-0" X 7'-0"	A	WD	WD-1	F1	HM	PNT	D1	D2	--	5	--	4
201	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D3	D4	T8	13	--	
202	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
203	3'-0" X 7'-0"	B	WD	WD-1	F3	HM	PNT	D1	D2	--	16	--	
204	3'-0" X 7'-0"	B	WD	WD-1	F2	HM	PNT	D1	D2	--	16	--	
205	3'-0" X 7'-0"	B	WD	WD-1	F2	HM	PNT	D1	D2	--	17	--	
206A	3'-0" X 7'-0"	A	WD	WD-1	F1	HM	PNT	D1	D2	--	18	--	
206L	4'-0" X 3'-8"	--	--	--	F10	HM	PNT	D8	D8	3/A6-10	--	--	4
206M	4'-0" X 4'-0"	--	--	--	F5	HM	PNT	D1	D2	D2	--	--	
207	3'-0" X 7'-0"	B	WD	WD-1	F2	HM	PNT	D1	D2	--	19	--	
208	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
209	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
210	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
211	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
212	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	T5	3	--	
213	3'-0" X 7'-0"	B	WD	WD-1	F2	HM	PNT	D1	D2	--	15	--	
214	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	--	10	--	
215	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	--	20	--	
216	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
217	3'-0" X 7'-0"	A	WD	WD-1	F1	HM	PNT	D1	D2	--	10	--	
218	3'-0" X 7'-0"	A	WD	WD-1	F1	HM	PNT	D1	D2	--	10	--	
219	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
220	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	--	20	--	
221	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	--	20	--	
222	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
223	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
224	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	--	21	--	
225	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	T5	22	--	
226	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
227	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
228	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
229	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
230	3'-0" X 7'-0"	--	--	--	--	--	--	--	--	--	--	--	1
231	NOT USED	--	--	--	--	--	--	--	--	--	--	--	
232	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	T2	23	--	
233	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	T5	21	--	
234	3'-0" X 7'-0"	B	WD	WD-1	F1	HM	PNT	D1	D2	T2	23	--	

PARTNERS

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CONSULTANT

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD-Owner Mtg	6/16/2021
SD-Owner Mtg	7/1/2021
SD Issue	9/20/2021
DD-Progress Review	10/12/2021
QAQC	2/18/2022
Bidding / Construction	3/9/2022
Proposal Request #1	6/10/2022
Proposal Request #3	9/27/2022
Proposal Request #4	1/18/2023

DRAWN BY

ASY, CJJ

CHECKED BY

JAV

APPROVED BY

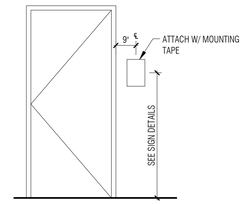
MAM

SHEET NAME

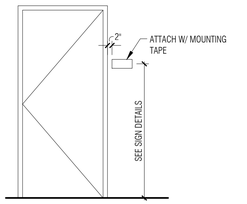
DOOR SCHEDULE
& FRAME TYPES

SHEET NO.

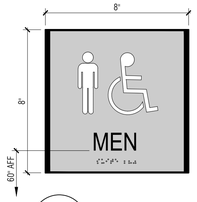
A0-05



11 Mounting Detail 2
N.T.S.

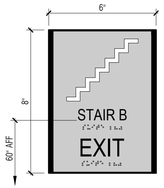


10 Mounting Detail 1
N.T.S.



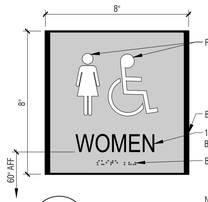
7 Sign Type 'G'
N.T.S.

NOTES:
1. SEE SIGN TYPE 'F' FOR TYPICAL NOTES & DIMENSIONS
2. PROVIDE (2) SIGNS MOUNTED TO SOLID WALLS
3. LOCATE IN FIELD PER ARCHITECT
4. LOCATE PER MOUNTING DETAIL 2



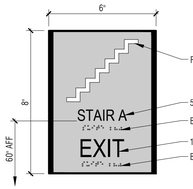
11 Sign Type 'K'
N.T.S.

NOTES:
1. SEE SIGN TYPE 'J' FOR TYPICAL NOTES & DIMENSIONS
2. PROVIDE (2) SIGNS MOUNTED TO SOLID WALLS
3. LOCATE IN FIELD PER ARCHITECT
4. LOCATE PER MOUNTING DETAIL 2



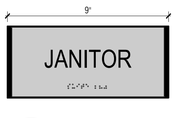
6 Sign Type 'F'
N.T.S.

NOTES:
1. PROVIDE (2) SIGNS MOUNTED TO SOLID WALLS
2. LOCATE IN FIELD PER ARCHITECT
3. LOCATE PER MOUNTING DETAIL 2



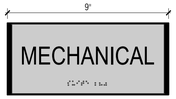
10 Sign Type 'J'
N.T.S.

NOTES:
1. PROVIDE (2) SIGNS MOUNTED TO SOLID WALLS
2. LOCATE IN FIELD PER ARCHITECT
3. LOCATE PER MOUNTING DETAIL 2



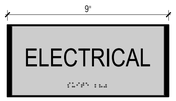
5 Sign Type 'E'
N.T.S.

NOTES:
1. SEE SIGN TYPE 'A' FOR TYPICAL NOTES & DIMENSIONS
2. PROVIDE (2) SIGNS MOUNTED TO SOLID WALLS
3. LOCATE IN FIELD PER ARCHITECT
4. LOCATE PER MOUNTING DETAIL 1



4 Sign Type 'D'
N.T.S.

NOTES:
1. SEE SIGN TYPE 'A' FOR TYPICAL NOTES & DIMENSIONS
2. PROVIDE (6) SIGNS MOUNTED TO SOLID WALLS
3. LOCATE IN FIELD PER ARCHITECT
4. LOCATE PER MOUNTING DETAIL 1

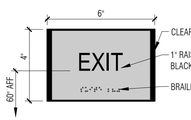


3 Sign Type 'C'
N.T.S.

NOTES:
1. SEE SIGN TYPE 'A' FOR TYPICAL NOTES & DIMENSIONS
2. PROVIDE (2) SIGNS MOUNTED TO SOLID WALLS
3. LOCATE IN FIELD PER ARCHITECT
4. LOCATE PER MOUNTING DETAIL 1

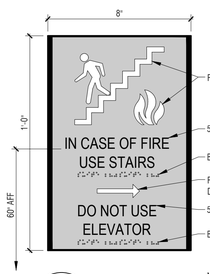
2 Sign Type 'B'
N.T.S.

NOTES:
1. SEE SIGN TYPE 'A' FOR TYPICAL NOTES & DIMENSIONS
2. PROVIDE (3) SIGNS MOUNTED TO SOLID WALLS
3. LOCATE IN FIELD PER ARCHITECT
4. LOCATE PER MOUNTING DETAIL 1



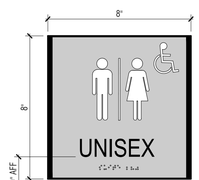
1 Sign Type 'A'
N.T.S.

NOTES:
1. PROVIDE (8) SIGNS MOUNTED TO SOLID WALLS
2. LOCATE IN FIELD PER ARCHITECT
3. LOCATE PER MOUNTING DETAIL 1



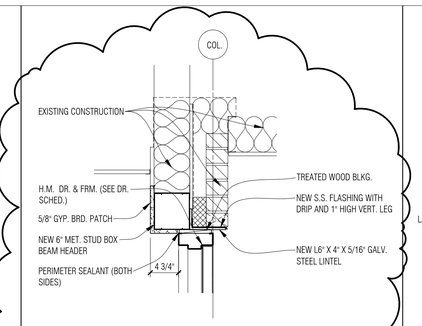
9 Sign Type 'I'
N.T.S.

NOTES:
1. PROVIDE (2) SIGNS MOUNTED TO SOLID WALLS
2. LOCATE IN FIELD PER ARCHITECT
3. LOCATE PER MOUNTING DETAIL 2

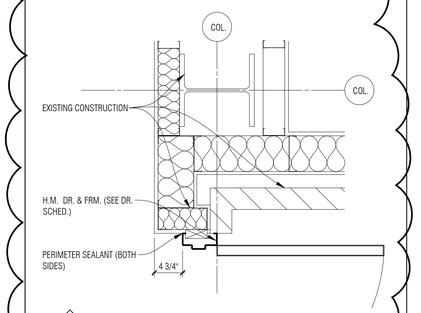


8 Sign Type 'H'
N.T.S.

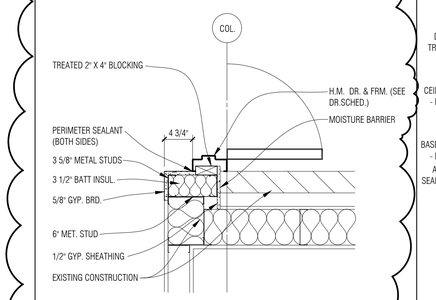
NOTES:
1. SEE SIGN TYPE 'F' FOR TYPICAL NOTES & DIMENSIONS
2. PROVIDE (3) SIGNS MOUNTED TO SOLID WALLS
3. LOCATE IN FIELD PER ARCHITECT
4. LOCATE PER MOUNTING DETAIL 2



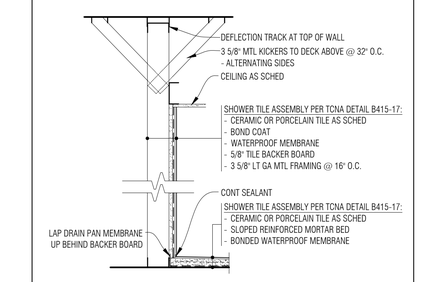
11 H.M. HEAD AT EXTERIOR WALL
SCALE: 1" = 1'-0"



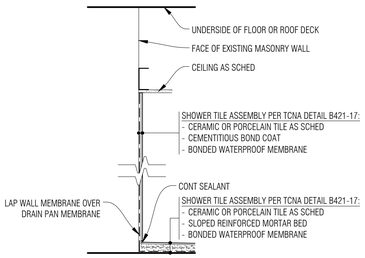
10 H.M. JAMB AT EXTERIOR WALL
SCALE: 1" = 1'-0"



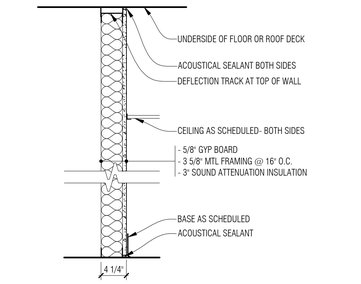
9 H.M. JAMB AT EXTERIOR WALL
SCALE: 1" = 1'-0"



8 WALL TYPE - 8
SCALE: 1" = 1'-0"

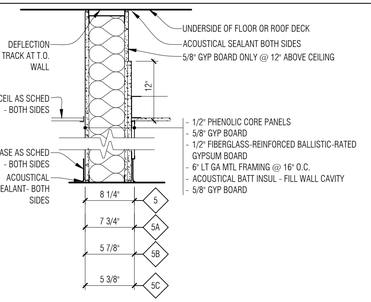


7 WALL TYPE - 7
SCALE: 1" = 1'-0"



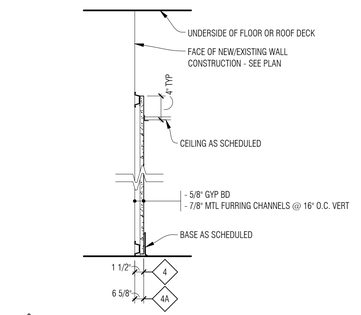
6 WALL TYPE - 6
SCALE: 1" = 1'-0"

WALL TYPE '6A' : SAME AS TYPE '6' WITHOUT SOUND ATTENUATION INSULATION



5 WALL TYPE - 5
SCALE: 1" = 1'-0"

WALL TYPE '5A' : SAME AS TYPE '5' WITHOUT 1/2" PHENOLIC PANELS
WALL TYPE '5B' : SAME AS TYPE '5' WITH 3 5/8" STUDS IN LIEU OF 6"
WALL TYPE '5C' : SAME AS TYPE '5B' WITHOUT 1/2" PHENOLIC PANELS



4 WALL TYPE - 4
SCALE: 1" = 1'-0"

WALL TYPE '4A' : SAME AS TYPE '4' WITH 6" MTL STUDS @ 16" O.C. IN LEIU OF 7/8" FURRING CHANNELS

WALL TYPE GENERAL NOTES:

A. SUBSTITUTE TYPE 'X' GYP BOARD FOR STANDARD GYP BOARD AT ALL FIRE-RATED WALLS - REFER TO CODE & LIFE SAFETY PLAN FOR REQUIRED LOCATIONS.

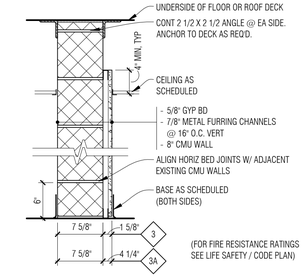
B. AT FIRE RATED WALLS FILL ALL VOIDS, PENETRATIONS ETC. AND SEAL - REFER TO CODE & LIFE SAFETY PLANS FOR ALL PARTITION FIRE RATINGS

C. AT INTERSECTIONS OF DISSIMILAR PARTITION TYPES, THE HIGHEST RATED PARTITION IS TO RUN THROUGH THE INTERSECTION TO MAINTAIN ENCLOSURE.

D. FIRE-RATED PARTITIONS SHALL BE CONSTRUCTED ACCORDING TO THE FIRE TEST INDICATED ON THE CODE SUMMARY SHEET. NO SUBSTITUTIONS OF MATERIALS OR DEVIATIONS FROM CONSTRUCTION ARE ALLOWED. ADDITIONAL LAYERS MAY BE REQUIRED FOR ACOUSTICAL OR OTHER REASONS AND MUST BE EXECUTED AS SHOWN

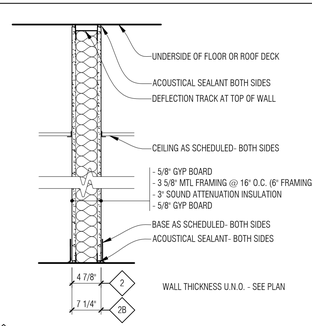
E. AT ALL FIRE RATED WALL CONSTRUCTION, PROVIDE SIGNAGE ABOVE THE ADJACENT ACCESSIBLE CEILING THAT STATES: "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS." THE LETTERS ARE TO BE 3" HIGH MIN. AND ARE TO BE STENCILED IN PAINT DIRECTLY ONTO THE WALL. LOCATE THE SIGNS 30'-0" O.C. MAXIMUM. AND NO MORE THAN 15'-0" FROM THE END OF EACH WALL. (PER MBC 703.7)

F. SUBSTITUTE TILE BACKER BOARD FOR GYP BOARD AT ALL LOCATIONS RECEIVING WALL TILE - REFER TO ROOM FINISH SCHEDULE & INTERIOR ELEVATIONS FOR LOCATIONS.



(FOR FIRE RESISTANCE RATINGS SEE LIFE SAFETY / CODE PLAN)

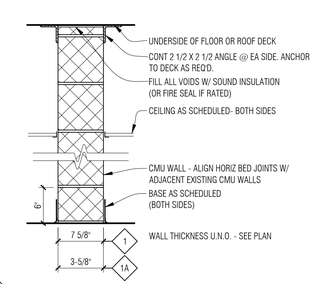
3 WALL TYPE - 3
SCALE: 1" = 1'-0"
STC=(VARIES UPON THICKNESS OF CMU) + 1.6



WALL THICKNESS U.N.O. - SEE PLAN

2 WALL TYPE - 2
SCALE: 1" = 1'-0"

WALL TYPE '2A' : SAME AS TYPE '2' WITHOUT SOUND ATTENUATION INSULATION



WALL THICKNESS U.N.O. - SEE PLAN

1 WALL TYPE - 1
SCALE: 1" = 1'-0"

PARTNERS

PARTNERS in Architecture, PLC
65 MARKET STREET
MOUNT CLEMENS, MI 48043
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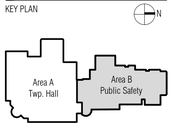
CONSULTANT

KEY PLAN



OWNER
Canton Township Public Safety

PROJECT NAME
Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

ISSUES / REVISIONS

SD-Owner Mtg	6/16/2021
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SD Issue	9/20/2021
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QAQC	2/18/2022
Bidding / Construction	3/9/2022
Proposal Request #1	6/10/2022
Proposal Request #3	9/27/2022

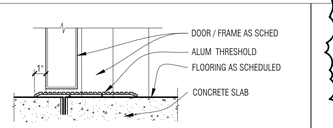
DRAWN BY
ASY, CJJ

CHECKED BY
JAV

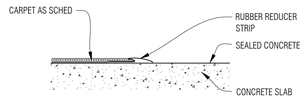
APPROVED BY
MAM

SHEET NAME
WALL TYPES & SIGN DETAILS

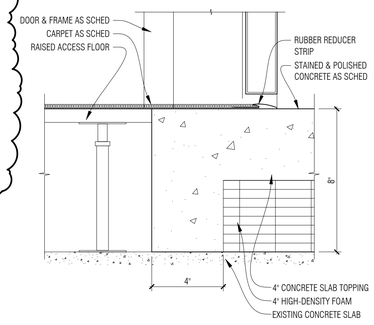
SHEET NO.
A0-06



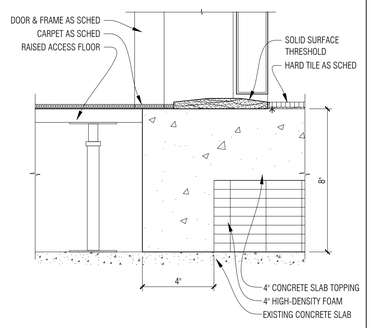
CONCRETE TO CONCRETE 3" = 1'-0" T15



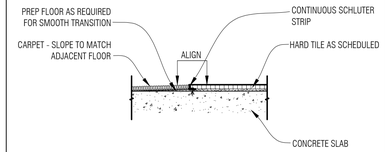
CARPET TO CONCRETE TRANSITION 3" = 1'-0" T14



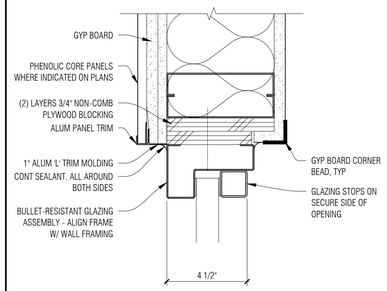
CARPET TO CONCRETE TRANSITION @ ACCESS FLOOR 3" = 1'-0" T10



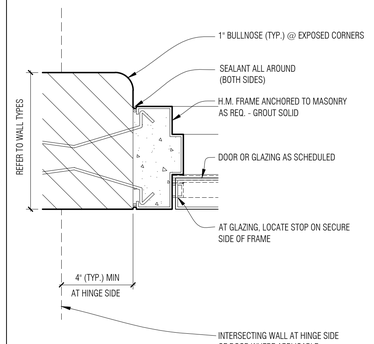
CARPET TO HARD TILE TRANSITION @ ACCESS FLOOR 3" = 1'-0" T6



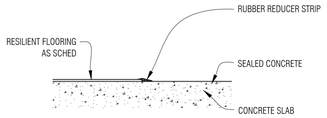
CARPET TO HARD TILE TRANSITION 3" = 1'-0" T2



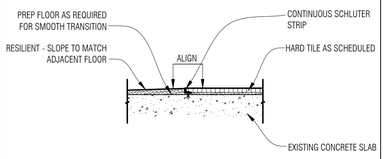
BULLET RESISTANT GLAZING HEAD / JAMB 3" = 1'-0" D8



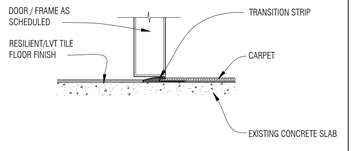
H.M. JAMB AT MASONRY WALL 3" = 1'-0" D4



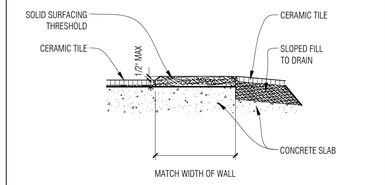
RESILIENT FLOORING TO CONCRETE TRANSITION 3" = 1'-0" T13



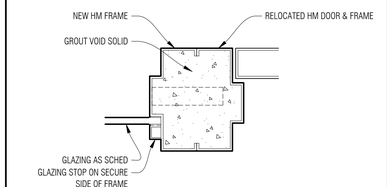
RESILIENT FLOORING TO HARD TILE TRANSITION 3" = 1'-0" T9



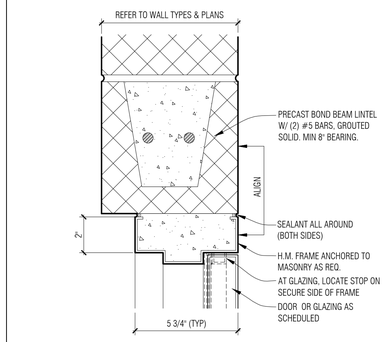
RESILIENT/LVT TO CARPET TRANSITION 3" = 1'-0" T5



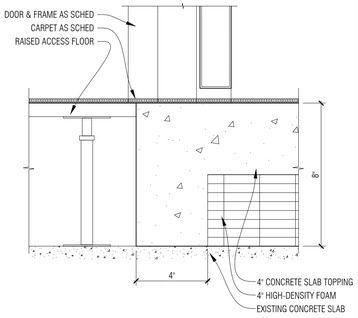
HARD TILE TO HARD TILE TRANSITION @ ADA SHOWER 3" = 1'-0" T1



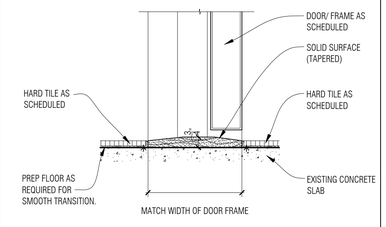
H.M. JAMB AT GYP BD ON MASONRY WALL D7



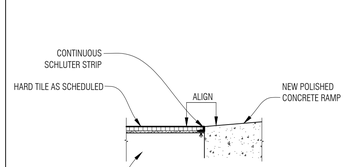
H.M. HEAD AT MASONRY WALL 3" = 1'-0" D3



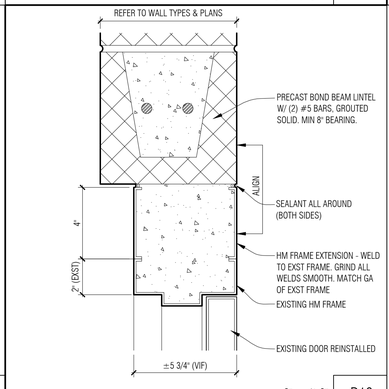
CARPET TO RESILIENT SHEET TRANS. @ ACCESS FLOOR 3" = 1'-0" T12



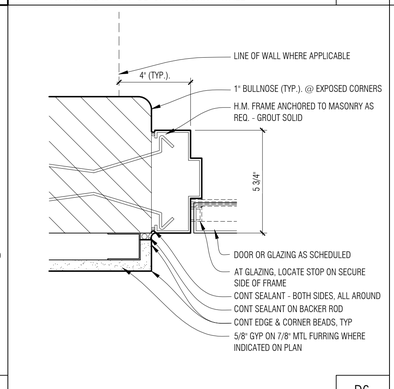
SOLID SURFACE THRESHOLD 3" = 1'-0" T8



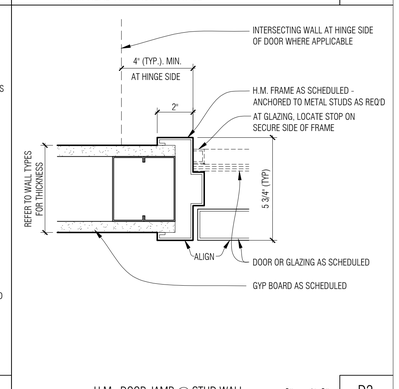
TILE TO NEW POLISHED CONC RAMP TRANSITION N.T.S. T4



HM FRAME HEAD EXTENSION 3" = 1'-0" D10

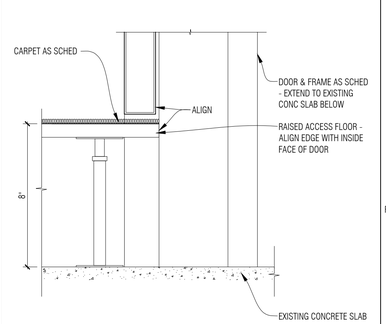


H.M. JAMB AT GYP BD ON MASONRY WALL 3" = 1'-0" D6

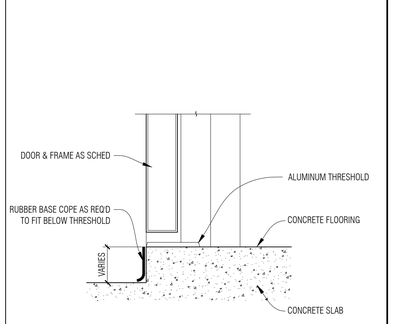


H.M. DOOR JAMB @ STUD WALL 3" = 1'-0" D2

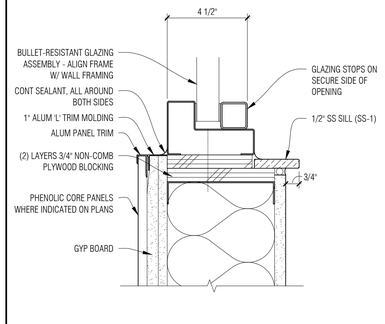
CARPET TO CARPET TRANSITION @ ACCESS FLOOR 3" = 1'-0" T11



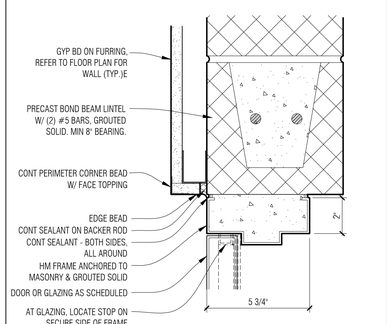
RAISED FLOOR @ I.T. CLOSET 3" = 1'-0" T7



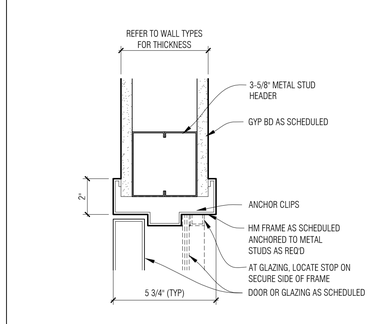
CENTRAL VACUUM TRANSITION 3" = 1'-0" T3



BULLET RESISTANT GLAZING SILL D9



H.M. HEAD AT GYP BD ON MASONRY WALL 3" = 1'-0" D5



H.M. DOOR HEAD @ STUD WALL 3" = 1'-0" D1

P:\2021\21-130-Canton PSD – Interior Renovations\02_CAD\A0-07_Typical Opening Details.dwg - 1/5/2023 9:52:29 AM - Joe Valeri

PARTNERS

PARTNERS in Architecture, PLC

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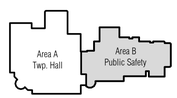
MOUNT CLEMENS, MI 48043
P 586.469.3600

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ISSUED BELOW SPECIFICALLY FOR "BIDDING / CONSTRUCTION"

CONSULTANT

KEY PLAN



OWNER

Canton Township Public Safety

PROJECT NAME

Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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QAQC	2/18/2022
Bidding / Construction	3/9/2022
Proposal Request #3	9/27/2022

DRAWN BY
ASY, CJJ

CHECKED BY
JAV

APPROVED BY
MAM

SHEET NAME

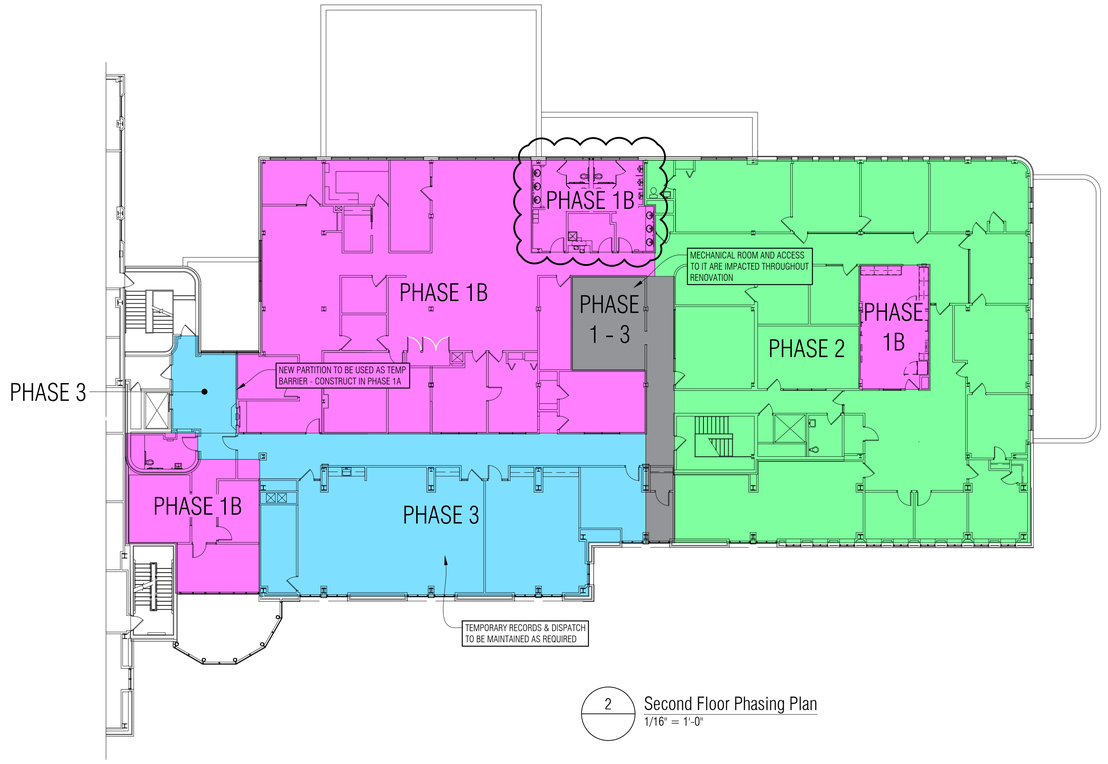
TYPICAL OPENING DETAILS

SHEET NO.

A0-07

PHASING PLAN LEGEND

- PHASE 1A
- PHASE 1B
- PHASE 2
- PHASE 3
- PHASES 1-3



2 Second Floor Phasing Plan
1/16" = 1'-0"

SEQUENCING

PHASE 1A: BEGIN WORK IN THIS AREA AFTER TEMPORARY CONSTRUCTION WALLS HAVE BEEN ERECTED. CONFIRM THAT THE DISPATCH AND RECORDS FUNCTIONS HAVE BEEN RELOCATED TO THE SECOND FLOOR BEFORE BEGINNING DEMOLITION. MAINTAIN SECURITY BARRIER AT THE DETENTION AREA THROUGHOUT THE CONSTRUCTION PROCESS. PHASE 1A WORK MUST BE COMPLETED BEFORE PHASE 3 WORK BEGINS.

PHASE 1B: WORK IN THESE AREAS MAY BE INITIATED ON BOTH FLOORS AT, OR ABOUT THE SAME TIME AS PHASE 1A. GENERAL DEMOLITION TO INCLUDE THE REMOVAL OF EXISTING CEILING SYSTEMS AND VARIOUS PARTITIONS, WITH SOME FLOOR CORING, TO PROVIDE ADEQUATE ACCESS OF PLENUM SPACES FOR MEP WORK TO OCCUR. MISCELLANEOUS NEW PARTITIONS TO BE CONSTRUCTED AS A PART OF THIS PHASE.

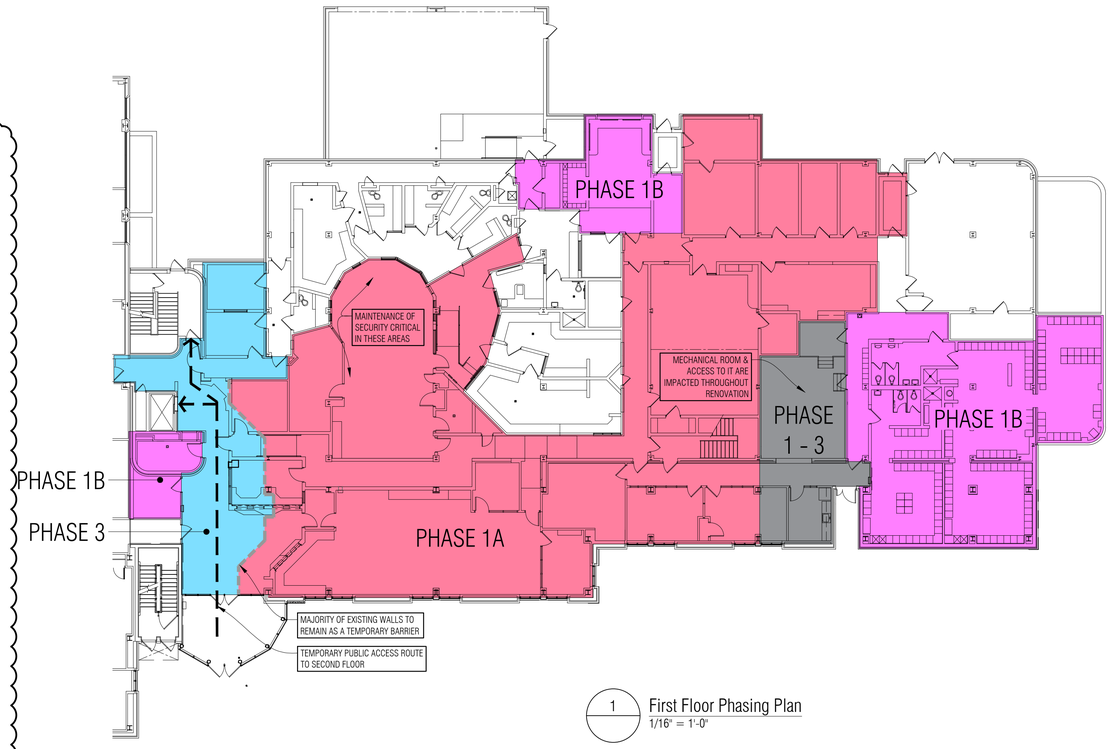
PHASE 2: WORK IN THIS AREA WILL INVOLVE PRIMARILY THE REMOVAL OF EXISTING CEILINGS, WITH THE ADDITION OF A FEW NEW PARTITIONS TO RECONFIGURE, OR CREATE NEW SPACES. ACTIVITY TO BE SIMILAR TO THAT WHICH OCCURS IN THE PHASE 1B AREAS.

PHASE 3: THE START OF RENOVATION OPERATIONS IN THIS AREA CANNOT COMMENCE UNTIL THE PHASE 1A WORK HAS BEEN COMPLETED. AT THAT TIME, THE TEMPORARILY HOUSED RECORDS AND DISPATCH FUNCTIONS ARE TO BE RETURNED TO THE FIRST FLOOR. COMPLETION OF BOTH LOBBIES SHOULD BEGIN IN UNISON WITH THAT OF THIS AREA.

PHASE 1-3: THIS IS A SPECIAL DESIGNATION FOR THE PRIMARY MECHANICAL ROOMS ON BOTH FLOORS. WORK IN THESE SPACES WILL BEGIN AT, OR ABOUT THE SAME TIME AS THE FIRST PHASES OF THE RENOVATION. THESE AREAS WILL BE IMPACTED TO ONE DEGREE OR ANOTHER THROUGHOUT THE COURSE OF THE PROJECT.

GENERAL NOTES

1. CONTRACTOR TO WORK CLOSELY WITH THE OWNER IN ESTABLISHING THE BEST ORDER IN WHICH TO PERFORM THE WORK.
2. CONTRACTOR TO COORDINATE WITH OWNER TO MANAGE ANY SPECIAL RESTRICTIONS IMPOSED IN ORDER TO KEEP PUBLIC SAFETY OPERATIONS FUNCTIONAL.
2. SUGGESTED PHASING MAY BE ADJUSTED TO BETTER ALIGN WITH CONTRACTORS PROJECT SCHEDULE, MATERIAL DELIVERY AND STORAGE, AND MEANS AND METHODS RECOMMENDATIONS.
3. CONTRACTOR TO COORDINATE WITH OWNER WHERE ANY STAGING AREAS ON SITE MAY BE PERMITTED. NOTE THAT THE ENTIRETY OF THE WEST PARKING LOT WILL BE UNDER CONSTRUCTION AND INACCESSIBLE FOR THE DURATION OF THIS PROJECT.



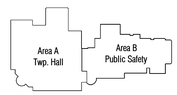
1 First Floor Phasing Plan
1/16" = 1'-0"

PARTNERS

PARTNERS in Architecture, PLC
65 MARKET STREET
MOUNT CLEMENS, MI 48043
P 586.469.3600

CONSULTANT

KEY PLAN



OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

Addendum #1	3/18/2022
Addendum #2	3/22/2022

DRAWN BY
CJJ

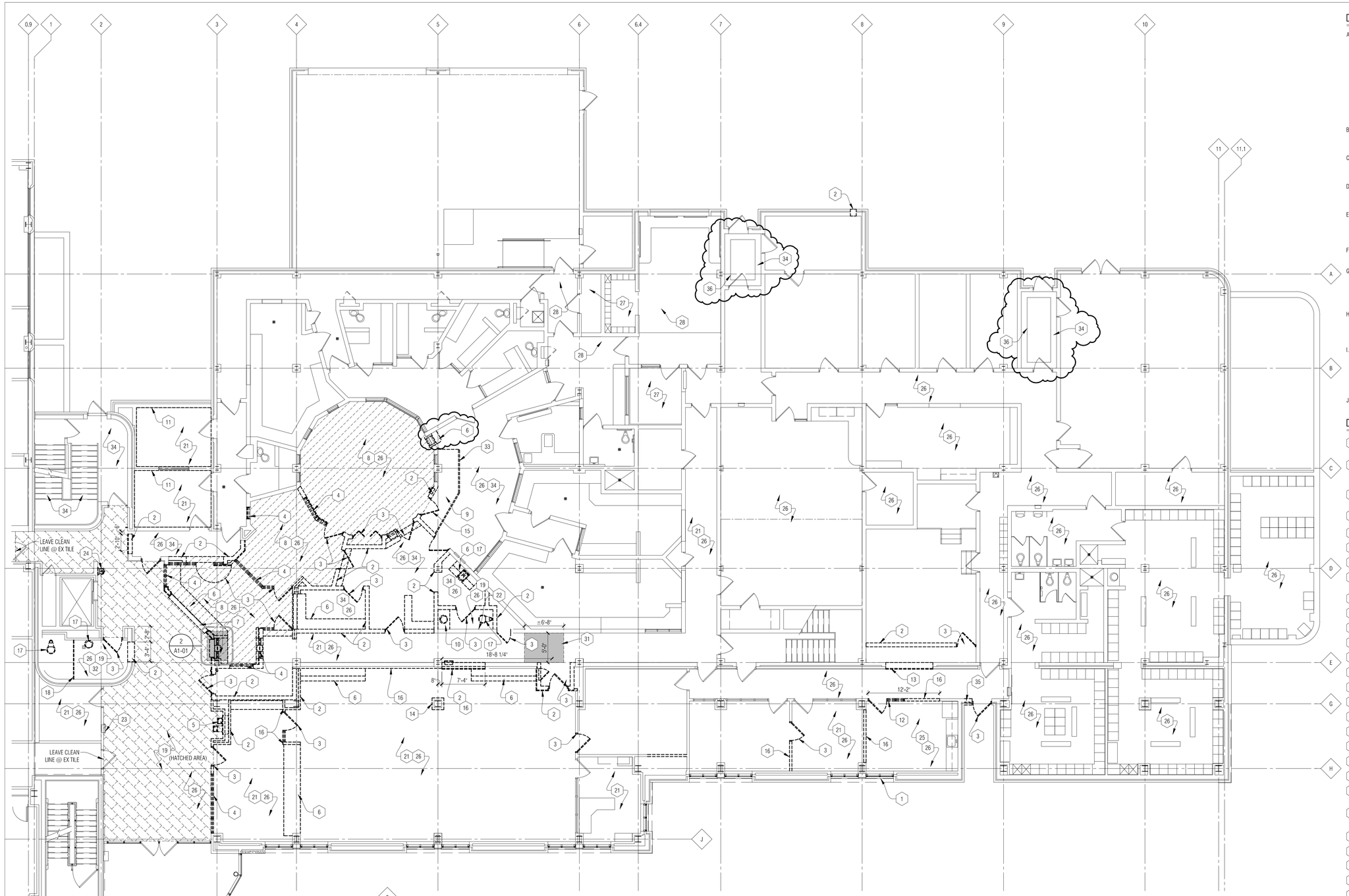
CHECKED BY
JAV

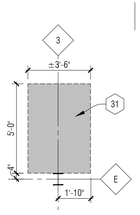
APPROVED BY
MAM

SHEET NAME

PROJECT PHASING PLAN

SHEET NO.
A0-08





2 A1-01 Slab Removal Plan
1/8" = 1'-0"

N 1 Demolition First Floor Plan
1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES:

A. ALL DEMOLITION DRAWINGS AND DEMOLITION DETAILS ARE PROVIDED TO SHOW THE GENERAL SCOPE OF THE DEMOLITION WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PERFORM ALL DEMOLITION WORK NECESSARY TO ACCOMPLISH NEW WORK. THE DEMOLITION DRAWINGS AND DETAILS MAY NOTE TYPICAL ITEMS IN SOME AREAS, WHICH APPLY IN OTHER AREAS (AND ARE DESIGNATED WITH DASHED, HIDDEN OR STRUCK THRU LINES). COORDINATE ALL DEMOLITION WORK WITH ALL ARCHITECTURAL, STRUCT., MECH. AND ELEC. DRAWINGS. CONTRACTOR RESPONSIBLE TO REFERENCE ALL DRAWINGS/ SPECIFICATIONS TO CONFIRM EXTENT OF DEMOLITION WORK.

B. ALL REMOVED ITEMS, WALLS, FLOORS CEILING, OPENINGS, ETC ARE TO BE PATCHED/REPAIRED AND PREPPED TO RECEIVE NEW WORK AND/OR FINISHES.

C. ALL CONSTRUCTION AND DEMOLITION MEANS, METHODS AND SAFETY PRECAUTIONS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

D. WALL REMOVAL THAT TERMINATES INTO A WALL OR CEILING TO REMAIN SHALL BE COMPLETELY REMOVED FREE OF PROJECTIONS, READY TO RECEIVE NEW WORK.

E. REMOVE ALL ITEMS PROJECTING FROM EXISTING WALLS OR FLOORS TO REMAIN (BLOCKING, SCREWS, FASTENERS, PIPES, CONDUITS, MOUNTING PLATES, FIXED EQUIPMENT, ETC). PATCH AND REPAIR FOR NEW FINISH.

F. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING AND UNDERSTANDING EXISTING CONDITIONS. PRIOR TO BIDDING

G. CONTRACTOR SHALL PROTECT EXISTING BUILDING ELEMENTS FROM DAMAGE CAUSED BY CONSTRUCTION OR CONSTRUCTION TRADES. CONTRACTOR SHALL REPAIR ALL DAMAGED AREAS (IDENTIFIED BY OWNER, ARCHITECT, OR CONSTRUCTION MANAGER) AT NO ADDITIONAL COST.

H. MAINTAIN EXISTING FIRE RATING WHERE OCCURS AND WHERE POSSIBLE DURING DEMOLITION. REFER TO CODE AND LIFE SAFETY SHEETS FOR MORE INFORMATION AS WELL AS CONSTRUCTION MANAGER'S INSTRUCTIONS.

I. ASBESTOS AND OTHER HAZARDOUS MATERIALS WILL BE REMOVED BY OWNER'S ABATEMENT CONTRACTOR PRIOR TO START OF CONSTRUCTION. IF ANY SUSPECTED HAZARDOUS MATERIAL IS ENCOUNTERED, STOP WORK IN THAT AREA AND IMMEDIATELY INFORM THE ARCHITECT, CONSTRUCTION MANAGER, AND OWNER.

J. DISPOSE OF ALL DEMOLITION MATERIALS LEGALLY OFF-SITE, U.O.N.

DEMOLITION PLAN KEY NOTES:

1. WINDOWS TO BE REMOVED DURING CONSTRUCTION AND REINSTALLED AFTERWARDS FOR MECH EQPM ACCESS.
2. REMOVE EXISTING MASONRY WALL CONSTRUCTION TO LIMITS SHOWN. DEMO TO PREPARE FOR TOOTHED-IN NEW CONSTRUCTION OR NEW FINISH - SEE NEW WORK PLANS.
3. REMOVE EXISTING DOOR AND FRAME (INCLUDING SIDELITE, IF PRESENT).
4. REMOVE EXISTING GLAZING AND FRAME.
5. SALVAGE DRINKING FOUNTAIN FOR REINSTALLATION.
6. REMOVE EXISTING COUNTER AND RELATED MILLWORK.
7. REMOVE EXISTING PASS-THRU GLAZING AND FRAME.
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13. REMOVE EXISTING CMU INFILL.
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18. REMOVE TOILET PARTITIONS.
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21. REMOVE CARPET & WALL BASE COMPLETE
22. REMOVE CERAMIC TILE WALL FINISH. GRIND SURFACE SMOOTH TO RECEIVE NEW FINISH - SEE SCHED.
23. SALVAGE EXISTING FIRE EXTINGUISHER FOR RE-INSTALLATION - SEE NEW WORK PLANS
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PARTNERS

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MOUNT CLEMENS, MI 48043
P 586.469.3600

CONSULTANT

KEY PLAN

N

Area A
Twp. Hall

Area B
Public Safety

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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DRAWN BY

ASY, CJJ

CHECKED BY

JAV

APPROVED BY

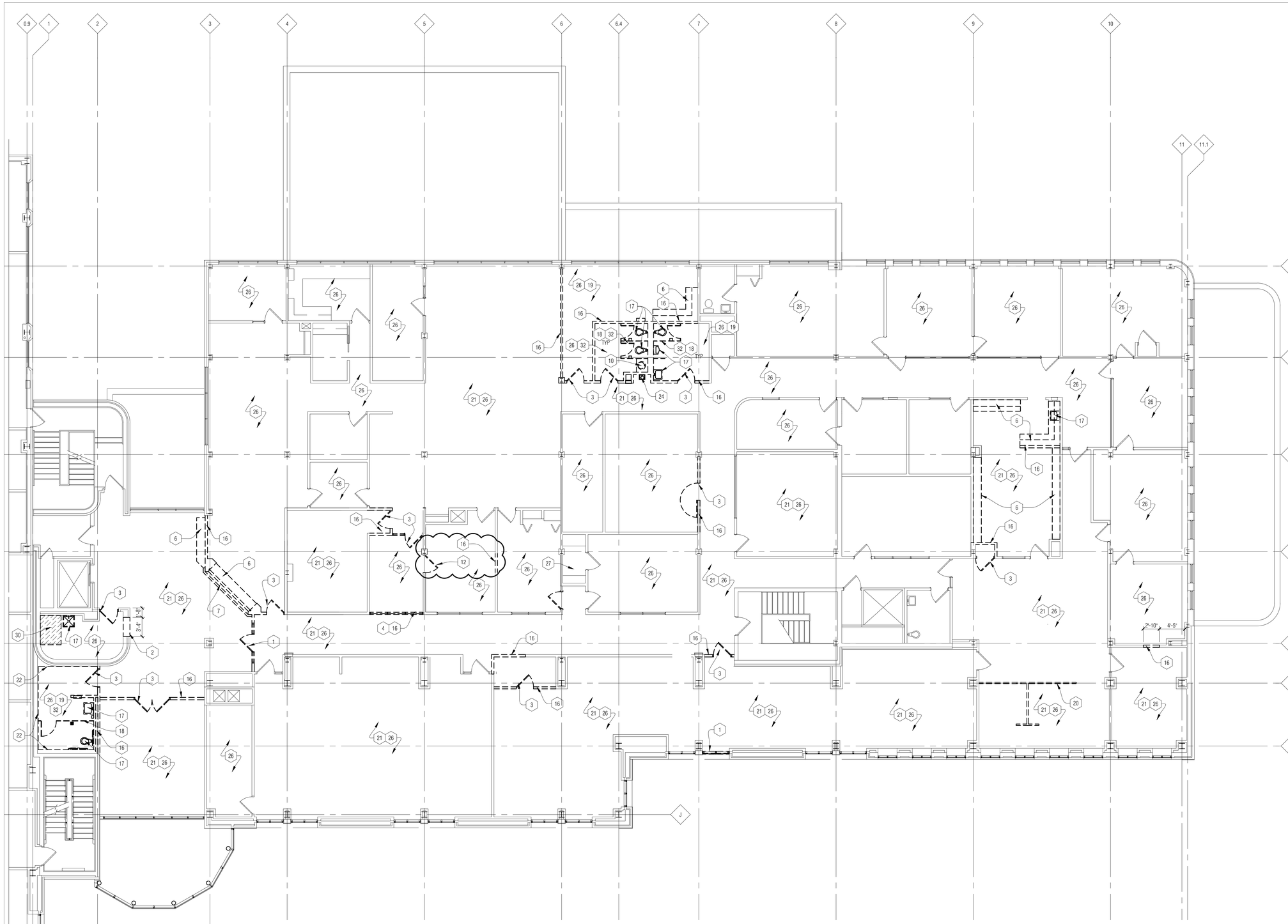
MAM

SHEET NAME

DEMOLITION FIRST FLOOR PLAN

SHEET NO.

A1-01



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N

1 Demolition Second Floor Plan
1/8" = 1'-0"

PARTNERS

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P 586.469.3600

CONSULTANT

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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Proposal Request #4	1/18/2023

DRAWN BY
ASY, CJJ

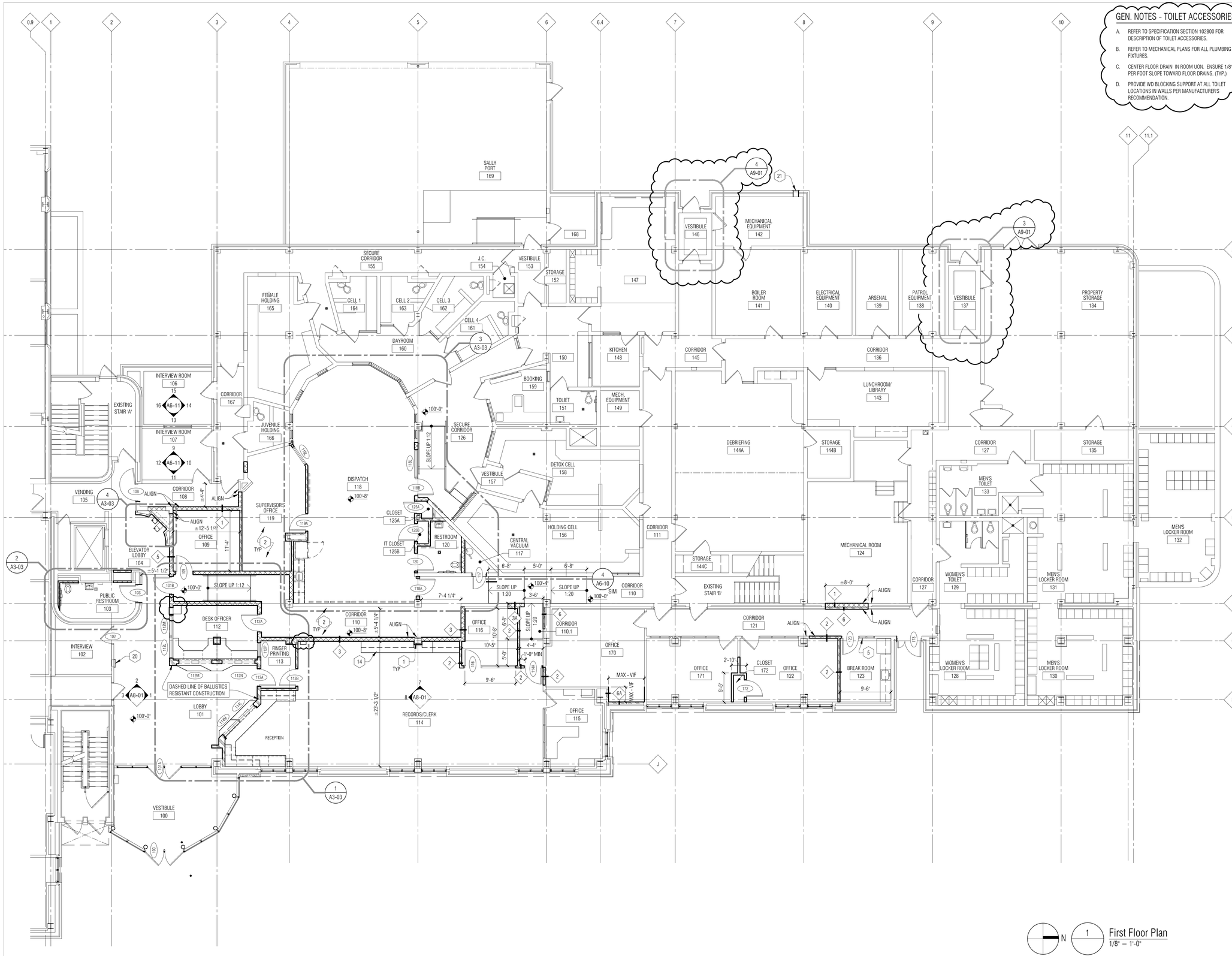
CHECKED BY
JAV

APPROVED BY
MAM

SHEET NAME

DEMOLITION
SECOND FLOOR
PLAN

SHEET NO.
A1-02



1 First Floor Plan
1/8" = 1'-0"

GEN. NOTES - TOILET ACCESSORIES

A. REFER TO SPECIFICATION SECTION 102800 FOR DESCRIPTION OF TOILET ACCESSORIES.

B. REFER TO MECHANICAL PLANS FOR ALL PLUMBING FIXTURES.

C. CENTER FLOOR DRAIN IN ROOM UON. ENSURE 1/8" PER FOOT SLOPE TOWARD FLOOR DRAINS. (TYP.)

D. PROVIDE WD BLOCKING SUPPORT AT ALL TOILET LOCATIONS IN WALLS PER MANUFACTURER'S RECOMMENDATION.

FLOOR PLAN GENERAL NOTES:

A. DO NOT SCALE DRAWINGS. USE DIMENSIONS PROVIDED. IF A CONFLICT IS ENCOUNTERED OR REQUIRED DIMENSION IS NOT PROVIDED, REQUEST A CLARIFICATION FROM THE ARCHITECT.

B. ALL PLAN DIMENSIONS ARE NOMINAL TO THE FACE OF WALLS. WALL THICKNESSES ARE SHOWN NOMINAL. REFER TO WALL TYPES FOR ACTUAL WALL THICKNESSES.

C. REFER TO SHEET A0-01 FOR ABBREVIATIONS AND OTHER SYMBOL DEFINITIONS.

D. COORDINATE SIZE AND LOCATION OF ALL DUCT, SHAFT AND LOUVER OPENINGS IN WALLS AND FLOORS WITH MECHANICAL AND ELECTRICAL. PROVIDE ALL REQUIRED LINTELS FOR OPENINGS.

E. REFER TO CODE & LIFE SAFETY PLAN A0-02 FOR REQ'D FIRE RATED PARTITIONS, FLOORS, & CEILINGS; AND FIRE EXTINGUISHER & CABINET LOCATIONS.

F. ALL EXPOSED CORNERS OF CMU ARE TO BE BULLNOSE U.O.N.

G. LOCATIONS WHERE WALLS, FLOORS, CEILINGS, OPENINGS, ETC WERE DEMOLISHED ARE TO BE PATCHED/REPAIRED WITH LIKE MATERIALS AND PREPPED TO RECEIVE NEW WORK AND/OR FINISHES. COORDINATE WITH DEMOLITION PLANS.

H. REPAIR EXISTING SLAB WHERE WALLS WERE REMOVED W/ HYDRAULIC CEMENT UNDERLAYMENT TO BE FLUSH W/ ADJACENT SLAB AND RECEIVE NEW FLOOR FINISH. COORD W/ DEMO PLANS.

I. REFER TO FINISH FLOOR PLAN FOR ALL FLOOR PATTERNS, FLOOR TRANSITIONS AND MARKER/TACK BOARD DESIGNATIONS.

FLOOR PLAN KEY NOTES:

1. EXISTING STEEL COLUMN
2. SHADED AREA OF RAISED CONCRETE & FOAM FLOOR CONSTRUCTION ON EXISTING SLAB
3. STEEL PIPE HANDRAIL
4. WOOD PLATFORM / RAMP CONSTRUCTION
5. INSTALL SALVAGED DOOR & SIDELITE FRAME
6. SMOKE CURTAIN AT TRANSACTION WINDOW
7. DASHED LINE OF EXTENTS OF RAISED ACCESS FLOOR
8. KITCHEN APPLIANCES - OWNER FURNISHED, CONTRACTOR INSTALLED
9. NEW TOILET PARTITION
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12. FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
13. CENTRAL VACUUM PORT @ 18" AFF
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15. MILLWORK SHELF & HANGER ROD - SEE 6/A8-10
16. RELOCATED DRINKING FOUNTAIN - SEE MECHANICAL
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22. FULLY ENCLOSE EXIST SHAFT W/ NEW 1-HOUR HORIZ SHAFTWALL CONST PER PCI EVALUATION SERVICES REPORT #AER-09038 TIGHT TO NEW DUCTS - COORD W/ MECH. FIRE STOP ANNULAR SPACES AROUND DUCTWORK
23. RELOCATED EXISTING DRUG BOX. REFER TO DETAIL 19/A6-11 FOR MODIFICATIONS TO BE MADE.
24. MAIL DROP BOX. CENTER OF MAIL SLOT TO BE 42" A.F.F.

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THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ISSUED BELOW SPECIFICALLY FOR "BIDDING / CONSTRUCTION"

CONSULTANT

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

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21-130

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Proposal Request #4	1/18/2023

DRAWN BY
ASY, CJJ

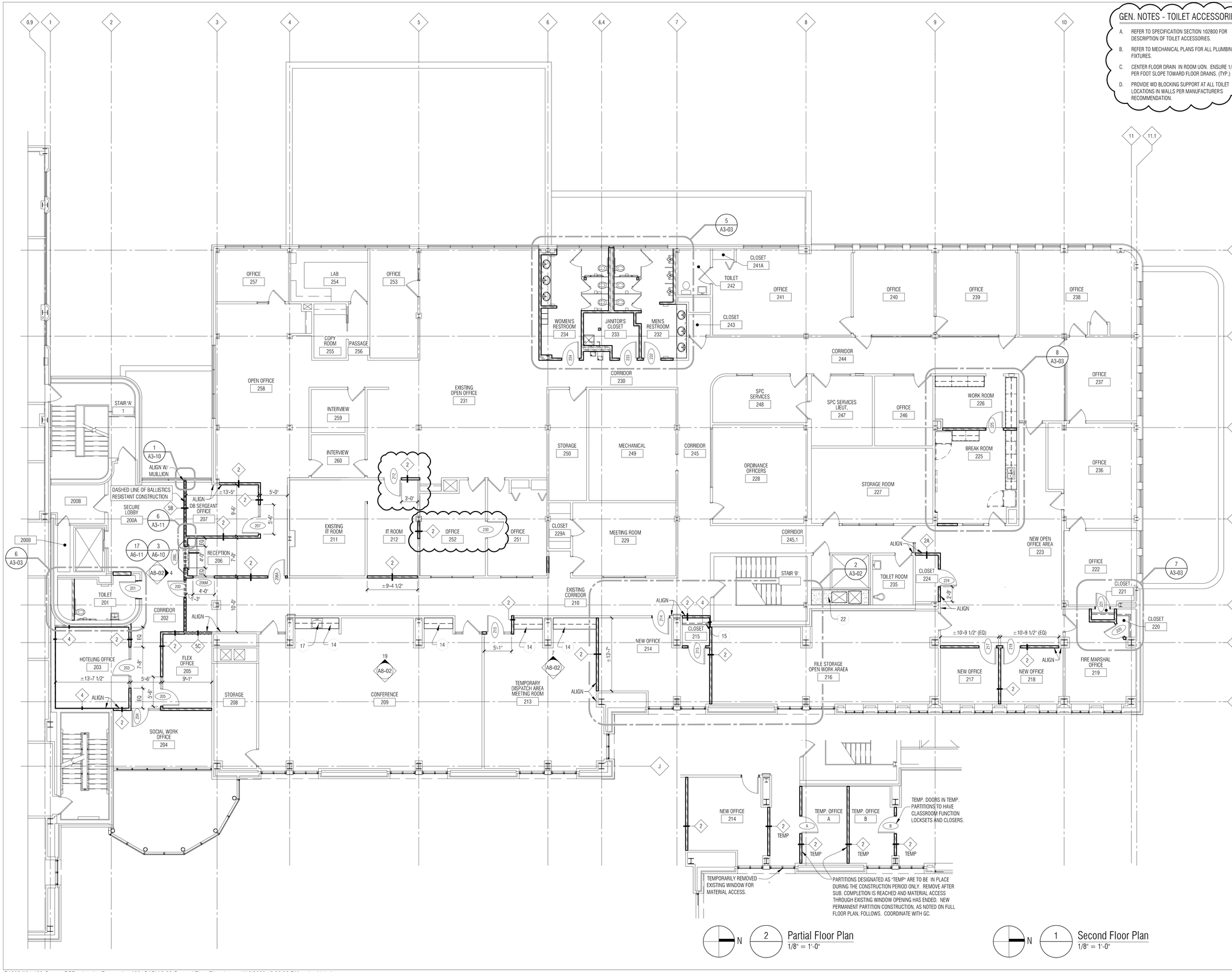
CHECKED BY
JAV

APPROVED BY
MAM

SHEET NAME

FIRST FLOOR PLAN

SHEET NO.
A3-01



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DRAWN BY
ASY, CJJ

CHECKED BY
JAV

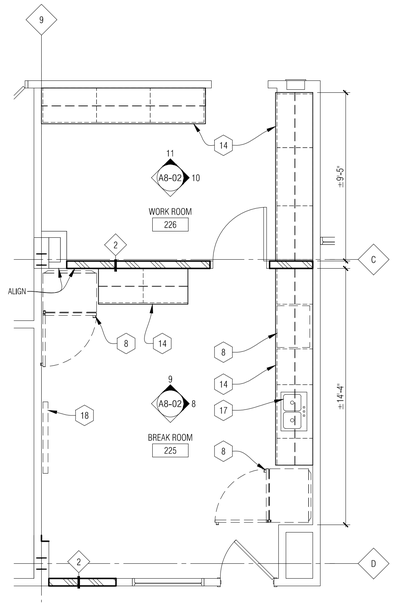
APPROVED BY
MAM

SHEET NAME

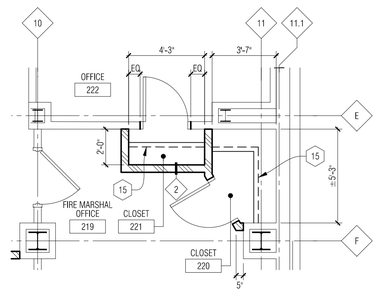
SECOND FLOOR PLAN

SHEET NO.

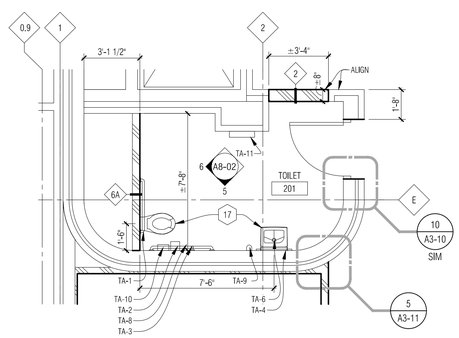
A3-02



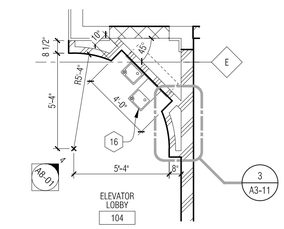
8 A3-02 Enlarged Plan @ Break & Work Rooms 225 & 226
1/4" = 1'-0"



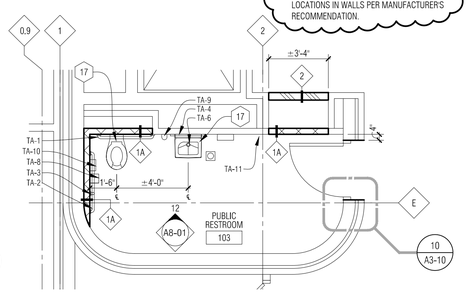
7 A3-02 Enlarged Plan @ Closets 220 & 221
1/4" = 1'-0"



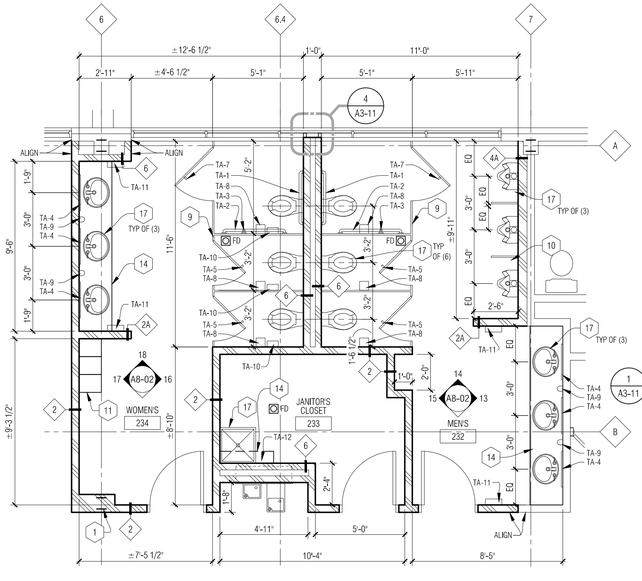
6 A3-02 Enlarged Plan @ Public Restroom 201
1/4" = 1'-0"



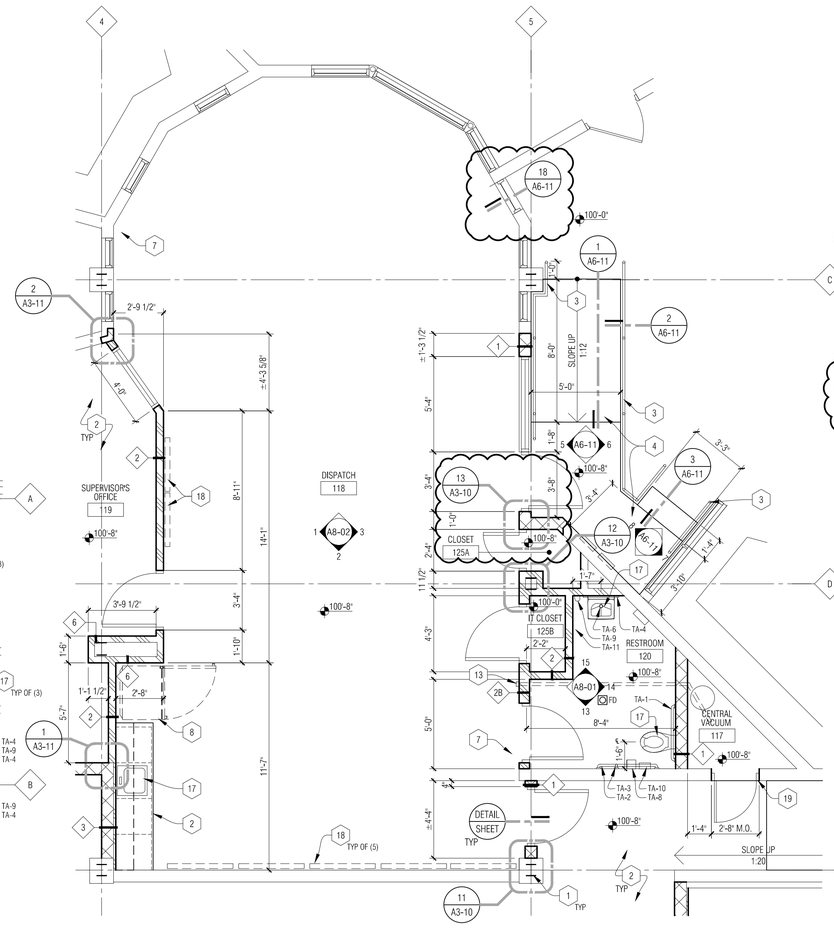
4 A3-01 Enlarged Plan @ Lobby 104
1/4" = 1'-0"



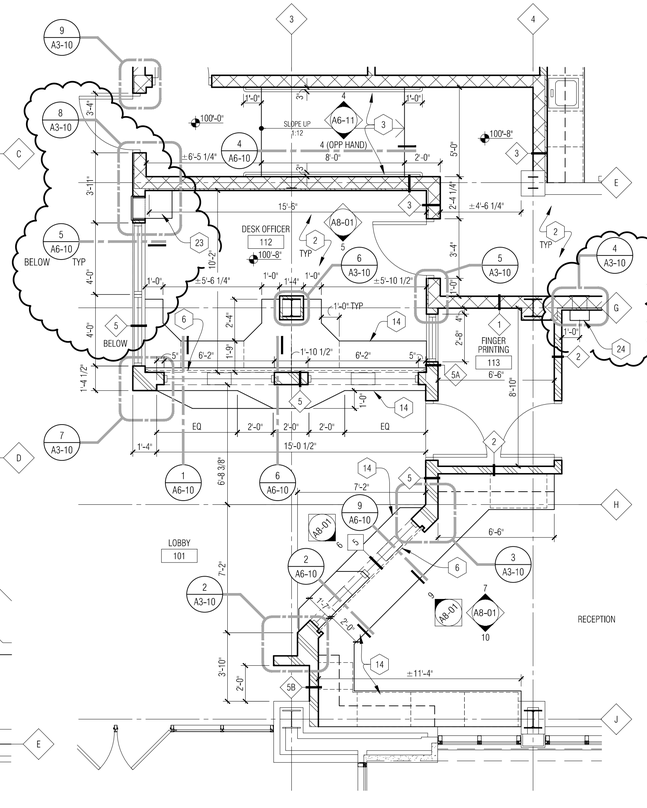
2 A3-01 Enlarged Plan @ Restroom 103
1/4" = 1'-0"



5 A3-02 Enlarged Plan @ Second Floor Restroom
1/4" = 1'-0"



3 A3-01 Enlarged Plan @ Dispatch
1/4" = 1'-0"



1 A3-01 Enlarged Plan @ Lobby
1/4" = 1'-0"

GEN. NOTES - TOILET ACCESSORIES

A. REFER TO SPECIFICATION SECTION 102800 FOR DESCRIPTION OF TOILET ACCESSORIES.

B. REFER TO MECHANICAL PLANS FOR ALL PLUMBING FIXTURES.

C. CENTER FLOOR DRAIN IN ROOM UON. ENSURE 1/8" PER FOOT SLOPE TOWARD FLOOR DRAINS. (TYP.)

D. PROVIDE WD BLOCKING SUPPORT AT ALL TOILET LOCATIONS IN WALLS PER MANUFACTURERS RECOMMENDATION.

FLOOR PLAN GENERAL NOTES:

A. DO NOT SCALE DRAWINGS. USE DIMENSIONS PROVIDED. IF A CONFLICT IS ENCOUNTERED OR REQUIRED DIMENSION IS NOT PROVIDED, REQUEST A CLARIFICATION FROM THE ARCHITECT.

B. ALL PLAN DIMENSIONS ARE NOMINAL TO THE FACE OF WALLS. WALL THICKNESSES ARE SHOWN NOMINAL. REFER TO WALL TYPES FOR ACTUAL WALL THICKNESSES.

C. REFER TO SHEET A0-01 FOR ABBREVIATIONS AND OTHER SYMBOL DEFINITIONS.

D. COORDINATE SIZE AND LOCATION OF ALL DUCT, SHAFT AND LOUVER OPENINGS IN WALLS AND FLOORS WITH MECHANICAL AND ELECTRICAL. PROVIDE ALL REQUIRED LINTELS FOR OPENINGS.

E. REFER TO CODE & LIFE SAFETY PLAN A0-02 FOR REQ'D FIRE RATED PARTITIONS, FLOORS, & CEILINGS; AND FIRE EXTINGUISHER & CABINET LOCATIONS.

F. ALL EXPOSED CORNERS OF CMU ARE TO BE BULLNOSE U.O.N.

G. LOCATIONS WHERE WALLS, FLOORS, CEILINGS, OPENINGS, ETC WERE DEMOLISHED ARE TO BE PATCHED/REPAIRED WITH LIKE MATERIALS AND PREPPED TO RECEIVE NEW WORK AND/OR FINISHES. COORDINATE WITH DEMOLITION PLANS.

H. REPAIR EXISTING SLAB WHERE WALLS WERE REMOVED W/ HYDRAULIC CEMENT UNDERLAYMENT TO BE FLUSH W/ ADJACENT SLAB AND RECEIVE NEW FLOOR FINISH. COORD W/ DEMO PLANS.

I. REFER TO FINISH FLOOR PLAN FOR ALL FLOOR PATTERNS, FLOOR TRANSITIONS AND MARKER/TACK BOARD DESIGNATIONS.

FLOOR PLAN KEY NOTES:

1 EXISTING STEEL COLUMN
2 SHADED AREA OF RAISED CONCRETE & FOAM FLOOR CONSTRUCTION ON EXISTING SLAB
3 STEEL PIPE HANDRAIL
4 WOOD PLATFORM / RAMP CONSTRUCTION
5 INSTALL SALVAGED DOOR & SIDELITE FRAME
6 SMOKE CURTAIN AT TRANSACTION WINDOW
7 DASHED LINE OF EXTENTS OF RAISED ACCESS FLOOR
8 KITCHEN APPLIANCES - OWNER FURNISHED, CONTRACTOR INSTALLED
9 NEW TOILET PARTITION
10 NEW URINAL SCREEN W/ FULL-HT SUPPORT POST
11 NEW STORAGE LOCKER
12 FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
13 CENTRAL VACUUM PORT @ 18" AFF
14 MILLWORK / CASEWORK - SEE INTERIOR ELEVATIONS
15 MILLWORK SHELF & HANGER ROD - SEE 6/A8-10
16 RELOCATED DRINKING FOUNTAIN - SEE MECHANICAL
17 PLUMBING FIXTURE - SEE MECHANICAL
18 WALL-MOUNTED DIGITAL DISPLAY - OWNER FURNISHED, CONTRACTOR INSTALLED
19 TOOTH IN NEW MASONRY AT CUT OPENING
20 REINSTALL SALVAGED FIRE EXTINGUISHER CAB IN ORIGINAL LOCATION
21 NEW 12"X18" LOUVER; SET AT HT OF EXST LOUVERS ON SAME WALL & COORD W/ MECH. PROVIDE (1) ∠4x3 1/2x5/16" LLV GALV STL LINTEL FOR EA 4" OF MASONRY WALL
22 FULLY ENCLOSE EXIST SHAFT W/ NEW 1-HOUR HORIZ SHAFTWALL CONST PER PCI EVALUATION SERVICES REPORT #AER-09038 TIGHT TO NEW DUCTS - COORD W/ MECH. FIRE STOP ANNULAR SPACES AROUND DUCTWORK
23 RELOCATED EXISTING DRUG BOX. REFER TO DETAIL 19/A6-11 FOR MODIFICATIONS TO BE MADE.
24 MAIL DROP BOX. CENTER OF MAIL SLOT TO BE 42" A.F.F.

LEGEND - TOILET ACCESSORIES

TA-1 36" GRAB BAR
TA-2 42" GRAB BAR
TA-3 18" GRAB BAR - VERTICAL
TA-4 36" H x 24" W MIRROR
TA-5 CLOTHES HOOK / DOOR BUMPER
TA-6 UNDER LAVATORY GUARDS
TA-7 CLOTHES HOOK
TA-8 TOILET TISSUE DISPENSER
TA-9 SOAP DISPENSER
TA-10 SURFACE-MOUNTED SANITARY NAPKIN DISPOSAL
TA-11 SURFACE-MOUNTED PAPER TOWEL DISPENSER
TA-12 MOP SHELF
TA-13 ADA COMPLIANT SHOWER SEAT
TA-14 SURFACE-MOUNTED SEAT COVER DISPENSER
TA-15 SHOWER CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT
TA-16 SHOWER GRAB BAR
TA-17 SHOWER CURTAIN ROD

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CONSULTANT

KEY PLAN

OWNER
Canton Township Public Safety

PROJECT NAME
Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

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Proposal Request #3	9/27/2022
Proposal Request #4	1/18/2023

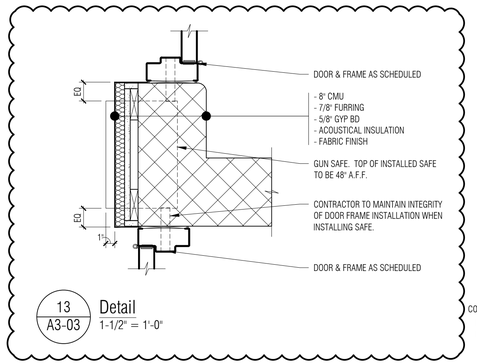
DRAWN BY
ASY, CJJ

CHECKED BY
JAV

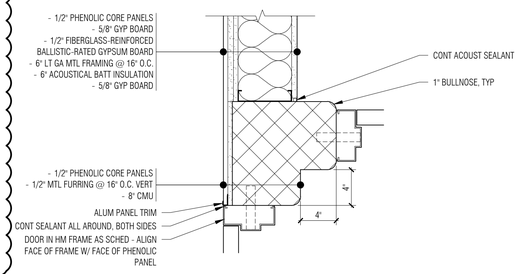
APPROVED BY
MAM

SHEET NAME
ENLARGED FLOOR PLANS

SHEET NO.
A3-03



13 A3-03 Detail
1-1/2" = 1'-0"



9 A3-03 Detail
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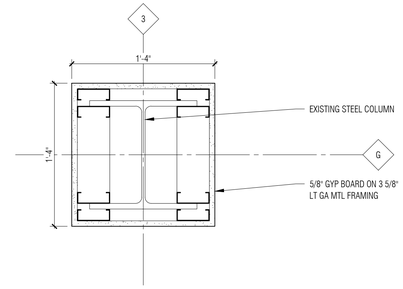

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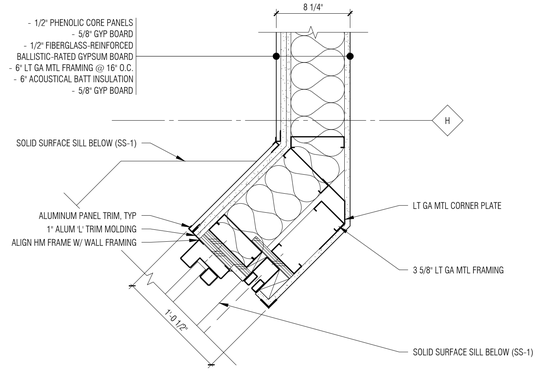
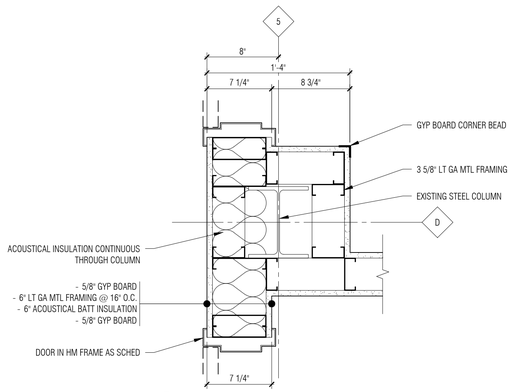
1-1/2" = 1'-0"

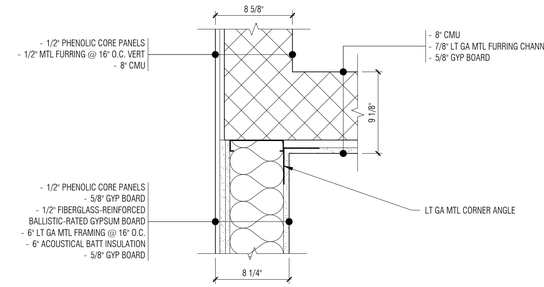


3 A3-03 Detail
1-1/2" = 1'-0"

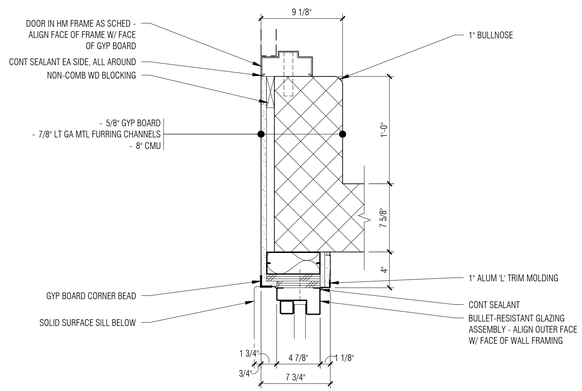
SEE DETAIL 2 THIS SHEET FOR SIMILAR / TYPICAL NOTES & DIMENSIONS



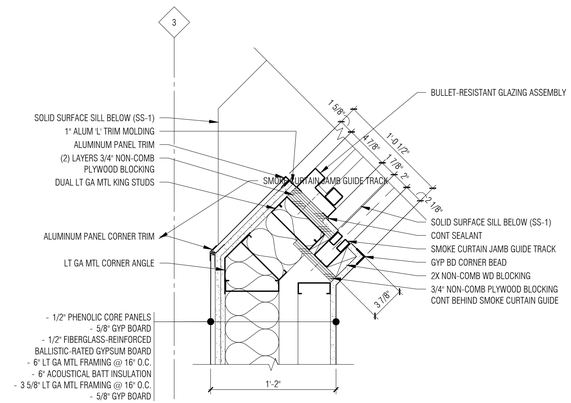
12 A3-03 Detail
1-1/2" = 1'-0"



8 A3-03 Detail
1-1/2" = 1'-0"



5 A3-03 Detail
1-1/2" = 1'-0"



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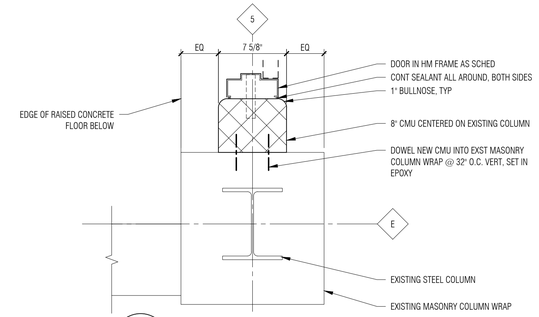

11 A3-03 Detail
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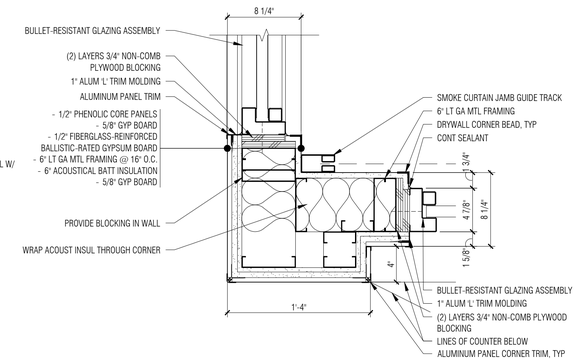

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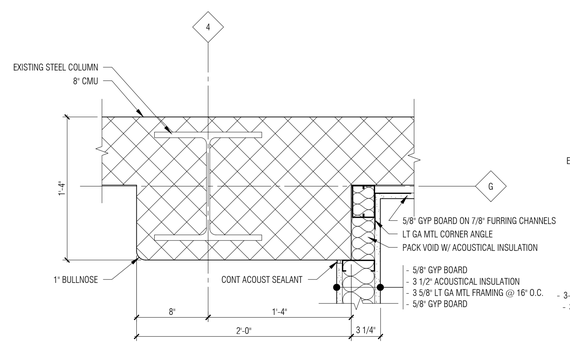
1-1/2" = 1'-0"



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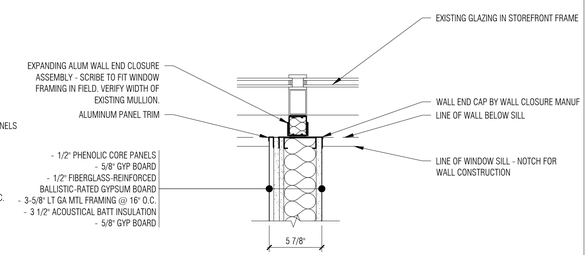

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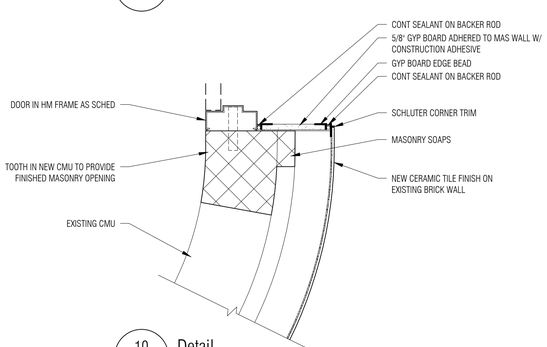

10 A3-03 Detail
1-1/2" = 1'-0"

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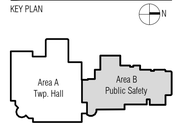

OWNER

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Proposal Request #4	1/18/2023

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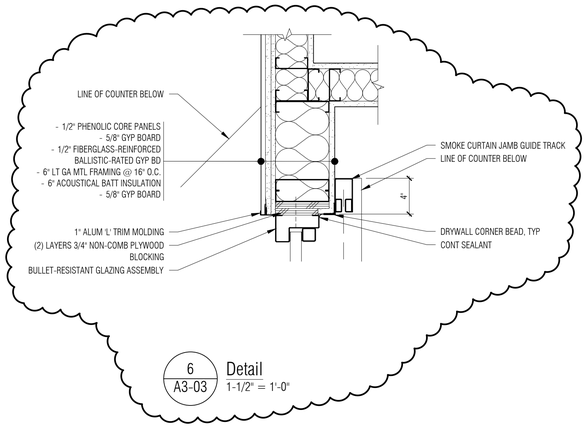
SHEET NAME

PLAN DETAILS

SHEET NO.

A3-10



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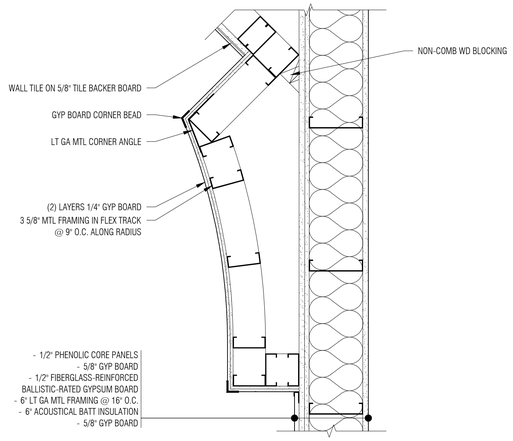
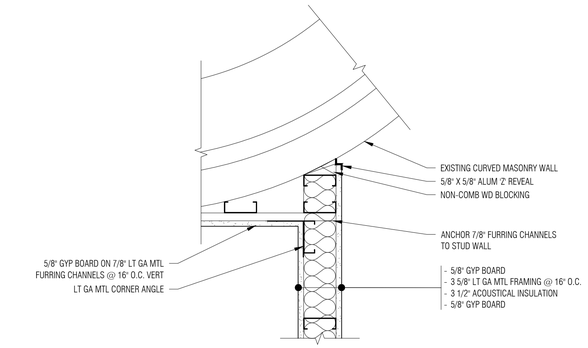
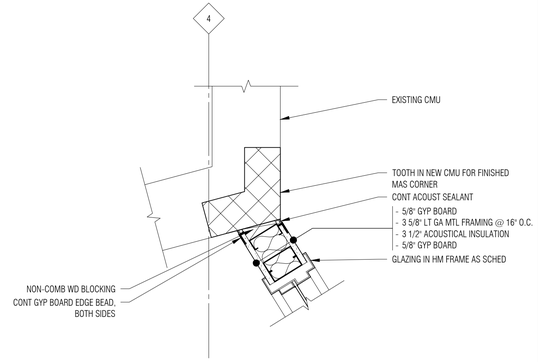
1-1/2" = 1'-0"



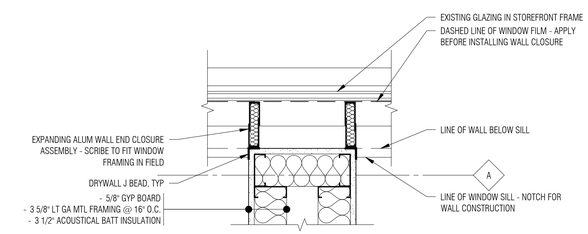
3 A3-03 Detail
1-1/2" = 1'-0"



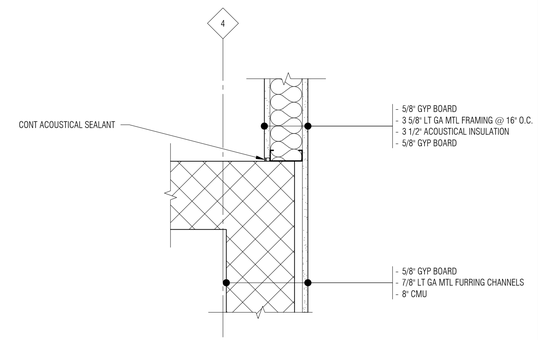
5 A3-03 Detail
1-1/2" = 1'-0"



1 A3-03 Detail
1-1/2" = 1'-0"



4 A3-03 Detail
1-1/2" = 1'-0"



1 A3-03 Detail
1-1/2" = 1'-0"

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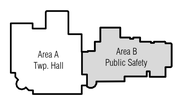

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Proposal Request #2	8/26/2022

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JAV

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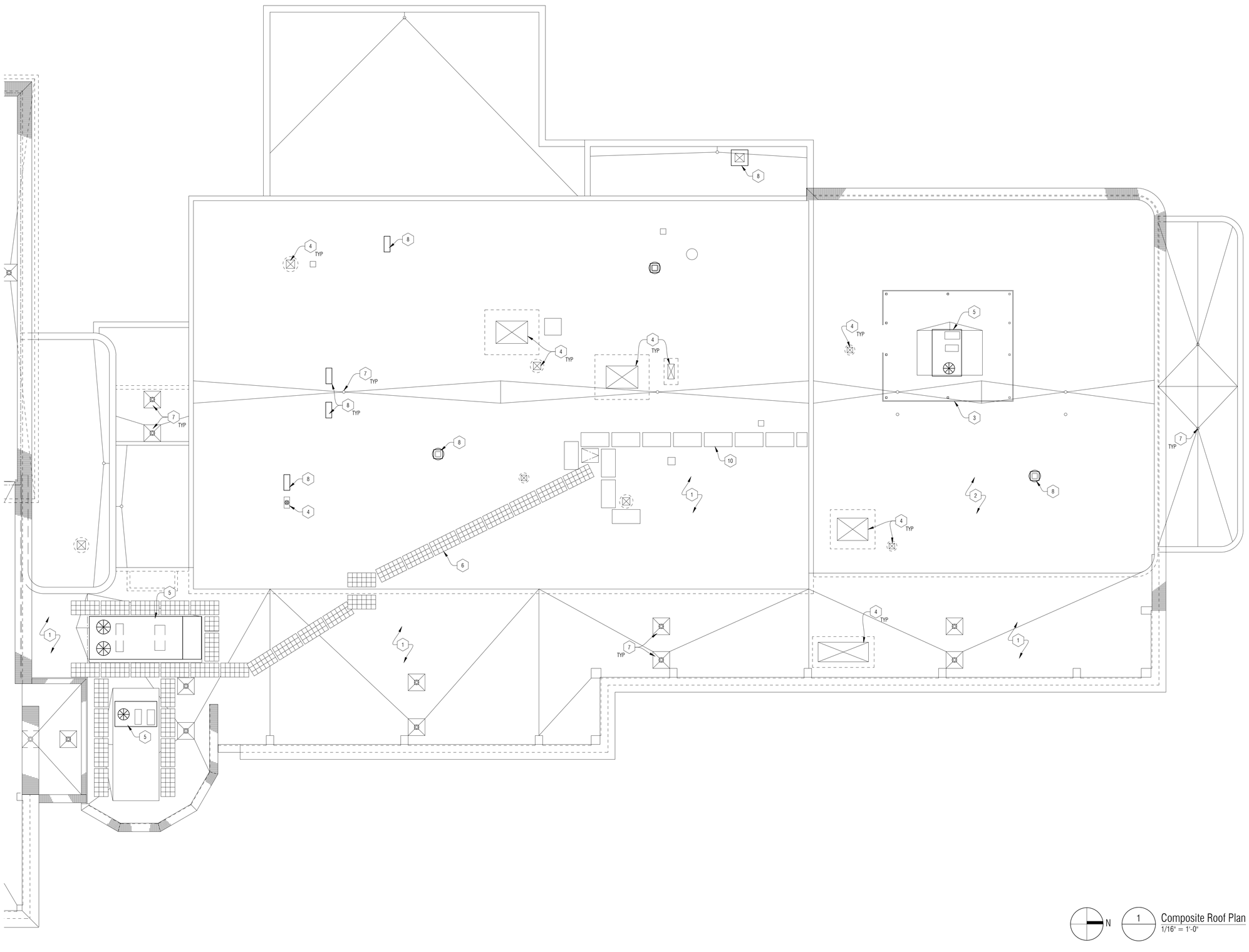
SHEET NAME

PLAN DETAILS

SHEET NO.
A3-11



1 Composite Roof Plan
1/16" = 1'-0"

ROOF PLAN - GENERAL NOTES:

A. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION FOR ROOF RELATED ITEMS.

B. ALL MODIFICATIONS TO EXISTING ROOFING SYSTEMS ARE TO MAINTAIN ROOF WARRANTIES.

C. TAPERED INSULATION SHALL SLOPE 1/4" PER 1'-0" TOWARDS ROOF SUMP UNLESS OTHERWISE NOTED. SLOPE VALUES ARE APPROXIMATE. IF SLOPE CANNOT BE ACHIEVED, CONTACT ARCHITECT BEFORE PROCEEDING FURTHER. ARROWS SHOWN REPRESENT DOWN SLOPE OF ROOF.

D. MECH CURBS SHALL BE PROVIDED CONTINUOUSLY AT ALL SIDES OF MECH UNITS. PROVIDE CRICKETS AS REQUIRED FOR PROPER DRAINAGE - REFER TO ROOF DETAILS

E. REFER TO MECHANICAL FOR PIPE AND VENT PENETRATIONS. UTILIZE DETAILS ON SHEET A3-32.

F. PROVIDE (2) ROWS OF 24" x 24" ROOF WALKWAY PADS AROUND ENTIRE MECHANICAL UNIT - TYP FOR ALL MECHANICAL UNITS.

ROOF PLAN - KEY NOTES:

1. EXISTING SINGLE-PLY ROOFING TO REMAIN.
2. EXISTING BUILT-UP ROOFINGTO REMAIN.
3. EXISTING SCREEN WALL
4. EXISTING MECHANICAL EQUIPMENT TO REMAIN
5. NEW MECHANICAL EQUIPMENT ON EXST CURBS - REFER TO MECH DRAWINGS.
6. NEW ROOF WALKWAY PADS.
7. EXISTING ROOF SUMP (TYP)
8. NEW MECHANICAL UNIT ON EXISTING ROOF
9. EXISTING ROOF HATCH
10. EXISTING ROOF WALKWAY PADS

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KEY PLAN

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SHEET NAME

ROOF PLAN

SHEET NO.

