TOPEKA METRO

REQUEST FOR BIDS
QSS South Office Remodel
TO-23-10

Appendix III
Drawings & Specifications

TMTA - QUINCY STREET STATION

SOUTH OFFICE REMODEL

820 SE QUINCY STREET
TOPEKA, KANSAS 66612

CLIENT

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Quincy Street Station
SOUTH OFFICE REMODEL
Topeka Metropolitan Transit Authority
820 SE QUINCY STREET TOPEKA, KS. 66612

PROJECT NUMBER: 22004

#	ISSUE/REVISION	DATE

SHEET TITLE

G001

CONTRACT DOCUMENTS
9-30-2022

DIVISION 1 - GENERAL REQUIREMENTS

1. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION - AIA A201" FORMS PART OF THIS CONTRACT AS IF HEREIN BOUND.
2. THE GENERAL CONTRACTOR TO VERIFY THE LOCATIONS OF ALL UTILITIES PRIOR TO ANY DEMOLITION OR CONSTRUCTION AND VERIFY HOOKUP WITH ALL UTILITY COMPANIES AS REQUIRED.
3. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING OF SYSTEMS OR STRUCTURES AS REQUIRED BY CODE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. GENERAL CONTRACTOR TO BE RESPONSIBLE FOR DAILY CLEANUP OF SPACE AND FINAL CLEANUP WHEN PROJECT IS COMPLETE.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SEALANTS

1. CASINGS, AND HOLLOW METAL TO DRYWALL AND DRYWALL - URETHANE SEALANT: ONE-PART SEALANT COMPLYING WITH ASTM C920; TYPE S, GRADE NS, CLASS 25
2. JOINTS AND SPACES TO BE CAULKED SHALL BE CLEAN, DRY AND FREE OF DUST, LOOSE MORTAR OR OTHER FOREIGN MATERIALS. AFTER JOINTS HAVE BEEN FILLED, THEY SHALL BE NEATLY TOOLED TO ELIMINATE AIR POCKETS OR VOIDS AND TO PROVIDE A SMOOTH, NEAT APPEARING SURFACE.

DIVISION 8 - DOORS

HOLLOW METAL FRAMES/STEEL FRAMES

1. FRAMES SHALL BE 18 GAUGE STEEL.
2. FABRICATE HOLLOW METAL UNITS TO BE RIGID, NEAT IN APPEARANCE, AND FREE FROM DEFECTS, WARP OR BUCKLE.
3. PREPARE STEEL FRAMES TO RECEIVE MORTISED AND CONCEALED FINISH HARDWARE, INCLUDING CUTOUTS, REINFORCING, DRILLING AND TAPPING, COMPLYING WITH ANSI A115 "SPECIFICATIONS FOR DOOR AND FRAME PREPARATION FOR HARDWARE".
4. SHOP PAINT EXPOSED SURFACES OF HOLLOW METAL UNITS USING MANUFACTURER'S STANDARD BAKED ON RUST INHIBITIVE PRIMER.
5. FOR FIRE-RATED ASSEMBLIES PROVIDE UNITS THAT DISPLAY APPROPRIATE UL LABELS FOR FIRE RATING INDICATED AND OR REQUIRED.

WOOD DOORS

1. PROVIDE FLUSH WOOD RED OAK VENEER SOLID CORE DOORS TO MATCH EXISTING, GRAHAM WOOD DOORS OR ARCHITECT APPROVED EQUAL.
2. STAIN WOOD DOORS TO MATCH EXISTING.

FINISH HARDWARE

1. PROVIDE FINISH HARDWARE FOR ALL DOORS IN PROJECT. ALL HARDWARE SHOULD MATCH BUILDING STANDARD & FINISH. THE CONTRACTOR SHALL VERIFY ALL KEYING REQUIREMENTS WITH OWNER PRIOR TO INSTALLATION.
2. NEW LOCKS SHALL BE MASTER KEYED INTO OWNER'S EXISTING SYSTEM.
3. THE FOLLOWING HARDWARE SPECIFICATIONS SHALL BE USED AS A BASIS FOR BIDDING. VERIFY SPECIFIC HARDWARE REQUIREMENTS WITH BUILDING STANDARD:

   3.1. DOORS 145 & 146: (4' x 7' x 1.75") 20 MINUTE FIRE RATED S.C. WD.

CLOSER	LCN 4040XP SURFACE MOUNTED
LOCKSET	SCHLAGE ND75 HD RHO 26D
CYCLINDER	MATCH EXISTING
HINGES (3)	IVES 5BB1HW 4.5x4.5 652
GASKETING	NATIONAL GUARD 2525C
VISION PANEL	6"X30" TGP-FIRELITE ¼" GLASS W/ 1" METAL FRAME (DOOR 145 ONLY)

DIVISION 9 - FINISHES

1. PROVIDE 5/8" TYPE 'X' GYPSUM BOARD ALL LOCATIONS.
2. GYPSUM WALL BOARD AS MANUFACTURED BY U.S. GYPSUM OR EQUAL. ⅝" THICK TYPICAL AT ALL AREAS UNLESS OTHERWISE NOTED. "FIRE CODE" SHALL BE USED AS NOTED PER CONTRACT DRAWINGS. METAL EDGING SHALL BE USED AT ALL CORNERS AND TRANSITIONS. CONTROL JOINTS SHALL BE INSTALLED IN WALLS EXCEEDING 30'-0" IN LENGTH. WALL BOARD TO MEET ASTM 36.
3. WALL BOARD FINISH SHALL CONSIST OF THREE APPLICATIONS: JOINT COMPOUND OVER TAPE, SANDING THE FINAL TWO COATS SMOOTH.
4. MATERIALS SHALL MEET THE FOLLOWING STANDARDS:
   - 4.1. GYPSUM WALLBOARD - ASTM C36
   - 4.2. SCREWS - ASTM CERTIFIED
   - 4.3. METAL ACCESSORIES - ASA A97.1
   - 4.4. WATER RESISTANT GYPSUM BACKING BOARD - ASTM C 630
5. USE GYPSUM BOARD FASTENERS THAT ARE RECOMMENDED BY GYPSUM BOARD MANUFACTURER.
6. FURNISH AND INSTALL ALL METAL TRIM ACCESSORIES, ADHESIVES, AND JOINT TREATMENTS PER MANUFACTURER'S RECOMMENDATIONS.
7. METAL STUDS TO BE 3 5/8" 25 GAUGE AT 16" O.C. UNLESS NOTED OTHERWISE. PROVIDE DOUBLE 20 GAUGE STUD AT EACH SIDE OF ALL DOOR JAMBS EXTENDING TO OR BRACED TO STRUCTURE ABOVE.

FLOOR COVERING

1. BASE SHALL BE 4" HIGH RUBBER, COVE TYPE WITH TOE, AS MANUFACTURED BY ROPPE OR APPROVED EQUAL. ADHESIVE SHALL BE IN ACCORDANCE WITH BASE MANUFACTURER'S RECOMMENDATIONS.
2. FLOOR COVERINGS, LVT & CARPET TILE, TO BE INSTALLED PER MANUFACTURE'S INSTRUCTIONS AND SPECIFICATIONS.

PAINTING

1. HOLLOW METAL FRAMES AND EXPOSED EXTERIOR METAL SHALL RECEIVE ONE COAT OF PRIMER FINISH AND TWO COATS OF SATIN FINISH ENAMEL.
2. ALL INTERIOR DRYWALL SHALL BE TAPED AND SANDED, WITH ONE COAT SEALER/PRIMER AND TWO COATS LATEX PAINT.
3. COLORS TO MATCH EXISTING. SURFACES SHALL BE CLEAN AND DRY PRIOR TO PAINTING. PROTECT ADJOINING SURFACES NOT TO BE PAINTED FROM PAINTING OPERATION. PAINT ALL EDGES OF DOORS AND IN GENERAL FOLLOW THE BEST APPLICATION PROCEDURES OF THE TRADE.
4. PAINTING SHALL BE FREE OF RUNS, DRIPS, SAGS, BRUSH MARKS AND COLOR VARIANCES.