A3-20

1 First Floor Reflected Ceiling Plan
1/8" = 1'-0"

CEILING PLAN GENERAL NOTES:

A. REFER TO FLOOR PLANS FOR ROOM NAMES, NUMBERS AND ROOM DIMENSIONS

B. REFER TO ELECTRICAL FOR LIGHT FIXTURE TYPES AND SPECIFICATIONS

C. REFER TO MECHANICAL FOR DIFFUSERS, REGISTERS, AND RETURNS

D. ALL LIGHT FIXTURES ARE TO BE CENTERED WITHIN CEILING TILE AND GYP SOFFIT U.O.N.

E. CEILING GRID IS TO BE CENTERED IN ROOM U.O.N.

F. MATCH ALL EXISTING CEILING ELEVATIONS FOR NEW WORK UNLESS NOTED OTHERWISE.

CEILING PLAN KEY NOTES:

1. EXISTING GYP BD SOFFIT TO REMAIN
2. EXISTING RADIANT HEAT PANEL TO REMAIN
3. ALIGN NEW CLNG ELEVATION W/ TOP OF EXIST WINDOW
4. COORD ACOUSTICAL TREATMENT W/ EXIST LIGHTS & MECHANICAL ITEMS AS REQ'D
5. OPEN TO STRUCTURE ABOVE
6. DISASSEMBLE EXISTING CEILING GRID AS REQ'D TO INSTALL NEW WORK. CUT EXISTING TILES TO FIT AND REINSTALL GRID.
7. LINEAR LIGHT RECESSED IN SOFFIT - SEE ELECTRICAL
8. SMOKE CURTAIN ENCLOSURE
9. NEW RADIANT HEAT PANEL - SEE MECHANICAL
10. SUSPENDED LINEAR LIGHT FIXTURE - CENTER BETWEEN WD SLATS TO NEAREST DIMENSION
11. DASHED LINE OF SUSPENDED CEILING EXTENDED ABOVE GYP BOARD SOFFIT - TYP

CEILING SYMBOLS LEGEND

- 5/8" GYP BD ON 3 5/8" MTL STUD CONSTRUCTION @ 16" O.C. SECURE TO STRUC ABOVE AT 48" O.C. MAX EA WAY
- 2' X 4' LAY-IN LIGHT FIXTURE IN GRID
- 2' X 2' LAY-IN LIGHT FIXTURE IN GRID
- LINEAR LIGHT FIXTURE - SEE ELECTRICAL FOR SIZE
- 24" LINEAR VANITY LIGHT
- RECESSED ROUND LIGHT FIXTURE
- SUPPLY AIR DIFFUSER - REFER TO MECHANICAL
- RETURN AIR GRILLE - REFER TO MECHANICAL
- LINEAR SLOT SUPPLY AIR DIFFUSER - REFER TO MECHANICAL
- EXIT LIGHT - CEILING MOUNTED - REFER TO ELECTRICAL
- SPEAKER - CEILING AND WALL MOUNTED
- VIDEO SURVEILLANCE CAMERA - COORD WITH TECH & ELEC
- SMOKE DETECTOR
- SPRINKLER HEAD - CEILING AND WALL MOUNTED REFER TO SPECIFICATIONS FOR DIFFERENT TYPES
- WIRELESS ACCESS POINT - COORD WITH TECH AND ELEC
- ACOUSTIC CEILING TREATMENT
- LINEAR WOOD CEILING SYSTEM

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Proposal Request #3	9/27/2022

DRAWN BY
ASY, CJJ

CHECKED BY
JAV

APPROVED BY
MAM

SHEET NAME

FIRST FLOOR
REFLECTED
CEILING PLAN

SHEET NO.
A4-01

CEILING PLAN GENERAL NOTES:

A. REFER TO FLOOR PLANS FOR ROOM NAMES, NUMBERS AND ROOM DIMENSIONS

B. REFER TO ELECTRICAL FOR LIGHT FIXTURE TYPES AND SPECIFICATIONS

C. REFER TO MECHANICAL FOR DIFFUSERS, REGISTERS, AND RETURNS

D. ALL LIGHT FIXTURES ARE TO BE CENTERED WITHIN CEILING TILE AND GYP SOFFIT U.O.N.

E. CEILING GRID IS TO BE CENTERED IN ROOM U.O.N.

F. MATCH ALL EXISTING CEILING ELEVATIONS FOR NEW WORK UNLESS NOTED OTHERWISE.

CEILING PLAN KEY NOTES:

1. EXISTING GYP BD SOFFIT TO REMAIN
2. EXISTING RADIANT HEAT PANEL TO REMAIN
3. ALIGN NEW CLNG ELEVATION W/ TOP OF EXIST WINDOW
4. COORD ACOUSTICAL TREATMENT W/ EXIST LIGHTS & MECHANICAL ITEMS AS REQ'D
5. OPEN TO STRUCTURE ABOVE
6. DISASSEMBLE EXISTING CEILING GRID AS REQ'D TO INSTALL NEW WORK. CUT EXISTING TILES TO FIT AND REINSTALL GRID.
7. LINEAR LIGHT RECESSED IN SOFFIT - SEE ELECTRICAL
8. SMOKE CURTAIN ENCLOSURE
9. NEW RADIANT HEAT PANEL - SEE MECHANICAL
10. SUSPENDED LINEAR LIGHT FIXTURE - CENTER BETWEEN WD SLATS TO NEAREST DIMENSION
11. DASHED LINE OF SUSPENDED CEILING EXTENDED ABOVE GYP BOARD SOFFIT - TYP

PAINT WALLS IN TEMP OFFICES A & B SATIN WHITE. NO FLOOR FINISH REQUIRED NOW. REFINISH SPACES AFTER CONSTRUCTION IS COMPLETED.

LEAVE EXISTING CEILING IN PLACE FOR THE TEMPORARY CORRIDOR. REMOVE AND REPLACE WITH NEW FROM NEW OFFICE 214 AFTER PERMANENT WALLS HAVE BEEN CONSTRUCTED IN THIS AREA.

FIXTURES TO BE REUSED AND REPOSITIONED AS NECESSARY WHEN FINAL CEILING INSTALLTION IS DONE. COORDINATE WITH GC.

CEILINGS IN TEMP. OFFICES TO BE REMOVED AFTER SUB. COMPLETION IS REACHED AND MATERIAL TRANSPORT THROUGH EXISTING WINDOW OPENING HAS ENDED. IF POSSIBLE, SALVAGE AND REINSTALL THESE CEILINGS TO BE RESUSPENDED IN NEW FILE STORAGE/OPEN OFFICE AREA 216. COORDINATE WITH GC.

2 Partial Second Floor Reflected Ceiling Plan
1/8" = 1'-0"

1 Second Floor Reflected Ceiling Plan
1/8" = 1'-0"

CEILING SYMBOLS LEGEND

	5/8" GYP BD ON 3 5/8" MTL STUD CONSTRUCTION @ 16" O.C. SECURE TO STRUC ABOVE AT 48" O.C. MAX EA WAY
	2' X 4' LAY-IN LIGHT FIXTURE IN GRID
	2' X 2' LAY-IN LIGHT FIXTURE IN GRID
	LINEAR LIGHT FIXTURE - SEE ELECTRICAL FOR SIZE
	24" LINEAR VANITY LIGHT
	RECESSED ROUND LIGHT FIXTURE
	SUPPLY AIR DIFFUSER - REFER TO MECHANICAL
	RETURN AIR GRILLE - REFER TO MECHANICAL
	LINEAR SLOT SUPPLY AIR DIFFUSER - REFER TO MECHANICAL
	EXIT LIGHT - CEILING MOUNTED - REFER TO ELECTRICAL
S	SPEAKER - CEILING AND WALL MOUNTED
	VIDEO SURVEILLANCE CAMERA - COORD WITH TECH & ELEC
	SMOKE DETECTOR
	SPRINKLER HEAD - CEILING AND WALL MOUNTED REFER TO SPECIFICATIONS FOR DIFFERENT TYPES
	WIRELESS ACCESS POINT - COORD WITH TECH AND ELEC
	ACOUSTIC CEILING TREATMENT
	LINEAR WOOD CEILING SYSTEM

PARTNERS

PARTNERS in Architecture, PLC

65 MARKET STREET
MOUNT CLEMENS, MI 48043
P 586.469.3600

CONSULTANT

KEY PLAN

N

Area A
Twp. Hall

Area B
Public Safety

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD-Owner Mtg	6/16/2021
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SD Issue	9/20/2021
DD-Progress Review	10/12/2021
QAQC	2/18/2022
Bidding / Construction	3/9/2022
Proposal Request #1	6/10/2022
Proposal Request #2	8/26/2022

DRAWN BY
ASY, CJJ, JAV

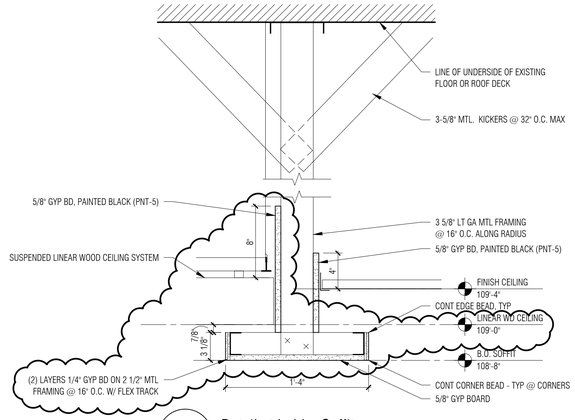
CHECKED BY
JAV

APPROVED BY
MAM

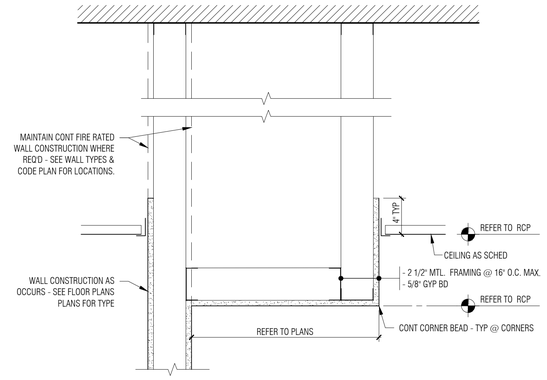
SHEET NAME

SECOND FLOOR
REFLECTED
CEILING PLAN

SHEET NO.
A4-02



6 A4-11 Detail at Lobby Soffit
1 1/2" = 1'-0"

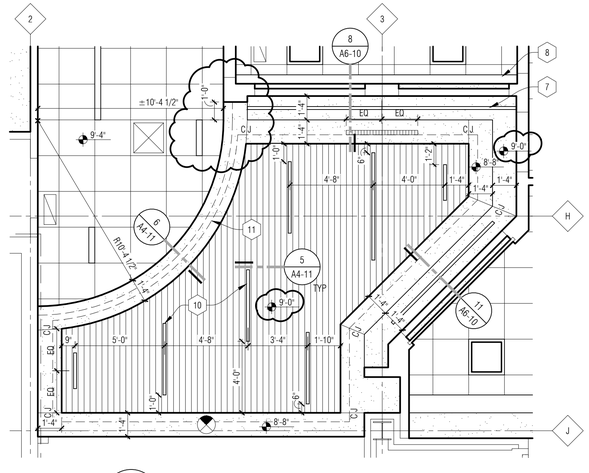


3 A4-01 Typical Gyp. Board Soffit Detail
1-1/2" = 1'-0"
A4-02

5 A4-11 Linear Wood Ceiling Detail
1-1/2" = 1'-0"

2 Typical Detail @ Suspended Gyp. Bd. Ceiling
N.T.S.

4 A4-01 Typical Detail at Gyp. Board Bulkhead
1 1/2" = 1'-0"
A4-02



1 A4-01 Enlarged Reflected Ceiling Plan - Lobby
1/4" = 1'-0"

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CEILING SYMBOLS LEGEND

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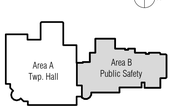
CONSULTANT

KEY PLAN



OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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Proposal Request #2	8/26/2022

DRAWN BY
CJJ

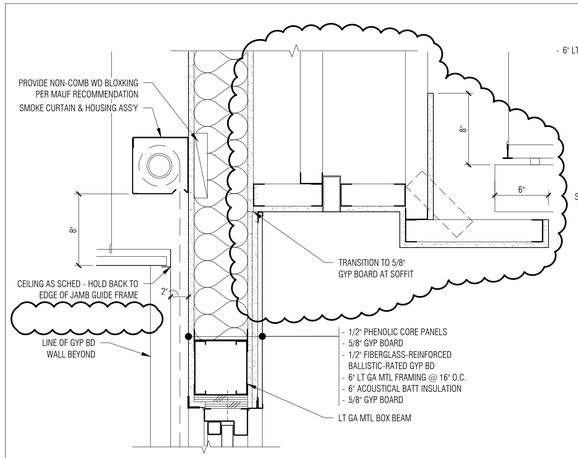
CHECKED BY
JAV

APPROVED BY
MAM

SHEET NAME

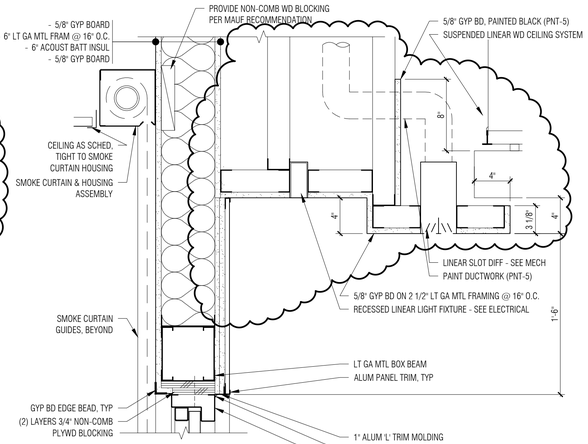
ENLARGED REFLECTED CEILING PLAN & CEILING DETAILS

SHEET NO.
A4-11

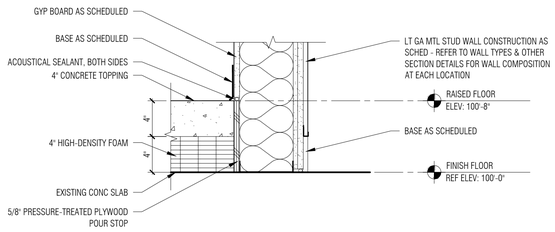


11 A6-10 Detail 1-1/2" = 1'-0"

SEE DETAIL 8 THIS SHEET FOR SIMILAR / TYPICAL NOTES & DIMENSIONS

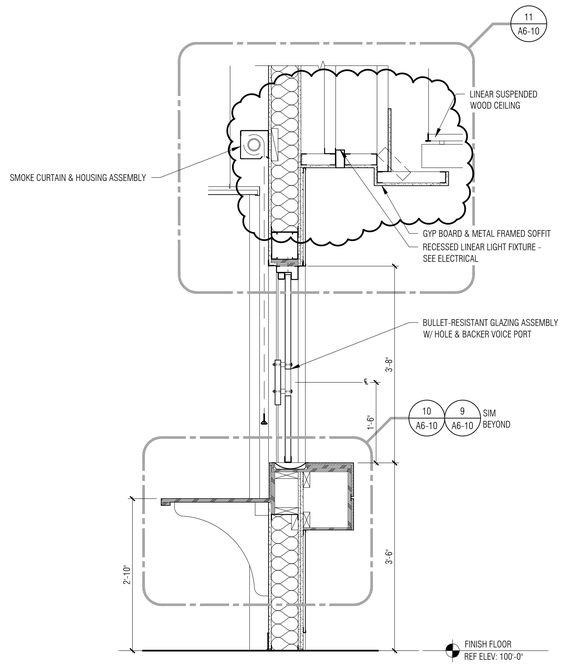


8 A6-10 Detail 1-1/2" = 1'-0"

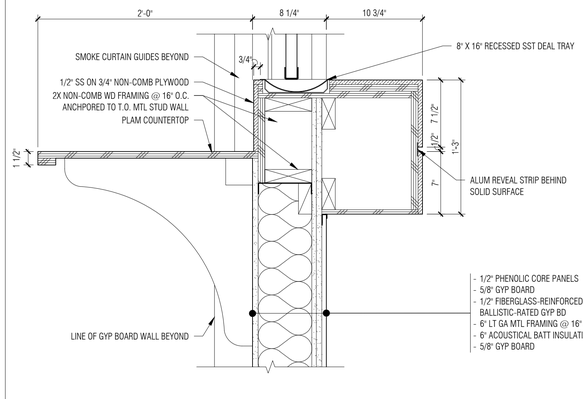


5 A3-03 Detail 1-1/2" = 1'-0"

A6-10

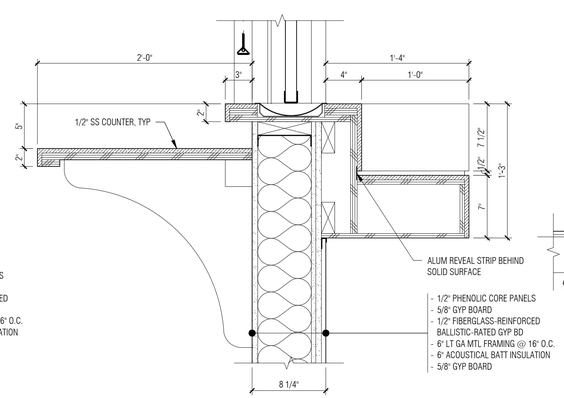


2 A3-03 Wall Section @ Reception 114 3/4" = 1'-0"



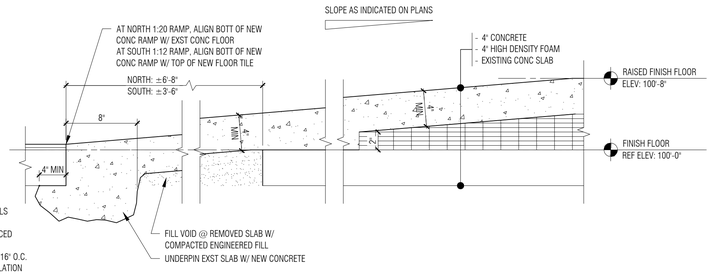
10 A6-10 Detail 1-1/2" = 1'-0"

SEE DETAILS 3 & 6 THIS SHEET FOR SIMILAR / TYPICAL NOTES & DIMENSIONS



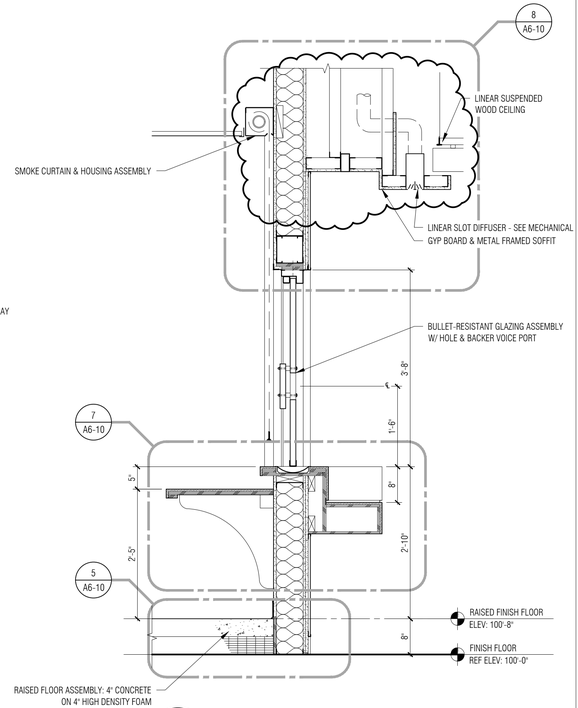
7 A6-10 Detail 1-1/2" = 1'-0"

SEE DETAILS 3 & 6 THIS SHEET FOR SIMILAR / TYPICAL NOTES & DIMENSIONS

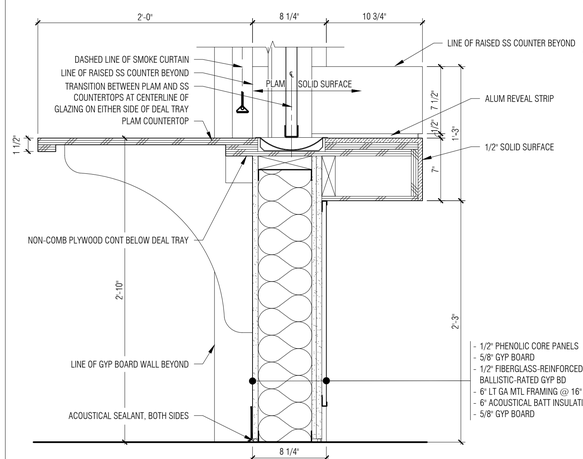


4 A3-01 Detail 1-1/2" = 1'-0"

A3-03



1 A3-03 Wall Section @ Desk Officer 112 3/4" = 1'-0"



9 A3-03 Detail 1-1/2" = 1'-0"

A6-10

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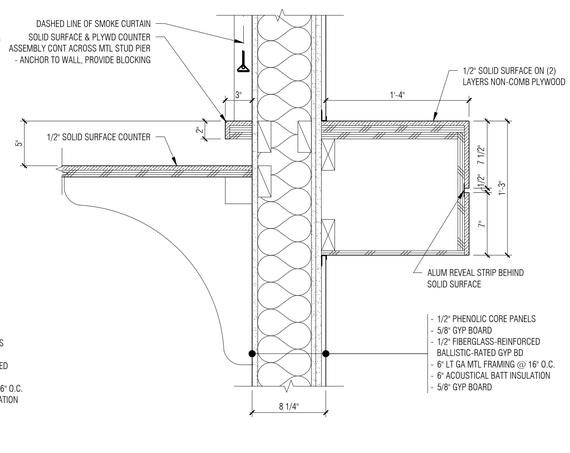
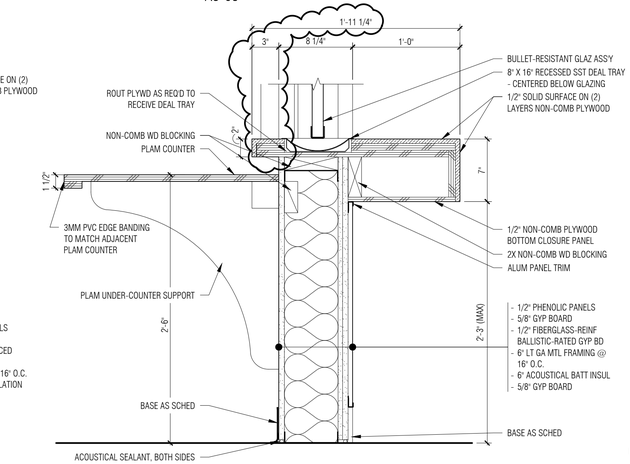


6 A3-03 Detail 1-1/2" = 1'-0"

SEE DETAIL 3 THIS SHEET FOR SIMILAR / TYPICAL NOTES & DIMENSIONS



3 A3-02 Detail 1-1/2" = 1'-0"

P:\2021\21-130-Canton PSD – Interior Renovations\02_CAD\A6-10 - Section Details.dwg - 1/5/2023 9:59:50 AM - Joe Valeri

PARTNERS

PARTNERS in Architecture, PLC

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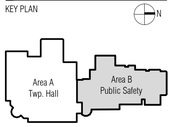
MOUNT CLEMENS, MI 48043
P 586.469.3600

CONSULTANT

KEY PLAN



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CJJ

CHECKED BY
JAV

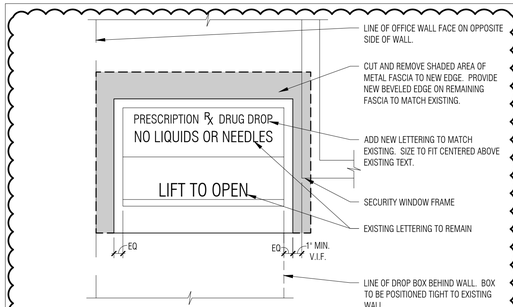
APPROVED BY
MAM

SHEET NAME

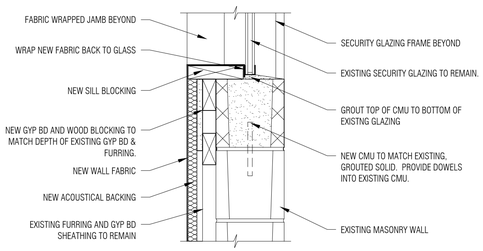
WALL SECTIONS & SECTION DETAILS

SHEET NO.

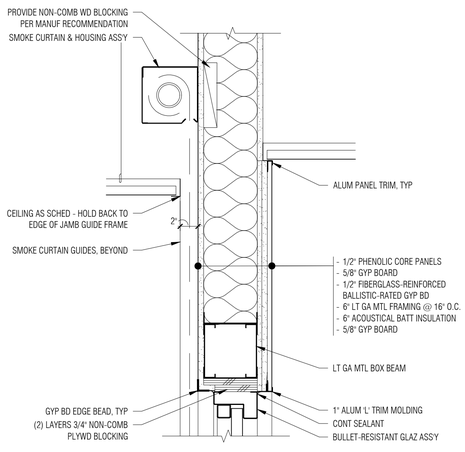
A6-10



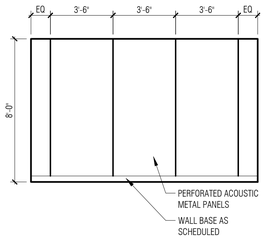
19 / A3-03 Elevation Detail @ Drug Drop Box
1-1/2" = 1'-0"



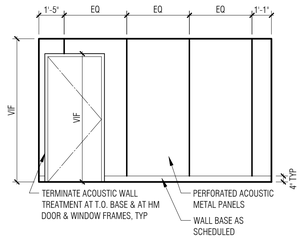
18 / A3-03 Detail @ Removed Pass Through
1-1/2" = 1'-0"



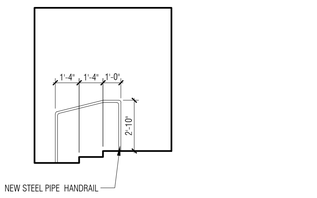
17 / A3-02 Detail
1-1/2" = 1'-0"



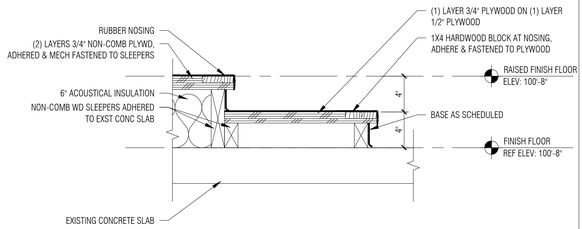
15 / A3-03 Interview Room 106
1/4" = 1'-0"



11 / A3-03 Interview Room 107
1/4" = 1'-0"



7 / A3-03 Secure Corridor 126 Stairs
1/4" = 1'-0"



3 / A3-03 Detail
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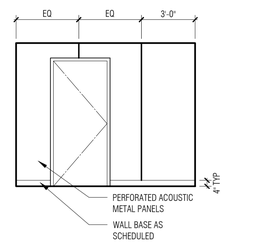
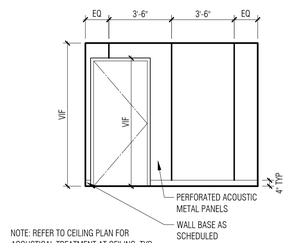
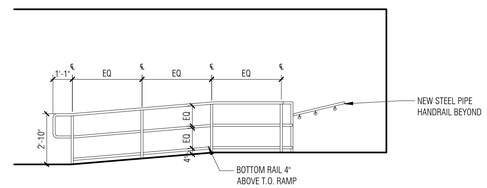


14 / A3-03 Interview Room 106
1/4" = 1'-0"

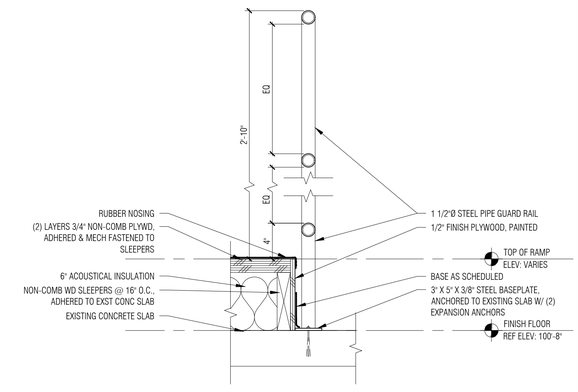


NOTE: REFER TO CEILING PLAN FOR ACOUSTICAL TREATMENT AT CEILING, TYP

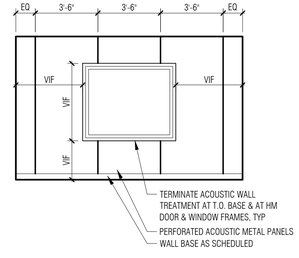
10 / A3-03 Interview Room 107
1/4" = 1'-0"



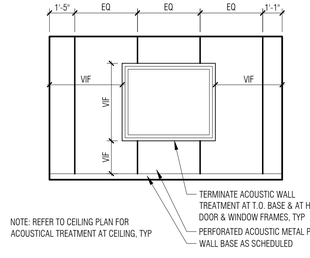
6 / A3-03 Secure Corridor 126
1/4" = 1'-0"



2 / A3-03 Detail
1-1/2" = 1'-0"



13 / A3-03 Interview Room 106
1/4" = 1'-0"



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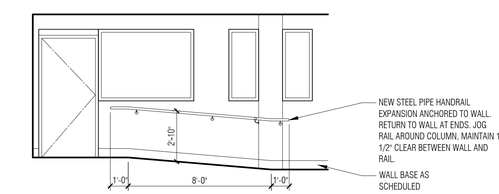
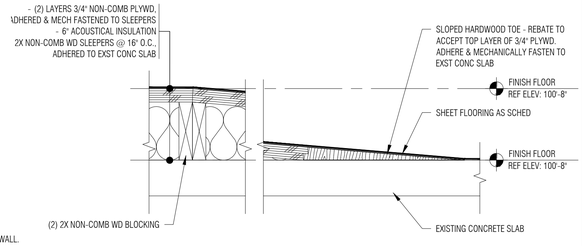
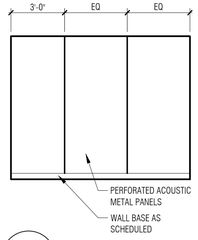
9 / A3-03 Interview Room 107
1/4" = 1'-0"



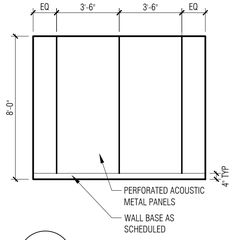
5 / A3-03 Secure Corridor 126
1/4" = 1'-0"



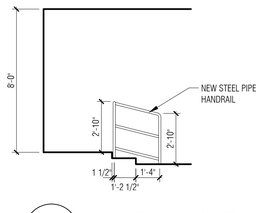
1 / A3-03 Detail
1-1/2" = 1'-0"



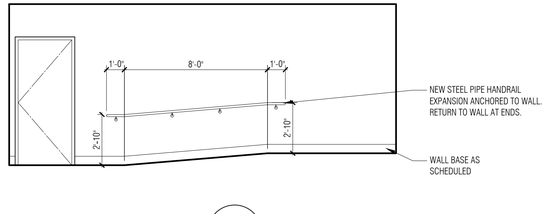
16 / A3-03 Interview Room 106
1/4" = 1'-0"



12 / A3-03 Interview Room 107
1/4" = 1'-0"



8 / A3-03 Secure Corridor 126 Stairs
1/4" = 1'-0"



4 / A3-03 Corridor 110
1/4" = 1'-0"

PARTNERS

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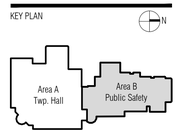
KEY PLAN



OWNER
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PROJECT NAME
Public Safety Building Interior Renovations

1150 S. Canton Center Road
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PROJECT NO.
21-130

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Addendum #1	3/18/2022
Proposal Request #2	8/26/2022
Proposal Request #4	1/18/2023

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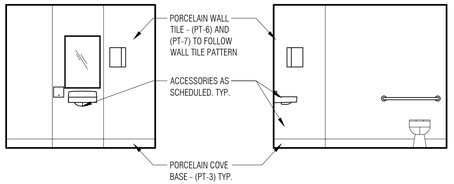
CHECKED BY
JAV

APPROVED BY
MAM

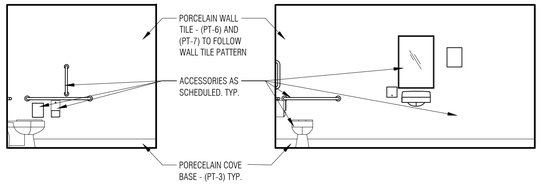
SHEET NAME
SECTION DETAILS & INTERIOR ELEVATIONS

SHEET NO.
A6-11



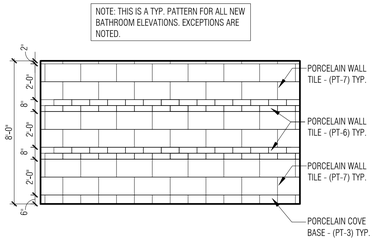
15 / A3-03 Restroom 120
1/4" = 1'-0"

14 / A3-03 Restroom 120
1/4" = 1'-0"

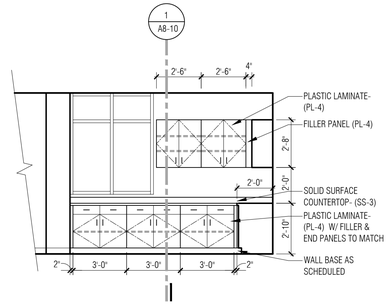


13 / A3-03 Restroom 120
1/4" = 1'-0"

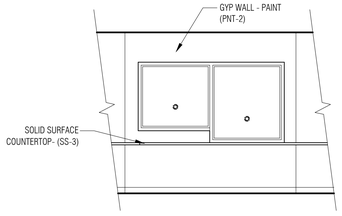
12 / A3-03 Public Restroom 103
1/4" = 1'-0"



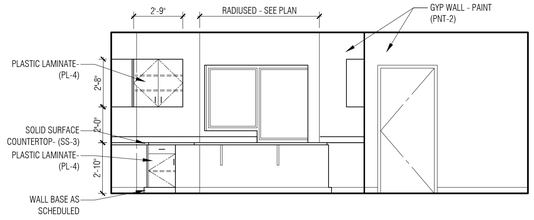
11 / A8-01 Typical Bathroom Tile Pattern
1/4" = 1'-0"
A8-02



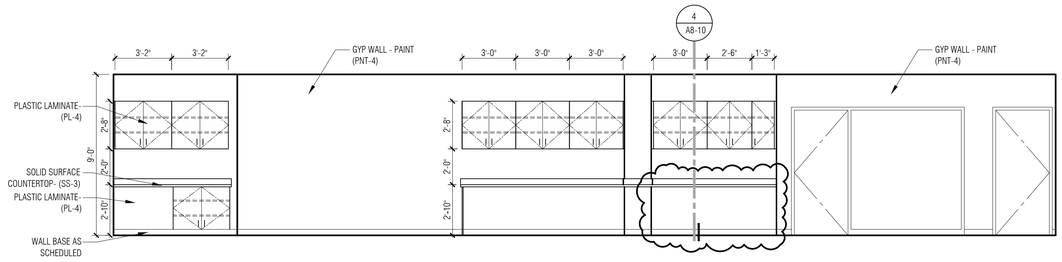
10 / A3-03 Records/Clerk
1/4" = 1'-0"



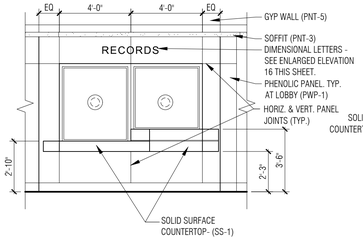
9 / A3-03 Records/Clerk
1/4" = 1'-0"



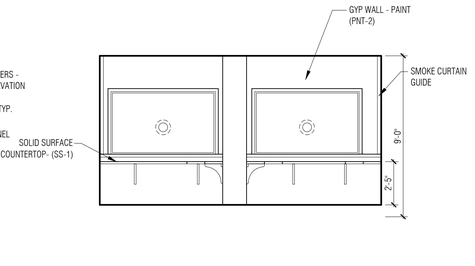
8 / A3-01 Records/Clerk
1/4" = 1'-0"



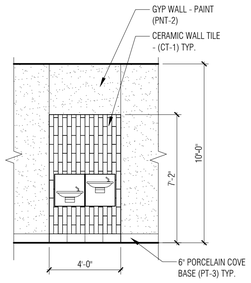
7 / A3-01 Records/Clerk 114
1/4" = 1'-0"



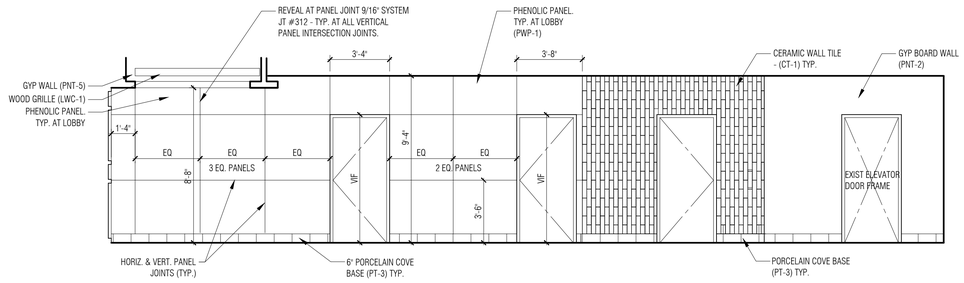
6 / A3-03 Lobby 101
1/4" = 1'-0"



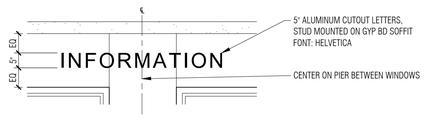
5 / A3-03 Desk Officer 112
1/4" = 1'-0"



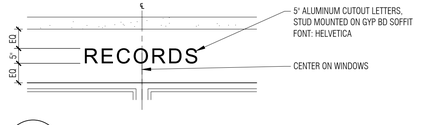
4 / A3-03 D.F. Alcove
1/4" = 1'-0"



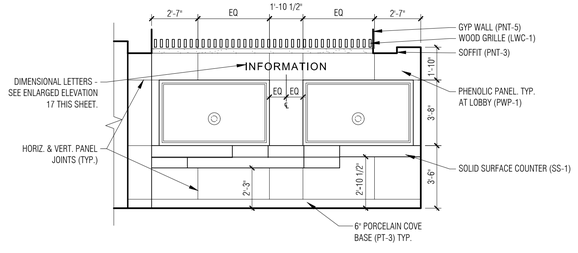
3 / A3-01 Lobby 101
1/4" = 1'-0"



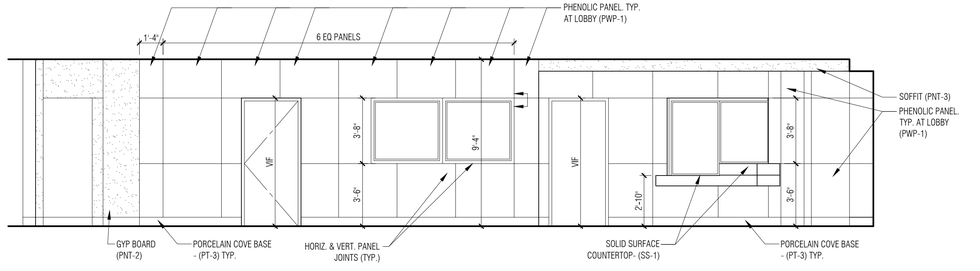
17 / A8-01 Enlarged Signage - Information
1/4" = 1'-0"



16 / A8-01 Enlarged Signage - Records
1/4" = 1'-0"



2 / A3-01 Lobby 101
1/4" = 1'-0"



1 / A3-01 Lobby 101
1/4" = 1'-0"

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65 MARKET STREET
MOUNT CLEMENS, MI 48043
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CONSULTANT

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JAV

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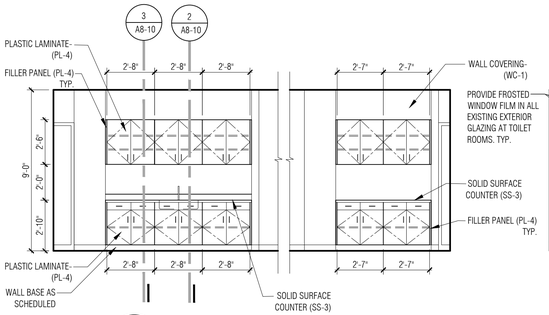
MAM

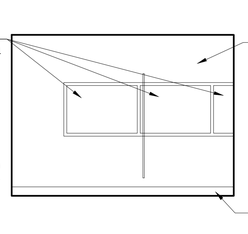
SHEET NAME

INTERIOR ELEVATIONS

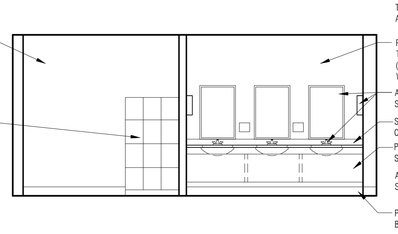
SHEET NO.
A8-01



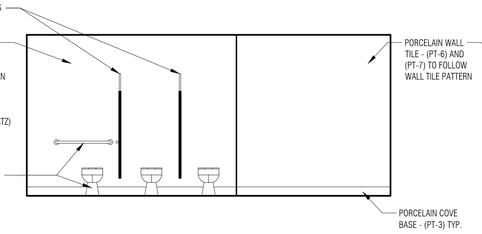
19 / A3-02 Conference 209
1/4" = 1'-0"



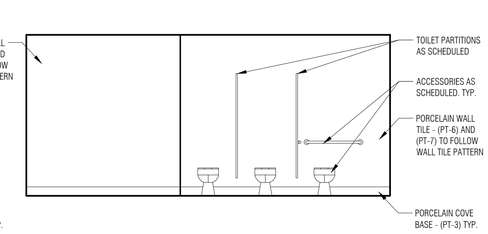
18 / A3-03 Women's Restroom 234
1/4" = 1'-0"



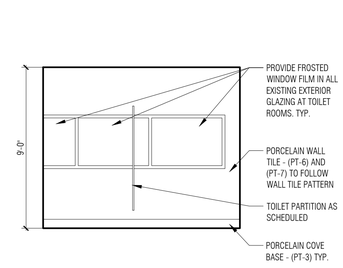
17 / A3-03 Women's Restroom 234
1/4" = 1'-0"



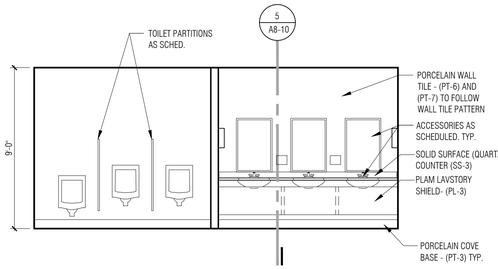
16 / A3-03 Women's Restroom 234
1/4" = 1'-0"



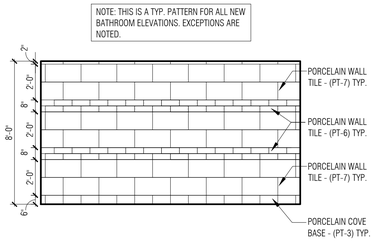
15 / A3-03 Men's Restroom 232
1/4" = 1'-0"



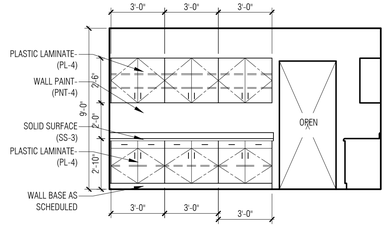
14 / A3-03 Men's Restroom 232
1/4" = 1'-0"



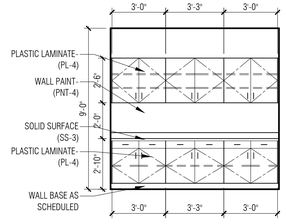
13 / A3-03 Men's Restrooms 232
1/4" = 1'-0"



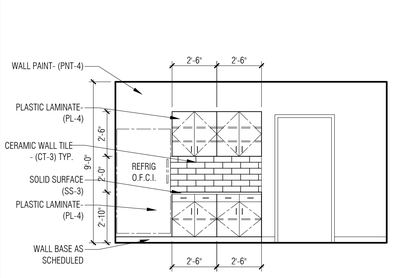
12 / A8-01 / A8-02 Typical Bathroom Tile Pattern
1/4" = 1'-0"



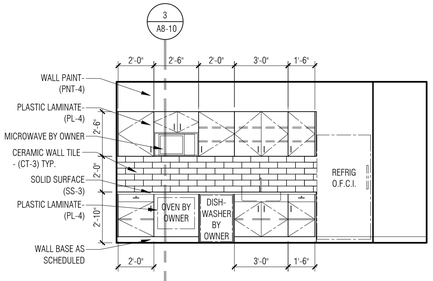
11 / A3-03 Work Room 226
1/4" = 1'-0"



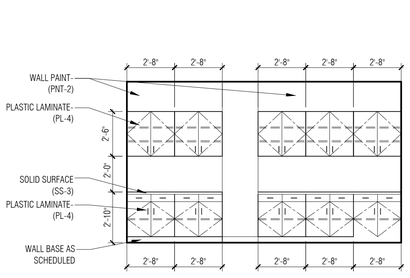
10 / A3-03 Work Room 226
1/4" = 1'-0"



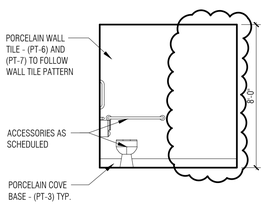
9 / A3-03 Break Room 225
1/4" = 1'-0"



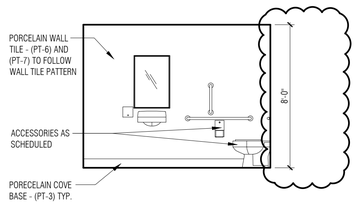
8 / A3-03 Break Room 225
1/4" = 1'-0"



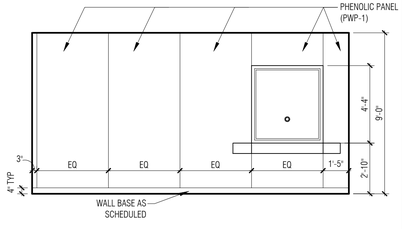
7 / A3-02 Temp. Dispatch Mtg Room 213
1/4" = 1'-0"



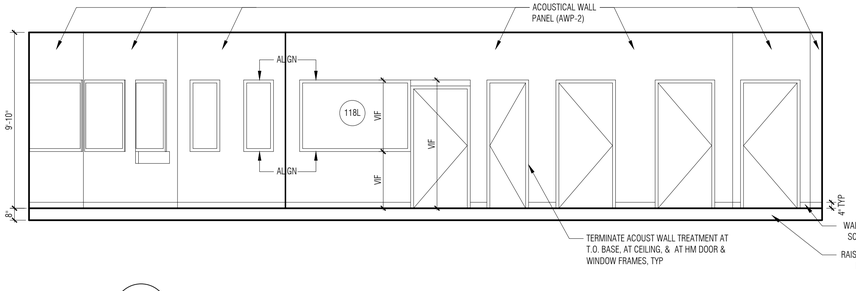
6 / A3-03 Toilet 201
1/4" = 1'-0"



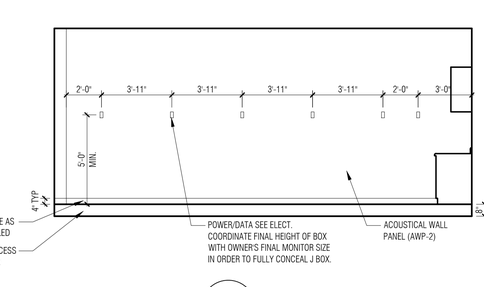
5 / A3-03 Toilet 201
1/4" = 1'-0"



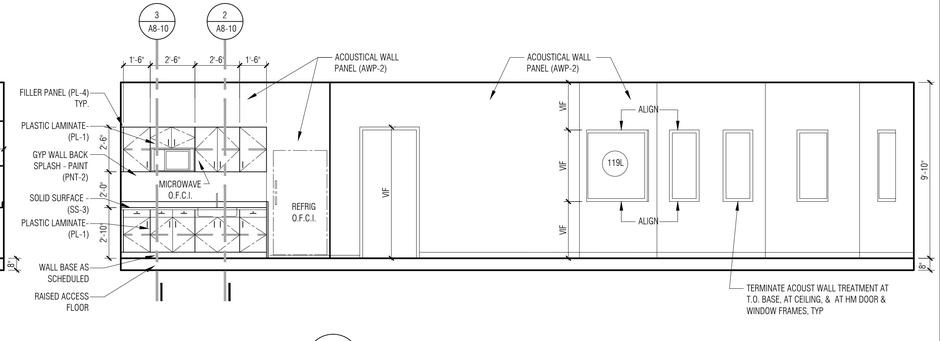
4 / A3-02 Secure Lobby 200A
1/4" = 1'-0"



3 / A3-03 Dispatch
1/4" = 1'-0"



2 / A3-03 Dispatch 118
1/4" = 1'-0"



1 / A3-03 Dispatch 118
1/4" = 1'-0"

PARTNERS

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65 MARKET STREET
MOUNT CLEMENS, MI 48043
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CONSULTANT

KEY PLAN

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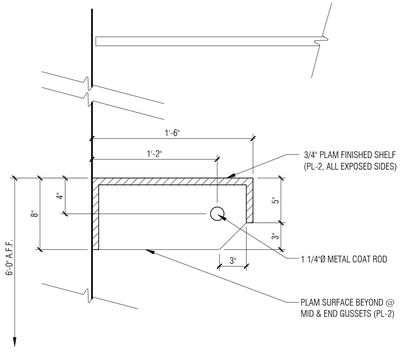
APPROVED BY
MAM

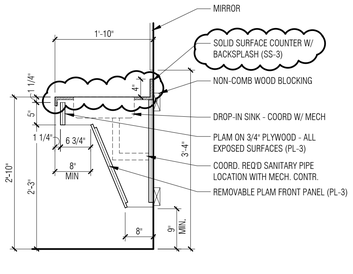
SHEET NAME

INTERIOR ELEVATIONS

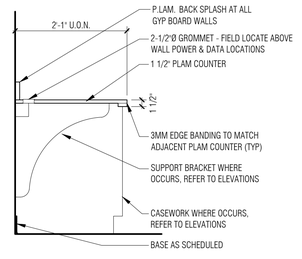
SHEET NO.
A8-02



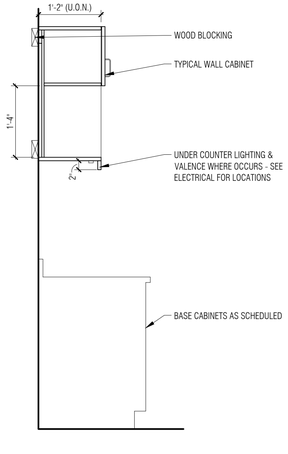
6 Typical Hanger Rod and Shelf Detail
1-1/2" = 1'-0"



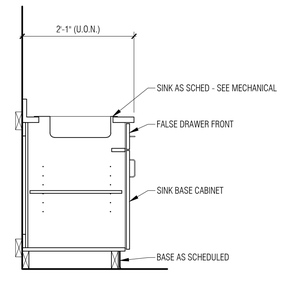
5 Typical Vanity Section
3/4" = 1'-0"



4 Typical Section @ Countertop
3/4" = 1'-0"

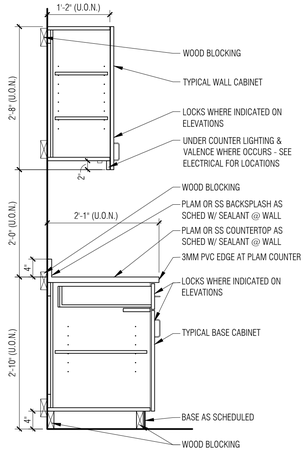


3 Microwave Cabinet Section
3/4" = 1'-0"



2 Sink Cabinet Section
3/4" = 1'-0"

SEE DETAIL 1 THIS SHEET FOR SIMILAR / TYPICAL NOTES & DIMENSIONS



1 Typical Casework Section
3/4" = 1'-0"

P:\2021\21-130-Canton PSD – Interior Renovations\02_CAD\A8-10_Millwork Details.dwg - 1/5/2023 10:02:04 AM - Joe Valeri

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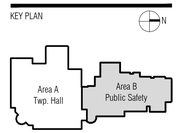

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CHECKED BY
JAV

APPROVED BY
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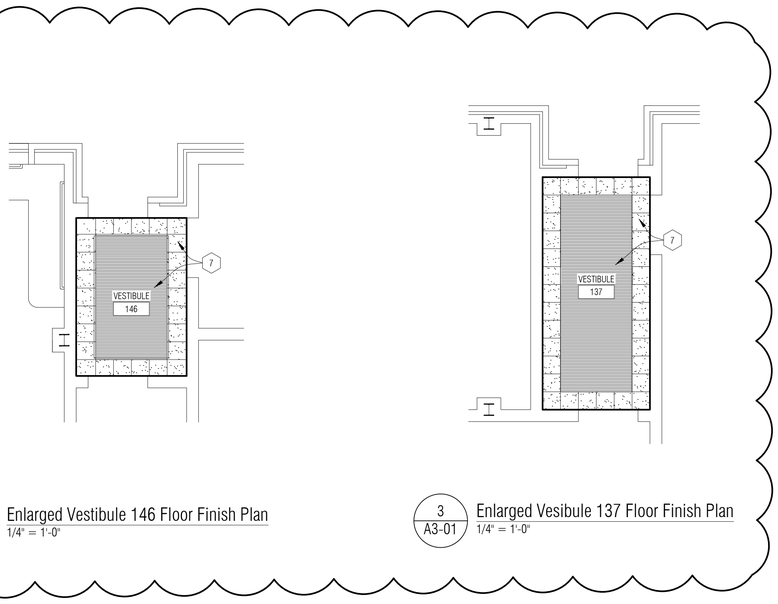
SHEET NAME

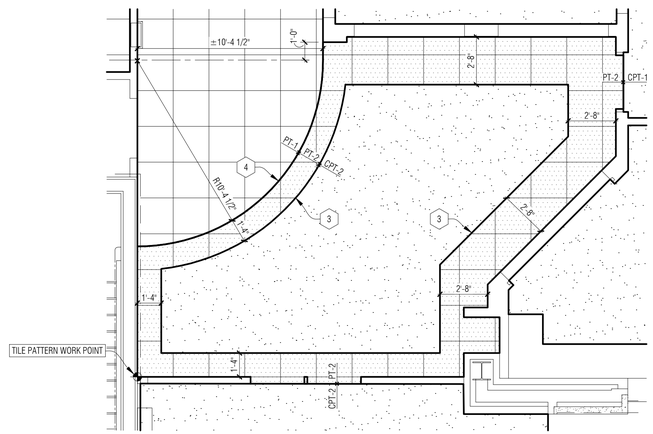
MILLWORK
DETAILS

SHEET NO.
A8-10

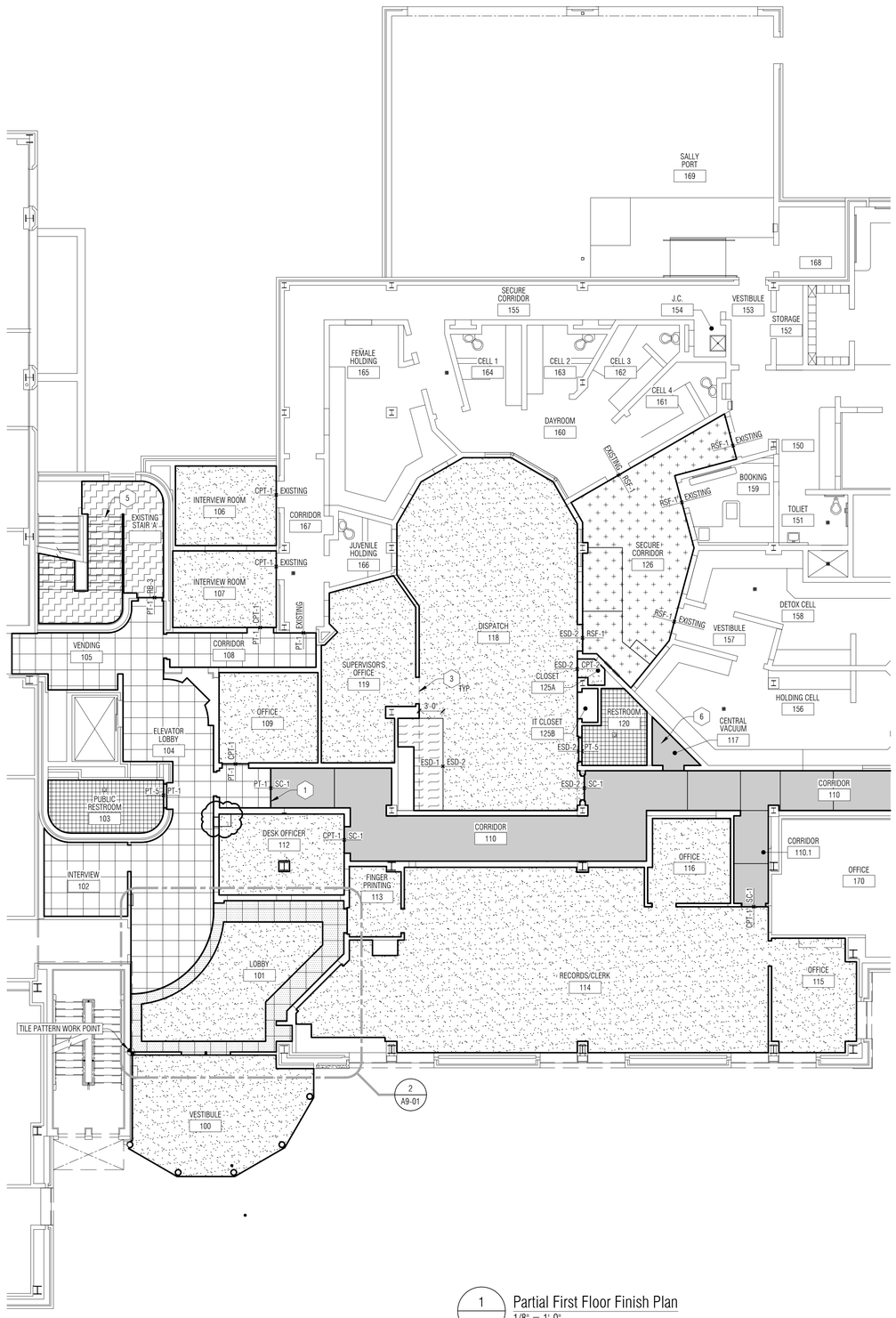


4 / A3-01 Enlarged Vestibule 146 Floor Finish Plan
1/4" = 1'-0"

3 / A3-01 Enlarged Vesibule 137 Floor Finish Plan
1/4" = 1'-0"



2 / A9-01 Enlarged First Floor Finish Plan
1/4" = 1'-0"



1 / Partial First Floor Finish Plan
1/8" = 1'-0"

FINISH FLOOR PLAN GEN. NOTES:

A. REFER TO MATERIAL FINISH SCHEDULE (SPEC SECTION 000200) AND ROOM FINISH SCHEDULE AD-03 FOR ADDITIONAL FINISH INFORMATION.

B. UNLESS OTHERWISE NOTED, FLOOR FINISHES TRANSITION UNDER THE CENTERLINE OF DOORS (WHEREVER APPLICABLE).

C. UNLESS OTHERWISE NOTED, FLOOR FINISH TO BE CPT-1.

FINISH FLOOR PLAN KEY NOTES:

1. FLOOR TRANSITION TYPE 4 - SEE OPENING DETAILS
2. RADIUSED MTL TRANSITION STRIP - SEE FLOOR TRANSITION TYPE 2
3. DASHED LINE OF EDGE OF ACCESS FLOOR BELOW
4. SAWCUT TILE ALONG RADIUS & PROVIDE TYP GROUT JOINT AT TRANSITION BETWEEN TILE
5. NEW RUBBER TREADS & RISERS ON EX STAIR (RB-3)
6. CONCRETE FLOOR IN THIS AREA TO BE SEALED ONLY.
7. SIZE OF NEW METAL FLOOR MAT AND WALK-OFF FLOOR TILE BOARDER TO BE FIELD VERIFIED.

FINISH FLOOR PLAN LEGEND:

- PORCELAIN TILE, 24" X 24"
- PORCELAIN ACCENT TILE, 24" X 24"
- PORCELAIN TILE, SMALL FORMAT (6" X 6" / 3" X 3")
- LUXURY VINYL TILE
- RESILIENT SAFETY FLOORING
- RUBBER STAIR TREAD
- ESD RUBBER TILE FLOORING
- POLISHED CONCRETE
- CARPET / ELECTROSTATIC DISCHARGE CARPET
- RECESSED METAL FLOOR MAT

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD-Owner Mtg	6/16/2021
SD-Owner Mtg	7/1/2021
SD Issue	9/20/2021
DD-Progress Review	10/12/2021
QAQC	2/18/2022
Bidding / Construction	3/9/2022
Addendum #5	3/28/2022
Proposal Request #2	8/26/2022
Proposal Request #4	1/18/2023

DRAWN BY
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CHECKED BY
JAV

APPROVED BY
MAM

SHEET NAME

PARTIAL & ENLARGED FIRST FLOOR FINISH PLANS

SHEET NO.
A9-01

MECHANICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A	COMPRESSED AIR
A(___#)	COMPRESSED AIR (SPECIFIC PSIG)
AAV	AUTOMATIC AIR VENT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AD	AREA DRAIN
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
AMP	AMPERE
APD	AIR PRESSURE DROP
AR	ARGON
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS
ASR	AUTOMATIC SPRINKLER RISER
ATD	AIR TRANSFER DUCT
AUX	AUXILIARY
AV	ACID VENT
AVTR	ACID VENT THROUGH ROOF
AW	ACID WASTE
BAS	BUILDING AUTOMATION SYSTEM
BCU	BLOWER COIL UNIT
BDD	BACKDRAFT DAMPER
BFF	BELOW FINISHED FLOOR
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BVC	BEVERAGE CONDUIT
BWV	BACKWATER VALVE
C	COMMON
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CB	CATCH BASIN
CC	COOLING COIL
CD	COLD DECK
CD	CONDENSATE DRAIN
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	COOLING
CNDS	CONDENSATE
CNDS (___#)	CONDENSATE (SPECIFIC PSIG)
CO	CLEAN OUT
CO2	CARBON DIOXIDE
CONT	CONTINUATION OR CONTINUED
CONTR	CONTRACTOR
CONV	CONVECTOR
COP	COEFFICIENT OF PERFORMACE
CP	CIRCULATING PUMP
CRU	CONDENSATE RETURN UNIT
CSS	CLINICAL SERVICE SINK
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CW	DOMESTIC COLD WATER
CWF	DOMESTIC COLD WATER - FILTERED
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D&T	DRIP AND TRAP
DA	DISCHARGE AIR
DAT	DISCHARGE AIR TEMPERATURE
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DFU	DRAINAGE FIXTURE UNITS
DIA	DIAMETER
DMPR	DAMPER
D/N	DAY/NIGHT
DN	DOWN
DNZ	DOWNSPOUT NOZZLE
DS	DUCT SILENCER
DT	DRAIN TILE
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
DWG	DRAWING
(E)	EXISTING
E	EXHAUST GRILLE OR REGISTER
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	EXPANSION COMPENSATOR
ECUH	ELECTRIC CABINET UNIT HEATER
EDB	ENTERING DRY BULB
EER	ENERGY EFFICIENCY RATIO
EES	EMERGENCY EYE WASH / SHOWER
EEW	EMERGENCY EYE WASH
EF	EXHAUST FAN
EFF	EFFICIENCY
EHC	ELECTRIC HEATING COIL
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ERL	ENERGY RECOVERY LOOP
ERLR	ENERGY RECOVERY LOOP RETURN
ERLS	ENERGY RECOVERY LOOP SUPPLY
ERU	ENERGY RECOVERY UNIT
ESH	EMERGENCY SHOWER
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	FIRE PROTECTION
°F	DEGREES FAHRENHEIT
F&B	FACE AND BYPASS
F&T	FLOAT AND THERMOSTATIC
FA	FACE AREA
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW METER
FMS	FLOW MEASURING STATION
FPM	FEET PER MINUTE
FP	FIRE PUMP
FPTU	FAN POWERED (AIR) TERMINAL UNIT
FS	FLOOR SINK
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
FT	FEET
FTR	FINNED TUBE RADIATION
FV	FACE VELOCITY
G	NATURAL GAS
GA	GAUGE
GAL	GALLON
GRH	GRAVITY RELIEF HOOD
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GSAN	GREASE SANITARY WASTE
H	HYDROGEN
HB	HOSE BIBB
HC	HEATING COIL
HD	HOT DECK
HEPA	HIGH EFFICIENCY PARTICULATE ARRESTANCE
HL	HIGH LIMIT
HOA	HAND/OFF/AUTO
HP	HEAT PUMP
HP	HORSEPOWER
HPCW	HIGH PRESSURE DOMESTIC COLD WATER
HPHW	HIGH PRESSURE DOMESTIC HOT WATER
HPHWR	HIGH PRESSURE DOMESTIC HOT WATER RETURN
HPL	HEAT PUMP LOOP
HPLR	HEAT PUMP LOOP RETURN
HPLS	HEAT PUMP LOOP SUPPLY
HR	HOUR
HTG	HEATING
HV	HEATING VENTILATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATING
HWHR	HOT WATER HEATING RETURN
HWHS	HOT WATER HEATING SUPPLY
HW	DOMESTIC HOT WATER
HW(___)	DOMESTIC HOT WATER (SPECIFIC TEMP °F)
HWR	DOMESTIC HOT WATER RETURN
HX	HEAT EXCHANGER
HZ	HERTZ
IAQ	INDOOR AIR QUALITY
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IH	INTAKE HOOD
IN	INCHES
IR	INFRARED HEATER
IW	INDIRECT WASTE
JC	JANITOR'S CLOSET
JP	JOCKEY PUMP
KA	THOUSAND AMP
KW	KILOWATT
KWH	KILOWATT-HOUR
LAT	LEAVING AIR TEMPERATURE
LAB	LABORATORY
LAV	LAVATORY
LBS	POUNDS
LDB	LEAVING DRY BULB
LL	LOW LIMIT
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MA	MIXED AIR
MAT	MIXED AIR TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCA	MEDICAL COMPRESSED AIR
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE
MIL	1/1000th INCH
MIN	MINIMUM
MISC	MISCELLANEOUS
MMBH	MILLION BRITISH THERMAL UNITS PER HOUR
MOP	MAXIMUM OVERCURRENT PROTECTION
M/S	MOTOR STARTER
MTD	MOUNTED
MTR	MOTOR
MV	MANUAL AIR VENT
MVAC	MEDICAL VACUUM
N	NITROGEN
N2O	NITROUS OXIDE
NC	NOISE CRITERIA
NC	NORMALLY CLOSED
NCTC	NORMALLY CLOSED TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NOTC	NORMALLY OPEN TIMED CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPCW	NON POTABLE COLD WATER
O	OXYGEN
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
OB	OUTLET BOX
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER/CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OL	OVERLOAD
ORC	OVERFLOW RAIN CONDUCTOR
ORD	OVERFLOW ROOF DRAIN
OS&Y	OUTSIDE SCREW AND YOKE
OV	OUTLET VELOCITY
OWS	OPERATOR WORKSTATION
PACU	PACKAGED AIR CONDITIONING UNIT
PBD	PARALLEL BLADE DAMPER
PC	PUMPED CONDENSATE
PCW	PROCESS COOLING WATER
PCWR	PROCESS COOLING WATER RETURN
PCWS	PROCESS COOLING WATER SUPPLY
PD	PRESSURE DROP (FEET OF WATER)
PH	PERIMETER HEAT
PHR	PERIMETER HEAT RETURN
PHS	PERIMETER HEAT SUPPLY
PNL	PANEL
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSAN	PUMPED SANITARY
PST	PUMPED STORM
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE
PW	PURIFIED WATER
PWR	PURIFIED WATER RETURN
PWS	PURIFIED WATER SUPPLY
(R)	RELOCATED
R	RETURN GRILLE OR REGISTER
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RC	RAIN CONDUCTOR
RCP	RADIANT CEILING PANEL
RD	ROOF DRAIN
REQD	REQUIRED
REF	ROOF EXHAUST FAN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RL	REFRIGERANT LIQUID
RLFA	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RPDA	REDUCED PRESSURE BACKFLOW PREVENTION DETECTION ASSY
RPZA	REDUCED PRESSURE BACKFLOW PREVENTION ZONE ASSY
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
S	SUPPLY AIR DIFFUSER OR GRILLE
SA	SOUND ATTENUATOR
SA	SUPPLY AIR
SAN	SANITARY WASTE
SAT	SUPPLY AIR TEMPERATURE
SECT	SECTION
SCCR	SHORT CIRCUIT CURRENT RATING
SF	SUPPLY FAN
SH	SHOWER
SK	SINK
SMR	SNOW MELT RETURN
SMS	SNOW MELT SUPPLY
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SPKLR	SPRINKLER
SQFT	SQUARE FOOT/SQUARE FEET
S/S	START/STOP
SS	SERVICE SINK
ST	STORM
STD	STANDARD
STK	STACK
STM	STEAM
STM(___#)	STEAM (SPECIFIC PSIG)
S/W	SUMMER/WINTER
SW	SWITCH
T	TRANSFER GRILLE
TC	TEMPERATURE CONTROL
TC	TEMPERING COIL
TCP	TEMPERATURE CONTROL PANEL
TD	TRENCH DRAIN
TEMP	TEMPERATURE
TEMP	TEMPORARY
TH	TERMINAL HEATING
THA	TOTAL HEAT ABSORBED
THR	TERMINAL HEATING RETURN
THR	TOTAL HEAT REJECTED
THS	TERMINAL HEATING SUPPLY
TPD	TEPID WATER
TSP	TOTAL STATIC PRESSURE
TU	(AIR) TERMINAL UNIT
TV	TURNING VANES
TW	TEMPERED WATER
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UON	UNLESS OTHERWISE NOTED
UR	URINAL
UV	UNIT VENTILATOR
V	VALVE
V	VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VB	VACUUM BREAKER
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VOL	VOLUME
VFC	VARIABLE FREQUENCY CONTROLLER
VTR	VENT THROUGH ROOF
VTU	VENTURI TERMINAL UNIT
VUV	VERTICAL UNIT VENTILATOR
W	WASTE
W&V	WASTE AND VENT
WAGD	WASTE ANESTHETIC GAS DISPOSAL
WB	WET BULB
WC	WATER CLOSET
WC	WATER COLUMN
WG	WATER GAUGE
WH	WALL HYDRANT
WMSD	WASHING MACHINE SUPPLY AND DRAIN BOX
WPD	WATER PRESSURE DROP
WT	WEIGHT
XFMR	TRANSFORMER
ZVB	ZONE VALVE BOX

TEMPERATURE CONTROL - PARTIAL SYMBOLS LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
CO2	CARBON DIOXIDE SENSOR	OS	OCCUPANCY SENSOR
CO	CARBON MONOXIDE SENSOR	PT	PRESSURE TRANSMITTER
DPT	DIFFERENTIAL PRESSURE TRANSMITTER	SP	STATIC PRESSURE SENSOR OR PROBE
FM	FLOW METER	2-WAY	VALVE - 2 WAY CONTROL VALVE
	GUARD FOR STAT OR SENSOR	3-WAY	VALVE - 3 WAY CONTROL VALVE
H	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)	T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)

NOTE: LIST OF ADDITIONAL SYMBOLS & ABBREVIATIONS ASSOCIATED WITH TEMPERATURE CONTROLS ARE IDENTIFIED ON TC DRAWINGS.

MECHANICAL SYMBOL LIST

PIPING SYMBOLS

SYMBOL	DESCRIPTION
AAV	AIR VENT - AUTOMATIC
MV	AIR VENT - MANUAL
BFP	BACKFLOW PREVENTER
	CATCH BASIN
	CIRCULATING PUMP
CO	CLEAN OUT - IN FLOOR
CO	CLEAN OUT - FLANGE
	DIRECTION OF FLOW
	DIRECTION OF PITCH - DOWN
	FINNED TUBE RADIATION
	FIRE PROTECTION - SIAMESE CONNECTION - FREE STANDING
	FIRE PROTECTION - SIAMESE CONNECTION - WALL MOUNTED
	FIRE PROTECTION - SPRINKLER HEAD, CONCEALED
	FIRE PROTECTION - SPRINKLER HEAD, PENDANT
	FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT
	FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL
	FLOOR DRAIN
	FLOOR DRAIN - ELEVATION
	FLOOR DRAIN - FUNNEL
	FLOOR DRAIN - FUNNEL, ELEVATION
	FLOW MEASURING DEVICE (FOR TEST AND BALANCING)
FS	FLOW SWITCH
FM	FLOW METER
HB	HOSE BIBB
MH	MANHOLE
	OPEN SITE DRAIN
	PIPE - ANCHOR
	PIPE - CAP OR PLUG
	PIPE - ELBOW DOWN
	PIPE - ELBOW UP
	PIPE - EXPANSION JOINT OR COMPENSATOR
	PIPE - FLANGE
	PIPE - HOSE AND BRAID FLEXIBLE CONNECTION
	PIPE - RUBBER FLEXIBLE CONNECTION
	PIPE - GUIDE
	PIPE - TEE DOWN
	PIPE - TEE UP
	PIPE - UNION
TP/T	PRESSURE AND TEMPERATURE TEST PLUG
	PRESSURE GAUGE AND COCK
	REDUCER - CONCENTRIC
	REDUCER - ECCENTRIC
	ROOF/OVERFLOW DRAIN
	STEAM TRAP - FLOAT AND THERMOSTATIC
	STEAM TRAP - BUCKET
	STRAINER
	STRAINER WITH VALVE AND BLOW-OFF
	THERMOMETER
	TRAP
	VALVE - ANGLE
	VALVE - BALL
	VALVE - BUTTERFLY
0.5	VALVE - BALANCE (i.e. BALANCE VALVE TO 0.5 GPM)
0.5	VALVE - COMBINATION BALANCE & FLOW MEASURING (i.e. BALANCE VALVE TO 0.5 GPM)
	VALVE - CHECK
	VALVE - SPRING CHECK
	VALVE - GAS (MANUAL)
	VALVE - GLOBE
	VALVE - ISOLATION
	VALVE - NEEDLE
	VALVE - OS&Y
	VALVE - PLUG
	VALVE - PRESSURE REGULATING
	VALVE - PRESSURE REDUCING
	VALVE - PRESSURE RELIEF
	VALVE - PRESSURE & TEMPERATURE RELIEF
VTR	VENT THROUGH ROOF
WH	WALL HYDRANT

DOUBLE LINE PIPING SYMBOLS

SYMBOL	DESCRIPTION
	FLANGE
	FLEX CONNECTION
	STRAINER - BASKET
	STRAINER - Y TYPE
	VALVE - 2 WAY CONTROL
	VALVE - 3 WAY CONTROL
	VALVE - BUTTERFLY
	VALVE - CHECK
	VALVE - DETECTOR CHECK
	VALVE - OS&Y HORIZONTAL STEM
	VALVE - OS&Y VERTICAL STEM

DUCTWORK SYMBOLS

SYMBOL	DESCRIPTION
TU-101	AIR TERMINAL UNIT
TU-101	AIR TERMINAL UNIT WITH HEATING COIL
TU-101	VENTURI AIR TERMINAL UNIT
VTU-101	VENTURI AIR TERMINAL UNIT WITH HEATING COIL
	DAMPER - HORIZONTAL FIRE (EXISTING, NEW)
	DAMPER - HORIZONTAL FIRE / SMOKE (EXISTING, NEW)
	DAMPER - SMOKE (EXISTING, NEW)
	DAMPER - VERTICAL FIRE (EXISTING, NEW)
	DAMPER - VERTICAL FIRE / SMOKE (EXISTING, NEW)
BDD	DAMPER - BACK DRAFT
M	DAMPER - MOTORIZED
	DAMPER - VOLUME (MANUALLY ADJUSTABLE)
	DIFFUSER - BLANK OFF
	DIFFUSER - LINEAR SLOT
	DIFFUSER - SQUARE OR RECTANGULAR
	DUCT CROSS SECTION - SUPPLY
	DUCT CROSS SECTION - RETURN
	DUCT CROSS SECTION - EXHAUST
	DUCT - FLEXIBLE CONNECTION
	DUCT - FLEXIBLE DUCT
	DUCT TAKE-OFF - ROUND CONICAL
	DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP
	ELBOW - RECTANGULAR WITH TURNING VANES
	ELBOW - RECTANGULAR/ ROUND SMOOTH RADIUS
	ELBOW DOWN - RECTANGULAR
	ELBOW DOWN - ROUND
	ELBOW UP - RECTANGULAR
	ELBOW UP - ROUND
	FAN - CENTRIFUGAL (ELEVATION)
	HEATING COIL
D	INCLINED DROP IN DIRECTION OF AIRFLOW
R	INCLINED RISE IN DIRECTION OF AIRFLOW
	INTAKE OR RELIEF HOOD
	REGISTER - RETURN OR EXHAUST
	REGISTER - RETURN WITH BOOT
	REGISTER - TRANSFER GRILLE
	ROOF EXHAUST FAN
	TRANSITION - CONCENTRIC
	TRANSITION - ECCENTRIC
	UNIT HEATER - HORIZONTAL THROW
	UNIT HEATER - VERTICAL THROW

DOUBLE LINE DUCTWORK SYMBOLS

SYMBOL	DESCRIPTION
	DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP
	DUCT TAKE-OFF - ROUND CONICAL
	ELBOW - RECTANGULAR WITH TURNING VANES
	ELBOW - RECTANGULAR SHORT RADIUS WITH SPLITTER VANES
	ELBOW - ROUND
	ELBOW - RECTANGULAR SMOOTH RADIUS
	ELBOW DOWN - RECTANGULAR
	ELBOW DOWN - ROUND
	ELBOW UP - RECTANGULAR
	ELBOW UP - ROUND
	HEATING COIL
D	INCLINED DROP IN DIRECTION OF AIRFLOW
R	INCLINED RISE IN DIRECTION OF AIRFLOW
	TRANSITION - CONCENTRIC
	TRANSITION - ECCENTRIC

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

MECHANICAL DRAWING INDEX

STANDARD METHODS OF NOTATION

S-1 — SUPPLY DIFFUSER WITH SCHEDULE TAG "1", 10" DIAMETER NECK SIZE, 350 CFM TYPICAL FOR 4

R-1 — RETURN REGISTER WITH SCHEDULE TAG "1", 22"x 22" NECK SIZE, 640 CFM TYPICAL FOR 2, EXHAUST REGISTER E DESIGNATION SIMILAR.

TU-101 — AIR TERMINAL UNIT WITH HEATING COIL NO. 101 WITH SERVICE CLEARANCE SHOWN

VTU-101 — VENTURI AIR TERMINAL WITH HEATING COIL NO. 101 WITH SERVICE CLEARANCE SHOWN

(2)WC-1 — PLUMBING FIXTURE UNIT IDENTIFICATION TAG WATER CLOSET TYPE "1" TYPICAL FOR 2

8 — PIPE DIAMETER NOTATION ALL SIZES IN INCHES

8Ø / 22x10 / 18x14Ø — DUCT SIZE NOTATION ALL SIZES IN INCHES; OVAL DUCT; RECTANGULAR DUCT

1 — CONSTRUCTION KEY NOTE (NUMBER) OR DEMOLITION KEY NOTE (LETTER)

EF 1 — EQUIPMENT DESIGNATION, (i.e. EXHAUST FAN NUMBER 1)

HW-1 — PIPING RISER DESIGNATION (i.e. HOT WATER RISER NUMBER 1)

NEW SYSTEM COMPONENT; EXISTING SYSTEM COMPONENT TO REMAIN; POINT OF NEW CONNECTION SYMBOL

1 / M5.1 — SECTION OR PLAN NUMBER; SHEET WHERE SECTION IS DRAWN

AREA OF ENLARGEMENT; PLAN NUMBER; 1 / M5.1 SHEET WHERE ENLARGED PLAN IS DRAWN

1 / M5.1 — SECTION OR PLAN NUMBER; SHEET WHERE SECTION IS CUT OR ENLARGED PLAN IS REFERENCED

SECTION OR ENLARGED PLAN

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

SHEET M10 / SHEET M1.1 — MATCH LINE

HEAVY LINE WEIGHT INDICATES NEW WORK

LIGHT LINE WEIGHT INDICATES EXISTING EQUIPMENT OR REFERENCED INFORMATION

GRAY LINE INDICATES BACKGROUND INFORMATION

DASHED LINES INDICATE PIPING ROUTED BELOW SLAB OR GRADE

HATCH MARKS INDICATE EQUIPMENT OR MATERIALS TO BE DISCONNECTED AND REMOVED.

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

DRAWN BY

MDR

CHECKED BY

DAC

APPROVED BY

DAC

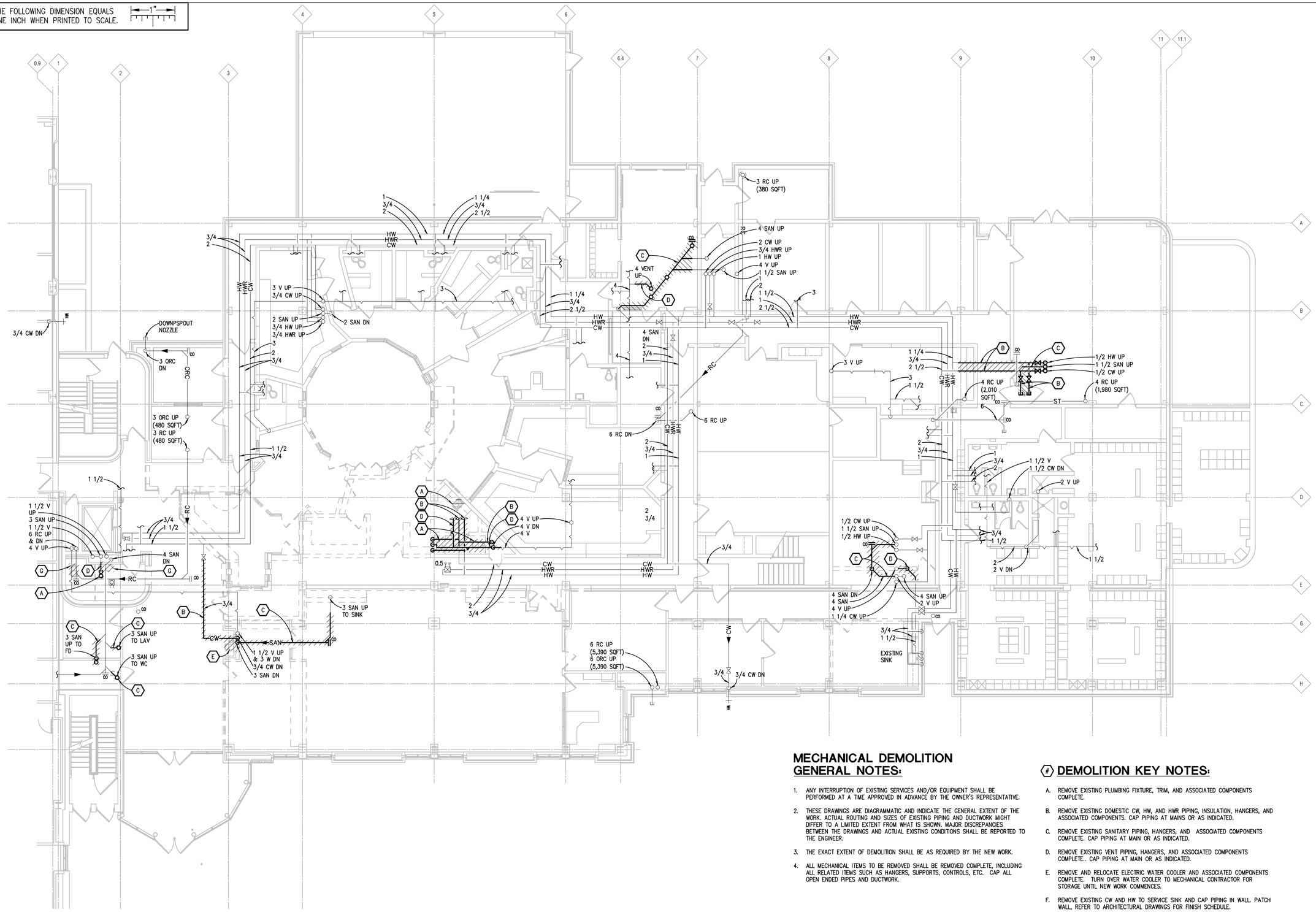
SHEET NAME

MECHANICAL STANDARDS AND DRAWING INDEX

SHEET NO.

M0.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



MECHANICAL DEMOLITION GENERAL NOTES:

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2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.

(#) DEMOLITION KEY NOTES:

A. REMOVE EXISTING PLUMBING FIXTURE, TRIM, AND ASSOCIATED COMPONENTS COMPLETE.

B. REMOVE EXISTING DOMESTIC CW, HW, AND HWR PIPING, INSULATION, HANGERS, AND ASSOCIATED COMPONENTS. CAP PIPING AT MAINS OR AS INDICATED.

C. REMOVE EXISTING SANITARY PIPING, HANGERS, AND ASSOCIATED COMPONENTS COMPLETE. CAP PIPING AT MAIN OR AS INDICATED.

D. REMOVE EXISTING VENT PIPING, HANGERS, AND ASSOCIATED COMPONENTS COMPLETE.. CAP PIPING AT MAIN OR AS INDICATED.

E. REMOVE AND RELOCATE ELECTRIC WATER COOLER AND ASSOCIATED COMPONENTS COMPLETE. TURN OVER WATER COOLER TO MECHANICAL CONTRACTOR FOR STORAGE UNTIL NEW WORK COMMENCES.

F. REMOVE EXISTING CW AND HW TO SERVICE SINK AND CAP PIPING IN WALL. PATCH WALL, REFER TO ARCHITECTURAL DRAWINGS FOR FINISH SCHEDULE.

G. REMOVE EXISTING PLUMBING FIXTURES, TRIM, AND ASSOCIATED COMPONENTS COMPLETE. EXISTING SERVICE SHALL REMAIN AND BE PREPARED FOR NEW PLUMBING FIXTURES.

DEMOLITION FIRST FLOOR PLUMBING PLAN

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

PARTNERS

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P 586.469.3600

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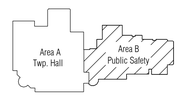
www.PeterBassoAssociates.com
PBA Project No: 2021.0163

KEY PLAN



OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

DRAWN BY
MDR

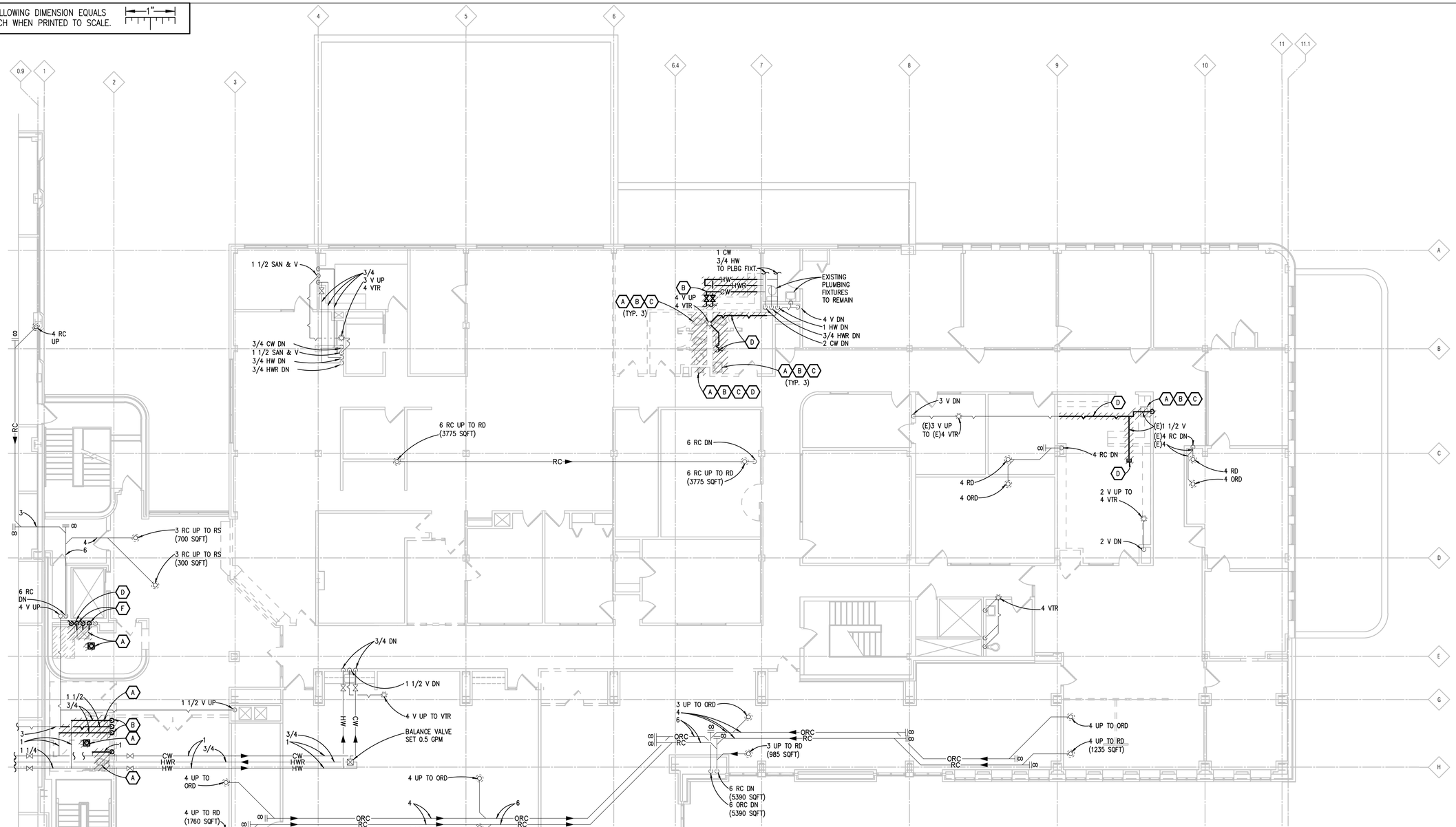
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
DEMOLITION FIRST FLOOR PLUMBING PLAN

SHEET NO.
MD2.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



DEMOLITION SECOND FLOOR PLUMBING PLAN

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

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F. REMOVE EXISTING CW AND HW TO SERVICE SINK AND CAP PIPING IN WALL. PATCH WALL, REFER TO ARCHITECTURAL DRAWINGS FOR FINISH SCHEDULE.

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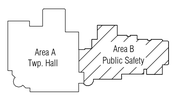

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Bidding / Construction	03/09/2022

DRAWN BY
MDR

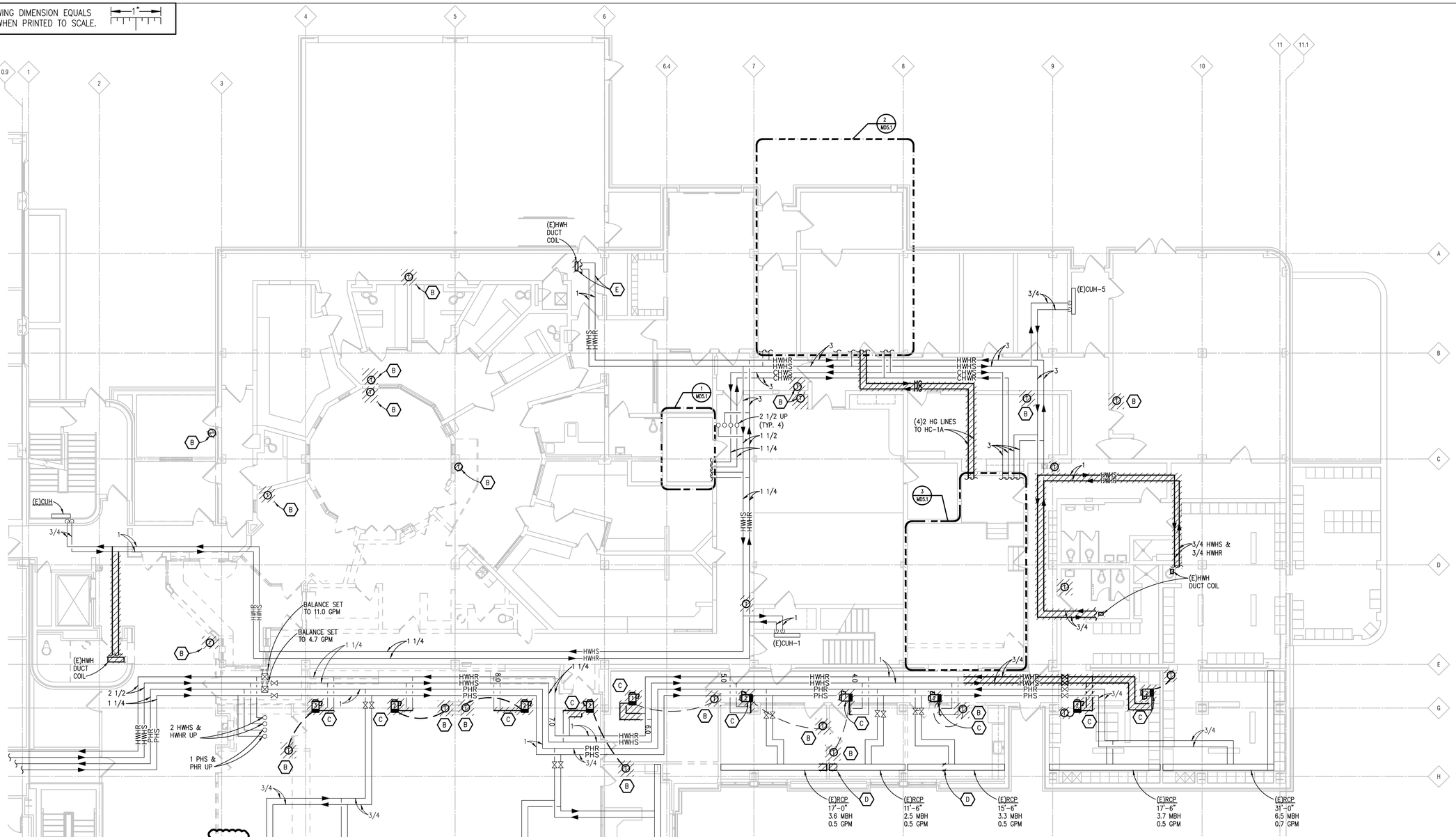
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
DEMOLITION SECOND FLOOR PLUMBING PLAN

SHEET NO.
MD2.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



DEMOLITION FIRST FLOOR HVAC PIPING PLAN

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

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(#) DEMOLITION KEY NOTES:

A. REMOVE HOT GAS REHEAT PIPING, INCLUDING ALL VALVES, INSULATION, HANGERS, AND ACCESSORIES COMPLETE.

B. REMOVE THERMOSTATS, WIRING, AND ASSOCIATED COMPONENTS COMPLETE. NEW THERMOSTATS WILL BE LOCATED IN SAME LOCATION AS EXISTING; FIELD VERIFY.

C. REMOVE EXISTING AIR TERMINAL UNIT, COIL, HANGERS, AND TEMPERATURE CONTROLS COMPLETE. PREPARE DUCTWORK AND HVAC PIPING FOR NEW TERMINAL UNIT INSTALLATION WHERE INDICATED AS PART OF THE NEW WORK SCOPE.

D. REMOVE EXISTING RADIANT CEILING PANEL AND ASSOCIATED COMPONENTS AS INDICATED ON DEMOLITION PLAN. COORDINATE EXACT EXTENT WITH ARCHITECTURAL AND NEW WORK PLANS.

E. REMOVE DUCT-MOUNTED HEATING COIL, VALVES, MOUNTING HARDWARE COMPLETE. PATCH DUCTWORK AS REQUIRED. CAP HOT WATER HEATING SUPPLY AND RETURN LINES AND ABANDON IN PLACE.

F. REMOVE EXISTING AIR CONDITIONING UNIT, PIPING, TEMPERATURE CONTROLS, AND ASSOCIATED COMPONENTS COMPLETE.

G. EXISTING AIR CONDITIONING UNIT TO BE RELOCATED. REMOVE PIPING, TEMPERATURE CONTROLS, AND ASSOCIATED COMPONENTS COMPLETE.

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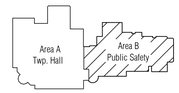

OWNER
Canton Township Public Safety

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21-130

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Bidding / Construction	03/09/2022
Proposal Request No.1	06/10/2022
Proposal Request No.2	08/26/2022

DRAWN BY
MDR

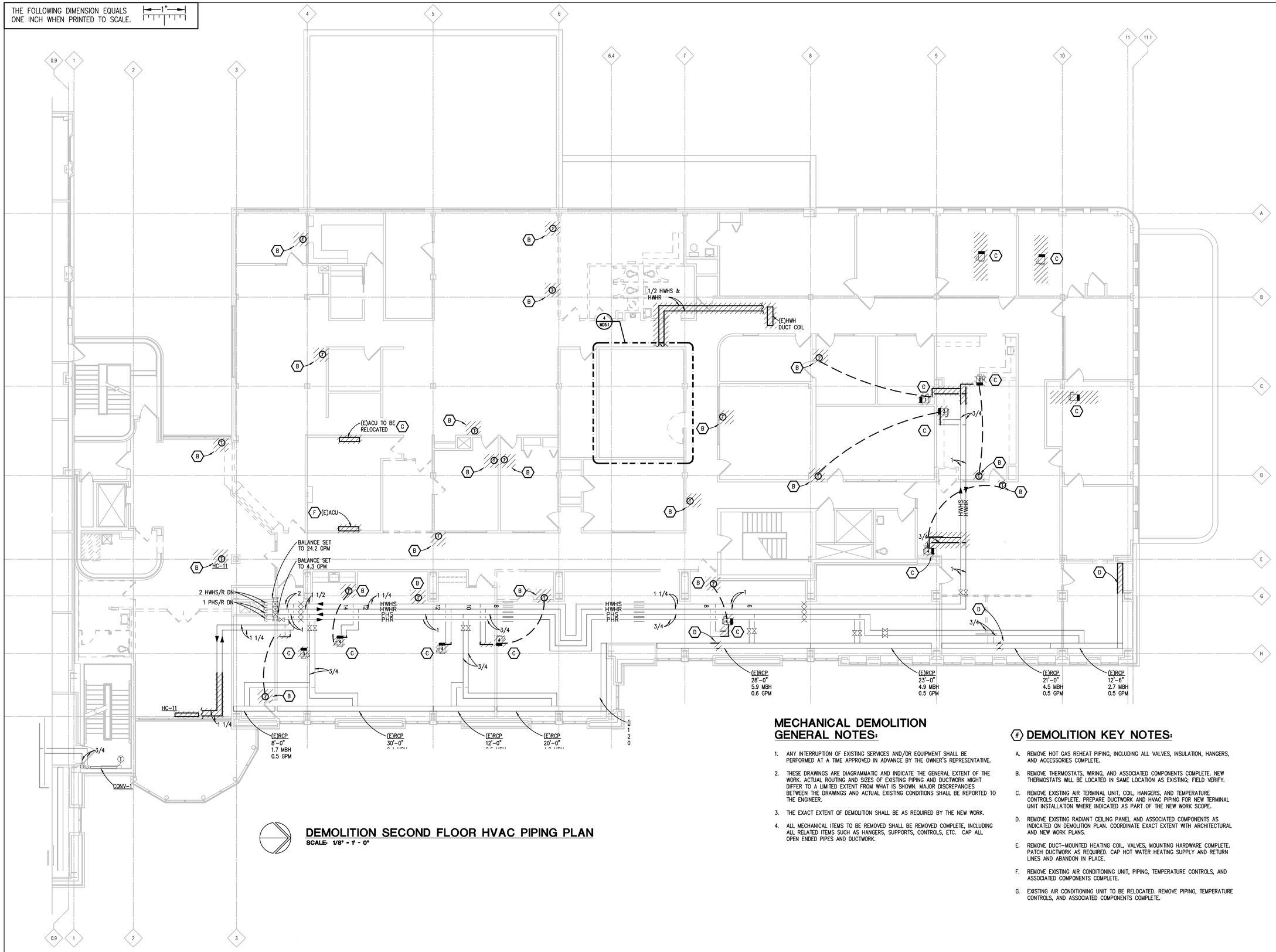
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
DEMOLITION FIRST FLOOR HVAC PIPING PLAN

SHEET NO.
MD3.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



DEMOLITION SECOND FLOOR HVAC PIPING PLAN

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

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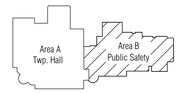

OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

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PROJECT NO.

21-130

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95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

DRAWN BY
MDR

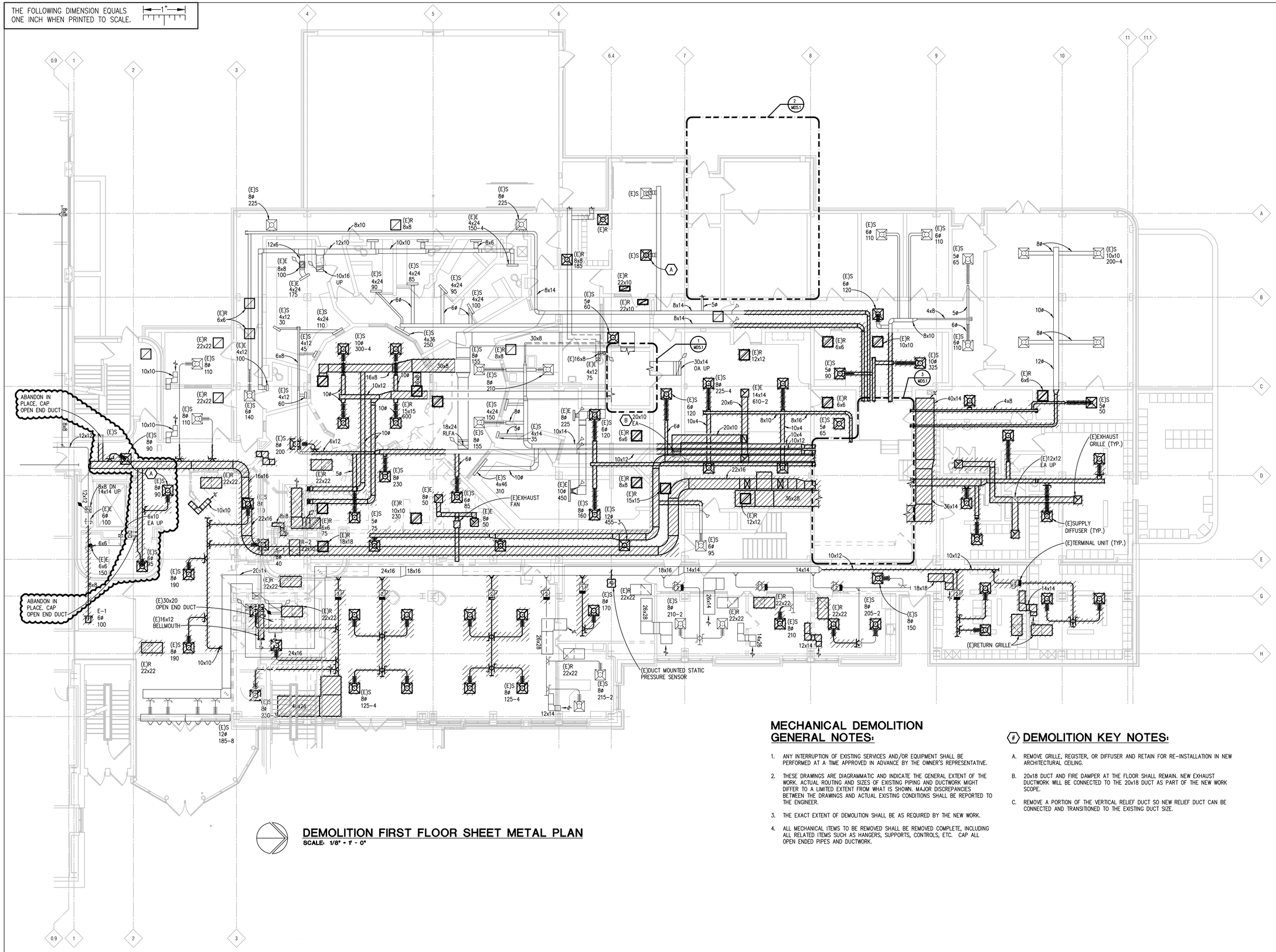
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
DEMOLITION SECOND FLOOR HVAC PIPING PLAN

SHEET NO.
MD3.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



DEMOLITION FIRST FLOOR SHEET METAL PLAN

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

MECHANICAL DEMOLITION GENERAL NOTES:

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(#) DEMOLITION KEY NOTES:

A. REMOVE GRILLE, REGISTER, OR DIFFUSER AND RETAIN FOR RE-INSTALLATION IN NEW ARCHITECTURAL CEILING.

B. 20x18 DUCT AND FIRE DAMPER AT THE FLOOR SHALL REMAIN. NEW EXHAUST DUCTWORK WILL BE CONNECTED TO THE 20x18 DUCT AS PART OF THE NEW WORK SCOPE.

C. REMOVE A PORTION OF THE VERTICAL RELIEF DUCT SO NEW RELIEF DUCT CAN BE CONNECTED AND TRANSITIONED TO THE EXISTING DUCT SIZE.

PARTNERS

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PBA Project No: 20210163

KEY PLAN N

OWNER
Canton Township Public Safety

PROJECT NAME
Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

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Bidding / Construction	03/09/2022
Proposal Request No.2	08/26/2022
Proposal Request No.3	09/27/2022

DRAWN BY
MDR

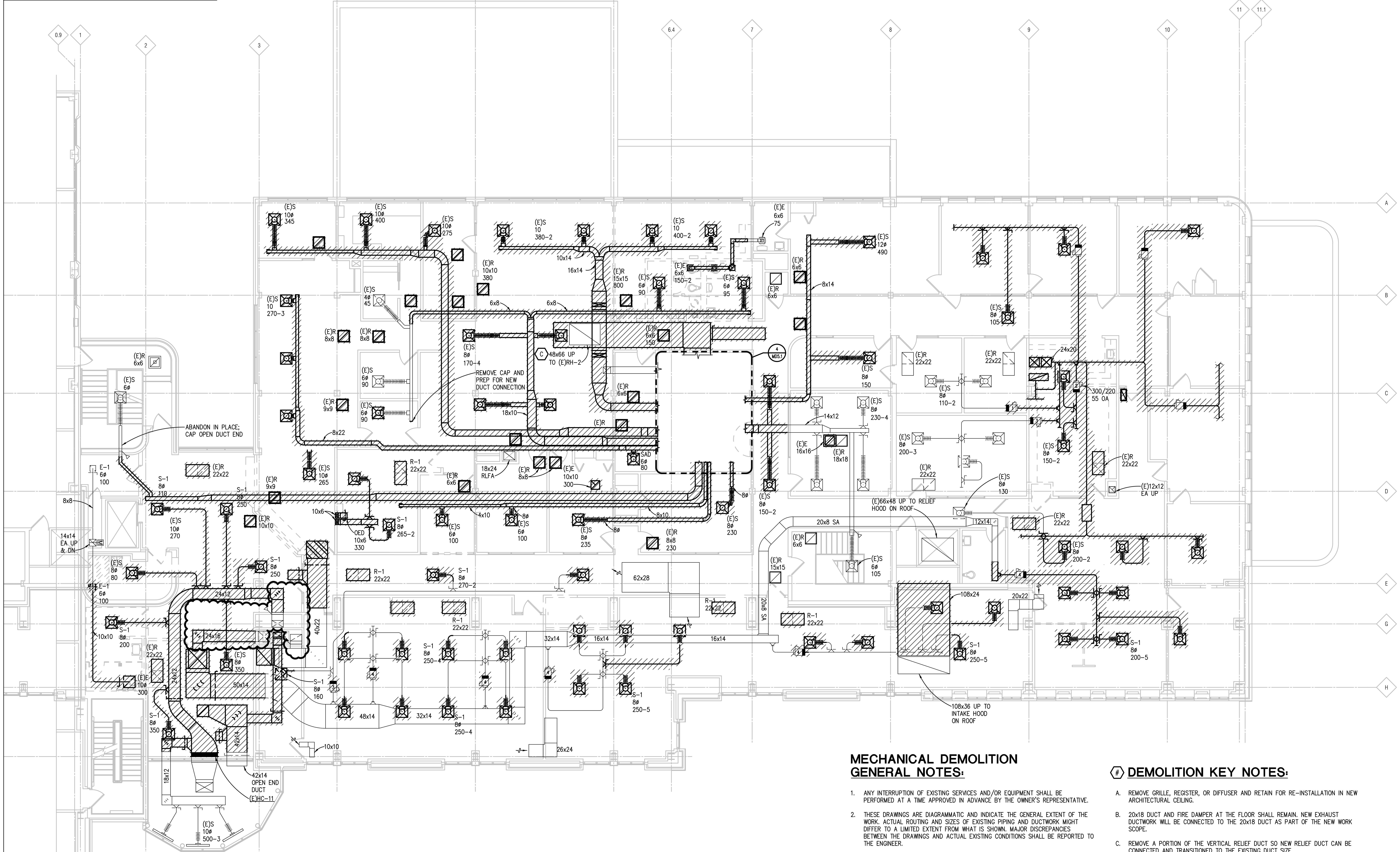
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
DEMOLITION FIRST FLOOR SHEET METAL PLAN

SHEET NO.
MD4.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



DEMOLITION SECOND FLOOR SHEET METAL PLAN

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

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DEMOLITION KEY NOTES:

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B. 20x18 DUCT AND FIRE DAMPER AT THE FLOOR SHALL REMAIN. NEW EXHAUST DUCTWORK WILL BE CONNECTED TO THE 20x18 DUCT AS PART OF THE NEW WORK SCOPE.

C. REMOVE A PORTION OF THE VERTICAL RELIEF DUCT SO NEW RELIEF DUCT CAN BE CONNECTED AND TRANSITIONED TO THE EXISTING DUCT SIZE.

PARTNERS

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PBA Project No.: 2021.0163

KEY PLAN

Area A Twp. Hall

Area B Public Safety

OWNER

Canton Township Public Safety

PROJECT NAME

Public Safety Building Interior Renovations

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PROJECT NO.

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Proposal Request No.2	08/26/2022

DRAWN BY
MDR

CHECKED BY
DAC

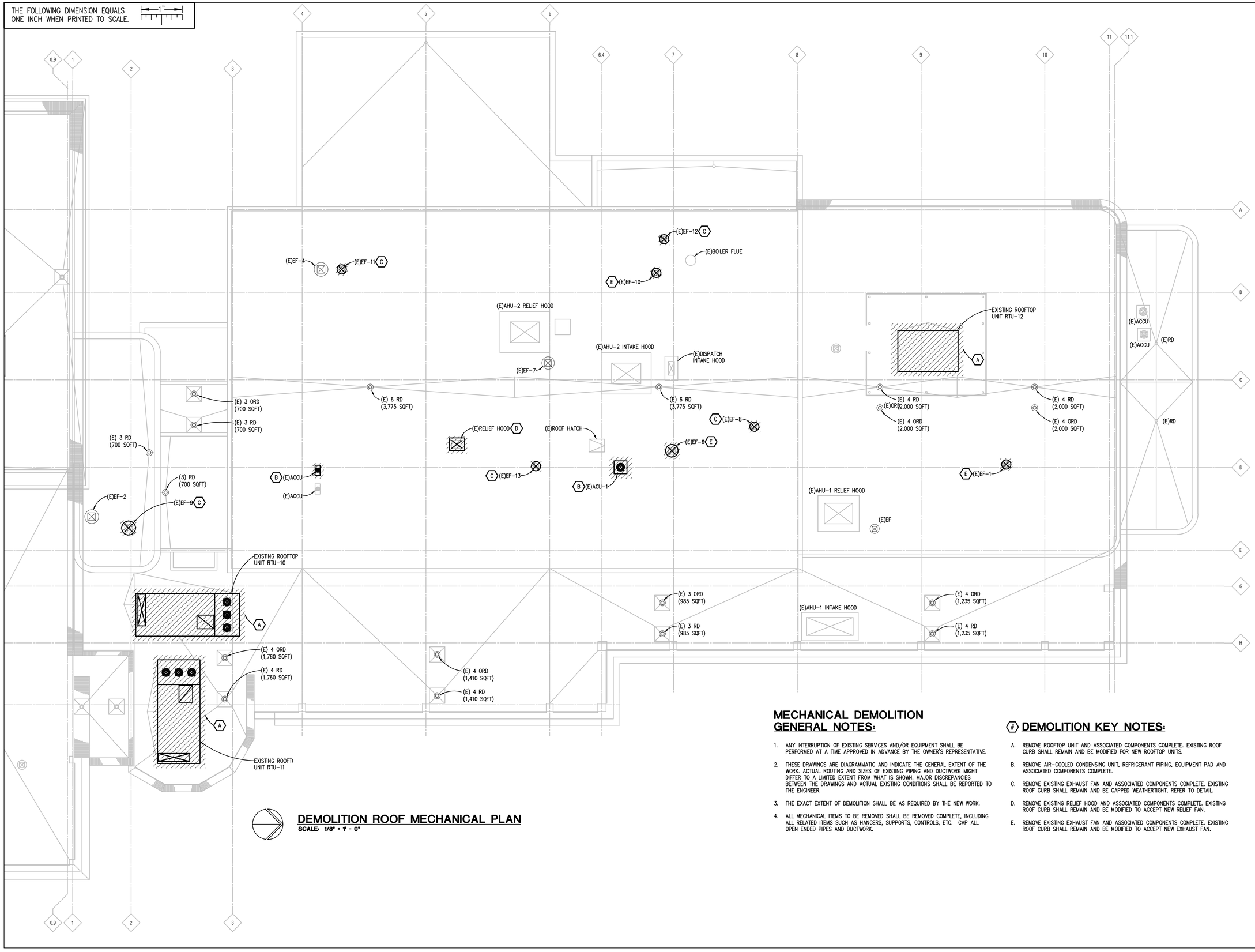
APPROVED BY
DAC

SHEET NAME
DEMOLITION SECOND FLOOR SHEET METAL PLAN

SHEET NO.
MD4.2

\\pba.local\projects\2021\2021-0163-00\CAD\2021-0163-MD4-SM2.dwg, MD4.2, 8/26/2022 10:07:42 AM, Matt Raubinger, Peter Basso Associates Inc.

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



DEMOLITION ROOF MECHANICAL PLAN

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

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(#) DEMOLITION KEY NOTES:

A. REMOVE ROOFTOP UNIT AND ASSOCIATED COMPONENTS COMPLETE. EXISTING ROOF CURB SHALL REMAIN AND BE MODIFIED FOR NEW ROOFTOP UNITS.

B. REMOVE AIR-COOLED CONDENSING UNIT, REFRIGERANT PIPING, EQUIPMENT PAD AND ASSOCIATED COMPONENTS COMPLETE.

C. REMOVE EXISTING EXHAUST FAN AND ASSOCIATED COMPONENTS COMPLETE. EXISTING ROOF CURB SHALL REMAIN AND BE CAPPED WEATHERTIGHT, REFER TO DETAIL.

D. REMOVE EXISTING RELIEF HOOD AND ASSOCIATED COMPONENTS COMPLETE. EXISTING ROOF CURB SHALL REMAIN AND BE MODIFIED TO ACCEPT NEW RELIEF FAN.

E. REMOVE EXISTING EXHAUST FAN AND ASSOCIATED COMPONENTS COMPLETE. EXISTING ROOF CURB SHALL REMAIN AND BE MODIFIED TO ACCEPT NEW EXHAUST FAN.

PARTNERS

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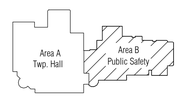

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DRAWN BY
MDR

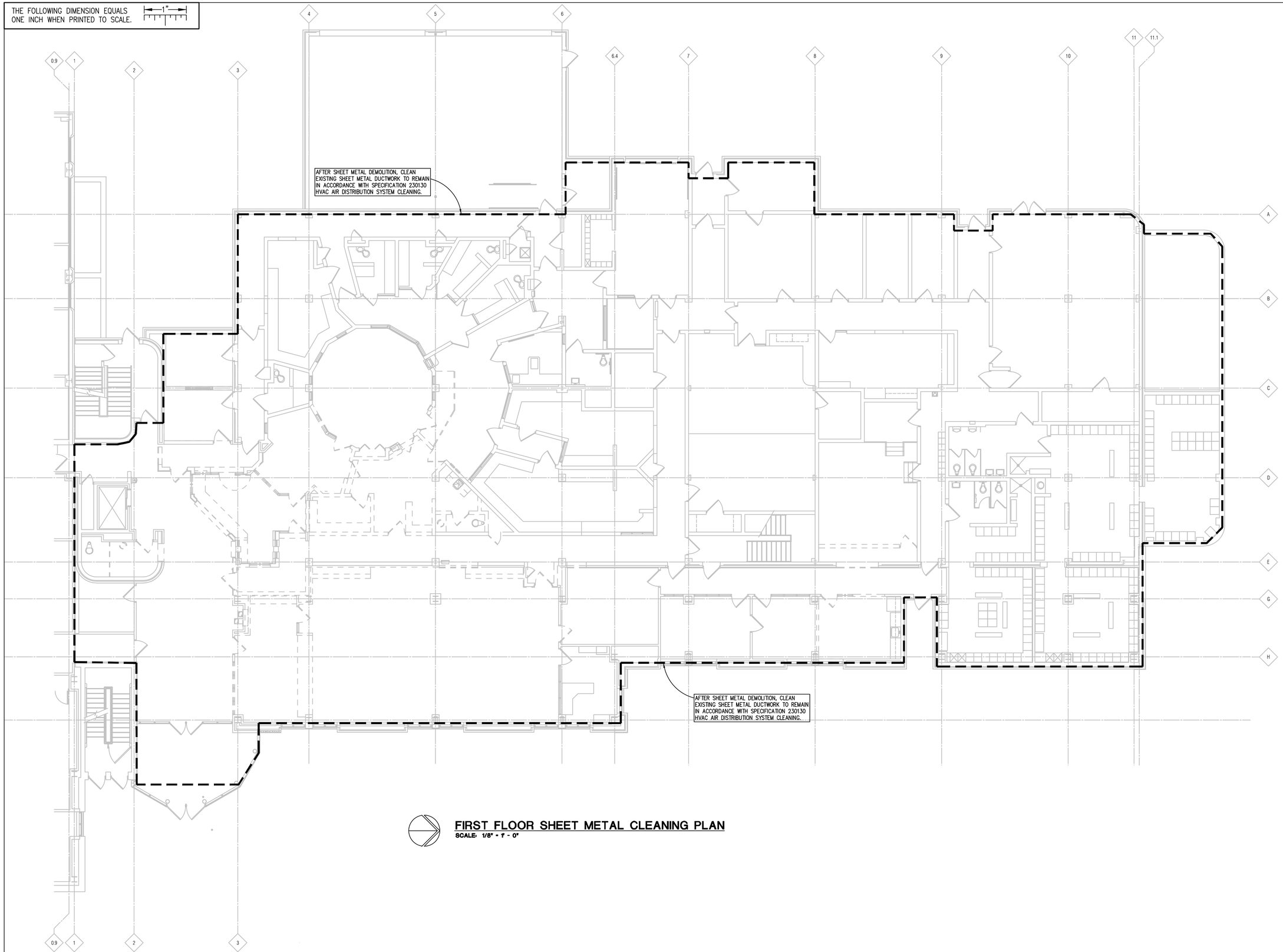
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
DEMOLITION ROOF MECHANICAL PLAN

SHEET NO.
MD4.3

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



FIRST FLOOR SHEET METAL CLEANING PLAN

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

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PBA Project No: 2021.0163

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

DRAWN BY

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CHECKED BY

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APPROVED BY

.

SHEET NAME

FIRST FLOOR SHEET METAL CLEANING PLAN

SHEET NO.

MD4.4

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"

AFTER SHEET METAL DEMOLITION, CLEAN EXISTING SHEET METAL DUCTWORK TO REMAIN IN ACCORDANCE WITH SPECIFICATION 230130 HVAC AIR DISTRIBUTION SYSTEM CLEANING.

(E)E 6x6 75

(E)R 6x6

(E)S 48 45

(E)R 6x6

(E)S 6ø 90

C 48x66 UP TO (E)RH-2

REMOVE CAP AND PREP FOR NEW DUCT CONNECTION

ABANDON IN PLACE; CAP OPEN DUCT END

(E)R 6x6

(E)S 6ø

E-1 6ø 100

8x8

14x14 EA UP & DN

18x24 RLFA

(E)R 22x22

(E)R 22x22

(E)S 8ø 110-2

14x12

(E)R 18x18

(E)S 8ø 200-3

(E)R 22x22

(E)S 8ø 130

(E)66x48 UP TO RELIEF HOOD ON ROOF

20x8 SA

(E)R 6x6

(E)R 15x15

(E)S 6ø 105

(E)R 22x22

12x14

62x28

20x8 SA

20x22

40x22

32x14

16x14

16x14

48x14

32x14

10x10

26x24

108x36 UP TO INTAKE HOOD ON ROOF

AFTER SHEET METAL DEMOLITION, CLEAN EXISTING SHEET METAL DUCTWORK TO REMAIN IN ACCORDANCE WITH SPECIFICATION 230130 HVAC AIR DISTRIBUTION SYSTEM CLEANING.

18x12

42x14 OPEN END DUCT

(E)S 10ø 500-3

SECOND FLOOR SHEET METAL CLEANING PLAN

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

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PBA Project No: 2021.0163

KEY PLAN

N

Area A Twp. Hall

Area B Public Safety

OWNER

Canton Township Public Safety

PROJECT NAME

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Bidding / Construction	03/09/2022

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.

CHECKED BY

.

APPROVED BY

.

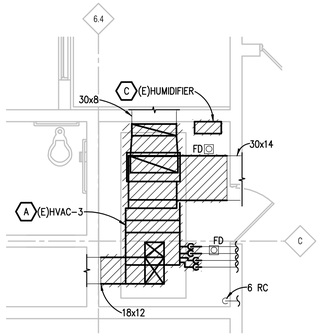
SHEET NAME

SECOND FLOOR SHEET METAL CLEANING PLAN

SHEET NO.

MD4.5

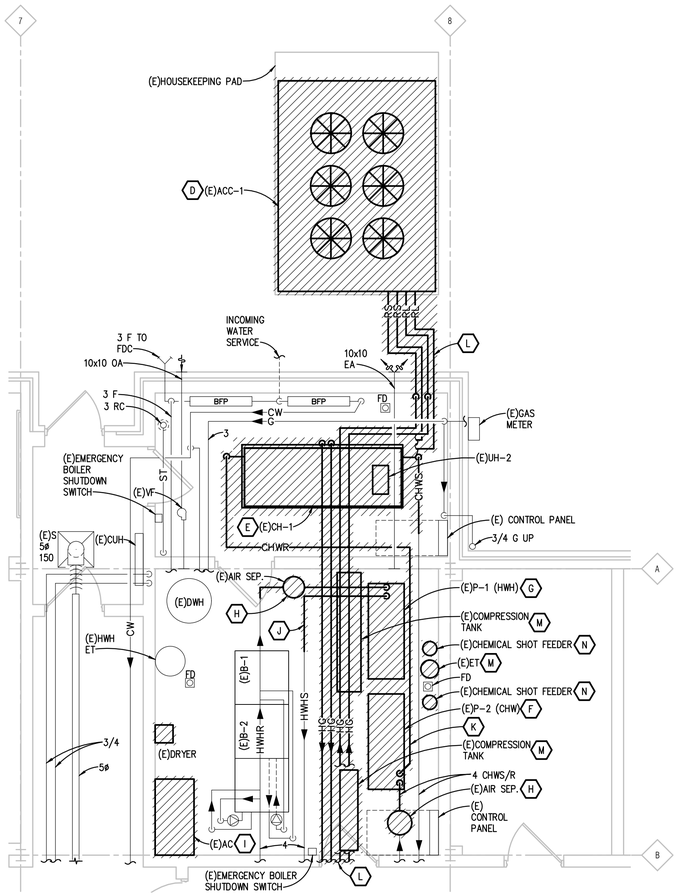
THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



1 MD2.1,MD3.1,MD4.1

FIRST FLOOR - MECHANICAL DEMOLITION ENLARGED PLAN

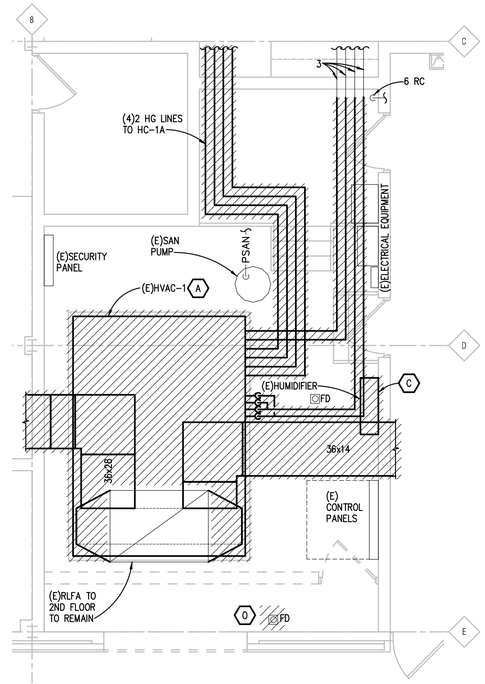
SCALE: 1/4" = 1' - 0"



2 MD2.1,MD3.1,MD4.1

FIRST FLOOR - MECHANICAL DEMOLITION ENLARGED PLAN

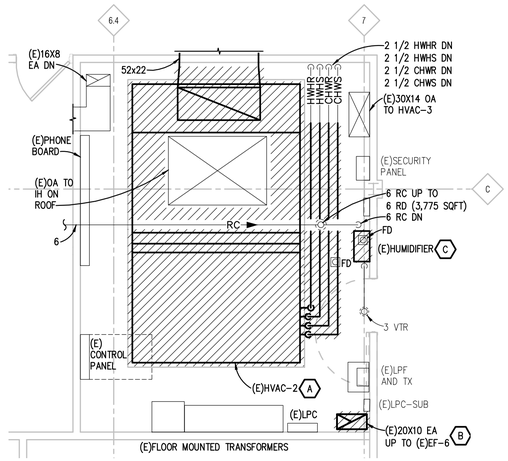
SCALE: 1/4" = 1' - 0"



3 MD2.1,MD3.1,MD4.1

FIRST FLOOR - MECHANICAL DEMOLITION ENLARGED PLAN

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



4 MD2.2,MD3.2,MD4.2

SECOND FLOOR - MECHANICAL DEMOLITION ENLARGED PLAN

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

MECHANICAL DEMOLITION GENERAL NOTES:

1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.

(#) DEMOLITION KEY NOTES:

A. REMOVE EXISTING AIR HANDLING UNIT, DUCTWORK, ELECTRICAL, TEMPERATURE CONTROLS, AND ASSOCIATED COMPONENTS COMPLETE. EXISTING HOUSEKEEPING PAD SHALL REMAIN. REFER TO SHEETS MD4.1 AND MD4.2 FOR EXTENT OF DUCTWORK DEMOLITION OUTSIDE OF THE MECHANICAL ROOM.

B. REMOVE EXISTING 20x18 DUCT UP TO ROOF. EXISTING FIRE DAMPER AT THE FLOOR SHALL REMAIN. NEW EXHAUST DUCTWORK WILL BE CONNECTED TO THE FIRE DAMPER AT THE FLOOR AS PART OF THE NEW WORK SCOPE.

C. REMOVE EXISTING HUMIDIFIER, PIPING, ELECTRICAL, TEMPERATURE CONTROLS, AND ASSOCIATED COMPONENTS COMPLETE.

D. REMOVE EXISTING AIR COOLED CONDENSING UNIT, REFRIGERANT PIPING, TEMPERATURE CONTROLS, ELECTRICAL, AND ASSOCIATED COMPONENTS COMPLETE. EXISTING HOUSEKEEPING PAD SHALL REMAIN.

E. REMOVE EXISTING CHILLER, PIPING, REFRIGERANT PIPING, TEMPERATURE CONTROLS, AND ASSOCIATED COMPONENTS COMPLETE. REMOVE EXISTING CONCRETE HOUSEKEEPING PAD.

F. REMOVE EXISTING CHILLED WATER PUMP, PIPING, TEMPERATURE CONTROLS, HOUSEKEEPING PAD AND ASSOCIATED COMPONENTS COMPLETE. CONTRACTOR SHALL REMOVE ENOUGH PIPING IN ORDER TO GET THE NEW PUMPS INSTALLED. REMOVE EXISTING CONCRETE HOUSEKEEPING PAD.

G. REMOVE EXISTING HOT WATER HEATING PUMP, PIPING, TEMPERATURE CONTROLS, AND ASSOCIATED COMPONENTS COMPLETE. CONTRACTOR SHALL REMOVE ENOUGH PIPING IN ORDER TO GET THE NEW PUMPS INSTALLED. REMOVE EXISTING CONCRETE HOUSEKEEPING PAD.

H. REMOVE EXISTING AIR SEPARATOR AND ASSOCIATED COMPONENTS COMPLETE.

I. REMOVE EXISTING AIR COMPRESSOR, PIPING, DRYER, ELECTRICAL, AND ASSOCIATED COMPONENTS COMPLETE. REMOVE EXISTING CONCRETE HOUSEKEEPING PAD.

J. REMOVE EXISTING HOT WATER HEATING PIPING, INSULATION, HANGERS, TEMPERATURE CONTROL DEVICES, AND ASSOCIATED COMPONENTS COMPLETE.

K. REMOVE EXISTING CHILLED WATER PIPING, INSULATION, HANGERS, TEMPERATURE CONTROL DEVICES, AND ASSOCIATED COMPONENTS COMPLETE.

L. REMOVE EXISTING REFRIGERANT PIPING, INSULATION, HANGERS, TEMPERATURE CONTROL DEVICES, AND ASSOCIATED COMPONENTS COMPLETE.

M. REMOVE EXISTING COMPRESSION OR EXPANSION TANK AND ASSOCIATED COMPONENTS COMPLETE.

N. EXISTING CHEMICAL SHOT FEEDER TO BE RELOCATED. REMOVE EXISTING PIPING AND ASSOCIATED COMPONENTS COMPLETE.

O. REMOVE EXISTING FLOOR DRAIN, PIPING, AND ASSOCIATED COMPONENTS COMPLETE.

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PBA Project No: 2021.0163

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

DRAWN BY
MDR

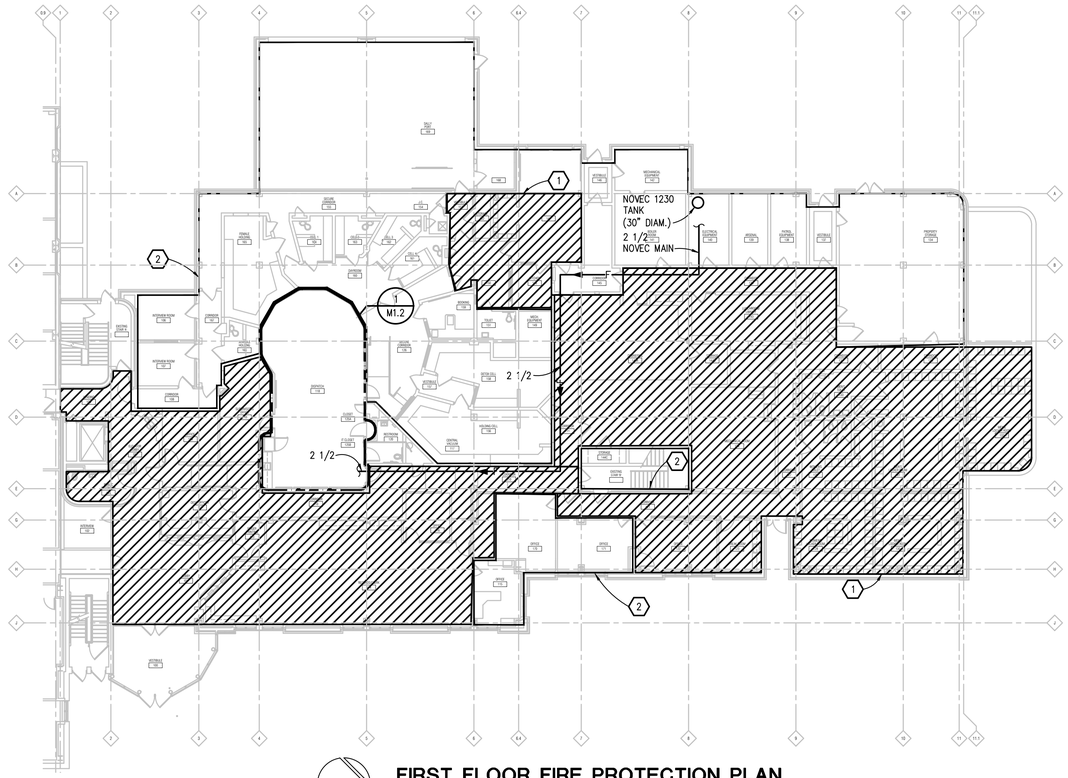
CHECKED BY
DAC

APPROVED BY
DAC

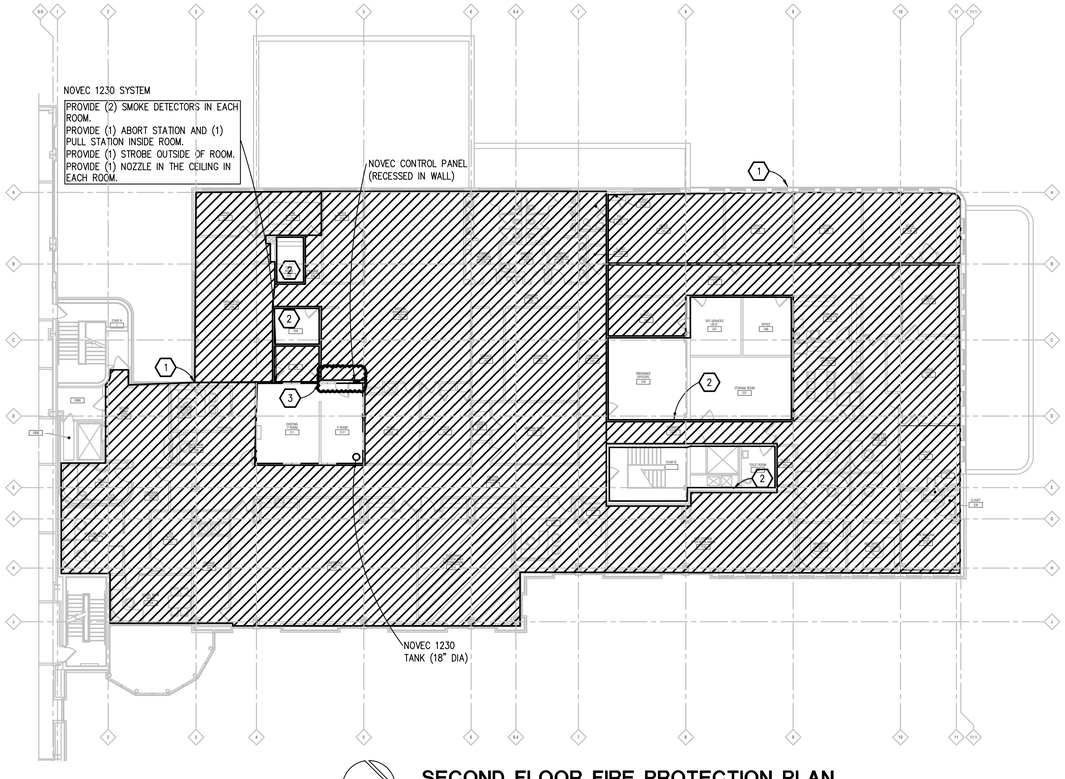
SHEET NAME
MECHANICAL DEMOLITION ENLARGED PLAN

SHEET NO.
MD5.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



FIRST FLOOR FIRE PROTECTION PLAN
SCALE: 1/16" = 1' - 0"



SECOND FLOOR FIRE PROTECTION PLAN
SCALE: 1/16" = 1' - 0"

FIRE PROTECTION GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. NO SPRINKLER PIPING SHALL BE ROUTED THROUGH ELECTRICAL EQUIPMENT ROOMS, TELECOMMUNICATION EQUIPMENT ROOMS, ELEVATOR EQUIPMENT ROOMS OR SIMILAR ROOMS. ONLY SPRINKLER PIPING SERVING SPRINKLERS HEADS IN THOSE ROOMS SHALL BE ALLOWED.
4. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
5. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".

(#) CONSTRUCTION KEY NOTES:

1. PROVIDE WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 IN AREA OUTLINED. REUSE EXISTING FIRE PROTECTION MAIN PIPING AND PROVIDE NEW BRANCH PIPING AND SPRINKLER HEADS.
2. EXISTING SPRINKLER SYSTEM IN AREA OUTLINED TO REMAIN.
3. PROVIDE NOVEC 1230 CHEMICAL AGENT FIRE SUPPRESSION SYSTEM.

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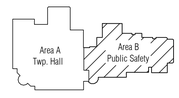
KEY PLAN



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Canton Township
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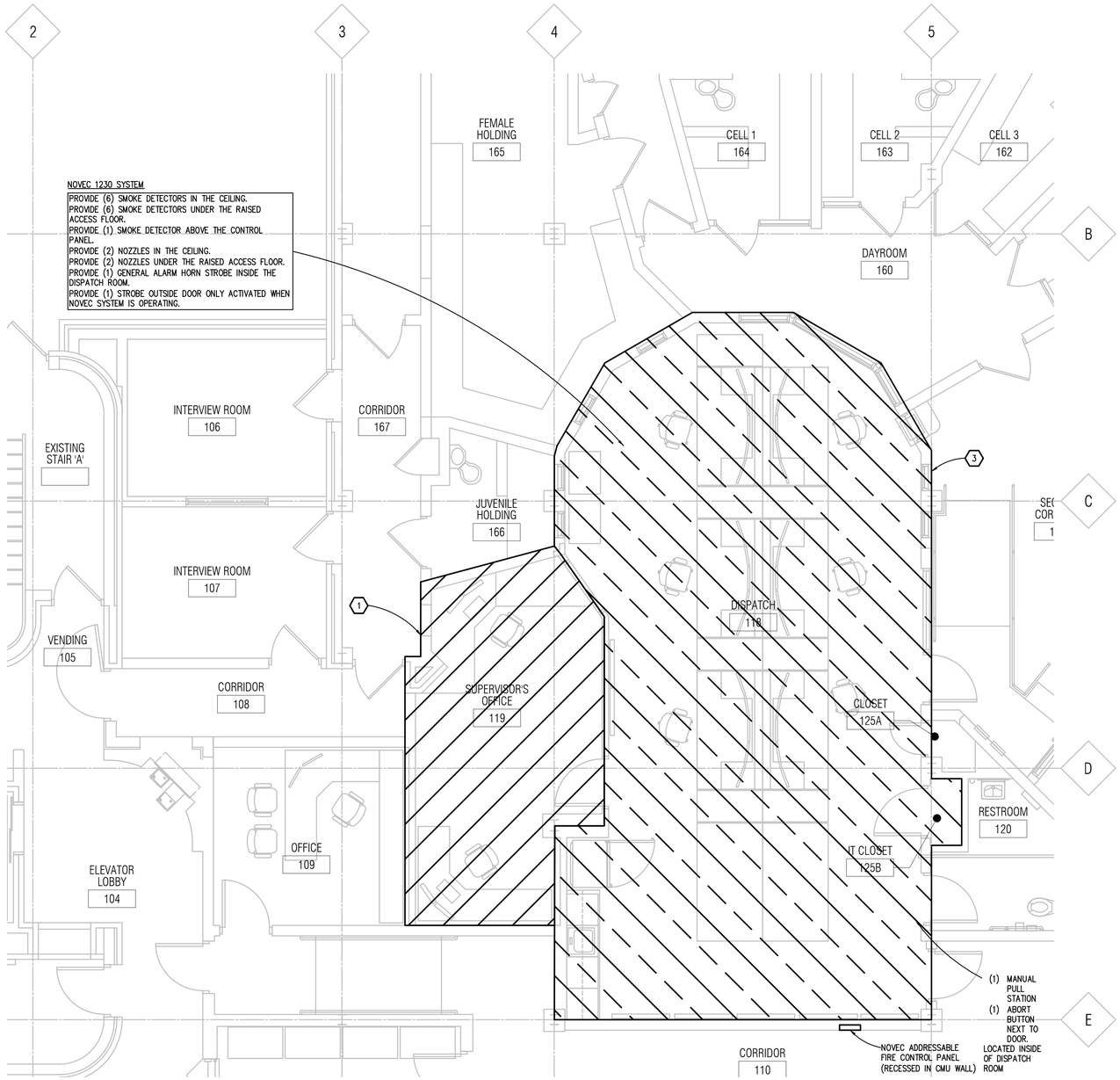
Bidding / Construction	03/09/2022
Proposal Request No.4	01/18/2023

DRAWN BY
MDR
CHECKED BY
DAC
APPROVED BY
DAC

SHEET NAME
FIRE PROTECTION PLANS

SHEET NO.
M1.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



FIRE PROTECTION ENLARGED PLAN
SCALE: 1/4" = 1' - 0"

FIRE PROTECTION GENERAL NOTES:

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5. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".

(#) CONSTRUCTION KEY NOTES:

1. PROVIDE WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 IN AREA OUTLINED. REUSE EXISTING FIRE PROTECTION MAIN PIPING AND PROVIDE NEW BRANCH PIPING AND SPRINKLER HEADS.
2. EXISTING SPRINKLER SYSTEM IN AREA OUTLINED TO REMAIN.
3. PROVIDE NOVEC 1230 CHEMICAL AGENT FIRE SUPPRESSION SYSTEM.

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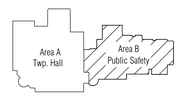

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MDR

CHECKED BY
DAC

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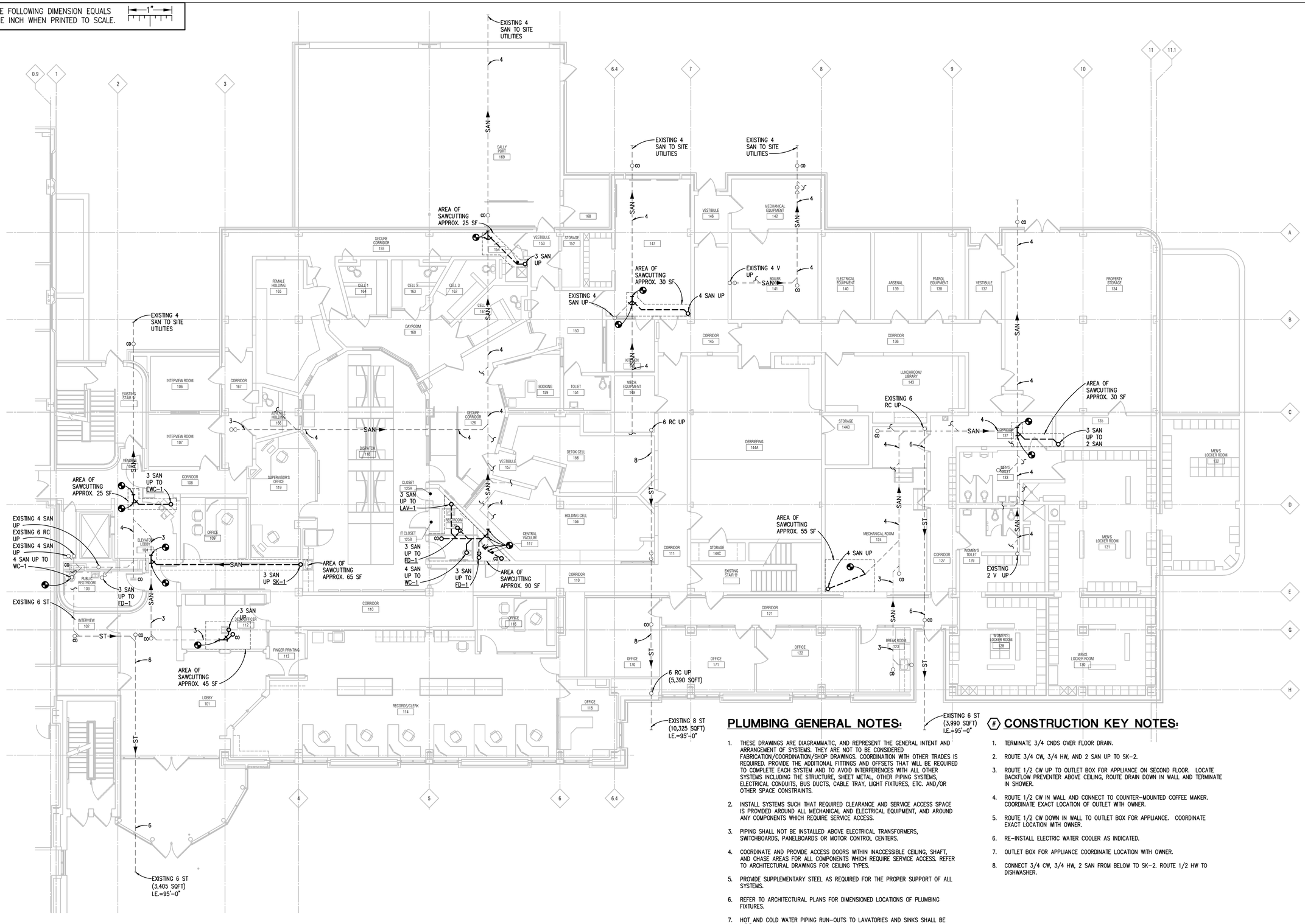
DAC

SHEET NAME
FIRE PROTECTION ENLARGED PLAN

SHEET NO.
M1.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



UNDERGROUND PLUMBING PLAN

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

PLUMBING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.
7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
8. PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
9. PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
10. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

CONSTRUCTION KEY NOTES:

1. TERMINATE 3/4 CNDS OVER FLOOR DRAIN.
2. ROUTE 3/4 CW, 3/4 HW, AND 2 SAN UP TO SK-2.
3. ROUTE 1/2 CW UP TO OUTLET BOX FOR APPLIANCE ON SECOND FLOOR. LOCATE BACKFLOW PREVENTER ABOVE CEILING, ROUTE DRAIN DOWN IN WALL AND TERMINATE IN SHOWER.
4. ROUTE 1/2 CW IN WALL AND CONNECT TO COUNTER-MOUNTED COFFEE MAKER. COORDINATE EXACT LOCATION OF OUTLET WITH OWNER.
5. ROUTE 1/2 CW DOWN IN WALL TO OUTLET BOX FOR APPLIANCE. COORDINATE EXACT LOCATION WITH OWNER.
6. RE-INSTALL ELECTRIC WATER COOLER AS INDICATED.
7. OUTLET BOX FOR APPLIANCE COORDINATE LOCATION WITH OWNER.
8. CONNECT 3/4 CW, 3/4 HW, 2 SAN FROM BELOW TO SK-2. ROUTE 1/2 HW TO DISHWASHER.

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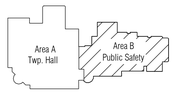

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DRAWN BY
MDR

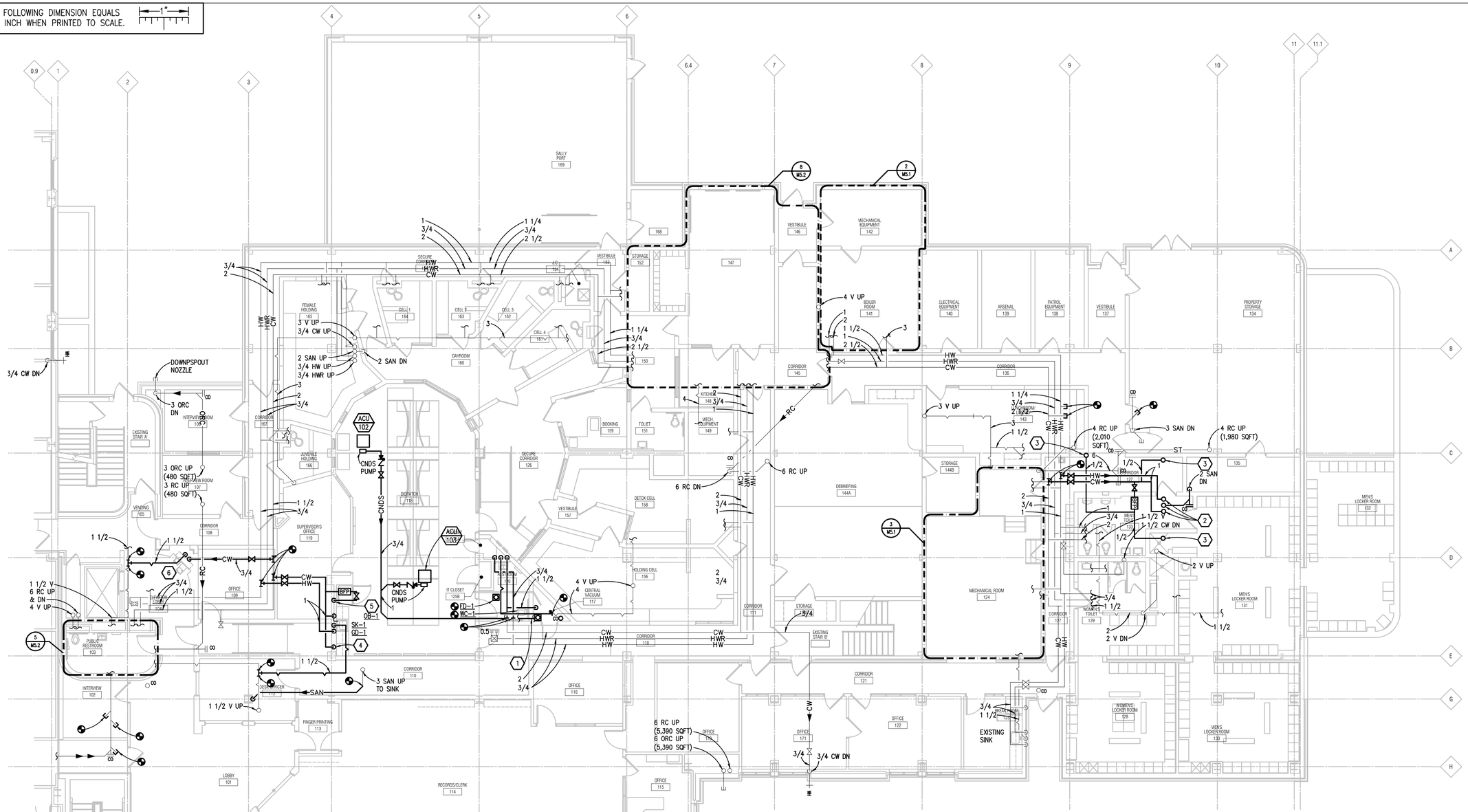
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
UNDERGROUND PLUMBING PLAN

SHEET NO.
M2.0

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



FIRST FLOOR PLUMBING PLAN

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

PLUMBING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
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4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.
7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
8. PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
9. PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
10. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

(#) CONSTRUCTION KEY NOTES:

1. TERMINATE 3/4 CNDS OVER FLOOR DRAIN.
2. ROUTE 3/4 CW, 3/4 HW, AND 2 SAN UP TO SK-2.
3. ROUTE 1/2 CW UP TO OUTLET BOX FOR APPLIANCE ON SECOND FLOOR. LOCATE BACKFLOW PREVENTER ABOVE CEILING, ROUTE DRAIN DOWN IN WALL AND TERMINATE IN SHOWER.
4. ROUTE 1/2 CW IN WALL AND CONNECT TO COUNTER-MOUNTED COFFEE MAKER. COORDINATE EXACT LOCATION OF OUTLET WITH OWNER.
5. ROUTE 1/2 CW DOWN IN WALL TO OUTLET BOX FOR APPLIANCE. COORDINATE EXACT LOCATION WITH OWNER.
6. RE-INSTALL ELECTRIC WATER COOLER AS INDICATED.
7. OUTLET BOX FOR APPLIANCE COORDINATE LOCATION WITH OWNER.
8. CONNECT 3/4 CW, 3/4 HW, 2 SAN FROM BELOW TO SK-2. ROUTE 1/2 HW TO DISHWASHER.

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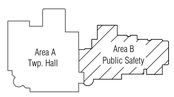
PBA Project No: 2021.0163

KEY PLAN



OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
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Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

DRAWN BY
MDR

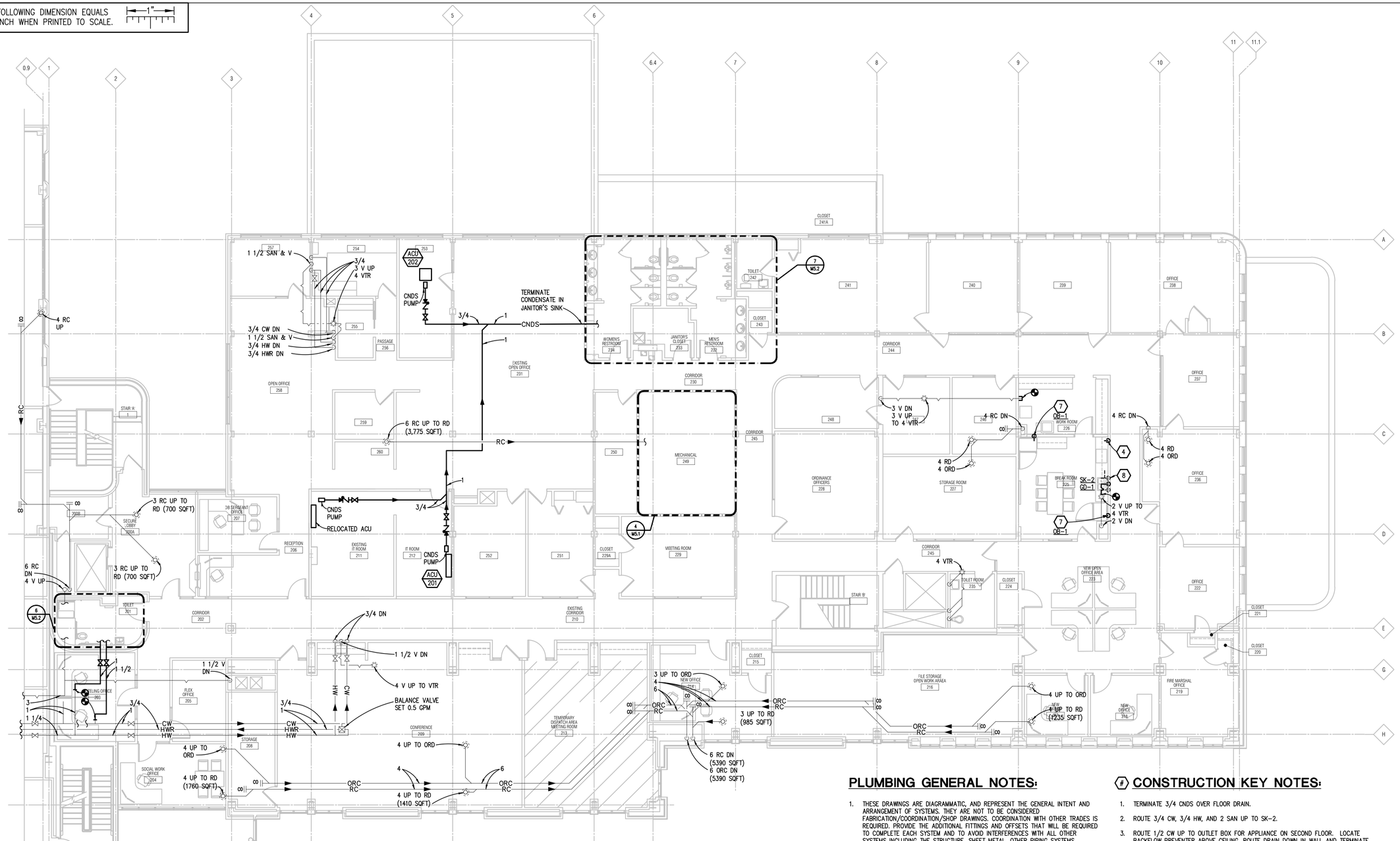
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
FIRST FLOOR PLUMBING PLAN

SHEET NO.
M2.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



SECOND FLOOR PLUMBING PLAN

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

PLUMBING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.
7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
8. PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
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5. ROUTE 1/2 CW DOWN IN WALL TO OUTLET BOX FOR APPLIANCE. COORDINATE EXACT LOCATION WITH OWNER.
6. RE-INSTALL ELECTRIC WATER COOLER AS INDICATED.
7. OUTLET BOX FOR APPLIANCE COORDINATE LOCATION WITH OWNER.
8. CONNECT 3/4 CW, 3/4 HW, 2 SAN FROM BELOW TO SK-2. ROUTE 1/2 HW TO DISHWASHER.

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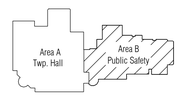
KEY PLAN



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Public Safety

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Bidding / Construction	03/09/2022

DRAWN BY
MDR

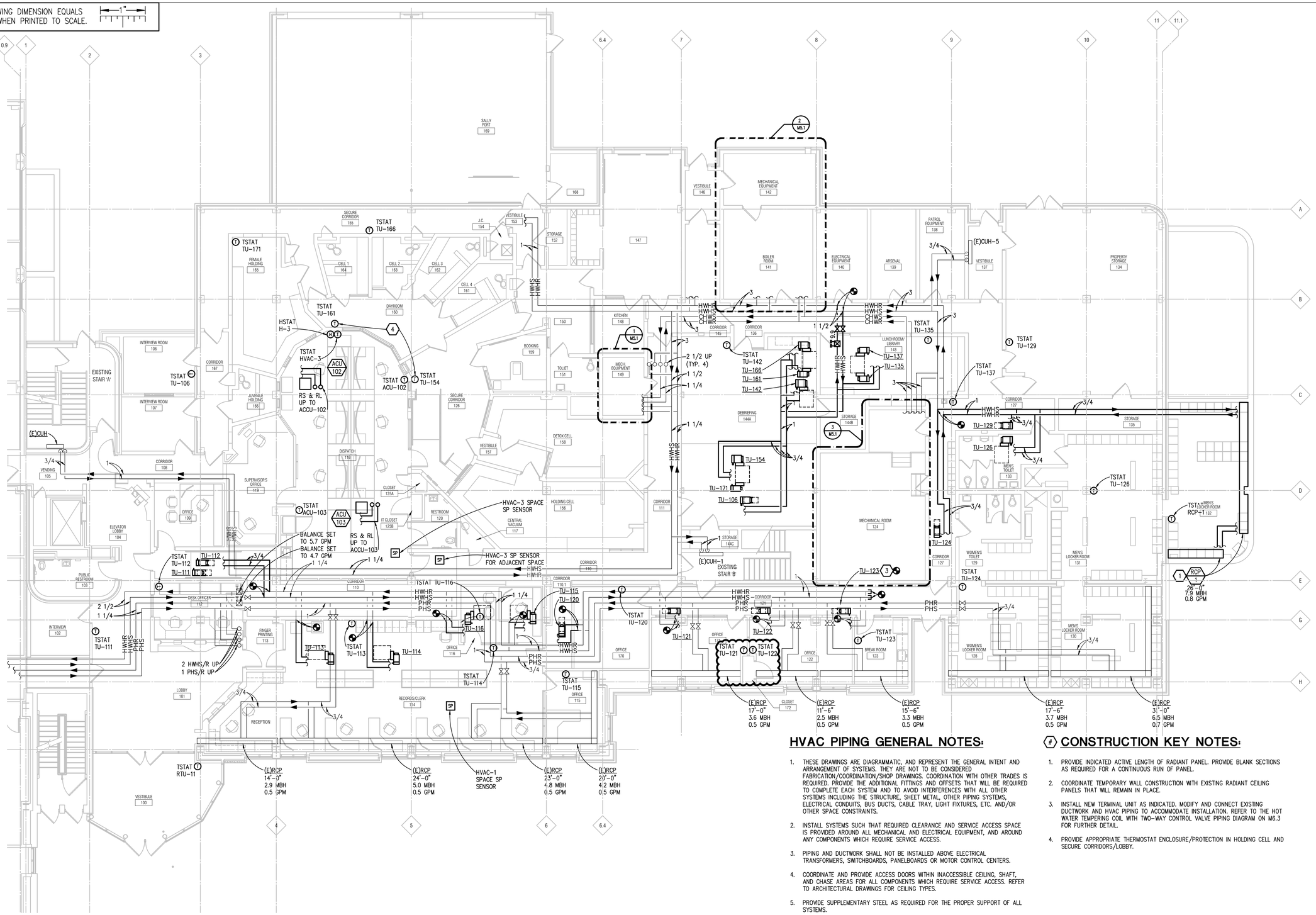
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
SECOND FLOOR PLUMBING PLAN

SHEET NO.
M2.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



FIRST FLOOR HVAC PIPING PLAN

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

HVAC PIPING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
7. COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
8. BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.
9. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

(#) CONSTRUCTION KEY NOTES:

1. PROVIDE INDICATED ACTIVE LENGTH OF RADIANT PANEL. PROVIDE BLANK SECTIONS AS REQUIRED FOR A CONTINUOUS RUN OF PANEL.
2. COORDINATE TEMPORARY WALL CONSTRUCTION WITH EXISTING RADIANT CEILING PANELS THAT WILL REMAIN IN PLACE.
3. INSTALL NEW TERMINAL UNIT AS INDICATED. MODIFY AND CONNECT EXISTING DUCTWORK AND HVAC PIPING TO ACCOMMODATE INSTALLATION. REFER TO THE HOT WATER TEMPERING COIL WITH TWO-WAY CONTROL VALVE PIPING DIAGRAM ON M6.3 FOR FURTHER DETAIL.
4. PROVIDE APPROPRIATE THERMOSTAT ENCLOSURE/PROTECTION IN HOLDING CELL AND SECURE CORRIDORS/LOBBY.

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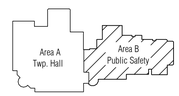

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Canton Township
Public Safety

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Bidding / Construction	03/09/2022
Proposal Request No.1	06/10/2022

DRAWN BY
MDR

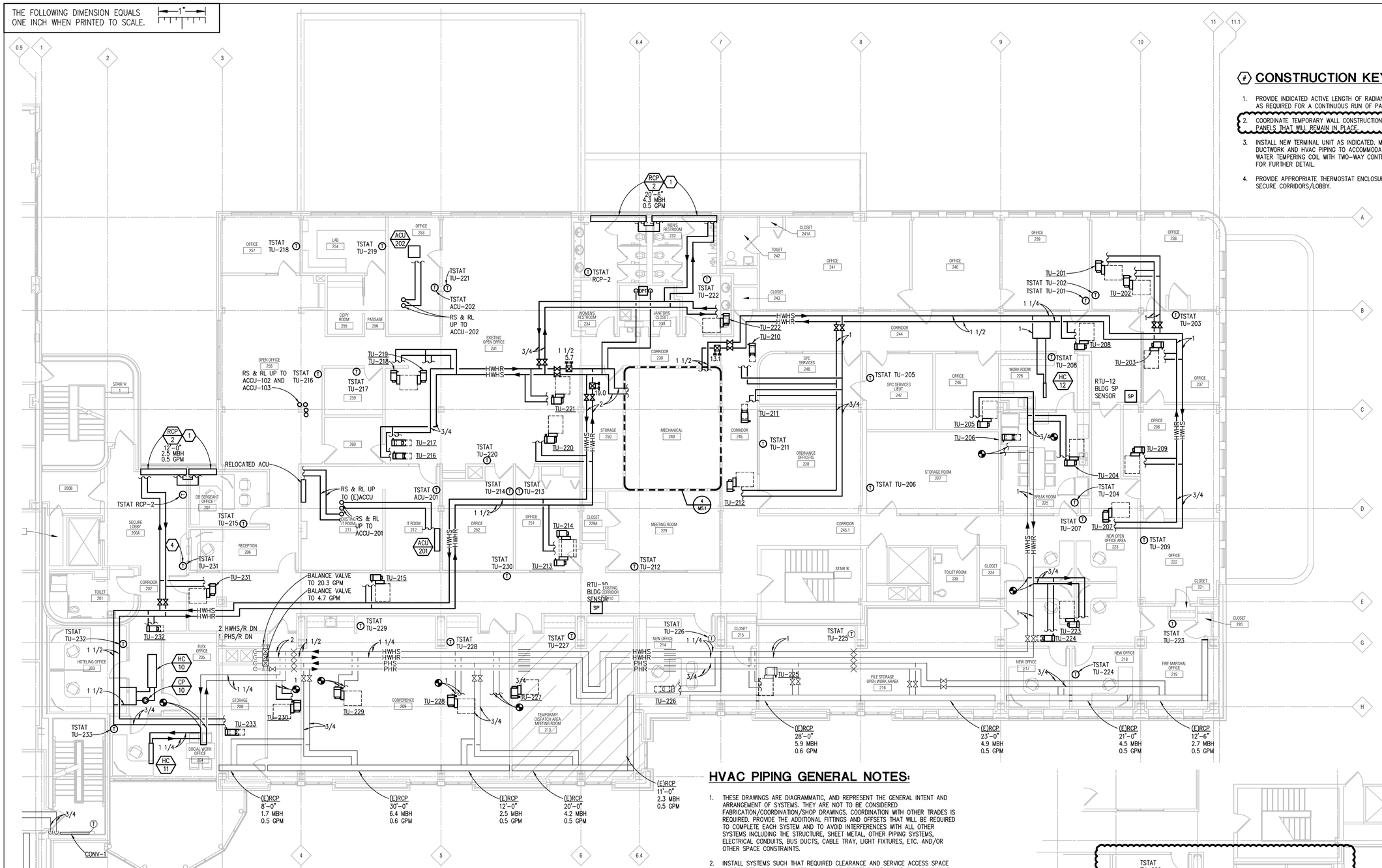
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
FIRST FLOOR HVAC PIPING PLAN

SHEET NO.
M3.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



CONSTRUCTION KEY NOTES:

1. PROVIDE INDICATED ACTIVE LENGTH OF RADIANT PANEL. PROVIDE BLANK SECTIONS AS REQUIRED FOR A CONTINUOUS RUN OF PANEL.
2. COORDINATE TEMPORARY WALL CONSTRUCTION WITH EXISTING RADIANT CEILING PANELS THAT WILL REMAIN IN PLACE.
3. INSTALL NEW TERMINAL UNIT AS INDICATED. MODIFY AND CONNECT EXISTING DUCTWORK AND HVAC PIPING TO ACCOMMODATE INSTALLATION. REFER TO THE HOT WATER TEMPERING COIL WITH TWO-WAY CONTROL VALVE PIPING DIAGRAM ON M6.3 FOR FURTHER DETAIL.
4. PROVIDE APPROPRIATE THERMOSTAT ENCLOSURE/PROTECTION IN HOLDING CELL AND SECURE CORRIDORS/LOBBY.

SECOND FLOOR HVAC PIPING PLAN

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

HVAC PIPING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
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3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
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5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
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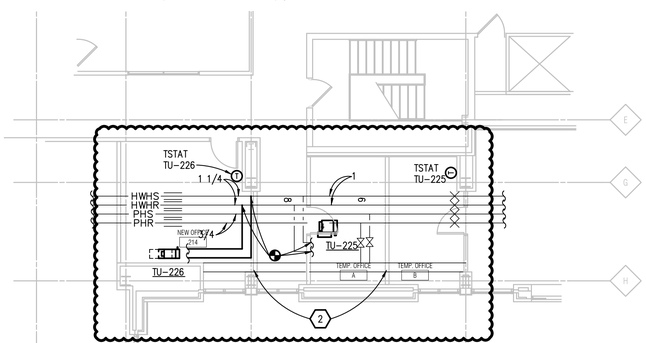
8. BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWSE NOTED.
9. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.



PARTIAL SECOND FLOOR HVAC PIPING PLAN

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

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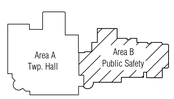
KEY PLAN



OWNER

Canton Township
Public Safety

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95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022
Proposal Request No.1	06/10/2022

DRAWN BY
MDR

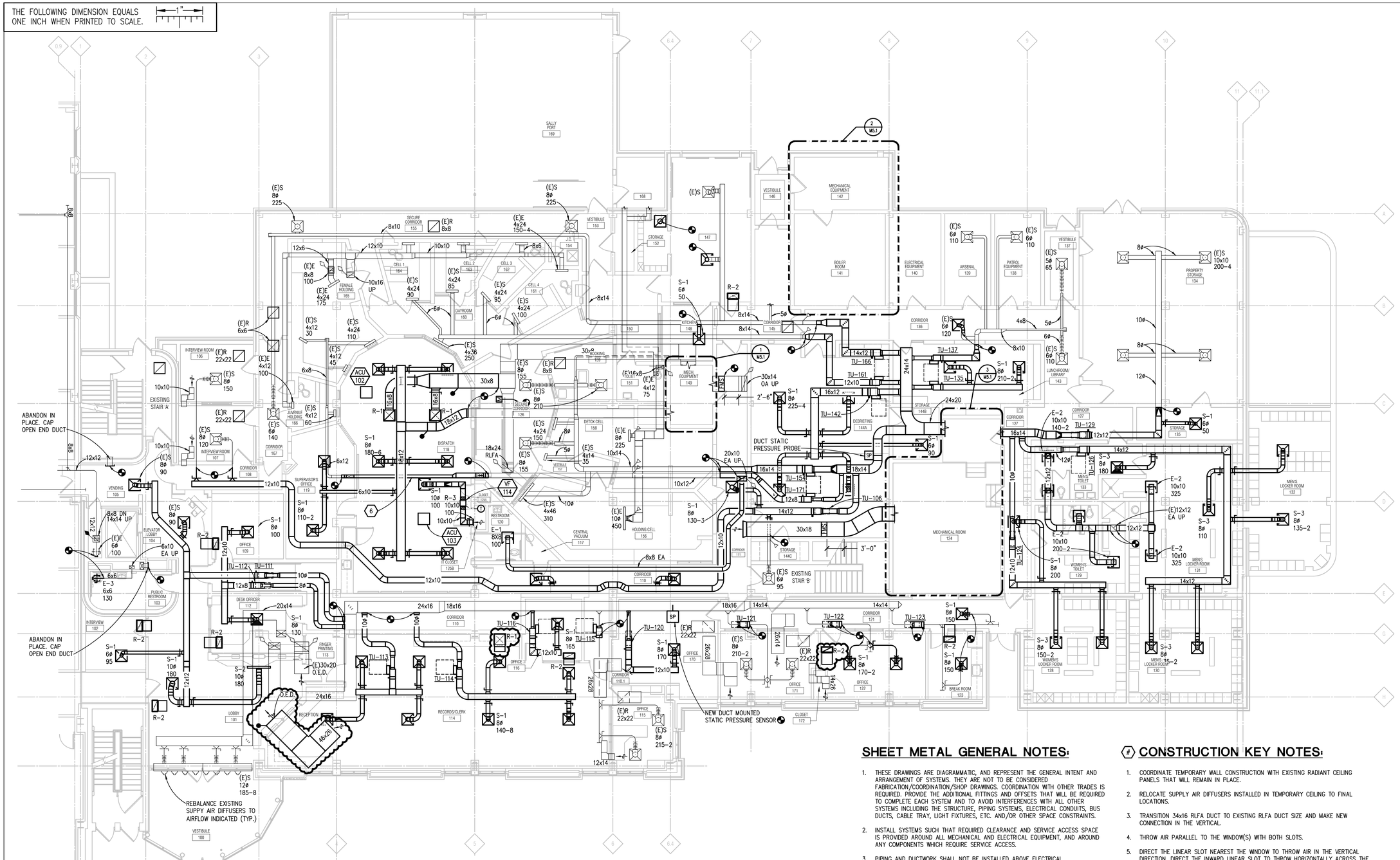
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
SECOND FLOOR HVAC PIPING PLAN

SHEET NO.
M3.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



FIRST FLOOR SHEET METAL PLAN

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

SHEET METAL GENERAL NOTES:

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5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONED LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
7. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

(#) CONSTRUCTION KEY NOTES:

1. COORDINATE TEMPORARY WALL CONSTRUCTION WITH EXISTING RADIANT CEILING PANELS THAT WILL REMAIN IN PLACE.
2. RELOCATE SUPPLY AIR DIFFUSERS INSTALLED IN TEMPORARY CEILING TO FINAL LOCATIONS.
3. TRANSITION 34x16 RLFA DUCT TO EXISTING RLFA DUCT SIZE AND MAKE NEW CONNECTION IN THE VERTICAL.
4. THROW AIR PARALLEL TO THE WINDOW(S) WITH BOTH SLOTS.
5. DIRECT THE LINEAR SLOT NEAREST THE WINDOW TO THROW AIR IN THE VERTICAL DIRECTION. DIRECT THE INWARD LINEAR SLOT TO THROW HORIZONTALLY ACROSS THE ROOM.
6. ROUTE DUCTWORK TIGHT TO STRUCTURE.

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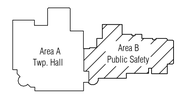

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Proposal Request No.2	08/26/2022
Proposal Request No.4	01/18/2023

DRAWN BY
MDR

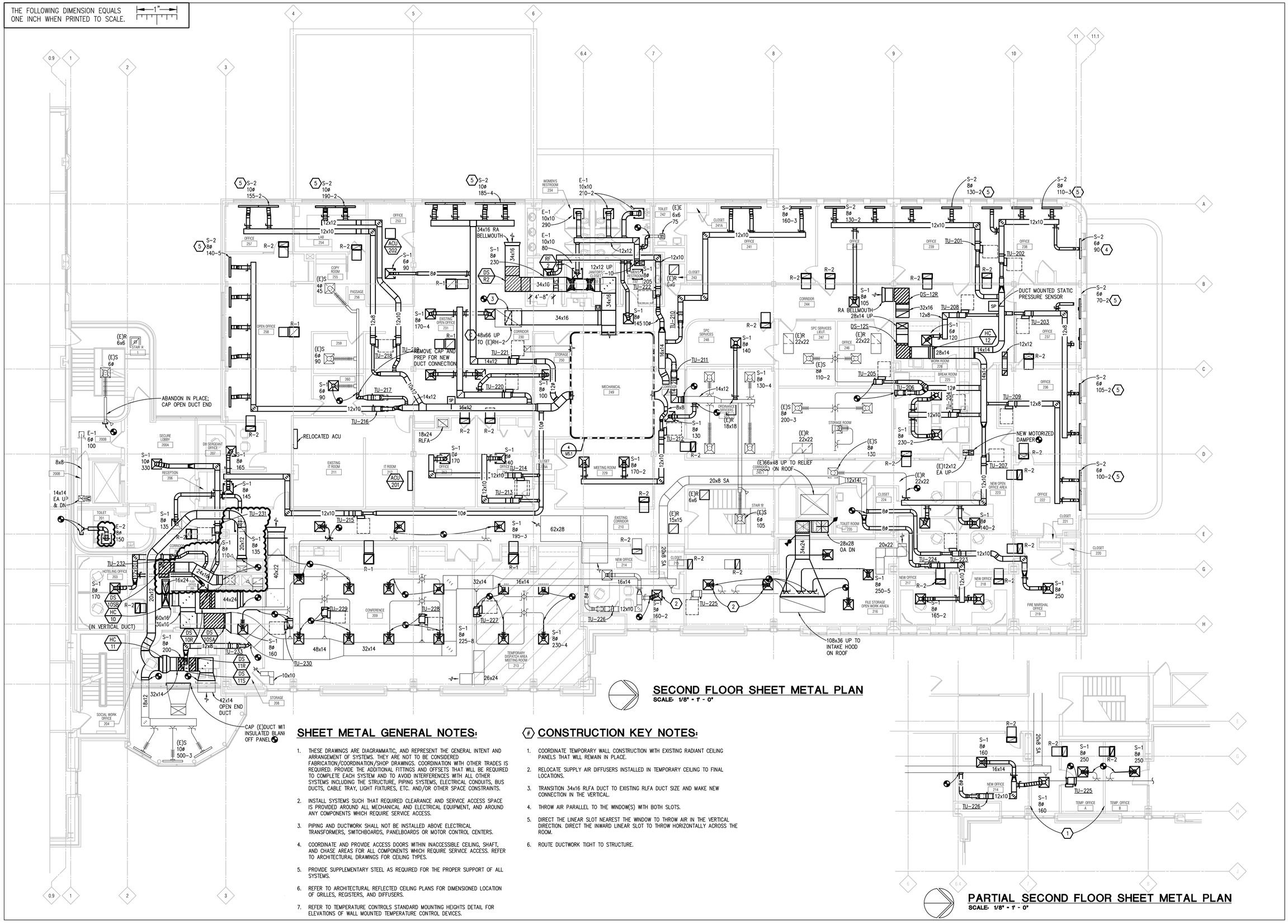
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
FIRST FLOOR SHEET METAL PLAN

SHEET NO.
M4.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



SECOND FLOOR SHEET METAL PLAN

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

PARTIAL SECOND FLOOR SHEET METAL PLAN

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

SHEET METAL GENERAL NOTES:

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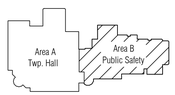

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Proposal Request No.2	08/26/2022

DRAWN BY
MDR

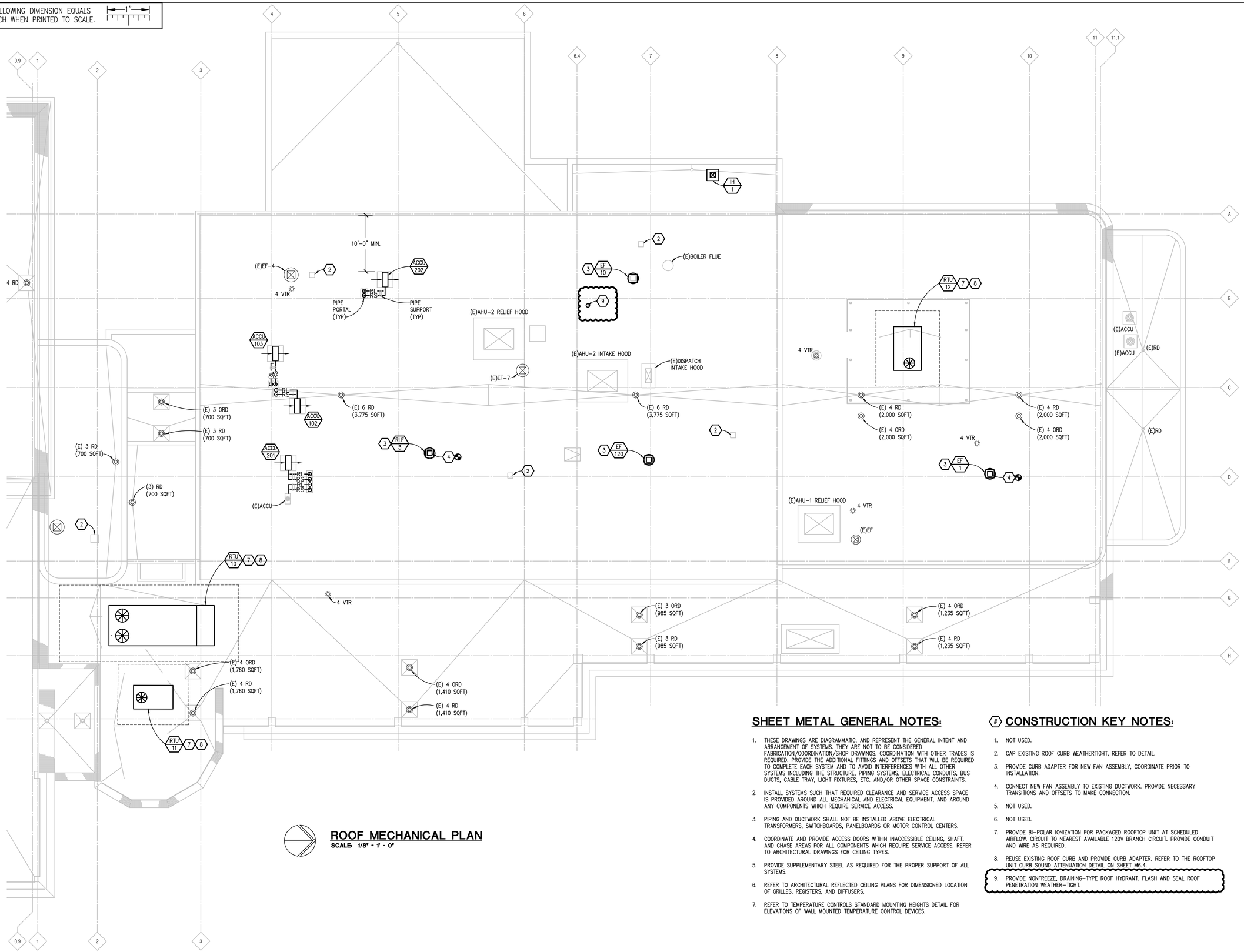
CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
SECOND FLOOR SHEET METAL PLAN

SHEET NO.
M4.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



ROOF MECHANICAL PLAN

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

SHEET METAL GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
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3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
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5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONED LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
7. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

CONSTRUCTION KEY NOTES:

1. NOT USED.
2. CAP EXISTING ROOF CURB WEATHERTIGHT, REFER TO DETAIL.
3. PROVIDE CURB ADAPTER FOR NEW FAN ASSEMBLY, COORDINATE PRIOR TO INSTALLATION.
4. CONNECT NEW FAN ASSEMBLY TO EXISTING DUCTWORK. PROVIDE NECESSARY TRANSITIONS AND OFFSETS TO MAKE CONNECTION.
5. NOT USED.
6. NOT USED.
7. PROVIDE BI-POLAR IONIZATION FOR PACKAGED ROOFTOP UNIT AT SCHEDULED AIRFLOW. CIRCUIT TO NEAREST AVAILABLE 120V BRANCH CIRCUIT. PROVIDE CONDUIT AND WIRE AS REQUIRED.
8. REUSE EXISTING ROOF CURB AND PROVIDE CURB ADAPTER. REFER TO THE ROOFTOP UNIT CURB SOUND ATTENUATION DETAIL ON SHEET M6.4.
9. PROVIDE NONFREEZE, DRAINING-TYPE ROOF HYDRANT. FLASH AND SEAL ROOF PENETRATION WEATHER-TIGHT.

PARTNERS

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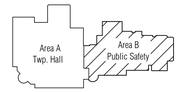

OWNER
Canton Township
Public Safety

PROJECT NAME
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Interior Renovations

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SHEET NAME
ROOF MECHANICAL PLAN

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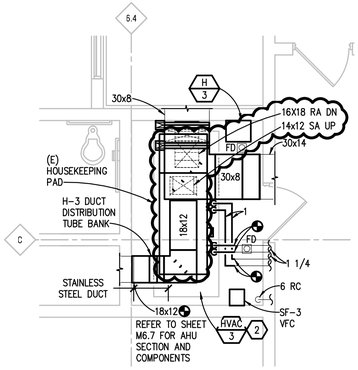
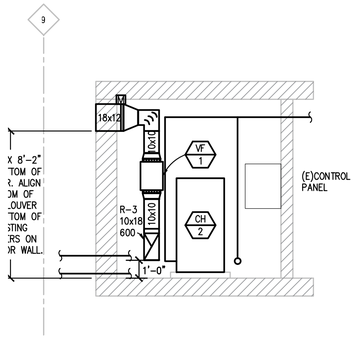


1 / M3.1,M4.1

FIRST FLOOR - MECHANICAL ENLARGED PLAN

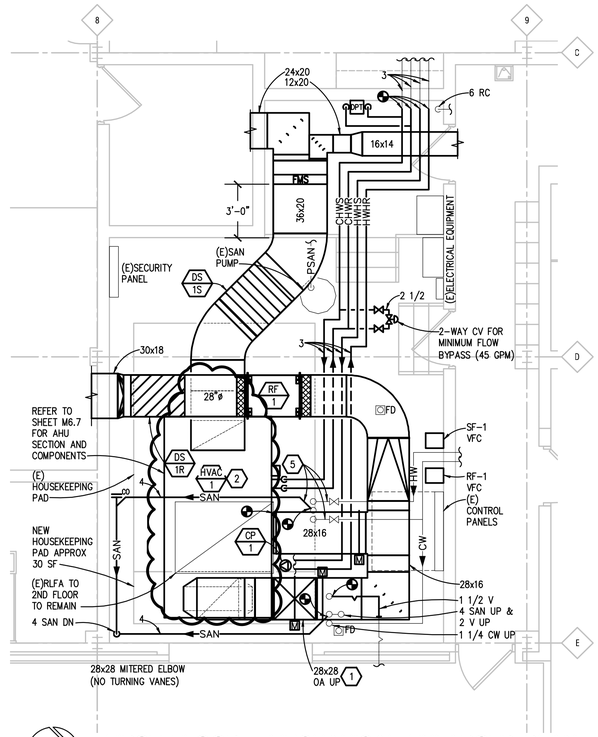
SCALE: 1/4" = 1' - 0"



1 / M5.1

MECHANICAL SECTION 1

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



3 / M2.1,M3.1,M4.1

FIRST FLOOR - MECHANICAL ENLARGED PLAN

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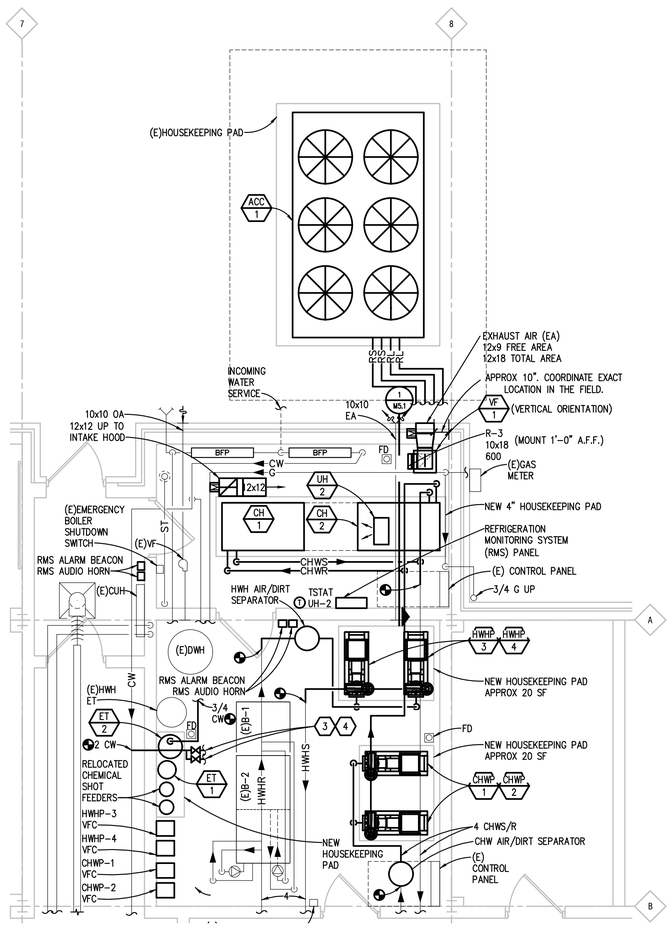

2 / M2.1,M3.1,M4.1

FIRST FLOOR - MECHANICAL ENLARGED PLAN

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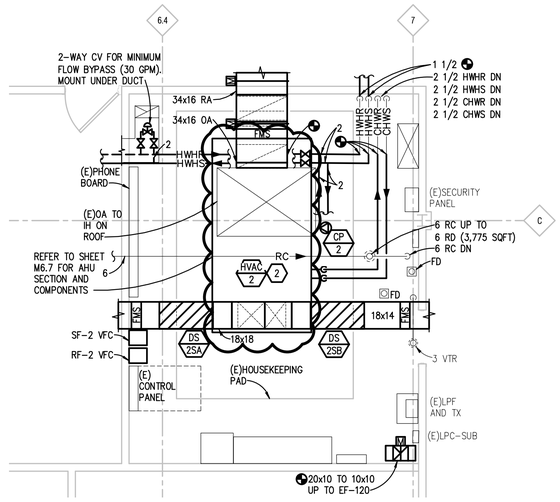

4 / M3.2,M4.2

SECOND FLOOR - MECHANICAL ENLARGED PLAN

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PLUMBING GENERAL NOTES:

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7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
8. PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
9. PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
10. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

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SHEET NO.
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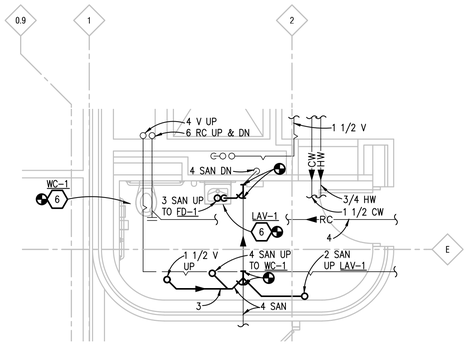

5 / M2.1

FIRST FLOOR - PLUMBING ENLARGED PLAN

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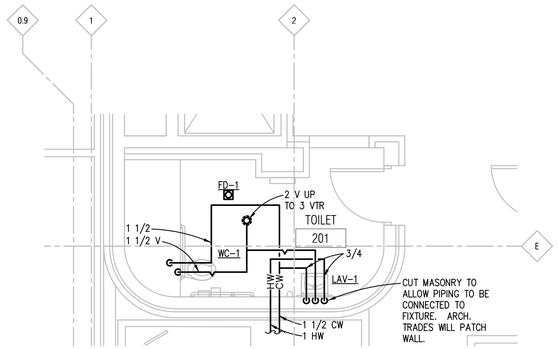

5 / M2.2

SECOND FLOOR - PLUMBING ENLARGED PLAN

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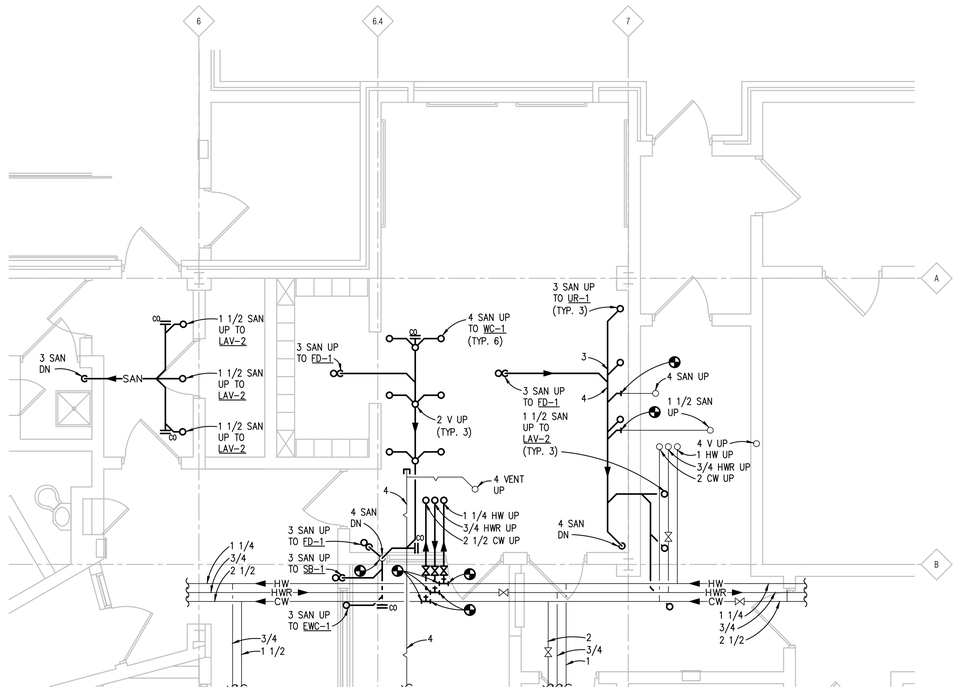

8 / M2.1

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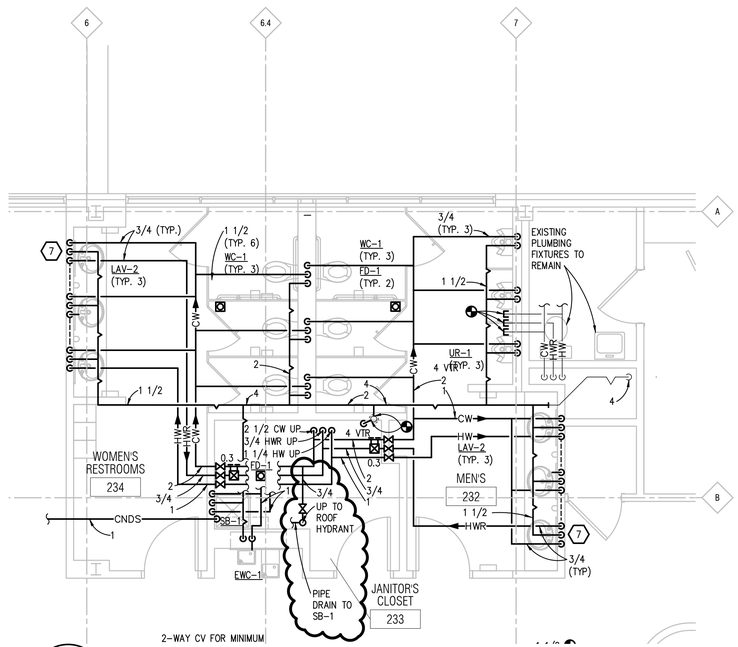

7 / M2.2

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DRAWN BY

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CHECKED BY

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APPROVED BY

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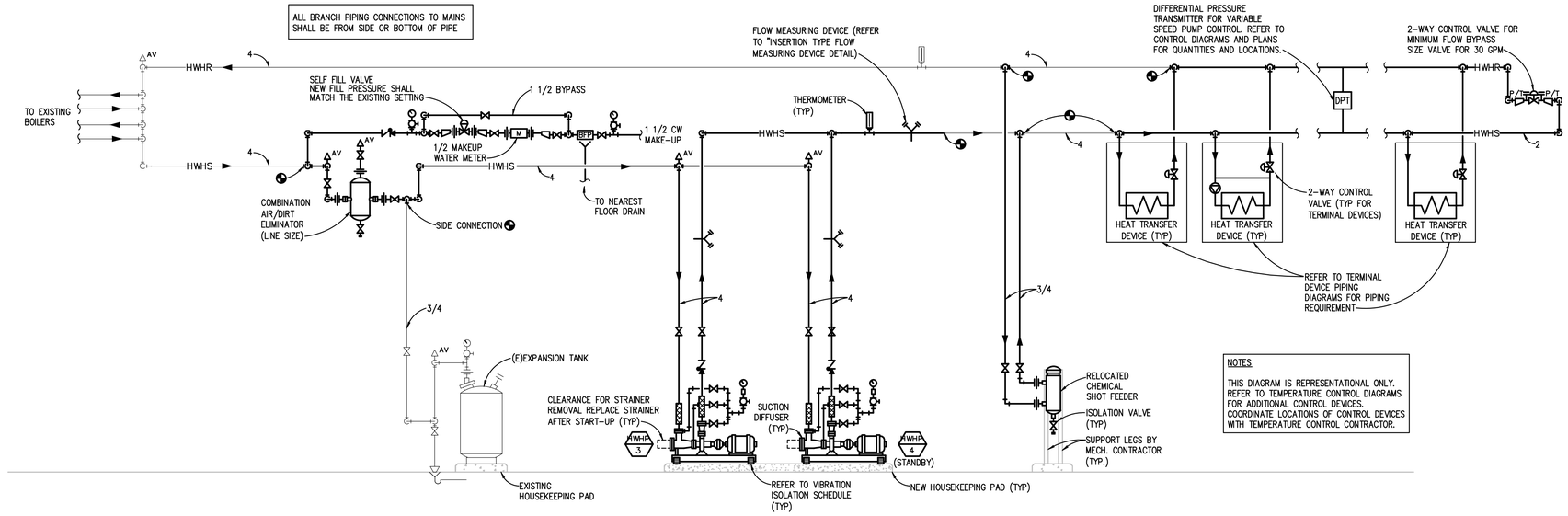
SHEET NAME

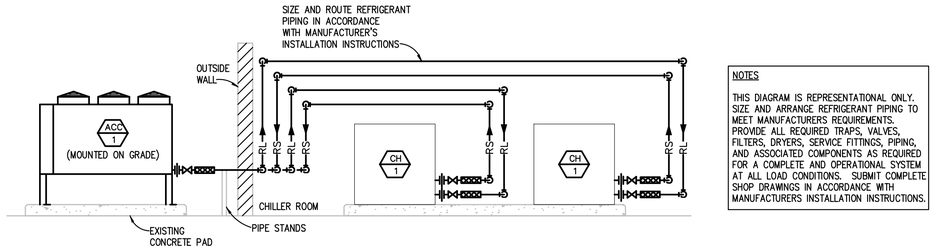
PLUMBING ENLARGED PLAN

SHEET NO.