DIVISION 22 - PLUMBING SYSTEMS

SEE PLUMBING DRAWINGS

DIVISION 23 - MECHANICAL SYSTEMS

SEE MECHANICAL DRAWINGS

DIVISION 26 - ELECTRICAL SYSTEMS

SEE ELECTRICAL DRAWINGS

SPECIFICATIONS D10

1. ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH FEDERAL AND STATE LAWS, CURRENT LOCAL ORDINANCES AND ADOPTED BUILDING CODES, AND THE AMERICANS WITH DISABILITIES ACT (ADA). REFER TO CODE SUMMARY FOR SPECIFIC APPLICABLE LAWS, ORDINANCES, AND CODES. REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL PERMITS AND PAY ALL FEES AS NECESSARY FOR THE CONSTRUCTION COVERED IN THE PROJECT.
3. ALL ESTIMATES OF QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ALL QUANTITIES AND SHALL PROVIDE ALL WORK AND MATERIALS AS SHOWN ON PLANS AND SPECIFIED IN THE SPECIFICATIONS.
4. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES.
5. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS, AND SEQUENCE OF CONSTRUCTION AND THE SAFETY OF ALL CONSTRUCTION PERSONNEL AND VISITORS.
6. DO NOT SCALE DRAWINGS; FOLLOW WRITTEN DIMENSIONS AND NOTES. CONTACT ARCHITECT FOR CLARIFICATIONS IF REQUIRED.
7. "TYPICAL" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITIONS OR DIMENSIONS ARE REPRESENTATIVE OR THE SAME FOR SIMILAR CONDITIONS THROUGHOUT.
8. ON COMPLETION OF THE PROJECT, CONTRACTOR SHALL CLEAN ALL SURFACES AND LEAVE THE WORK IN CLEAN CONDITION. THE CONTRACTOR AT ALL TIMES SHALL KEEP PREMISES FREE FROM WASTE MATERIALS AND RUBBISH CAUSED BY THE WORK.
9. WHENEVER CONTRACT DOCUMENTS REASONABLY INFER MATERIALS OR INSTALLATION AS NECESSARY TO PRODUCE THE INTENDED RESULTS, BUT DO NOT FULLY DETAIL OR SPECIFY SUCH MATERIALS, THE CONTRACTOR SHALL PROVIDE THE MATERIALS AND LABOR REQUIRED FOR INSTALLATION.
10. THE SPECIFICATIONS HAVE BEEN PARTIALLY "STREAMLINED" AND SOME WORDS AND PHRASES HAVE BEEN INTENTIONALLY OMITTED. MISSING PORTIONS SHALL BE SUPPLIED BY INFERENCE AS WITH NOTES ON DRAWINGS.
11. WORDS LIKE "INSTALL," "PROVIDE," "LOCATE," "FURNISH," AND "SUPPLY" SHALL BE CONSTRUED TO INCLUDE COMPLETE FURNISHINGS AND INSTALLING OR CONSTRUCTION BY THE CONTRACTOR.
12. ALL MANUFACTURER AND PRODUCT REFERENCES ARE BASIS-OF-DESIGN ONLY. ITEMS CAPABLE OF EQUAL PERFORMANCE, BUT PROVIDED BY AN ALTERNATE MANUFACTURER, WILL BE ACCEPTABLE.
13. ALL EXISTING CONDITIONS, DIMENSIONS, AND MATERIALS OF CONSTRUCTION ARE TO BE VERIFIED IN THE FIELD PRIOR TO ANY DEMOLITION WORK OR ANY NEW CONSTRUCTION.