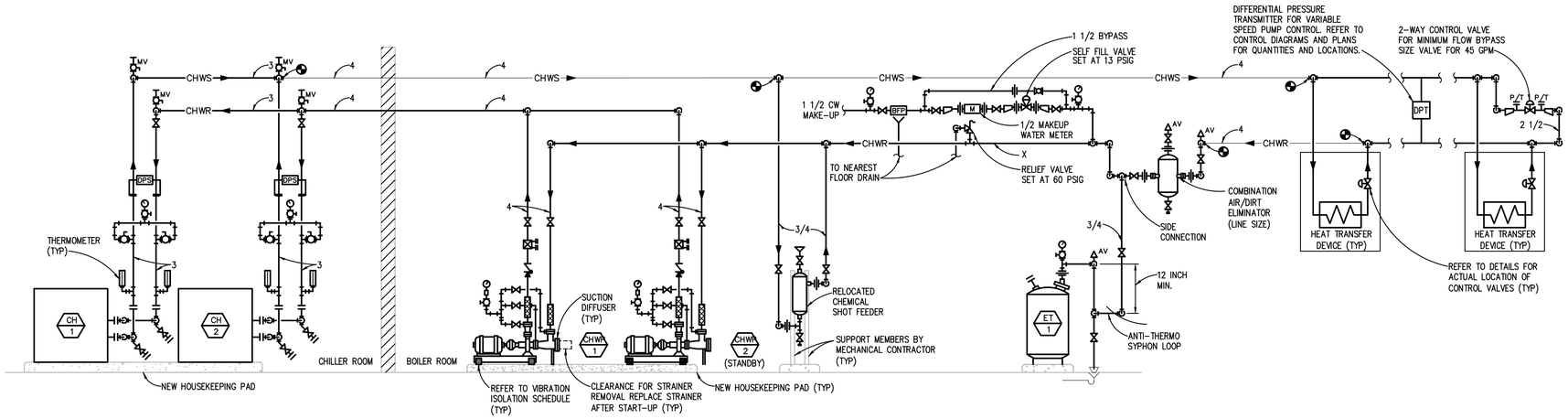
M5.2



HOT WATER HEATING SYSTEM PIPING DIAGRAM
NO SCALE



ACC-1 REFRIGERANT PIPING DIAGRAM
NO SCALE



CHILLED WATER SYSTEM PIPING DIAGRAM
NO SCALE

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KEY PLAN

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Canton Township Public Safety

PROJECT NAME
Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

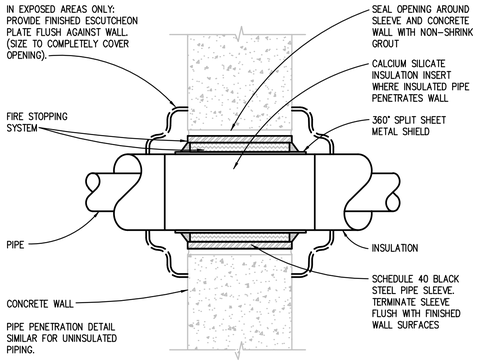
DRAWN BY
MDR

CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
PIPING DIAGRAMS

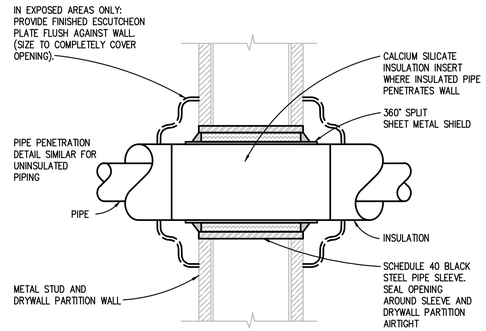
SHEET NO.
M6.1



DETAIL INDICATES THE INSTALLATION REQUIREMENTS FOR A FIRE RATED ASSEMBLY. FOR A NON-FIRE RATED ASSEMBLY PACK SLEEVED OPENING WITH INSULATION MATERIAL AND CAULK WITH NON-HARDENING SEALANT.

FIRE RATED AND NON-FIRE RATED POURED CONCRETE OR BLOCK WALL PIPE PENETRATION DETAIL

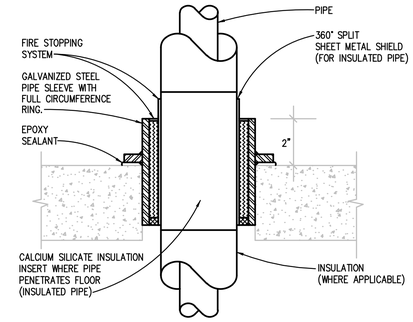
NO SCALE



DETAIL INDICATES THE INSTALLATION REQUIREMENTS FOR A FIRE RATED ASSEMBLY. FOR A NON-FIRE RATED ASSEMBLY PACK SLEEVED OPENING WITH INSULATION MATERIAL AND CAULK WITH NON-HARDENING SEALANT.

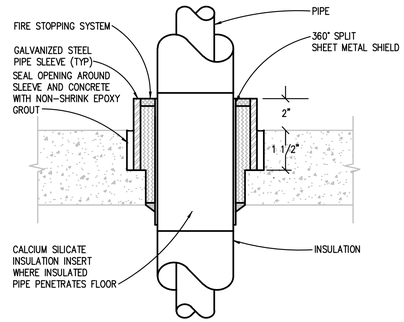
FIRE RATED AND NON-FIRE RATED METAL STUD AND DRYWALL PARTITION WALL PIPE PENETRATION DETAIL

NO SCALE



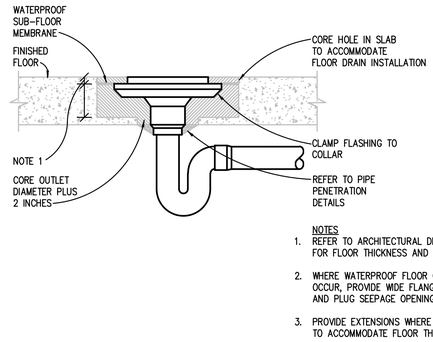
EXISTING FLOOR PIPE PENETRATION DETAIL

NO SCALE



EXISTING FLOOR PIPE PENETRATION DETAIL

NO SCALE

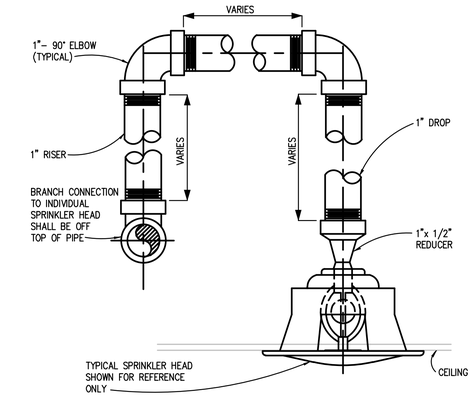


NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR FLOOR THICKNESS AND FINISHES.
2. WHERE WATERPROOF FLOOR COVERINGS OCCUR, PROVIDE WIDE FLANGE STRAINER AND PLUG SEEPAGE OPENINGS.
3. PROVIDE EXTENSIONS WHERE REQUIRED TO ACCOMMODATE FLOOR THICKNESS.

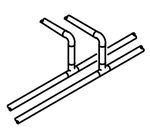
FLOOR DRAIN DETAIL (EXISTING FLOORS)

NO SCALE



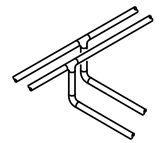
TYPICAL SPRINKLER PIPING DETAIL

NO SCALE



BRANCH CONNECTION OFF TOP

APPLIES TO THE FOLLOWING SYSTEMS:
DOMESTIC WATER



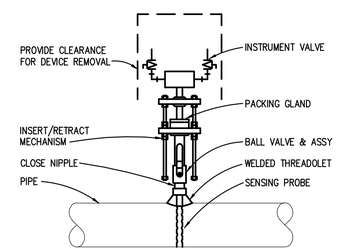
BRANCH CONNECTION OFF BOTTOM

APPLIES TO THE FOLLOWING SYSTEMS:
HOT WATER HEATING
CHILLED WATER

NOTE: BOTTOM AS INDICATED OR SIDE CONNECTION IS ACCEPTABLE. CONNECTION ABOVE CENTERLINE OF MAINS IS NOT ACCEPTABLE.

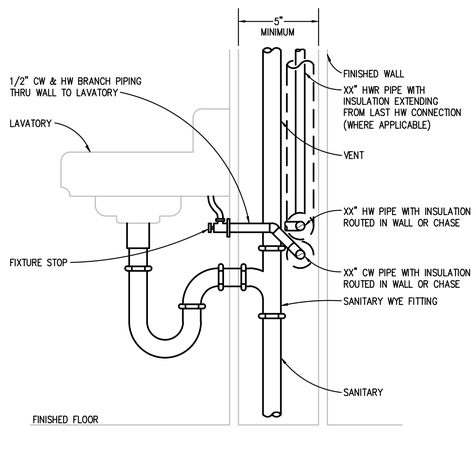
TYPICAL BRANCH TAKE-OFF CONNECTION PIPING DETAIL

NO SCALE



INSERTION TYPE FLOW MEASURING DEVICE DETAIL

NO SCALE



TYPICAL LAVATORY DETAIL

NO SCALE

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PBA Project No. 2021.0163

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CHECKED BY
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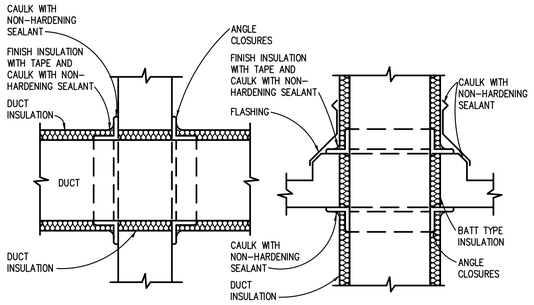
APPROVED BY
DAC

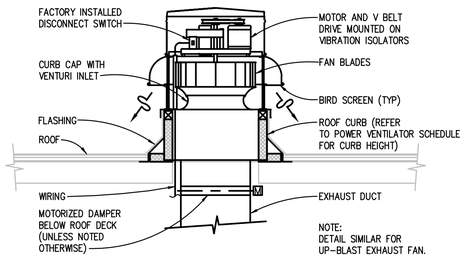
SHEET NAME
MECHANICAL DETAILS

SHEET NO.
M6.2



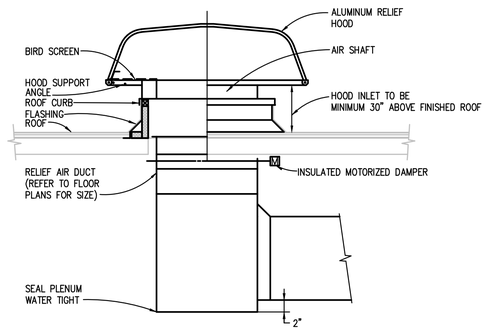
VERTICAL OR HORIZONTAL (NON FIRE RATED ASSEMBLY) DUCT PENETRATION DETAIL

NO SCALE



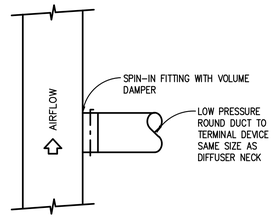
ROOF MOUNTED POWER VENTILATOR EXHAUST FAN DETAIL

NO SCALE

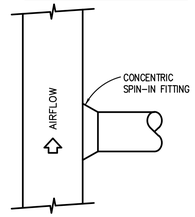


DUCTED INTAKE OR RELIEF HOOD INSTALLATION DETAIL

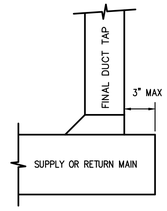
NO SCALE



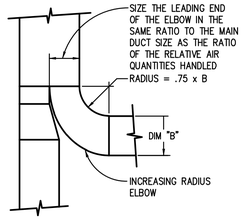
LOW PRESSURE INLET/OUTLET TO/FROM DIFFUSER, REGISTER OR GRILLE



RECTANGULAR TO ROUND DUCT

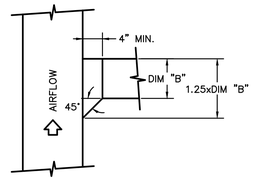


LOW PRESSURE END OF RUN

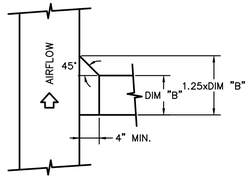


SUPPLY, RETURN OR EXHAUST DUCT

FOR USE WHEN A BRANCH TAKE-OFF IS TO HANDLE MORE THAN 25% OF THE AIR HANDLED BY THE MAIN DUCT



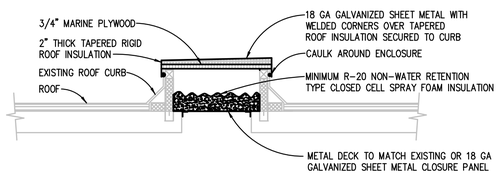
SUPPLY DUCT



RETURN OR EXHAUST DUCT

RECTANGULAR DUCT BRANCH TAKE-OFF DETAILS

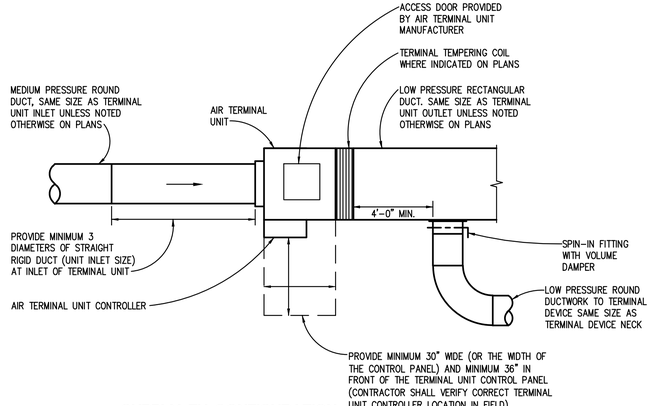
NO SCALE



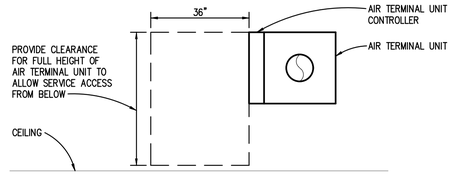
NOTE:
1. FASTEN TOP CLOSURE, WITH SCREWS THROUGH SIDE.
2. NOT TO BE USED FOR CURBS GREATER THAN 24" IN ANY DIMENSION

SMALL ROOF CURB CAP DETAIL

NO SCALE



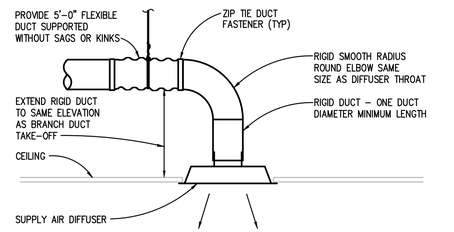
SUPPLY TU CONFIGURATION

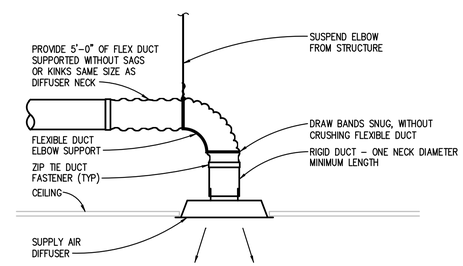


TERMINAL UNIT SECTION

AIR TERMINAL UNIT (TU) DETAIL

NO SCALE





ROUND NECK SUPPLY AIR DIFFUSER DETAIL

NO SCALE

PARTNERS

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MDR

CHECKED BY
DAC

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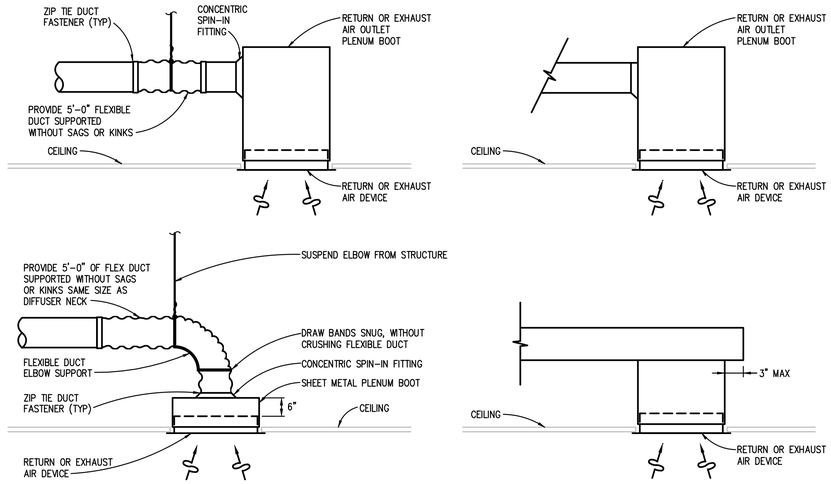
SHEET NAME
MECHANICAL DETAILS

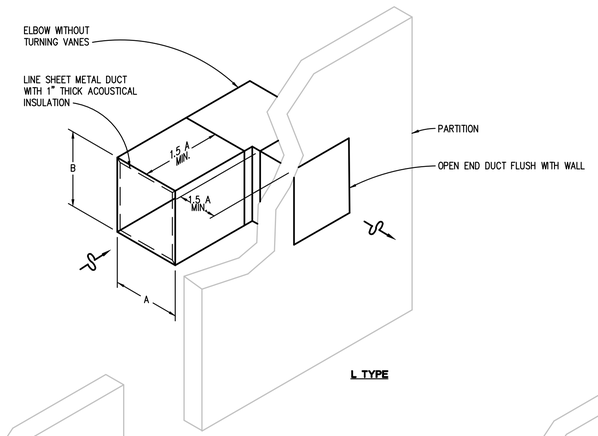
SHEET NO.
M6.3

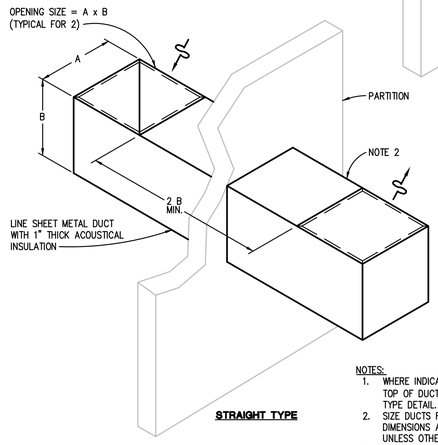


RETURN OR EXHAUST AIR DEVICE INSTALLATION DETAIL

NO SCALE

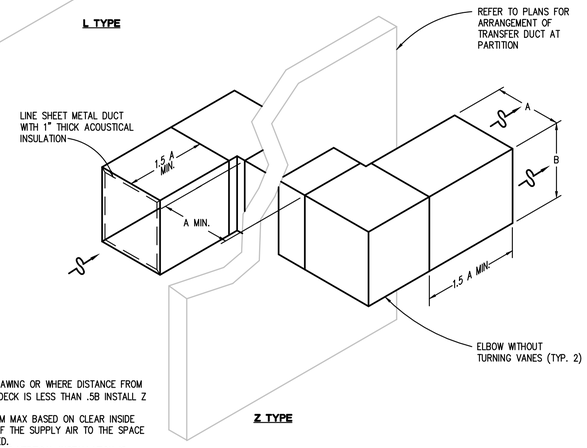
NOTE: PAINT INTERIOR SURFACE OF PLENUM BOX FLAT BLACK.





STRAIGHT TYPE

L TYPE



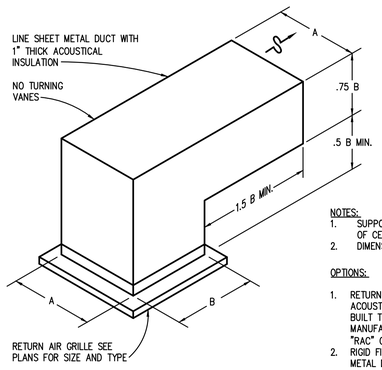
Z TYPE

NOTES:
1. WHERE INDICATED ON DRAWNG OR WHERE DISTANCE FROM TOP OF DUCT TO SLAB/DECK IS LESS THAN .5B INSTALL Z TYPE DETAIL.
2. SIZE DUCTS FOR 400 FPM MAX BASED ON CLEAR INSIDE DIMENSIONS AND 100% OF THE SUPPLY AIR TO THE SPACE UNLESS OTHERWISE NOTED.
3. ROTATE DETAILS 90° WHERE VERTICAL INSTALLATION IS INDICATED.
4. DIMENSIONS ARE INSIDE CLEAR.

OPTIONS:
1. RIGID FIBER BOARD MAY BE USED IN LIEU OF LINED SHEET METAL DUCT.

AIR TRANSFER DUCT DETAILS

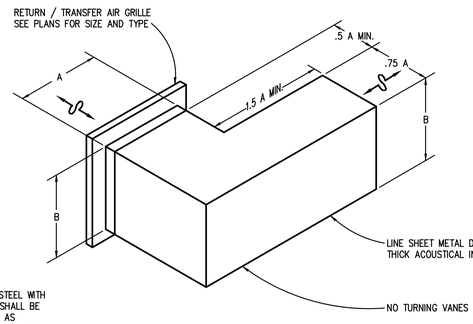
NO SCALE



NOTES:
1. SUPPORT ELBOW INDEPENDENT OF CEILING GRID
2. DIMENSIONS ARE INSIDE CLEAR

OPTIONS:
1. RETURN AIR CANOPY. GALVANIZED STEEL WITH ACOUSTIC FIBERGLASS LINER. UNIT SHALL BE BUILT TO THE RETURN GRILLE SIZE. AS MANUFACTURED BY PRICE INDUSTRIES–MODEL "RAC" OR OTHER APPROVED.
2. RIGID FIBER BOARD IN LIEU OF LINED SHEET METAL DUCT.

CEILING GRILLE TO/FROM PLENUM



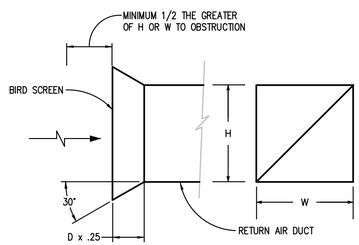
NOTE: DIMENSIONS ARE INSIDE CLEAR.

OPTION: RIGID FIBER BOARD IN LIEU OF LINED SHEET METAL DUCT.

PLENUM TO / FROM WALL GRILLE

PLENUM RETURN AIR GRILLE DETAILS

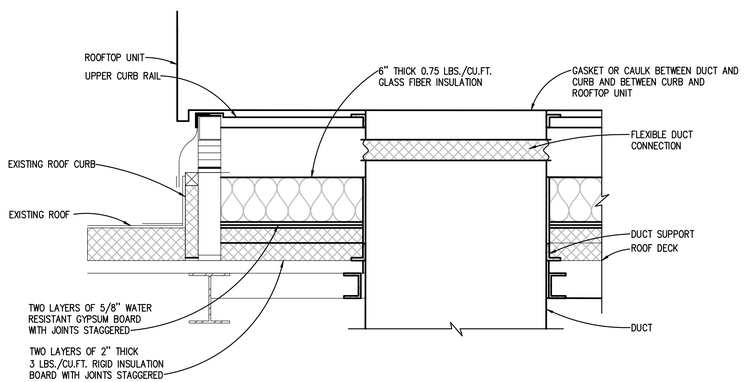
NO SCALE



$$D = \frac{2HW}{(H + W)}$$

BELLMOUTH DETAIL

NO SCALE



NOTE:
1. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR SPECIFIC FLASHING AND SUPPORT DETAILS.

ROOFTOP UNIT CURB SOUND ATTENUATION DETAIL

NO SCALE

(TYPICAL FOR RTU-10, 11, & 12)

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DRAWN BY
MDR

CHECKED BY
DAC

APPROVED BY
DAC

SHEET NAME
MECHANICAL DETAILS

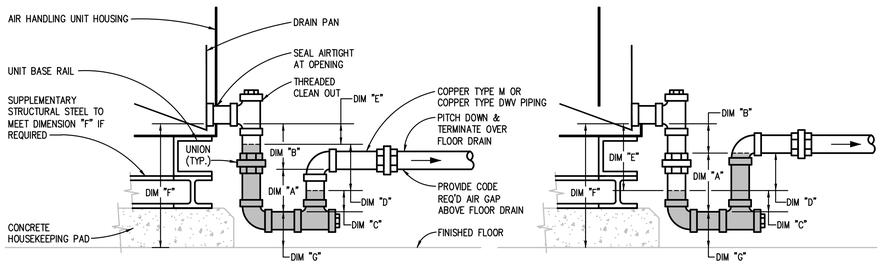
SHEET NO.
M6.4

TRAP DIMENSION TABLE

TYPE OF SYSTEM	S.P. AT DRAIN PAN (IN.) (NOTE A)	DIMENSION "A" (INCHES) MIN.	DIMENSION "B" (INCHES)	DIMENSION "C" (INCHES) (TRAP SEAL)	DIMENSION "D" (INCHES)	DIMENSION "E" (INCHES)	DIMENSION "F" (INCHES) DRAIN PIPE SIZE (INCHES)			
							1 1/2	2	2 1/2, 3	4
DRAW THROUGH	−5.1 TO −6	5.0	5.0	2	6	2	13.0	14.0	15.0	16.0
	−4.1 TO −5	4.5	4.5	2	5	2	12.0	13.0	14.0	15.0
	−3.1 TO −4	4.0	4.0	2	4	2	11.0	12.0	13.0	14.0
	−2.1 TO −3	3.5	3.5	2	3	2	10.0	11.0	12.0	13.0
	UP TO −2	3.0	3.0	2	2	2	9.0	10.0	11.0	12.0
BLOW THROUGH	UP TO +2	4.0	2.0	2	2	4	9.0	10.0	11.0	12.0
	+2.1 TO +3	5.0	2.0	2	3	5	10.0	11.0	12.0	13.0
	+3.1 TO +4	6.0	2.0	2	4	6	11.0	12.0	13.0	14.0
	+4.1 TO +5	7.0	2.0	2	5	7	12.0	13.0	14.0	15.0
	+5.1 TO +6	8.0	2.0	2	6	8	13.0	14.0	15.0	16.0

NOTES: A. REFER TO AIR HANDLING UNIT SCHEDULE FOR (−) OR (+) STATIC PRESSURE AT DRAIN PAN.

B. DIMENSION "G" IS MIN: 3" FOR UP TO 1 1/2" DRAIN PIPE
4" FOR 2" DRAIN PIPE
5" FOR 2 1/2" OR 3" DRAIN PIPE
6" FOR 4" DRAIN PIPE



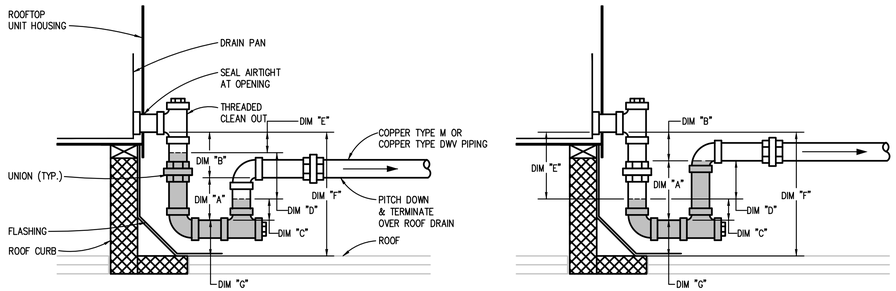
INDOOR AIR HANDLING UNIT CONDENSATE DRAIN PAN TRAP DETAIL

NO SCALE

TRAP DIMENSION TABLE

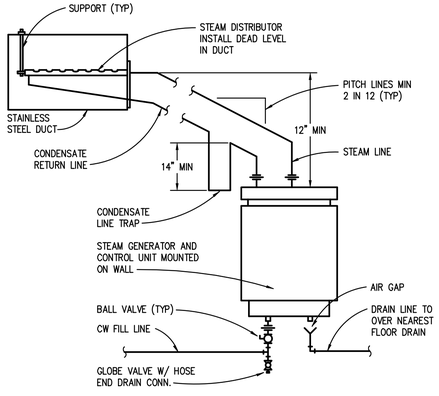
TYPE OF SYSTEM	S.P. AT DRAIN PAN (IN.) (NOTE A)	DIMENSION "A" (INCHES) MIN.	DIMENSION "B" (INCHES)	DIMENSION "C" (INCHES) (TRAP SEAL)	DIMENSION "D" (INCHES)	DIMENSION "E" (INCHES)	DIMENSION "F" (INCHES) DRAIN PIPE SIZE (INCHES)			
							1 1/2	2	2 1/2, 3	4
DRAW THROUGH	−5.1 TO −6	5.0	5.0	2	6	2	13.0	14.0	15.0	16.0
	−4.1 TO −5	4.5	4.5	2	5	2	12.0	13.0	14.0	15.0
	−3.1 TO −4	4.0	4.0	2	4	2	11.0	12.0	13.0	14.0
	−2.1 TO −3	3.5	3.5	2	3	2	10.0	11.0	12.0	13.0
	UP TO −2	3.0	3.0	2	2	2	9.0	10.0	11.0	12.0
BLOW THROUGH	UP TO +2	4.0	2.0	2	2	4	9.0	10.0	11.0	12.0
	+2.1 TO +3	5.0	2.0	2	3	5	10.0	11.0	12.0	13.0
	+3.1 TO +4	6.0	2.0	2	4	6	11.0	12.0	13.0	14.0
	+4.1 TO +5	7.0	2.0	2	5	7	12.0	13.0	14.0	15.0
	+5.1 TO +6	8.0	2.0	2	6	8	13.0	14.0	15.0	16.0

NOTES: A. REFER TO ROOFTOP AIR HANDLING UNIT (COMMERCIAL, UNITARY, MODULAR) SCHEDULE FOR (−) OR (+) STATIC PRESSURE AT DRAIN PAN.
B. CONDENSATE DRAIN PAN TRAP PIPING SERVING ENERGY RECOVERY UNIT HEAT EXCHANGER AND HUMIDIFIER SECTIONS, WHERE LOCATED OUTDOORS, SHALL BE INSULATED AND HEAT TRACED.
C. DIMENSION "G" IS MIN: 3" FOR UP TO 1 1/2" DRAIN PIPE
4" FOR 2" DRAIN PIPE
5" FOR 2 1/2" OR 3" DRAIN PIPE
6" FOR 4" DRAIN PIPE
D. PROVIDE ROOF CURB WITH ADEQUATE HEIGHT TO MEET DIMENSION "F"



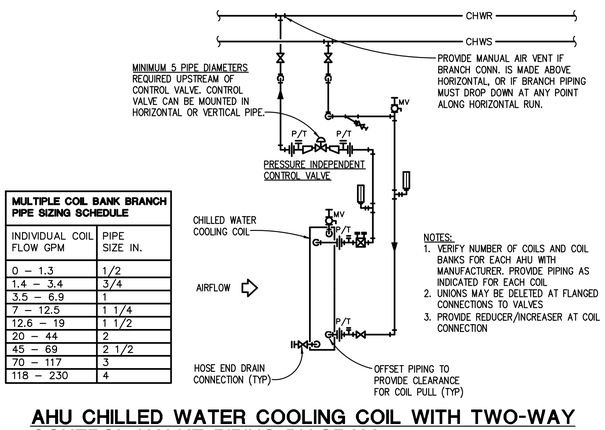
ROOFTOP AIR HANDLING/AIR CONDITIONING UNIT CONDENSATE DRAIN PAN TRAP DETAIL

NO SCALE



PACKAGED STEAM HUMIDIFIER PIPING DIAGRAM

NO SCALE

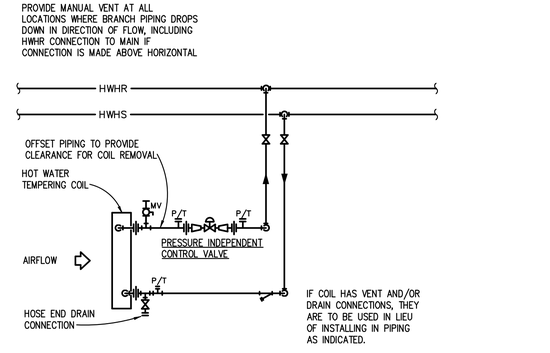


MULTIPLE COIL BANK BRANCH PIPE SIZING SCHEDULE

INDIVIDUAL COIL FLOW GPM	PIPE SIZE IN.
0 – 1.3	1/2
1.4 – 3.4	3/4
3.5 – 6.9	1
7 – 12.5	1 1/4
12.6 – 19	1 1/2
20 – 44	2
45 – 69	2 1/2
70 – 117	3
118 – 230	4

AHU CHILLED WATER COOLING COIL WITH TWO-WAY CONTROL VALVE PIPING DIAGRAM

NO SCALE



HOT WATER TEMPERING COIL WITH TWO-WAY CONTROL VALVE PIPING DIAGRAM

NO SCALE
(TYPICAL FOR ALL TUs EXCEPT TU-204)

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KEY PLAN

OWNER
Canton Township Public Safety

PROJECT NAME
Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

ISSUES / REVISIONS

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Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

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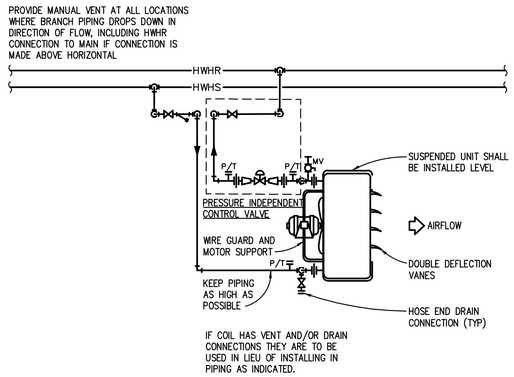
DAC

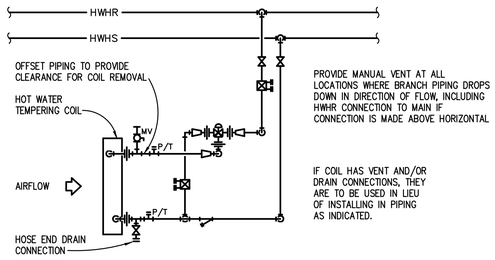
SHEET NAME
MECHANICAL DETAILS

SHEET NO.
M6.5



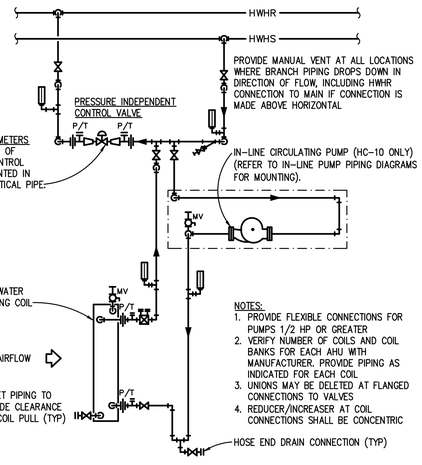
HOT WATER UNIT HEATER WITH TWO-WAY CONTROL VALVE PIPING DIAGRAM

NO SCALE



TU-204 HOT WATER TEMPERING COIL WITH THREE-WAY CONTROL VALVE PIPING DIAGRAM

NO SCALE

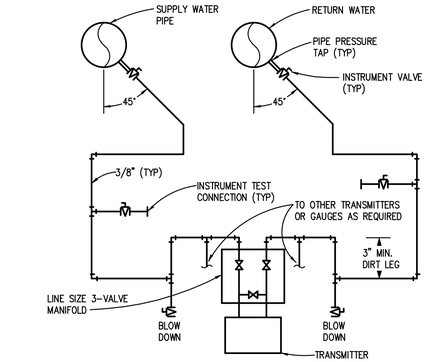


MULTIPLE COIL BANK BRANCH PIPE SIZING SCHEDULE	
INDIVIDUAL COIL FLOW GPM	PIPE SIZE IN.
0 – 1.3	1/2
> 1.3 – 3.4	3/4
> 3.4 – 6.9	1
> 6.4 – 12.5	1 1/4
> 12.5 – 19	1 1/2
> 19 – 44	2
> 44 – 69	2 1/2
> 69 – 117	3
> 117 – 230	4

RTU DUCT MOUNTED HOT WATER HEATING COIL PRESSURE INDEPENDENT CONTROL VALVE PIPING DIAGRAM

NO SCALE

(TYPICAL FOR HC-10, 11, & 12)

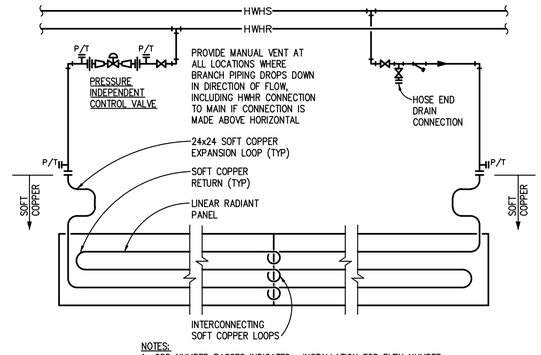


NOTES:

1. ON HORIZONTAL PIPES, INSTALL PIPE PRESSURE TAP AT 45° ANGLE FROM BOTTOM OF PIPE.
2. PROVIDE LINE SIZE 3-VALVE MANIFOLD AS INDICATED FOR EACH TRANSMITTER AND GAUGE.

DIFFERENTIAL PRESSURE SENSING DEVICE DETAIL

NO SCALE

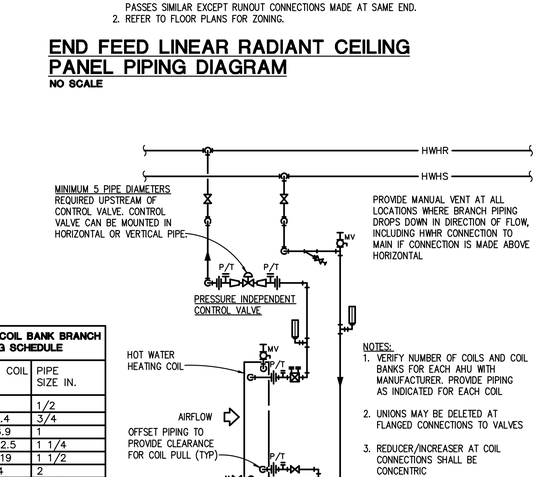


NOTES:

1. ODD NUMBER PASSES INDICATED. INSTALLATION FOR EVEN NUMBER PASSES SIMILAR EXCEPT RUNOUT CONNECTIONS MADE AT SAME END.
2. REFER TO FLOOR PLANS FOR ZONING.

END FEED LINEAR RADIANT CEILING PANEL PIPING DIAGRAM

NO SCALE

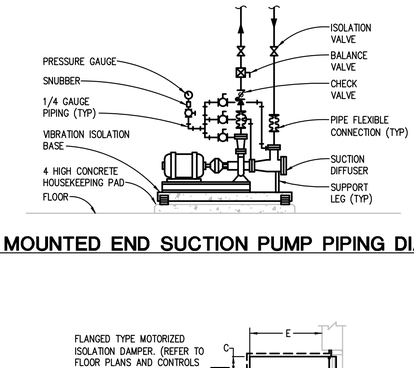


MULTIPLE COIL BANK BRANCH PIPE SIZING SCHEDULE	
INDIVIDUAL COIL FLOW GPM	PIPE SIZE IN.
0 – 1.3	1/2
> 1.3 – 3.4	3/4
> 3.4 – 6.9	1
> 6.4 – 12.5	1 1/4
> 12.5 – 19	1 1/2
> 19 – 44	2
> 44 – 69	2 1/2
> 69 – 117	3
> 117 – 230	4

AHU HOT WATER HEATING COIL PIPING DIAGRAM #1

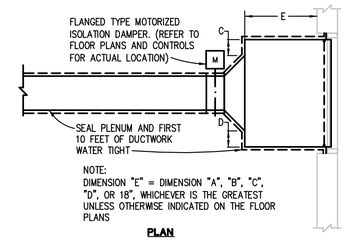
NO SCALE

(APPLIES TO HVAC-3)

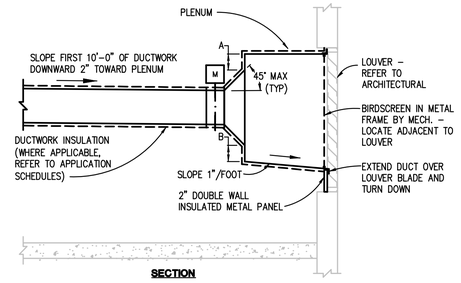


BASE MOUNTED END SUCTION PUMP PIPING DIAGRAM

NO SCALE



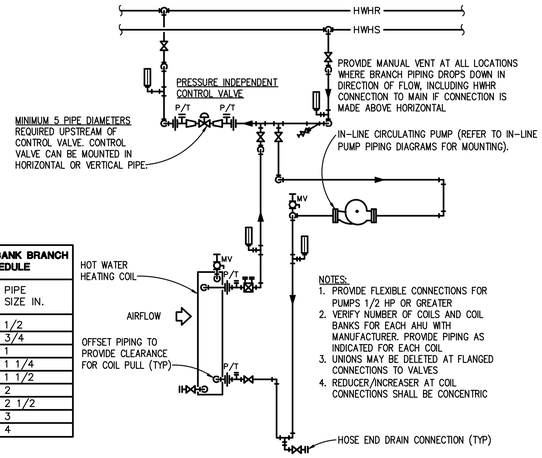
PLAN



SECTION

OUTDOOR AIR INTAKE OR EXHAUST/RELIEF PLENUM DETAIL

NO SCALE



MULTIPLE COIL BANK BRANCH PIPE SIZING SCHEDULE	
INDIVIDUAL COIL FLOW GPM	PIPE SIZE IN.
0 – 1.3	1/2
> 1.3 – 3.4	3/4
> 3.4 – 6.9	1
> 6.4 – 12.5	1 1/4
> 12.5 – 19	1 1/2
> 19 – 44	2
> 44 – 69	2 1/2
> 69 – 117	3
> 117 – 230	4

AHU HOT WATER HEATING COIL PIPING DIAGRAM #2

NO SCALE

(TYPICAL FOR HVAC-1 & HVAC-2)

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PBA Project No: 2021.0163

KEY PLAN

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Public Safety

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Interior Renovations

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PROJECT NO.

21-130

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Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

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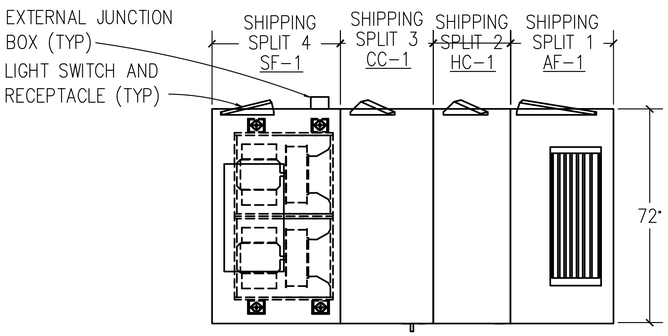
SHEET NAME

MECHANICAL DETAILS

SHEET NO.

M6.6



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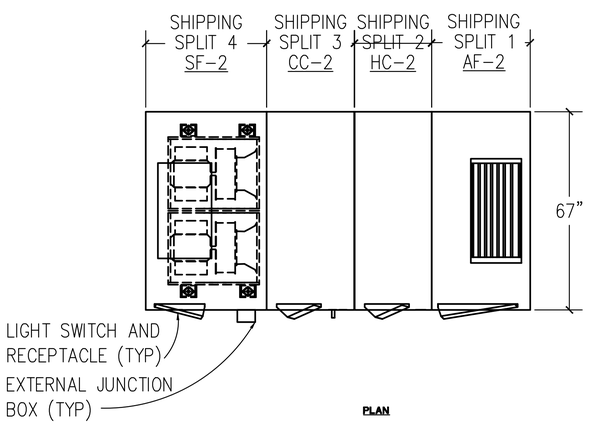

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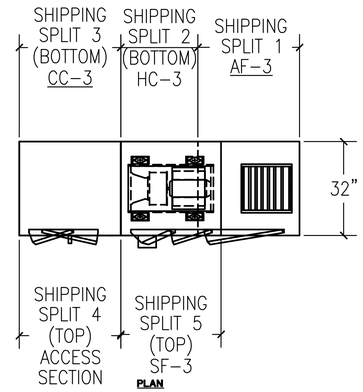

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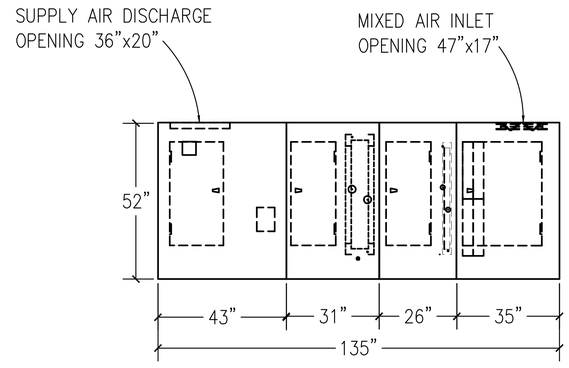

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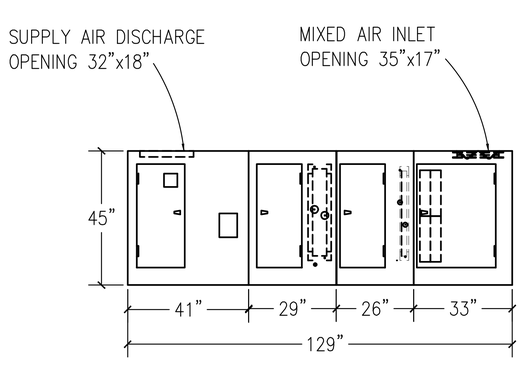

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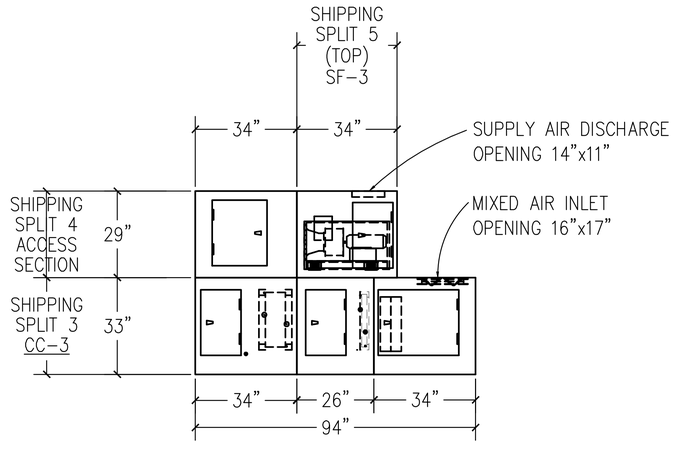

SECTION

HVAC-1 DETAILS
NO SCALE

HVAC-2 DETAILS
NO SCALE

HVAC-3 DETAILS
NO SCALE

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Bidding / Construction	03/09/2022
Addendum 01	03/18/2022

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SHEET NAME
AHU DETAILS

SHEET NO.
M6.7

DUCT SYSTEM INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES)							FIELD APPLIED JACKET MATERIAL		
	FIBERGLASS BLANKET 0.75 LB/CU FT	FIBERGLASS BLANKET 1.0 LB/CU FT	FIBERGLASS BOARD 2.25 LB/CU FT	FIBERGLASS BOARD 6.0 LB/CU FT	FLEXIBLE ELASTOMERIC	ASTM E2336 2-HOUR FIRE RATED BLANKET	2-HOUR FIRE RATED BLANKET	ALUMINUM	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	KEYED NOTES
DUCT SYSTEMS LOCATED INDOORS										
SUPPLY AIR, EXCEPT AS NOTED BELOW		1.5								A, E
RECTANGULAR SUPPLY AIR IN MECHANICAL ROOMS		1.5								
RECTANGULAR RETURN AIR IN MECHANICAL EQUIPMENT ROOMS		1.5								
OUTSIDE AIR AND MIXED AIR, EXCEPT AS NOTED BELOW		1.5								
RECTANGULAR OUTSIDE AIR AND MIXED AIR IN MECHANICAL ROOMS		1.5								
EXHAUST AND RELIEF AIR BETWEEN ISOLATION DAMPER AND PENETRATION OF BUILDING EXTERIOR, EXCEPT AS NOTED BELOW		1.5								
RECTANGULAR EXHAUST AND RELIEF AIR BETWEEN ISOLATION DAMPER AND PENETRATION OF BUILDING EXTERIOR, IN MECHANICAL ROOMS		1.5								
LOCKER ROOM AND WET AREA EXHAUST BETWEEN EXHAUST GRILLE & CONNECTION TO GENERAL EXHAUST OR BETWEEN EXHAUST GRILLE AND PENETRATION OF BUILDING EXTERIOR		1.5								

PLENUMS, DUCTS, AND DUCT ACCESSORIES NOT REQUIRING INSULATION:
- FIBROUS-GLASS DUCTS
- DOUBLE-WALL METAL DUCTS WITH INSULATION OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 – 2013
- METAL DUCTS WITH DUCT LINER OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 – 2013
- FABRIC SUPPLY DUCTS
- FACTORY-INSULATED FLEXIBLE DUCTS
- FACTORY-INSULATED PLENUMS AND CASINGS
- FLEXIBLE CONNECTORS
- VIBRATION-CONTROL DEVICES
- FACTORY-INSULATED ACCESS PANELS AND DOORS

GENERAL NOTES

1. 'X' OR THICKNESS IN INCHES INDICATE ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. REFER TO METAL DUCT SECTION OF SPECIFICATIONS FOR DUCT LINING AND DOUBLE-WALL INSULATED DUCT.
3. REFER TO HVAC CASINGS SECTION OF SPECIFICATIONS FOR DOUBLE-WALL INSULATED PLENUMS.

KEYED NOTES

A. INCLUDE INSULATION AROUND DUCT MOUNTED COILS AND AIR TERMINAL UNIT COILS.
B. NUMBER OF LAYERS AND TOTAL INSULATION THICKNESS AS RECOMMENDED BY SELECTED MANUFACTURER.
C. DOES NOT APPLY TO PREFABRICATED, ZERO-CLEARANCE GREASE DUCT.
D. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL DUCT INSULATION.
E. EXPOSED SUPPLY DUCTWORK LOCATED IN CONDITIONED SPACE SERVED BY THAT SYSTEM IS NOT REQUIRED TO BE INSULATED.

ABOVEGROUND HVAC PIPE & ACCESSORY INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES)							FIELD-APPLIED JACKET MATERIAL						
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	KEYED NOTES
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
CHILLED WATER & BRINE BELOW 40 DEG F:														
NPS 6 AND SMALLER		1								X				A
NPS 8 AND LARGER		1.5								X				A
CHILLED WATER & BRINE 40 DEG F to 60 DEG F:	1	1								X				A
HEATING HOT WATER SUPPLY & RETURN 200 DEG F AND LOWER														
NPS 1-1/4 AND SMALLER		1.5								X				A
NPS 1-1/2 AND LARGER		2								X				A
REFRIGERANT SUCTION & HOT GAS (RIGID COPPER)														
NPS 6 AND SMALLER	1	1								X				
REFRIGERANT SUCTION & HOT GAS (SOFT COPPER)	1									X				
OUTDOOR (ABOVEGROUND) AND TUNNEL PIPE SYSTEM AND SIZE (INCHES)														
REFRIGERANT SUCTION & HOT GAS (RIGID COPPER)	2.5	2.5						X			X			B

UNLESS OTHERWISE INDICATED OR SCHEDULED, THE FOLLOWING DO NOT REQUIRE INSULATION:
- DIRECT BURIED COOLING SYSTEM PIPING
- PIPING THAT CONVEYS FLUIDS HAVING DESIGN OPERATING TEMPERATURE RANGE BETWEEN 60 DEG F. AND 105 DEG F., INCLUSIVE.

GENERAL NOTES

1. 'X' OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.
3. FOR PIPING NPS 1-1/4 AND SMALLER WITHIN PARTITIONS IN CONDITIONED SPACES INSULATION MAY BE REDUCED BY ONE-INCH THICKNESS, BUT NOT TO LESS THAN ONE-INCH THICKNESS.
4. FOR PIPING NPS 1 AND SMALLER, INSULATION IS NOT REQUIRED FOR STRAINERS, CONTROL VALVES, AND BALANCING VALVES.

KEYED NOTES

A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR.
B. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.

ABOVEGROUND HVAC PIPING & VALVE APPLICATION SCHEDULE

	MATERIAL						CONNECTION								ISOLATION VALVES				
PIPE SIZE (INCHES)	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (SCHED. 80)	CARBON STEEL (STD.)	COPPER TYPE DWV	SOLDERED	BRAZED	WELDED	THREADED	FLANGED	GROOVED	PRESSURE SEAL	MECHANICALLY FORMED TEE	BALL	GENERAL SERVICE BUTTERFLY	HI-PERF BUTTERFLY	GATE	KEYED NOTES
CHILLED WATER SUPPLY & RETURN - MIN. WORKING PRESS. & TEMP.: 125 PSIG AT 200 DEG F																				
UP TO 2				X							X					X				
UP TO 2		X						X								X				
2-1/2 TO 4				X								X		X			X			A
2-1/2 TO 4		X											X				X			A
HEATING HOT WATER SUPPLY & RETURN - MIN. WORKING PRESS. & TEMP.: 125 PSIG AT 200 DEG F																				
UP TO 2				X							X					X				
UP TO 2		X						X								X				
2-1/2 TO 4				X								X		X			X			A
2-1/2 TO 4		X											X				X			A

GENERAL NOTES

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS. IF A BRONZE VALVE CONNECTS THE DISSIMILAR METALS NO FURTHER DIELECTRIC ISOLATION IS REQUIRED.
   a. NPS 2 AND SMALLER: USE BRASS COUPLING, NIPPLE, OR UNION.
   b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.
3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
4. HVAC EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

KEYED NOTES

A. GROOVED AND FLANGED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS FOR THIS PIPING SYSTEM ONLY. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS.
B. BALL VALVE WITH 250 PSIG STEAM TRIM.
C. BALL VALVE WITH 150 PSIG STEAM TRIM.

DUCT SYSTEM APPLICATION SCHEDULE

	DUCT MATERIAL																	
AIR SYSTEMS	G90 GALV. SHEET METAL	DOUBLE-WALL LINED G90 GALV. SHEET METAL (SOLID INNER WALL)	DOUBLE-WALL LINED G90 GALV. SHEET METAL (PERF. INNER WALL)	G90 GALV. SHEET METAL WITH 1-INCH LINING	GALVANNEALED SHEET METAL	ALUMINUM	TYPE 304 STAINLESS STEEL	TYPE 316 STAINLESS STEEL	PVC COATED GALV. SHEET METAL (4X1)	PVC COATED GALV. SHEET METAL (1X4)	PVC COATED GALV. SHEET METAL (4X4)	16 GA. CARBON STEEL	ZERO-CLEARANCE PREFABRICATED RANGE HOOD EXHAUST DUCT	FABRIC	DESIGN PRESSURE CLASS (INCHES WG)	SEAL CLASS	MAX. ALLOWABLE LEAKAGE RATE (PERCENT)	KEYED NOTES
SUPPLY AIR WITHOUT TERMINAL UNITS	X														+2	A	5	
SUPPLY AIR UPSTREAM OF TERMINAL UNITS	X														+6	A	5	
SUPPLY AIR DOWNSTREAM OF TERMINAL UNITS	X														+2	A	5	
RETURN AIR WITHOUT TERMINAL UNITS	X														-2	A	5	
LOCKER ROOM AND WET AREA EXHAUST						X	X								-2	A	5	
AIR TRANSFER DUCT				X											+2	A	5	
RELIEF AIR DOWNSTREAM OF FANS	X														+6	A	5	
OUTSIDE AIR AND MIXED AIR DUCT	X														-6	A	5	
OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR PLENUMS ADJACENT TO EXTERIOR LOUVERS															+/-6	A	5	

GENERAL NOTES

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. 4 X 1 PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON EXTERIOR SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND MINIMUM 1 MIL (0.025 MM) THICK ON INTERIOR SURFACES.
3. 1 X 4 (4 X 1 REVERSE COATED) PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON INTERIOR SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND MINIMUM 1 MIL (0.025 MM) THICK ON EXTERIOR SURFACES.
4. 4 X 4 PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND 4 MILS (0.10 MM) THICK ON OPPOSITE SURFACES.

KEYED NOTES

A. SCREWS, DAMPERS, OR PROJECTIONS OF ANY TYPE ON INTERIOR OF DUCT SURFACE ARE PROHIBITED.
B. DUCT SHALL BE LINED WITHIN 25 FEET UPSTREAM OF FANS.
C. ALL WELDED CONSTRUCTION.

MECHANICAL EQUIPMENT INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES)						FIELD APPLIED JACKET MATERIAL		
	FLEXIBLE ELASTOMERIC	FIBERGLASS, LARGE DIAMETER PIPE & TANK	FIBERGLASS BOARD	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	PVC	KEYED NOTES
COLD SURFACES ON CHILLERS (IF NOT FACTORY INSULATED)	1	1	1						X	A
CHILLED WATER PUMPS	1		2						X	A

GENERAL NOTES

1. 'X' OR THICKNESS IN INCHES INDICATE ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED.
2. REFER TO SPECIFICATIONS FOR FACTORY INSULATED EQUIPMENT.

KEYED NOTES

A. FIELD APPLIED JACKETS NOT REQUIRED FOR FLEXIBLE ELASTOMERIC INSULATION.
B. SELECT INSULATION THICKNESS TO PROVIDE MINIMUM R-VALUE OF 12.5.

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KEY PLAN

OWNER
Canton Township
Public Safety

PROJECT NAME
Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
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SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.
M7.1

HORIZONTAL PIPING AND SUPPORT APPLICATION SCHEDULE

	HANGER OR SUPPORT TYPE						SHIELD TYPE			
METAL PIPE TYPE & SIZE	MSS TYPE 1 CLEVIS HANGER	MSS TYPE 10 SWIVEL RING BAND HANGER	MSS TYPE 41 DOUBLE ROD PIPE ROLLER	MSS TYPE 43 SINGLE ROD ROLLER HANGER	MSS TYPE 44 PIPE ROLLER & STAND	MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND	MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL-HANGER SHIELD	KEYED NOTES
UNINSULATED SINGLE PIPE										
UP TO 2 INCH	X	X								
2-1/2 INCH TO 4 INCH	X	X								
6 INCH TO 8 INCH	X									
10 INCH	X									
12 INCH			X							
14 INCH AND LARGER			X							
INSULATED SINGLE COLD PIPES										
UP TO 2 INCH	X	X						X	X	A
2-1/2 INCH TO 4 INCH	X								X	
6 INCH TO 8 INCH	X								X	
10 INCH	X								X	
12 INCH	X								X	
14 INCH AND LARGER	X								X	
INSULATED SINGLE HOT PIPES										
UP TO 2 INCH	X	X					X	X	X	A, C
2-1/2 INCH TO 4 INCH			X	X	X	X	X		X	B, C
6 INCH TO 8 INCH			X	X	X	X	X		X	B, C
10 INCH			X	X	X	X	X		X	B, C
12 INCH			X		X	X	X		X	B, C
14 INCH AND LARGER			X				X		X	B, C

GENERAL NOTES

1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.
2. REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS.
3. HANGERS AND SUPPORTS USED FOR FIRE PROTECTION SERVICES SHALL BE UL LISTED OR FMG APPROVED.
4. HANGER ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC COATED, FELT LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS.
5. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR HANGER SPACING.
6. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING U-BOLTS OR STRUT CLAMPS AND THERMAL HANGER SHIELDS. REFER TO KEYED NOTE A.
7. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD HANGER ELEMENTS INDICATED FOR SINGLE COLD PIPES.
8. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING ROLLER ELEMENTS AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEYED NOTES B AND C.
9. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD ROLLER HANGERS INDICATED AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEY NOTES B AND C.
10. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR ADDITIONAL SYSTEM SPECIFIC HANGER APPLICATIONS.

KEYED NOTES

A. USE THERMAL HANGER SHIELD ON TRAPEZE SUPPORTED INSULATED PIPE TO PREVENT CRUSHING OF INSULATION.
B. USE THERMAL HANGER SHIELD DESIGNED FOR USE ON ROLLER SUPPORTS FOR INSULATED HOT PIPE .
C. USE TYPE 39 PROTECTION SADDLES IF INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS WITH INSULATION MATCHING ADJOINING INSULATION.

ABOVEGROUND PLUMBING PIPE & ACCESSORY INSULATION APPLICATION SCHEDULE

	INSULATION MATERIAL & THICKNESS (INCHES)							FIELD-APPLIED JACKET MATERIAL						
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	KEYED NOTES
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
DOMESTIC COLD WATER	1	1								X				A
DOMESTIC HOT WATER SUPPLY & RETURN 140 DEG F AND LESS:														
NPS 1-1/4 AND SMALLER	1	1								X				A
NPS 1-1/2 AND LARGER	1.5	1.5								X				A
STORM WATER & OVERFLOW	1	1								X				A
ROOF DRAIN AND OVERFLOW DRAIN BODIES	1	1												
CONDENSATE AND EQUIPMENT DRAIN PIPING BELOW 60 DEG F	0.75	1												
FLOOR DRAINS, TRAPS AND SANITARY DRAIN PIPING WITHIN 10 FEET OF DRAIN RECEIVING CONDENSATE AND EQUIPMENT DRAIN WATER BELOW 60 DEG F	0.75	1								X				A

UNLESS OTHERWISE INDICATED OR SCHEDULED, DO NOT INSULATE THE FOLLOWING:
- FIRE SUPPRESSION PIPING
- UNDERGROUND PIPING
- LABORATORY GAS AND VACUUM PIPING
- MEDICAL GAS AND VACUUM PIPING
- FUEL GAS PIPING
- FUEL OIL PIPING

GENERAL NOTES

1. 'X' OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.

KEYED NOTES

A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE, WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR.
B. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.

PLUMBING PIPING & VALVE APPLICATION SCHEDULE

	MATERIAL						PRESSURE CONNECTIONS					GRAVITY DWV CONNECTIONS		ISOLATION VALVES		
PIPE SIZE (INCHES)	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	STAINLESS STEEL (SCHED. 10)	NO-HUB CISP	PVC TYPE DWV	COPPER TYPE DWV	SOLDERED	BRAZED	FLANGED	GROOVED	PRESSURE-SEAL	MECHANICALLY-FORMED TEE	SOLVENT WELDED	CISP HUBLESS	HEAVY-DUTY HUBLESS	BALL	GENERAL SERVICE BUTTERFLY	KEYED NOTES
ABOVEGROUND DOMESTIC WATER (POTABLE AND NON-POTABLE) ON DISTRIBUTION SIDE OF METER - MIN. WORKING PRESS. & TEMP., 125 PSIG AT 200 DEG F																			
UP TO 4		X						X			X	X					X	X	A
ABOVEGROUND SANITARY WASTE & VENT - MIN. WORKING PRESS., 10-FOOT HEAD OF WATER																			
1-1/2 TO 15					X										X				
UNDERGROUND SANITARY WASTE & VENT - MIN. WORKING PRESS., 10-FOOT HEAD OF WATER																			
3 TO 12					X											X			
ABOVEGROUND COLD CONDENSATE DRAIN - MIN. WORKING PRESSURE, 10 FT. HEAD OF WATER																			
ALL SIZES		X				X	X												
ABOVEGROUND PUMPED COLD CONDENSATE DRAIN - MIN. WORKING PRESSURE, 125 PSIG																			
UP TO 2			X					X									X		
2-1/2 TO 4			X															X	

GENERAL NOTES

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS.
   a. NPS 2 AND SMALLER: USE DIELECTRIC NIPPLE/WATERWAY.
   b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.
3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
4. PLUMBING EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

KEYED NOTES

A. GROOVED AND FLANGED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS ONLY FOR THIS PIPING SYSTEM. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS.
B. JOINTS ARE NOT PERMITTED ON UNDERGROUND WATER PIPING.
C. USE CAST IRON DRAINAGE PATTERN (DURHAM) FITTINGS.
D. INSTALL IN CONTAINMENT JACKET, REFER TO SPECIFICATIONS.
E. VALVES, UNIONS, AND FLANGED JOINTS MAY BE USED IN ACCESSIBLE LOCATIONS ONLY, EXCLUDING CEILINGS USED AS AIR PLENUMS. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS. USE ONLY STEEL WELDED FITTINGS AND WELDED JOINTS IN CEILING USED AS AIR PLENUMS.
F. NO JOINTS ALLOWED UNDERGROUND.

PLUMBING CONNECTION SCHEDULE

UNIT IDENTIFICATION	CW INCHES	HW INCHES	SAN INCHES	VENT INCHES	KEYED NOTES
UR-1	3/4	–	2	1 1/2	
WC-1	1 1/2	–	4	2	
LAV-1	1/2	1/2	1 1/2	1 1/2	
SK-1	3/4	3/4	1 1/2	1 1/2	
SK-2	3/4	3/4	3	–	
SB-1	3/4	3/4	3	–	
EWC-1	1/2	–	1 1/2	1 1/2	
SH-1	3/4	3/4	–	–	1
FD-1	–	–	3	–	
FD-2	–	–	3	–	

GENERAL NOTES:
1. INDIVIDUAL WATER LINE BRANCHES, WASTE LINES, VENTS, AND TRAPS FOR CONNECTION TO INDIVIDUAL FIXTURES, FIXTURE FITTINGS, AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE OR AS INDICATED ON DRAWINGS, WHICHEVER IS GREATER.

KEYED NOTES:
1. PROVIDE MIXING VALVE.

ROOF MOUNTED PIPING SUPPORT APPLICATION SCHEDULE

	SUPPORT TYPE								SHIELD TYPE			
PIPE TYPE & SIZE	LOW FIXED-HEIGHT SINGLE-BASE STAND	LOW ADJUSTABLE-HEIGHT SINGLE-BASE STAND	HIGH ADJUSTABLE-HEIGHT SINGLE-BASE STAND	LOW FIXED HEIGHT SINGLE-BASE ROLLER STAND	LOW ADJUSTABLE-HEIGHT SINGLE-BASE ROLLER STAND	HIGH MULTIPLE-BASE PIPE STAND	CUSTOM MULTIPLE BASE PIPE STAND	CURB-MOUNTING PIPE STAND	MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL-HANGER SHIELD	KEYED NOTES
SINGLE PIPES												
REFRIGERANT PIPE NPS 4 AND SMALLER				X	X							
CONDENSATE DRAIN PIPE ALL SIZES	X	X										
MULTIPLE PARALLEL PIPES												
REFRIGERANT PIPE NPS 4 AND SMALLER	X	X										
CONDENSATE DRAIN PIPE ALL SIZES	X	X										

GENERAL NOTES

1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.
2. REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS. CONTRACTOR'S OPTION.
3. SUPPORT ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC OR PLASTIC COATED, FELT LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS

KEYED NOTES

A. TYPE 40 SHIELD MAY BE USED ON INSULATED PIPE SIZED NPS 2 AND SMALLER.
B. CONSULT WITH SUPPORT MANUFACTURER FOR CUSTOM SUPPORT REQUIREMENTS.
C. USE THERMAL HANGER SHIELD FOR INSULATED RING.
D. TYPE 39 PROTECTION SADDLE MAY BE USED IF INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS WITH INSULATION MATCHING ADJOINING INSULATION.

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KEY PLAN

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Public Safety

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SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.
M7.2

COMBINATION BALANCE VALVE AND FLOW MEASURING DEVICE SCHEDULE

MANUFACTURER	VALVE SIZE	FLOW RANGE		DIFFERENTIAL PRESSURE READING AT PRESSURE TAPS		VALVE PERMANENT PRESSURE LOSS (VALVE FULL OPEN)		MODEL NUMBER	KEYED NOTES
		GPM		INCHES W.G.		FT. HEAD			
		MINIMUM	MAXIMUM	AT MINIMUM GPM	AT MAXIMUM GPM	AT MINIMUM GPM	AT MAXIMUM GPM		
FLOW DESIGN ACCUSETTER	1/2	0.4	0.9	22	109	0.7	3.8	UA	
	3/4	0.9	2.4	23	148	0.5	2.9	UA	
	3/4	2.2	3.4	26	62	0.5	1.2	UA	
	1	3.4	6.6	40	150	0.8	2.8	UA	
	1 1/4	5.6	12	23	105	0.2	1.1	UA	
	1 1/2	9.5	20	22	95	0.6	2.7	UA	
	2	20	44	21	99	0.2	1	UA	
	2 1/2	40	80	25	77	0.2	0.6	250L	
	3	60	130	14	64	0.1	0.5	300L	
	4	120	260	16	75	0.2	0.8	400L	
PRO HYDRONIC SPECIALTIES	3/4	0.3	2.5	7	147	0.1	1.3	CBV075UL	
	1	2.5	5.5	10	145	0.1	1.2	CBV100	
	1 1/4	5.5	9	10	145	0.1	1.2	CBV125	
	1 1/2	9	16.5	11	147	0.1	1.3	CBV150	
	2	16.5	34.5	10	146	0.1	1.3	CBV200	
	2 1/2	35	57	12.5	139	0.1	1.2	CBVF250L	
	3	57	100	5.2	149	0.1	1.3	CBVF300L	
	4	100	220	5.1	147	0.1	1.3	CBVF400L	
NEXUS	1/2	0.4	1.5	2.6	36	0.2	2.3	XB	
	3/4	1.5	3.4	5.1	26	0.3	1.7	XB	
	1	2.9	7	4.3	25	0.1	0.7	XB	
HCI	1/2	0.5	0.5	5.4	8.1	0.3	0.4	TB-B VEN-4	
	3/4	0.5	1.5	3.2	26.7	0.1	0.7	TB-B VEN-6	
	3/4	1.5	2	8.8	16.3	0.4	0.7	TB-B VEN-7.5	
	1	2	3.9	5.3	20.8	0.2	0.7	TB-C VEN-10	
	1	3.9	5.5	5	10	0.2	0.3	TB-C VEN-14.5	
	1 1/4	5.5	17	2.7	25.3	0.1	0.6	TB-D VEN-19	
	2	17	31.4	8.9	30.4	0.3	0.7	TB-F VEN-25	
	2 1/2	31	57	17	57.5	0.1	0.3	TB-G LOW B-1.234	
	3	57	100	24.2	74.3	0.2	0.4	TB-H LOW B-1.533	
	4	100	220	4.6	21.9	0.1	0.2	TB-I B-3.015	
GRISWOLD	3/4L	0.4	0.8	5	32	0.1	2.4	QS2 (CV 0.8)	
	3/4L	0.7	1.9	5	45	0.1	2.9	QS2 (CV 1.7)	
	3/4L	1.3	3.8	5.2	45	0.1	2.8	QS2 (CV 3.5)	
	3/4L	2.6	8.4	5.2	54	0.1	2.9	QS2 (CV 7.5)	
	1	1.3	3.6	5.2	40	0.1	2.8	QS3 (CV 3.3)	
	1	2.6	6.6	5.2	34	0.1	2.1	QS3 (CV 7.0)	
	1	4.1	12.3	5.2	47	0.1	2.8	QS3 (CV 11.35)	
	1 1/4	3.4	6.9	5	19	0.1	1.4	QS4 (CV 9.0)	
	1 1/4	6.8	20	5	43	0.1	2.4	QS4 (CV 19.8)	
	1 1/2	6.8	20	5	43	0.1	2.6	QS5 (CV 19.2)	
	1 1/2	12.3	23	5	17	0.1	1	QS5 (CV 36)	
	1 1/2	12.3	29	5	28	0.1	0.8	QS5 (CV 45)	
	2	20.3	40	5	19	0.1	1	QS6 (CV 61)	
	2	20.3	44	5	23	0.1	0.8	QS6 (CV 75)	
	2 1/2	39	68	20	61	0.1	0.6	3QFM (CV 135)	
	3	66	117	20	40	0.1	0.8	3QFN (CV 201)	
	4	116	230	20	78	0.1	0.7	3QFP (CV 417)	
VICTAULIC	1/2	0.1	0.5	12	240	0.1	1.5	S/786	
	3/4	0.5	2.5	12	240	0.3	1.4	S/786	
	1	2.5	5.5	12	240	0.7	1.4	S/786	
	1 1/4	5.5	9	12	240	0.5	1.4	S/786	
	1 1/2	9	16.5	12	240	0.8	1.4	S/786	
	2	16.5	34.5	12	240	0.5	1.3	S/786	
	2 1/2	35	57	12	240	0.2	1.3	S/788	
	3	57	100	12	240	0.7	1.3	S/788	
	4	100	220	12	240	0.5	1.4	S/788	

GENERAL NOTES:
1. SELECTED VALVE SHALL MATCH PIPE SIZE UNLESS REQUIRED FLOW RATE IS BELOW THE FLOW RANGE FOR THAT SIZE VALVE. PROVIDE REDUCERS AS REQUIRED IF VALVE SIZE IS LESS THAN PIPE SIZE.
2. VALVE FLOW RANGES AND PRESSURE DROPS BASED ON WATER.

VIBRATION ISOLATOR APPLICATION SCHEDULE

EQUIPMENT TYPE	EQUIPMENT CATEGORY	HORSEPOWER AND OTHER	RPM	EQUIPMENT LOCATION						KEYED NOTES
				SLAB ON GRADE			UP TO 40 FT (12 M) FLOOR SPAN			
				BASE TYPE	ISOLATOR TYPE	MIN. DEFL., IN. (MM)	BASE TYPE	ISOLATOR TYPE	MIN. DEFL., IN. (MM)	
REFRIGATION MACHINES AND CHILLERS	SCROLL	ALL ALL	ALL ALL	A A	2 1a OR 1b	0.25 (6) 0.25 (6)	A A	4 4	2.50 (64) 1.50 (38)	NOTE 3
PUMPS	END SUCTION	≤40 50 TO 125 ≥150	ALL ALL ALL	C C C	3 3 3	0.75 (19) 0.75 (19) 0.75 (19)	C C C	3 3 3	1.50 (38) 2.50 (64) 3.50 (89)	
SUSPENDED AXIAL FANS, PLENUM FANS, CABINET FANS, FAN SECTIONS, CENTRIFUGAL INLINE FANS	UP TO 22 IN. DIAMETER	ALL	ALL				A OR B	8a OR 8b	0.75 (19)	NOTES 1, 3, 4
	24 IN. DIAMETER AND UP	≤2 IN. SP	UP TO 300 301 TO 500 500 AND UP				A OR B A OR B A OR B	8a OR 8b 8a OR 8b 8a OR 8b	1.50 (38) 1.50 (38) 1.50 (38)	
		>2 IN. SP	UP TO 300 301 TO 500 500 AND UP				A OR B A OR B A OR B	8a OR 8b 8a OR 8b 8a OR 8b	3.50 (89) 2.50 (64) 2.50 (64)	
BASE MOUNTED CONDENSING UNITS	ALL ALL	≤1HP >1HP	ALL ALL	A OR B A OR B	2 2	0.25 (6) 0.25 (6)	A OR B A OR B	2 4	0.25 (64) 2.50 (64)	NOTE 3
PACKAGED AND MODULAR AIR HANDLING, AIR CONDITIONING AND HEATING AND VENTILATING UNITS WITH INTERNAL SPRING ISOLATORS	ALL	ALL	ALL	A	1a	0.25 (6)	A	1a	0.25 (6)	NOTES 1, 3, 4
AIR HANDLING EQUIPMENT WITH NON-INTERNALLY ISOLATED FAN ARRAYS (AIR HANDLING UNITS, CABINET FANS, FAN UNITS, ETC.)	ALL	ALL	ALL	A	3	0.75 (19)	A	3	2.50 (64)	NOTES 1, 3, 4

GENERAL NOTES:

KEYED NOTES:
1. THRUST RESTRAINTS: PROVIDE THRUST RESTRAINTS BETWEEN FAN DISCHARGE AND DUCT (IN PAIRS, LOCATED ON THE CENTERLINE OF THE DISCHARGE OUTLET OF THE FAN, BRIDGING THE FLEXIBLE DUCT CONNECTOR) FOR ALL FAN HEADS, FOR AXIAL AND CENTRIFUGAL FANS UNITS OPERATING AT 2 INCHES OR GREATER TOTAL STATIC PRESSURE AND AS SHOWN ON DRAWINGS. SPRING DEFLECTION SHALL BE SAME AS THE SUPPORT ISOLATORS.
2. PIPING RISER ISOLATION: PROVIDE PIPE RISER RESILIENT ANCHORS, SPRING MOUNTS AND RESILIENT PIPE GUIDES CAPABLE OF DISTRIBUTING THE LOADS WITHIN THE BUILDING DESIGN LIMITS AT THE SUPPORT POINTS.
3. HORIZONTAL PIPING VIBRATION ISOLATION: PROVIDE TYPE 8a OR 8b SPRING HANGERS FOR PIPING CONNECTED TO VIBRATION ISOLATED EQUIPMENT FOR ALL PIPING IN MECHANICAL ROOMS OR THE FOLLOWING MINIMUM HORIZONTAL DISTANCES FROM THE ISOLATED EQUIPMENT: UP TO 6" – 50 FEET (1 1/2" MINIMUM DEFLECTION), 8" AND LARGER – 100 FEET (2 1/2" MINIMUM DEFLECTION), WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS. THE FIRST 4 HANGERS FROM THE ISOLATED EQUIPMENT SHALL BE TYPE 8b.
4. DUCTWORK VIBRATION ISOLATION: PROVIDE TYPE 8a OR 8b SPRING HANGERS FOR DUCTWORK WITH A CROSS SECTION OF 2 SQUARE FEET OR GREATER CONNECTED TO AIR HANDLING UNITS, RETURN OR RELIEF FANS, AND VIBRATION ISOLATED EQUIPMENT FOR ALL SUCH DUCTWORK IN MECHANICAL ROOMS OR FOR A MINIMUM HORIZONTAL DISTANCE OF 100 FEET FROM THE ISOLATED EQUIPMENT, WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS (3/4" MINIMUM DEFLECTION).
5. IF SPAN DOES NOT EXCEED 20 FT, SPRING DEFLECTION MAY BE 1.0 IN AND TYPE D BASE MAY BE USED. FOR SPANS GREATER THAN 20 FT, USE SPRING DEFLECTION INDICATED AND TYPE E BASE.

BASE TYPES:

BASE TYPE A – NO BASE, ISOLATORS ATTACHED DIRECTLY TO EQUIPMENT.
BASE TYPE B – STRUCTURAL, STEEL RAILS OR BASE.
BASE TYPE C – CONCRETE INERTIA BASE.
BASE TYPE D – CURB – MOUNTED ALUMINUM BASE WITH 1" DEFL. SPRING ISOLATORS
BASE TYPE E – CURB – MOUNTED STEEL BASE WITH ADJUSTABLE 1", 2" OR 3" DEFL. SPRING ISOLATORS

ISOLATOR TYPES:

ISOLATOR TYPE 1a – ELASTOMERIC ISOLATION PAD.
ISOLATOR TYPE 1b – ELASTOMERIC ISOLATION PAD WITH STEEL LOAD BEARING PLATE.
ISOLATOR TYPE 2 – ELASTOMERIC FLOOR ISOLATOR.
ISOLATOR TYPE 3 – FREE STANDING SPRING FLOOR ISOLATOR.
ISOLATOR TYPE 4 – RESTRAINED SPRING ISOLATOR.
ISOLATOR TYPE 5 – THRUST RESTRAINT.
ISOLATOR TYPE 6 – AIR SPRING.
ISOLATOR TYPE 7 – ELASTOMERIC HANGERS.
ISOLATOR TYPE 8a – SPRING HANGERS.
ISOLATOR TYPE 8b – SPRING HANGERS WITH VERTICAL-LIMIT STOP.

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KEY PLAN

OWNER
Canton Township Public Safety

PROJECT NAME
Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

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APPROVED BY
DAC

SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.
M7.3

SCHEDULES GENERAL NOTES:

TYPICAL FOR ALL SCHEDULE SHEETS:

1. REFER TO ELECTRICAL STANDARD SCHEDULES, ONE LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL ELECTRICAL INFORMATION

2. PROVIDE THE FOLLOWING FACTORY-WIRED ELECTRICAL OPTIONS/ACCESSORIES WHERE INDICATED IN SCHEDULE:

   A – NON-FUSED DISCONNECT SWITCH
   B – UNIT SHALL BE SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS
   C – SERVICE RECEPTACLE
   D – FUSED DISCONNECT SWITCH
   E – COMBINATION STARTER
   F – UNIT SHALL HAVE (2) SINGLE POINT CONNECTIONS WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS. (1) CONNECTION SHALL BE FOR CONDENSING SECTION AND (1) CONNECTION SHALL BE FOR THE REMAINDER OF THE UNIT.

3. FOR MODULATION/CONTROL TYPE COLUMN, "VFC" INDICATES VARIABLE FREQUENCY CONTROLLERS, "AUTO" INDICATES AUTOMATIC OPERATION (CONTROLLED BY TEMPERATURE CONTROLS OR SELF CONTAINED CONTROLS), "MANUAL" INDICATES HAND OPERATION.

4. IF VARIABLE FREQUENCY CONTROLLERS ARE INDICATED TO BE PROVIDED AND ARE NOT INSTALLED INTEGRAL TO THE UNIT, VARIABLE FREQUENCY CONTROLLERS SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR (UNLESS OTHERWISE NOTED) AND INSTALLED BY THE ELECTRICAL CONTRACTOR INCLUDING THE LINE SIDE AND LOAD SIDE WIRING TO THE MOTOR AND INCLUDING MISCELLANEOUS STEEL REQUIRED FOR THE SUPPORT AND MOUNTING OF THE VFC. REFER TO FLOOR PLANS FOR LOCATION.

5. WHERE EQUIPMENT IS INDICATED TO HAVE A SINGLE POINT ELECTRICAL CONNECTION, THAT EQUIPMENT SHALL COME COMPLETE WITH FACTORY INSTALLED STARTERS, MOTOR OVERLOAD PROTECTION, CONTACTORS, FUSING AND ALL NECESSARY INTERNAL WIRING AND CONTROLS. PROVIDE A FACTORY MOUNTED UNIT DISCONNECTING MEANS WHERE THE ELECTRICAL CONTRACTOR SHALL MAKE SINGLE POINT CONNECTION. INSTALL PACKAGED EQUIPMENT SUCH THAT THE ELECTRICAL CONNECTION AND CONTROLS ARE ACCESSIBLE AND HAVE CLEARANCES MEETING THE NATIONAL ELECTRICAL CODE.

6. WHERE PACKAGED EQUIPMENT IS PROVIDED, NAMEPLATE MUST INDICATE MAXIMUM OVERCURRENT PROTECTION BY HACR RATED CIRCUIT BREAKERS OR FUSES. IF FUSE PROTECTION ONLY IS INDICATED, PROVIDE A FUSIBLE DISCONNECT AND FUSES WITH THE UNIT.

7. WHERE EQUIPMENT IS DESIGNATED BY MANUFACTURER AND MODEL NUMBER, THIS IS THE BASIS OF DESIGN. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT BY OTHER SPECIFIED MANUFACTURERS OR PROPOSED ALTERNATE EQUIPMENT BY THE BASIS OF DESIGN MANUFACTURER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS TO ELECTRICAL REQUIREMENTS, STRUCTURAL LOADING, OR ARCHITECTURAL APPURTENANCES AND SHALL INCLUDE THE COST OF SUCH REVISIONS IN HIS BID.

8. WHERE EQUIPMENT IS SCHEDULED TO INCLUDE A SERVICE RECEPTACLE, PROVIDE A FACTORY MOUNTED SERVICE RECEPTACLE WITH APPROPRIATE FUSES AND TRANSFORMERS CONNECTED ON THE LINE SIDE OF THE UNIT DISCONNECT. PROVIDE A NAMEPLATE ON THE DISCONNECT SWITCH INDICATING THE PRESENCE OF LIVE POWER TO THE SERVICE RECEPTACLE WHEN THE UNIT DISCONNECT IS IN THE OFF POSITION.

9. SIZE ALL EQUIPMENT FEEDERS BASED ON THE LISTED MOP (MAXIMUM OVERCURRENT PROTECTION). REFER TO THE FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE ON THE ELECTRICAL STANDARD SCHEDULES SHEET.

MODULAR AIR HANDLING UNIT COMPONENT SCHEDULE

UNIT IDENTIFICATION	POSITION NUMBER 1	POSITION NUMBER 2	POSITION NUMBER 3	POSITION NUMBER 4	POSITION NUMBER 5	POSITION NUMBER 6	POSITION NUMBER 7	POSITION NUMBER 8	POSITION NUMBER 9	MAXIMUM UNIT LENGTH (INCHES)	MAXIMUM UNIT WIDTH (INCHES)	MAXIMUM UNIT HEIGHT (INCHES)	MODEL NUMBER	KEYED NOTES
HVAC-1	MIXING BOX	AF-1	HC-1	ACCESS	CC-1	ACCESS	SF-1	---	---	135	72	53	CSAA017	1, 2
HVAC-2	MIXING BOX	AF-2	HC-2	ACCESS	CC-2	ACCESS	SF-2	---	---	129	67	45	CSAA012	1, 2
HVAC-3	MIXING BOX	AF-3	HC-3	ACCESS	CC-3	ACCESS	SF-3	---	---	94	32	62	CSAA003	1, 2

GENERAL NOTES:
1. MODULES SELECTED BASED ON TRANE INDOOR MODULAR CLIMATE CHANGER AIR HANDLING UNIT.
2. POSITION NUMBERS ARE INDICATED IN THE DIRECTION OF AIRFLOW FROM RETURN AIR INLET TO SUPPLY AIR DISCHARGE.

KEYED NOTES:
1. PROVIDE BIPOLAR IONIZATION WITH AIRFLOW SWITCH OPTION.
2. MECHANICAL CONTRACTOR SHALL COORDINATE SHIPPING SPLITS AND SIZES TO ENSURE NEW AIR HANDLING SECTIONS CAN FIT THROUGH ACCESS POINTS.

AIR HANDLING UNIT FILTER SCHEDULE

UNIT I.D.	SYSTEM SERVED	TYPE (NOTE 2)	AIRFLOW CFM	AIR PRESS. DROP		EFFICIENCIES		FILTER MEDIA						MODEL NO.	KEYED NOTES
				INITIAL IN. W.G.	DIRTY IN. W.G.	MERV	D.S. %	QUAN.	WIDTH IN.	HEIGHT IN.	DEPTH IN.	MIN. MEDIA FACE AREA SQ. FT.	ACCESS TYPE		
AF-1	HVAC-1	4" CARTRIDGE	8000	0.50	1.40	13	85	6	(6)20	(2)20, (4)24	(6)4	18.9	REMOVABLE	CSAA017	
AF-2	HVAC-2	4" CARTRIDGE	5500	0.50	1.40	13	85	6	(6)16	(6)20	(6)4	13.4	REMOVABLE	CSAA012	
AF-3	HVAC-3	4" CARTRIDGE	1300	0.50	1.40	13	85	1	20	25	4	3.5	REMOVABLE	CSAA003	

GENERAL NOTES:
1. MODEL NUMBERS ARE TRANE UNLESS OTHERWISE NOTED.
2. PROVIDE 25% TO 30% EFFICIENT 2 INCH THROW AWAY PREFILTERS
3. MERV DESIGNATES THE "MINIMUM EFFICIENCY REPORTING VALUE" AS EVALUATED UNDER ASHRAE STANDARD 52.2 1999.
4. AIR HANDLING UNIT TOTAL STATIC PRESSURE FOR VARIABLE AIR VOLUME SYSTEMS IS BASED ON THE FILTER DIRTY AIR PRESSURE DROP AND AVERAGE/MIDLIFE FILTER AIR PRESSURE DROP FOR CONSTANT VOLUME SYSTEMS UNLESS NOTED OTHERWISE.

HOT WATER HEATING COIL SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	MAXIMUM NUMBER ROWS	MAXIMUM FIN DENSITY FINS/INCH	CAPACITY MBH	AIR				MINIMUM FACE AREA SQ. FT.	WATER					CONTROL VALVE W.P.D. FT. HD.	MODEL NUMBER	KEYED NOTES
					AIRFLOW CFM	E.D.B. °F	L.D.B. °F	MAXIMUM A.P.D. IN. W.G.		FLOW GPM	FLUID TYPE	E.W.T. °F	L.W.T. °F	MAXIMUM W.P.D. FT. HEAD			
HC-1	HVAC-1	2	10	245.4	4400	8.6	60.0	0.10	15.0	24.5	W	180	160	5	15	HOT WATER – 5W	
HC-2	HVAC-2	2	10	65.4	2500	35.9	60.0	0.10	11.2	6.6	W	180	160	5	15	HOT WATER – 5W	
HC-3	HVAC-3	2	10	43.1	1300	59.4	90.0	0.12	2.5	4.3	W	180	160	5	15	HOT WATER – 5W	
HC-10	RTU-10	2	10	129.0	3750	28.3	60.0	0.25	8.5	12.9	W	180	160	5	15	5WC-2-18x68x1-7AL	1
HC-11	RTU-11	2	10	126.0	3000	63.8	102.5	0.24	4.4	12.6	W	180	160	5	15	5WC-4-15x42x2-7AL	1
HC-12	RTU-12	2	10	23.6	1600	46.4	60.0	0.24	2.9	1.6	W	180	150	5	15	5WC-10-15x28x1-6AL	1

GENERAL NOTES:
1. MODEL NUMBERS ARE TRANE UNLESS OTHERWISE NOTED.
2. COIL SELECTION BASED ON .00025 FOULING FACTOR.
3. FLUID TYPE: W = WATER

KEYED NOTES:
1. MODEL NUMBERS ARE NORTEK AIR SOLUTIONS – TEMTROL.