GENERAL NOTES A10

ACOUST.	ACOUSTICAL
A.F.F.	ABOVE FINISHED FLOOR
ALT.	ALTERNATE
ALUM.	ALUMINUM
ARCH.	ARCHITECTURAL
BLDG.	BUILDING
BLKG.	BLOCKING
B.O.	BOTTOM OF OPENING
BRG.	BEARING
BOD	BASIS OF DESIGN
℄	CENTERLINE
C.J.	CONTROL JOINT
C.M.U.	CONCRETE MASONRY UNIT
CONC.	CONCRETE
CONT.	CONTINUOUS
CR RK.	CRUSHED ROCK
CWP	CUSTOM WOOD PRODUCTS
DIA.	DIAMETER
DR.	DOOR
DWG.	DRAWING
D.S.	DOWNSPOUT
DTL.	DETAIL
EIFS	EXTERIOR INSULATION FINISH SYSTEM
E.J.	EXPANSION JOINT
ELECT.	ELECTRICAL
ELEV.	ELEVATION
ELVR	ELEVATOR
EPS	EXPANDED POLYSTYRENE
ELE.	EQUAL
EXG.	EXISTING
EXT.	EXTERIOR
F.O.I.C.	FURNISHED BY OWNER, INSTALLED BY CONTRACTOR
F.B.O.	FURNISHED BY OTHERS
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
F.V.	FIELD VERIFY
EXTG.	FLOOR
FND.	FOUNDATION
FRP	FIBER REINFORCED PLASTIC
FRTW	FIRE-RESISTANT TREATED WOOD
FTG.	FOOTING
G.A.	GAUGE
G.B.	GRAB BAR
GALV.	GALVANIZED
GL	GRID LINE
GYP. BD.	GYPSUM BOARD
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
HT.	HEIGHT
I.B.C.	INTERNATIONAL BUILDING CODE
INSUL.	INSULATION
INTR.	INTERIOR
JST.	JOIST
JT.	JOINT
MANUF.	MANUFACTURER
MB.	MARKER BOARD
MAS.	MASONRY
M.O.	MASONRY OPENING
MAX.	MAXIMUM
MECH.	MECHANICAL
MEDS.	MEDICINE
MEPS.	MOLDED EXPANDED POLYSTYRENE
MISC.	MISCELLANEOUS
MIN.	MINIMUM
M.R.	MOISTURE RESISTANT
MTL.	METAL
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OCC.	OCCUPANCY
OPCI	OWNER PROVIDED, CONTRACTOR INSTALLED.
OPOI	OWNER PROVIDED, OWNER INSTALLED.
PL	PROPERTY LINE
PLAM	PLASTIC LAMINATE
PRE-FIN	PRE-FINISHED
RCP	REFLECTED CEILING PLAN
REF:	REFER TO/REFERENCE
REQ'D	REQUIRED
SF.	SQUARE FOOT
SQ FT	SQUARE FOOT
STL.	STEEL
STRUCT.	STRUCTURAL
SUSP.	SUSPENDED
TB.	TACK BOARD
T.O.	TOP OF
T.P.	TOILET PAPER
T.S.	TUBE STEEL
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
WRB	WEATHER RESISTANT BARRIER
WWF	WIRE WELDED FABRIC
XPS.	EXTRUDED POLYSTYRENE

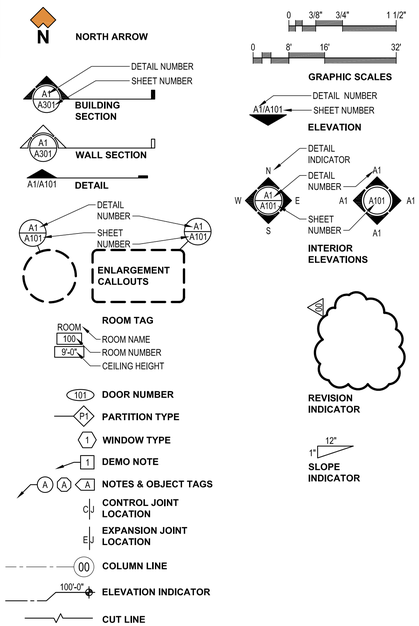
ABBREVIATIONS A7

CODE: CITY OF TOPEKA
- 2015 IBC
- 2017 NEC
- 2015 UMC
- 2015 IFC
- 2010 ADA
- 2015 LIFE SAFETY CODE

PROJECT:
- EXISTING BUS TRANSFER STATION, NO CHANGE IN USE, OCCUPANCY, OR BUILDING AREA.
- EXISTING SOUTH OFFICE AREA WITH ADDED CORRIDOR
- SOUTH OFFICE AREA PROVIDED WITH 1 EXITS PER IBC 1006.2.2.1

IMPERVIOUS AREA:
NO CHANGE IN BUILDING, PAVING OR IMPERVIOUS AREA.

CODE INFO. F4



SYMBOL LEGEND A4

SHEET INDEX

GENERAL	
G-001	COVER SHEET & SPECIFICATIONS
ARCHITECTURAL	
D001	DEMOLITION PLANS
A-101	PLANS & SECTION
MECHANICAL/ELECTRICAL/PLUMBING	
ME100	MECHANICAL / ELECTRICAL SYMBOLS & SPECIFICATIONS
M100	MECHANICAL - HVAC PLAN
E100	ELECTRICAL - POWER PLAN
E20	ELECTRICAL - LIGHTING PLAN

SHEET INDEX A1

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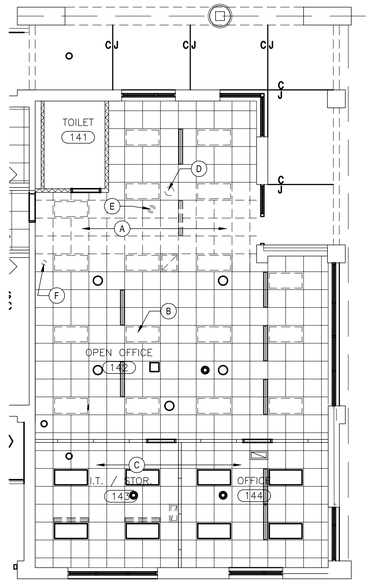