PACKAGED ELECTRIC STEAM GENERATOR/HUMIDIFIER SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	STEAM GENERATOR/CONTROL PACKAGE			DUCT DISTRIBUTION TUBE BANK							MODULATION/ CONTROL TYPE	ELECTRICAL					
		FLOW LBS/HR	TYPE	MODEL	TYPE	MODEL LBS/HR	DUCT AIR TEMPERATURE °F	DUCT WIDTH INCHES	DUCT HEIGHT INCHES	MINIMUM ABSORPTION DISTANCE INCHES	MODEL		VOLTS	PHASE	MCA	MOP	SCCR KA	OPTIONS/ ACCESSORIES
H-3	HVAC-3	6.3	ELECTRODE STEAM	EL 010	STAINLESS STEEL	6.3	55	18	12	24	ASD 18	AUTO	208	1	18	25	10	---

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE CONDAIR UNLESS OTHERWISE NOTED.

CHILLED WATER COOLING COIL SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	MAXIMUM NUMBER ROWS	MAXIMUM FIN DENSITY FINS/INCH	TOTAL CAPACITY MBH	AIR						MINIMUM FACE AREA SQ. FT.	WATER					CONTROL VALVE W.P.D. FT. HEAD	MODEL NUMBER
					AIRFLOW CFM	E.D.B. °F	E.W.B. °F	L.D.B. °F	L.W.B. °F	MAXIMUM A.P.D. IN. W.G.		FLOW GPM	FLUID TYPE	E.W.T. °F	L.W.T. °F	MAXIMUM W.P.D. FT. HEAD		
CC-1	HVAC-1	6	12	394.8	8000	82.2	68.3	52.4	52.3	0.92	16.8	78.7	W	45	55	9.2	15	CHILLED WATER – 3U
CC-2	HVAC-2	6	11	185.6	5500	78.2	64.0	52.7	52.5	0.70	12.1	37.0	W	45	55	3.2	15	CHILLED WATER – 3U
CC-3	HVAC-3	6	10	43.1	1300	77.4	63.8	52.9	52.4	0.60	2.9	8.6	W	45	55	2.3	15	CHILLED WATER – 3W

GENERAL NOTES:
1. MODEL NUMBERS ARE TRANE UNLESS OTHERWISE NOTED.
2. COIL SELECTIONS BASED ON .00025 FOULING FACTOR.
3. FLUID TYPE: W = WATER

AIR HANDLING UNIT SUPPLY AIR FAN SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	TYPE	AIRFLOW CFM	MINIMUM OUTSIDE AIR FLOW CFM	E.S.P. IN. W.G.	SUCTION OR DISCHARGE S.P. IN. W.C. AT COOLING COIL DRAIN PAN	T.S.P. IN. W.G.	RPM	OUTLET VELOCITY FPM	FAN CLASS	MOTOR			MODULATION/ CONTROL TYPE	ELECTRICAL						MODEL NUMBER	KEYED NOTES
											BHP	HP	DRIVE TYPE		VOLTS	PHASE	MCA	MOP	SCCR KA (NOTE 5)	OPTIONS/ ACCESSORIES		
SF-1	HVAC-1	PLENUM	8000	3400	1.50	-2.1	4.90	2904	1600	I	10.2	15	DIRECT	VFC	480	3	27.6	40	10	B	CSAA017	1, 2
SF-2	HVAC-2	PLENUM	5500	1100	1.50	-2.1	4.58	3290	1375	I	6.1	10	DIRECT	VFC	480	3	18.9	30	10	B	CSAA012	1, 2
SF-3	HVAC-3	PLENUM	1300	200	1.25	-2.2	4.06	4541	1216	I	1.65	2	DIRECT	VFC	480	3	3.13	15	10	B	CSAA003	1

MAXIMUM SOUND POWER LEVELS

	UNIT DISCHARGE Lw BY OCTAVE BAND								UNIT INLET Lw BY OCTAVE BAND								CASING RADIATED Lw BY OCTAVE BAND							
	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)
SF-1	85	81	81	88	83	84	80	71	76	76	75	77	71	74	69	61	83	80	76	80	78	63	54	43
SF-2	75	85	78	86	78	79	80	75	75	73	73	80	70	71	69	64	80	75	74	84	72	58	55	47
SF-3	85	83	87	86	78	76	73	76	78	74	74	71	73	63	61	65	85	75	80	77	74	55	48	43

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE TRANE UNLESS OTHERWISE NOTED.
3. DESIGN MINIMUM OUTSIDE AIRFLOW CFM (VENTILATION) LISTED IS BASED ON THE ESTIMATED MAXIMUM OCCUPANT LOAD. REFER TO TEMPERATURE CONTROL DRAWINGS FOR OUTSIDE AIR CONTROL SEQUENCE.
4. REFER TO AIR HANDLING UNIT FILTER SCHEDULE FOR AIR PRESSURE DROP TO BE USED FOR TOTAL STATIC PRESSURE CALCULATIONS.
5. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

KEYED NOTES:
1. PROVIDE AIR HANDLING UNIT WITH INTEGRAL LIGHTS AND SWITCH (120V CIRCUIT PROVIDED BY ELECTRICAL CONTRACTOR). PROVIDE AIR HANDLING UNIT WITH A GENERAL SERVICE RECEPTACLE (120V CIRCUIT PROVIDED BY ELECTRICAL CONTRACTOR).
2. SUPPLY FAN IS SET UP AS A 1 ROW, 2 FAN ARRAY. THE SCHEDULED BHP AND HP VALUES ARE THE TOTAL BRAKE HORSEPOWERS AND THE TOTAL NAMEPLATE HORSEPOWERS RESPECTIVELY.

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PBA Project No. 2021.0163

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

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Bidding / Construction	03/09/2022
Addendum 01	03/18/2022

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SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.
M7.4

COMMERCIAL ROOFTOP AIR CONDITIONING UNIT SCHEDULE - PART A

SEE PART "B"

UNIT I.D.	SUPPLY FAN (NOTE 1)											RELIEF FAN							COOLING SECTION-DX													INTEGRAL AIR-COOLED CONDENSING SECTION		
	AIRFLOW CFM	MIN. OUTSIDE AIRFLOW CFM	E.S.P. IN. W.G.	FAN SUCTION OR DISCHARGE S.P. IN. W.G. AT COOLING COIL DRAIN PAN	T.S.P. IN. W.G.	FAN SPEED RPM	FAN POSITION	WHEEL TYPE	CONTROL TYPE	MOTOR BHP	MOTOR HP	AIRFLOW CFM	E.S.P. IN. W.G.	FAN SPEED RPM	WHEEL TYPE	CONTROL TYPE	MOTOR BHP	MOTOR HP	MIXED AIR E.D.B. °F	MIXED AIR E.W.B. °F	COIL LEAVING AIR L.D.B. °F	COIL LEAVING AIR L.W.B. °F	UNIT LEAVING AIR L.D.B. °F	UNIT LEAVING AIR L.W.B. °F	NET UNIT CAPACITY TOTAL MBH	NET UNIT CAPACITY SENSIBLE MBH	MINIMUM NUMBER OF CIRCUITS	REFRIG. TYPE	HOT GAS BYPASS YES OR NO	MIN. FACE AREA SQ. FT.	MAX. FACE VEL. F.P.M	MAX. A.P.D. IN. W.G.	DESIGN AMBIENT TEMP. °F	MIN. AMBIENT TEMP. °F	MIN. NO. OF CAPACITY CONTROL STAGES
RTU-10	9000	2000	2.0	-1.6	3.45	2741	DRAW-THROUGH	---	VFC	6.9	10	8400	0.6	1489	---	ECM	3.0	8	78.5	65.1	50.6	50.5	54.3	52.2	349.2	244.3	1	R-410A	NO	30.2	298	0.40	95	50	NOTE 2

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE TRANE INTELLIPAK UNLESS OTHERWISE NOTED
3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.
4. DESIGN MINIMUM OUTSIDE AIRFLOW CFM (VENTILATION) LISTED IS BASED ON THE ESTIMATED MAXIMUM OCCUPANT LOAD. REFER TO TEMPERATURE CONTROL DRAWINGS FOR OUTSIDE AIR CONTROL SEQUENCE.
5. MERV DESIGNATES THE "MINIMUM EFFICIENCY REPORTING VALUE" AS EVALUATED UNDER ASHRAE STANDARD 52.2 1999.
6. TOTAL STATIC PRESSURE FOR VARIABLE AIR VOLUME SYSTEMS IS BASED ON THE FILTER DIRTY AIR PRESSURE DROP AND AVERAGE/MIDLIFE FILTER AIR PRESSURE DROP FOR CONSTANT VOLUME SYSTEMS UNLESS NOTED OTHERWISE.

KEYED NOTES:
1. SUPPLY FAN IS SET UP AS A 1 ROW, 2 FAN ARRAY. THE SCHEDULED BHP AND HP VALUES ARE THE TOTAL BRAKE HORSEPOWERS AND THE TOTAL NAMEPLATE HORSEPOWERS RESPECTIVELY.
2. RTU-10 SHALL BE EQUIPPED WITH A VARIABLE SPEED COMPRESSOR CAPABLE OF TURNING DOWN TO 15% OF THE UNIT COOLING CAPACITY.
3. PROVIDE AIRSIDE ECONOMIZER WITH COMPARATIVE ENTHALPY CONTROL.
4. PROVIDE BIPOLAR IONIZATION WITH AIRFLOW SWITCH OPTION.
5. USE CURB ADAPTER WHERE NECESSARY AND REUSE EXISTING ROOF CURB. REFER TO EXISTING ROOF CURB SOUND ATTENUATION DETAIL.
6. MANUFACTURER TO INCLUDE TECHNICIAN TIME TO FIELD CONVERT NATURAL GAS HEAT CONTROL TO REMOTE HOT WATER HEATING CONTROL. CONTROL VALVE TO BE PROVIDED BY TC CONTRACTOR WITH ACTUATOR REQUIREMENTS TO BE COORDINATED WITH EQUIPMENT SUPPLIER.

COMMERCIAL ROOFTOP UNIT AIR CONDITIONING SCHEDULE - PART B

SEE PART "A"

SEE PART "C"

UNIT I.D.	PRE-FILTER SECTION				FINAL-FILTER SECTION				CURB			MAXIMUM UNIT DIMENSIONS			MAXIMUM UNIT OPERATING WEIGHT LBS. (WITHOUT CURB OR ADAPTER)	TOTAL UNIT ELECTRICAL						MODEL NO.	KEYED NOTES
	TYPE	MERV	AIR PRESS. DROP INITIAL IN. W.G.	AIR PRESS. DROP FINAL IN. W.G.	TYPE	MERV	AIR PRESS. DROP INITIAL IN. W.G.	AIR PRESS. DROP FINAL IN. W.G.	TYPE STANDARD	TYPE VIBRATION ISOLATION SPRING CURB	HEIGHT	LENGTH INCHES	HEIGHT WITHOUT CURB OR ADAPTER INCHES	WIDTH (INCHES)		VOLTS	PHASE	MCA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
RTU-10	2" PLEATED	8	0.10	0.25	2" CARTRIDGE	14	0.25	0.75	NOTE 5			240	88	91	6500	480	3	87.25	110	5	A	RA30	1, 2, 3, 4, 5, 6

NOTE: SEE NOTES UNDER PART "A"

COMMERICAL ROOFTOP AIR CONDITIONING UNIT SCHEDULE - PART C

SEE PART "B"

UNIT I.D.	MAXIMUM SOUND POWER LEVELS																													
	UNIT DISCHARGE Lw BY OCTAVE BAND								UNIT INLET Lw BY OCTAVE BAND								CASING RADIATED Lw BY OCTAVE BAND													
	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)						
RTU-10	94	92	167	90	87	88	85	73	96	150	167	93	78	73	71	55	102	103	93	90	87	83	79	74						

NOTE: SEE NOTES UNDER PART "A"

UNITARY ROOFTOP AIR CONDITIONING UNIT SCHEDULE

UNIT I.D.	SUPPLY FAN								COOLING SECTION – DX							INTEGRAL AIR-COOLED CONDENSING SECTION			FILTER SECTION				ROOF CURB		MAXIMUM UNIT DIMENSIONS			MAXIMUM UNIT OPERATING WEIGHT LBS. (WITHOUT CURB OR ADAPTER)	TOTAL UNIT ELECTRICAL						MODEL NO.	KEYED NOTES
	AIRFLOW CFM	MINIMUM OUTSIDE AIR FLOW CFM	E.S.P. IN. W.G.	FAN SUCTION OR DISCHARGE S.P. IN. W.G. AT COOLING COIL DRAIN PAN	T.S.P. IN. W.G.	FAN SPEED RPM	BHP	HP	MIXED AIR E.D.B. °F	MIXED AIR E.W.B. °F	UNIT LEAVING AIR L.D.B. °F	UNIT LEAVING AIR L.W.B. °F	NET UNIT CAPACITY TOTAL MBH	NET UNIT CAPACITY SENSIBLE MBH	NUMBER OF CIRCUITS	REFRIG. TYPE	MAX. FACE VEL. F.P.M.	DESIGN AMBIENT TEMP °F	MIN. AMBIENT TEMP. °F	NO. OF CAPACITY CONTROL STAGES	TYPE	MERV	AIR PRESS. DROP INITIAL IN. W.G.	AIR PRESS. DROP FINAL IN. W.G.	TYPE STANDARD	TYPE VIBRATION ISOLATION SPRING CURB	HEIGHT	LENGTH INCHES	HEIGHT WITHOUT CURB OR ADAPTER INCHES	WIDTH INCHES	VOLTS	PHASE	MCA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
RTU-11	3000	300	1.15	-0.44	1.60	1281	1.29	2.7	76.6	62.5	53.7	52.7	84.1	75.2	1	R-410A	---	95	50	NOTE 1	2" PLEATED	13	0.15	0.40	NOTE 4		89	48	54	1150	480	3	23	35	5	B	TCZ090F	1, 2, 3, 4, 5
RTU-12	3200	500	1.35	-0.57	1.92	1428	2.08	2.75	77.5	64.0	56.1	55.6	112.6	83.4	1	R-410A	---	95	50	NOTE 1	2" PLEATED	13	0.15	0.40	NOTE 4		100	51	64	1500	480	3	31	45	5	B	TCZ120F	1, 2, 3, 4, 5

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE TRANE UNLESS OTHERWISE NOTED
3. DESIGN MINIMUM OUTSIDE AIRFLOW CFM (VENTILATION) LISTED IS BASED ON THE ESTIMATED MAXIMUM OCCUPANT LOAD. REFER TO TEMPERATURE CONTROL DRAWINGS FOR OUTSIDE AIR CONTROL SEQUENCE.
4. MERV DESIGNATES THE "MINIMUM EFFICIENCY REPORTING VALUE" AS EVALUATED UNDER ASHRAE STANDARD 52.2 1999.
5. AIR HANDLING UNIT TOTAL STATIC PRESSURE FOR VARIABLE AIR VOLUME SYSTEMS IS BASED ON THE FILTER DIRTY AIR PRESSURE DROP AND AVERAGE/MIDLIFE FILTER AIR PRESSURE DROP FOR CONSTANT VOLUME SYSTEMS UNLESS NOTED OTHERWISE.

KEYED NOTES:
1. RTU-11 & RTU-12 SHALL BE EQUIPPED WITH A VARIABLE SPEED COMPRESSOR CAPABLE OF TURNING DOWN TO 25% OF THE UNIT COOLING CAPACITY.
2. PROVIDE AIRSIDE ECONOMIZER (WITH COMPARATIVE ENTHALPY CONTROL) WITH POWERED EXHAUST.
3. PROVIDE BIPOLAR IONIZATION WITH AIRFLOW SWITCH OPTION.
4. USE CURB ADAPTER WHERE NECESSARY AND REUSE EXISTING ROOF CURB. REFER TO EXISTING ROOF CURB SOUND ATTENUATION DETAIL.
5. MANUFACTURER TO INCLUDE TECHNICIAN TIME TO FIELD CONVERT NATURAL GAS HEAT CONTROL TO REMOTE HOT WATER HEATING CONTROL. CONTROL VALVE TO BE PROVIDED BY TC CONTRACTOR WITH ACTUATOR REQUIREMENTS TO BE COORDINATED WITH EQUIPMENT SUPPLIER.

UNIT I.D.	MAXIMUM SOUND POWER LEVELS															
	UNIT INLET Lw BY OCTAVE BAND								CASING RADIATED Lw BY OCTAVE BAND							
	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)
RTU-11	94	77	69	66	61	56	54	50	93	91	89	89	86	80	75	72
RTU-12	81	82	71	68	65	60	60	69	92	92	90	86	83	79	74	71

NOTE: SEE NOTES UNDER PART "A"

FAN SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	TYPE	AIRFLOW CFM	T.S.P. IN. W.G.	RPM	CLASS	ARRANGEMENT	OUTLET VELOCITY FPM	MOTOR BHP	MOTOR HP	MOTOR RPM	MOTOR DRIVE TYPE	MODULATION/ CONTROL TYPE	ELECTRICAL VOLTS	ELECTRICAL PHASE	ELECTRICAL SCCR KA (NOTE 3)	ELECTRICAL OPTIONS/ ACCESSORIES	MAXIMUM SOUND POWER LEVELS UNIT DISCHARGE Lw BY OCTAVE BAND 63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	MAXIMUM SOUND POWER LEVELS UNIT INLET Lw BY OCTAVE BAND 63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	MODEL NUMBER	KEYED NOTES
RF-1	HVAC-1	MIXED FLOW INLINE	4600	0.80	1246	I	HORIZONTAL – CEILING HUNG	1333	1.01	1 1/2	1170	DIRECT	VFC	480	3	10	B	82	79	78	79	78	74	66	56	77	80	79	77	74	73	65	57	QEID-20	
RF-2	HVAC-2	MIXED FLOW INLINE	4400	0.80	1200	I	HORIZONTAL – CEILING HUNG	1300	0.88	1	1170	DIRECT	VFC	480	3	10	B	78	75	74	76	75	70	62	52	72	75	75	73	71	69	61	53	QEID-18	

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED.
3. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.

M7.5

AIR-COOLED MODULAR CHILLER SCHEDULE

UNIT NUMBER	CAPACITY TONS	CHILLED WATER							COMPRESSOR MOTOR		EFFICIENCY		MODULATION/ CONTROL TYPE	ELECTRICAL						MODEL NUMBER	KEYED NOTES
		FLOW GPM	MINIMUM OPERATING FLOW GPM	FLUID TYPE	E.W.T. °F	L.W.T. °F	MAXIMUM W.P.D. FT. HEAD	FOULING FACTOR	NUMBER OF COMPRESSOR	KW TOTAL	MINIMUM FULL LOAD EER	MINIMUM IPLV (EER)		VOLTS	PHASE	MCA	MOCP	SCCR KA	OPTIONS/ ACCESSORIES		
CH-1	28.4	72	43	W	44.0	53.5	20.4	0.0001	1	26.9	11.3	13.5	AUTO	460	3	60.5	80	10	A	3MPA 030	
CH-2	27.2	72	43	W	44.4	53.4	20.4	0.0001	1	29.2	10.4	13.5	AUTO	460	3	60.5	80	10	A	3MPA 030	

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE CARRIER UNLESS OTHERWISE NOTED.
3. FLUID TYPE: W = WATER
4. EFFICIENCY RATINGS SHALL BE IN ACCORDANCE WITH ARI STANDARD 550/590-98 WITH ADDENDA THROUGH JULY 2002.

AIR-COOLED CONDENSER SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	TOTAL CAPACITY MBH	REFRIGERATION TYPE	NUMBER OF CIRCUITS	NUMBER OF CONTROL STAGES	CONDENSER		CONDENSER FAN	MODULATION/ CONTROL TYPE	ELECTRICAL						MODEL NUMBER	KEYED NOTES
						DESIGN AMBIENT TEMPERATURE °F	MINIMUM AMBIENT TEMPERATURE °F	QUANTITY		VOLTS	PHASE	MCA	MOCP	SCCR KA	OPTIONS/ ACCESSORIES		
ACC-1	CH-1 & CH-2	55.6	R-410A	2	3	95	55	5	AUTO	460	3	15.2	15	10	A	09DPM075	

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE CARRIER UNLESS OTHERWISE NOTED.
3. EFFICIENCY RATING SHALL BE IN ACCORDANCE WITH ARI-STANDARD 340/360-2004.

PUMP SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	LOCATION	TYPE	COUPLING TYPE	WATERFLOW GPM	FLUID TYPE	COLDEST SYSTEM OPERATING TEMP. °F FOR PUMP SELECTION	PUMP HEAD FT.	OVERLOAD GPM	MINIMUM EFFICIENCY %	MOTOR			MODULATION/ CONTROL TYPE	ELECTRICAL				MODEL NUMBER	KEYED NOTES
											BHP	HP	RPM		VOLTS	PHASE	SCCR KA (NOTE 4)	OPTIONS/ ACCESSORIES		
HWHP-3	HWH SYSTEM	BOILER ROOM 144	BASE-MOUNTED	FLEXIBLE	150	W	40	37	---	72.9	1.9	3	1800	VFC	480	3	10	---	E-1510-2AD	
HWHP-4	HWH SYSTEM (STANDBY)	BOILER ROOM 144	BASE-MOUNTED	FLEXIBLE	150	W	40	37	---	72.9	1.9	3	1800	VFC	480	3	10	---	E-1510-2AD	
CHWP-1	CHW SYSTEM	BOILER ROOM 144	BASE-MOUNTED	FLEXIBLE	125	W	40	60	---	71.1	2.64	5	1800	VFC	480	3	10	---	E-1510-2BD	
CHWP-2	CHW SYSTEM (STANDBY)	BOILER ROOM 144	BASE-MOUNTED	FLEXIBLE	125	W	40	60	---	71.1	2.64	5	1800	VFC	480	3	10	---	E-1510-2BD	
CP-1	HC-1	MECHANICAL ROOM 124	INLINE	CLOSE	24.5	W	40	25	---	---	---	0.17	3300	AUTO	120	1	10	---	PL-36	
CP-2	HC-2	2ND FLOOR MECHANICAL ROOM	INLINE	CLOSE	6.6	W	40	25	---	---	---	0.40	3250	AUTO	120	1	10	---	PL-55	
CP-10	HC-10	2ND FLOOR (BELOW RTU-10)	INLINE	CLOSE	12.0	W	40	25	---	---	---	0.17	3300	AUTO	120	1	10	---	PL-36	

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBER ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.
3. FLUID TYPE: W = WATER
4. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

POWER VENTILATOR SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	TYPE	AIRFLOW CFM	T.S.P. IN. W.G.	TIP SPEED FPM	FAN RPM	MOTOR				CURB HEIGHT INCHES	MODULATION/ CONTROL TYPE	ELECTRICAL						MAXIMUM SOUND POWER LEVELS										MODEL NUMBER	KEYED NOTES
							BHP	HP	RPM	DRIVE TYPE			VOLTS	PHASE	MCA	MOP	SCCR KA (NOTE 3)	OPTIONS/ ACCESSORIES	UNIT RADIATED Lw BY OCTAVE BAND								UNIT INLET Lw BY OCTAVE BAND									
																			63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)		
EF-1	LOCKER ROOMS	CENTRIFUGAL DOWNBLAST	1330	0.50	4145	1206	0.20	1/2	1550	DIRECT	18	ECM	120	1	8	15	5	A	–	–	–	–	–	–	–	–	73	73	75	68	63	61	54	48	G-130-VG	
EF-10	MENS 232/ WOMENS 234	CENTRIFUGAL DOWNBLAST	865	0.50	3990	1370	0.14	1/4	1725	DIRECT	18	ECM	120	1	4	15	5	A	–	–	–	–	–	–	–	–	71	76	70	64	56	54	49	42	G-100-VG	
EF-120	RESTROOM 120 (DISPATCH)	CENTRIFUGAL DOWNBLAST	100	0.50	3313	1131	0.03	1/4	1725	DIRECT	18	ECM	120	1	4	15	5	A	–	–	–	–	–	–	–	–	66	64	65	54	50	43	39	35	G-097-VG	
RLF-3	HVAC-3 RELIEF	CENTRIFUGAL DOWNBLAST	1000	0.40	4164	1430	0.16	1/4	1725	DIRECT	18	ECM	120	1	4	15	5	A	–	–	–	–	–	–	–	–	74	77	77	69	66	65	59	53	G-100-VG	
VF-1	CHILLER ROOM VENTILATION	INLINE CENTRIFUGAL	600	0.50	4829	1696	0.13	1/6	1725	DIRECT	---	ECM	120	1	---	---	5	B	81	81	68	61	56	45	36	36	80	79	74	67	61	51	42	40	SQ-95-VG	
VF-114	IT CLOSET 114	INLINE CENTRIFUGAL	100	0.30	3509	1650	0.03	1/15	1725	DIRECT	---	ECM	120	1	2	15	5	A	64	67	59	48	46	44	37	35	63	65	64	53	50	50	42	39	SQ-60-VG	

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED.
3. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

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SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.
M7.6

AIR TERMINAL TYPE

DUCT CONNECTIONS		DISCHARGE SOUND POWER/RADIATED SOUND POWER – dB						DIMENSIONS		MODEL NUMBER	KEYED NOTES
INLET SIZE INCHES	OUTLET SIZE INCHES	125 Hz	250 Hz	500 Hz	1000 Hz	2000 HZ	4000 HZ	LENGTH INCHES	HEIGHT INCHES		
6ø	12x8	73/66	69/63	62/52	56/42	53/40	49/36	22–1/8	8	SDV	1
8ø	12x10	72/68	70/59	66/53	63/47	57/46	53/46	20–1/8	10	SDV	2
10ø	14x12–1/2	78/71	70/61	65/56	61/50	58/47	53/45	20–1/8	12–1/2	SDV	3
12ø	16x15	76/72	73/63	69/59	65/53	61/48	57/46	20–1/8	15	SDV	4

GENERAL NOTES:
1. MODEL NUMBERS ARE PRICE UNLESS OTHERWISE NOTED.
2. MAXIMUM SOUND POWER LEVEL BASED ON 2" PRESSURE DROP ACROSS UNIT WITH NO ALLOWANCE FOR EXTERNAL ATTENUATION.

KEYED NOTES:
1. BASED ON 350 CFM
2. BASED ON 650 CFM
3. BASED ON 900 CFM
4. BASED ON 1500 CFM

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

UNIT IDENTIFICATION	TYPE	FACE SIZE	NECK SIZE	FRAME TYPE	ACCESSORY	CONSTRUCTION	FINISH	MODEL NUMBER	KEYED NOTES
S–1	DIFFUSER	24x24	SEE PLAN	LAY–IN	---	STEEL	WHITE	OMNI	
S–2	DIFFUSER	48x4	SEE PLAN	SEE PLAN	---	STEEL	WHITE	TBD–30	1
S–3	DIFFUSER	24x24	SEE PLAN	LAY–IN	---	ALUMINUM	WHITE	OMNI–AA	
R–1	GRILLE	24x24	22x22	LAY–IN	---	STEEL	WHITE	PAR	
R–2	GRILLE	24x12	22x10	LAY–IN	---	STEEL	WHITE	PAR	
R–3	GRILLE	D + 1–3/4	SEE PLANS	SURFACE MOUNT	OPPOSED BLADE DAMPER	STEEL	WHITE	23RL	
E–1	GRILLE	24x24	SEE PLAN	LAY–IN	---	STEEL	WHITE	PAR	
E–2	GRILLE	24x24	SEE PLAN	LAY–IN	---	ALUMINUM	WHITE	PAR–AA	
E–3	GRILLE	12x12	SEE PLAN	LAY–IN	---	STEEL	WHITE	PAR	

GENERAL NOTES:
1. MODEL NUMBERS ARE TITUS UNLESS OTHERWISE NOTED.
2. REFER TO ARCHITECT'S REFLECTED CEILING PLAN FOR FRAME TYPE.

KEYED NOTES:
1. 2–SLOT, 1" SLOT WIDTH

AIR TERMINAL UNIT WITH HOT WATER COIL SCHEDULE

UNIT IDENTIFICATION	INLET SIZE	AREA SERVED	UNIT SERVED FROM	AIR FLOW					HEATING COIL (NOTE 3)										KEYED NOTES
				COOLING MAX CFM	COOLING MIN. CFM	HEATING MIN. CFM	HEATING MAX CFM	MAXIMUM A.P.D. W/COIL IN. W.G.	CAPACITY MBH	NUMBER ROWS	AIR		WATER						
											E.D.B °F	L.D.B. °F	FLOW GPM	E.W.T. °F	L.W.T. °F	MAXIMUM W.P.D. FT. HEAD	CONTROL VALVE W.P.D. FT. HEAD	CONTROL VALVE TYPE	
TU–106	10	INTERVIEW ROOMS	HVAC–1	755	230	230	550	0.25	18.0	1	60.0	90.0	1.8	180	160	5.0	15	2–WAY	1
TU–111	8	LOBBY	RTU–10	635	145	180	350	0.25	6.6	1	60.0	85.7	1.0	180	160	5.0	15	2–WAY	1
TU–112	6	FRONT DESK OFFICE 109	RTU–10	230	80	80	200	0.25	5.0	1	60.0	83.4	0.5	180	160	5.0	15	2–WAY	1
TU–113	8	RECEPTION /FILING	RTU–10	560	145	145	220	0.25	7.2	1	60.0	90.2	0.7	180	160	5.0	15	2–WAY	
TU–114	8	RECEPTION /FILING	RTU–10	560	145	145	220	0.25	7.2	1	60.0	90.2	0.7	180	160	5.0	15	2–WAY	
TU–115	6	RECORDS SUPERVISOR	RTU–10	430	80	80	160	0.25	3.6	1	60.0	90.2	0.5	180	160	5.0	15	2–WAY	
TU–116	8	OFFICE 116	RTU–10	165	80	80	165	0.25	5.2	1	60.0	80.0	0.5	180	165	5.0	15	2–WAY	
TU–120	6	RECORDS STORAGE	RTU–10	170	80	90	200	0.25	5.0	1	60.0	83.1	0.5	180	160	5.0	15	2–WAY	1
TU–121	8	CAPTAIN'S OFFICE	RTU–10	420	145	145	200	0.25	6.4	1	60.0	89.5	0.6	180	160	5.0	15	2–WAY	1
TU–122	6	SECRETARY	RTU–10	340	80	80	180	0.25	3.7	1	60.0	78.7	0.5	180	165	5.0	15	2–WAY	1
TU–123	6	BREAKROOM	RTU–10	300	80	145	180	0.25	5.0	1	60.0	85.6	0.5	180	160	5.0	15	2–WAY	1
TU–124	8	WOMENS LOCKER ROOM	HVAC–1	500	500	500	500	0.25	13.6	1	60.0	85.0	0.9	180	160	5.0	15	2–WAY	1
TU–126	10	MENS LOCKER ROOM	HVAC–1	830	830	830	830	0.25	22.5	1	60.0	85.0	1.5	180	160	5.0	15	2–WAY	
TU–129	10	PROPERTY STORAGE	HVAC–1	850	240	240	525	0.25	17.0	1	60.0	89.9	1.7	180	160	5.0	15	2–WAY	1
TU–135	8	EQUIPMENT ROOM	HVAC–1	420	145	145	200	0.25	5.0	1	60.0	83.0	0.5	180	160	5.0	15	2–WAY	
TU–137	8	ARMORY	HVAC–1	515	150	150	300	0.25	10.0	1	60.0	90.7	1.0	180	160	5.0	15	2–WAY	
TU–142	12	BRIEFING/ DEBRIEFING	HVAC–1	990	335	335	375	0.25	10.0	1	60.0	84.5	1.0	180	160	5.0	15	2–WAY	
TU–154	12	BOOKING/ HOLDING CELLS	HVAC–1	1055	675	675	675	0.25	18.0	1	60.0	84.6	1.8	180	160	5.0	15	2–WAY	
TU–161	8	CELLS	HVAC–1	620	620	620	620	0.25	16.8	1	60.0	85.0	1.6	180	159	5.0	15	2–WAY	
TU–166	10	CORRIDOR	HVAC–1	885	430	430	495	0.25	16.0	1	60.0	89.8	1.6	180	160	5.0	15	2–WAY	
TU–171	6	HOLDING CELL	HVAC–1	245	245	245	245	0.25	6.7	1	60.0	85.0	0.6	180	158	5.0	15	2–WAY	
TU–201	8	ADMIN SEC	RTU–12	625	145	225	625	0.25	20.0	1	60.0	90.0	2.0	180	160	5.0	15	2–WAY	
TU–202	8	FIRE CHIEF	RTU–12	450	145	145	450	0.25	15.2	1	60.0	91.3	1.5	180	160	5.0	15	2–WAY	
TU–203	6	SEC CLERK FILE	RTU–12	350	80	215	350	0.25	13.7	1	60.0	96.1	1.4	180	160	5.0	15	2–WAY	
TU–204	8	BREAK ROOM	RTU–12	580	145	170	200	0.25	4.9	1	60.0	82.4	0.5	180	160	5.0	15	3–WAY	
TU–205	6	SS LT COMM	RTU–12	220	80	140	200	0.25	5.4	1	60.0	85.0	0.5	180	160	5.0	15	2–WAY	
TU–206	8	STORAGE	RTU–12	600	145	150	200	0.25	5.5	1	60.0	85.5	0.6	180	160	5.0	15	2–WAY	1
TU–207	8	OPEN OFFICE	RTU–12	415	145	200	225	0.25	6.1	1	60.0	85.0	0.6	180	160	5.0	15	2–WAY	
TU–208	6	COPY ROOM	RTU–12	120	80	80	80	0.25	2.4	1	60.0	87.5	0.5	180	170	5.0	15	2–WAY	
TU–209	6	OFFICE 222	RTU–12	200	80	80	175	0.25	5.9	1	60.0	90.1	0.6	180	160	5.0	15	2–WAY	
TU–210	8	PS DIRECTOR	HVAC–2	480	145	145	425	0.25	13.8	1	60.0	90.0	1.4	180	160	5.0	15	2–WAY	1
TU–211	10	ORD/SPC	HVAC–2	895	230	350	500	0.25	13.3	1	60.0	84.6	1.3	180	160	5.0	15	2–WAY	1
TU–212	6	MEETING RM	HVAC–2	345	80	80	140	0.25	3.8	1	60.0	85.3	0.5	180	165	5.0	15	2–WAY	
TU–213	6	SECRETARY	HVAC–2	140	80	80	155	0.25	3.7	1	60.0	82.2	0.5	180	165	5.0	15	2–WAY	
TU–214	6	CAPTAIN	HVAC–2	170	80	100	155	0.25	3.7	1	60.0	82.5	0.5	180	165	5.0	15	2–WAY	
TU–215	6	DB SGT/REC	HVAC–2	310	80	80	190	0.25	5.0	1	60.0	84.2	0.5	180	160	5.0	15	2–WAY	
TU–216	10	DB SOUTH	HVAC–2	690	230	230	400	0.25	13.3	1	60.0	90.8	1.3	180	160	5.0	15	2–WAY	1
TU–217	6	INTERVIEW/COPY	HVAC–2	245	80	80	160	0.25	4.3	1	60.0	85.3	0.6	180	165	5.0	15	2–WAY	1
TU–218	6	CORNER OFFICE	HVAC–2	310	80	80	270	0.25	8.8	1	60.0	90.1	0.9	180	160	5.0	15	2–WAY	
TU–219	8	LAB	HVAC–2	380	145	145	225	0.25	7.4	1	60.0	90.3	0.7	180	160	5.0	15	2–WAY	
TU–220	8	DB NORTH	HVAC–2	640	145	230	440	0.25	12.0	1	60.0	85.0	1.2	180	160	5.0	15	2–WAY	
TU–221	10	DB WEST	HVAC–2	830	230	230	320	0.25	10.4	1	60.0	90.1	1.0	180	160	5.0	15	2–WAY	
TU–222	8	2ND FL TOILETS	HVAC–2	570	570	570	570	0.25	15.0	1	60.0	83.8	1.5	180	160	5.0	15	2–WAY	
TU–223	6	FIRE MARSHALL	RTU–10	250	80	80	130	0.25	5.0	1	60.0	86.0	0.5	180	160	5.0	15	2–WAY	
TU–224	6	OFFICES 217/218	RTU–10	330	80	80	270	0.25	5.0	1	60.0	77.3	0.5	180	160	5.0	15	2–WAY	1
TU–225	12	FILE STORAGE	RTU–10	1250	325	325	325	0.25	7.4	1	60.0	81.1	0.7	180	160	5.0	15	2–WAY	
TU–226	6	OFFICE 214	RTU–10	320	80	80	240	0.25	7.7	1	60.0	89.6	0.8	180	160	5.0	15	2–WAY	1
TU–227	10	MEETING ROOM	RTU–10	930	230	475	475	0.25	10.3	1	60.0	80.0	1.0	180	160	5.0	15	2–WAY	
TU–228	10	CONFERENCE	RTU–10	900	230	440	440	0.25	9.5	1	60.0	80.0	1.0	180	160	5.0	15	2–WAY	
TU–229	10	CONFERENCE	RTU–10	900	230	440	440	0.25	9.5	1	60.0	80.0	1.0	180	160	5.0	15	2–WAY	
TU–230	10	STOR/CORR	RTU–10	700	230	230	230	0.25	5.7	1	60.0	85.0	0.6	180	160	5.0	15	2–WAY	
TU–231	8	SECURE LOBBY	RTU–10	600	145	145	225	0.25	7.0	1	60.0	88.6	0.7	180	160	5.0	15	2–WAY	
TU–232	6	HOTELING	RTU–10	280	80	80	185	0.25	5.0	1	60.0	85.0	0.5	180	160	5.0	15	2–WAY	1
TU–233	6	SOCIAL WORK	RTU–10	200	80	80	165	0.25	5.0	1	60.0	87.7	0.5	180	160	5.0	15	2–WAY	1

GENERAL NOTES:
1. MODEL NUMBERS ARE TITUS UNLESS OTHERWISE NOTED.
2. MAXIMUM PRESSURE DROP SCHEDULED SHALL BE THE MAXIMUM ALLOWABLE STATIC PRESSURE FOR BOX AND COIL. AT THE MAXIMUM CFM.
3. HEATING COIL SELECTION BASED ON HEATING MAXIMUM AIR FLOW.

KEYED NOTES:
1. AIR TERMINAL UNIT SHALL BE PROVIDED WITH BOTTOM ACCESS.

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022
Proposal Request No.3	09/27/2022

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SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.
M7.7

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

INDOOR UNIT														OUTDOOR UNIT												
UNIT IDENTIFICATION	AREA SERVED	TOTAL CAPACITY MBH	EVAPORATOR FAN		COOLING COIL			ELECTRICAL					MODEL NUMBER	UNIT IDENTIFICATION	CONDENSING SECTION				MODULATION/ CONTROL TYPE	ELECTRICAL						MODEL NUMBER	KEYED NOTES
			AIRFLOW CFM	NUMBER FANS	E.D.B. °F	E.W.B. °F	MINIMUM FACE AREA SQ. FT.	VOLTS	PHASE	MCA	MOP	SCCR KA			NUMBER OF COMPRESSORS	NUMBER OF CONTROL STAGES	AMBIENT TEMPERTURE °F	AIRFLOW CFM		VOLTS	PHASE	MCA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
ACU-102	DISPATCH (BACK-UP)	24	610	1	80	67	3.6	208	1	---	35	10	40MBCQ24--3	ACCU-102	1	MODULATING	95	2235	AUTO	208	1	25	35	10	---	38MARBQ24AA3	1, 2, 3
ACU-103	DISPATCH (BACK-UP)	24	610	1	80	67	3.6	208	1	---	35	10	40MBCQ24--3	ACCU-103	1	MODULATING	95	2235	AUTO	208	1	25	35	10	---	38MARBQ24AA3	1, 2, 3
ACU-201	IT ROOM	24	870	1	80	67	3.6	208	1	0.4	30	10	40MAHBQ24XA3	ACCU-201	1	MODULATING	95	2300	AUTO	208	1	25	35	10	---	38MAQB24R--3	1, 2, 3
ACU-202	COMPUTER ROOM	24	610	1	80	67	3.6	208	1	---	35	10	40MBCQ24--3	ACCU-202	1	MODULATING	95	2235	AUTO	208	1	25	35	10	---	38MARBQ24AA3	1, 2, 3

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS CARRIER UNLESS OTHERWISE NOTED. UNITS HAVE HEATING CAPABILITY.

KEYED NOTES:
1. INDOOR UNIT POWER FEED THROUGH OUTDOOR UNIT.
2. UNITS SHALL BE CAPABLE OF OPERATING DOWN TO 0 DEG. F.
3. PROVIDE PLENUM RATED CONDENSATE PUMP.

INTAKE HOOD SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	CFM	THROAT SIZE INCHES	HOOD INTAKE VELOCITY FPM	THROAT VELOCITY FPM	STATIC PRESSURE DROP IN. W.G.	HOOD SIZE			CURB HEIGHT INCHES	HOOD CONSTRUCTION	MODEL NUMBER	KEYED NOTES
							WIDTH INCHES	LENGTH INCHES	HEIGHT INCHES				
IH-1	VF-1	600	12x12	297	600	.047	26	27	14	18	GALVANIZED	FGI	

GENERAL NOTES:
1. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED.
2. PROVIDE WITH BIRD SCREEN.

AIR & DIRT SEPARATOR SCHEDULE

INLET/OUTLET PIPE SIZE (INCHES)	MAX SYSTEM FLOW (GPM)	MAX PRESSURE DROP CLEAN (FT HD)	BUNDLE REMOVAL CLEARANCE NOTE 3 (INCHES)	OPERATING WEIGHT (LBS)	TYPE	MODEL NUMBER	KEYED NOTES
4	220	1.10	16	250	STANDARD VELOCITY / AIR & DIRT	VDN 400 FA	

GENERAL NOTES:
1. MODEL NUMBERS ARE SPIROTHERM UNLESS OTHERWISE NOTED.
2. SEPARATOR FLANGE CONNECTION MUST BE A MINIMUM OF THE PIPE DIAMETER SIZE OF WHICH THE SEPARATOR IS INSTALLED.
3. MINIMUM BUNDLE REMOVAL CLEARANCE IS MEASURED FROM CENTERLINE OF INLET/OUTLET PIPING. PROVIDE CLEARANCE BELOW UNIT TO DIMENSION LISTED TO ALLOW REMOVAL OF HEAD AND ELEMENT BUNDLE.
4. REFER TO PUMP SCHEDULE FOR SYSTEM FLOW.

DUCT SILENCER SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	AIRFLOW CFM	MAX. A.P.D. IN. W.G.	VELOCITY AT DIL RATING FPM	DYNAMIC INSERTION LOSS (DIL) dB								DUCT DIMENSIONS		SILENCER LENGTH	CONSTRUCTION					MODEL NUMBER
					63	125	250	500	1K	2K	4K	8K	W INCHES	H INCHES	L INCHES	TYPE	OUTER CASING TYPE	FILL MATERIAL	LINER	CASING MATERIAL	
DS-1R	HVAC-1 RA	4600	0.09	1076	4	7	13	25	33	28	18	14	28ø	---	36	CS	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	CS
DS-1S	HVAC-1 SA	8000	0.13	1600	5	7	10	15	12	10	9	7	36	20	36	RS	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	RH36/WB
DS-2R	HVAC-2 RA	4400	0.09	1165	11	15	20	29	31	28	24	20	34	16	86	RE	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	ERM86/VA
DS-2SA	HVAC-2 SA	3500	0.10	1556	4	6	11	19	20	16	13	10	18	18	36	RS	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	RH36/3B
DS-2SB	HVAC-2 SA	2300	0.11	1314	4	7	11	21	21	16	14	12	18	14	36	RS	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	RH36/3B
DS-10R	RTU-10 RA	8500	0.10	1159	7	11	20	26	32	31	26	22	24	44	48	RE	STANDARD	FIBERGLASS	22 GA GALVANIZED	22 GA GALVANIZED	ERM48/1A
DS-10SA	RTU-10 SA	5500	0.12	1375	7	9	12	18	13	10	9	8	36	16	48	RS	STANDARD	FIBERGLASS	22 GA GALVANIZED	22 GA GALVANIZED	RM48/WB
DS-10SB	RTU-10 SA	4300	0.12	1613	7	10	14	18	19	19	18	17	24	16	48	RE	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	ERM48/6A
DS-11R	RTU-11 RA	3000	0.04	844	6	8	12	18	14	11	9	7	32	16	36	RS	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	RM36/UB
DS-11S	RTU-11 SA	3000	0.05	964	6	7	11	17	13	11	10	7	32	14	36	RS	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	RM36/UB
DS-12R	RTU-12 RA	3000	0.06	844	8	13	21	26	33	30	26	23	32	16	46	RE	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	ERM46/2B
DS-12S	RTU-12 SA	3200	0.11	1176	7	11	18	24	30	30	26	23	28	14	44	RE	STANDARD	FIBERGLASS	22 GA GALVANIZED	18 GA GALVANIZED	ERM44/2B

GENERAL NOTES:
1. DUCT SILENCER MODEL NUMBERS ARE BASED ON PRICE NOISE CONTROL UNLESS OTHERWISE NOTED.
2. LENGTH SHOWN FOR ELBOW SILENCERS IS CENTERLINE LENGTH.
3. VELOCITY SHOWN IS +(FORWARD FLOW) OR -(REVERSE FLOW) AS DEFINED BY ASTM E477-99.
4. PRESSURE DROP, DYNAMIC INSERTION LOSS AND SELF GENERATED NOISE PER ASTM E477-99.
5. MAXIMUM PRESSURE DROP WITH SYSTEM EFFECTS = SILENCER PRESSURE DROP PER ASTM E477-99 + SYSTEM EFFECTS FOR NEARBY DUCT ELEMENTS.
6. TYPE: RS = RECTANGULAR STRAIGHT; RE = RECTANGULAR ELBOW; REE = RECTANGULAR EXTENDED ELBOW; CS = CIRCULAR STRAIGHT; CE = CIRCULAR ELBOW.

EXPANSION TANK SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	ESTIMATED TOTAL SYSTEM VOLUME GALLONS	TYPE	FLUID TYPE	SYSTEM FILL VALVE PRESSURE SETTING PSIG	OPERATING PRESSURES AT EXPANSION TANK		SYSTEM OPERATING TEMPERATURES		EXPANSION VOLUME GALLONS	ACCEPTANCE FACTOR	MINIMUM TANK VOLUME GALLONS	DIMENSIONS		MODEL NUMBER	KEYED NOTES
						PRE-CHARGE PSIG	MAX (OPERATING) PSIG	MINIMUM °F	MAXIMUM °F				DIAMETER INCHES	HEIGHT INCHES		
ET-1	CHW SYSTEM	285	DIAPHRAM	WATER	15	19.8	34.5	40	90	1.2	0.3	4	12	19	D15V	
ET-2	DWH SYSTEM	236	DIAPHRAM	WATER	---	35	74.6	40	140	3.3	0.39	9.3	15-3/8	19-1/4	PT-25V	

GENERAL NOTES:
1. MODEL NUMBERS ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL PRE-CHARGE THE TANK TO THE VALUE INDICATED IN THE SCHEDULE. FOR TANKS THAT ARE SUPPLIED PRE-CHARGED BY THE MANUFACTURER, THE CONTRACTOR SHALL CONFIRM THE PRESSURE AND MAKE ADJUSTMENTS AS REQUIRED.

HOT WATER RADIANT CEILING PANEL SCHEDULE

UNIT IDENTIFICATION	CAPACITY BTUH/ LINEAR FT.	FLUID TYPE	WATER TEMP		DIMENSIONS		FINISH	CONSTRUCTION	CONTROL VALVE W.P.D. FT. HEAD	MODEL NUMBER	KEYED NOTES
			E.W.T. °F	L.W.T. °F	LENGTH INCHES	WIDTH INCHES					
RCP-1	303	W	180	160	SEE PLANS	1'-6"	WHITE	ALUMINUM	15	NOTE 2	
RCP-2	212	W	180	160	SEE PLANS	1'-0"	WHITE	ALUMINUM	15	NOTE 2	

GENERAL NOTES:
1. MODEL NUMBERS ARE AIRTEX UNLESS OTHERWISE NOTED.
2. EXTRUDED ARCHITECTURAL SPACE MASTERY SERIES HEF-2 FLUTED.
3. FLUID TYPE: W = WATER

HOT WATER PROPELLER FAN UNIT HEATER SCHEDULE

UNIT IDENTIFICATION	CAPACITY MBH	AIRFLOW CFM	LEAVING AIR TEMPERATURE °F	FAN		WATER					CONTROL VALVE W.P.D. FT. HEAD	MODULATION/ CONTROL TYPE	ELECTRICAL					MODEL NUMBER	KEYED NOTES
				W	RPM	FLOW GPM	FLUID TYPE	E.W.T. °F	L.W.T. °F	MAXIMUM W.P.D. FT. HEAD			VOLTS	PHASE	MCA	SCCR KA	OPTIONS/ ACCESSORIES		
UH-2	24,800	580	102	25	1550	2.5	W	180	160	2.2	15	AUTO	115	1	1.5	10	---	HS-125A	

GENERAL NOTES:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE STERLING UNLESS OTHERWISE NOTED.
3. FLUID TYPE: W = WATER

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KEY PLAN

OWNER
Canton Township
Public Safety

PROJECT NAME
Public Safety Building
Interior Renovations

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Canton, MI 48188

PROJECT NO.
21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022
Addendum 01	03/18/2022

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SHEET NAME
MECHANICAL SCHEDULES

SHEET NO.
M7.8

TEMPERATURE CONTROL - SYMBOLS LIST

SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
AQ	AQUASTAT, STRAP ON BULB
CO2	CARBON DIOXIDE SENSOR – WALL MOUNTED
CO2	CARBON DIOXIDE SENSOR – DUCT MOUNTED
CS	CURRENT SWITCH
	DAMPER – OPPOSED BLADE
	DAMPER – PARALLEL BLADE
M	DAMPER MOTOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
FM	FLOW METER
FS	FLOW SWITCH
FZ	FREEZESTAT
	GUARD FOR STAT OR SENSOR
H	SPACE HUMIDITY SENSOR
H	HUMIDITY SENSOR, DUCT MOUNTED
	LINE – ELECTRIC
	LINE – PNEUMATIC
M	MAIN AIR
M/S	MOTOR STARTER
OS	OCCUPANCY SENSOR
PT	PRESSURE TRANSMITTER
R	RELAY, ELECTRIC
N	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)
AI	SIGNAL – DDC/BAS, ANALOG INPUT
AO	SIGNAL – DDC/BAS, ANALOG OUTPUT
DI	SIGNAL – DDC/BAS, DIGITAL INPUT
DO	SIGNAL – DDC/BAS, DIGITAL OUTPUT
AI	SIGNAL – PACKAGED EQUIPMENT, ANALOG INPUT
AO	SIGNAL – PACKAGED EQUIPMENT, ANALOG OUTPUT
DI	SIGNAL – PACKAGED EQUIPMENT, DIGITAL INPUT
DO	SIGNAL – PACKAGED EQUIPMENT, DIGITAL OUTPUT
DD	SMOKE DETECTOR – DUCT MOUNTED
S/S	START/STOP RELAY
SP	STATIC PRESSURE SENSOR OR PROBE

SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
T	TEMPERATURE SENSOR – DUCT MOUNTED AVG ELEMENT
T	TEMPERATURE SENSOR – DUCT MOUNTED RIGID ELEMENT
T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)
	VALVE – 2 WAY CONTROL VALVE
	VALVE – 3 WAY CONTROL VALVE
VFC	VARIABLE FREQUENCY CONTROLLER
XF	TRANSFORMER

WIRING SYMBOLS

SYMBOL	DESCRIPTION
M/S	COIL – MOTOR STARTER CONTACTOR
R	COIL – RELAY
	CONTACT – INSTANT OPERATING, NO
	CONTACT – INSTANT OPERATING, NC
	GROUND
	MOTOR, SINGLE PHASE
1 2	SWITCH – 2 POSITION SELECTOR
H O A	SWITCH – 3 POSITION SELECTOR HAND/OFF/AUTO
	SWITCH – TEMPERATURE ACTUATED, NO
	THERMAL OVERLOAD, SINGLE PHASE
OLs	THERMAL OVERLOAD CONTACTS – 3 PHASE
	TRANSFORMER
	WIRE TERMINATION AT DEVICE
	WIRE TO WIRE TERMINATION

ABBREVIATIONS

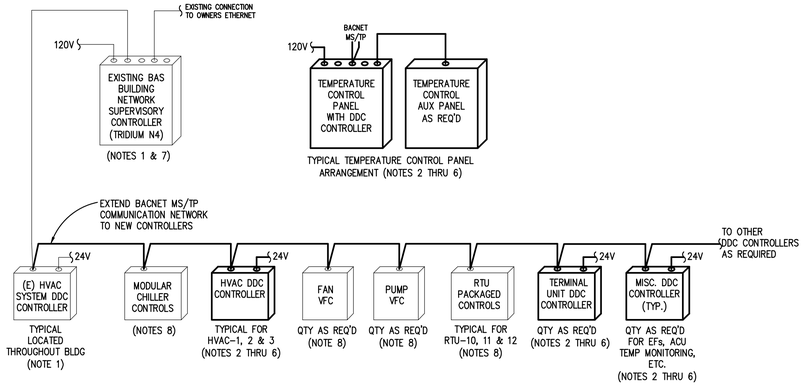
ABBREVIATION	DESCRIPTION
BAS	BUILDING AUTOMATION SYSTEM
DDC	DIRECT DIGITAL CONTROL
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
TC	TEMPERATURE CONTROLS

NOTES:

1. SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT
2. REFER TO MECHANICAL STANDARDS ON DRAWING M0.1 FOR ADDITIONAL SYMBOLS & ABBREVIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL DRAWINGS.

TC GENERAL NOTES

1. THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TEMPERATURE CONTROL (TC) DRAWINGS.
2. "PROVIDE" IS DEFINED AS "FURNISH AND INSTALL".
3. TEMPERATURE CONTROLS CONTRACTOR (TC CONTRACTOR) SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
4. FOR TEMPERATURE CONTROL DRAWINGS ONLY: ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE PROVIDED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT SHALL BE PROVIDED BY OTHER TRADES.
5. ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS' WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION.
6. TC CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
7. ALL TC PROVIDED COMPONENTS AND ALL TC CONTRACTOR INSTALLED WIRING SHALL BE LABELED PER SPECIFICATIONS.
8. ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE ELECTRICAL SPECIFICATIONS.
9. VARIABLE FREQUENCY CONTROLLER, FAN AND PUMP MOTOR STARTERS, STARTER WIRING, CONTROL VOLTAGE TRANSFORMERS AND ASSOCIATED POWER WIRING SHALL BE PROVIDED BY OTHER TRADES.
10. DUCT SMOKE DETECTORS SHALL BE FURNISHED, INSTALLED AND WIRED TO THE FIRE ALARM SYSTEM BY THE ELECTRICAL CONTRACTOR. ELECTRICAL SHALL PROVIDE FIRE ALARM SYSTEM CONTROL MODULES FOR REQUIRED SAFETIES TO MOTOR STARTERS OR VFC'S AS INDICATED. CONTROL MODULES SHALL BE LOCATED NEAR RESPECTIVE MOTOR STARTERS OR VFCs. TC CONTRACTOR SHALL PROVIDE INTERLOCK WIRING FROM CONTROL MODULES TO MOTOR STARTERS OR VFCs.
11. ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR UNLESS OTHERWISE NOTED. TC CONTRACTOR SHALL COORDINATE WITH VFC AND MOTOR STARTER SUPPLIERS TO DETERMINE EXACT WIRING REQUIREMENTS AND TERMINATION POINTS.
12. ALL DDC AND CONTROL INTERLOCK WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
13. ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH ELECTRICAL SPECIFICATION REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR 120V WIRING AND THE OTHER FOR 24V WIRING.
14. TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PANEL SCHEDULES FOR SPARE CIRCUITS OR CIRCUITS DEDICATED TO TEMPERATURE CONTROLS. COORDINATE CIRCUIT USE WITH ELECTRICAL CONTRACTOR.
15. TC CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
16. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES. PROVIDE WALL MOUNTED DEVICE GUARDS WHERE INDICATED ON TC DETAILS OR AT SPECIFIC LOCATIONS INDICATED ON MECHANICAL FLOOR PLANS.
17. TC CONTRACTOR SHALL PROVIDE AUXILIARY PANELS FOR REQUIRED PANEL MOUNTED EQUIPMENT SUCH AS RELAYS, TRANSDUCERS, CONTROL TRANSFORMERS, ETC. AUXILIARY PANELS SHALL BE LOCATED NEXT TO ASSOCIATED DDC PANEL. DEPENDING ON WIRE QUANTITY OR COMPLEXITY, PROVIDE CONDUITS BETWEEN PANELS OR WIRING THROUGH WITH CONDUIT STUBS ABOVE ALL ASSOCIATED PANELS.
18. REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSED IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
19. CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
20. FREEZESTATS SHALL BE MOUNTED ON UPSTREAM FACE OF COOLING COILS. FREEZESTAT QUANTITY SHALL BE ONE PER 20 SQ. FT OF CROSS SECTIONAL AREA.
21. CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
22. ALL CONTROL VALVES, CONTROL DAMPERS AND ASSOCIATED CONTROL ACTUATORS IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TC CONTRACTOR UNLESS OTHERWISE NOTED. DAMPER SIZE AND LOCATIONS ARE INDICATED ON MECHANICAL FLOOR PLAN DRAWINGS.
23. ALL CONTROL VALVES AND DAMPERS FURNISHED BY THE TC CONTRACTOR SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR. ALL PIPE PENETRATIONS AND BASIC FITTINGS REQUIRED FOR SENSOR INSTALLATIONS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR.
24. DAMPER ACTUATORS SHALL BE INSTALLED BY TC CONTRACTOR WHEN FURNISHED BY TC CONTRACTOR.
25. ALL INSTRUMENTATION TUBING REQUIRED FOR DPS COMPONENT INSTALLATIONS SHALL BE PROVIDED BY TC CONTRACTOR.
26. TC CONTRACTOR SHALL FIELD MOUNT ALL REQUIRED "SHIPPED LOOSE" PACKAGED CONTROL COMPONENTS FURNISHED BY EQUIPMENT SUPPLIERS WHERE INDICATED. ALL REQUIRED 24V AND 120V FIELD WIRING SHALL BE PROVIDED BY TC CONTRACTOR UNLESS NOTED OTHERWISE. TC CONTRACTOR SHALL COORDINATE SPECIFIC SYSTEM WIRING REQUIREMENTS WITH PACKAGED EQUIPMENT SUPPLIERS.

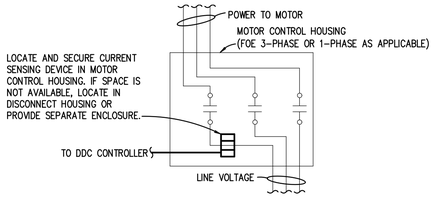


DDC SYSTEM ARCHITECTURE

NO SCALE

NOTES:

1. EXISTING BUILDING AUTOMATION SYSTEM IS COMPRISED OF JOHNSON CONTROLS FACILITY EXPLORER CONTROLLERS CONNECTED TO AN EXISTING TRIDIUM NIAGARA 4 (N4) OPERATOR INTERFACE PLATFORM. THE EXISTING BAS SHALL BE MODIFIED AND EXPANDED AS REQUIRED TO ACCOMMODATE PROJECT SCOPE OF WORK.
2. REFER TO TEMPERATURE CONTROL SCHEMATICS FOR THE REQUIRED POINTS ASSOCIATED FOR EACH SYSTEM.
3. TC CONTRACTOR SHALL DETERMINE DDC PANEL QUANTITY BASED ON POINT DENSITIES AND AVAILABLE MOUNTING SPACE. UNLESS SPECIFICALLY NOTED IN DESIGN DRAWINGS, TC CONTRACTOR SHALL LOCATE DDC PANELS AND COORDINATE WITH THEIR ELECTRICAL SUBCONTRACTOR.
4. TC CONTRACTOR SHALL PROVIDE REQUIRED POWER SUPPLIES FROM EXISTING CIRCUITS USED AT EXISTING TC PANELS OR FROM SPARE CIRCUITS AS AVAILABLE IN EXISTING 120V ELECTRICAL PANELS TO BE FIELD DETERMINED AS REQUIRED. REFER TO FLOOR PLAN DWGS FOR EXISTING ELECTRICAL PANEL LOCATIONS.
5. 24V TRANSFORMERS REQUIRED FOR TERMINAL UNIT DDC CONTROLLERS SHALL BE NEW LOCATED IN MECHANICAL, ELECTRICAL ROOMS OR IN CONTRACTOR IDENTIFIED LOCATIONS ABOVE CEILING IN ENCLOSURES – COORDINATE LOCATIONS. MAXIMUM TRANSFORMER SIZE SHALL BE 100VA. PROVIDE ENCLOSURE(S) FOR TRANSFORMERS.
6. AUXILIARY PANEL FOR GAUGES, TRANSMITTERS, RELAYS, POWER TRANSFORMERS, ETC.
7. BUILDING DDC NETWORK IS BE CONNECTED TO THE ETHERNET, TC CONTRACTOR. COORDINATE EXISTING ETHERNET CONNECTION AND I/P ADDRESS WITH OWNER'S INFORMATION TECHNOLOGY PERSONNEL.
8. TC CONTRACTOR SHALL PROVIDE BACnet COMMUNICATION TO VARIABLE FREQUENCY CONTROLLERS, RTU PACKAGED CONTROLS AND OTHER EQUIPMENT CONTROLS WITH BACnet COMMUNICATION CAPABILITY WHERE APPLICABLE FOR ADDITIONAL MONITORING INFORMATION.
9. TC CONTRACTOR SHALL PROVIDE NEW MODBUS OPEN PROTOCOL COMMUNICATION TO EXISTING BOILER CONTROLLER FOR ADDITIONAL MONITORING CAPABILITIES. UTILIZE POINT DISCOVERY PROCESS TO IMPORT APPROPRIATE MONITORING INFORMATION.

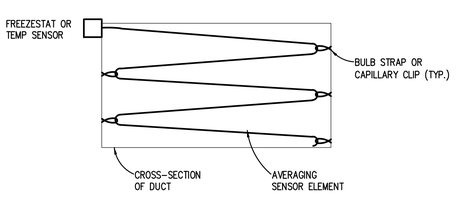


CURRENT SWITCH INSTALLATION DETAIL

TYPICAL

NOTES:

1. WHERE INDICATED ON CONTROL DETAILS, CURRENT SWITCHES SHALL BE INSTALLED FOR DDC SYSTEM STATUS INDICATION OF FAN OPERATION. APPROPRIATE TIME DELAY FOR STATUS FEEDBACK UPON DDC START AND STOP COMMANDS SHALL BE INCLUDED WITH THE DDC LOGIC TO AVOID NUISANCE OPERATIONAL ALARMS.
2. FOR FANS WITH ECM, PROVIDE CURRENT SWITCH TYPE APPLICABLE FOR ECMs.
3. FOR FANS WITH BELTS, CURRENT SWITCH SHALL BE ADJUSTED TO MEET THE CURRENT DRAW REQUIRED TO DETECT FAN BELT LOSS.
4. WHEN FAN IS ON AND NOT IN ALARM, DDC SYSTEM SHALL TOTALIZE RUN TIME HOURS FOR OPERATOR INFORMATION FROM BUILDING AUTOMATION SYSTEM OPERATOR INTERFACE.

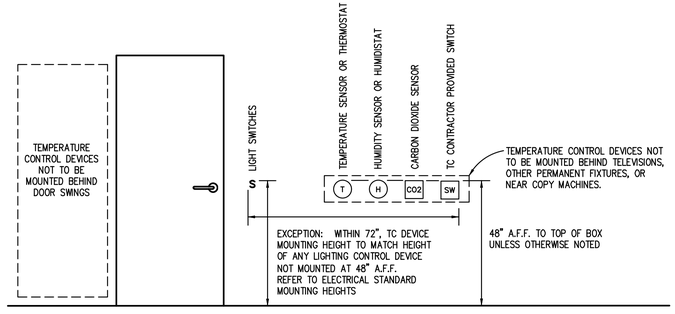


AVERAGING ELEMENT INSTALLATION DETAIL

TYPICAL

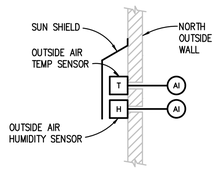
NOTES:

1. FREEZESTAT QUANTITY SHALL BE ONE PER 20 SQ. FT. OF CROSS-SECTIONAL AREA.
2. AVERAGING DDC SENSOR QUANTITY SHALL BE SUFFICIENT TO COVER AND SENSE THE CROSS-SECTIONAL AREA.
3. PROVIDE REQUIRED CAPILLARY STRAP OR CLIPS TO SUPPORT SENSOR TO PREVENT VIBRATION FROM AIR MOVEMENT.
4. PROVIDE PROTECTION AT EACH CAPILLARY STRAP OR CLIP TO PREVENT ABRASION TO CAPILLARY.



TC DEVICE STANDARD MOUNTING HEIGHTS DETAIL

NO SCALE



OA SENSOR INSTALLATION DETAIL

NO SCALE

NOTES:

1. TC CONTRACTOR SHALL REPLACE EXISTING OA TEMP AND HUMIDITY SENSORS ASSOCIATED WITH EXISTING BAS (CONNECTED TO EXISTING DDC CONTROLLER IN BOILER RM).
2. CALCULATE OA ENTHALPY OR DEW POINT TEMPERATURE AS REQUIRED PER SEQUENCE OF OPERATION REQUIREMENTS.
3. BROADCAST OUTSIDE AIR TEMPERATURE, HUMIDITY, AND CALCULATED OA ENTHALPY OR DEWPOINT TEMPERATURE, AS REQUIRED, THROUGH BAS COMMUNICATION NETWORK TO CONTROLLERS REQUIRING INFORMATION FOR DDC PROGRAMMING LOGIC.

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PBA Project No. 2021.0163

KEY PLAN

OWNER

Canton Township Public Safety

PROJECT NAME

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1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

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JWC

APPROVED BY

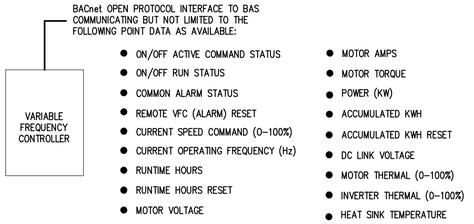
DAC

SHEET NAME

TEMPERATURE CONTROL STANDARDS AND GENERAL NOTES

SHEET NO.

M8.1

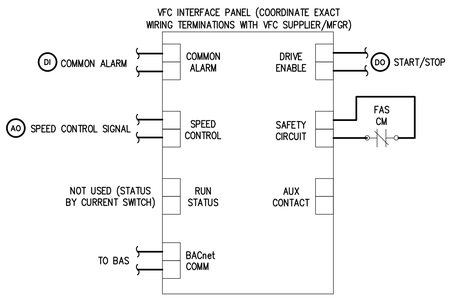


VFC BACnet INTERFACE & MONITORING REQUIREMENTS

TYPICAL FOR PUMP & FAN VFCs

NOTE:

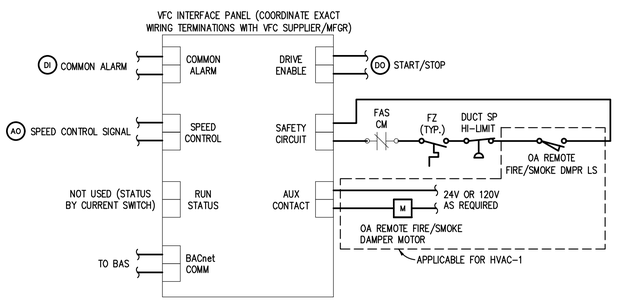
TC CONTRACTOR SHALL COORDINATE BACnet OPEN PROTOCOL WIRE TERMINATION REQUIREMENTS AND POINT INTEGRATION CAPABILITIES WITH VFC SUPPLIER/MANUFACTURER AND PROVIDE APPROPRIATE BAS COMPONENTS FOR COMMUNICATION INTERFACE TO BAS.



HVAC-1 & 2 RF VFC WIRING

TYPICAL

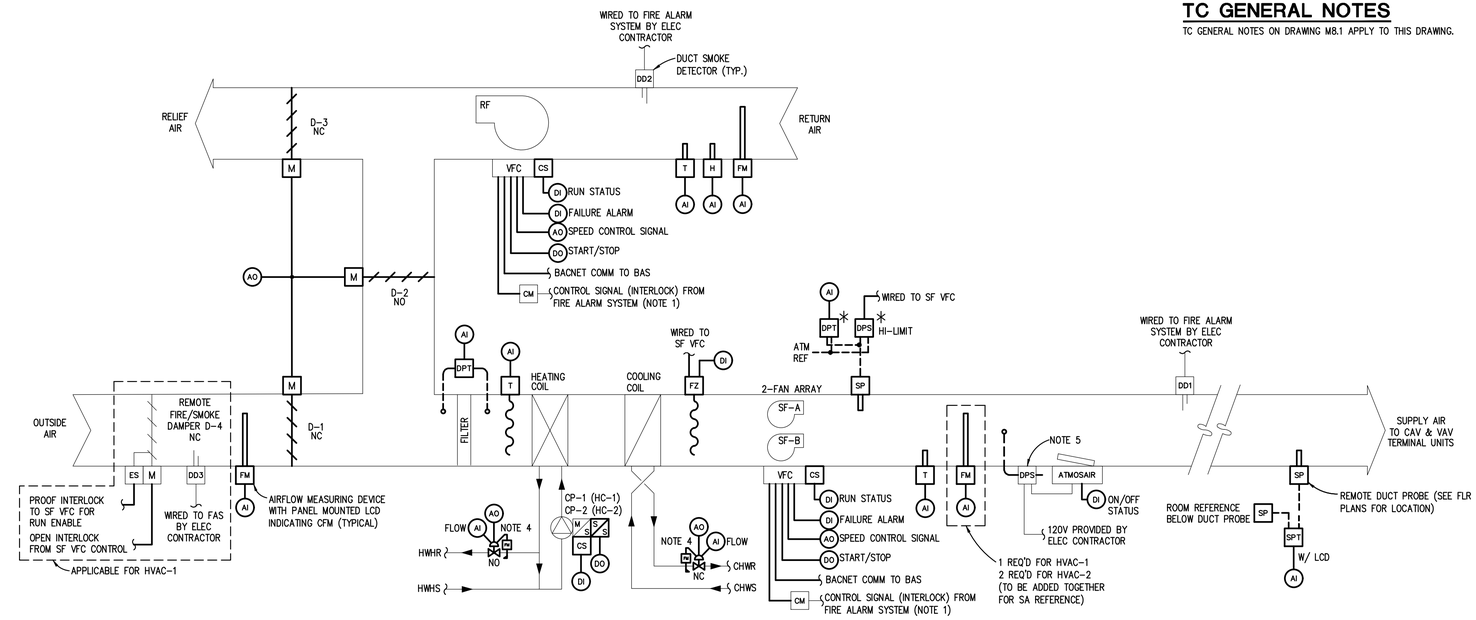
NOTE: WIRING DETAIL IDENTIFIES INTENT AND DOES NOT INDICATE ACTUAL WIRING REQUIREMENTS. CONSULT WITH VFC SUPPLIER/MFGR FOR THE ACTUAL WIRING REQUIREMENTS.



HVAC-1 & 2 SF VFC WIRING

TYPICAL EXCEPT WHERE NOTED

NOTE: WIRING DETAIL IDENTIFIES INTENT AND DOES NOT INDICATE ACTUAL WIRING REQUIREMENTS. CONSULT WITH VFC SUPPLIER/MFGR FOR THE ACTUAL WIRING REQUIREMENTS.



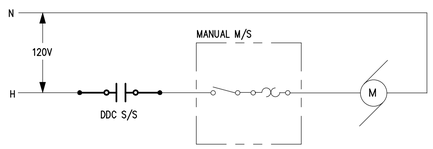
HVAC-1 & 2 CONTROL

TYPICAL EXCEPT WHERE NOTED

CP-1 FOR HVAC-1, CP-2 FOR HVAC-2

NOTES:

1. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE. TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO MOTOR CONTROL CIRCUIT.
2. OUTSIDE, RETURN, & RELIEF DAMPERS ARE TO BE FURNISHED BY TC CONTRACTOR AND INSTALLED BY MECH CONTRACTOR. TC CONTRACTOR SHALL PROVIDE DAMPER ACTUATORS.
3. REFER TO VFC BACnet INTERFACE & MONITORING REQUIREMENTS DETAIL.
4. TC CONTRACTOR SHALL FURNISH 2-WAY PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVES (BELIMO MODEL EPIV). SELECT VALVE TO ACHIEVE THE SCHEDULED FLOW RATE. COORDINATE WITH MECH CONTRACTOR TO ENSURE REQUIRED 5-PIPE DIAMETER STRAIGHT PIPE AT VALVE INLET. CONTROL VALVE CAN BE MOUNTED IN VERTICAL POSITION IF NECESSARY.
5. AIR PROOF DIFFERENTIAL PRESSURE SWITCH FURNISHED WITH ATMOSAIR IAQ SYSTEM SHALL BE INSTALLED BY TC CONTRACTOR. TC CONTRACTOR SHALL PROVIDE DUCT PROBE AND TUBING. ELECTRICAL CONTRACTOR SHALL WIRE ATMOSAIR POWER SUPPLY THRU DPS.



COIL CIRC PUMP CP-1 & 2 M/S WIRING

TYPICAL

SEQUENCE OF OPERATION

HVAC-1 & 2 (TYPICAL):

NOTE: ALL SETPOINTS INCLUDING RESET SCHEDULE SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS.

SYSTEM START UP

1. SUPPLY FANS AND SOFTWARE INTERLOCKED RETURN FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. HVAC UNIT SHALL BASED ON TIME SCHEDULED BUILDING OCCUPIED MODE COMPENSATED BY OPTIMUM START PROGRAM. HVAC UNIT SHALL BE CYCLED ON & OFF DURING BUILDING UNOCCUPIED MODE BASED ON ASSOCIATED TERMINAL UNIT CONTROL UNOCCUPIED HEATING AND COOLING SETPOINTS.
2. FOR HVAC-1 ONLY: REMOTE OUTDOOR AIR FIRE /SMOKE DAMPER SHALL BE WIRED TO SF VFC. WHEN SF IS ACTIVATED BY DDC OR MANUALLY THRU HOA SWITCH, OA FIRE/SMOKE DAMPER SHALL OPEN. DAMPER OPEN PROOF END SWITCH SHALL BE WIRED TO VFC SAFETY CIRCUIT TO PREVENT FAN FROM OPERATING IF A DAMPER IS CLOSED. MIXING OA DAMPER AT HVAC UNIT SHALL MODULATE FOR HVAC UNIT OPERATION DURING OCCUPIED MODE AND REMAIN CLOSED DURING UNOCCUPIED CYCLING MODE.
3. PRE-OCCUPANCY WARM-UP MODE SHALL BE UTILIZED WITH DDC OPTIMUM START/STOP PROGRAMMING BASED ON SPACE TEMPERATURE FEEDBACK. WHEN UNIT IS ACTIVATED DURING PRE-OCCUPANCY, OA DAMPERS SHALL REMAIN IN FULL RECIRC POSITION. OA DAMPER CONTROL SHALL RESUME WHEN OCCUPANCY MODE BEGINS.

SYSTEM TEMPERATURE SETPOINTS

4. FOR HEATING AND COOLING OCCUPIED MODE, HVAC UNIT SHALL BE CONTROLLED TO MAINTAIN DISCHARGE AIR TEMP SETPOINT AND ZONE TERMINAL UNITS (AND FUTURE VAV TERMINAL UNITS) WITH ASSOCIATED TEMPERING COILS SHALL BE CONTROLLED BY UNITARY DDC CONTROLLERS TO MAINTAIN RESPECTIVE ZONE SPACE TEMP SETPOINT (REFER TO AIR TERMINAL UNIT – SEQUENCES OF OPERATION).
5. FOR HEATING UNOCCUPIED MODE, HVAC UNIT SHALL CYCLE ON & OFF TO MAINTAIN A SETBACK SPACE TEMPERATURE OF 62°F. DDC SHALL REFERENCE ALL VAV TERMINAL UNIT CONTROLLERS ASSOCIATED WITH HVAC UNIT AND CYCLE HVAC UNIT BASED ON THE LOWEST SPACE TEMP READING.
6. FOR COOLING UNOCCUPIED MODE, HVAC UNIT SHALL CYCLE ON & OFF TO MAINTAIN A SETUP TEMPERATURE OF 80°F. DDC SHALL REFERENCE ALL VAV TERMINAL UNIT CONTROLLERS ASSOCIATED WITH HVAC UNIT AND CYCLE HVAC UNIT BASED ON THE HIGHEST SPACE TEMP READINGS.

FAN STATUS MONITORING

7. EACH SF AND RF STATUS SHALL BE MONITORED BY DDC THRU RESPECTIVE CURRENT SWITCH. ABNORMAL STATUS CONDITION SHALL ACTIVATE ALARM.
8. ADDITIONAL STATUS MONITORING INFORMATION FOR SFs AND RF SHALL BE AVAILABLE THRU DDC SHALL THRU RESPECTIVE BAS COMMUNICATION INTERFACE.

CONTROL OF DAMPERS, HEATING COIL & COOLING COIL

9. DDC SHALL ACTIVATE HEATING COIL CIRC PUMP WHENEVER OA TEMP IS BELOW 55°F WITH SF ACTIVATED OR WHENEVER OA TEMP IS BELOW 40°F WITH SF DEACTIVATED. PUMP STATUS SHALL BE MONITORED BY DDC THRU CURRENT SWITCH. ABNORMAL STATUS CONDITION SHALL ACTIVATE ALARM.
10. WHEN HVAC UNIT IS ACTIVATED IN THE OCCUPIED MODE; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL BE ALLOWED TO MODULATE AS DESCRIBED. WHEN HVAC UNIT IS DEACTIVATED OR OPERATING IN UNOCCUPIED CYCLE MODE OR MORNING WARM-UP MODE; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL REMAIN IN NORMAL POSITIONS (OUTSIDE AIR DAMPER FULLY CLOSED).
11. DDC SHALL MONITOR OUTSIDE AIRFLOW AND MODULATE OUTSIDE, RETURN & RELIEF AIR DAMPERS ACCORDINGLY TO MAINTAIN MINIMUM OA CFM AS SF SPEED MODULATES. REFER TO MECHANICAL SCHEDULES FOR MINIMUM OUTSIDE AIR INFORMATION.
12. WHEN OA TEMP IS GREATER THAN RA TEMP OR CALCULATED OA DEWPOINT TEMP IS GREATER THAN ECONOMIZER LOCKOUT DEWPOINT TEMP SETPOINT OF 52°F; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL REMAIN AT MINIMUM OA FLOW POSITION AND COOLING COIL VALVE SHALL BE MODULATED TO MAINTAIN DA TEMP SETPOINT.
13. WHEN OA TEMP IS LESS THAN OR EQUAL TO RA TEMP, CALCULATED OA DEWPOINT TEMP IS LESS THAN OR EQUAL TO ECONOMIZER LOCKOUT DEWPOINT TEMP SETPOINT OF 52°F, AND DA TEMP IS ABOVE SETPOINT; DDC SHALL MODULATE OUTSIDE, RETURN & RELIEF AIR DAMPERS ABOVE MINIMUM OA FLOW POSITION IN SEQUENCE WITH COOLING COIL MODULATING CONTROL TO MAINTAIN DA TEMP SETPOINT.
14. WHEN DA TEMP IS BELOW SETPOINT; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL REMAIN AT MINIMUM OA FLOW POSITION AND HEATING COIL VALVE SHALL BE MODULATED TO MAINTAIN DA TEMP SETPOINT.

DISCHARGE AIR TEMPERATURE CONTROL

15. DISCHARGE AIR TEMP SETPOINT SHALL BE 55°F BASED ON THE FOLLOWNG OUTSIDE AIR TEMP RESET SCHEDULE:

OAT	DAT
≤ 30°F	60°F
≥ 55°F	55°F

16. DISCHARGE AIR TEMP LOW LIMIT SETPOINT OF 45°F SHALL PROVIDE OVERRIDE CONTROL. IF HEATING COIL VALVE IS MODULATED TO FULL OPEN POSITION, RETURN AIR & RELIEF AIR DAMPERS SHALL BE MODULATED BELOW MINIMUM OA POSITION. DDC SHALL ACTIVATE "LOW LIMIT CONTROL" ALARM UPON THIS OPERATING CONDITION (OPERATOR SHOULD VERIFY HEATING COIL VALVE OPERATION).
17. DURING MORNING WARM-UP OR UNOCCUPIED HEATING CYCLE, DAT SETPOINT SHALL BE 90F UNTIL BUILDING OCCUPANCY TIME OR WHEN OCCUPIED MODE SPACE TEMPERATURE IS REACHED IN ONE OF THE ASSOCIATED ZONES.

SF & RF SPEED CONTROL

18. SF ECM SPEED CONTROL SHALL BE MODULATED BY DDC TO MAINTAIN REMOTE SYSTEM SUPPLY AIR STATIC PRESSURE SETPOINT THAT SHALL BE DETERMINED BY THE AIR BALANCE CONTRACTOR. STATIC PRESSURE SETPOINT SHALL BE RESET BASED ON DAMPER POSITION FEEDBACK FROM ASSOCIATED VAV BOX CONTROLLERS AS FOLLOWS: SETPOINT SHALL BE ADJUSTED TO ALLOW 2 SA TERMINAL UNITS TO OPERATE ABOVE 90% OPEN DAMPER POSITION. LESS THAN 2 ABOVE 90%, SETPOINT SHALL BE SLOWLY DECREASED BY 0.1" W.G. EVERY HALF-HOUR. MORE THAN 2 ABOVE 90%, SETPOINT SHALL BE SLOWLY INCREASED BY 0.1" W.G. EVERY HALF-HOUR. SETPOINT RANGE SHALL BE MINIMUM 0.5" W.G. TO A MAXIMUM VALUE WHICH SHALL BE DETERMINED BY THE AIR BALANCE CONTRACTOR. THE MAXIMUM VALUE SHALL BE THE STARTING POINT.
19. FOR OCCUPIED MODE RF VFC SPEED CONTROL HVAC UNIT SHALL BE MODULATED TO MAINTAIN A _____ CFM DIFFERENTIAL SETPOINT BETWEEN SUPPLY AIRFLOW AND RETURN AIRFLOW. FOR UNOCCUPIED MODE HVAC UNIT CYCLING, THE CFM DIFFERENTIAL SHALL BE ZERO.
20. DISCHARGE STATIC PRESSURE HIGH LIMIT AT HVAC UNIT WITH SETPOINT OF 3.5" W.G. SHALL PROVIDE OVERRIDE CONTROL AND HIGH LIMIT SWITCH WITH SETPOINT OF 5.0" W.G. SHALL PROVIDE HARDWIRED SAFETY. DDC SHALL ACTIVATE ALARM IF OPERATING IN OVERRIDE CONDITION.

SAFETY SHUTDOWN AND MISC MONITORING

21. FREEZESTAT(S) SHALL DEACTIVATE SF & SOFTWARE INTERLOCKED RF WHEN TEMPERATURE IS 35°F OR BELOW. DDC SHALL MONITOR FREEZESTAT STATUS AND ACTIVATE ALARM IF CONDITION OCCURS.
22. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SF & SOFTWARE INTERLOCKED RF THRU FIRE ALARM SYSTEM CONTROL MODULE WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
23. FILTER STATUS SHALL BE MONITORED BY DDC THRU DIFFERENTIAL PRESSURE TRANSMITTER. WHEN DP REACHES 1ST LEVEL SETPOINT, DDC SHALL ACTIVATE DIRTY FILTER WARNING. WHEN DP REACHES 2ND LEVEL SETPOINT, DDC SHALL ACTIVATE DIRTY FILTER ALARM.
24. BAS SHALL MONITOR FLOW FEEDBACK FROM HWH & CHW CONTROL VALVES AND DISPLAY ON SYSTEM GRAPHICS.
25. ATMOSAIR IAQ SYSTEM SHALL BE ACTIVATED UPON AIR FLOW PROOF THRU DPS. BAS SHALL MONITOR ATMOSAIR ON/OFF STATUS TO DISPLAY ON GRAPHICS. IF IAQ SYSTEM OPERATIONAL STATUS DOES NOT MATCH SF OPERATIONAL STATUS AS MONITORED BY BAS, BAS SHALL ACTIVATE ALARM.

SYSTEM SHUTDOWN

26. WHEN HVAC UNIT IS DEACTIVATED, COOLING COIL VALVE SHALL REMAIN CLOSED AND HEATING COIL VALVE SHALL BE MODULATED BY DDC BASED ON MA TEMP TO MAINTAIN LOW LIMIT PLENUM TEMP SETPOINT OF 50°F.

TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M8.1 APPLY TO THIS DRAWING.

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KEY PLAN

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DRAWN BY
TLG

CHECKED BY
JWC

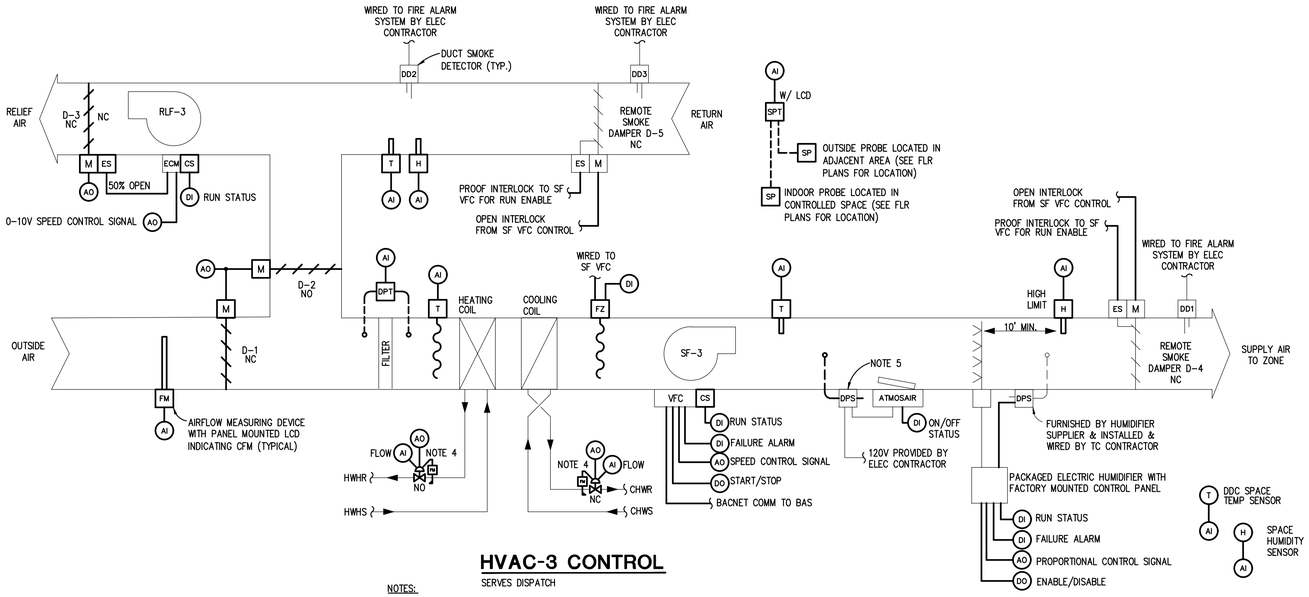
APPROVED BY
DAC

SHEET NAME
TEMPERATURE CONTROLS

SHEET NO.
M8.2

TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M8.1 APPLY TO THIS DRAWING.

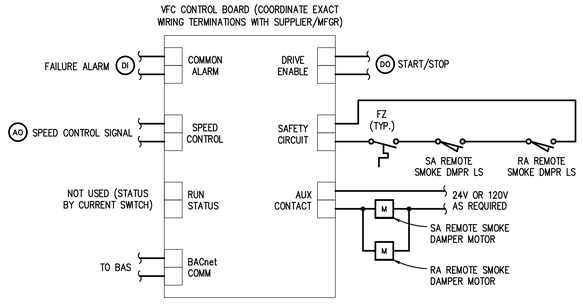


HVAC-3 CONTROL

SERVES DISPATCH

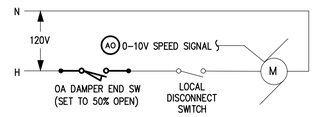
NOTES:

1. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE. TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO MOTOR CONTROL CIRCUIT.
2. OUTSIDE, RETURN & RELIEF DAMPERS ARE TO BE FURNISHED BY TC CONTRACTOR AND INSTALLED BY MECH CONTRACTOR. TC CONTRACTOR SHALL PROVIDE DAMPER ACTUATORS.
3. REFER TO VFC BACnet INTERFACE & MONITORING REQUIREMENTS DETAIL.
4. TC CONTRACTOR SHALL FURNISH 2-WAY PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVES (BELIMO MODEL EPIV). SELECT VALVE TO ACHIEVE THE SCHEDULED FLOW RATE. COORDINATE WITH MECH CONTRACTOR TO ENSURE REQUIRED 5-PIPE DIAMETER STRAIGHT PIPE AT VALVE INLET. CONTROL VALVE CAN BE MOUNTED IN VERTICAL POSITION IF NECESSARY.
5. AIR PROOF DIFFERENTIAL PRESSURE SWITCH FURNISHED WITH ATMOSAIR IAQ SYSTEM SHALL BE INSTALLED BY TC CONTRACTOR. TC CONTRACTOR SHALL PROVIDE DUCT PROBE AND TUBING. ELECTRICAL CONTRACTOR SHALL WIRE ATMOSAIR POWER SUPPLY THRU DPS.
6. 120V EMERGENCY POWER SUPPLY SHALL BE USED FOR ALL HVAC-3 SYSTEM RELATED CONTROLS. FIELD VERIFY THAT EXISTING CIRCUITS USED ARE FROM EMERGENCY POWER. USE SPARE CIRCUIT FROM EMERGENCY POWER PANEL BOARD LP-AA AS REQUIRED AND COORDINATE USE WITH ELECTRICAL CONTRACTOR



HVAC-3 SF VFC WIRING

NOTE: WIRING DETAIL IDENTIFIES INTENT AND DOES NOT INDICATE ACTUAL WIRING REQUIREMENTS. CONSULT WITH VFC SUPPLIER/MFGR FOR THE ACTUAL WIRING REQUIREMENTS.



RLF-3 MOTOR CONTROL WIRING

SEQUENCE OF OPERATION

HVAC-3:

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS.

SYSTEM START UP AND FAN STATUS MONITORING

1. SUPPLY FAN SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. HVAC UNIT SHALL OPERATE 24/7.
2. REMOTE SUPPLY AIR AND RETURN AIR SMOKE DAMPERS SHALL BE WIRED TO SF VFC. WHEN SF IS ACTIVATED BY DDC OR MANUALLY THRU HOA SWITCH, SA & RA SMOKE ISOLATION DAMPERS SHALL OPEN. DAMPER OPEN PROOF END SWITCHES SHALL BE WIRED TO VFC SAFETY CIRCUIT TO PREVENT FAN FROM OPERATING IF A DAMPER IS CLOSED.
3. BAS SHALL MONITOR OPERATING STATUS OF HVAC UNIT SF. UPON SF FAILURE, BAS SHALL ACTIVATE FAILURE ALARM. SPLIT SYSTEM AC UNITS SHALL PROVIDE BACK-UP FOR COOLING WHEN SPACE TEMPERATURE RISES TO ITS STAND-ALONE CONTROLLER SETPOINT (REFER TO ACU DETAIL).
4. ADDITIONAL STATUS MONITORING INFORMATION FOR SF SHALL BE AVAILABLE THRU DDC SHALL THRU BAS COMMUNICATION INTERFACE.

SYSTEM TEMPERATURE SETPOINTS

5. UNIT OPERATION SHALL BE SINGLE ZONE VAV. HEATING SETPOINT SHALL BE 70°F AND COOLING SETPOINT SHALL BE 74°F.

CONTROL OF DAMPERS, HEATING COIL, COOLING COIL & SF SPEED

6. DDC SHALL MONITOR OUTSIDE AIRFLOW AND MODULATE OUTSIDE, RETURN & RELIEF DAMPERS ACCORDINGLY TO MAINTAIN MINIMUM OA CFM AS SF SPEED MODULATES. REFER TO MECHANICAL SCHEDULES FOR MINIMUM OUTSIDE AIR INFORMATION.
7. WHEN OA TEMP IS GREATER THAN RA TEMP OR CALCULATED OA DEWPOINT TEMP IS GREATER THAN ECONOMIZER LOCKOUT DEWPOINT TEMP SETPOINT OF 52°F; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL REMAIN AT MINIMUM OA FLOW POSITION AND SF SPEED SHALL MODULATE FROM MIN TO MAX SPEED TO ACHIEVE COOLING SPACE TEMP SETPOINT. WHEN SF SPEED IS AT MAX AND SPACE TEMP IS ABOVE SETPOINT, THE COOLING COIL VALVE SHALL BE MODULATED TO MAINTAIN COOLING SPACE TEMP SETPOINT.
8. WHEN OA TEMP IS LESS THAN OR EQUAL TO RA TEMP, CALCULATED OA DEWPOINT TEMP IS LESS THAN OR EQUAL TO ECONOMIZER LOCKOUT DEWPOINT TEMP SETPOINT OF 52°F, AND DA TEMP IS ABOVE SETPOINT; DDC SHALL FIRST KEEP SF AT MIN SPEED AND MODULATE OUTSIDE, RETURN & RELIEF AIR DAMPERS ABOVE MINIMUM OA FLOW POSITION TO ACHIEVE COOLING SPACE TEMP SETPOINT. WHEN OA DAMPER IS FULLY OPEN, SF SPEED SHALL MODULATE FROM MIN TO MAX SPEED TO ACHIEVE COOLING SPACE TEMP SETPOINT. WHEN SF SPEED IS AT MAX AND SPACE TEMP IS ABOVE SETPOINT, THE COOLING COIL VALVE SHALL BE MODULATED TO MAINTAIN COOLING SPACE TEMP SETPOINT.
9. WHEN DA TEMP IS BELOW SETPOINT; OUTSIDE, RETURN & RELIEF AIR DAMPERS SHALL REMAIN AT MINIMUM OA FLOW POSITION AND DDC SHALL FIRST KEEP SF AT MIN SPEED AND MODULATE HEATING COIL VALVE WITH HIGH LIMIT DAT OF 90°F TO ACHIEVE HEATING SPACE TEMP SETPOINT. WHEN HIGH LIMIT IS REACHED, DDC SHALL MODULATE SF TOWARDS MAX WHILE MODULATING HEATING COIL VALVE TO MAINTAIN HIGH LIMIT DAT OF 90°F UNTIL HEATING SPACE TEMP IS REACHED.

HUMIDIFIER - SEQUENCE OF OPERATION:

10. WHEN ZONE SPACE HUMIDITY (AS SENSED IN RETURN AIR DUCT) FALLS BELOW SETPOINT, DDC SHALL ENABLE HUMIDIFIER AND PROVIDE MODULATING CONTROL SIGNAL TO HUMIDIFIER CONTROLLER TO MAINTAIN THE ZONE HUMIDITY SETPOINT.
11. WHEN OA TEMP IS BELOW 55°F, SPACE HUMIDITY IS LESS THAN 5% ABOVE SETPOINT, DDC SHALL ACTIVATE HUMIDIFIER TO MAINTAIN SPACE HUMIDITY SETPOINT BASED ON THE FOLLOWING RESET SCHEDULE:

OAT	HUMIDITY
≤0°	15% RH
≥40°F	30% RH

12. DISCHARGE AIR HUMIDITY HIGH LIMIT SETPOINT OF 85% RH SHALL PROVIDE OVERRIDE CONTROL (DISABLE HUMIDIFIER).
13. LOCAL DUCT MOUNTED DIFFERENTIAL PRESSURE SWITCH SHALL PROVIDE PROOF OF AIRFLOW INTERLOCK.
14. DDC SHALL MONITOR RUN STATUS AND FAILURE ALARM THRU CONTACTS AVAILABLE FROM HUMIDIFIER PACKAGED CONTROLS. IF RUN STATUS IS NOT PROVEN UPON COMMAND OF FAILURE ALARM OCCURS, DDC SHALL PROVIDE REMOTE ALARM.

RELIEF FAN SPEED CONTROL

15. DURING OCCUPIED MODE, DDC SHALL ACTIVATE EF AND MODULATE THE EXHAUST FAN SPEED TO MAINTAIN SPACE STATIC PRESSURE SETPOINT OF +0.02" W.C. EXHAUST AIR DAMPER END SWITCH SHALL PROVIDE SAFETY SAFETY INTERLOCK TO PREVENT FAN FROM OPERATING IF DAMPER IS NOT 50% OPEN. EF SHALL REMAIN OFF FOR UNOCCUPIED CYCLING AND MORNING WARM-UP MODES OF OPERATION.

SAFETY SHUTDOWN AND MISC MONITORING

16. FREEZESTAT(S) SHALL DEACTIVATE SF WHEN TEMPERATURE IS 35°F OR BELOW. DDC SHALL MONITOR FREEZESTAT STATUS AND ACTIVATE ALARM IF CONDITION OCCURS.
17. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SF & SOFTWARE INTERLOCKED RELIEF FAN THRU FIRE ALARM SYSTEM CONTROL MODULE WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
18. FILTER STATUS SHALL BE MONITORED BY DDC THRU DIFFERENTIAL PRESSURE TRANSMITTER. WHEN DP REACHES 1ST LEVEL SETPOINT, DDC SHALL ACTIVATE DIRTY FILTER WARNING. WHEN DP REACHES 2ND LEVEL SETPOINT, DDC SHALL ACTIVATE DIRTY FILTER ALARM.
19. BAS SHALL MONITOR FLOW FEEDBACK FROM HWH & CHW CONTROL VALVES AND DISPLAY ON SYSTEM GRAPHICS.
20. ATMOSAIR IAQ SYSTEM SHALL BE ACTIVATED UPON AIR FLOW PROOF THRU DPS. BAS SHALL MONITOR ATMOSAIR ON/OFF STATUS TO DISPLAY ON GRAPHICS. IF IAQ SYSTEM OPERATIONAL STATUS DOES NOT MATCH SF OPERATIONAL STATUS AS MONITORED BY BAS, BAS SHALL ACTIVATE ALARM.

SYSTEM SHUTDOWN

21. IF HVAC UNIT IS DEACTIVATED, COOLING COIL VALVE SHALL REMAIN CLOSED AND HEATING COIL VALVE SHALL BE MODULATED BY DDC BASED ON MA TEMP TO MAINTAIN LOW LIMIT PLENUM TEMP SETPOINT OF 50°F.

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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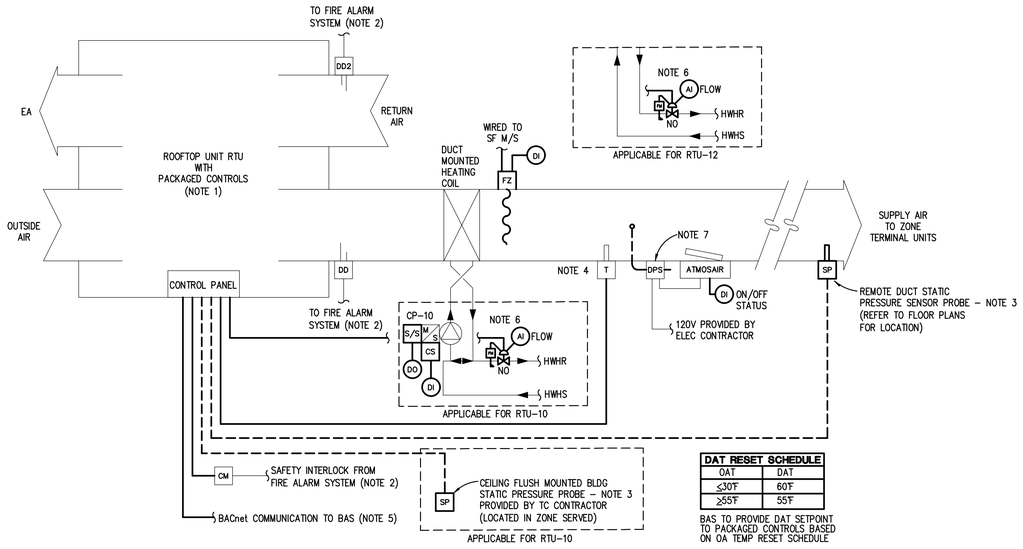
SHEET NAME

TEMPERATURE CONTROLS

SHEET NO.

M8.3



DAT RESET SCHEDULE	
OAT	DAT
≤30°F	60°F
≥55°F	55°F

BAS TO PROVIDE DAT SETPOINT TO PACKAGED CONTROLS BASED ON OA TEMP RESET SCHEDULE

RTU-10 & 12 VAV/DAT CONTROL & FIELD INSTALLATION REQUIREMENTS

TYPICAL EXCEPT WHERE NOTED.

RTU-10 W/ POWERED EF MODULATING SPEED CONTROL BASED ON BLDG STATIC PRESSURE.
RTU-12 W/ POWERED EF ON/OFF CONTROL BASED ON ECONOMIZER OPERATION.

NOTES:

1. ROOFTOP UNIT (RTU) SHALL BE SUPPLIED FOR PROJECT WITH PACKAGED CONTROLS FOR VAV WITH DAT TEMP CONTROL APPLICATION INCLUDING CONTROL DAMPERS AND BACnet COMMUNICATION INTERFACE FOR BAS SCHEDULING, DISCHARGE AIR TEMP SETPOINT ADJUSTMENT AND UNIT MONITORING. UNIT SINGLE POINT CONNECTION POWER SUPPLY SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR. TC CONTRACTOR SHALL PROVIDE CONTROL FIELD WIRING AND INSTRUMENTATION TUBING FOR UNIT AS INDICATED PLUS ANY MISCELLANEOUS FIELD CONTROL WIRING THAT MAY BE REQUIRED FOR PACKAGED UNIT THAT IS NOT SHOWN. UNIT SUPPLIER SHALL PROVIDE TECH SUPPORT TO CONFIGURE AND PROGRAM THE UNIT FOR REMOTE HWH COIL CONTROL.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE. TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO UNIT SAFETY CUTOUT CIRCUIT.
3. TC CONTRACTOR SHALL FURNISH AND INSTALL REMOTE DUCT STATIC PRESSURE PROBE AND BUILDING STATIC PRESSURE PROBE AND PROVIDE INSTRUMENTATION TUBING TO THE UNIT PACKAGED CONTROLS' STATIC PRESSURE SENSORS.
4. DISCHARGE AIR TEMP SENSOR FURNISHED BY UNIT SUPPLIER SHALL BE INSTALLED AND WIRED BY TC CONTRACTOR.
5. TC CONTRACTOR SHALL PROVIDE BACnet COMMUNICATION INTERFACE WIRING FROM UNIT CONTROL PANEL TO NEW BAS NETWORK SUPERVISORY CONTROLLER, COMMUNICATING BUT NOT LIMITED TO THE FOLLOWING POINTS AS AVAILABLE:
   - OCCUPANCY MODE SCHEDULER (FROM BAS)
   - EFFECTIVE OCCUPANCY MODE (TO BAS)
   - SUPPLY FAN COMMAND STATUS (TO BAS)
   - SUPPLY FAN RUN STATUS (TO BAS)
   - SUPPLY FAN SPEED COMMAND STATUS (TO BAS)
   - RETURN OR EXHAUST FAN COMMAND STATUS (TO BAS)
   - RETURN OR EXHAUST FAN RUN STATUS (TO BAS)
   - RETURN OR EXHAUST FAN SPEED COMMAND STATUS (TO BAS)
   - DISCHARGE AIR TEMP SETPOINT (FROM BAS)
   - EFFECTIVE DISCHARGE AIR TEMP SETPOINT (TO BAS)
   - DISCHARGE AIR TEMP (TO BAS)
   - HEATING/COOLING MODE STATUS (TO BAS)
   - HEATING OUTPUT STATUS (TO BAS)
   - COOLING OUTPUT STATUS (TO BAS)
   - OA DAMPER MINIMUM CFM SETPOINT (FROM BAS)
   - DAMPER OUTPUT STATUS (TO BAS)
   - DAMPER ECONOMIZER ENABLE STATUS (TO BAS)
   - COMPRESSOR ENABLE STATUS, EACH STAGE (TO BAS)
   - DIRTY FILTER STATUS (TO BAS)
   - DUCT STATIC PRESSURE SETPOINT (FROM BAS)
   - DUCT STATIC PRESSURE (TO BAS)
   - BUILDING STATIC PRESSURE SETPOINT (FROM BAS) – FOR RTU-10
   - BUILDING STATIC PRESSURE (TO BAS) – FOR RTU-10
   - MISC UNIT TEMPERATURE MONITORING (TO BAS)
   - TEMP SENSOR FAILURE ALARMS (TO BAS)
   - UNIT SAFETY CUTOUT ALARMS (TO BAS)
   - OTHER MISC ALARMS (TO BAS)
6. TC CONTRACTOR SHALL FURNISH 2-WAY PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVES (BELIMO MODEL EPIV). SELECT VALVE TO ACHIEVE THE SCHEDULED FLOW RATE. COORDINATE WITH MECH CONTRACTOR TO ENSURE REQUIRED 5-PIPE DIAMETER STRAIGHT PIPE AT VALVE INLET. CONTROL VALVE CAN BE MOUNTED IN VERTICAL POSITION IF NECESSARY. FREEZESTAT AND PUMP CONTROLS TO BE PROVIDED BY TC CONTRACTOR.
7. AIR PROOF DIFFERENTIAL PRESSURE SWITCH FURNISHED WITH ATMOSAIR IAQ SYSTEM SHALL BE INSTALLED BY TC CONTRACTOR. TC CONTRACTOR SHALL PROVIDE DUCT PROBE AND TUBING. ELECTRICAL CONTRACTOR SHALL WIRE ATMOSAIR POWER SUPPLY THRU DPS.
8. COORDINATE ALL FIELD WIRING REQUIREMENTS AND TERMINATIONS WITH UNIT SUPPLIER.
9. TC CONTRACTOR SHALL OBTAIN EQUIPMENT SHOP DRAWINGS FROM SELECTED UNIT SUPPLIER TO DEVELOP GRAPHICS THAT REPRESENT ACTUAL UNIT CONFIGURATION WITH COMPONENTS SHOWN IN CORRECT LOCATIONS.
10. TC CONTRACTOR SHALL INCLUDE A MINIMUM OF 16 HOURS PER UNIT WITH BID (OR MORE AS DETERMINED BY TC CONTRACTOR THAT SHOULD BE DOCUMENTED IN THEIR SCOPE OF WORK SUMMARY) TO REVIEW UNIT SUBMITTAL, FIELD INSTALLED COMPONENTS AND WIRING REQUIREMENTS AND INTEGRATION DATA AVAILABLE FROM UNIT'S PACKAGED CONTROLS FOR DEVELOPMENT OF SYSTEM GRAPHICS TO INCLUDE RELEVANT INFORMATION FOR OWNER'S CONTROL AND MONITORING OF UNIT. LABOR HOURS SHALL ALSO ACCOMMODATE TIME SPENT WITH UNIT MANUFACTURER'S TECHNICIAN TO COORDINATE ALL PACKAGED CONTROLLER POINTS TO BE INTEGRATED TO THE BAS. TC CONTRACTOR SHALL LOG ALL TIME SPENT ON EACH UNIT RELATIVE TO THIS SCOPE OF WORK TO ENSURE FAIR COMPENSATION FOR TC CONTRACTOR INVOLVEMENT TO PROPERLY CONTROL MODES OF UNIT OPERATION, SET UP DESIRED SETPOINT ADJUSTMENTS AND DIAGNOSTIC MONITOR OF UNIT.

SEQUENCE OF OPERATION RTU-VAV/DAT APPLICATION:

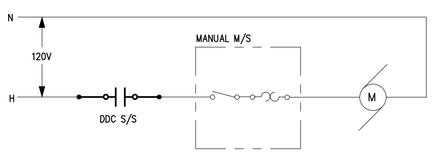
1. RTU WITH PACKAGED CONTROLS SHALL MAINTAIN A DISCHARGE AIR TEMPERATURE (DAT) SETPOINT (ADJUSTABLE THRU BAS) FOR BUILDING TEMPERATURE CONTROL REQUIREMENTS. PACKAGED CONTROL SHALL MODULATE MIXING DAMPERS, MODULATE REMOTE HWH COIL CONTROL VALVE, AND STAGE DX UNIT AS REQUIRED TO MAINTAIN PROPER DISCHARGE AIR TEMPERATURE CONTROL. PACKAGED CONTROL SHALL INCLUDE OUTDOOR AIRFLOW MONITORING OR CONTROL ALGORITHM FOR MINIMUM OUTSIDE AIR DAMPER CONTROL TO SATISFY MINIMUM OUTSIDE AIR CFM AS SUPPLY AIRFLOW VARIES. DAMPER CONTROL SHALL INCLUDE COMPARATIVE ENTHALPY ECONOMIZER CONTROL TO MODULATE DAMPERS ABOVE MINIMUM OA CFM SETTING TO PROVIDE FREE COOLING WHEN AVAILABLE.
2. BACnet OPEN PROTOCOL COMMUNICATIONS INTERFACE SHALL BE PROVIDED WITH PACKAGED CONTROLS AND CONNECTED TO OWNER'S BUILDING AUTOMATION SYSTEM THAT SHALL ALLOW UNIT SCHEDULING, FAN STATUSES, DISCHARGE AIR TEMPERATURE ADJUSTMENT AND ADDITIONAL UNIT MONITORING AS AVAILABLE.
3. FOR OCCUPIED MODE, UNIT SHALL OPERATE CONTINUOUSLY.
4. FOR UNOCCUPIED MODE, UNIT SHALL BE CYCLED ON AND OFF AS REQUIRED BY BAS BASED ON UNOCCUPIED MODE SETPOINT. BAS SHALL WRITE LOWEST TERMINAL UNIT SPACE TEMP TO RTU PACKAGED CONTROLS. DAMPERS SHALL REMAIN IN RECIRC MODE UNLESS COOLING ECONOMIZER IS AVAILABLE.
5. SUPPLY FAN VFC SHALL BE MODULATED BY PACKAGED CONTROLS TO MAINTAIN REMOTE SYSTEM SUPPLY DUCT AIR STATIC PRESSURE SETPOINT THAT IS ADJUSTABLE FROM BAS THRU BACnet COMMUNICATION. THE AIR BALANCE CONTRACTOR SHALL DETERMINE APPROPRIATE DUCT STATIC PRESSURE SETPOINT.
6. FORE RTU-10: BAS SHALL ACTIVATE HWH COIL PUMP WHENEVER OA TEMP IS BELOW 55°F. BAS SHALL MONITOR PUMP RUN STATUS THRU CURRENT SWITCH. ABNORMAL PUMP OPERATION SHALL ACTIVATE REMOTE ALARM.
7. FOR RTU-10: RELIEF EXHAUST FAN SHALL BE ACTIVATED BY PACKAGED CONTROLS BASED ON SOFTWARE INTERLOCK WITH SF FOR OCCUPIED MODE. EF SPEED SHALL BE MODULATED TO MAINTAIN A BLDG STATIC PRESSURE STATIC PRESSURE SETPOINT OF +0.02" W.C.
8. FOR RTU-12: POWERED EXHAUST FAN SHALL BE ACTIVATED BY PACKAGED CONTROLS BASED ON OUTDOOR AIR DAMPER ECONOMIZER CONTROL.
9. UNIT LOW TEMPERATURE SAFETY CUTOUT CIRCUIT SHALL DEACTIVATE SUPPLY FAN WHEN TEMPERATURE IS 35°F OR BELOW. BAS SHALL MONITOR FREEZESTAT FOR ALARM.
10. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE UNIT THRU FIRE ALARM SYSTEM CONTROL MODULE WHEN PRODUCTS OF COMBUSTION ARE DETECTED.

DISCHARGE AIR TEMPERATURE RESET

11. BAS SHALL RESET DAT BASED ON OA TEMP PER INDICATED RESET SCHEDULE.

MISC MONITORING

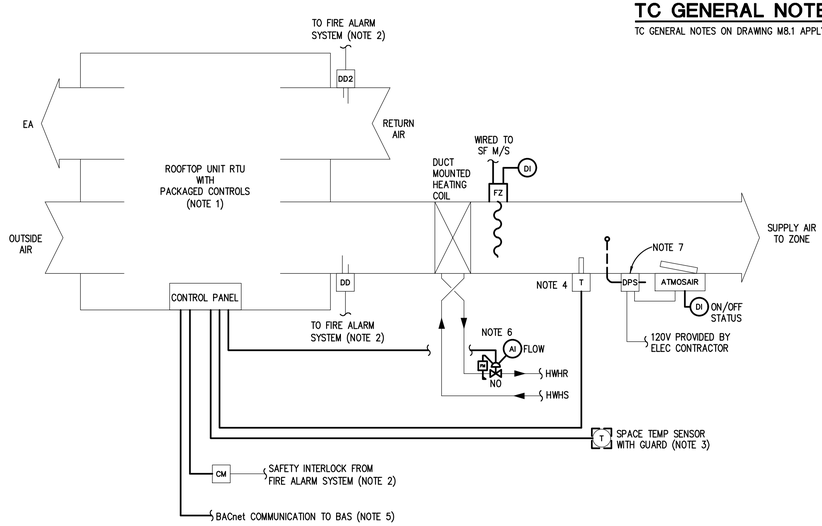
12. ATMOSAIR IAQ SYSTEM SHALL BE ACTIVATED UPON AIR FLOW PROOF THRU DPS. BAS SHALL MONITOR ATMOSAIR ON/OFF STATUS TO DISPLAY ON GRAPHICS. IF IAQ SYSTEM OPERATIONAL STATUS DOES NOT MATCH SF OPERATIONAL STATUS AS MONITORED BY BAS, BAS SHALL ACTIVATE ALARM.



COIL CIRC PUMP CP-10 M/S WIRING

TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M8.1 APPLY TO THIS DRAWING.



RTU-11 SINGLE ZONE VAV CONTROL & FIELD INSTALLATION REQUIREMENTS

TYPICAL EXCEPT WHERE NOTED.

RTU-11 W/ POWERED EF ON/OFF CONTROL BASED ON ECONOMIZER OPERATION.

NOTES:

1. ROOFTOP UNIT (RTU) SHALL BE SUPPLIED FOR PROJECT WITH PACKAGED CONTROLS FOR VAV WITH DAT TEMP CONTROL APPLICATION INCLUDING CONTROL DAMPERS AND BACnet COMMUNICATION INTERFACE FOR BAS SCHEDULING, DISCHARGE AIR TEMP SETPOINT ADJUSTMENT AND UNIT MONITORING. UNIT SINGLE POINT CONNECTION POWER SUPPLY SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR. TC CONTRACTOR SHALL PROVIDE CONTROL FIELD WIRING AND INSTRUMENTATION TUBING FOR UNIT AS INDICATED PLUS ANY MISCELLANEOUS FIELD CONTROL WIRING THAT MAY BE REQUIRED FOR PACKAGED UNIT THAT IS NOT SHOWN. UNIT SUPPLIER SHALL PROVIDE TECH SUPPORT TO CONFIGURE AND PROGRAM THE UNIT FOR REMOTE HWH COIL CONTROL.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE. TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO UNIT SAFETY CUTOUT CIRCUIT.
3. TC CONTRACTOR SHALL INSTALL REMOTE SPACE TEMP SENSOR AS FURNISHED BY UNIT SUPPLIER AND PROVIDE WIRING TO THE UNIT PACKAGED CONTROLS. TC CONTRACTOR SHALL PROVIDE GUARD FOR SENSOR.
4. DISCHARGE AIR TEMP SENSOR FURNISHED BY UNIT SUPPLIER SHALL BE INSTALLED AND WIRED BY TC CONTRACTOR.
5. TC CONTRACTOR SHALL PROVIDE BACnet COMMUNICATION INTERFACE WIRING FROM UNIT CONTROL PANEL TO NEW BAS NETWORK SUPERVISORY CONTROLLER, COMMUNICATING BUT NOT LIMITED TO THE FOLLOWING POINTS AS AVAILABLE:
   - EFFECTIVE OCCUPANCY MODE (TO BAS)
   - SUPPLY FAN COMMAND STATUS (TO BAS)
   - SUPPLY FAN RUN STATUS (TO BAS)
   - SUPPLY FAN SPEED COMMAND STATUS (TO BAS)
   - EXHAUST FAN COMMAND STATUS (TO BAS)
   - EXHAUST FAN RUN STATUS (TO BAS)
   - OCCUPIED SPACE HEATING TEMP SETPOINT (FROM BAS)
   - UNOCCUPIED SPACE HEATING TEMP SETPOINT (FROM BAS)
   - OCCUPIED SPACE COOLING TEMP SETPOINT (FROM BAS)
   - UNOCCUPIED SPACE COOLING TEMP SETPOINT (FROM BAS)
   - EFFECTIVE SPACE TEMP SETPOINT (TO BAS)
   - DISCHARGE AIR TEMP (TO BAS)
   - HEATING/COOLING MODE STATUS (TO BAS)
   - HEATING OUTPUT STATUS (TO BAS)
   - COOLING OUTPUT STATUS (TO BAS)
   - OA DAMPER MIN-MINIMUM CFM SETPOINT (FROM BAS)
   - OA DAMPER MAX-MINIMUM CFM SETPOINT (FROM BAS)
   - DAMPER OUTPUT STATUS (TO BAS)
   - DAMPER ECONOMIZER ENABLE STATUS (TO BAS)
   - COMPRESSOR ENABLE STATUS, EACH STAGE (TO BAS)
   - DIRTY FILTER STATUS (TO BAS)
   - MISC UNIT TEMPERATURE MONITORING (TO BAS)
   - TEMP SENSOR FAILURE ALARMS (TO BAS)
   - UNIT SAFETY CUTOUT ALARMS (TO BAS)
   - OTHER MISC ALARMS (TO BAS)
6. TC CONTRACTOR SHALL FURNISH 2-WAY PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVES (BELIMO MODEL EPIV). SELECT VALVE TO ACHIEVE THE SCHEDULED FLOW RATE. COORDINATE WITH MECH CONTRACTOR TO ENSURE REQUIRED 5-PIPE DIAMETER STRAIGHT PIPE AT VALVE INLET. CONTROL VALVE CAN BE MOUNTED IN VERTICAL POSITION IF NECESSARY.
7. AIR PROOF DIFFERENTIAL PRESSURE SWITCH FURNISHED WITH ATMOSAIR IAQ SYSTEM SHALL BE INSTALLED BY TC CONTRACTOR. TC CONTRACTOR SHALL PROVIDE DUCT PROBE AND TUBING. ELECTRICAL CONTRACTOR SHALL WIRE ATMOSAIR POWER SUPPLY THRU DPS.
8. COORDINATE ALL FIELD WIRING REQUIREMENTS AND TERMINATIONS WITH UNIT SUPPLIER.
9. TC CONTRACTOR SHALL OBTAIN EQUIPMENT SHOP DRAWINGS FROM SELECTED UNIT SUPPLIER TO DEVELOP GRAPHICS THAT REPRESENT ACTUAL UNIT CONFIGURATION WITH COMPONENTS SHOWN IN CORRECT LOCATIONS.
10. TC CONTRACTOR SHALL INCLUDE A MINIMUM OF 16 HOURS PER UNIT WITH BID (OR MORE AS DETERMINED BY TC CONTRACTOR THAT SHOULD BE DOCUMENTED IN THEIR SCOPE OF WORK SUMMARY) TO REVIEW UNIT SUBMITTAL, FIELD INSTALLED COMPONENTS AND WIRING REQUIREMENTS AND INTEGRATION DATA AVAILABLE FROM UNIT'S PACKAGED CONTROLS FOR DEVELOPMENT OF SYSTEM GRAPHICS TO INCLUDE RELEVANT INFORMATION FOR OWNER'S CONTROL AND MONITORING OF UNIT. LABOR HOURS SHALL ALSO ACCOMMODATE TIME SPENT WITH UNIT MANUFACTURER'S TECHNICIAN TO COORDINATE ALL PACKAGED CONTROLLER POINTS TO BE INTEGRATED TO THE BAS. TC CONTRACTOR SHALL LOG ALL TIME SPENT ON EACH UNIT RELATIVE TO THIS SCOPE OF WORK TO ENSURE FAIR COMPENSATION FOR TC CONTRACTOR INVOLVEMENT TO PROPERLY CONTROL MODES OF UNIT OPERATION, SET UP DESIRED SETPOINT ADJUSTMENTS AND DIAGNOSTIC MONITOR OF UNIT.

SEQUENCE OF OPERATION RTU-SINGLE ZONE VAV APPLICATION:

1. RTU WITH PACKAGED CONTROLS SHALL MAINTAIN EFFECTIVE OCCUPIED/UNOCCUPIED SPACE TEMP SETPOINT (ADJUSTABLE THRU BAS) PER OCCUPIED MODE SCHEDULING THRU BAS. PACKAGED CONTROL SHALL MODULATE MIXING DAMPERS, MODULATE REMOTE HWH COIL CONTROL VALVE, AND STAGE DX UNIT AS REQUIRED TO MAINTAIN PROPER SPACE TEMPERATURE CONTROL. PACKAGED CONTROL SHALL INCLUDE OUTDOOR AIRFLOW MONITORING OR CONTROL ALGORITHM FOR MINIMUM OUTSIDE AIR DAMPER CONTROL TO SATISFY MINIMUM OUTSIDE AIR CFM AS SUPPLY AIRFLOW VARIES. DAMPER CONTROL SHALL INCLUDE COMPARATIVE ENTHALPY ECONOMIZER CONTROL TO MODULATE DAMPERS ABOVE MINIMUM OA CFM SETTING TO PROVIDE FREE COOLING WHEN AVAILABLE.
2. BACnet OPEN PROTOCOL COMMUNICATIONS INTERFACE SHALL BE PROVIDED WITH PACKAGED CONTROLS AND CONNECTED TO OWNER'S BUILDING AUTOMATION SYSTEM THAT SHALL ALLOW UNIT SCHEDULING, FAN STATUSES, DISCHARGE AIR TEMPERATURE ADJUSTMENT AND ADDITIONAL UNIT MONITORING AS AVAILABLE.
3. FOR OCCUPIED MODE, UNIT SHALL OPERATE CONTINUOUSLY.
4. FOR UNOCCUPIED MODE, UNIT SHALL BE CYCLED ON AND OFF AS REQUIRED BY BAS BASED ON TERMINAL UNIT UNOCCUPIED MODE SETPOINTS. DAMPERS SHALL REMAIN IN RECIRC MODE UNLESS COOLING ECONOMIZER IS AVAILABLE.
5. SUPPLY FAN VFC SHALL BE MODULATED BY PACKAGED CONTROLS WITH SPACE TEMP HEATING/COOLING CONTROL TO MAINTAIN EFFECTIVE SPACE TEMP SETPOINT, WITH OCC/UNOCC MODE HEATING/COOLING SPACE TEMP SETPOINTS ADJUSTABLE FROM BAS THRU BACnet COMMUNICATION.
6. POWERED EXHAUST FAN SHALL BE ACTIVATED BY PACKAGED CONTROLS BASED ON OUTDOOR AIR DAMPER ECONOMIZER CONTROL.
7. UNIT LOW TEMPERATURE SAFETY CUTOUT CIRCUIT SHALL DEACTIVATE SUPPLY FAN WHEN TEMPERATURE IS 35°F OR BELOW. BAS SHALL MONITOR FREEZESTAT FOR ALARM.
8. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE UNIT THRU FIRE ALARM SYSTEM CONTROL MODULE WHEN PRODUCTS OF COMBUSTION ARE DETECTED.

MISC MONITORING

9. ATMOSAIR IAQ SYSTEM SHALL BE ACTIVATED UPON AIR FLOW PROOF THRU DPS. BAS SHALL MONITOR ATMOSAIR ON/OFF STATUS TO DISPLAY ON GRAPHICS. IF IAQ SYSTEM OPERATIONAL STATUS DOES NOT MATCH SF OPERATIONAL STATUS AS MONITORED BY BAS, BAS SHALL ACTIVATE ALARM.

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PBA Project No. 2021.0163

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Public Safety

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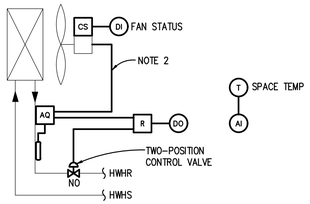


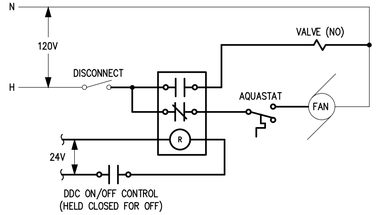
HWH UH-1 CONTROL

NOTES:

1. REFER TO FLOOR PLANS FOR LOCATION OF UNIT.
2. AQUASTAT SHALL BE WIRED IN SERIES WITH FAN CONTROL WIRING CIRCUIT.
3. TC CONTRACTOR SHALL FURNISH 2-WAY PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVES (BELIMO MODEL QPCIV) FOR HEATING COIL. SELECT VALVE TO ACHIEVE THE SCHEDULED FLOW RATE.

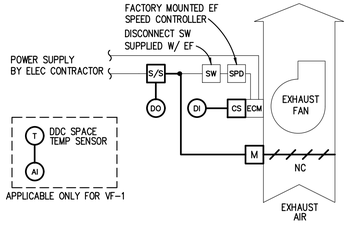
SEQUENCE OF OPERATION:

1. DDC SHALL ENABLE/DISABLE FAN CIRCUIT AND OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 62°F DURING BLDG UNOCCUPANCY. FAN SHALL ACTIVATE UPON PROOF OF HWHR FLOW BY AQ.
2. DDC SHALL MONITOR FAN OPERATION. ABNORMAL OPERATING STATUS SHALL ACTIVATE AN ALARM.



HWH UH WIRING

TYPICAL



EF-1 & 10 & VF-114 CONTROL

TYPICAL EXCEPT WHERE NOTED

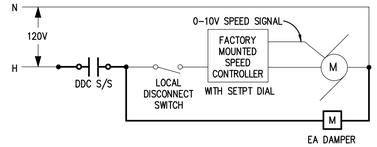
EF-1 SERVES LOCKER RMS.
EF-10 SERVES MEN AND WOMENS TOILET RMS 234 & 235
VF-114 SERVES IT CLOSET

NOTES:

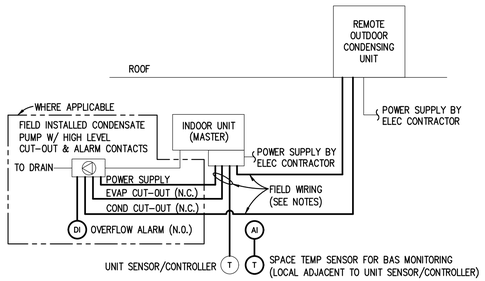
1. REFER TO MECH FLOOR PLANS FOR LOCATIONS.
2. EXHAUST FAN SPEED SHALL BE MANUALLY SET VIA ON BOARD POTENTIOMETER DIAL DURING SYSTEM BALANCING.

SEQUENCE OF OPERATION:

1. EXHAUST FAN SHALL BE STARTED AND STOPPED BY DDC BASED ON BUILDING OCCUPIED MODE SCHEDULE. WIRING INTERLOCK SHALL OPEN DAMPERS.
2. DDC SHALL MONITOR EF RUN STATUS THRU CURRENT SWITCH. ABNORMAL EF OPERATION SHALL ACTIVATE REMOTE ALARM. DDC SHALL TOTALIZE FAN RUN TIME HOURS OF OPERATION.



EF-1 & 10 & VF-114 MOTOR CONTROL WIRING



PACKAGED ACU FIELD WIRING & CONTROL

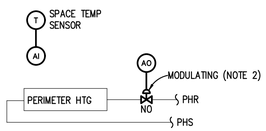
TYPICAL EXCEPT WHERE NOTED – REFER TO MECH FLOOR PLANS FOR QTY & LOCATIONS

NOTES:

1. TC CONTRACTOR SHALL PROVIDE FIELD WIRING BETWEEN INDOOR UNIT CONTROLS AND THE REMOTE CONDENSER.
2. TC CONTRACTOR SHALL INSTALL SPACE SENSOR/CONTROLLER FURNISHED BY ACU SUPPLIER AND PROVIDE REQUIRED FIELD WIRING AS REQUIRED.
3. WHERE APPLICABLE: TC CONTRACTOR SHALL PROVIDE FIELD WIRING FOR CONDENSATE PUMP PACKAGE. MECHANICAL CONTRACTOR SHALL INSTALL CONDENSATE PUMP AND TUBING.
4. TC CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURERS FOR EXACT TERMINATIONS AND WIRING REQUIREMENTS.

SEQUENCE OF OPERATION:

1. MANUFACTURER UNIT CONTROLLER SHALL SHALL CYCLE UNIT OF/OFF TO MAINTAIN COOLING SETPOINT OF 75F (ADJUSTABLE).
2. BAS SHALL MONITOR SPACE TEMP AND ACTIVATE ALARM IF HIGH OR LOW LIMIT SETPOINTS ARE REACHED.
3. CONDENSATE PUMP AUXILIARY CUT-OUT CONTACTS ARE INTERLOCKED TO EVAPORATOR AND CONDENSING UNIT. ALARM CONTACT WITH PACKAGE IS TO BE MONITORED BY BAS. SHOULD WATER LEVEL REACH SETPOINT, AC UNIT SHALL BE DEACTIVATED AND BAS SHALL ACTIVATE REMOTE ALARM.



STAND-ALONE PERIMETER HTG CONTROL

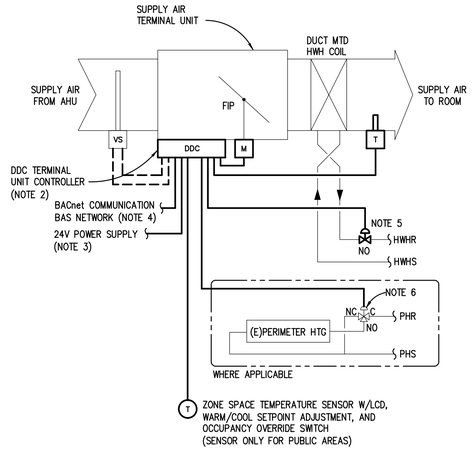
TYPICAL FOR RADIANT CEILING PANELS PANELS NOT ASSOCIATED WITH DDC TERMINAL UNIT CONTROLLERS.

NOTES:

1. REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNIT(S).
2. TC CONTRACTOR SHALL FURNISH 2-WAY PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVES (BELIMO MODEL QPCIV) FOR HEATING COIL. SELECT VALVE TO ACHIEVE THE SCHEDULED FLOW RATE

SEQUENCE OF OPERATION:

1. ALL SETPOINTS AND DEADBANDS SHALL BE ADJUSTABLE THROUGH DDC.
2. DDC SHALL OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 55°F DURING BLDG UNOCCUPANCY.
3. DDC SHALL PROVIDE A 2°F DEADBAND AROUND SETPOINTS FOR CONTROL.



TERMINAL UNIT (TU) CONTROL - VAV W/ & W/O PERIMETER HEATING

TYPICAL EXCEPT WHERE NOTED

NOTES:

1. REFER TO FLOOR PLANS FOR LOCATION OF UNIT AND ASSOCIATED SPACE TEMPERATURE SENSOR.
2. TC CONTRACTOR SHALL PROVIDED A FULLY PROGRAMMABLE TERMINAL UNIT CONTROLLER THAT IS CAPABLE OF ACCOMPLISHING THE INDICATED SEQUENCE OF OPERATION.
3. TC CONTRACTOR SHALL PROVIDE 24V POWER SUPPLY TO TERMINAL UNIT CONTROLLER.
4. TC CONTRACTOR SHALL FURNISH & INSTALL BACnet MS/TP OPEN PROTOCOL COMMUNICATION WIRING TO EACH TU CONTROLLER AND EXTEND TO THE BUILDING SUPERVISORY CONTROLLER.
5. EXCEPT WHERE NOTED ON FLOOR PLANS TO BE 3-WAY CONTROL VALVE, TC CONTRACTOR SHALL FURNISH 2-WAY PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVES (BELIMO MODEL QPCIV) FOR HEATING COIL. SELECT VALVE TO ACHIEVE THE SCHEDULED FLOW RATE.
6. EXISTING PERIMETER HEATING CONTROL VALES ASSOCIATED WITH TU ZONES SHALL BE REUSED AND CONTROLLED BY NEW TU CONTROLLER. TC CONTRACTOR SHALL FIELD INVESTIGATE EXISTING CONTROL SIGNAL REQUIREMENTS. AN EXISTING SEPARATE BOILER SYSTEM SERVES PERIMETER HEATING REQUIREMENTS WITH CONTROLS TO REMAIN AS-IS.

SEQUENCE OF OPERATION

VAV TERMINAL UNIT (FOR THE VARIOUS APPLICATIONS):

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS).

1. THE SUPPLY AIR TERMINAL UNIT'S (TU) MINIMUM AND MAXIMUM AIRFLOW SETTINGS SHALL BE AS INDICATED ON THE MECH EQUIPMENT SCHEDULE. WHERE MINIMUM AND MAXIMUM AIR FLOWS ARE EQUAL, THE TERMINAL UNIT SHALL OPERATE AS CONSTANT VOLUME.
2. ZONE SPACE TEMPERATURE SETPOINTS SHALL BE AS FOLLOWS:

   HEATING OCCUPIED SETPOINT = 70°F
   HEATING UNOCCUPIED SETPOINT = 62°F
   COOLING OCCUPIED SETPOINT = 74°F
   COOLING UNOCCUPIED SETPOINT = 80°F

3. WHEN ZONE SPACE TEMP RISES ABOVE THE SPACE COOLING SETPOINT, THE SUPPLY AIR TU CONTROLLER SHALL KEEP THE HWH HEATING COIL VALVE CLOSED AND (WHERE APPLICABLE) KEEP PERIMETER HEATING CONTROL VALVE CLOSED. TU CONTROLLER SHALL MODULATE THE SUPPLY AIRFLOW BETWEEN ITS COOLING MINIMUM AND MAXIMUM CFM SETTINGS TO ACHIEVE SPACE TEMP SETPOINT.
4. FOR ZONES WITHOUT PERIMETER HEATING: WHEN ZONE SPACE TEMP FALLS BELOW SPACE HEATING SETPOINT, THE SUPPLY AIR TU CONTROLLER SHALL FIRST MODULATE TU DAMPER TOWARDS ITS MINIMUM AIRFLOW SETTING. WHEN AIRFLOW IS AT MIN, CONTROLLER SHALL MODULATE TEMPERING COIL CONTROL VALVE TO ACHIEVE SPACE TEMPERATURE SETPOINT. IF THE ROOM TEMP IS BELOW SETPOINT WITH DISCHARGE AIR TEMP (DAT) AT HIGH LIMIT SETPOINT OF 90°F, THE SUPPLY AIR TU CONTROLLER SHALL MODULATE THE SUPPLY AIRFLOW BETWEEN ITS MINIMUM AND HEATING MAXIMUM SETTING (WITH DAT MAINTAINED AT 90°F WITH HWH CONTROL VALVE MODULATION) TO ACHIEVE ROOM SETPOINT.
5. FOR ZONES WITH PERIMETER HEATING: WHEN OA TEMP IS 60°F OR BELOW AND ZONE SPACE TEMP FALLS BELOW SPACE HEATING SETPOINT, THE SUPPLY AIR TU CONTROLLER SHALL FIRST MODULATE TU DAMPER TOWARDS ITS MINIMUM AIRFLOW SETTING. WHEN AIRFLOW IS AT MIN, TU CONTROLLER SHALL MODULATE THE PERIMETER HEATING CONTROL VALVE FOLLOWED BY TEMPERING COIL CONTROL VALVE (WHEN PERIMETER HEATING CONTROL VALVE IS FULL OPEN) TO ACHIEVE SPACE TEMPERATURE SETPOINT. IF THE ROOM TEMP IS BELOW SETPOINT WITH DISCHARGE AIR TEMP (DAT) AT HIGH LIMIT SETPOINT OF 90°F, THE SUPPLY AIR TU CONTROLLER SHALL MODULATE THE SUPPLY AIRFLOW BETWEEN ITS MINIMUM AND HEATING MAXIMUM SETTING (WITH DAT MAINTAINED AT 90°F WITH HWH CONTROL VALVE MODULATION) TO ACHIEVE ROOM SETPOINT.
6. FOR ZONES WITH PERIMETER HEATING: WHEN OA TEMP IS ABOVE 60°F, PERIMETER HEATING CONTROL VALVE SHALL REMAIN CLOSED. THEN THE SUPPLY AIR TU CONTROLLER SHALL FIRST MODULATE TU DAMPER TOWARDS ITS MINIMUM AIRFLOW SETTING. WHEN AIRFLOW IS AT MIN, TU CONTROLLER SHALL MODULATE TEMPERING COIL CONTROL VALVE TO ACHIEVE SPACE TEMPERATURE SETPOINT. IF THE ROOM TEMP IS BELOW SETPOINT WITH DISCHARGE AIR TEMP (DAT) AT HIGH LIMIT SETPOINT OF 90°F, THE SUPPLY AIR TU CONTROLLER SHALL MODULATE THE SUPPLY AIRFLOW BETWEEN ITS MINIMUM AND HEATING MAXIMUM SETTING (WITH DAT MAINTAINED AT 90°F WITH HWH CONTROL VALVE MODULATION) TO ACHIEVE ROOM SETPOINT.
7. DURING BUILDING UNOCCUPANCY, RELATED ASSOCIATED HVAC UNIT OR RTU SHALL CYCLE AS REQUIRED TO MAINTAIN BUILDING ZONE UNOCCUPIED SETBACK AND SETUP TEMP SETPOINTS AS INDICATED.
8. WHEN ASSOCIATED HVAC UNIT OR RTU IS DEACTIVATED, THE TERMINAL UNIT HWH HEATING COIL CONTROL VALVE SHALL REMAIN CLOSED.
9. ONCE A DAY MINIMUM, THE DDC TU CONTROLLER SHALL RE-SYNCHRONIZE FLOATING CONTROL DAMPER AND CONTROL VALVE ACTUATORS BY FULLY CLOSING AND OPENING THE ACTUATORS. THE RE-SYNCHRONIZATION PROCESS SHALL OCCUR WHEN RELATED HVAC UNIT OR RTU IS DEACTIVATED.
10. POSITION FEEDBACK (CONTROL OUTPUT SIGNAL) FOR TERMINAL UNIT DAMPER AND HWH HEATING COIL CONTROL VALVE SHALL BE DISPLAYED WITH SYSTEM GRAPHICS.

TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M8.1 APPLY TO THIS DRAWING.

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

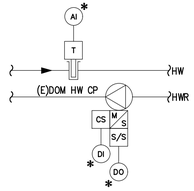
DRAWN BY
TLG

CHECKED BY
JWC

APPROVED BY
DAC

SHEET NAME
TEMPERATURE CONTROLS

SHEET NO.
M8.5



(E)DOMESTIC HW CONTROL

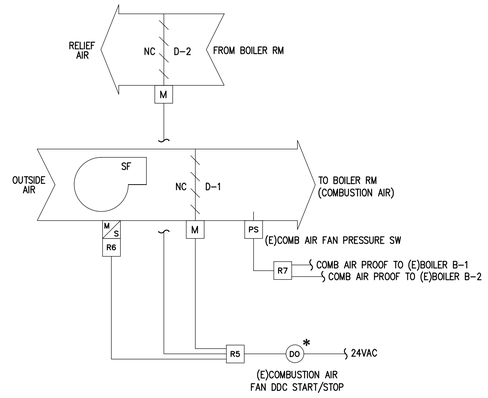
SHOWN FOR REFERENCE

NOTE:

* DESIGNATES EXISTING DDC COMPONENT TO BE REUSED AND REMAIN CONNECTED TO EXISTING DDC CONTROLLER.

SEQUENCE OF OPERATION:

1. DOMESTIC HW CIRC PUMP SHALL BE STARTED AND STOPPED BY DDC BASED ON BUILDING OCCUPIED MODE SCHEDULE.
2. DDC SHALL MONITOR CIRC PUMP RUN STATUS THRU CURRENT SWITCH. ABNORMAL EF OPERATION SHALL ACTIVATE REMOTE ALARM. DDC SHALL TOTALIZE CIRC PUMP RUN TIME HOURS OF OPERATION.
3. DDC SYSTEM SHALL MONITOR DOMESTIC HW SYSTEM SUPPLY TEMP FOR REMOTE SYSTEM DIAGNOSTIC CAPABILITY BY OWNER AND FOR LOW TEMPERATURE ALARM WHEN PUMP OPERATION IS ENABLED – ALLOW 10 MINUTES UPON PUMP CONTROL ENABLE TO INITIATE LOW TEMP ALARM IF HWS TEMP DROPS BELOW 110°F (ADJUSTABLE).

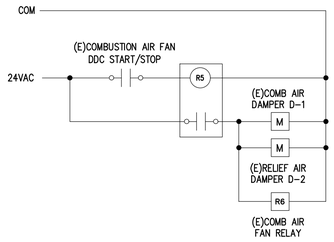


(E)COMBUSTION AIR DAMPERS & FAN CONTROL

SHOWN FOR REFERENCE

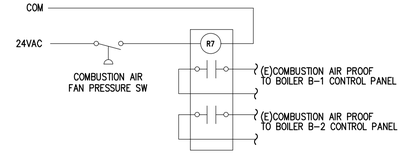
NOTES:

1. * DESIGNATES EXISTING DDC COMPONENT TO BE REUSED AND REMAIN CONNECTED TO EXISTING DDC CONTROLLER.
2. REFER TO HWH SYSTEM SEQUENCE OF OPERATION.



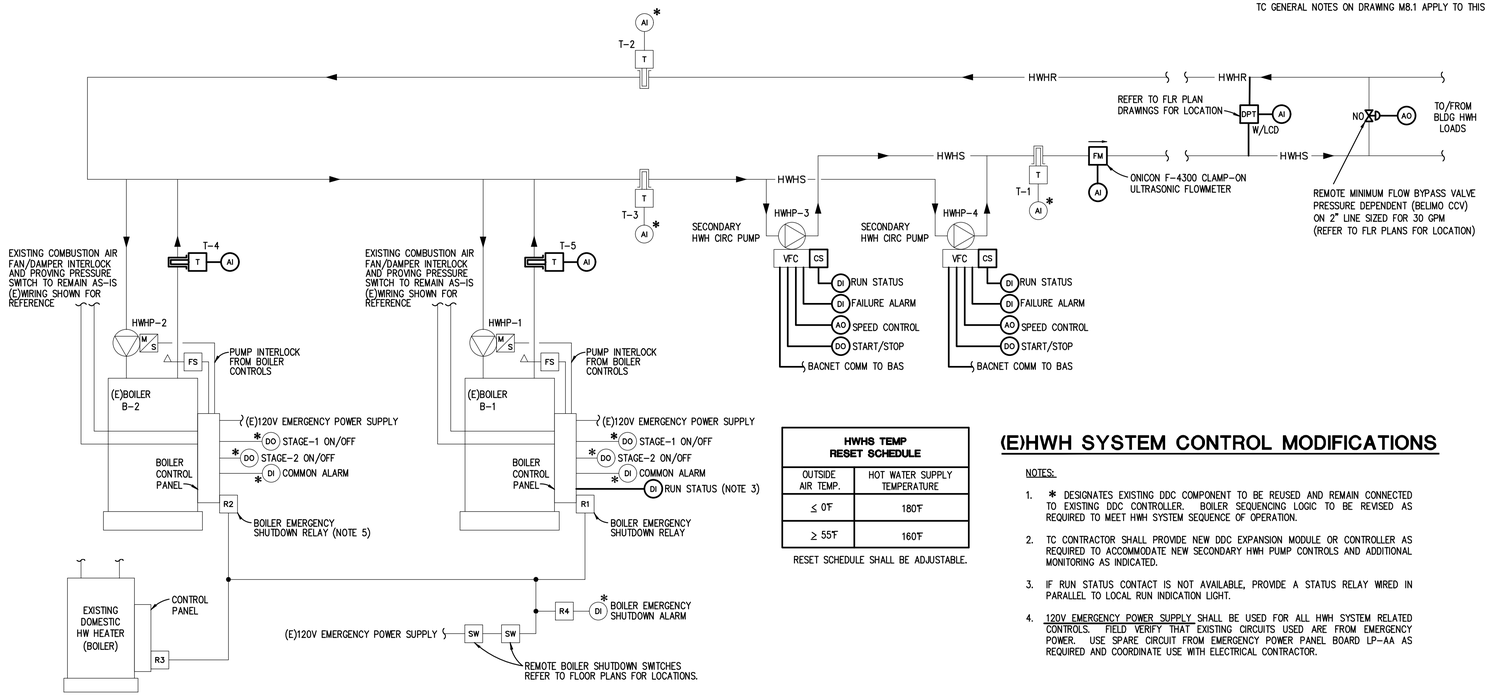
(E)COMBUSTION AIR DAMPERS & FAN WIRING

SHOWN FOR REFERENCE



(E)COMBUSTION AIR DAMPERS PROOF WIRING

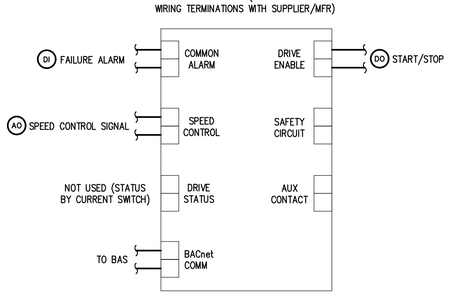
SHOWN FOR REFERENCE

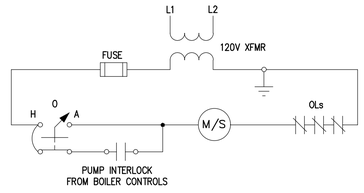


HWHS TEMP RESET SCHEDULE

OUTSIDE AIR TEMP.	HOT WATER SUPPLY TEMPERATURE
≤ 0°F	180°F
≥ 55°F	160°F

RESET SCHEDULE SHALL BE ADJUSTABLE.





HWHP-3 & 4 VFC WIRING

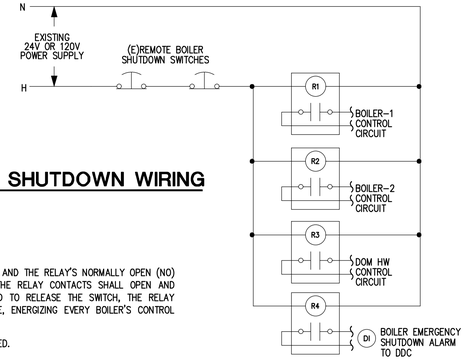
TYPICAL

NOTES:

1. WIRING DETAIL IDENTIFIES INTENT AND DOES NOT INDICATE ACTUAL WIRING REQUIREMENTS. CONSULT WITH VFC SUPPLIER FOR THE ACTUAL WIRING REQUIREMENTS.

(E) HWH PUMPS CP-1 & 2 M/S WIRING

TYPICAL



(E) REMOTE BOILER EMERGENCY SHUTDOWN WIRING

NOTE:

1. SHOWN ONLY FOR EXISTING CONTROL REFERENCE.

SEQUENCE OF OPERATION:

1. UNDER NORMAL OPERATING CONDITIONS THE CIRCUIT SHALL BE ENERGIZED AND THE RELAY'S NORMALLY OPEN (NO) CONTACTS SHALL BE CLOSED. WHEN A SWITCH IS PUSHED (LATCHED) THE RELAY CONTACTS SHALL OPEN AND INTERRUPT EVERY BOILER'S CONTROL CIRCUIT. WHEN THE KEY IS TURNED TO RELEASE THE SWITCH, THE RELAY SHALL BE ENERGIZED AND ITS NORMALLY OPEN CONTACTS SHALL CLOSE, ENERGIZING EVERY BOILER'S CONTROL CIRCUIT.
2. DDC SHALL ACTIVATE AN ALARM WHEN A REMOTE SWITCH HAS BEEN PUSHED.

TC GENERAL NOTES

TC GENERAL NOTES ON DRAWING M8.1 APPLY TO THIS DRAWING.

(E)HWH SYSTEM CONTROL MODIFICATIONS

NOTES:

1. * DESIGNATES EXISTING DDC COMPONENT TO BE REUSED AND REMAIN CONNECTED TO EXISTING DDC CONTROLLER. BOILER SEQUENCING LOGIC TO BE REVISED AS REQUIRED TO MEET HWH SYSTEM SEQUENCE OF OPERATION.
2. TC CONTRACTOR SHALL PROVIDE NEW DDC EXPANSION MODULE OR CONTROLLER AS REQUIRED TO ACCOMMODATE NEW SECONDARY HWH PUMP CONTROLS AND ADDITIONAL MONITORING AS INDICATED.
3. IF RUN STATUS CONTACT IS NOT AVAILABLE, PROVIDE A STATUS RELAY WIRED IN PARALLEL TO LOCAL RUN INDICATION LIGHT.
4. 120V EMERGENCY POWER SUPPLY SHALL BE USED FOR ALL HWH SYSTEM RELATED CONTROLS. FIELD VERIFY THAT EXISTING CIRCUITS USED ARE FROM EMERGENCY POWER. USE SPARE CIRCUIT FROM EMERGENCY POWER PANEL BOARD LP-AA AS REQUIRED AND COORDINATE USE WITH ELECTRICAL CONTRACTOR.

SEQUENCE OF OPERATION

HOT WATER HEATING SYSTEM:

NOTE: THE EXISTING HWH SYSTEM CONTROL PROGRAMMING SHALL BE MODIFIED TO ACCOMMODATE THE NEW HWH PUMPS. ALL SETPOINTS, RESET SCHEDULE SETPOINTS, DEADBANDS, AND TIME INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS.

1. HOT WATER HEATING SYSTEM SHALL BE ACTIVATED FOR CONTINUOUS OPERATION DURING BUILDING OCCUPANCY OR WHEN OUTDOOR AIR TEMPERATURE IS BELOW 55°F FOR BUILDING UNOCCUPANCY. HWH SYSTEM SERVES VAV TERMINAL UNITS WITH TEMPERING COILS FOR REHEAT DURING COOLING SEASON.
2. SECONDARY HWH CIRC PUMPS HWHP-3 & HWHP-4 SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. ONE OF THE TWO PUMPS SHALL BE ACTIVATED BY DDC TO OPERATE CONTINUOUSLY. THE OTHER WILL SERVE AS STANDBY. DDC SHALL ALTERNATE LEAD PUMP OPERATION AT THE BEGINNING OF EACH MONTH. IDENTIFY THE LEAD PUMP ON SYSTEM GRAPHICS.
3. DDC SHALL MONITOR OPERATING STATUS OF EACH PUMP. UPON PUMP FAILURE, DDC SHALL ACTIVATE FAILURE ALARM AND AUTOMATICALLY START THE STANDBY PUMP.
4. VFC COMMON FAILURE ALARM FOR EACH CIRC PUMP SHALL BE MONITORED BY DDC THRU AVAILABLE CONTACTS AT RESPECTIVE PUMP VFC.
5. DDC SHALL MODULATE THE VARIABLE FREQUENCY CONTROLLER OF SECONDARY HWH CIRC PUMP TO MAINTAIN LOOP DIFFERENTIAL PRESSURE SETPOINT TO BE DETERMINED AT SYSTEM BALANCING. DDC SHALL MODULATE THE BYPASS VALVE OPEN TO ACHIEVE DP SETPOINT WHILE PUMP SPEED MAINTAINS THE HWH FLOW LOW LIMIT SETPOINT OF 30 GPM. WHEN BYPASS VALVE MODULATES TO FULL CLOSED POSITION, DDC PUMP SPEED CONTROL TO MAINTAIN REMOTE HWH DP SETPOINT SHALL RESUME.
6. BOILER CONTROL SHALL BE THRU DDC SYSTEM. WHEN SECONDARY PUMP IS ACTIVATED, DDC SHALL ENABLE LEAD BOILER AND ACTIVATE COMBUSTION AIR FAN AND OPEN ASSOCIATED OUTDOOR AIR AND RELIEF DAMPERS THRU NORMALLY CLOSED CONTROL RELAY CONTACT FOR FAILSAFE OPERATION. COMBUSTION FAN PRESSURE SWITCH PROVIDES AIRFLOW PROOF TO ALLOW BOILERS TO OPERATE.
7. DDC SHALL ACTIVATE OR DEACTIVATE BOILERS AND CONTROL BOILER STAGES AS REQUIRED TO MAINTAIN HWH SUPPLY TEMP (T-1) SETPOINT BASED ON OUTSIDE AIR RESET SCHEDULE. DDC SHALL ALTERNATE LEAD BOILER OPERATION WEEKLY. IDENTIFY THE LEAD BOILER ON SYSTEM GRAPHICS.
8. WHENEVER A BOILER ACTIVATED, ITS ASSOCIATED PRIMARY CIRC PUMP SHALL BE ACTIVATED BY FACTORY WIRED PUMP RELAY.
9. WHENEVER A BOILER IS DEACTIVATED, ITS ASSOCIATED PRIMARY CIRC PUMP SHALL CONTINUE TO RUN BASED ON BOILER CONTROLLER TIME DELAY RELAY (5 MINUTES, ADJUSTABLE) TO DISSIPATE HEAT FROM THE DEACTIVATED BOILER.
10. EACH BOILER SAFETY CONTROLS SHALL INCLUDE AN AUTO-RESET HI-LIMIT (BOILER OPERATOR) WITH SETPOINT OF 210°F AND A MANUAL-RESET HI-LIMIT WITH SETPOINT OF 230°F.
11. DDC SHALL MONITOR BOILER RUN STATUS AND COMMON ALARM FOR EACH BOILER THROUGH DRY CONTACTS AVAILABLE IN RESPECTIVE BOILER CONTROL PANEL.
12. IF PRIMARY HWH SUPPLY TEMP (T-1) DROPS BELOW 150°F WHEN SYSTEM IS ACTIVATED (AFTER 30 MINUTE DELAY FOR SYSTEM WARM-UP), DDC SHALL ACTIVATE ALARM.
13. DDC SHALL MONITOR SECONDARY HWHR TEMPERATURE (T-2), SECONDARY HWHS BEFORE SECONDARY PUMPS (T-3) AND BOILER DISCHARGE TEMPERATURES (T-4 & T-5) FOR DIAGNOSTIC PURPOSES.
14. WHEN ONE OF THE REMOTE BOILER SHUTDOWN SWITCHES IS PUSHED, BURNER CONTROLS FOR ALL BOILERS INCLUDING DOMESTIC HOT WATER BOILER SHALL BE DE-ENERGIZED THRU HARDWIRE INTERLOCK. DDC SHALL MONITOR SWITCH CIRCUIT AND ACTIVATE ALARM WHEN REMOTE BOILER SHUTDOWN CONDITION OCCURS.

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

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CHECKED BY

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APPROVED BY

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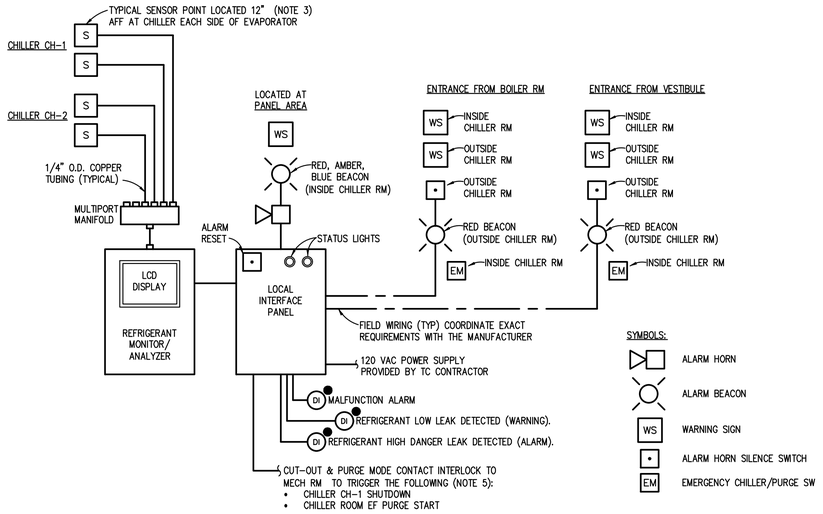
SHEET NAME

TEMPERATURE CONTROLS

SHEET NO.

M8.6



REFRIGERANT MONITORING SYSTEM SCHEMATIC

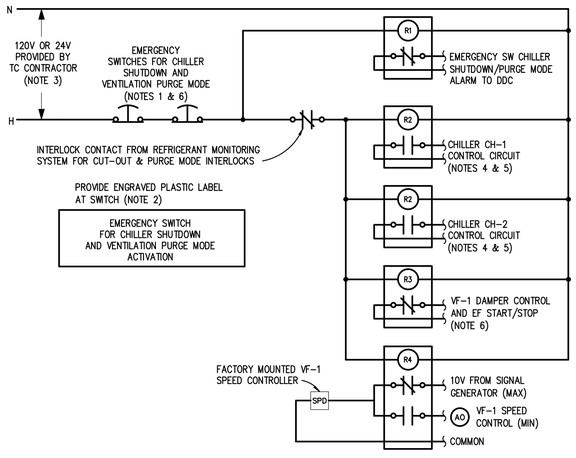
NO SCALE – LOCATED IN CHILLER RM

NOTES:

1. ● DESIGNATES REFRIGERANT SYSTEM DDC MONITORING PROVIDED BY TC CONTRACTOR. DRY CONTACTS PROVIDED BY REFRIGERANT MONITOR SUPPLIER.
2. TC CONTRACTOR FURNISH REFRIGERANT MONITORING EQUIPMENT AND INSTALL PER EQUIPMENT MANUFACTURER'S REQUIREMENTS.
3. REFRIGERANT SENSORS SHALL BE LOCATED AT BOTH ENDS OF CHILLER EVAPORATOR, MOUNTED ON STEEL SUPPORTS.
4. REMOTE REFRIGERANT LEAK MONITOR SHALL BE PROVIDED.
5. LOCAL SWITCHING OF CHILLER EMERGENCY STOP AND ROOM EMERGENCY PURGE VENTILATION ACTIVATION SHALL BE ACCOMPLISHED THROUGH COMMON EMERGENCY SWITCH WIRING. REFER TO CHILLER EMERGENCY SHUTDOWN WIRING DETAIL ON THIS DRAWING.
6. REFER TO CHILLER RM PURGE EXHAUST FAN CONTROL AND SEQUENCE OF OPERATION AND DETAILS.

SEQUENCE OF OPERATION:

1. FOR NORMAL MODE: DDC SHALL CONTROL CHILLER ROOM EF FOR VENTILATION AS INDICATED PER CHILLER RM EF SEQUENCE OF OPERATION.
2. WHEN REFRIGERANT LOW LEAK (AEL LEVEL) IS DETECTED, THE AMBER WARNING BEACON LOCATED AT THE REFRIGERANT MONITORING SYSTEM PANEL SHALL BE ACTIVATED. DDC SYSTEM SHALL MONITOR WARNING STATUS.
3. WHEN REFRIGERANT HIGH DANGER LEAK (TLV-TWA LEVEL) IS DETECTED, THE RED ALARM BEACON AND HORN LOCATED AT THE REFRIGERANT MONITORING SYSTEM PANEL AND AT ALL EXTERIOR ROOM ENTRANCE DOORS SHALL BE ACTIVATED, CHILLER PURGE EF SHALL BE INTERLOCKED TO OPERATE AND THE CHILLERS SHALL BE INTERLOCKED TO SHUTDOWN. DDC SYSTEM SHALL MONITOR ALARM STATUS.
4. UPON REFRIGERANT MONITORING SYSTEM MALFUNCTION ALARM, THE BLUE MALFUNCTION BEACON LOCATED AT THE REFRIGERANT MONITORING SYSTEM PANEL SHALL BE ACTIVATED. DDC SYSTEM SHALL MONITORING MALFUNCTION STATUS.



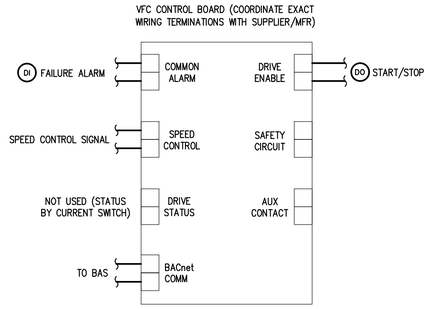
BOILER/CHILLER RM REMOTE EMERGENCY SWITCH SHUTDOWN WIRING

NOTES:

1. REFER TO FLOOR PLANS FOR EXISTING EMERGENCY SWITCH LOCATIONS.
2. TC CONTRACTOR SHALL PROVIDE AN ENGRAVED PLASTIC LABEL (NAME PLATE) TO BE PLACED DIRECTLY ABOVE, BELOW OR ADJACENT TO EACH PUSH BUTTON SWITCH.
3. TC CONTRACTOR SHALL WIRE CHILLERS' CONTROL CIRCUITS (POWER FROM SECONDARY SIDE OF CONTROL TRANSFORMERS) THRU NORMALLY OPEN RELAY CONTACTS. TC CONTRACTOR SHALL COORDINATE EXACT WIRING AND TERMINATION REQUIREMENTS WITH CHILLER MANUFACTURER.
4. TC CONTRACTOR SHALL MOUNT SHUTDOWN CONTROL RELAYS AT RESPECTIVE CHILLER CONTROL PANELS.
5. TC CONTRACTOR SHALL MOUNT MECH RM VENTILATION CONTROL RELAYS AT FAN MOTOR CONTROL. REFER TO CHILLER ROOM VF-1 CONTROL AND WIRING DETAILS.
6. TC CONTRACTOR SHALL PROVIDE MUSHROOM HEAD PUSH BUTTON SWITCH (PUSH TO LATCH / PULL TO RELEASE) WITH NORMALLY CLOSED (NC) CONTACTS. PROVIDE FLIP COVER TO PREVENT ACCIDENTAL SWITCHING AND JUNCTION BOX FOR SWITCH MOUNTING.

SEQUENCE OF OPERATION:

1. UNDER NORMAL OPERATING CONDITIONS THE EMERGENCY SHUTDOWN SWITCH CIRCUIT SHALL BE ENERGIZED AND THE RELAY'S NORMALLY OPEN (NO) CONTACTS SHALL BE CLOSED TO ALLOW NORMAL OPERATION OF HVAC EQUIPMENT. NORMALLY CLOSED (NC) CONTACTS USED FOR FAILSAFE OPERATION OF VENTILATION HVAC EQUIPMENT AND DDC SYSTEM ALARMING SHALL BE HELD OPEN UNTIL EMERGENCY SHUTDOWN AND VENTILATION PURGE MODE IS NEEDED.
2. WHEN A SWITCH IS PUSHED (LATCHED) OR IF THE REFRIGERANT MONITORING SYSTEM DETECTS A LEAK AND GOES INTO EMERGENCY PURGE MODE, THE RELAY CONTACTS SHALL OPEN AND INTERRUPT THE CHILLER'S CIRCUITS TO SHUTDOWN EQUIPMENT. WHEN SWITCH IS RELEASED, THE RELAY SHALL BE ENERGIZED AND ITS NORMALLY OPEN CONTACTS SHALL CLOSE, ENERGIZING THE EQUIPMENT CONTROL CIRCUITS.
3. DDC SHALL ACTIVATE AN ALARM WHEN A REMOTE SWITCH HAS BEEN PUSHED. DDC SYSTEM SEPARATELY MONITORS STATUS OF REFRIGERANT MONITORING SYSTEM.



CHW PUMPS CP-1 & 2 VFC WIRING

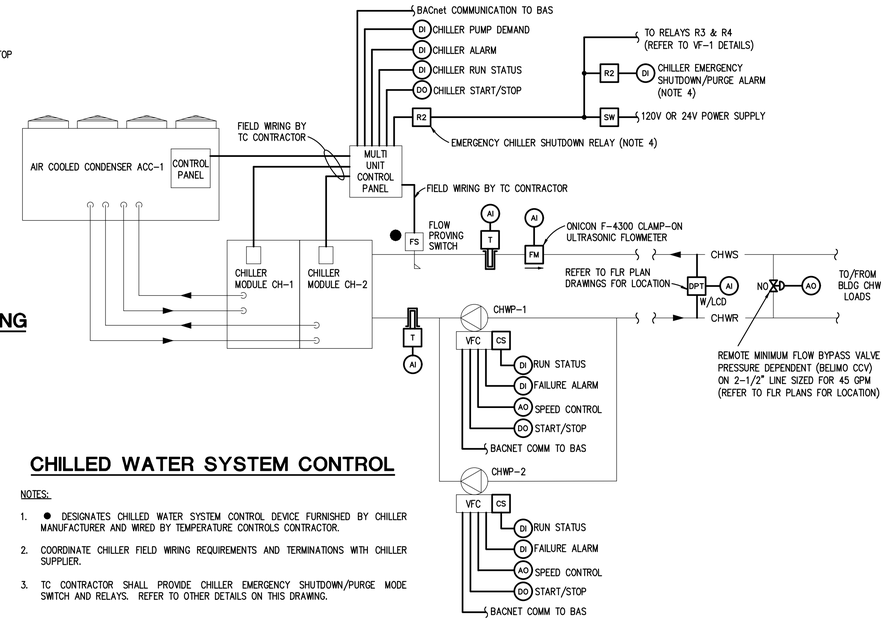
TYPICAL

NOTES:

1. WIRING DETAIL IDENTIFIES INTENT AND DOES NOT INDICATE ACTUAL WIRING REQUIREMENTS. CONSULT WITH VFC SUPPLIER FOR THE ACTUAL WIRING REQUIREMENTS.

TC GENERAL NOTES

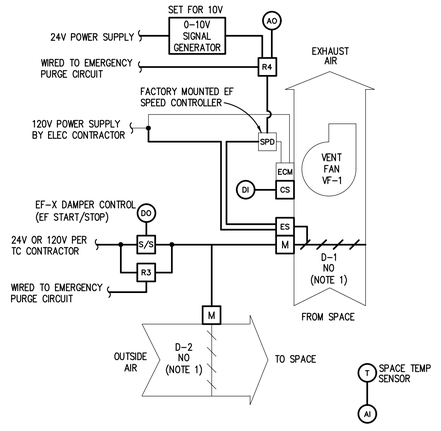
TC GENERAL NOTES ON DRAWING M8.1 APPLY TO THIS DRAWING.



CHILLED WATER SYSTEM CONTROL

NOTES:

1. ● DESIGNATES CHILLED WATER SYSTEM CONTROL DEVICE FURNISHED BY CHILLER MANUFACTURER AND WIRED BY TEMPERATURE CONTROLS CONTRACTOR.
2. COORDINATE CHILLER FIELD WIRING REQUIREMENTS AND TERMINATIONS WITH CHILLER SUPPLIER.
3. TC CONTRACTOR SHALL PROVIDE CHILLER EMERGENCY SHUTDOWN/PURGE MODE SWITCH AND RELAYS. REFER TO OTHER DETAILS ON THIS DRAWING.



VF-1 VENTILATION / PURGE CONTROL

NOTES:

1. EXHAUST AIR DAMPER D-1 AND OUTSIDE AIR DAMPER D-2 FAILSAFE IS NORMALLY OPENED AND HELD CLOSED WHEN VF-1 IS OFF. EXHAUST AIR DAMPER END SWITCH SHALL BE USED TO ACTIVATE VF-1.
2. VF-1 MINIMUM SPEED SHALL BE SET FOR 200 CFM AND MAXIMUM SPEED SHALL BE SET FOR 600 CFM. CONTROL SIGNAL LIMITS ARE TO BE COORDINATED WITH TAB CONTRACTOR.

SEQUENCE OF OPERATION:

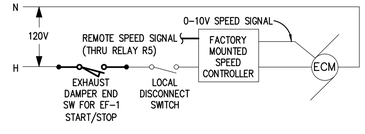
1. FOR NORMAL MODE OF OPERATION: VENTILATION FAN VF-1 THROUGH DDC EA/OA DAMPER CONTROL (END SW) SHALL BE STARTED AND STOPPED BY DDC SYSTEM FOR CONTINUOUS MECH RM VENTILATION DURING BUILDING OCCUPANCY OR WHEN SPACE TEMP RISES ABOVE ROOM SETPOINT OF 78°F (ADJUSTABLE). DDC SHALL INCREASE VF-1 SPEED FROM MINIMUM SPEED SETTING AS SPACE TEMP RISES ABOVE SETPOINT.
2. DDC SHALL MONITOR VF-1 RUN STATUS THRU CURRENT SWITCH. ABNORMAL STATUS CONDITION OF ANY FAN OPERATION SHALL ACTIVATE ALARM.
3. FOR EMERGENCY PURGE MODE OPERATION AS ACTIVATED BY REFRIGERANT MONITORING OR BY LOCAL PURGE ACTIVATION SWITCH, HARDWIRE INTERLOCKS SHALL OPEN EA/OA DAMPERS TO ACTIVATE VF-1 AND TO OPERATE VF-1 AT FULL SPEED. DDC SHALL PROVIDE AN ALARM FOR THIS OPERATING CONDITION – REFER TO REFRIGERANT MONITORING SYSTEM DETAIL ON THIS DRAWING AND REFER TO MECH RM EMERGENCY SHUTDOWN WIRING DETAILS.

SEQUENCE OF OPERATION

CHW SYSTEM:

NOTE: ALL SETPOINTS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS.

1. CHW SYSTEM OPERATION SHALL BE MANUALLY ENABLED BY OPERATOR AND BUILDING AUTOMATION SYSTEM SHALL START CHW SYSTEM WHENEVER OUTSIDE AIR TEMPERATURE IS ABOVE 55°F.
2. THE CHW CIRCULATING PUMPS CHWP-1 & CHWP-2 SHALL HAVE START/STOP CAPABILITY FROM THE DDC SYSTEM. BASED ON CHILLER CONTROL'S PUMP DEMAND, ONE OF THE TWO PUMPS SHALL BE ACTIVATED BY DDC. THE OTHER PUMP SHALL SERVE AS STANDBY. DDC SHALL ALTERNATE LEAD PUMP OPERATION AT THE BEGINNING OF EACH MONTH. IDENTIFY THE LEAD PUMP ON SYSTEM GRAPHICS.
3. DDC SHALL MONITOR OPERATING STATUS OF EACH PUMP. UPON PUMP FAILURE, DDC SHALL ACTIVATE FAILURE ALARM AND AUTOMATICALLY START THE STANDBY PUMP.
4. VFC COMMON FAILURE ALARM FOR EACH CIRC PUMP SHALL BE MONITORED BY DDC THRU AVAILABLE CONTACTS AT RESPECTIVE PUMP VFC.
6. DDC SHALL MODULATE THE VARIABLE FREQUENCY CONTROLLER ON THE OPERATING CHW CIRC PUMP TO MAINTAIN LOOP DIFFERENTIAL PRESSURE SETPOINT TO BE DETERMINED AT SYSTEM BALANCING. DDC SHALL MODULATE THE BYPASS VALVE OPEN TO ACHIEVE DP SETPOINT WHILE PUMP SPEED MAINTAINS THE CHW FLOW LOW LIMIT SETPOINT OF 45 GPM. WHEN BYPASS VALVE MODULATES TO FULL CLOSED POSITION, DDC PUMP SPEED CONTROL TO MAINTAIN REMOTE CHW DP SETPOINT SHALL RESUME.
7. CHILLER PACKAGED CONTROLS SHALL BE SET FOR REMOTE ENABLE FUNCTION BY OPERATORS.
8. WITH CHW PUMP ACTIVATED, BAS SHALL ACTIVATE CHILLER.
9. WHEN CHW FLOW IS PROVEN BY FLOW PROVING SWITCH, THE CHILLER PACKAGED CONTROL PANEL WITH INTEGRAL TEMPERATURE SENSORS SHALL SEQUENCE CHILLER MODULES CH-1 & CH-2 OPERATION TO MAINTAIN THE CHILLER'S CHW SUPPLY SETPOINT OF 42°F (ADJUSTABLE AT CHILLER PANEL OR FROM REMOTE SETPOINT ADJUSTMENT THRU BAS BACnet COMMUNICATION INTERFACE).
10. DDC SHALL ACTIVATE CHILLER LOW CHW LOAD ALARM WHEN DIFFERENCE BETWEEN CHW SUPPLY & RETURN TEMPERATURE IS LESS THAN 2°F FOR A 5 MINUTE PERIOD. CHW SYSTEM OPERATION SHALL BE MANUALLY DEACTIVATED AS REQUIRED.
11. AFTER CHILLER IS DISABLED, CHW PUMP SHALL REMAIN ACTIVE BY DDC PER CHILLER PUMP DEMAND BASED ON CHILLER'S TIME DELAY PUMP OFF REQUIREMENTS.
12. DDC SHALL STOP CHW SYSTEM WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 50°F (5°F START/STOP DEADBAND).
13. DDC SHALL PREVENT SHORT CYCLING OF CHILLER WITH A 30 MINUTE INTERVAL BETWEEN CHILLER SHUTDOWN AND CHILLER RESTART.



VF-1 M/S WIRING

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

DRAWN BY

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CHECKED BY

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APPROVED BY

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SHEET NAME

TEMPERATURE CONTROLS

SHEET NO.

M8.7

ELECTRICAL SYMBOL LIST

(NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION
FX (NL)	FIXTURE TYPE (NL INDICATES NIGHT LIGHT)
	LIGHTING FIXTURE
	DIRECT/INDIRECT LIGHTING FIXTURE
	EMERGENCY FIXTURE
	LIGHTING FIXTURE
	WALL MOUNTED LIGHTING FIXTURE
	LIGHTING FIXTURE
	DIRECTIONAL LIGHTING FIXTURE
	PENDANT LIGHTING FIXTURE
	WALL SCONCE
	LIGHTING TRACK
	TRACK LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE – POST TOP
	BOLLARD LIGHTING FIXTURE
	EMERGENCY LIGHTING UNIT
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE – WALL MOUNTED
	EXIT/EMERGENCY LIGHTING COMBO
BCELTS	BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH
ALCR	AUTOMATIC LOAD CONTROL RELAY
LC	LIGHTING CONTROL DEVICE – REFER TO LIGHTING CONTROL SCHEDULE
XX	ROOM CONTROL DESIGNATION – REFER TO LIGHTING CONTROL SCHEDULE
S	SINGLE POLE TOGGLE SWITCH
S2	TWO POLE TOGGLE SWITCH
S3	3 WAY TOGGLE SWITCH
S4	4 WAY TOGGLE SWITCH
K	KEY OPERATED SWITCH
K3	3 WAY KEY OPERATED SWITCH
K4	4 WAY KEY OPERATED SWITCH
D	DIMMER SWITCH
D3	3 WAY DIMMER SWITCH
DO	DIMMER OCCUPANCY SENSOR SWITCH
DL	LOW VOLTAGE DIMMER SWITCH
SP	PILOT SWITCH

SYMBOL	DESCRIPTION
TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION
TWCD	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER
TWCA	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL
TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP
TWCDP	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP
RGP	REMOTE GENERATOR ANNUCIATOR PANEL
ATS	AUTOMATIC TRANSFER SWITCH
UPS	UNINTERRUPTIBLE POWER SUPPLY
CSX	LOW VOLTAGE CONTROL STATION "X" INDICATES TYPE
"X"	SINGLE/DUPLEX RECEPTACLE OUTLET "X" INDICATES TYPE
"X"	SINGLE/DUPLEX RECEPTACLE OUTLET CONTROLLED BY AUTOMATIC CONTROL DEVICE/SYSTEM
	QUAD RECEPTACLE OUTLET
X	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY, USB AND GFCI RECEPTACLES) LENGTH AS REQUIRED "X" INDICATES CONDUIT SIZE
	DUPLEX RECEPTACLE–GROUND FAULT CIRCUIT INTERRUPTER
	DEAD FRONT–GROUND FAULT CIRCUIT INTERRUPTER
	DUPLEX EMERGENCY RECEPTACLE OUTLET
	DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET
	QUAD TAMPER RESISTANT RECEPTACLE OUTLET
	ABOVE COUNTER DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET
	DUPLEX UPS RECEPTACLE
	DUPLEX RECEPTACLE WITH 2 USB PORTS OUTLET
	4 PORT USB CHARGING STATION
	CEILING MOUNTED DUPLEX RECEPTACLE
	POWER POLE
	SPECIAL RECEPTACLE – REFER TO ELECTRICAL STANDARD SCHEDULES
	MULTI–OUTLET SURFACE RACEWAY
"X"	MULTI–SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET "X" INDICATES TYPE
PTX	POKE–THROUGH ASSEMBLY "X" INDICATES TYPE
FBX	FLOOR SERVICE FITTING "X" INDICATES TYPE
AFX	ACCESS FLOOR SERVICE FITTING "X" INDICATES TYPE
RX	CORD REEL "X" INDICATES TYPE
S S	DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
S3 S3	3–WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
S4 S4	4–WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
ST	DIGITAL TIME SWITCH
SI	ILLUMINATED TOGGLE SWITCH FOR CONTROL OF LIGHTING ON CRITICAL POWER–ILLUMINATED WHEN SWITCH IS IN "OFF" POSITION
SL	LOW VOLTAGE SWITCH
SO	OCCUPANCY SENSOR
SO2	OCCUPANCY SENSOR REFER TO ELECTRICAL STANDARD SCHEDULES
OS X	OCCUPANCY SENSOR "X" INDICATES TYPE

SYMBOL	DESCRIPTION
CP	CONTROL PANEL
MD	MOTOR
VFC	VARIABLE FREQUENCY CONTROLLER.
	MANUAL CONTROLLER
	MAGNETIC CONTROLLER
	COMBINATION MAGNETIC CONTROLLER
	NON–FUSIBLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
CB	ENCLOSED CIRCUIT BREAKER
	PUSH BUTTON STATION
	JUNCTION BOX
	HARD WIRE POWER CONNECTION
	GROUND ROD
	GROUND CONNECTION
HH	HANDHOLE
	CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED "X" INDICATES CONDUIT SIZE
	CONDUIT UP
	CONDUIT DOWN
	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	ABOVE COUNTER EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET
	TELECOMMUNICATION OUTLET "X" INDICATES TYPE
	ABOVE COUNTER TELECOMMUNICATION OUTLET "X" INDICATES TYPE
	TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE
	TELECOMMUNICATION BACKBOARD
TGB	TELECOMMUNICATION GROUNDING BUS BAR
TMGB	TELECOMMUNICATION MAIN GROUNDING BUS BAR
IC	INTERCOM OUTLET
S	SPEAKER
S	SPEAKER – WALL MOUNTED
MIC	MICROPHONE
VC	VOLUME CONTROL/STATION SELECTOR
B	SIGNALING BELL
	SINGLE FACE CLOCK – CEILING MOUNTED
	SINGLE FACE CLOCK – WALL MOUNTED
	DOUBLE FACE CLOCK – CEILING MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED
	DOUBLE FACE CLOCK – WALL MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED
	TIME CLOCK
C	CONTACTOR
P	PHOTOCELL
TT	TWIST TIMER

REFER TO ELECTRICAL STANDARD SCHEDULES

SYMBOL	DESCRIPTION
	SECURITY CAMERA
MD	MOTION DETECTOR
K	SECURITY KEY SWITCH
DC	DOOR CONTACT
KP	KEY PAD
CR	CARD READER
DB	DURESS PUSH BUTTON STATION
DE	DELAYED EGRESS
REX	REQUEST TO EXIT STATION
PP	AUTOMATIC DOOR PUSH PAD OPERATOR
DO	DOOR OPERATOR
DA	DOOR ACTUATOR
AC	ACCESS CONTROL STATION
ACCP	ACCESS CONTROL CONTROL PANEL
ACPS	ACCESS CONTROL POWER SUPPLY
	CIRCUIT BREAKER
	DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED
	DRAWOUT CIRCUIT BREAKER ELECTRICALLY/ OPERATED
	SWITCH
	AUTOMATIC OR MANUAL TRANSFER SWITCH
	FUSE
	TRANSFORMER
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	LIGHTNING ARRESTOR
X	PANELBOARD "X" INDICATES PANELBOARD NAME
	GROUND
	STRESS CONE TERMINATION
K	SECURITY KEY INTERLOCK
G	ENGINE GENERATOR
M	UTILITY METER
EMU	ELECTRONIC METERING UNIT
A	AMMETER
V	VOLTMETER
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
SPD	SURGE PROTECTIVE DEVICE
CR	CONTROL RELAY
TDR	TIME DELAY RELAY

SYMBOL	DESCRIPTION
F	MANUAL FIRE ALARM BOX
SD	SMOKE DETECTOR
DD	DUCT SMOKE DETECTOR
CO	CARBON MONOXIDE DETECTOR
RT	REMOTE TEST STATION (FOR DUCT DETECTOR)
TD	THERMAL DETECTOR
BD	PROJECTED BEAM DETECTOR
F	FIRE ALARM BELL
F	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE NOTIFICATION APPLIANCE– CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE – CEILING MOUNTED
F	FIREFIGHTERS PHONE JACK
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR PANEL
NAC	NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL
IM	ADDRESSABLE MONITORING MODULE
CM	ADDRESSABLE CONTROL MODULE
TS	TAMPER SWITCH
FS	FLOW SWITCH
DR	MAGNETIC DOOR RELEASE
	THERMAL OVERLOAD RELAY
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
	N.O. PUSH BUTTON SINGLE CIRCUIT
	N.C. PUSH BUTTON SINGLE CIRCUIT
X–X	CABLE VAULT "X–X" INDICATES TYPE
	BRANCH CIRCUIT PANELBOARD
	LOAD CENTER
	MOTOR CONTROL CENTER
T	TRANSFORMER
	DISTRIBUTION PANEL
GB	GROUND BUS
PB	PLUG IN BUSWAY
FB	FEEDER BUSWAY

ELECTRICAL DRAWING INDEX

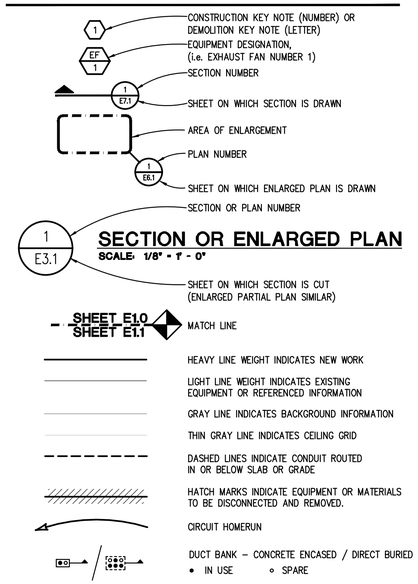
ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A	AMPERES
AER	ARC ENERGY REDUCTION
AF	AMPERES FRAME (BREAKER RATING)
AFCI	ARC FAULT CIRCUIT INTERRUPTER
A.F.F.	ABOVE FINISH FLOOR
AIC	AMPS INTERRUPTING CAPACITY
AL	AUDIENCE LEFT
ALCR	AUTOMATIC LOAD CONTROL RELAY
AR	AUDIENCE RIGHT
AT	AMPERES TRIP (BREAKER SETTING)
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
BCELTS	BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH
BKR	BREAKER
BPS	BOLTED PRESSURE SWITCH
C	CONDUIT
CB	CIRCUIT BREAKER
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CT	CURRENT TRANSFORMER
DEMO	DEMOLITION
DIM	DIMENSION
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
DS	DOWNSTAGE
DWG	DRAWING
EBU	EMERGENCY BATTERY UNIT
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRICAL
EM/ EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EO	ELECTRICALLY OPERATED
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
FA	FIRE ALARM
FLA	FULL LOAD AMPS
FLR	FLOOR
FOH	FRONT OF HOUSE
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
FU	FUSE
G/GRD/EG	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HOA	HAND–OFF–AUTO
HP	HORSEPOWER
HV	HIGH VOLTAGE
HZ	HERTZ
IG	ISOLATED GROUND

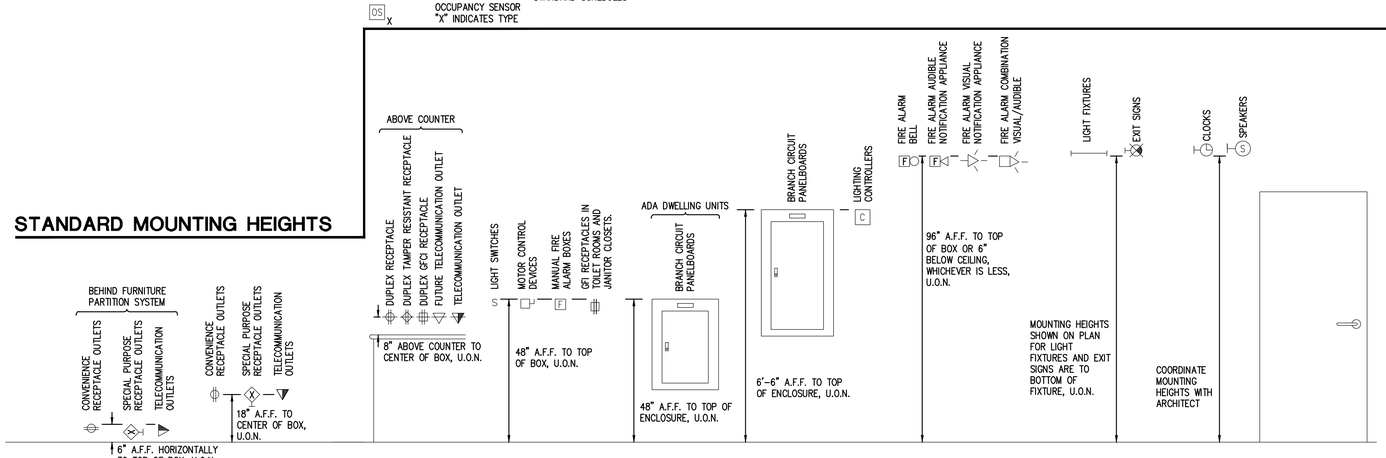
ABBREVIATION	DESCRIPTION
JB	JUNCTION BOX
KA	THOUSAND AMP
KV	KILOVOLT
KVA	KILOVOLT – AMPERES
KW	KILOWATT
KWH	KILOWATT – HOURS
LA	LIGHTNING ARRESTOR
LP	LIGHTING PANEL
LDP	LIGHTING DISTRIBUTION PANEL
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MIN	MINIMUM
MISC.	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MOP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MTG	MOUNTING
MTR	MOTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NON–FUSIBLE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED

ABBREVIATION	DESCRIPTION
P	POLE
PB	PUSHBUTTON STATION
PH	PHASE
PT	POTENTIAL TRANSFORMER
PDP	POWER DISTRIBUTION PANEL
RECEPT.	RECEPTACLE
RDP	RECEPTACLE DISTRIBUTION PANEL
RP	RECEPTACLE PANEL
RSC	RIGID STEEL CONDUIT
SCCR	SHORT CIRCUIT CURRENT RATING
SCHED	SCHEDULE
SPD	SURGE PROTECTION DEVICE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TERMINAL BOX
TELECOM	TELECOMMUNICATIONS
TR	TAMPER RESISTANT
TTB	TELEPHONE TERMINAL BACKBOARD
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
US	UPSTAGE
V	VOLTS
W	WIRE OR WATTS
WG	WIRE GUARD
WP	WEATHERPROOF
WR	WEATHER RESISTANT
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
(E)	EXISTING
(R)	RELOCATED

STANDARD METHODS OF NOTATION



STANDARD MOUNTING HEIGHTS



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PBA Project No. 2021.0163

KEY PLAN

OWNER

Canton Township Public Safety

PROJECT NAME

Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

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SHEET NAME
ELECTRICAL STANDARDS AND DRAWING INDEX

SHEET NO.
E0.1

FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE

OVERCURRENT DEVICE RATING (AMPERES)	COPPER CONDUCTORS: WIRE SIZE (AWG OR KCMIL) PHASE & NEUTRAL	COPPER: WIRE SIZE GROUND	COPPER: CONDUIT SIZE SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G, 2PH, 1G)	COPPER: CONDUIT SIZE SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	COPPER: CONDUIT SIZE THREE PHASE 3 WIRE+G (3PH, 1G)	COPPER: CONDUIT SIZE THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)	KEYED NOTES	ALUMINUM CONDUCTORS: WIRE SIZE (AWG OR KCMIL) PHASE & NEUTRAL	ALUMINUM: WIRE SIZE GROUND	ALUMINUM: CONDUIT SIZE SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	ALUMINUM: CONDUIT SIZE THREE PHASE 3 WIRE+G (3PH, 1G)	ALUMINUM: CONDUIT SIZE THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)
15-20	12	12	3/4"	3/4"	3/4"	3/4"		NOT ACCEPTABLE				
25-30	10	10	3/4"	3/4"	3/4"	3/4"						
35-40	8	10	3/4"	3/4"	3/4"	3/4"						
45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"	1					
60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	1" (1 1/4")	1					
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"						
80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"	1					
90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1	1	6	1 1/2"	1 1/2"	1 1/2"
110	2 (1)	6	-	1 1/4"	1 1/4"	1 1/4" (1 1/2")	1	1/0	4	1 1/2"	1 1/2"	2"
125	1 (1/0)	6	-	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"	1	2/0	4	1 1/2"	1 1/2"	2"
150	1/0	6	-	1 1/2"	1 1/2"	1 1/2"		3/0	4	2"	2"	2 1/2"
175	2/0	6	-	2"	2"	2"		4/0	4	2"	2"	2 1/2"
200	3/0	6	-	2"	2"	2 1/2"		250	4	2"	2"	3"
225	4/0	4	-	2"	2"	2 1/2"		300	2	2 1/2"	2 1/2"	3"
250	250	4	-	2 1/2"	2 1/2"	2 1/2"		350	2	2 1/2"	2 1/2"	3"
300	350	4	-	2 1/2"	2 1/2"	3"		500	2	3"	3"	3 1/2"
350	500	3	-	3"	3"	3"		2-4/0	2-1/0	2-2"	2-2"	2-2"
400	500	3	-	3"	3"	3"		2-250	2-1/0	2-2 1/2"	2-2 1/2"	2-2 1/2"
450	2-4/0	2-2	-	2-2"	2-2"	2-2 1/2"		2-300	2-1/0	2-2 1/2"	2-2 1/2"	2-3"
500	2-250	2-2	-	2-2 1/2"	2-2 1/2"	2-2 1/2"		2-350	2-1/0	2-2 1/2"	2-2 1/2"	2-3"
600	2-350	2-1	-	2-2 1/2"	2-2 1/2"	2-3"		2-500	2-2/0	2-3"	2-3"	2-3 1/2"
700	2-500	2-1/0	-	2-3"	2-3"	2-3"		2-600	2-3/0	2-3"	2-3"	2-3 1/2"
800	2-500	2-1/0	-	2-3"	2-3"	2-3 1/2"		3-400	3-3/0	3-3"	3-3"	3-3 1/2"
1000	3-400	3-2/0	-	3-3"	3-3"	3-3"		3-600	3-4/0	-	3-3 1/2"	3-3 1/2"
1200	3-600	3-3/0	-	3-3 1/2"	3-3 1/2"	3-3 1/2"		4-500	4-250	-	4-3"	4-3 1/2"
1600	4-600	4-4/0	-	4-3 1/2"	4-3 1/2"	4-3 1/2"		5-600	5-350	-	5-3 1/2"	5-4"
2000	5-600	5-250	-	5-3 1/2"	5-3 1/2"	5-3 1/2"		6-600	6-400	-	6-3 1/2"	6-4"

GENERAL NOTES:
1. CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.
2. CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.
3. COPPER CONDUCTORS ARE BASED ON THHN/THWN UP TO AND INCLUDING #4/0. COPPER CONDUCTORS LARGER THAN #4/0 AND ALUMINUM CONDUCTORS ARE BASED ON XHHW-2.
4. CONDUIT SIZES ARE VALID FOR EMT OR RGS. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.
5. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE REQUIRED WIRE SIZES TO ACCOMMODATE MECHANICAL EQUIPMENT LUG SIZES.
6. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.
7. OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLING DIFFERENT SIZE/QUANTITY OF CONDUCTORS TO OBTAIN AN EQUIVALENT AMPACITY.
8. SPLICE FROM ALUMINUM TO COPPER PRIOR TO ENTERING EQUIPMENT LISTED FOR USE WITH COPPER CONDUCTORS ONLY OR USE COPPER CONDUCTORS FOR THE ENTIRE LENGTH OF FEEDER.

KEYED NOTES:
1. CONDUCTORS ARE BASED ON 90°C, 600V. INSULATED WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.

OCCUPANCY SENSOR LEGEND

TYPE	DESCRIPTION
OS_A	360° CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
OS_B	90° CEILING/WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
OS_C	360° CEILING MOUNTED PASSIVE INFRARED OCCUPANCY SENSOR
OS_D	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR
OS_E	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR - CORRIDOR OPTIMIZED
So	WALL SWITCH OCCUPANCY SENSOR
So2	WALL SWITCH OCCUPANCY SENSOR - DUAL LEVEL SWITCHING
Do	WALL DIMMER SWITCH OCCUPANCY SENSOR

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS

BRANCH CKT RATING (A)	WIRE SIZE (AWG)	MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET) 120V	208V	240V	277V	480V
20A	12	83	143	165	191	331
	10	128	222	256	295	511
	8	201	348	402	464	804
	6	313	542	625	721	1250
30A	10	85	148	170	197	341
	8	134	232	268	309	536
	6	208	361	417	481	833
	4	313	542	625	721	1250

GENERAL NOTES:
1. THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER FACTOR OF 0.85 PER NEC CHAPTER 9, TABLE 9.
2. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
3. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT.
4. LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE 90.1 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

MOTOR CIRCUIT SIZING SCHEDULE (208V, 3 PHASE)

MOTOR HP	SWITCH/ FUSE	CIRCUIT BREAKER	STARTER SIZE/TYPE	MOTOR DISCONNECT (NOTE 3)
1/2	30/6A	15A	1	30A
3/4	30/6A	15A	1	30A
1	30/10A	15A	1	30A
1 1/2	30/10A	15A	1	30A
2	30/10A	15A	1	30A
3	30/20A	20A	1	30A
5	30/25A	35A	1	30A
7 1/2	60/40A	50A	1	60A
10	60/50A	60A	2	60A
15	60/60A	90A	3	60A
20	100/90A	100A	3	100A
25	100/100A	110A	3	100A
30	200/125A	125A	4	200A
40	200/175A	175A	4	200A
50	200/200A	200A	5	200A
60	400/250A	250A	5	400A
75	400/300A	300A	5	400A
100	400/400A	400A	6	400A
125	600/500A	600A	6	600A
150	600/600A	600A	6	600A

GENERAL NOTES:
1. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE N.E.C.
2. BASED ON MOTOR RUNNING OVERLOAD PROTECTIONS PROVIDED BY THERMAL OVERLOAD RELAYS.
3. WHERE THE STARTER IS LOCATED REMOTE FROM THE MOTOR, PROVIDE DISCONNECT LOCATED AT THE MOTOR, SIZE AS INDICATED.

MOTOR CIRCUIT SIZING SCHEDULE (120V, SINGLE PHASE)

MOTOR HP	CIRCUIT BREAKER	MANUAL MOTOR STARTER SIZE	COMBINATION STARTER SIZE	MOTOR DISCONNECT (NOTE 3)
1/6	15A	1 HP	0	20A
1/4	15A	1 HP	0	20A
1/3	15A	1 HP	0	20A
1/2	20A	1 HP	0	20A

GENERAL NOTES:
1. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE N.E.C.
2. BASED ON MOTOR RUNNING OVERLOAD PROTECTIONS PROVIDED BY THERMAL OVERLOAD RELAYS.
3. WHERE THE STARTER IS LOCATED REMOTE FROM THE MOTOR, PROVIDE DISCONNECT LOCATED AT THE MOTOR, SIZE AS INDICATED.

MOTOR CIRCUIT SIZING SCHEDULE (480V, 3 PHASE)

MOTOR HP	SWITCH/ FUSE	CIRCUIT BREAKER	STARTER SIZE/TYPE	MOTOR DISCONNECT (NOTE 3)
1/2	30/3A	15A	1	30A
3/4	30/3A	15A	1	30A
1	30/6A	15A	1	30A
1 1/2	30/6A	15A	1	30A
2	30/6A	15A	1	30A
3	30/10A	15A	1	30A
5	30/15A	15A	1	30A
7 1/2	30/20A	20A	1	30A
10	30/20A	25A	1	30A
15	30/30A	40A	2	30A
20	60/40A	60A	2	60A
25	60/50A	70A	2	60A
30	60/60A.	80A	3	60A
40	100/80A.	90A	3	100A
50	100/100A.	100A	3	100A
60	200/125A.	125A	4	200A
75	200/150A.	150A	4	200A
100	200/200A.	200A	4	200A
125	200/200A.	225A	5	200A
150	400/250A.	250A	5	400A
200	400/350A.	350A	5	400A

GENERAL NOTES:
1. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE N.E.C.
2. BASED ON MOTOR RUNNING OVERLOAD PROTECTIONS PROVIDED BY THERMAL OVERLOAD RELAYS.
3. WHERE THE STARTER IS LOCATED REMOTE FROM THE MOTOR, PROVIDE DISCONNECT LOCATED AT THE MOTOR, SIZE AS INDICATED.

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

RACEWAY / CONDUCTOR / CABLE APPLICATION SCHEDULE

		WIRE			RACEWAY																CABLE/CORD														
		COPPER, TYPE THHN/THWN-2	COPPER, TYPE XHHW-2	ALUMINUM, TYPE XHHW-2 (100A AND ABOVE ONLY)	ELECTRICAL METALLIC TUBING (EMT)	INTERMEDIATE METAL CONDUIT (IMC)	RIGID STEEL CONDUIT (RSC)	PVC COATED RIGID STEEL CONDUIT	PVC COATED INTERMEDIATE METAL CONDUIT	ALUMINUM RIGID CONDUIT	RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-40	RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-80	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 40	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 80	REINFORCED THERMOSET RESIN CONDUIT (RTRC) TYPE AG	REINFORCED THERMOSET RESIN CONDUIT (RTRC) TYPE BG	FLEXIBLE METAL CONDUIT (FMC)	LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC)	SURFACE RACEWAY	CABLE TRAY	METAL CLAD TYPE CABLE WITH INSULATED GROUND WIRE (TYPE MC)	ARMOR CLAD TYPE CABLE WITH INSULATED GROUND WIRE (TYPE AC)	HEALTHCARE FACILITY ARMOR CLAD TYPE CABLE (TYPE AC-HFC)(KEYED NOTE 5)	UNDERGROUND FEED CABLE (TYPE UF)	UNDERGROUND SERVICE CABLE (TYPE SE OR USE-2 CABLE)	NONMETALLIC CABLE (TYPE NM)	TWO HOUR FIRE RATED MINERAL INSULATED CABLE (TYPE MI) (KEYED NOTE 4)	TWO HOUR FIRE RATED CABLE (RHW-2) (KEYED NOTE 4)	TWO HOUR RATED MC POWER CABLE (KEYED NOTE 4)	VFC CABLE	TRAY CABLE (TYPE TC)	TRAY CABLE FOR EXPOSED RUNS (TYPE TC-ER)	PHOTOVOLTAIC CABLE (TYPE PV)	POWER LIMITED CABLE	CIRCUIT INTEGRITY CABLE (TYPE CI)
FEEDERS - EXTERIOR	EXPOSED, SURFACE MOUNTED TO STRUCTURE		X	X		X	X	X							X																				
	EXPOSED, WITH FREESTANDING SUPPORT		X	X		X	X	X							X																				
	CONCEALED IN RETAINING WALL OR SIMILAR ELEMENT		X	X			X	X			X	X																							
	BELOW PARKING LOTS AND ROADWAYS		X	X				X				X		X		X																			
	BELOW GREEN SPACE		X	X				X			X		X			X																			
	WITHIN 5' OF FOUNDATION WALL		X	X			X	X																											
	ROOFTOPS (WHEN APPROVED BY ENGINEER)		X	X		X	X	X																											
FEEDERS - INTERIOR	CONCEALED, ACCESSIBLE CEILINGS	X		X	X	X																													
	CONCEALED, INACCESSIBLE CEILINGS	X		X	X	X																													
	CONCEALED IN GYPSUM BOARD PARTITION WALLS	X		X	X	X																													
	CONCEALED IN CMU WALLS	X		X	X	X																													
	EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE	X		X		X	X	X																			X								
	EXPOSED, BELOW 10' AFF AND NOT SUBJECT TO DAMAGE	X		X	X	X																					X								
	EXPOSED, ABOVE 10' AFF UNFINISHED SPACES	X		X	X	X																					X								
	EXPOSED, FINISHED SPACES	X		X															X																
	BELOW SLAB ON GRADE	X		X			X	X			X	X															X								
	DAMP AND WET LOCATIONS	X		X		X	X	X			X																								
BRANCH CIRCUITS - EXTERIOR	EXPOSED, SURFACE MOUNTED TO STRUCTURE		X			X	X	X				X																							
	EXPOSED, WITH FREESTANDING SUPPORT		X			X	X	X																											
	CONCEALED IN RETAINING WALL OR SIMILAR ELEMENT		X				X	X			X																								
	BELOW PARKING LOTS AND ROADWAYS		X				X	X			X		X																						
	BELOW GREEN SPACE		X								X																								
	WITHIN 5' OF FOUNDATION WALL		X				X	X																											
	ROOFTOPS (WHEN APPROVED BY ENGINEER)		X			X	X	X																											
BRANCH CIRCUITS - INTERIOR	CONCEALED, ACCESSIBLE CEILINGS	X			X	X															X		X												
	CONCEALED, INACCESSIBLE CEILINGS	X			X	X																													
	CONCEALED IN GYPSUM BOARD PARTITION WALLS	X			X	X											X				X		X												
	CONCEALED IN CMU WALLS	X			X	X																													
	EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE	X				X	X	X																											
	EXPOSED, BELOW 10' AFF AND NOT SUBJECT TO DAMAGE	X			X	X													X								X								
	EXPOSED, ABOVE 10' AFF UNFINISHED SPACES	X			X	X																	X												
	EXPOSED, FINISHED SPACES	X																	X				X												
	BELOW SLAB ON GRADE	X									X																								
	EMBEDDED IN ELEVATED CONCRETE SLAB	X									X																								
	DAMP AND WET LOCATIONS	X				X	X	X			X							X																	
SPECIAL APPLICATIONS	SERVICE ENTRANCE - UNDERGROUND		X	X				X			X	X	X	X																					
	SERVICE ENTRANCE - ABOVE GROUND		X	X	X	X	X																												
	CONNECTION BETWEEN VFC AND MOTORS (KEYED NOTE 1)																													X					
	CLASS 1 CONTROL CIRCUITS	X			X	X	X																								X	X			
	CLASS 2 CONTROL CIRCUITS	X			X	X	X													X											X	X		X	
	CLASS 3 CONTROL CIRCUITS	X			X	X	X													X											X	X		X	
	FIRE PUMP FEEDERS (KEYED NOTE 2)		X	X			X	X			X	X	X	X													X	X	X						
	EMERGENCY FEEDERS UNDER NEC 700.10(D) (KEYED NOTE 3)		X	X	X	X	X	X			X	X	X	X													X	X	X						
	CONNECTIONS TO TRANSFORMERS, MOTORS AND VIBRATING EQUIPMENT		X															X																	

GENERAL NOTES:
1. TRANSITION FROM PVC/HDPE AND PROVIDE RIGID STEEL OR RTRC SWEEPS WHERE CONDUITS PENETRATE WALLS, CONCRETE SLABS, CONCRETE BASES, AND ASPHALT.
2. REFER TO SPECIFICATIONS FOR RESTRICTIONS ON MC/AC CABLE INSTALLATION.
3. EMT SHALL NOT BE USED ON THE EXTERIOR OF A BUILDING OR IN AREAS SUBJECT TO DAMAGE BELOW 10' AFF.
4. INSTALL SURFACE RACEWAYS ONLY WHERE INDICATED ON DRAWINGS.

KEYED NOTES:
1. NON-ARMORED CABLE SHALL BE INSTALLED IN RACEWAY. ARMORED CABLE SHALL BE INSTALLED IN TRAY OR FREE-AIR AS APPLICABLE.
2. CONDUIT AND BUILDING WIRE ALLOWED WHEN ENCASED IN MINIMUM 2" CONCRETE.
3. EMERGENCY FEEDERS IN OCCUPANCIES THAT ARE UNDER 700.10(D) SHALL HAVE A TWO HOUR RATING. RATING SHALL BE OBTAINED BY ROUTING CONDUIT AND BUILDING WIRE IN SPRINKLERED SPACE, IN A TWO HOUR SHAFT, OUTSIDE OF THE BUILDING, IN A LISTED TWO HOUR RATED RACEWAY, OR UNDER A MINIMUM OF 2" OF CONCRETE; OR BY USING A LISTED TWO-HOUR RATED CABLE ASSEMBLY.
4. SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS BASED ON UL TESTING AND RATING.
5. FOR USE IN PATIENT CARE SPACES. SHALL NOT BE USED FOR LIFE SAFETY OR CRITICAL CIRCUITS EXCEPT WHERE PERMITTED BY NEC 517.
6. PULLING LUBRICANT SHALL NOT BE USED
7. ALL CONDUIT, FITTINGS, AND OTHER ACCESSORIES SHALL BE NON-FERROUS.
8. ALL CONDUIT, FITTINGS, AND OTHER ACCESSORIES SHALL BE RATED FOR THE HAZARD CLASSIFICATION OF THE SPACE OR AREA.

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SHEET NAME
ELECTRICAL STANDARD SCHEDULES

SHEET NO.
E0.2

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ACCESS FLOOR ASSEMBLY SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER (SEE NOTE #2)	DEVICE CONFIGURATION	FLANGE/COVER MATERIAL & COLOR	SERVICE PLATE TYPE	MAXIMUM DEPTH	MAXIMUM CONDUIT
AF1	POWER, COMMUNICATIONS, AV SYSTEMS FOR RAISED ACCESS FLOOR, FLUSH ALUMINUM FLOOR BOX WITH FURNITURE FEED FOR USE WITH TILE OR CARPET	WIREMOLD AF1/AC8105SERIES	D/T/AV	PLASTIC COVER GY	FF	5"	3/4"

GENERAL NOTES:
1. PROVIDE 1 1/4"C. FROM EACH TELECOM FLOOR BOX (GANG) TO ACCESSIBLE LOCATION IN CEILING.
2. OTHER ACCEPTABLE MANUFACTURERS ARE STEEL CITY, OR HUBBELL–RACO.
3. ALL PRODUCTS IN THIS SCHEDULE SHALL MEET AND EXCEED THE UL514A or UL514C SCRUB WATER EXCLUSION REQUIREMENT.
4. COORDINATE ALL TELECOM AND A/V OUTLETS WITH COMMUNICATIONS AND A/V CONTRACTORS.

ABBREVIATIONS:
FF = FURNITURE FEED
PF = PARTITION FEED
D = DUPLEX RECEPTACLE
T = TELECOM OPENINGS
AV = AUDIO/VISUAL OPENINGS

BS = BRASS
AL = ALUMINUM
BK = BLACK
GY = GRAY (CONCRETE)
BZ = BRONZE
NK = NICKEL

FR = FLIP LID/RECTANGULAR
SL = SLIDES
F = FLIP COVER

SPECIAL RECEPTACLES

TYPE	DESCRIPTION
1	125V, 30A, SINGLE PHASE, LOCKING RECEPTACLE, 2 POLE, 3 WIRE (NEMA L5–30R)
2	250V, 20A, SINGLE PHASE, LOCKING RECEPTACLE, 2 POLE, 3 WIRE (NEMA L6–20R)
3	250V, 30A, SINGLE PHASE, LOCKING RECEPTACLE, 2 POLE, 3 WIRE (NEMA L6–30R)
4	250V, 20A, THREE PHASE, LOCKING RECEPTACLE, 3 POLE, 4 WIRE (NEMA L15–20R)
5	250V, 30A, THREE PHASE, LOCKING RECEPTACLE, 3 POLE, 4 WIRE (NEMA L15–30R)
6	208Y/120V, 30A, THREE PHASE, LOCKING RECEPTACLE, 4 POLE, 5 WIRE (NEMA L21–30R)
7	125/ 250V SINGLE PHASE RECEPTACLE, 3 POLE, 4 WIRE (NEMA 14–30R)
8	125/ 250V SINGLE PHASE RECEPTACLE, 3 POLE, 4 WIRE (NEMA 14–50R)

POKE-THROUGH ASSEMBLY SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER (SEE NOTE #2)	DEVICE CONFIGURATION	BOTTOM HOUSING	FLANGE/COVER MATERIAL & COLOR	SERVICE PLATE TYPE	MINIMUM DEPTH	MAXIMUM CONDUIT	CORE SIZE MIN/MAX
PT1	POWER POKE–THROUGH WITH 1 DUPLEX RECEPTACLE FOR CARPET/TILE	WIREMOLD RC7	1D	3/4"C FOR POWER	GY AL	SL	N/A	3/4"	3 1/16" 3 1/8"
PT4	POWER QUAD POKE–THROUGH WITH 2 DUPLEX RECEPTACLES FOR CARPET/TILE	WIREMOLD RC4	2D	3/4"C FOR POWER	GY AL	SL	N/A	3/4"	4" 4 1/8"
PT6A	PARTITION FEED POKE–THROUGH FOR POWER AND/OR TELECOM FOR CARPET/TILE	WIREMOLD 6AT	PF	3/4"C FOR POWER 2"C FOR DATA	GY AL	FF	N/A	2"	6 1/16" 6 1/8"
PT6B	POWER RECESSED POKE–THROUGH DEVICE WITH 2 DUPLEX OUTLETS FOR CARPET/TILE	WIREMOLD 6AT	2D	3/4"C FOR POWER	GY AL	SL / FC	N/A	2"	6 1/16" 6 1/8"
PT6C	MULTIFUNCTION RECESSED POKE–THROUGH DEVICE WITH 2 DUPLEX OUTLETS AND 2 TELECOM OUTLETS FOR CARPET/TILE	WIREMOLD 6AT	2D / 2T	3/4"C FOR POWER 1 1/4"C FOR DATA	GY AL	SL / FC	N/A	2"	6 1/16" 6 1/8"
PT8	MULTIFUNCTION RECESSED POKE–THROUGH DEVICE WITH 2 DUPLEX OUTLETS AND 3 CONFIGURABLE GANGS FOR CARPET/TILE	WIREMOLD 8AT	2D / 3T	3/4"C FOR POWER 2"C FOR DATA	GY AL	SL / FC	N/A	2"	8 1/16" 8 1/8"

GENERAL NOTES:
1. PROVIDE 1 1/4"C. FROM EACH TELECOM FLOOR BOX (GANG) TO ACCESSIBLE LOCATION IN CEILING.
2. OTHER ACCEPTABLE MANUFACTURERS ARE STEEL CITY, OR HUBBELL–RACO.
3. ALL PRODUCTS IN THIS SCHEDULE SHALL MEET AND EXCEED THE UL SCRUB WATER EXCLUSION REQUIREMENT.
4. COORDINATE ALL TELECOM AND A/V OUTLETS WITH COMMUNICATIONS AND A/V CONTRACTORS.
5. CORE MIN/MAX SIZES LISTED ARE FOR BARE CONCRETE OR TERRAZZO FLOORS.

ABBREVIATIONS:
PF = PARTITION FEED
D = DUPLEX RECEPTACLE
T = 2 TELECOM OPENINGS

BS = BRASS
AL = ALUMINUM
BK = BLACK
GY = GRAY (CONCRETE)
BZ = BRONZE
NK = NICKEL

FR = FLIP LID/RECTANGULAR
SL = SLIDES
FC = FLIP COVER
FF = FURNITURE FEED

INTERIOR LIGHTING CONTROL SCHEDULE

PLAN REFERENCE	ROOM TYPE	LOCAL CONTROL			CONTROL ON / OFF	SENSOR TYPE	TURN ON LIGHTING TO %	BI–LEVEL CONTROL	NO DETECTION PARTIAL OFF (NOTE 10)		NO DETECTION FULL OFF (MIN)	TIME–CLOCK SCHEDULE	EMERGENCY LIGHTING CIRCUIT CONTROL	CONTACT FOR HVAC CONTROL	NOTES
		SWITCH TYPE	SWITCH CONTROL	SCENE CONTROL					REDUCE TO (%)	AT(MIN)					
A	OFFICE (ENCLOSED AND ≤ 250 SQFT)	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	PARTIAL 75%	CONTINUOUS DIM	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
B	ELECTRICAL/MECHANICAL ROOM	LINE VOLTAGE	ON–OFF	NA	MANUAL ON / MANUAL OFF	NA	NA	NA	NA	NA	NA	NA		NA	
C	CONFERENCE/MEETING/MULTIPURPOSE ROOM	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	PARTIAL 75%	CONTINUOUS DIM	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
D	CORRIDOR (ALL OTHER CORRIDORS)	LINE VOLTAGE	ON–OFF	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	NA	50	10	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT; NOTE: SECURE CORRIDOR #126 EXEMPT FROM EMERGENCY OPERATIONS IN ASHRAE 90.1.
E	STORAGE ROOM (< 50 SQFT)	LINE VOLTAGE	ON–OFF	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	NA	NA	NA	20	NA	NA	NA	
F	LOBBY (ALL OTHER LOBBIES)	LINE VOLTAGE	ON–OFF	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	NA	50	10	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
G	RESTROOM (ALL OTHER RESTROOMS)	LINE VOLTAGE	ON–OFF	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	NA	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
H	STORAGE ROOM (>50 FT2 AND ≤ 1000 SQFT)	LINE VOLTAGE	ON–OFF	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	PARTIAL 75%	NA	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
I	STORAGE ROOM (ALL OTHER STORAGE ROOMS)	LINE VOLTAGE	ON–OFF	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	NA	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
J	LOUNGE/BREAKROOM (ALL OTHER LOUNGES/BREAKROOMS)	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	INTERMEDIATE STEP 70%	NA		20	NA	NA	NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
K	CLASSROOM/LECTURE HALL/TRAINING ROOM (ALL OTHER CLASSROOMS/LECTURE HALLS/TRAINING ROOMS)	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	CONTINUOUS DIM	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
L	OFFICE (ENCLOSED AND >250 SQFT)	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	CONTINUOUS DIM	NA	NA	20	NA		NA	THIS CONTROL SETTING IS FOR THE DISPATCH & TEMP DISPATCH CENTERS (118 & 213); ALL LUMINAIRES TO BE WIRED TO STANDBY CIRCUIT. THESE SPACES ARE ALSO EXEMPT FROM EMERGENCY OPERATIONS IN ASHRAE 90.1.
M	LOCKER ROOM	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	INTERMEDIATE STEP 70%	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
N	COMPUTER ROOM	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	PARTIAL 75%	CONTINUOUS DIM	NA	NA	20	NA		NA	THIS CONTROL SETTING IS FOR IT ROOMS #211 & #212; 3–LEVEL SWITCHING CONTROL THROUGHOUT
O	OFFICE (OPEN PLAN)	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	PARTIAL 75%	CONTINUOUS DIM	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
P	OFFICE (ENCLOSED AND >250 SQFT)	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	PARTIAL 75%	CONTINUOUS DIM	NA	NA	20	NA		NA	3–LEVEL SWITCHING CONTROL THROUGHOUT
Q	COPY/PRINT ROOM	LINE VOLTAGE	ON–OFF–DIM	NA	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	NA	INTERMEDIATE STEP 70%	NA		20	NA	NA	NA	THIS CONTROL SETTING IS FOR WORK ROOM #226; 3–LEVEL SWITCHING CONTROL THROUGHOUT

NA = NOT APPLICABLE

NOTE:
1. REFER TO PLANS FOR LOCATION OF LOCAL CONTROL.
2. REFER TO PLANS FOR SCENE CONTROL.
3. REFER TO PLANS FOR PRIMARY AND SECONDARY DAYLIGHT ZONES.
4. PROVIDE EMERGENCY LIGHTING CIRCUIT CONTROL (BCELTS OR ALCR) PER SWITCHING CIRCUIT AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE FLOOR PLAN INDICATING SENSOR AND EQUIPMENT LOCATIONS OF CHOSEN CONTROL SYSTEM.
6. REFER TO LUMINAIRE SCHEDULE FOR FIXTURE CHARACTERISTICS.
7. LIGHTING SENSOR SHALL HAVE CONTACT FOR HVAC CONTROL WHEN A "YES" SELECTION IS MADE IN THE HVAC CONTROL COLUMN.
8. REFER TO TEMPERATURE CONTROL DRAWINGS AND DIAGRAMS FOR ADDITIONAL SENSOR REQUIREMENTS.
9. PROVIDE WIRING CONTROL DIAGRAM FOR APPLICABLE CONTROL SYSTEM(S).
10. PERCENTAGE LIGHT OUTPUT REDUCTION IS FOR ALL FIXTURES WITHIN THE DESIGNATED ROOM UNLESS OTHERWISE NOTED.

LUMINAIRE SCHEDULE

REFER TO LIGHTING SPECIFICATIONS DOCUMENT FOR LUMINAIRE DETAILS & ORDERING INFORMATION.
DO NOT ATTEMPT TO QUOTE OR ORDER PRODUCTS USING THIS SCHEDULE.

TYPE	LOCATION	DESCRIPTION	WATTAGE	VOLTAGE	CONTROLS	REMARKS
CL	CLOSETS	WALL–MOUNTED CLOSET LIGHT – 24"	17W	120–277V	NON–DIM	MOUNT TO HEADER ABOVE DOOR.
RL2	LOBBIES & CORRIDOR 210	RECESSED LINEAR LUMINAIRE – 2' LENGTH	4W/FT	277V	DIM 0–10V 100%– 1%	IN GYP CEILING AREAS, CENTER RECESSED LUMINAIRE WITHIN CEILING, AS SHOWN ON LIGHTING PLAN.
RL4	LOBBIES	RECESSED LINEAR LUMINAIRE – 4' LENGTH	4W/FT	277V	DIM 0–10V 100%– 1%	
RL6	LOBBIES & CORRIDOR 210	RECESSED LINEAR LUMINAIRE – 6' LENGTH	4W/FT	277V	DIM 0–10V 100%– 1%	IN GYP CEILING AREAS, CENTER RECESSED LUMINAIRE WITHIN CEILING, AS SHOWN ON LIGHTING PLAN.
RL8	FIRST FLOOR LOBBY	RECESSED LINEAR LUMINAIRE – 8' LENGTH	4W/FT	277V	DIM 0–10V 100%– 1%	LENGTH OF RECESSED LUMINAIRE IS NOMINAL. FIELD MEASURE AVAILABLE SPACE WITHIN SOFFIT AND VERIFY DIMENSION WITH ARCHITECT PRIOR TO PLACING ORDER.
RL15	FIRST FLOOR LOBBY	RECESSED LINEAR LUMINAIRE – 15' LENGTH	4W/FT	277V	DIM 0–10V 100%– 1%	LENGTH OF RECESSED LUMINAIRE IS NOMINAL. FIELD MEASURE AVAILABLE SPACE WITHIN SOFFIT AND VERIFY DIMENSION WITH ARCHITECT PRIOR TO PLACING ORDER.
S1A	SHOWERS THROUGHOUT	SURFACE–MOUNTED LOW–PROFILE DOWNLIGHT – 5" DIAM	10W	120–277V	DIM 0–10V	
S1B	SMALL RESTROOMS	SURFACE–MOUNTED LOW–PROFILE DOWNLIGHT – 7" DIAM	13W	120–277V	DIM 0–10V	
S2	STORAGE & MECHANICAL SPACES	STRIP LIGHT	19W	120–277V	DIM 0–10V 100%– 10%	MOUNTING TYPE TO BE DETERMINED (SURFACE OR SUSPENDED).
SL2	FIRST FLOOR LOBBY	SUSPENDED LINEAR LUMINAIRE – 2' LENGTH	4W/FT	120–277V	DIM 0–10V 100%– 1%	ACTUAL LUMINAIRE LOCATIONS AND SUSPENSION HEIGHTS TO BE VERIFIED ON SITE. LUMINAIRES TO BE SUSPENDED SUCH THAT BOTTOMS ARE IN LINE WITH BOTTOMS OF AND CENTERED BETWEEN ROWS OF WOOD SLATS.
SL4	FIRST FLOOR LOBBY	SUSPENDED LINEAR LUMINAIRE – 4' LENGTH	4W/FT	120–277V	DIM 0–10V 100%– 1%	ACTUAL LUMINAIRE LOCATIONS AND SUSPENSION HEIGHTS TO BE VERIFIED ON SITE. LUMINAIRES TO BE SUSPENDED SUCH THAT BOTTOMS ARE IN LINE WITH BOTTOMS OF AND CENTERED BETWEEN ROWS OF WOOD SLATS.
SL6	FIRST FLOOR LOBBY	SUSPENDED LINEAR LUMINAIRE – 6' LENGTH	4W/FT	120–277V	DIM 0–10V 100%– 1%	ACTUAL LUMINAIRE LOCATIONS AND SUSPENSION HEIGHTS TO BE VERIFIED ON SITE. LUMINAIRES TO BE SUSPENDED SUCH THAT BOTTOMS ARE IN LINE WITH BOTTOMS OF AND CENTERED BETWEEN ROWS OF WOOD SLATS.
T1A	THROUGHOUT	RECESSED 2X4 ARCHITECTURAL TROFFER	23W	120–277V	DIM 0–10V 100%– 1%	
T1B	THROUGHOUT	RECESSED 2X4 ARCHITECTURAL TROFFER	30W	120–277V	DIM 0–10V 100%– 1%	
T1C	KITCHEN 148, STORAGE 144B & 208	RECESSED 2X4 LED FLAT PANEL	23W	120–277V	DIM 0–10V 100%– 1%	
T2A	THROUGHOUT	RECESSED 2X2 ARCHITECTURAL TROFFER	15W	120–277V	DIM 0–10V 100%– 1%	
T2B	THROUGHOUT	RECESSED 2X2 ARCHITECTURAL TROFFER	25W	120–277V	DIM 0–10V 100%– 1%	
T2C	TEMP DISPATCH	RECESSED 2X2 LED FLAT PANEL	16W	120–277V	DIM 0–10V 100%– 1%	
T2D	DISPATCH	RECESSED 2X2 LED FLAT PANEL	27W	120–277V	DIM 0–10V 100%– 1%	
T3A	THROUGHOUT	RECESSED 1X4 LED FLAT PANEL	12W	120–277V	DIM 0–10V 100%– 1%	
T3B	VESTIBULE 153	RECESSED 1X4 LED FLAT PANEL	23W	120–277V	DIM 0–10V 100%– 1%	
UC	THROUGHOUT	SURFACE–MOUNTED UNDERCABINET LIGHT – VARIOUS LENGTHS (1', 2', 3', 4')	7.29W/FT	120V	STANDARD INCAND. DIMMING	SURFACE–MOUNT TO THE UNDERSIDE OF UPPER CABINETS AT THE FRONT EDGE, JUST BEHIND THE REVEAL. VERIFY EXACT LENGTHS NEEDED PRIOR TO PLACING ORDER.
W1	TOILETS THROUGHOUT	24" LINEAR VANITY LIGHT	17.68W	120–277V	NON–DIM	WALL–MOUNT OVER MIRRORS AT VANITIES AT APPROX. 7'–0" AFF. VERIFY MOUNTING HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.
W2	WOMEN'S TOILET 129, MEN'S LOCKER 131, MEN'S TOILET 133	24" LINEAR VANITY LIGHT	17.68W	120–277V	NON–DIM	WALL–MOUNT OVER MIRRORS AT VANITIES AT APPROX. 7'–0" AFF. VERIFY MOUNTING HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.
X1	THROUGHOUT	EXIT SIGN – SINGLE–SIDED	2.3W	120–277V	NON–DIM	ALL EXIT SIGNS TO BE CONNECTED TO 120V EMERGENCY CIRCUIT (LP–A–21).
X2	THROUGHOUT	EXIT SIGN – DOUBLE–SIDED	3.2W	120–277V	NON–DIM	ALL EXIT SIGNS TO BE CONNECTED TO 120V EMERGENCY CIRCUIT (LP–A–21).

GENERAL NOTES:
1. REFER TO SPECIFICATIONS FOR DETAILED LUMINAIRE PRODUCT DATA SHEETS. DO NOT ORDER PRODUCT BASED ON LUMINAIRE SCHEDULE ONLY. ADDITIONAL INFORMATION IS PROVIDED ON THE PRODUCT DATA SHEETS.
2. WATTAGE, LIGHT CHARACTERISTICS, VOLTAGE, & CONTROL DETAILS LISTED ARE FROM THE BASIS OF DESIGN MANUFACTURER.
3. FINISH TO BE APPROVED BY INTERIOR DESIGNER, ARCHITECT, AND/ OR CLIENT PRIOR TO PLACING ORDER.
4. ALL LUMINAIRES TO BE AS SPECIFIED OR EQUAL APPROVED IN ADVANCE BY PBA.
5. FULL DIMMING COMPATIBILITY AS OUTLINED IN DESIGN INTENT TO BE VERIFIED BY CONTRACTOR AND ELECTRICAL ENGINEER.

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PBA Project No. 2021.0163

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022

DRAWN BY
.
CHECKED BY
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SHEET NAME
ELECTRICAL STANDARD SCHEDULES

SHEET NO.
E0.3

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"

DEMOLITION FIRST FLOOR LIGHTING PLAN

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

ELECTRICAL DEMOLITION GENERAL NOTES:

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE EQUIPMENT OR MATERIALS AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE COMPONENTS SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CONDUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.
6. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
7. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.
8. DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
9. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
10. RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
11. PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
12. VERIFY ALL UNDERGROUND AND IN SLAB UTILITY LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB.
13. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE OWNER'S REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER 72 HOURS PRIOR TO SHUT DOWN.

(#) DEMOLITION KEY NOTES:

A. EXISTING LIGHTING TO BE REMOVED, BUT EXISTING CIRCUITING TO BE IDENTIFIED AND REUSED FOR NEW LIGHTING SYSTEMS BEING INSTALLED IN EACH ROOM.

B. ANY CEILINGS BEING REMOVED IN CONJUNCTION WITH LIGHTING DEMOLITION THAT FLOW INTO ADJACENT CEILINGS SHOULD BE REMOVED IN SUCH A WAY AS TO ALLOW THE NEW AND EXISTING CEILINGS TO BLEND SEAMLESSLY.

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Bidding / Construction	03/09/2022
Proposal Request No.2	08/26/2022

DRAWN BY

SAM

CHECKED BY

EMG

APPROVED BY

EMG

SHEET NAME

DEMOLITION FIRST FLOOR LIGHTING PLAN

SHEET NO.

ED2.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"

DEMOLITION SECOND FLOOR LIGHTING PLAN

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

ELECTRICAL DEMOLITION GENERAL NOTES:

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE EQUIPMENT OR MATERIALS AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE COMPONENTS SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CONDUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.
6. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
7. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.
8. DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
9. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
10. RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
11. PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
12. VERIFY ALL UNDERGROUND AND IN SLAB UTILITY LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB.
13. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE OWNER'S REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER 72 HOURS PRIOR TO SHUT DOWN.

(#) DEMOLITION KEY NOTES:

A. EXISTING LIGHTING TO BE REMOVED, BUT EXISTING CIRCUITING TO BE IDENTIFIED AND REUSED FOR NEW LIGHTING SYSTEMS BEING INSTALLED IN EACH ROOM.

B. ANY CEILINGS BEING REMOVED IN CONJUNCTION WITH LIGHTING DEMOLITION THAT FLOW INTO ADJACENT CEILINGS SHOULD BE REMOVED IN SUCH A WAY AS TO ALLOW THE NEW AND EXISTING CEILINGS TO BLEND SEAMLESSLY.

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SAM

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EMG

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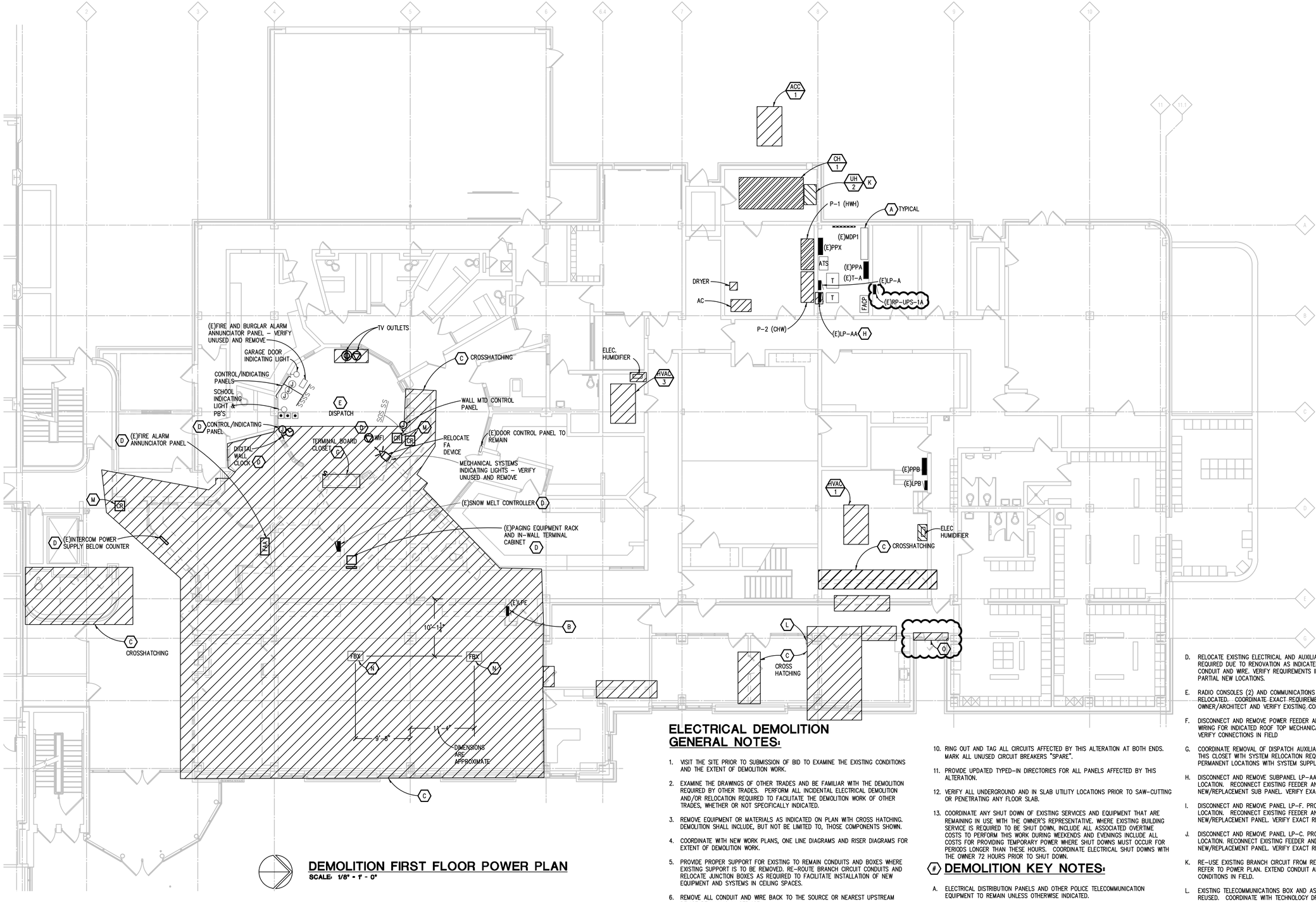
EMG

SHEET NAME
DEMOLITION SECOND FLOOR LIGHTING PLAN

SHEET NO.
ED2.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



DEMOLITION FIRST FLOOR POWER PLAN

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

ELECTRICAL DEMOLITION GENERAL NOTES:

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE EQUIPMENT OR MATERIALS AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE COMPONENTS SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CONDUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.
6. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
7. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.
8. DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
9. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
10. RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
11. PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
12. VERIFY ALL UNDERGROUND AND IN SLAB UTILITY LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB.
13. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE OWNER'S REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER 72 HOURS PRIOR TO SHUT DOWN.

(#) DEMOLITION KEY NOTES:

A. ELECTRICAL DISTRIBUTION PANELS AND OTHER POLICE TELECOMMUNICATION EQUIPMENT TO REMAIN UNLESS OTHERWISE INDICATED.

B. DISCONNECT AND REMOVE PANEL LPE. PROVIDE NEW PANEL LPE IN NEW LOCATION. REFER TO SHEET E3.1 FOR NEW LOCATION. EXTEND PANEL FEEDER AND EXISTING BRANCH CIRCUITS TO NEW PANEL AND LOCATION. VERIFY EXACT REQUIREMENTS IN FIELD.

C. DISCONNECT AND REMOVE ELECTRICAL RECEPTACLES, OTHER POWER DEVICES, TELECOMMUNICATION OUTLETS, OTHER AUXILIARY SYSTEM DEVICES FROM THE INDICATED AREA, INCLUDING BELOW RAISED FLOOR, UNLESS OTHERWISE INDICATED. DISCONNECT AND REMOVE FEEDERS AND BRANCH CIRCUITS FROM MECHANICAL EQUIPMENT TO BE DEMOLISHED. REMOVE CONDUIT AND WIRE BACK TO SOURCE PANEL OR NEXT ITEM IN SYSTEM TO REMAIN. COORDINATE EXACT DEMOLITION AREA AND REQUIREMENTS WITH ARCHITECTURAL AND MECHANICAL PLANS. SALVAGE AND RETURN CONTROL PANELS, INDICATING LIGHTS, PUSHBUTTONS AND OTHER ITEMS IN DEMOLITION AREA TO OWNER FOR POSSIBLE RELOCATION.

D. RELOCATE EXISTING ELECTRICAL AND AUXILIARY SYSTEMS EQUIPMENT WHERE REQUIRED DUE TO RENOVATION AS INDICATED OR REQUIRED BY OWNER. EXTEND CONDUIT AND WIRE. VERIFY REQUIREMENTS IN FIELD. REFER TO SHEE E3.1 FOR PARTIAL NEW LOCATIONS.

E. RADIO CONSOLES (2) AND COMMUNICATIONS ROOM DESK TOP CONSOLE TO BE RELOCATED. COORDINATE EXACT REQUIREMENTS AND LOCATIONS WITH OWNER/ARCHITECT AND VERIFY EXISTING CONDITIONS.

F. DISCONNECT AND REMOVE POWER FEEDER AND OTHER ASSOCIATED ELECTRICAL WIRING FOR INDICATED ROOF TOP MECHANICAL EQUIPMENT BACK TO SOURCE PANEL. VERIFY CONNECTIONS IN FIELD

G. COORDINATE REMOVAL OF DISPATCH AUXILIARY AND POWER SYSTEMS TERMINATED IN THIS CLOSET WITH SYSTEM RELOCATION REQUIREMENTS. VERIFY TEMPORARY AND PERMANENT LOCATIONS WITH SYSTEM SUPPLIERS AND OWNER

H. DISCONNECT AND REMOVE SUBPANEL LP-AA. PROVIDE NEW PANEL LP-AA IN SAME LOCATION. RECONNECT EXISTING FEEDER AND BRANCH CIRCUITS TO NEW/REPLACEMENT SUB PANEL. VERIFY EXACT REQUIREMENTS IN FIELD.

I. DISCONNECT AND REMOVE PANEL LP-F. PROVIDE NEW PANEL LP-F IN SAME LOCATION. RECONNECT EXISTING FEEDER AND BRANCH CIRCUITS TO NEW/REPLACEMENT PANEL. VERIFY EXACT REQUIREMENTS IN FIELD.

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K. RE-USE EXISTING BRANCH CIRCUIT FROM REMOVED UH-2 FOR REPLACEMENT UH-2. REFER TO POWER PLAN. EXTEND CONDUIT AND WIRE AS REQUIRED. VERIFY CONDITIONS IN FIELD.

L. EXISTING TELECOMMUNICATIONS BOX AND ASSOCIATED RACEWAY TO REMAIN AND BE REUSED. COORDINATE WITH TECHNOLOGY DRAWINGS.

M. EXISTING CARD READERS AND OTHER SECURITY DEVICES AND ASSOCIATED POWER SUPPLIES TO BE REUSED. REFER TO POWER AND AUX SYSTEMS PLANS. COORDINATE WITH DOOR HARDWARE SUPPLIER AND ARCHITECTURAL DOOR HARDWARE SCHEDULE ON SHEET A0-03.

N. EXISTING INDICATED FLOOR BOXES TO REMAIN, INCLUDING DEVICES, RACEWAYS, POWER BRANCH CIRCUITS, AND TELE/DATA CABLING TO FLOOR BOXES/DEVICES.

O. DOOR TO BE REPLACED BY ARCHITECTURAL TRADES AND RELATED WALL AREA TO BE REVISED. EXISTING AREA LIGHTING AND DOOR RELATED SECURITY DEVICES TO REMAIN AND BE REPOSITIONED AS REQUIRED. FIELD VERIFY EXISTING CONDITIONS, LIGHTING, AND DEVICES. PROTECT OR STORE ITEMS AS REQUIRED FOR RE-INSTALLATION OR REUSE.

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PBA Project No: 2021.0163

KEY PLAN

OWNER

Canton Township Public Safety

PROJECT NAME

Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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Proposal Request No.1	06/10/2022
Proposal Request No.2	08/26/2022
Proposal Request No.4	11/09/2022
Proposal Request No.4	01/18/2023

DRAWN BY
SAM

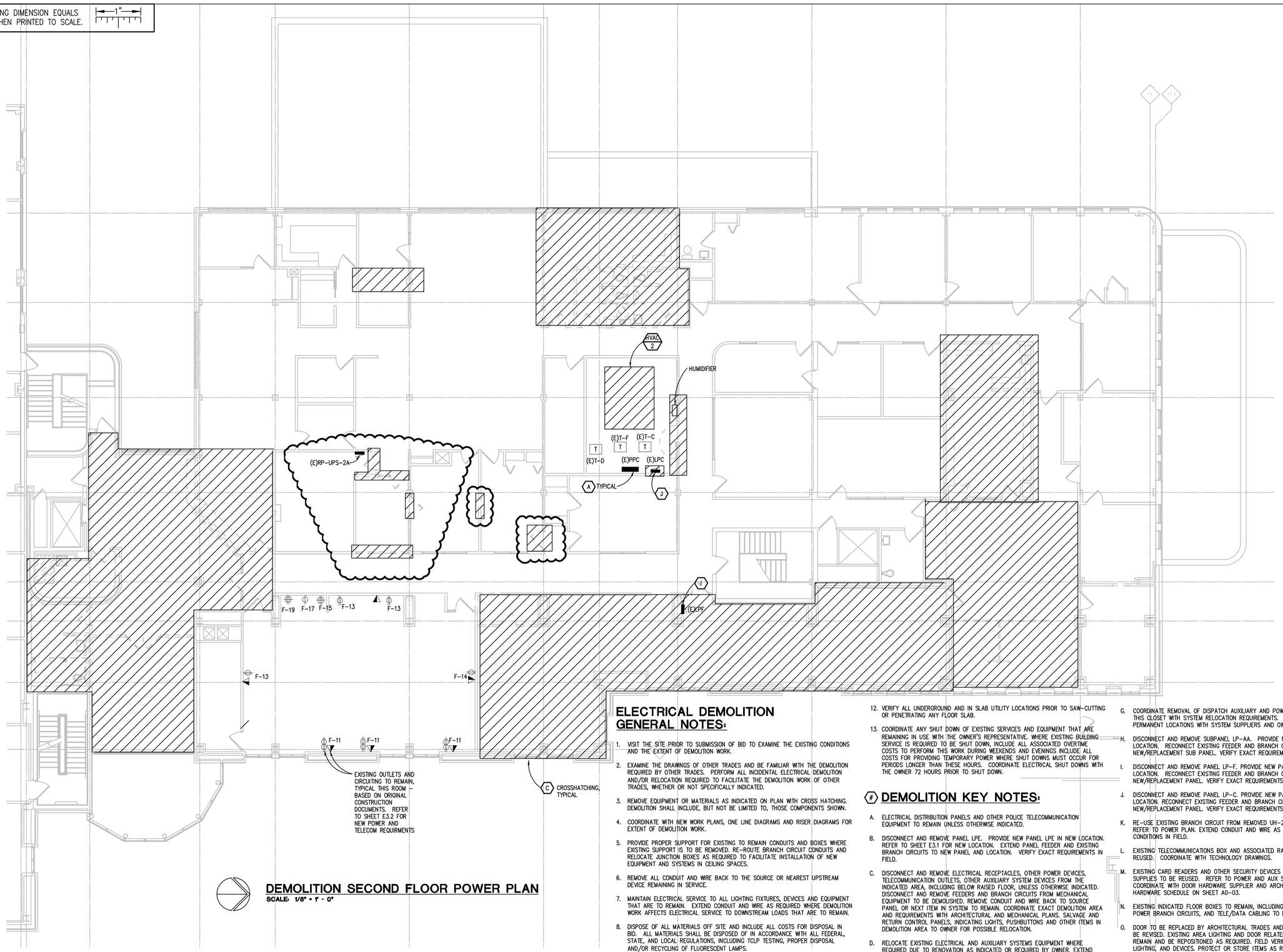
CHECKED BY
EMG

APPROVED BY
EMG

SHEET NAME
DEMOLITION FIRST FLOOR POWER PLAN

SHEET NO.
ED3.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



DEMOLITION SECOND FLOOR POWER PLAN

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

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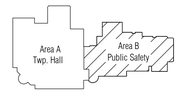
KEY PLAN



OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

1150 S. Canton Center Road
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PROJECT NO.

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DRAWN BY

SAM

CHECKED BY

EMG

APPROVED BY

EMG

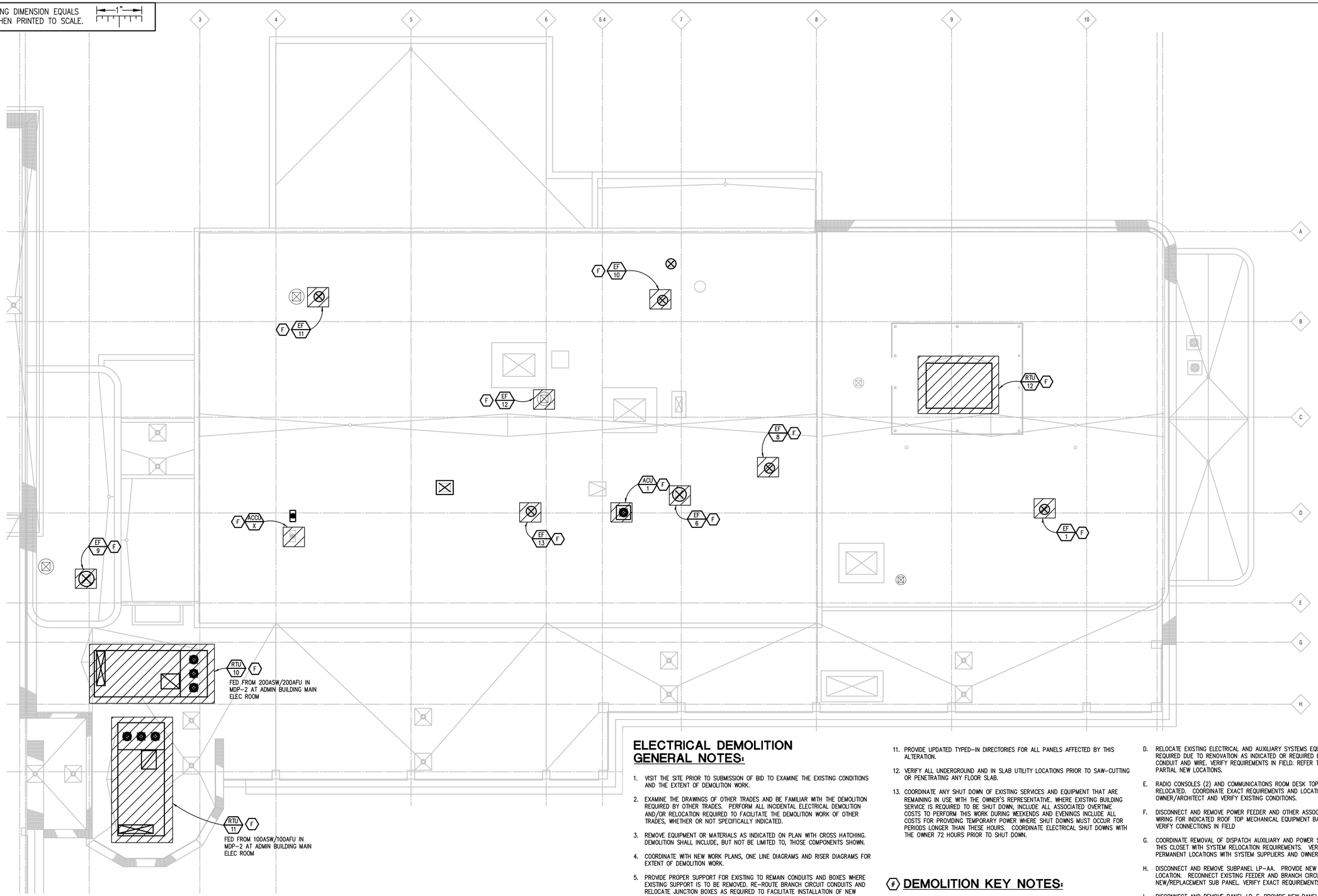
SHEET NAME

DEMOLITION SECOND FLOOR POWER PLAN

SHEET NO.

ED3.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



DEMOLITION ROOF ELECTRICAL PLAN

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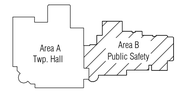
KEY PLAN



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SHEET NAME
DEMOLITION ROOF ELECTRICAL PLAN

SHEET NO.
ED3.3

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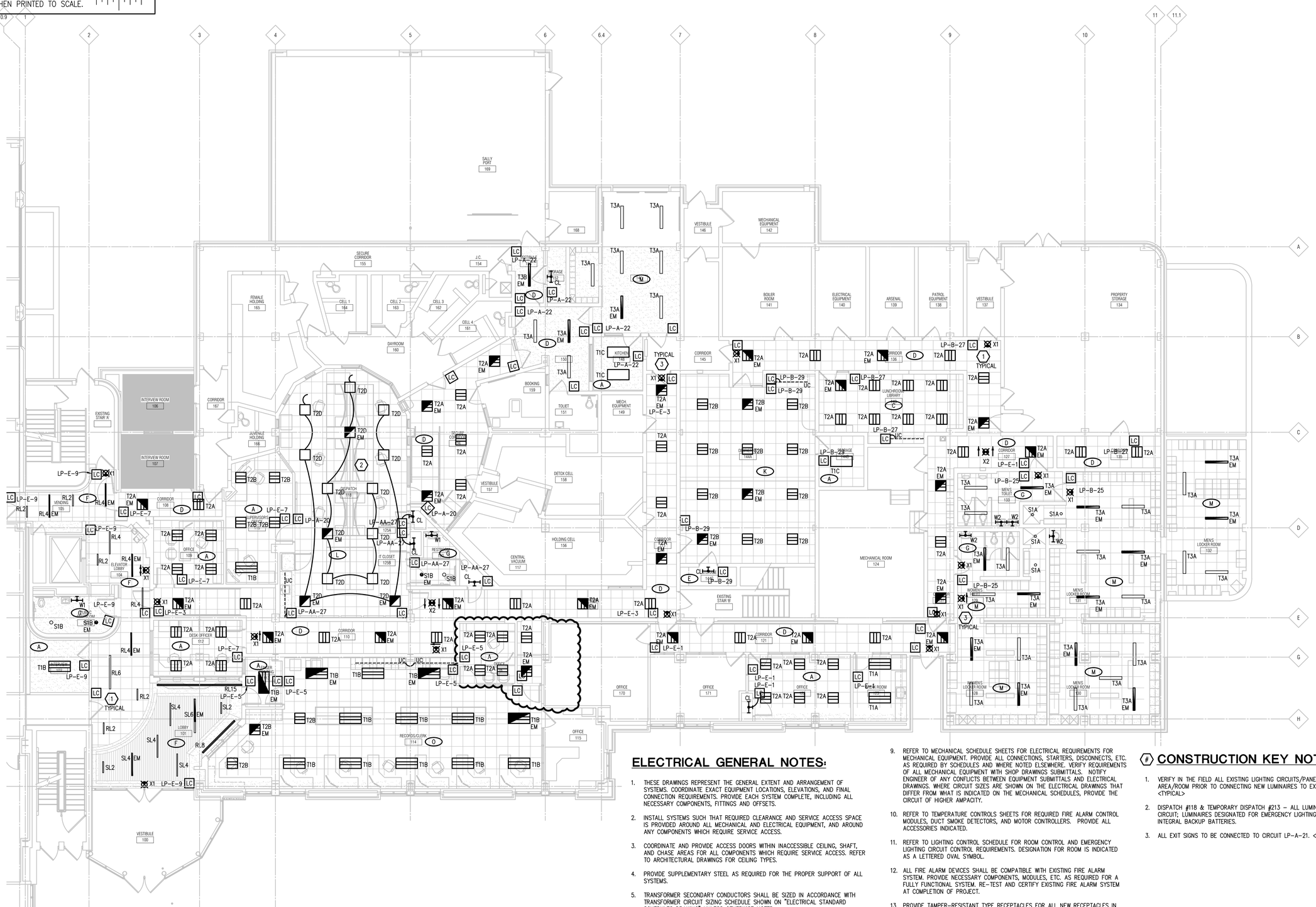

FIRST FLOOR LIGHTING PLAN

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

ELECTRICAL GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR SERVICE FITTINGS AND POKE-THROUGH ASSEMBLIES WITH FINAL FURNITURE LAYOUT DRAWINGS.
9. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
10. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
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13. PROVIDE TAMPER-RESISTANT TYPE RECEPTACLES FOR ALL NEW RECEPTACLES IN PUBLIC AREAS, UNLESS OTHERWISE NOTED.
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(#) CONSTRUCTION KEY NOTES:

1. VERIFY IN THE FIELD ALL EXISTING LIGHTING CIRCUITS/PANELS FOR EACH AREA/ROOM PRIOR TO CONNECTING NEW LUMINAIRES TO EXISTING CIRCUITS. <TYPICAL>
2. DISPATCH #118 & TEMPORARY DISPATCH #213 – ALL LUMINAIRES ARE ON STANDBY CIRCUIT; LUMINAIRES DESIGNATED FOR EMERGENCY LIGHTING (NOTED AS 'EM') HAVE INTEGRAL BACKUP BATTERIES.
3. ALL EXIT SIGNS TO BE CONNECTED TO CIRCUIT LP-A-21. <TYPICAL>

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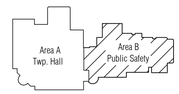
PBA Project No: 20210163

KEY PLAN



OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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Proposal Request No.2	08/26/2022

DRAWN BY
SAM

CHECKED BY
EMG

APPROVED BY
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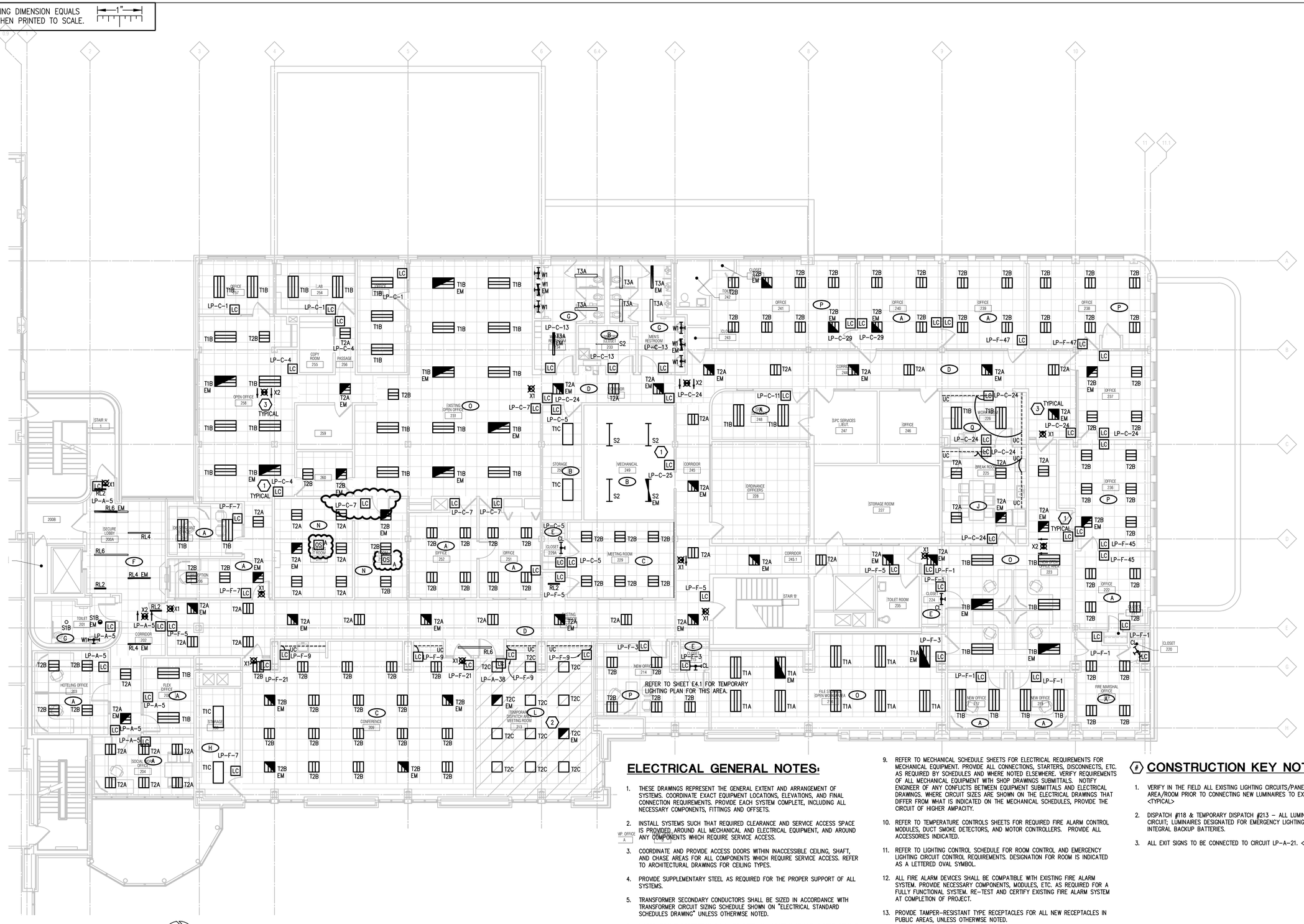
SHEET NAME
FIRST FLOOR LIGHTING PLAN

SHEET NO.
E2.1

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



SECOND FLOOR LIGHTING PLAN

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

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2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
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4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR SERVICE FITTINGS AND POKE-THROUGH ASSEMBLIES WITH FINAL FURNITURE LAYOUT DRAWINGS.
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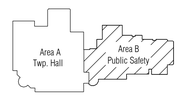

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CHECKED BY
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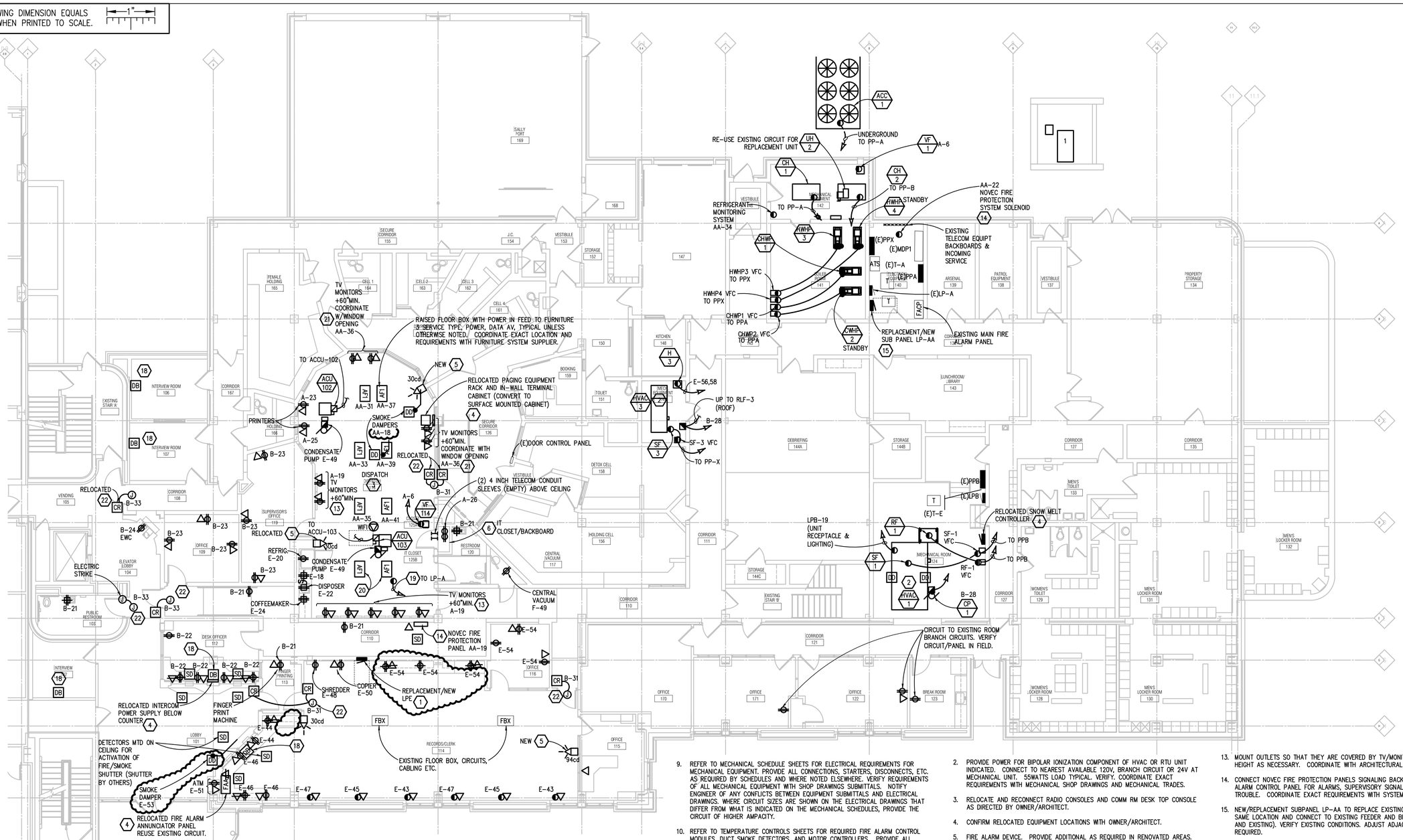
SHEET NAME
SECOND FLOOR LIGHTING PLAN

SHEET NO.
E2.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



FIRST FLOOR POWER PLAN

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2. PROVIDE POWER FOR BIPOLAR IONIZATION COMPONENT OF HVAC OR RTU UNIT INDICATED. CONNECT TO NEAREST AVAILABLE 120V, BRANCH CIRCUIT OR 24V AT MECHANICAL UNIT. 55WATTS LOAD TYPICAL. VERIFY. COORDINATE EXACT REQUIREMENTS WITH MECHANICAL SHOP DRAWINGS AND MECHANICAL TRADES.
3. RELOCATE AND RECONNECT RADIO CONSOLES AND COMM RM DESK TOP CONSOLE AS DIRECTED BY OWNER/ARCHITECT.
4. CONFIRM RELOCATED EQUIPMENT LOCATIONS WITH OWNER/ARCHITECT.
5. FIRE ALARM DEVICE. PROVIDE ADDITIONAL AS REQUIRED IN RENOVATED AREAS.
6. PROVIDE BACKBOARD AND COORDINATE WITH OWNER INSTALLATION OF TERMINAL BOARDS AND EQUIPMENT RELOCATED FROM ORIGINAL DISPATCH I.T. CLOSET.
7. CONNECT NEW ROOF TOP EQUIPMENT TO EXISTING LIGHTING PROTECTION SYSTEM. VERIFY SYSTEM REQUIREMENTS IN FIELD.
8. AT MDP-2 IN ADMINISTRATION BUILDING BASEMENT ELECTRICAL ROOM A030. REPLACE FUSE AT EXISTING 200A SWITCH FOR ORIGINAL RTU-10 WITH 110A FUSE. CONNECT TO NEW FEEDER FOR NEW RTU-10. APPROX 274 FEET TO MDP-2 - VERIFY IN FIELD.
9. AT MDP-2 IN ADMINSTRATION BUILDING BASEMENT ELECTRICAL ROOM A030. REPLACE EXISTING SWITCH AND FUSE FOR ORIGINAL RTU-11 WITH NEW 60ASW/35AFU. CONNECT TO NEW FEEDER FOR NEW RTU-11. APPROX. 289 FEET TO MDP-2 - VERIFY IN FIELD.
10. AT MDP-2 IN ADMINISTRATION BUILDING BASEMENT ELECTRICAL ROOM A030. REPLACE EXISTING SPARE SWITCH AND FUSE WITH NEW 60ASW/45A FUSE. CONNECT TO NEW FEEDER FOR NEW RTU-12. APPROX. 268 TO MDP-2 - VERIFY IN FIELD.
11. REUSE EXISTING AREA BRANCH CIRCUITS IF POSSIBLE, OTHERWISE CIRCUIT AS SHOWN. CIRCUITING INDICATED IS INDICATIVE OF MAXIMUM LOADING AND DISTRIBUTION OF BRANCH CIRCUITS REQUIRED.
12. LOCATE POKETHROUGHS CENTERED IN CONFERENCE ROOM ON 12'-0" X 12'-0" GRID FOR USE AS FUTURE EMERGENCY COMMAND CENTER. ADDITIONAL WALL MOUNTED RECEPTACLES AND TELECOMMUNICATIONS OUTLETS PROVIDED IN ADDITION TO EXISTING WALL MOUNTED OUTLETS FOR FUTURE EMERGENCY COMMAND CENTER. NEW RECEPTACLES/POKETHROUGHS FOR COMMAND CENTER IN THIS ROOM TO CIRCUITED TO EMERGENCY PANEL.
13. MOUNT OUTLETS SO THAT THEY ARE COVERED BY TV/MONITOR. ADJUST MOUNTING HEIGHT AS NECESSARY. COORDINATE WITH ARCHITECTURAL ELEVATIONS.
14. CONNECT NOVEC FIRE PROTECTION PANELS SIGNALING BACK TO EXISTING MAIN FIRE ALARM CONTROL PANEL FOR ALARMS, SUPERVISORY SIGNALS, AND GENERAL TROUBLE. COORDINATE EXACT REQUIREMENTS WITH SYSTEM SUPPLIER.
15. NEW/REPLACEMENT SUBPANEL LP-AA TO REPLACE EXISTING LP-AA. MOUNT IN SAME LOCATION AND CONNECT TO EXISTING FEEDER AND BRANCH CIRCUITS (NEW AND EXISTING). VERIFY EXISTING CONDITIONS. ADJUST ADJACENT EQUIPMENT AS REQUIRED.
16. NEW/REPLACEMENT PANEL LP-F TO REPLACE EXISTING LP-F. MOUNT IN SAME LOCATION AND CONNECT TO EXISTING FEEDER AND BRANCH CIRCUITS (NEW AND EXISTING). VERIFY EXISTING CONDITIONS. ADJUST ADJACENT EQUIPMENT AS REQUIRED.
17. NEW/REPLACEMENT PANEL LP-C TO REPLACE EXISTING LP-C. MOUNT IN SAME LOCATION AND CONNECT TO EXISTING FEEDER AND BRANCH CIRCUITS (NEW AND EXISTING.) VERIFY EXISTING CONDITIONS. ADJUST ADJACENT EQUIPMENT AS REQUIRED.
18. DISTRESS BUTTON MOUNTED AT DESK. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT AND SYSTEM SUPPLIER.
19. CONNECT INSULATED GROUND WIRE (CONCEALED) TO STATIC CONTROL TYPE FLOORING GROUNDING STRIPS/TERMINATIONS - SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. PROVIDE QUANTITIES AS REQUIRED. SIZE WIRE PER MANUFACTURERS RECOMMENDATIONS. ROUTE TO LOCAL AREA 208/120V, 3PHASE, 4WIRE ELECTRICAL PANEL GROUND BAR.
20. PROVIDE INFLOOR 3 SERVICE BOX WITH RACEWAY CONNECTIONS ETC AS WITH THE OTHER DISPATCH DESKS BUT WITH FLAT BOX COVER PLATE CABLE OF EITHER BEING REPLACE OR MODIFIED FOR FUTURE INSTALLATION OF DISPATCH DESK FURNITURE. BRANCH CIRCUIT TO BE PULLED IN FUTURE. PROVIDE PULL WIRES FOR FUTURE CABLING.
21. MOUNT RECEPTACLE AND TELECOM BOX ABOVE EXISTING WINDOW. COORDINATE WITH ARCHITECT AND ADJUST EXACT LOCATION IN FIELD
22. ACCESS CONTROL POWER SUPPLY ABOVE CEILING. REFER TO DETAIL ON E7.1. COORDINATE EXACT REQUIREMENTS WITH DOOR HARDWARE SUPPLIER.
23. FURNITURE PARTITION FEED-THROUGH CONNECTIONS FROM WALL FOR POWER (3/4"C) AND TELECOMMUNICATIONS (2"C.). COORDINATE EXACT LOCATION WITH FURNITURE PLANS.

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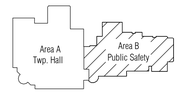

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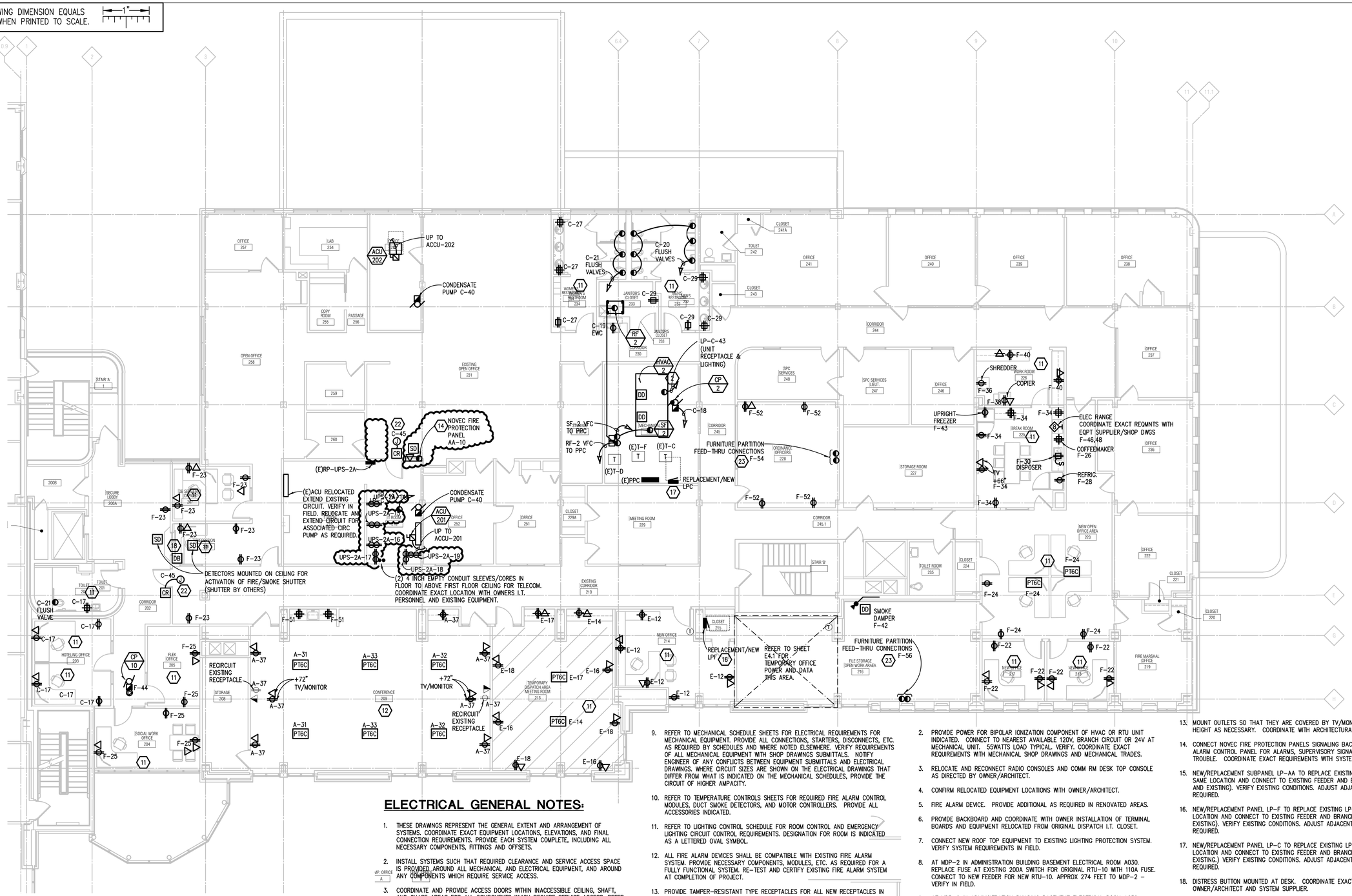

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9. AT MDP-2 IN ADMINISTRATION BUILDING BASEMENT ELECTRICAL ROOM A030. REPLACE EXISTING SWITCH AND FUSE FOR ORIGINAL RTU-11 WITH NEW 60ASW/35AFU. CONNECT TO NEW FEEDER FOR NEW RTU-11. APPROX. 289 FEET TO MDP-2 – VERIFY IN FIELD.
10. AT MDP-2 IN ADMINISTRATION BUILDING BASEMENT ELECTRICAL ROOM A030. REPLACE EXISTING SPARE SWITCH AND FUSE WITH NEW 60ASW/45A FUSE. CONNECT TO NEW FEEDER FOR NEW RTU-12. APPROX. 268 TO MDP-2 – VERIFY IN FIELD.
11. REUSE EXISTING AREA BRANCH CIRCUITS IF POSSIBLE, OTHERWISE CIRCUIT AS SHOWN. CIRCUITING INDICATED IS INDICATIVE OF MAXIMUM LOADING AND DISTRIBUTION OF BRANCH CIRCUITS REQUIRED.
12. LOCATE POKETHROUGHS CENTERED IN CONFERENCE ROOM ON 12'-0" X 12'-0" GRID FOR USE AS FUTURE EMERGENCY COMMAND CENTER. ADDITIONAL WALL MOUNTED RECEPTACLES AND TELECOMMUNICATIONS OUTLETS PROVIDED IN ADDITION TO EXISTING WALL MOUNTED OUTLETS FOR FUTURE EMERGENCY COMMAND CENTER. NEW RECEPTACLES/POKETHROUGHS FOR COMMAND CENTER IN THIS ROOM TO CIRCUITED TO EMERGENCY PANEL.
13. MOUNT OUTLETS SO THAT THEY ARE COVERED BY TV/MONITOR. ADJUST MOUNTING HEIGHT AS NECESSARY. COORDINATE WITH ARCHITECTURAL ELEVATIONS.
14. CONNECT NOVEC FIRE PROTECTION PANELS SIGNALING BACK TO EXISTING MAIN FIRE ALARM CONTROL PANEL FOR ALARMS, SUPERVISORY SIGNALS, AND GENERAL TROUBLE. COORDINATE EXACT REQUIREMENTS WITH SYSTEM SUPPLIER.
15. NEW/REPLACEMENT SUBPANEL LP-AA TO REPLACE EXISTING LP-AA. MOUNT IN SAME LOCATION AND CONNECT TO EXISTING FEEDER AND BRANCH CIRCUITS (NEW AND EXISTING). VERIFY EXISTING CONDITIONS. ADJUST ADJACENT EQUIPMENT AS REQUIRED.
16. NEW/REPLACEMENT PANEL LP-F TO REPLACE EXISTING LP-F. MOUNT IN SAME LOCATION AND CONNECT TO EXISTING FEEDER AND BRANCH CIRCUITS (NEW AND EXISTING). VERIFY EXISTING CONDITIONS. ADJUST ADJACENT EQUIPMENT AS REQUIRED.
17. NEW/REPLACEMENT PANEL LP-C TO REPLACE EXISTING LP-C. MOUNT IN SAME LOCATION AND CONNECT TO EXISTING FEEDER AND BRANCH CIRCUITS (NEW AND EXISTING.) VERIFY EXISTING CONDITIONS. ADJUST ADJACENT EQUIPMENT AS REQUIRED.
18. DISTRESS BUTTON MOUNTED AT DESK. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT AND SYSTEM SUPPLIER.
19. CONNECT INSULATED GROUND WIRE (CONCEALED) TO STATIC CONTROL TYPE FLOORING GROUNDING STRIPS/TERMINATIONS – SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. PROVIDE QUANTITIES AS REQUIRED. SIZE WIRE PER MANUFACTURERS RECOMMENDATIONS. ROUTE TO LOCAL AREA 208/120V, 3PHASE, 4WIRE ELECTRICAL PANEL GROUND BAR.
20. PROVIDE INFLOOR 3 SERVICE BOX WITH RACEWAY CONNECTIONS ETC AS WITH THE OTHER DISPATCH DESKS BUT WITH FLAT BOX COVER PLATE CABLE OF EITHER BEING REPLACE OR MODIFIED FOR FUTURE INSTALLATION OF DISPATCH DESK FURNITURE. BRANCH CIRCUIT TO BE PULLED IN FUTURE. PROVIDE PULL WIRES FOR FUTURE CABLING.
21. MOUNT RECEPTACLE AND TELECOM BOX ABOVE EXISTING WNDOW. COORDINATE WITH ARCHITECT AND ADJUST EXACT LOCATION IN FIELD
22. ACCESS CONTROL POWER SUPPLY ABOVE CEILING. REFER TO DETAIL ON E7.1. COORDINATE EXACT REQUIREMENTS WITH DOOR HARDWARE SUPPLIER.
23. FURNITURE PARTITION FEED-THROUGH CONNECTIONS FROM WALL FOR POWER (3/4"C) AND TELECOMMUNICATIONS (2"C.). COORDINATE EXACT LOCATION WITH FURNITURE PLANS.

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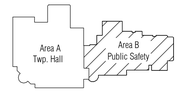
KEY PLAN



OWNER

Canton Township Public Safety

PROJECT NAME

Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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Proposal Request No.2	08/26/2022
Proposal Request No.4	01/18/2023

DRAWN BY
SAM

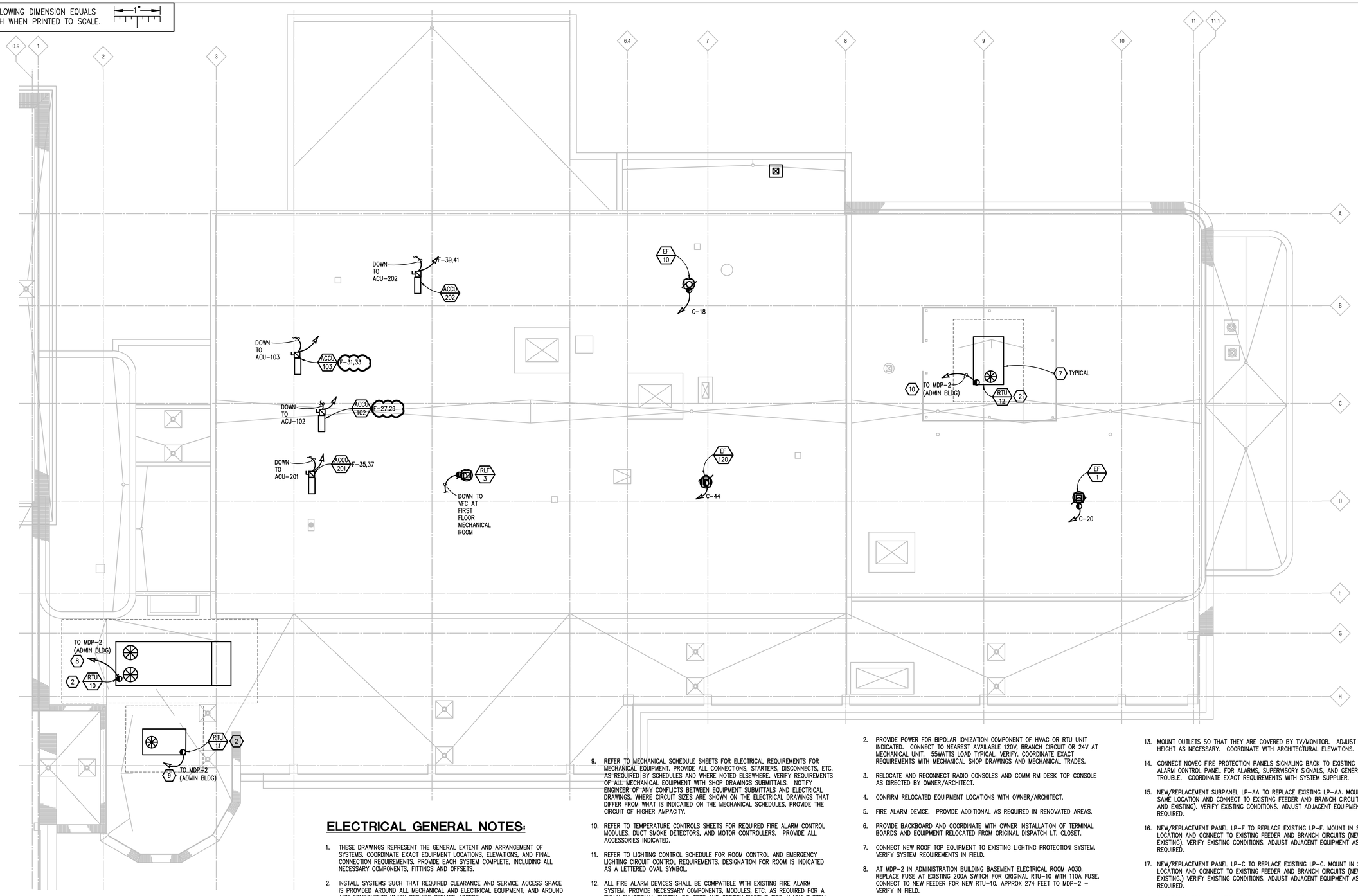
CHECKED BY
EMG

APPROVED BY
EMG

SHEET NAME
SECOND FLOOR POWER PLAN

SHEET NO.
E3.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



ROOF ELECTRICAL PLAN

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

ELECTRICAL GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR SERVICE FITTINGS AND POKE-THROUGH ASSEMBLIES WITH FINAL FURNITURE LAYOUT DRAWINGS.
9. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
10. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
11. REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM IS INDICATED AS A LETTERED OVAL SYMBOL.
12. ALL FIRE ALARM DEVICES SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. PROVIDE NECESSARY COMPONENTS, MODULES, ETC. AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM. RE-TEST AND CERTIFY EXISTING FIRE ALARM SYSTEM AT COMPLETION OF PROJECT.
13. PROVIDE TAMPER-RESISTANT TYPE RECEPTACLES FOR ALL NEW RECEPTACLES IN PUBLIC AREAS, UNLESS OTHERWISE NOTED.
14. ALL NEW LIGHTING TO BE CONNECTED VIA EXISTING LIGHTING CIRCUITS IN EACH ROOM/AREA. REFER TO PANELBOARD SCHEDULES FOR EXISTING AND REVISED PANEL AND CIRCUIT NUMBER LOCATIONS. FOR AREAS NOT INCLUDED IN THESE SCHEDULES, VERIFY EXISTING PANEL AND CIRCUIT NUMBERS PRIOR TO INSTALLATION OF NEW LIGHTING EQUIPMENT.
15. ALL ELECTRICAL AND TELECOMMUNICATION CONDUIT, RACEWAYS, AND BOXES ARE TO BE RUN CONCEALED IN EXISTING OR NEW WALL CAVITIES. PROVIDE CUTTING AND PATCHING OF WALL CONSTRUCTION AS REQUIRED TO RESTORE WALL FINISH, INSULATION, AND ASSEMBLY TO MATCH EXISTING.

(#) CONSTRUCTION KEY NOTES:

1. NEW PANEL LP-E REPLACING EXISTING PANEL LP-E. EXTEND FEEDER AND BRANCH CIRCUITS TO NEW PANEL/LOCATION. VERIFY EXISTING CONDITIONS.
2. PROVIDE POWER FOR BIPOLAR IONIZATION COMPONENT OF HVAC OR RTU UNIT INDICATED. CONNECT TO NEAREST AVAILABLE 120V, BRANCH CIRCUIT OR 24V AT MECHANICAL UNIT. 55WATTS LOAD TYPICAL. VERIFY, COORDINATE EXACT REQUIREMENTS WITH MECHANICAL SHOP DRAWINGS AND MECHANICAL TRADES.
3. RELOCATE AND RECONNECT RADIO CONSOLES AND COMM RM DESK TOP CONSOLE AS DIRECTED BY OWNER/ARCHITECT.
4. CONFIRM RELOCATED EQUIPMENT LOCATIONS WITH OWNER/ARCHITECT.
5. FIRE ALARM DEVICE. PROVIDE ADDITIONAL AS REQUIRED IN RENOVATED AREAS.
6. PROVIDE BACKBOARD AND COORDINATE WITH OWNER INSTALLATION OF TERMINAL BOARDS AND EQUIPMENT RELOCATED FROM ORIGINAL DISPATCH I.T. CLOSET.
7. CONNECT NEW ROOF TOP EQUIPMENT TO EXISTING LIGHTING PROTECTION SYSTEM. VERIFY SYSTEM REQUIREMENTS IN FIELD.
8. AT MDP-2 IN ADMINISTRATION BUILDING BASEMENT ELECTRICAL ROOM A030. REPLACE FUSE AT EXISTING 200A SWITCH FOR ORIGINAL RTU-10 WITH 110A FUSE. CONNECT TO NEW FEEDER FOR NEW RTU-10. APPROX 274 FEET TO MDP-2 – VERIFY IN FIELD.
9. AT MDP-2 IN ADMINISTRATION BUILDING BASEMENT ELECTRICAL ROOM A030. REPLACE EXISTING SWITCH AND FUSE FOR ORIGINAL RTU-11 WITH NEW 60ASW/35AFU. CONNECT TO NEW FEEDER FOR NEW RTU-11. APPROX. 289 FEET TO MDP-2 – VERIFY IN FIELD.
10. AT MDP-2 IN ADMINISTRATION BUILDING BASEMENT ELECTRICAL ROOM A030. REPLACE EXISTING SPARE SWITCH AND FUSE WITH NEW 60ASW/45A FUSE. CONNECT TO NEW FEEDER FOR NEW RTU-12. APPROX. 268 TO MDP-2 – VERIFY IN FIELD.
11. REUSE EXISTING AREA BRANCH CIRCUITS IF POSSIBLE, OTHERWISE CIRCUIT AS SHOWN. CIRCUITING INDICATED IS INDICATIVE OF MAXIMUM LOADING AND DISTRIBUTION OF BRANCH CIRCUITS REQUIRED.
12. LOCATE POKETHROUGHS CENTERED IN CONFERENCE ROOM ON 12'-0" X 12'-0" GRID FOR USE AS FUTURE EMERGENCY COMMAND CENTER. ADDITIONAL WALL MOUNTED RECEPTACLES AND TELECOMMUNICATIONS OUTLETS PROVIDED IN ADDITION TO EXISTING WALL MOUNTED OUTLETS FOR FUTURE EMERGENCY COMMAND CENTER. NEW RECEPTACLES/POKETHROUGHS FOR COMMAND CENTER IN THIS ROOM TO CIRCUITED TO EMERGENCY PANEL.
13. MOUNT OUTLETS SO THAT THEY ARE COVERED BY TV/MONITOR. ADJUST MOUNTING HEIGHT AS NECESSARY. COORDINATE WITH ARCHITECTURAL ELEVATIONS.
14. CONNECT NOVEC FIRE PROTECTION PANELS SIGNALING BACK TO EXISTING MAIN FIRE ALARM CONTROL PANEL FOR ALARMS, SUPERVISORY SIGNALS, AND GENERAL TROUBLE. COORDINATE EXACT REQUIREMENTS WITH SYSTEM SUPPLIER.
15. NEW/REPLACEMENT SUBPANEL LP-AA TO REPLACE EXISTING LP-AA. MOUNT IN SAME LOCATION AND CONNECT TO EXISTING FEEDER AND BRANCH CIRCUITS (NEW AND EXISTING). VERIFY EXISTING CONDITIONS. ADJUST ADJACENT EQUIPMENT AS REQUIRED.
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17. NEW/REPLACEMENT PANEL LP-C TO REPLACE EXISTING LP-C. MOUNT IN SAME LOCATION AND CONNECT TO EXISTING FEEDER AND BRANCH CIRCUITS (NEW AND EXISTING.) VERIFY EXISTING CONDITIONS. ADJUST ADJACENT EQUIPMENT AS REQUIRED.
18. DISTRESS BUTTON MOUNTED AT DESK. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT AND SYSTEM SUPPLIER.
19. CONNECT INSULATED GROUND WIRE (CONCEALED) TO STATIC CONTROL TYPE FLOORING GROUNDING STRIPS/TERMINATIONS – SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. PROVIDE QUANTITIES AS REQUIRED. SIZE WIRE PER MANUFACTURERS RECOMMENDATIONS. ROUTE TO LOCAL AREA 208/120V, 3PHASE, 4WIRE ELECTRICAL PANEL GROUND BAR.
20. PROVIDE INFLOOR 3 SERVICE BOX WITH RACEWAY CONNECTIONS ETC AS WITH THE OTHER DISPATCH DESKS BUT WITH FLAT BOX COVER PLATE CABLE OF EITHER BEING REPLACE OR MODIFIED FOR FUTURE INSTALLATION OF DISPATCH DESK FURNITURE. BRANCH CIRCUIT TO BE PULLED IN FUTURE. PROVIDE PULL WIRES FOR FUTURE CABLING.
21. MOUNT RECEPTACLE AND TELECOM BOX ABOVE EXISTING WINDOW. COORDINATE WITH ARCHITECT AND ADJUST EXACT LOCATION IN FIELD
22. ACCESS CONTROL POWER SUPPLY ABOVE CEILING. REFER TO DETAIL ON E7.1. COORDINATE EXACT REQUIREMENTS WITH DOOR HARDWARE SUPPLIER.

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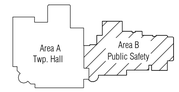
PBA Project No: 2021.0163

KEY PLAN



OWNER

Canton Township
Public Safety

PROJECT NAME

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Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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Proposal Request No.1	06/10/2022

DRAWN BY
SAM

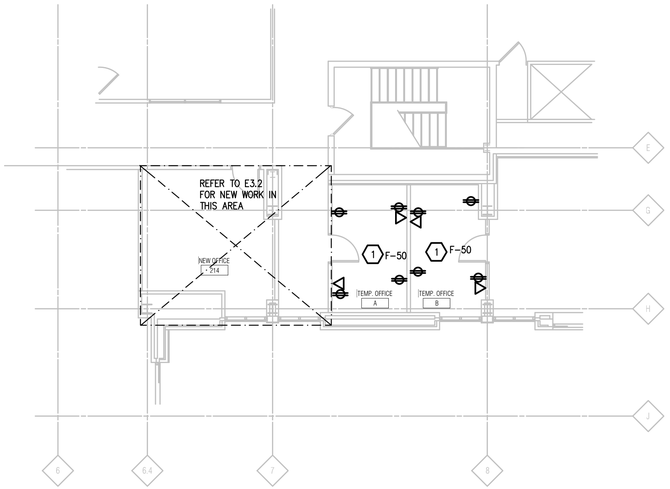
CHECKED BY
EMG

APPROVED BY
EMG

SHEET NAME
ROOF ELECTRICAL PLAN

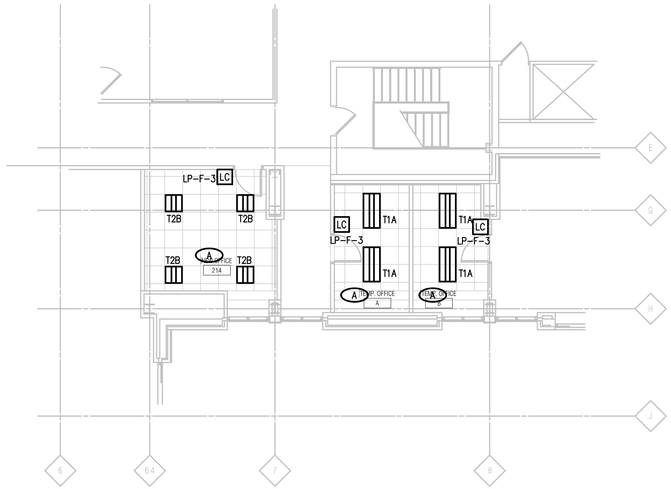
SHEET NO.
E3.3

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



PARTIAL SECOND FLOOR POWER PLAN

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



PARTIAL SECOND FLOOR LIGHTING PLAN

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

ELECTRICAL GENERAL NOTES:

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2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR SERVICE FITTINGS AND POKE-THROUGH ASSEMBLIES WITH FINAL FURNITURE LAYOUT DRAWINGS.
9. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
10. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
11. REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM IS INDICATED AS A LETTERED OVAL SYMBOL.
12. ALL FIRE ALARM DEVICES SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. PROVIDE NECESSARY COMPONENTS, MODULES, ETC. AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM. RE-TEST AND CERTIFY EXISTING FIRE ALARM SYSTEM AT COMPLETION OF PROJECT.
13. PROVIDE TAMPER-RESISTANT TYPE RECEPTACLES FOR ALL NEW RECEPTACLES IN PUBLIC AREAS, UNLESS OTHERWISE NOTED.
14. ALL NEW LIGHTING TO BE CONNECTED VIA EXISTING LIGHTING CIRCUITS IN EACH ROOM/AREA. REFER TO PANELBOARD SCHEDULES FOR EXISTING AND REVISED PANEL AND CIRCUIT NUMBER LOCATIONS. FOR AREAS NOT INCLUDED IN THESE SCHEDULES, VERIFY EXISTING PANEL AND CIRCUIT NUMBERS PRIOR TO INSTALLATION OF NEW LIGHTING EQUIPMENT.
15. ALL ELECTRICAL AND TELECOMMUNICATION CONDUIT, RACEWAYS, AND BOXES ARE TO BE RUN CONCEALED IN EXISTING OR NEW WALL CAVITIES. PROVIDE CUTTING AND PATCHING OF WALL CONSTRUCTION AS REQUIRED TO RESTORE WALL FINISH, INSULATION, AND ASSEMBLY TO MATCH EXISTING.

(#) CONSTRUCTION KEY NOTES:

1. REUSE EXISTING AREA BRANCH CIRCUITS IF POSSIBLE. OTHERWISE CIRCUIT AS SHOWN. CIRCUITING INDICATED IS INDICATIVE OF MAXIMUM LOADING AND DISTRIBUTION OF BRANCH CIRCUITING REQUIRED.

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KEY PLAN N

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Canton Township
Public Safety

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Interior Renovations

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Canton, MI 48188

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21-130

ISSUES / REVISIONS
Proposal Request No.1 06/10/2022

DRAWN BY
SAM

CHECKED BY
EMG

APPROVED BY
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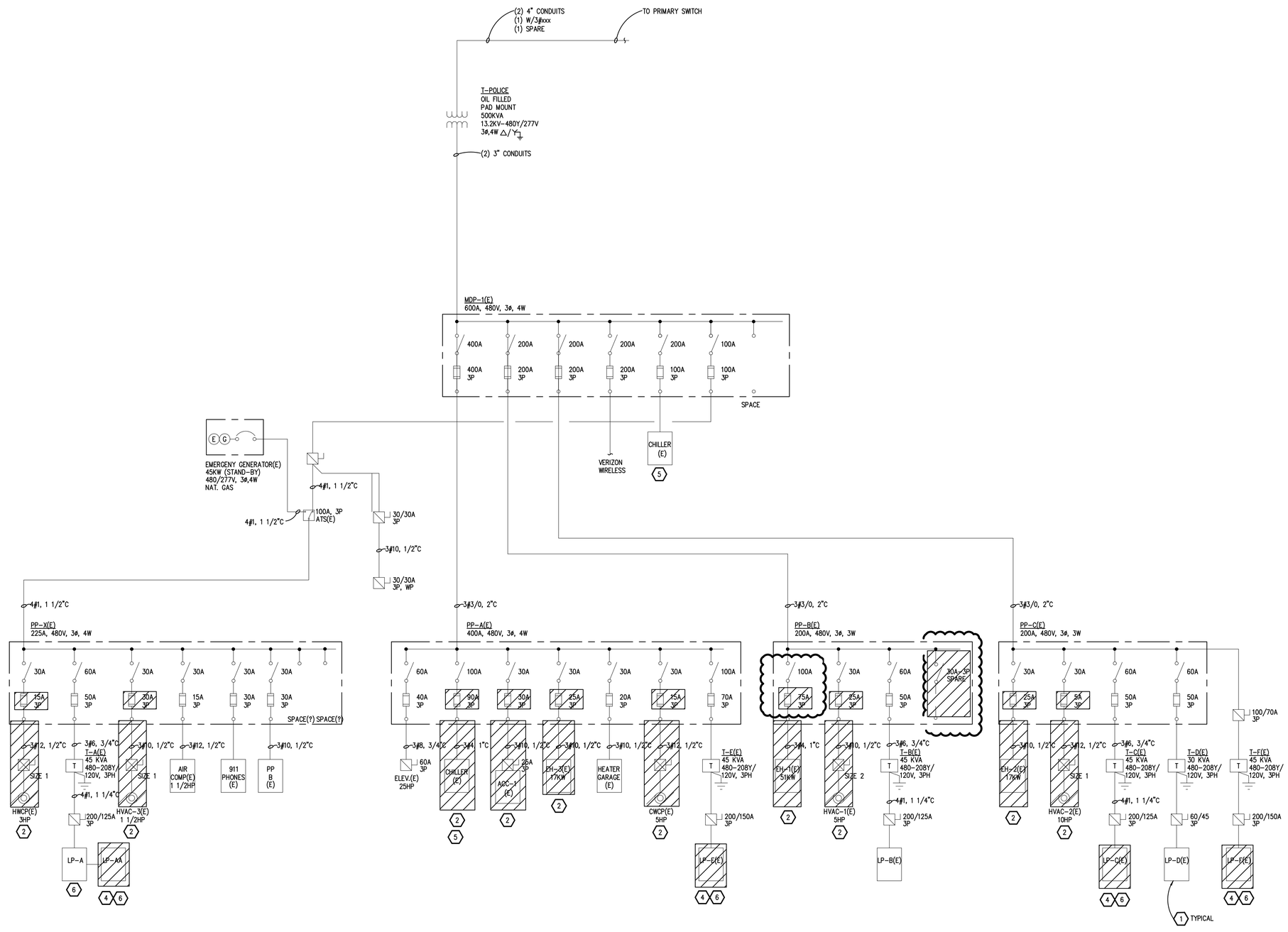
SHEET NAME
PARTIAL SECOND FLOOR ELECTRICAL PLANS

SHEET NO.
E4.1



EXISTING POLICE STATION ONE LINE DIAGRAM

NO SCALE

DIAGRAM GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
2. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
3. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "TRANSFORMER CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
4. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH THE MOTOR CIRCUIT SIZING SCHEDULES ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
5. BASIS OF DESIGN IS EATON DISTRIBUTION EQUIPMENT. EXISTING EQUIPMENT IS EATON, SIEMENS, AND SCHNEIDER. VERIFY EXISTING EQUIPMENT IN FIELD. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT FROM OTHER APPROVED MANUFACTURERS, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING ELECTRICAL EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.
6. VARIABLE FREQUENCY CONTROLLERS (VFC) FURNISHED BY MECHANICAL TRADES. ELECTRICAL CONTRACTOR SHALL INSTALL VFC, PROVIDE POWER FEEDER FROM DISTRIBUTION EQUIPMENT TO VFC AND PROVIDE POWER FEEDER FROM VFC TO MOTOR. REFER TO SPECIFICATIONS FOR APPLICATION OF VFC POWER CABLE FROM VFC TO MOTOR.

(#) CONSTRUCTION KEY NOTES:

1. ELECTRICAL EQUIPMENT IS EXISTING UNLESS OTHERWISE INDICATED.
2. DISCONNECT AND REMOVE FEEDER/CIRCUITS TO MECHANICAL UNIT AND ASSOCIATED ELECTRICAL EQUIPMENT. WHERE MECHANICAL UNIT IS REPLACED WITH NEW UNIT, CONNECT TO SAME PANEL. REPLACE BREAKER/FUSE WHERE NECESSARY AND PROVIDE NEW FEEDER.
3. STANDBY PUMP ONLY OPERATES WHEN COMPANION PUMP IS INOPERATIVE. COORDINATE TIME DELAYED START WITH CONTROLS CONTRACTOR.
4. DISCONNECT AND REMOVE EXISTING PANEL FROM FEEDER. REPLACE PANEL AS INDICATED ON NEW WORK ONE LINE DIAGRAM AND IN REVISED/NEW PANEL SCHEDULE FOR LABELED PANEL. RECONNECT TO EXISTING FEEDER AND DISTRIBUTION EQUIPMENT.
5. VERIFY THE CONNECTIONS FOR EXISTING CHILLER FEEDERS. LABEL SWITCH AT PANEL WITH CHILLER LABEL AND ROOM LOCATION. VERIFY LOCATED IN POLICE BUILDING. INFORM OWNERS REPRESENTATIVE AND DESIGN ENGINEER DURING CONSTRUCTION.
6. METER THE INDICATED PANEL FOR 30 DAYS PER NEC REQUIREMENTS TO VERIFY EXISTING LOAD AND LOAD CAPACITY.

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CHECKED BY
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APPROVED BY
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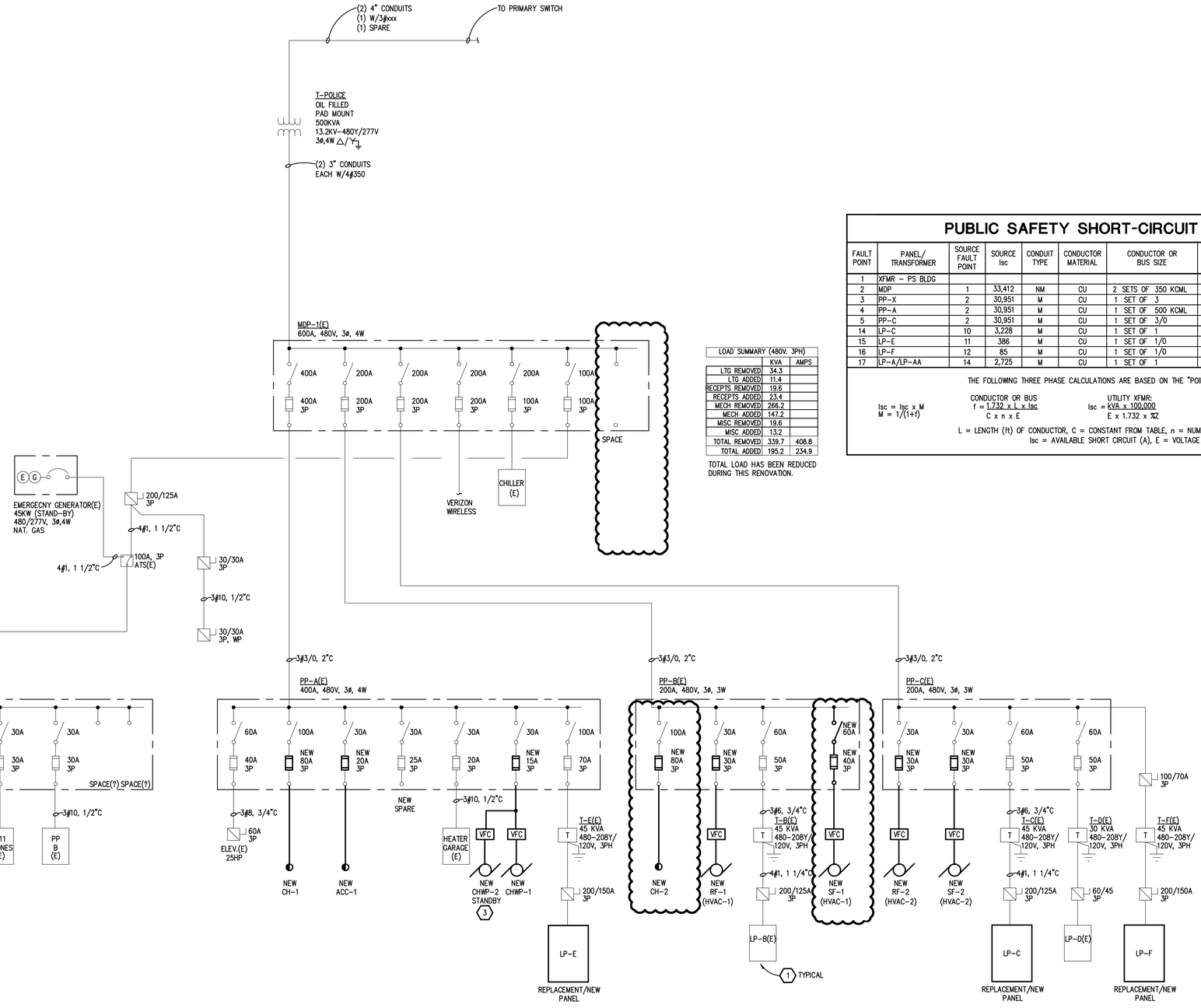
SHEET NAME
ONE LINE DIAGRAM

SHEET NO.
E5.1



NEW WORK POLICE STATION ONE LINE DIAGRAM

NO SCALE

LOAD SUMMARY (480V. 3PH)		
	KVA	AMPS
LTG REMOVED	34.3	
LTG ADDED	11.4	
RECEPTS REMOVED	19.6	
RECEPTS ADDED	23.4	
MECH REMOVED	268.2	
MECH ADDED	147.2	
MISC REMOVED	19.6	
MISC ADDED	13.2	
TOTAL REMOVED	339.7	408.8
TOTAL ADDED	195.2	234.9

TOTAL LOAD HAS BEEN REDUCED DURING THIS RENOVATION.

PUBLIC SAFETY SHORT-CIRCUIT CALCULATIONS

FAULT POINT	PANEL/ TRANSFORMER	SOURCE FAULT POINT	SOURCE Isc	CONDUIT TYPE	CONDUCTOR MATERIAL	CONDUCTOR OR BUS SIZE	'C' VALUE	E (V)	L (FT)	XFMR kVA	XFMR %Z	f	M	Isc
1	XFMR - PS BLDG							480		500	1.8			33,412
2	MDP	1	33,412	NM	CU	2 SETS OF 350 KCML	22737	480	30.0			0.080	0.93	30,951
3	PP-X	2	30,951	M	CU	1 SET OF 3	4774	480	14.0			0.328	0.75	23,315
4	PP-A	2	30,951	M	CU	1 SET OF 500 KCML	22185	480	10.0			0.050	0.95	29,467
5	PP-C	2	30,951	M	CU	1 SET OF 3/0	12844	480	70.0			0.609	0.62	19,240
14	LP-C	10	3,228	M	CU	1 SET OF 1	7293	208	50.0			0.184	0.84	2,725
15	LP-E	11	386	M	CU	1 SET OF 1/0	8925	208	123.0			0.044	0.96	369
16	LP-F	12	85	M	CU	1 SET OF 1/0	8925	208	72.0			0.006	0.99	84
17	LP-A/LP-AA	14	2,725	M	CU	1 SET OF 1	7293	208	10.0			0.031	0.97	2,643

THE FOLLOWING THREE PHASE CALCULATIONS ARE BASED ON THE "POINT-BY POINT" METHOD WHERE:

$Isc = Isc \times M$, $M = 1/(1+f)$

CONDUCTOR OR BUS: $f = \frac{1.732 \times L \times Isc}{C \times n \times E}$

UTILITY XFMR: $Isc = \frac{kVA \times 100{,}000}{E \times 1.732 \times \%Z}$

XFMR: $f = \frac{Ip(sc) \times Ep \times 1.73 \times \%Z}{100{,}000 \times kVA}$ $Is(sc) = \frac{Ep \times M \times Ip(sc)}{Es}$

L = LENGTH (ft) OF CONDUCTOR, C = CONSTANT FROM TABLE, n = NUMBER OF CONDUCTORS PER PHASE
Isc = AVAILABLE SHORT CIRCUIT (A), E = VOLTAGE OF CIRCUIT

PARTNERS

PARTNERS in Architecture, PLC
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MOUNT CLEMENS, MI 48043
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PBA Project No. 2021.0163

KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022
Addendum 01	03/18/2022
Proposal Request No.1	06/10/2022

DRAWN BY
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CHECKED BY
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APPROVED BY
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SHEET NAME
ONE LINE DIAGRAM

SHEET NO.
E5.2

(E) PANELBOARD LP-A

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		Corridor Lts		20						20		Exit and 24 hour lights		2
3		Outside Lts		20						20		Lts boiler, Elect Rm		4
5		2nd Fl. Lobby/ Corr/ Lts Computer Rm		20						20		Cypher locks, wire mold Records		6
7		Recept Elect Rm		20						20		Lts W. hall, kit, gar		8
9		Lts cells		20						20		Recept Comm		10
11		Burglar Alarm		20						20		Gar door, tube station/ A-motor opener		12
13		Fire Alarm		20						20		Elevator Lts		14
15		Sump Pump		20						70		LP-AA		16
17		LP-AA		70						70		LP-AA		18
19		Dispatch Monitor		20						15		Plug # 2 for		20
21		New ADD. EM Lights + Exit Lights		20						20		Lts, booking E kit		22
23		Tape // Lts Comm and operation (crossed out)		20						20		Lts comm and front		24
25		Recept intcom pogin		20						20		Recept S.E.		26
27		Intercom supply		20						20		Recept S.		28
29		Holdg cell door cont		20						20		Tranformer frond		30
31		Security mont.		20						20		Under floor recept		32
33		under floor recept		20						20		Under floor recept		34
35		Gen. Batt Charger		20						30		Gen block charger		36
37		Kitchenette		20						20		blank		38
39		Double 2nd Fl. Outlier		20						20		Donble 3nd Fl. Outlier		40
41		UPS AC PUMP		15						15		Plug #2 For		42
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.:
MOUNTING: SURFACE

☐ FEED-THROUGH LUGS
☐ DOUBLE LUGS
☐ INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING		NOTES:
CONTINUOUS LOAD (C)		100%		125%		
ELECTRIC HEAT (E)		100%		125%		
NON-CONTINUOUS LOAD (NC)		100%		100%		
KITCHEN LOAD (K)		100%		100%		
RECEPTACLE BASE LOAD (R)		100%		100%		
RECEPTACLE DEMAND LOAD (R)		50%		100%		
LIGHTING LOAD (L)		100%		125%		
ADDITIONAL TRACK LIGHTING LOAD				100%		
MOTORS, HIGHEST LOAD (MH)		125%		100%		
MOTORS, REMAINING LOAD (M)		100%		100%		
		TOTAL(KVA):				
NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD		TOTAL (AMPS):		TOTAL (AMPS):		

(E) PANELBOARD LP-AA

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		TV Camera, Recpt garage and boiler rm.		20						20		C.O.P		2
3		U.H-1 garage		20						20		U.H-2 mech rm 159		4
5		Sprinklar recept		20						20		Hot water Heater		6
7		H.W. circ pump		20						20		Air dryer		8
9		Dispatch kitchen		20						20		Dispatch Kitchen		10
11		Boiler		20						20		Boiler		12
13		Boiler		20						20		Lights		14
15		Garage Doors		20						20		Lts Rm 140		16
17		Lts rm 139		20						20		Recept and HVAC - 3 control		18
19		Kitchen disposal		20						20		Recept		20
21		Recept		20						20		Kitchenette disposal		22
23		Recept Operalon		20						20		booking		24
25		UPS AC PUMP		20						20		UPS AC PUMP		26
27		Spare		20						20		Unit Heaters		28
29		O.H. Door Lights		20						20		RECEPTICLES		30
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 100A
MAIN TYPE: 100A MCB
MINIMUM A.I.C.:
MOUNTING: SURFACE

☐ FEED-THROUGH LUGS
☐ DOUBLE LUGS
☐ INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING		NOTES:
CONTINUOUS LOAD (C)		100%		125%		
ELECTRIC HEAT (E)		100%		125%		
NON-CONTINUOUS LOAD (NC)		100%		100%		
KITCHEN LOAD (K)		100%		100%		
RECEPTACLE BASE LOAD (R)		100%		100%		
RECEPTACLE DEMAND LOAD (R)		50%		100%		
LIGHTING LOAD (L)		100%		125%		
ADDITIONAL TRACK LIGHTING LOAD				100%		
MOTORS, HIGHEST LOAD (MH)		125%		100%		
MOTORS, REMAINING LOAD (M)		100%		100%		
		TOTAL(KVA):				
NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD		TOTAL (AMPS):		TOTAL (AMPS):		

(E) PANELBOARD LP-B

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		Booking Offices		20						20		Booking		2
3		Video Arr. Freezer		20						20		Booking Quad # 2		4
5		Video Arr. Breathalyzer		20						20		Janitor Supply Closet		6
7		Video ARR. Microwave		20						20		Bass Paner bake		8
9		Video Arr. Court A.V.		20						20		Prisonor Bath Fan		10
11		Video Arr. G.D		20						20		Booking Quad # 3		12
13		Report Room		20						20		Switch Gear Heaters		14
15		Report Room		20						20		Report Room		16
17		Blank		20						20		Report Room		18
19		SPARE		20						20		SPARE		20
21		SPARE		20						20		SPARE		22
23		SPARE		20						20		SPARE		24
25		SPARE		20						20		SPARE		26
27		SPARE		20						20		SPARE		28
29		SPARE		20						20		SPARE		30
31		SPARE		20						20		SPARE		32
33		SPARE		20						20		SPARE		34
35		SPARE		20						20		SPARE		36
37		SPARE		20						20		SPARE		38
39		SPARE		20						20		SPARE		40
41		SPARE		20						20		SPARE		42
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.:
MOUNTING: SURFACE

☐ FEED-THROUGH LUGS
☐ DOUBLE LUGS
☐ INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING		NOTES:
CONTINUOUS LOAD (C)		100%		125%		
ELECTRIC HEAT (E)		100%		125%		
NON-CONTINUOUS LOAD (NC)		100%		100%		
KITCHEN LOAD (K)		100%		100%		
RECEPTACLE BASE LOAD (R)		100%		100%		
RECEPTACLE DEMAND LOAD (R)		50%		100%		
LIGHTING LOAD (L)		100%		125%		
ADDITIONAL TRACK LIGHTING LOAD				100%		
MOTORS, HIGHEST LOAD (MH)		125%		100%		
MOTORS, REMAINING LOAD (M)		100%		100%		
		TOTAL(KVA):				
NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD		TOTAL (AMPS):		TOTAL (AMPS):		

(REV) PANELBOARD LP-A

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		Corridor Lts		20						20		Exit and 24 hour lights		2
3		Outside Lts		20						20		Lts boiler, Elect Rm		4
5	L	REV LTS- 200A, 201, 202, 203, 204, 205		20	445				973	528	15	NEW NEW VF-114 - DISPATCH & VF-1 CHILR RM	M	6
7		Recept Elect Rm		20						20		Lts W. hall, kit, gar		8
9		Lts cells		20						20		Recept Comm		10
11		Burglar Alarm		20						20		Gar door, tube station/ A-motor opener		12
13		Fire Alarm		20						20		Elevator Lts		14
15		Sump Pump		20						70		LP-AA		16
17		LP-AA		70						70		LP-AA		18
19	R	NEW DISPATCH MONITORS		20		483			483	15		NEW LIGHTS- DISPATCH 118, CORR 126	L	20
21	L	New ADD. EM Lights + Exit Lights		20			206		206	20		REV LIGHTS- 147, 148, 150, 152, 153	L	22
23	R	NEW DISPATCH PRINTER		20	1800			1800		20		Lts comm and front		24
25	R	NEW DISPATCH PRINTER		20	1800	3600			1800	20		QUAD RECEPT - IT ROOM DISPATCH	R	26
27	R	Intercom supply		20			400		400	15	NEW	NEW CP-1 - MECH RM 124	M	28
29	R	Holdg cell door cont		20						20		Tranformer frond		30
31	R	NEW POKETHROUGHS - 2ND FL CONF RM		20	720	1440			720	20		NEW POKETHOUGHS - 2ND FL CONF RM	R	32
33	R	NEW POKETHROUGHS - 2ND FL CONF RM		20	720		720			20		NEW SPARE	R	34
35		Gen. Batt Charger		20						30		Gen block charger		36
37	R	NEW RECEPTACLES - 2ND FL CONF RM		20	1080	1452			192	20		NEW LIGHTS- TEMP DISPATCH 213	L	38
39		Double 2nd Fl. Outlier		20						20		Donble 3nd Fl. Outlier		40
41		UPS AC PUMP		15						15		Plug #2 For		42
						6975	1326	2773						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.:
MOUNTING: SURFACE

☐ FEED-THROUGH LUGS
☐ DOUBLE LUGS
☐ INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING		NOTES:
CONTINUOUS LOAD (C)		100%		125%		
ELECTRIC HEAT (E)		100%		125%		
NON-CONTINUOUS LOAD (NC)		100%		100%		
KITCHEN LOAD (K)		100%		100%		
RECEPTACLE BASE LOAD (R)	8640	100%	8640	100%	8640	
RECEPTACLE DEMAND LOAD (R)		50%		100%		
LIGHTING LOAD (L)	1326	100%	1326	125%	1658	
ADDITIONAL TRACK LIGHTING LOAD				100%		
MOTORS, HIGHEST LOAD (MH)		125%		100%		
MOTORS, REMAINING LOAD (M)	928	100%	928	100%	928	
		TOTAL(KVA):	10.89			
NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD		TOTAL (AMPS):	30	TOTAL (AMPS):	31	

REPLACEMENT/NEW PANELBOARD LP-AA

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		TV Camera, Recpt garage and boiler rm.		20						20		C.O.P		2
3		U.H-1 garage		20						20		U.H-2 mech rm 159		4
5		Sprinklar recept		20						20		Hot water Heater		6
7		H.W. circ pump		20						20		Air dryer		8
9		Dispatch kitchen		20			1200		1200	20		NEW NOVEC FIRE PROT - 2ND FL IT RM	C	10
11		Boiler		20						20		Boiler		12
13		Boiler		20						20		Lights		14
15		Garage Doors		20						20		Lts Rm 140		16
17		Lts rm 139		20				900	900	20		NEW SMK DMPRS - DISPATCH, LOBBY	C	18
19	C	NEW NOVEC FIRE PROT PNL - DISPATCH		20	1200	1200				20		Recept		20
21		Recept		20						20		NEW NOVEC SOLENOID - ELEC/LT. RM		22
23		Recept Operalon		20						20		booking		24
25		UPS AC PUMP		20						20		UPS AC PUMP		26
27	L	NEW LIGHTS- 117, 118, 120, 126A, 126B		20	154		154			20		Unit Heaters		28
29		O.H. Door Lights		20						20		RECEPTACLES		30
31	R	NEW ACCESS FLR BOX - DISPATCH		20	860	1388			528	15		NEW VF-1	M	32
33	R	NEW ACCESS FLR BOX - DISPATCH		20	860		1660		800	20		NEW REFRG MONITORING SYSTEM	C	34
35	R	NEW ACCESS FLR BOX - DISPATCH		20	860			1660	800	20		NEW TV MON RECEPTS - DISPATCH	C	36
37	R	NEW ACCESS FLR BOX - DISPATCH		20	860	860				20		SPARE		38
39	R	NEW ACCESS FLR BOX - DISPATCH		20	860		860			20		SPARE		40
41	R	NEW ACCESS FLR BOX - DISPATCH		20	860			860		20		SPARE		42
						3448	3874	3420						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 100A
MAIN TYPE: 100A MCB
MINIMUM A.I.C.: 10,000
MOUNTING: SURFACE

☐ FEED-THROUGH LUGS
☐ DOUBLE LUGS
☐ INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING		NOTES:
CONTINUOUS LOAD (C)	4900	100%	4900	125%	6125	FED FROM LP-A
ELECTRIC HEAT (E)		100%		125%		
NON-CONTINUOUS LOAD (NC)		100%		100%		
KITCHEN LOAD (K)		100%		100%		
RECEPTACLE BASE LOAD (R)	5160	100%	5160	100%	5160	
RECEPTACLE DEMAND LOAD (R)		50%		100%		
LIGHTING LOAD (L)	154	100%	154	125%	193	
ADDITIONAL TRACK LIGHTING LOAD				100%		
MOTORS, HIGHEST LOAD (MH)		125%		100%		
MOTORS, REMAINING LOAD (M)	528	100%	528	100%	528	
		TOTAL(KVA):	10.74			
NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD		TOTAL (AMPS):	30	TOTAL (AMPS):	33	

REVISED PANELBOARD LP-B

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		Booking Offices		20						20		Booking		2
3		Video Arr. Freezer		20						20		Booking Quad # 2		4
5		Video Arr. Breathalyzer		20						20		Janitor Supply Closet		6
7		Video ARR. Microwave		20						20		Bass Paner bake		8
9		Video Arr. Court A.V.		20						20		Prisonor Bath Fan		10
11		Video Arr. G.D		20						20		Booking Quad # 3		12
13		Report Room		20						20		Switch Gear Heaters		14
15		Report Room		20						20		Report Room		16
17		Blank		20						20		Report Room		18
19	NC	NEW HVAC-1 RECEPT & LIGHTING		20	280	280				20		SPARE		20
21	R	NEW RECEPT P.REBTRM, CORR, FPRINT		20	940		1840			20		NEW RECEPTS - DSK OFF 112	R	22
23	R	NEW RECEPT - OFFICES 109, 119		20	1080			2280	1200	20		NEW EWC	M	24
25	L	NEW LIGHTS- LOCKER RMS & TOILETS		20	435	435				20		SPARE		26
27	L	NEW LIGHTS- 155, 136, 143		20	240		624		384	20		NEW RLF-3	M	28
29	L	NEW LIGHTS- 144A, STOR 144B, 144C		20	384			384		20		SPARE		30
31	NC	NEW ACCESS CONTROL POWER SUPPLIES		20	800	800				20		SPARE		32
33	NC	NEW ACCESS CONTROL POWER SUPPLIES		20	600		600			20		SPARE		34
35		SPARE		20						20		SPARE		36
37		SPARE		20						20		SPARE		38
39		SPARE		20						20		SPARE		40
41		SPARE		20						20		SPARE		42
						1515	3064	2864						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.:
MOUNTING: SURFACE

☐ FEED-THROUGH LUGS
☐ DOUBLE LUGS
☐ INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING		NOTES:
CONTINUOUS LOAD (C)		100%		125%		
ELECTRIC HEAT (E)		100%		125%		
NON-CONTINUOUS LOAD (NC)	1680	100%	1680	100%	1680	
KITCHEN LOAD (K)		100%		100%		
RECEPTACLE BASE LOAD (R)	2920	100%	2920	100%	2920	
RECEPTACLE DEMAND LOAD (R)		50%		100%		
LIGHTING LOAD (L)	1059	100%	1059	125%	1324	
ADDITIONAL TRACK LIGHTING LOAD				100%		
MOTORS, HIGHEST LOAD (MH)		125%		100%		
MOTORS, REMAINING LOAD (M)	1584	100%	1584	100%	1584	
		TOTAL(KVA):	7.24			
NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD		TOTAL (AMPS):	20	TOTAL (AMPS):	21	

(E)PANELBOARD RP-UPS-1A

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	R	RECEPT - 911 CALL CENTER		20	360	720			360	20		RECEPT - 911 CALL CENTER	R	2
3	R	RECEPT - 911 CALL CENTER		20	360		720		360	20		RECEPT - 911 CALL CENTER	R	4
5	R	RECEPT - 911 CALL CENTER		20	360			720	360	20		RECEPT - 911 CALL CENTER	R	6
7	R	RECEPT - 911 CALL CENTER		20	360	720			360	20		RECEPT - 911 CALL CENTER	R	8
9	R	RECEPT - RADIO UPS ROOM		20	180		360		180	20		RECEPT - RADIO UPS ROOM	R	10
11	R	RECEPT - RADIO UPS ROOM		20	180			360	180	20		RECEPT - RADIO UPS ROOM	R	12
13		SPARE		20						20		SPARE		14
15		SPARE		20						20		SPARE		16
17		SPARE		20						20		SPARE		18
19		SPACE		20						20		SPACE		20
21		SPACE		20						20		SPACE		22
23		SPACE		20						20		SPACE		24
25		SPACE		20		4680			4680				R	26
27		SPACE		20			3780		3780	40		RP-UPS-2A	R	28
29		SPACE		20				2700	2700				R	30
						6120	4860	3780						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 60A
MAIN TYPE: 60A MCB
MINIMUM A.I.C.: 10,000
MOUNTING: SURFACE

☐ FEED-THROUGH LUGS
☐ DOUBLE LUGS
☐ INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED DEMAND	FEEDER AND OVERCURRENT SIZING		NOTES:
CONTINUOUS LOAD (C)		100%		125%		
ELECTRIC HEAT (E)		100%		125%		
NON-CONTINUOUS LOAD (NC)		100%		100%		
KITCHEN LOAD (K)		100%		100%		
RECEPTACLE BASE LOAD (R)	10000	100%	10000	100%	10000	
RECEPTACLE DEMAND LOAD (R)	4760	50%	2380	100%	2380	
LIGHTING LOAD (L)		100%		125%		
ADDITIONAL TRACK LIGHTING LOAD		(150VA/2FT)		100%		
MOTORS, HIGHEST LOAD (MH)		100%		125%		
MOTORS, REMAINING LOAD (M)		100%		100%		
		TOTAL(KVA):	12.38			
NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD		TOTAL (AMPS):	34	TOTAL (AMPS):	34	

REVISED PANELBOARD RP-UPS-2A

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	R	RECEPT - INTRADO 911		20	900	1800			900	20		RECEPT - INTRADO 911	R	2
3	R	RECEPT - MOTOROLA RADIO		20	900		1800		900	20		RECEPT - MOTOROLA RADIO	R	4
5	R	RECEPT - MOTOROLA RADIO		20	900			1260	360	20		RECEPT - COMPUTER ROOM	R	6
7	R	RECEPT - INTRADO 911		20	900	1800			900	20		RECEPT - INTRADO 911	R	8
9	R	RECEPT - INTRADO 911		20	900		1260		360	20		RECEPT - COMPUTER ROOM	R	10
11	R	RECEPT - COMPUTER ROOM		20	360			720	360	20		RECEPT - COMPUTER ROOM	R	12
13	R	RECEPT - COMPUTER ROOM		20	360	720			360	20		NEW QUAD RECEPT - LT. RM 212	R	14
15	R	NEW QUAD RECEPT - LT. RM 212		20	360		720		360	20		NEW QUAD RECEPT - LT. RM 212	R	16
17	R	NEW QUAD RECEPT - LT. RM 212		20	360			720	360	20		NEW QUAD RECEPT - LT. RM 212	R	18
19	R	NEW QUAD RECEPT - LT. RM 212		20	360	360				20		SPACE		20
21		SPACE		20						20		SPACE		22
23		SPACE		20						20		SPACE		24
25		SPACE		20						20		SPACE		26
27		SPACE		20						20		SPACE		28
29		SPACE		20						20		SPACE		30
						4680	3780	2700						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 60A
MAIN TYPE: MLO
MINIMUM A.I.C.: 10,000
MOUNTING: SURFACE

☐ FEED-THROUGH LUGS
☐ DOUBLE LUGS
☐ INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED DEMAND	FEEDER AND OVERCURRENT SIZING		NOTES:
CONTINUOUS LOAD (C)		100%		125%		
ELECTRIC HEAT (E)		100%		125%		
NON-CONTINUOUS LOAD (NC)		100%		100%		
KITCHEN LOAD (K)		100%		100%		
RECEPTACLE BASE LOAD (R)	10000	100%	10000	100%	10000	
RECEPTACLE DEMAND LOAD (R)	1160	50%	580	100%	580	
LIGHTING LOAD (L)		100%		125%		
ADDITIONAL TRACK LIGHTING LOAD		(150VA/2FT)		100%		
MOTORS, HIGHEST LOAD (MH)		100%		125%		
MOTORS, REMAINING LOAD (M)		100%		100%		
		TOTAL(KVA):	10.58			
NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD		TOTAL (AMPS):	29	TOTAL (AMPS):	29	

PANEL SCHEDULE INDEX

(E) LP-A	(E) LP-AA	(E) LP-B
(REV) LP-A	(REV) LP-AA	(REV) LP-B
(E) RP-UPS-1A	(REV) RP-UPS-2A	

PARTNERS

PARTNERS in Architecture, PLC
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MOUNT CLEMENS, MI 48043
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PBA Project No. 2021.0163

KEY PLAN

OWNER
Canton Township Public Safety

PROJECT NAME
Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022
Addendum 01	03/18/2022
Proposal Request No.1	06/10/2022
Proposal Request No.4	01/18/2023

DRAWN BY
SAM

CHECKED BY
EMG

APPROVED BY
EMG

SHEET NAME
PANEL SCHEDULES

SHEET NO.
E6.1

\\pba.local\projects\2021\2021-0163-00\CAD\2021-0163-E6-SH.dwg, E6.2, 8/26/2022 10:06:11 AM, Matt Raubinger, Peter Basso Associates Inc.

(E) PANELBOARD LP-C

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		LTS RM 204, 210 & LAB ARED		20						20		FLR RECEPT RM 206/ARTS CAROLS PLUGS		22
2		RECEPTS RM 204 COPY		20						20		FLR RECEPT RM 206		23
3		RECEPTS LAB PLUGMOLD		20						20		LTS RMS 218, 221, 222		24
4		LTS RM 203		20						20		LTS MECH RM		25
5		LTS FRONT DESK ARED		20						20		TEMP CONTROL PANELS		26
6		RECEPTS FRONT DESK		20						20		WALL HTR CHIEFS RESTRM		27
7		LTS RMS 211, 212, 214, 215		20						20		RECEPT RM 226		28
8		RECEPTS, RMS 211, 212, 214, 215		20						20		LTS RMS 226, 228		29
9		RECEPTS RM 203		20						20		COMPUTER RM I.G. PLUGS		30
10		LTS RM 206		20						20		SUB PANEL IT ROOM		31
11		LTS RM 206		20										32
12		DOOR PUSHBUTTONS RM 214		20						20		EXH FANS		33
13		LTS LUNCH & RESTRM		20						20		CORRIDOR & STAIR LIGHTS		34
14		RECEPTS RESTROOMS		20						20		LOBBY LTS, HALLWAY LTS		35
15		LPC – SUBPANEL		50						20		STAIRS & PUBLIC REST ROOM		36
16										20		COPY MACHINGE		37
17		RECEPT RM 218, 221, 222		20						50		220V STOVE		38
18		SPARE		20										39
19		SPARE		20						20		SPARE		40
20		SPARE		20						20		AC PLUG		41
21		SPARE		20						20		COMPUTER RM PLUG		42
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.:
MOUNTING: SURFACE

[ ] FEED–THROUGH LUGS
[ ] DOUBLE LUGS
[ ] INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING	
CONTINUOUS LOAD (C)		100%		125%	
ELECTRIC HEAT (E)		100%		125%	
NON–CONTINUOUS LOAD (NC)		100%		100%	
KITCHEN LOAD (K)		100%		100%	
RECEPTACLE BASE LOAD (R)		100%		100%	
RECEPTACLE DEMAND LOAD (R)		50%		100%	
LIGHTING LOAD (L)		100%		125%	
ADDITIONAL TRACK LIGHTING LOAD				100%	
MOTORS, HIGHEST LOAD (MH)		125%		100%	
MOTORS, REMAINING LOAD (M)		100%		100%	
		TOTAL(KVA):			
		TOTAL (AMPS):		TOTAL (AMPS):	

NOTES:

NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD

(E) PANELBOARD LP-E

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		LIGHTING B120, B121, B122, B123		20						20		RECEPT – LOCKER B126, B124, VEST, BRKRM		2
3		LIGHTING B118, B119, B114		20						20		RECPT – BREAKRM B123 GARBAGE DISPOSER		4
5		LIGHTING B112, B114		20						20		RECEPT – BREAKROOM B123		6
7		LIGHTING B106, B107, B108, B109, B110		20						20		RECEPT – BREAKEROOM B123 REFRIG		8
9		LIGHTING B101		20						20		RECEPT – BRKRM B123,SEC B121,CAPT B120		10
11		RECEPT – LOBBY, LIGHTING FOYER		20						20		RECEPT – CAPT B120		12
13		EWC LOBBY B102		20						20		RECEPT – STORAGE B119, RECORDS B114		14
15		LOBBY ADA DOORS		20						20		RECEPT – STORAGE B119, RECORDS OFFICE		16
17		RECEPT – RECORDS B114		20						20		RECEPT – RECORDS OPEN OFFICE B114		18
19		SPARE		20						20		RECEPT – RECORDS OFFICE SYS FURNITURE		20
21		SPARE		20						20		RECEPT – RECORDS OFFICE SYS FURNITURE		22
23		SPARE		20						20		RECEPT – RECORDS OFFICE SYS FURNITURE		24
25		SPARE		20						20		RECEPT – WAITING B112		26
27		SPARE		20						20		DOOR OPERATORS		28
29		SPARE		20						20		DISP. ROOM TV PLUGS		30
31		SNOW MELT CABLE		20						20		DISP. ROOM GEN PLUGS		32
33				20						20		SPARE		34
35		SNOW MELT CABLE		20						20		DISP. ROOM GEN PLUGS		36
37				20						20		SPACE		38
39		SNOW MELT CABLE		20						20		SPACE		40
41				20						20		SNOW MELT CONTROLLER		42
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.:
MOUNTING: FLUSH

[ ] FEED–THROUGH LUGS
[ ] DOUBLE LUGS
[X] INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING	
CONTINUOUS LOAD (C)		100%		125%	
ELECTRIC HEAT (E)		100%		125%	
NON–CONTINUOUS LOAD (NC)		100%		100%	
KITCHEN LOAD (K)		100%		100%	
RECEPTACLE BASE LOAD (R)		100%		100%	
RECEPTACLE DEMAND LOAD (R)		50%		100%	
LIGHTING LOAD (L)		100%		125%	
ADDITIONAL TRACK LIGHTING LOAD				100%	
MOTORS, HIGHEST LOAD (MH)		125%		100%	
MOTORS, REMAINING LOAD (M)		100%		100%	
		TOTAL(KVA):			
		TOTAL (AMPS):		TOTAL (AMPS):	

NOTES:
provide integral 100ka spd.
panel requirements to match existing.

NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD

(E) PANELBOARD LP-F

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		LIGHTING B214		20						20		RECEPT – OPEN OFFICE B214		2
3		LIGHTING B209, B212		20						20		RECEPT – OPEN OFFICE B209, B214		4
5		LIGHTING B206, B208		20						20		RECEPT – OPEN OFFICE B209		6
7		LIGHTING B202		20						20		RECEPT – OPEN OFFICE B209		8
9		LIGHTING – MULTIPURPOSE B206		20						20		RECEPT – OPEN OFFICE B209		10
11		RECEPT – MULTIPURPOSE B206		20						20		RECEPT – OPEN OFFICE B209		12
13		RECEPT – MULTIPURPOSE B206		20						20		RECEPT – OPEN OFFICE B209		14
15		RECEPT – MULTIPURPOSE B206		20						20		RECEPT – RECORDS B222		16
17		RECEPT – MULTIPURPOSE – GARBAGE DISP		20						20		RECEPT – OFFICE B223, B225		18
19		RECEPT – MULTIPURPOSE B206		20						20		OPEN OFFICE B214 SYSTEM FURNITURE		20
21		LIGHTING – MULTIPURPOSE		20						20		SPARE		22
23		SPARE		20						20		SPARE		24
25		SPARE		20						20		SPARE		26
27		SPARE		20						20		SPARE		28
29		SPARE		20						20		SPARE		30
31		SPARE		20						20		SPARE		32
33		SPARE		20						20		SPARE		34
35		SPARE		20						20		SPARE		36
37		SPARE		20						20		SPARE		38
39		SPARE		20						20		SPARE		40
41		SPARE		20						20		SPARE		42
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.:
MOUNTING: FLUSH

[ ] FEED–THROUGH LUGS
[ ] DOUBLE LUGS
[X] INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING	
CONTINUOUS LOAD (C)		100%		125%	
ELECTRIC HEAT (E)		100%		125%	
NON–CONTINUOUS LOAD (NC)		100%		100%	
KITCHEN LOAD (K)		100%		100%	
RECEPTACLE BASE LOAD (R)		100%		100%	
RECEPTACLE DEMAND LOAD (R)		50%		100%	
LIGHTING LOAD (L)		100%		125%	
ADDITIONAL TRACK LIGHTING LOAD				100%	
MOTORS, HIGHEST LOAD (MH)		125%		100%	
MOTORS, REMAINING LOAD (M)		100%		100%	
		TOTAL(KVA):			
		TOTAL (AMPS):		TOTAL (AMPS):	

NOTES:
provide integral 100ka spd.
panel requirements to match existing.

NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD

REPLACEMENT/NEW PANELBOARD LP-C

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	L	**REV LIGHTS: 253, 254, 257**		20	210	210				20		FLR RECEPT RM 206/ARTS CAROLS PLUGS		22
2		RECEPTS RM 204 COPY		20						20		FLR RECEPT RM 206		23
3		RECEPTS LAB PLUGMOLD		20				340	340	20		**REV LIGHTS: 225, 226, 230, 237, 244**	L	24
4	L	**REV LIGHTS: PASSAGE 256, OFF 258**		20	315	391			76	20		**REV LIGHTS: MECH RM 249**	L	25
5	L	**REV LIGHTS: 229, 229A, 250**		20	213		213			20		TEMP CONTROL PANELS		26
6		RECEPTS FRONT DESK		20				360	360	20		WALL HTR CHIEFS RESTRM,NEW RECPTS	R	27
7		LTS RMS 211, 212, 214, 215		20		360			360	20		RECEPT RM 226 & NEW RECEPTS	R	28
8		RECEPTS, RMS 211, 212, 214, 215		20						20		**REV LIGHTS: RMS 240, 241, 242**	L	29
9		RECEPTS RM 203		20						20		COMPUTER RM I.G. PLUGS		30
10		LTS RM 206		20						20		SUB PANEL IT ROOM		31
11	L	**REV LIGHTS: RM 248**		20	60		60							32
12		DOOR PUSHBUTTONS RM 214		20						20		EXH FANS		33
13	L	**REV LIGHTS: TOILET RMS 232, 234, JAN 233**		20	209	209				20		CORRIDOR & STAIR LIGHTS		34
14		RECEPTS RESTROOMS		20						20		LOBBY LTS, HALLWAY LTS		35
15		LPC – SUBPANEL		50						20		STAIRS & PUBLIC REST ROOM		36
16										20		COPY MACHINGE		37
17	R	**NEW RECEPTS TLT 201 & OFF 202**		20	900		900			50		220V STOVE		38
18	M	**NEW EF- 10 (ROOF)**	NEW	15	384			384						39
19	M	**NEW EF-1 (ROOF)**	NEW	15	768	1008			240	15	STB	**NEW CONDENSATE PUMPS**	M	40
20	NC	**NEW FLUSH VALVES - MENS**		20	1200		1200			20		AC PLUG		41
21	NC	**NEW FLUSH VALVES - WMNS & TLT**		20	800			800		20		COMPUTER RM PLUG		42
43	NC	**NEW HVAC-2 RECEPTACLE & LIGHTING**		20	280	808			528	15		**NEW EF-120**	M	44
45	NC	**NEW ACCESS CONTROL POWER SUPPLIES**		20	400		400			20		SPARE		46
47		SPARE		20						20		SPARE		48
49		SPARE		20						20		SPARE		50
51		SPARE		20						20		SPARE		52
53		SPARE		20						20		SPARE		54
55		SPARE		20						20		SPARE		56
57		SPARE		20						20		SPARE		58
59		SPARE		20						20		SPARE		60
61		SPARE		20						20		SPARE		62
63		SPARE		20						20		SPARE		64
						2986	2773	1884						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.: 10,000
MOUNTING: SURFACE

[ ] FEED–THROUGH LUGS
[ ] DOUBLE LUGS
[ ] INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING	
CONTINUOUS LOAD (C)		100%		125%	
ELECTRIC HEAT (E)		100%		125%	
NON–CONTINUOUS LOAD (NC)	2680	100%	2680	100%	2680
KITCHEN LOAD (K)		100%		100%	
RECEPTACLE BASE LOAD (R)	1620	100%	1620	100%	1620
RECEPTACLE DEMAND LOAD (R)		50%		100%	
LIGHTING LOAD (L)	1423	100%	1423	125%	1779
ADDITIONAL TRACK LIGHTING LOAD				100%	
MOTORS, HIGHEST LOAD (MH)		125%		100%	
MOTORS, REMAINING LOAD (M)	1920	100%	1920	100%	1920
		TOTAL(KVA):	7.64		
		TOTAL (AMPS):	21	TOTAL (AMPS):	22

NOTES:

NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD

REPLACEMENT/NEW PANELBOARD LP-E

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	L	**REV LIGHTS 121, 122, 123, 127, 172**		20	303	303				20		RECEPT – LOCKER B126, B124, VEST, BRKRM		2
3	L	**REV LIGHTS 110, 111**		20	210		210			20		RECPT – BREAKRM B123 GARBAGE DISPOSER		4
5	L	**REV LIGHTS 113, 114, 116**		20	525			525		20		RECEPT – BREAKROOM B123		6
7	L	**REV LIGHTS 108, 109, 112, 119**		20	280	280				20		RECEPT – BREAKEROOM B123 REFRIG		8
9	L	**REV LIGHTS 101, 102, 103, 104, 105**		20	430		430			20		RECEPT – BRKRM B123,SEC B121,CAPT B120		10
11		RECEPT – LOBBY, LIGHTING FOYER		20						20		RECEPT – CAPT B120		12
13		**NEW SPARE**		20						20		RECEPT – STORAGE B119, RECORDS B114		14
15		LOBBY ADA DOORS		20						20		**NEW SPARE**		16
17	C	**NEW S DAMPER/D DETECTS - DISPATCH**		20	360			540	180	20		**NEW RECEPT - DISPATCH COUNTER**	R	18
19		SPARE		20		800			800	20		**NEW RECEPT - REFRIG - DISPATCH**	R	20
21		SPARE		20			1200		1200	20		**NEW RECEPT - DISPOSER - DISPATCH**	R	22
23		SPARE		20				1200	1200	20		**NEW RECEPT - COFMKR - DISPATCH**	R	24
25		SPARE		20						20		RECEPT – WAITING B112		26
27		SPARE		20						20		DOOR OPERATORS		28
29		SPARE		20						20		DISP. ROOM TV PLUGS		30
31		SNOW MELT CABLE		20						20		DISP. ROOM GEN PLUGS		32
33				20						20		SPARE		34
35		SNOW MELT CABLE		20						20		DISP. ROOM GEN PLUGS		36
37				20						20		SPACE		38
39		SNOW MELT CABLE		20						20		SPACE		40
41				20						20		SNOW MELT CONTROLLER		42
43	R	**NEW RECPTS FURN. - RECORDS 114**		20	360	900			540	20		**NEW RECPTS - RECEPTN DESK AREA**	R	44
45	R	**NEW RECPTS FURN. - RECORDS 114**		20	360		900		540	20		**NEW RECPTS - RECEPTN DESK AREA**	R	46
47	R	**NEW RECPTS FURN. - RECORDS 114**		20	360			1560	1200	20		**NEW SHREDDER RECEPT - RM 114**	M	48
49	M	**NEW CONDEN PUMPS - DISPATCH**		15	240	2040			1800	20		**NEW COPIER RECECPT - RECORDS 114**	M	50
51	NC	**NEW RECEPTACLE - ATM**		20	250		250			20		NEW SPARE		52
53		NEW SPARE		20				720	720	20		**NEW RECEPTS - RECORDS , OFF 116**	R	54
55		NEW SPARE		20		864			864	25		**NEW H-3**	MH	56
57		NEW SPARE		20			864		864				MH	58
59		NEW SPARE		20						20		NEW SPARE		60
61		NEW SPARE		20						20		NEW SPARE		62
63		NEW SPARE		20						20		NEW SPARE		64
65		NEW SPARE		20						20		NEW SPARE		66
67		NEW SPARE		20						20		NEW SPARE		68
69		NEW SPARE		20						20		NEW SPARE		70
71		NEW SPARE		20						20		NEW SPARE		72
73		NEW SPARE		20						20		NEW SPARE		74
75		NEW SPARE		20						20		NEW SPARE		76
77		NEW SPARE		20						20		NEW SPARE		78
79		NEW SPARE		20						20		NEW SPARE		80
81		NEW SPARE		20						20		NEW SPARE		82
83		NEW SPARE		20						20		NEW SPARE		84
						5187	3854	4545						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.: 10,000
MOUNTING: FLUSH

[ ] FEED–THROUGH LUGS
[ ] DOUBLE LUGS
[X] INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING	
CONTINUOUS LOAD (C)	360	100%	360	125%	450
ELECTRIC HEAT (E)		100%		125%	
NON–CONTINUOUS LOAD (NC)	250	100%	250	100%	250
KITCHEN LOAD (K)		100%		100%	
RECEPTACLE BASE LOAD (R)	6260	100%	6260	100%	6260
RECEPTACLE DEMAND LOAD (R)		50%		100%	
LIGHTING LOAD (L)	1748	100%	1748	125%	2185
ADDITIONAL TRACK LIGHTING LOAD				100%	
MOTORS, HIGHEST LOAD (MH)	1728	125%	2160	100%	2160
MOTORS, REMAINING LOAD (M)	3240	100%	3240	100%	3240
		TOTAL(KVA):	14.02		
		TOTAL (AMPS):	39	TOTAL (AMPS):	40

NOTES:
provide integral 100ka spd.
panel requirements to match existing.

NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD

REPLACEMENT/NEW PANELBOARD LP-F

#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØB	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1	L	**REV LIGHTS: 217, 218, 219, 223, 224**		20	464	464				20		RECEPT – OPEN OFFICE B214		2
3	L	**REV LIGHTS: 214, 215, 216**		20	372		372			20		RECEPT – OPEN OFFICE B209, B214		4
5	L	**REV LIGHTS: CORRIDORS 210, 245**		20	255			255		20		RECEPT – OPEN OFFICE B209		6
7	L	**REV LIGHTS: 206, 207, 208**		20	156	156				20		RECEPT – OPEN OFFICE B209		8
9	L	**REV LIGHTS: UNDERCAB IN 209, 213**		20	190		190			20		RECEPT – OPEN OFFICE B209		10
11		RECEPT – MULTIPURPOSE B206		20						20		RECEPT – OPEN OFFICE B209		12
13		RECEPT – MULTIPURPOSE B206		20						20		RECEPT – OPEN OFFICE B209		14
15		RECEPT – MULTIPURPOSE B206		20						20		RECEPT – RECORDS B222		16
17		RECEPT – MULTIPURPOSE – GARBAGE DISP		20						20		RECEPT – OFFICE B223, B225		18
19		RECEPT – MULTIPURPOSE B206		20						20		OPEN OFFICE B214 SYSTEM FURNITURE		20
21	L	**REV LIGHTS: 209**		20	500		1760		1260	20		**NEW RECEPT - OFFICES 217,218**	R	22
23		**NEW OFFICE RECEPTS**		20				720	720	20		**NEW RECEPTS - OPEN OFFICE 223**	R	24
25		**NEW OFFICE RECEPTS**		20		1800			1800	20		**NEW COFFEEMKR RECEPT - BRK RM 225**	K	26
27	MH	**NEW ACU/ACCU-102**		35	2080		2880		800	20	GFCI	**NEW REFRIG RECEPT - BRK RM 225**	K	28
29	MH				2080			3280	1200	20		**NEW DISPOSER RECEPT - BRK RM 225**	K	30
31	M	**NEW ACU/ACCU-103**		35	2080	2280			200	20		SPARE	K	32
33	M				2080		3120		1040	20		**NEW RECEPTS BRK RM 225**	R	34
35	M	**NEW ACU/ACCU-201**		30	1664			2864	1200	20		**NEW SHREDDER RECEPT - WK RM 226**	R	36
37	M				1664	3464			1800	20		**NEW COPIER RECEPT - WK RM 226**	R	38
39	M	**NEW ACU/ACCU-202**		35	2080		2440		360	20		**NEW RECEPTS - WK RM 226**	R	40
41	M				2080			2280	200	20		**NEW SMOKE DAMPER**	NC	42
43	K	**NEW UPRIGHT FRZR BRK RM 225**	GFCI	20	1200	1728			528	20		**NEW CP-10**	M	44
45	L	**NEW LIGHTS: OFFICES 222, 236**		20	250		3162		2912	40		**NEW RANGE RECEPT - BRK RM 225**	K	46
47	L	**NEW LIGHTS: OFFICES 238, 239**		20	250			3162	2912				K	48
49	M	**NEW CENTRAL VACUUM**		20	1150	2590			1440	20		**NEW TEMP OFFICES A & B**	R	50
51	R	**NEW COUNTERTOP RECEPTS - CONF 209**		20	360		1080		720	20		**NEW RECEPTS - ORD OFF 228**	R	52
53		SPARE		20				1600	1600	20		**NEW FURNITURE FEEDTHU - ORD OFF 228**	R	54
55		SPARE		20		1600			1600	20		**NEW FURNITURE FEEDTHU - FILE/WK 216**	R	56
57		SPARE		20						20		SPARE		58
59		SPARE		20						20		SPARE		60
61		SPARE		20						20		SPARE		62
63		SPARE		20						20		SPARE		64
						14082	15004	14161						
						ØA	ØB	ØC						

PANELBOARD INFORMATION
VOLTAGE: 208Y/120
BUS AMPACITY: 225A
MAIN TYPE: MLO
MINIMUM A.I.C.: 10,000
MOUNTING: FLUSH

[ ] FEED–THROUGH LUGS
[ ] DOUBLE LUGS
[X] INTEGRAL SPD

PANELBOARD LOCATION

BRANCH CIRCUIT CONNECTED LOAD		DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OVERCURRENT SIZING	
CONTINUOUS LOAD (C)		100%		125%	
ELECTRIC HEAT (E)		100%		125%	
NON–CONTINUOUS LOAD (NC)	200	100%	200	100%	200
KITCHEN LOAD (K)	11024	65%	7166	100%	7166
RECEPTACLE BASE LOAD (R)	10000	100%	10000	100%	10000
RECEPTACLE DEMAND LOAD (R)	2100	50%	1050	100%	1050
LIGHTING LOAD (L)	2437	100%	2437	125%	3046
ADDITIONAL TRACK LIGHTING LOAD				100%	
MOTORS, HIGHEST LOAD (MH)	4160	125%	5200	100%	5200
MOTORS, REMAINING LOAD (M)	13326	100%	13326	100%	13326
		TOTAL(KVA):	39.38		
		TOTAL (AMPS):	109	TOTAL (AMPS):	111

NOTES:
provide integral 100ka spd.
panel requirements to match existing.

NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD

PANEL SCHEDULE INDEX

(E) LP–C	(E) LP–E	(E) LP–F
(REV) LP–C	(REV) LP–E	(REV) LP–F

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P 586.469.3600

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ISSUED BELOW SPECIFICALLY FOR "BIDDING / CONSTRUCTION"

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PBA Project No.: 2021.0163

KEY PLAN

OWNER
Canton Township
Public Safety

PROJECT NAME
Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.
21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
Bidding / Construction	03/09/2022
Addendum 01	03/18/2022
Proposal Request No.1	06/10/2022
Proposal Request No.2	08/26/2022

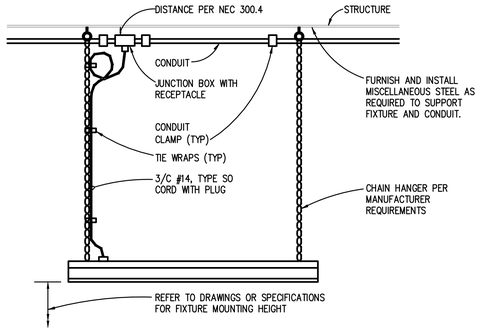
DRAWN BY
SAM

CHECKED BY
EMG

APPROVED BY
EMG

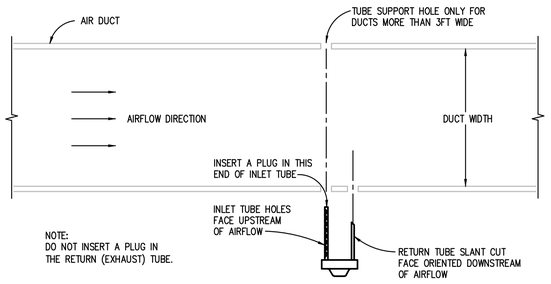
SHEET NAME
PANEL SCHEDULES

SHEET NO.
E6.2



TYPICAL MOUNTING DETAIL FOR CHAIN HUNG LIGHTING FIXTURES

NO SCALE

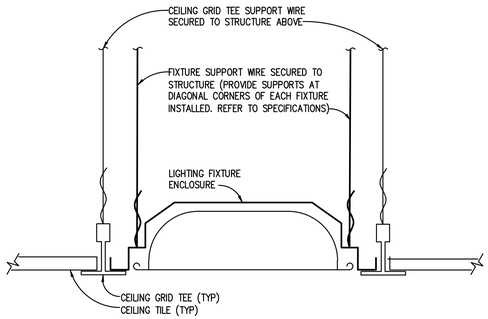


DUCT TYPE DETECTOR INSTALLATION

NO SCALE

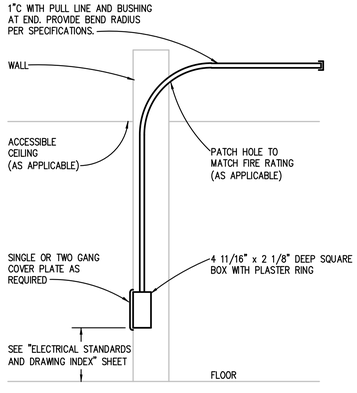
NOTES:

1. PROVIDE SAMPLING TUBE LENGTH AS REQUIRED FOR WIDTH OF DUCT.



RECESSED LIGHTING FIXTURE INSTALLATION DETAIL

NO SCALE

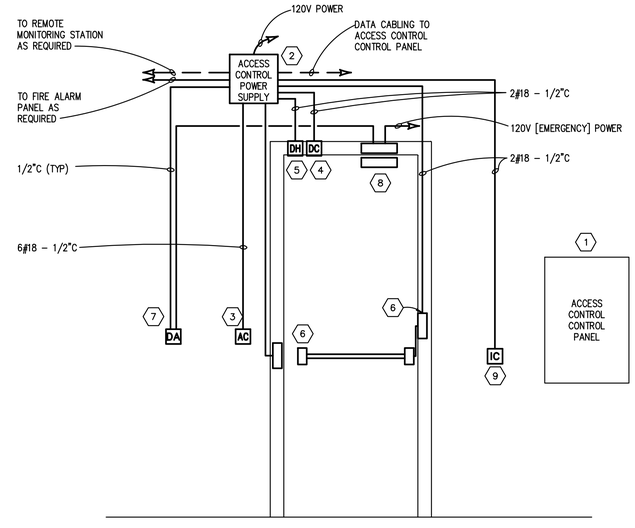


TELECOMMUNICATION OUTLET DETAIL

NO SCALE

NOTES:

1. IF CEILING IN ROOM IS NOT ACCESSIBLE, ROUTE CONDUIT TO NEAREST ACCESSIBLE CEILING IN DIRECTION OF AND WITH PATHWAY OR ACCESS TO TELECOMMUNICATION ROOM.



DOOR HARDWARE SINGLE DOOR CONNECTION DIAGRAM

NO SCALE

GENERAL NOTES:

1. REFER TO ELECTRICAL FLOOR PLANS FOR INDIVIDUAL DOOR REQUIREMENTS AND DEVICE LOCATIONS.
2. PROVIDE BACK BOXES, CONDUIT, WIRING, CABLING, AND TERMINATIONS AS REQUIRED BY MANUFACTURER. ROUTE AND SUPPORT CABLING PER TELECOMMUNICATIONS CABLING REQUIREMENTS. COORDINATE EXACT REQUIREMENTS AND SCOPE OF WORK WITH OWNER AND ACCESS CONTROL CONTRACTOR.
3. WIRE SIZES AND QUANTITIES ARE TYPICAL ONLY. WIRING SHALL BE PER MANUFACTURER'S REQUIREMENTS.
4. SOME DEVICES INDICATED MAY NOT APPLY. REFER TO DOOR HARDWARE AND DOOR SCHEDULE AND COORDINATE ALL WORK WITH HARDWARE CONTRACTOR.
5. ELECTRICAL CONTRACTOR SHALL PROVIDE INTERCONNECTION WITH FIRE ALARM PANEL TO RELEASE DOORS (I.E. ELECTROMAGNETIC LOCKS) UPON AN ALARM CONDITION, AS REQUIRED.

(#) KEYED NOTES:

1. ACCESS CONTROL CONTROL PANEL BY OTHERS. COORDINATE EXACT LOCATION WITH OWNER OR ACCESS CONTROL CONTRACTOR.
2. ACCESS CONTROL POWER SUPPLY. COORDINATE EXACT LOCATION AND QUANTITY WITH OWNER OR ACCESS CONTROL CONTRACTOR.
3. ACCESS CONTROL STATION. QUANTITY AND DEVICE TYPE PER DOOR HARDWARE SCHEDULE. (EXAMPLE DEVICES: CARD READER, KEYPAD, REQUEST TO EXIT PUSH PAD, MOTION DETECTOR, ETC)
4. DOOR MONITOR CONTACT SWITCH.
5. DOOR HOLDER: ELECTROMAGNETIC SWITCH MOUNTED ON/IN DOOR AND FRAME. [FOR DELAYED OPERATION] IN LIEU OF ELECTRIC STRIKE.
6. ELECTRIC STRIKE, PANIC HARDWARE, POWER TRANSFER: PROVIDED BY HARDWARE CONTRACTOR. COORDINATE POWER REQUIREMENTS AND WIRING CONNECTIONS.
7. DOOR OPERATOR ACTUATOR (EXAMPLE DEVICES: PUSH PAD, TOUCHLESS, ETC): PROVIDED BY OTHERS, PROVIDE INTERCONNECTION WIRING AND CONDUIT AS REQUIRED.
8. DOOR OPERATOR: PROVIDED BY HARDWARE CONTRACTOR. COORDINATE POWER REQUIREMENTS WIRING AND CONDUIT AS REQUIRED.
9. INTERCOM STATION: PROVIDE INTERCONNECTION FROM MASTER STATION TO [TWO] REMOTE STATIONS FOR MANUAL RELEASE OF DOOR STRIKE.

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PBA Project No: 2021.0163

KEY PLAN

OWNER

Canton Township Public Safety

PROJECT NAME

Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

SD Issue	9/20/2021
Design Development	10/29/2021
Pricing Set	01/19/2022
95% Review	02/02/2022
QAQC	02/18/2022
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DRAWN BY

SAM

CHECKED BY

EMG

APPROVED BY

EMG

SHEET NAME

ELECTRICAL DETAILS AND DIAGRAMS

SHEET NO.

E7.1

			SYSTEM OUTPUTS																					
			ANNUNCIATION								NOTIFICATION									FIRE SAFETY				
			INITIATE FIRE ALARM SIGNAL	IDENTIFY ALARM AT FACP	IDENTIFY ALARM AT REMOTE ANNUNCIATOR(S)	ANNUNCIATE SUPERVISORY SIGNAL AT FACP	ANNUNCIATE SUPERVISORY SIGNAL AT REMOTE ANNUNCIATOR(S)	ANNUNCIATE TROUBLE SIGNAL AT FACP	ANNUNCIATE TROUBLE SIGNAL AT REMOTE ANNUNCIATOR(S)	ACTUATE ALARM SEQUENCE ON EXISTING FACP	OPERATE ALARM NOTIFICATION APPLIANCES CONTINUOUSLY	ACTIVATE VOICE/ALARM COMMUNICATION SYSTEM	TRANSMIT ALARM SIGNAL TO REMOTE ALARM RECEIVING STATION	TRANSMIT SUPERVISORY SIGNAL TO REMOTE ALARM RECEIVING STATION	TRANSMIT TROUBLE SIGNAL TO REMOTE ALARM RECEIVING STATION	TRANSMIT ALARM SIGNAL TO BUILDING AUTOMATION SYSTEM	TRANSMIT TROUBLE SIGNAL TO BUILDING AUTOMATION SYSTEM	RECORD EVENTS IN THE SYSTEM MEMORY	DISABLE AUTOMATIC DOORS	SHUTDOWN HVAC UNIT SERVING ZONE IN ALARM VIA CONTROL MODULE (INTERLOCK)	SWITCH HVAC EQUIPMENT CONTROLS TO FIRE ALARM MODE	CLOSE SMOKE DAMPERS IN AIR DUCT SYSTEM SERVING ZONE WHERE ALARM WAS INITIATED
SYSTEM INPUTS	INITIATION	MANUAL FIRE BOX OPERATION	●	●	●					●	●	●	●			●							
		SMOKE DETECTOR OPERATION	●	●	●					●	●	●	●			●							
		HEAT DETECTOR OPERATION	●	●	●					●	●	●	●			●							
		DUCT DETECTOR OPERATION	●	●	●					●	●	●	●			●					●	●	●
		AUTOMATIC SPRINKLER SYSTEM WATER FLOW OPERATION	●	●	●					●	●	●	●			●							
	EXTERNAL SYSTEM INPUT	EXISTING FACP FIRE ALARM CONDITION	●	●	●					●	●	●	●			●		●					
		EXISTING FACP TROUBLE CONDITION						●	●						●		●	●					
		FIRE PROTECTION SYSTEM VALVE TAMPER OPERATION				●	●							●				●					
	STATUS	OPEN CIRCUIT, SHORT CIRCUIT, OR GROUND FAULT ON INITIATING DEVICE, SIGNALING LINE, OR NOTIFICATION APPLIANCE CIRCUIT.						●	●						●		●	●					
		OPENING, TAMPERING, OR REMOVAL OF ALARM-INITIATING DEVICES						●	●						●		●	●					
		OPENING, TAMPERING, OR REMOVAL OF SUPERVISORY SIGNAL INITIATING DEVICES						●	●						●		●	●					
		LOSS OF PRIMARY POWER OF FACP						●	●						●		●	●					
		GROUND OR SIGNAL BREAK IN FACP INTERNAL CIRCUITS						●	●						●		●	●					
		STANDBY BATTERY CIRCUITRY BREAK						●	●						●		●	●					
		FAILURE OF BATTERY CHARGING SYSTEM						●	●						●		●	●					

EXISTING FIRE ALARM MATRIX

NO SCALE

NOTES: VERIFY EXISTING CONDITIONS AND REQUIREMENTS FOR FIRE ALARM SYSTEM AND DEVICE IN FIELD. CATEGORIES TAKEN FROM ORIGINAL CONSTRUCTION DOCUMENTS AND ADDITIONS.

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KEY PLAN

OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

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DRAWN BY

SAM

CHECKED BY

EMG

APPROVED BY

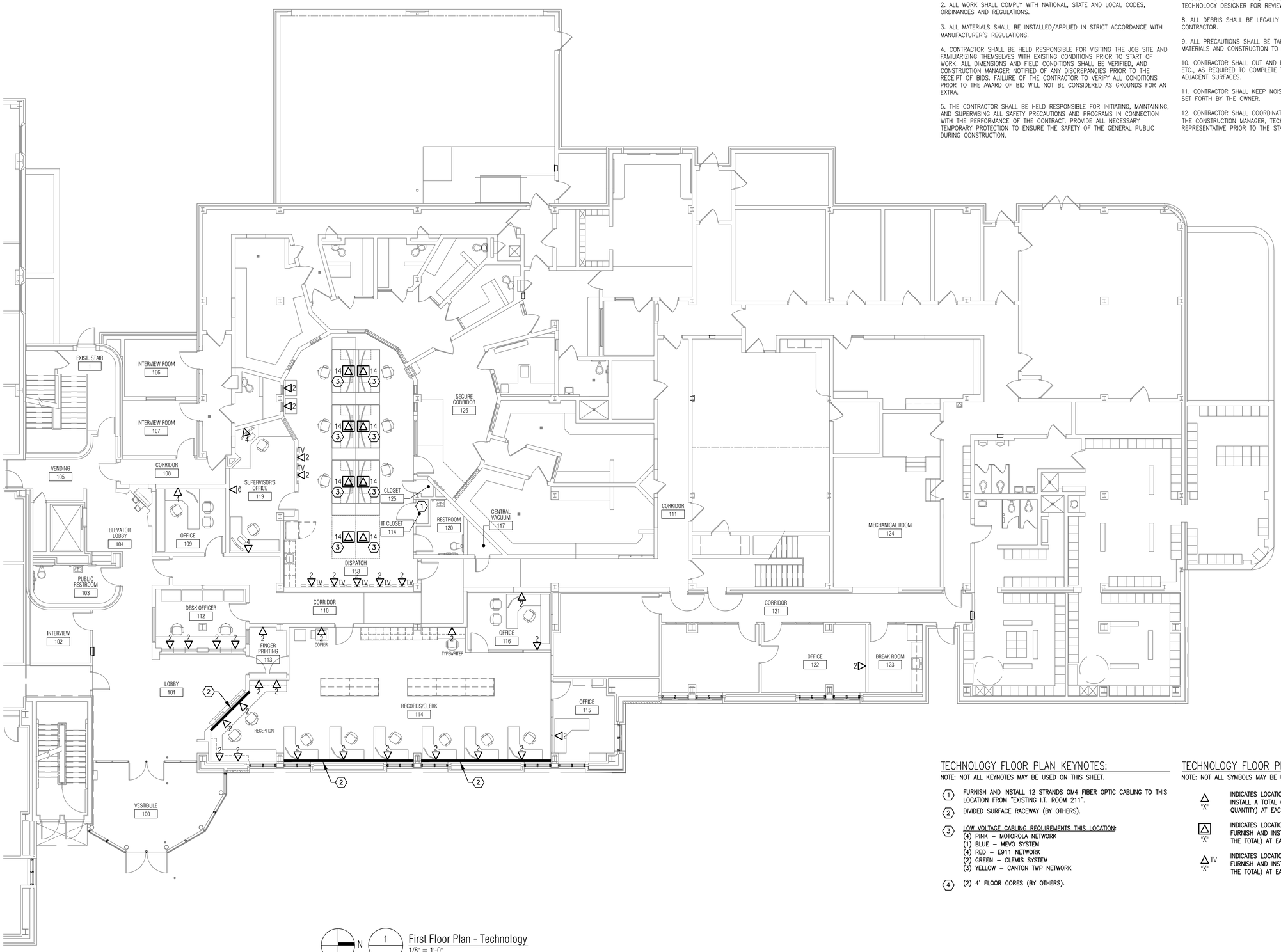
EMG

SHEET NAME

ELECTRICAL DETAILS AND DIAGRAMS

SHEET NO.

E7.2



N

1 First Floor Plan - Technology

1/8" = 1'-0"

GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS AND ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS.

2. ALL WORK SHALL COMPLY WITH NATIONAL, STATE AND LOCAL CODES, ORDINANCES AND REGULATIONS.

3. ALL MATERIALS SHALL BE INSTALLED/APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S REGULATIONS.

4. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR VISITING THE JOB SITE AND FAMILIARIZING THEMSELVES WITH EXISTING CONDITIONS PRIOR TO START OF WORK. ALL DIMENSIONS AND FIELD CONDITIONS SHALL BE VERIFIED, AND CONSTRUCTION MANAGER NOTIFIED OF ANY DISCREPANCIES PRIOR TO THE RECEIPT OF BIDS. FAILURE OF THE CONTRACTOR TO VERIFY ALL CONDITIONS PRIOR TO THE AWARD OF BID WILL NOT BE CONSIDERED AS GROUNDS FOR AN EXTRA.

5. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE PERFORMANCE OF THE CONTRACT. PROVIDE ALL NECESSARY TEMPORARY PROTECTION TO ENSURE THE SAFETY OF THE GENERAL PUBLIC DURING CONSTRUCTION.

6. ALL ITEMS SHALL BE AS SPECIFIED BY TECHNOLOGY DESIGNER.

7. SUBMIT SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES TO THE TECHNOLOGY DESIGNER FOR REVIEW PRIOR TO INSTALLATION/APPLICATION.

8. ALL DEBRIS SHALL BE LEGALLY DISPOSED OF OFF THE SITE BY THE CONTRACTOR.

9. ALL PRECAUTIONS SHALL BE TAKEN TO AVOID DAMAGE TO EXISTING MATERIALS AND CONSTRUCTION TO REMAIN.

10. CONTRACTOR SHALL CUT AND PATCH EXISTING WALLS, FLOORS, CEILINGS, ETC., AS REQUIRED TO COMPLETE THE WORK. PATCH TO MATCH EXISTING ADJACENT SURFACES.

11. CONTRACTOR SHALL KEEP NOISE, DUST, ETC., TO A MINIMUM STANDARD AS SET FORTH BY THE OWNER.

12. CONTRACTOR SHALL COORDINATE INSTALLATION AND PHASING OF WORK WITH THE CONSTRUCTION MANAGER, TECHNOLOGY DESIGNER AND OWNER'S REPRESENTATIVE PRIOR TO THE START OF WORK.

TECHNOLOGY FLOOR PLAN KEYNOTES:

NOTE: NOT ALL KEYNOTES MAY BE USED ON THIS SHEET.

1. FURNISH AND INSTALL 12 STRANDS OM4 FIBER OPTIC CABLING TO THIS LOCATION FROM "EXISTING I.T. ROOM 211".
2. DIVIDED SURFACE RACEWAY (BY OTHERS).
3. LOW VOLTAGE CABLING REQUIREMENTS THIS LOCATION:
   (4) PINK – MOTOROLA NETWORK
   (1) BLUE – MEVO SYSTEM
   (4) RED – E911 NETWORK
   (2) GREEN – CLEMIS SYSTEM
   (3) YELLOW – CANTON TWP NETWORK
4. (2) 4" FLOOR CORES (BY OTHERS).

TECHNOLOGY FLOOR PLAN LEGEND:

NOTE: NOT ALL SYMBOLS MAY BE USED ON THIS SHEET.

- △ "X" — INDICATES LOCATION OF NEW DATA DROP. FURNISH AND INSTALL A TOTAL OF "X" DROPS ("X" BEING THE TOTAL QUANTITY) AT EACH OF THESE LOCATIONS.
- ▣ "X" — INDICATES LOCATION OF NEW DATA DROP IN FLOOR BOX. FURNISH AND INSTALL A TOTAL OF "X" DROPS ("X" BEING THE TOTAL) AT EACH OF THESE LOCATIONS.
- △TV "X" — INDICATES LOCATION OF NEW DATA DROP, MONITOR HEIGHT. FURNISH AND INSTALL A TOTAL OF "X" DROPS ("X" BEING THE TOTAL) AT EACH OF THESE LOCATIONS.

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KEY PLAN

N

Area A City Hall

Area B Public Safety

OWNER

Canton Township Public Safety

PROJECT NAME

Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

DRAWN BY

KJW

CHECKED BY

KJW

APPROVED BY

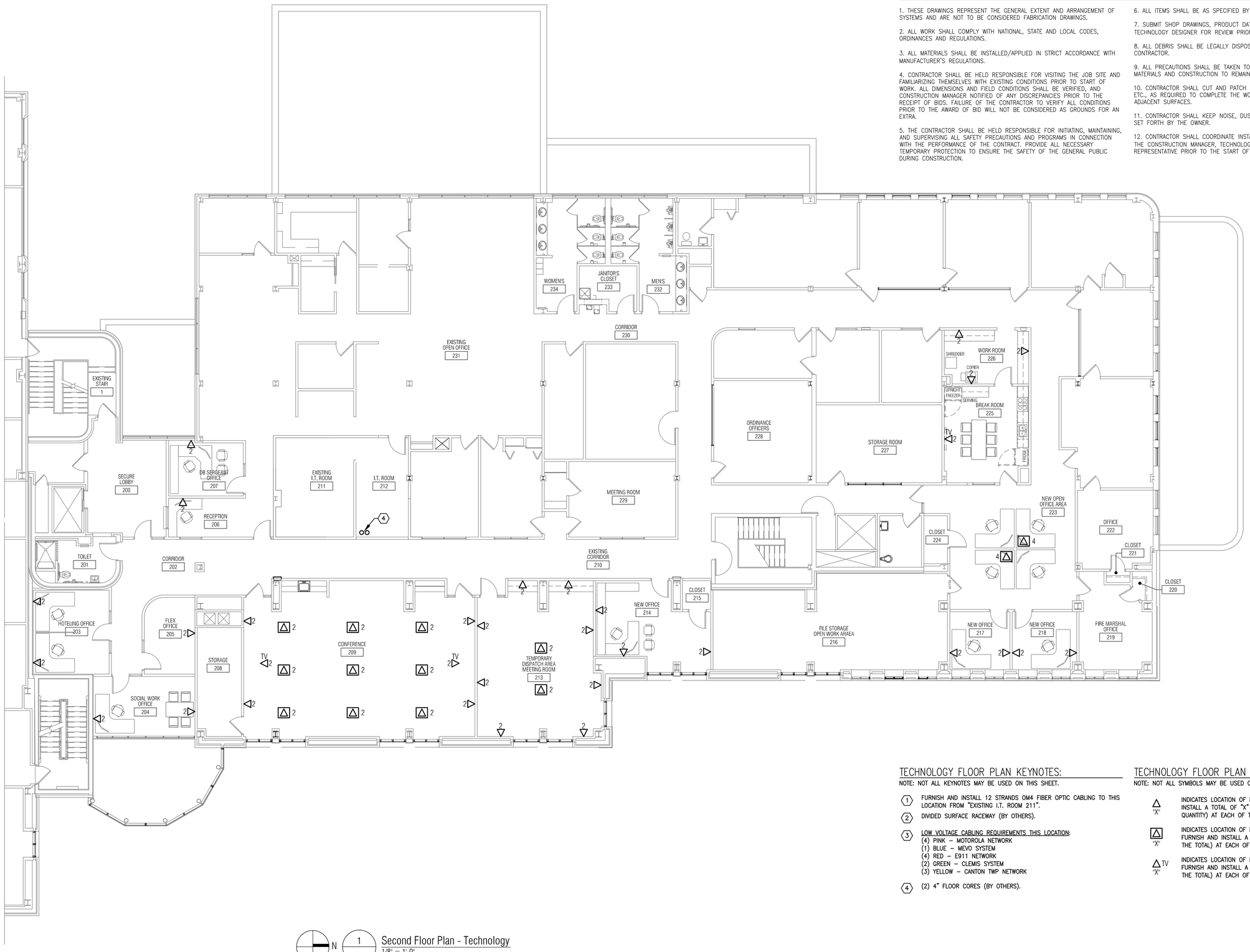
KJW

SHEET NAME

FIRST FLOOR PLAN - TECHNOLOGY

SHEET NO.

T1-01



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4. (2) 4" FLOOR CORES (BY OTHERS).

TECHNOLOGY FLOOR PLAN LEGEND:

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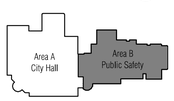
KEY PLAN



OWNER

Canton Township
Public Safety

PROJECT NAME

Public Safety Building
Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

DRAWN BY
KJW

CHECKED BY
KJW

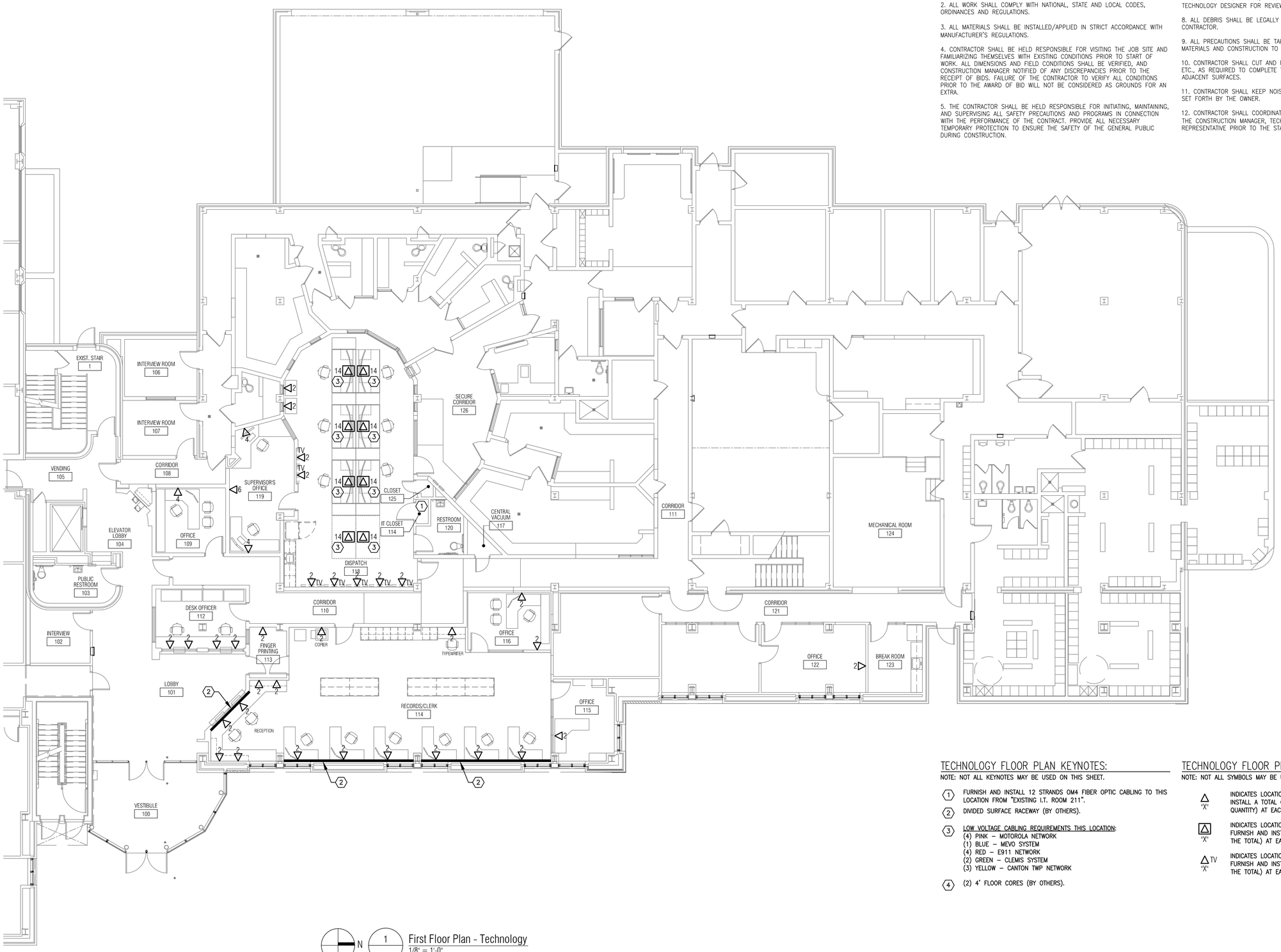
APPROVED BY
KJW

SHEET NAME

SECOND FLOOR PLAN - TECHNOLOGY

SHEET NO.

T1-02



N

1 First Floor Plan - Technology

1/8" = 1'-0"

GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS AND ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS.

2. ALL WORK SHALL COMPLY WITH NATIONAL, STATE AND LOCAL CODES, ORDINANCES AND REGULATIONS.

3. ALL MATERIALS SHALL BE INSTALLED/APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S REGULATIONS.

4. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR VISITING THE JOB SITE AND FAMILIARIZING THEMSELVES WITH EXISTING CONDITIONS PRIOR TO START OF WORK. ALL DIMENSIONS AND FIELD CONDITIONS SHALL BE VERIFIED, AND CONSTRUCTION MANAGER NOTIFIED OF ANY DISCREPANCIES PRIOR TO THE RECEIPT OF BIDS. FAILURE OF THE CONTRACTOR TO VERIFY ALL CONDITIONS PRIOR TO THE AWARD OF BID WILL NOT BE CONSIDERED AS GROUNDS FOR AN EXTRA.

5. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE PERFORMANCE OF THE CONTRACT. PROVIDE ALL NECESSARY TEMPORARY PROTECTION TO ENSURE THE SAFETY OF THE GENERAL PUBLIC DURING CONSTRUCTION.

6. ALL ITEMS SHALL BE AS SPECIFIED BY TECHNOLOGY DESIGNER.

7. SUBMIT SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES TO THE TECHNOLOGY DESIGNER FOR REVIEW PRIOR TO INSTALLATION/APPLICATION.

8. ALL DEBRIS SHALL BE LEGALLY DISPOSED OF OFF THE SITE BY THE CONTRACTOR.

9. ALL PRECAUTIONS SHALL BE TAKEN TO AVOID DAMAGE TO EXISTING MATERIALS AND CONSTRUCTION TO REMAIN.

10. CONTRACTOR SHALL CUT AND PATCH EXISTING WALLS, FLOORS, CEILINGS, ETC., AS REQUIRED TO COMPLETE THE WORK. PATCH TO MATCH EXISTING ADJACENT SURFACES.

11. CONTRACTOR SHALL KEEP NOISE, DUST, ETC., TO A MINIMUM STANDARD AS SET FORTH BY THE OWNER.

12. CONTRACTOR SHALL COORDINATE INSTALLATION AND PHASING OF WORK WITH THE CONSTRUCTION MANAGER, TECHNOLOGY DESIGNER AND OWNER'S REPRESENTATIVE PRIOR TO THE START OF WORK.

TECHNOLOGY FLOOR PLAN KEYNOTES:

NOTE: NOT ALL KEYNOTES MAY BE USED ON THIS SHEET.

1. FURNISH AND INSTALL 12 STRANDS OM4 FIBER OPTIC CABLING TO THIS LOCATION FROM "EXISTING I.T. ROOM 211".
2. DIVIDED SURFACE RACEWAY (BY OTHERS).
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KEY PLAN

N

Area A City Hall

Area B Public Safety

OWNER

Canton Township Public Safety

PROJECT NAME

Public Safety Building Interior Renovations

1150 S. Canton Center Road
Canton, MI 48188

PROJECT NO.

21-130

ISSUES / REVISIONS

DRAWN BY

KJW

CHECKED BY

KJW

APPROVED BY

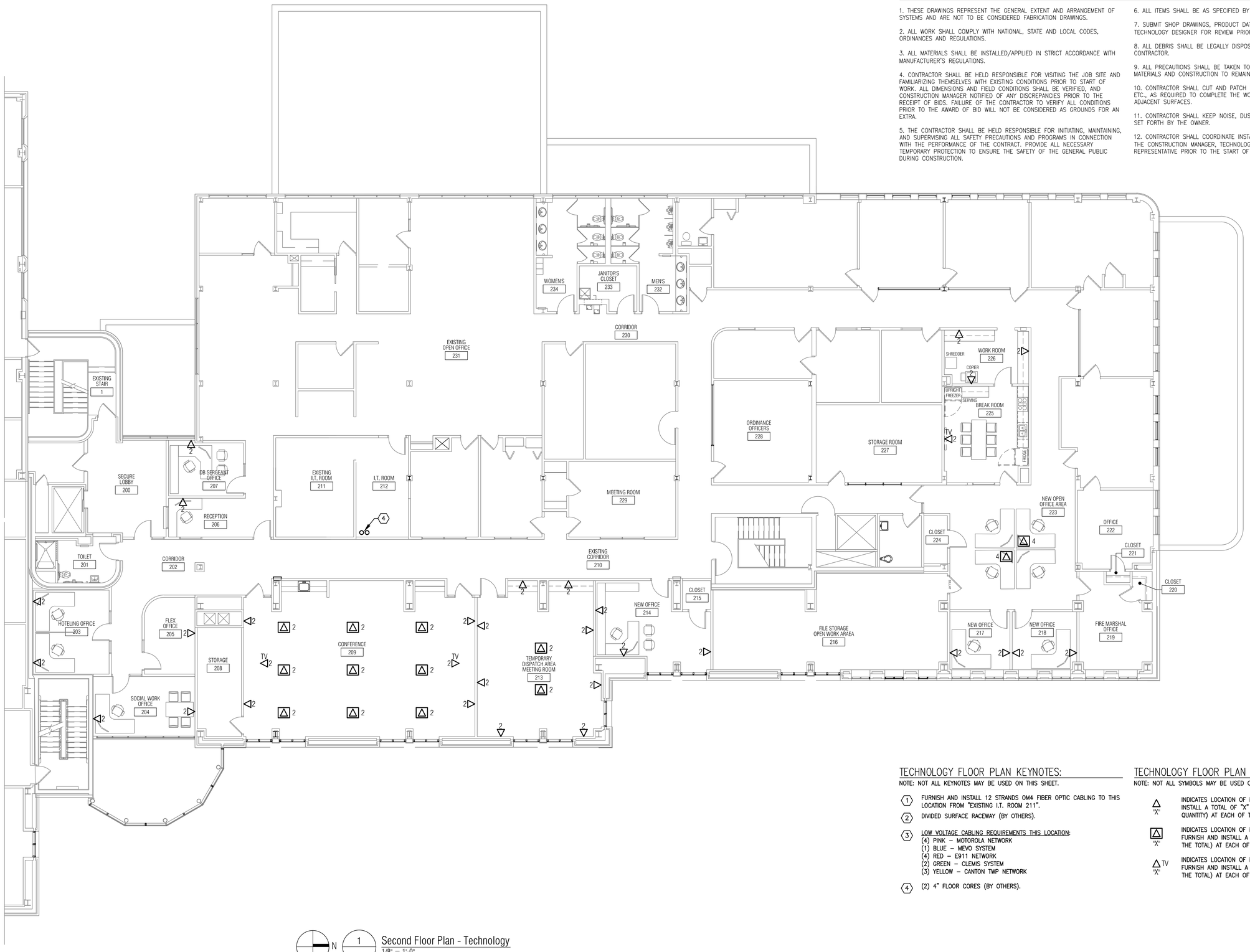
KJW

SHEET NAME

FIRST FLOOR PLAN - TECHNOLOGY

SHEET NO.

T1-01



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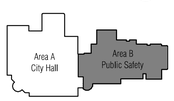

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SECOND FLOOR PLAN - TECHNOLOGY

SHEET NO.

T1-02