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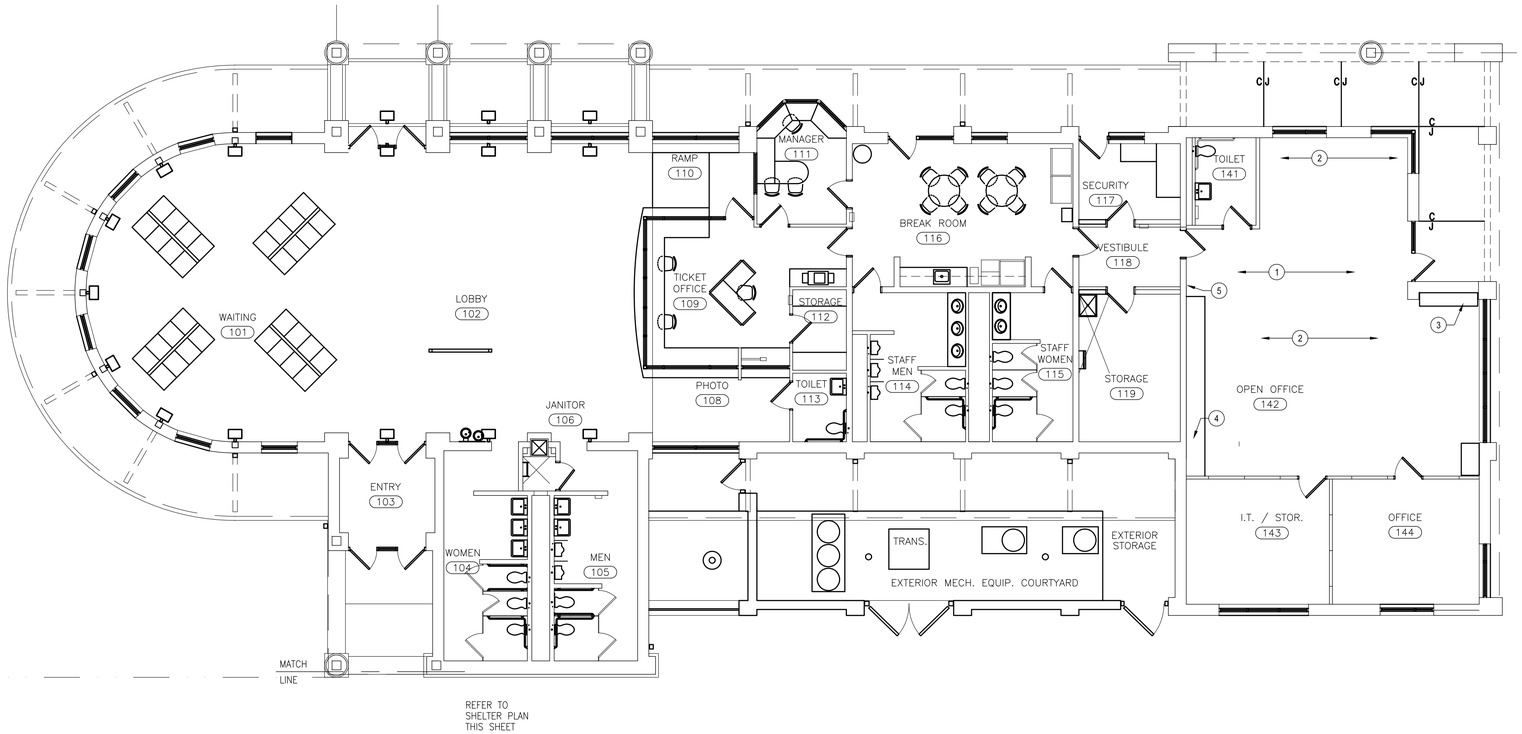
DEMO CEILING PLAN G3

1/8"=1'-0"

CEILING - KEY NOTES:

- (A) REMOVE & SALVAGE SUSP. 2X2 ACOUSTIC PNL CLG & MTL GRID AT NEW CORRIDOR, REF SHT A101.
- (B) REMOVE 2X4 LAY-IN LIGHT FIXTURE IN RM 142. REF ELEC DWGS.
- (C) EXG LIGHT FIXT & CLG TO REMAIN IN RMS 143 & 144.
- (D) REMOVE & SALVAGE SPEAKER TO OWNER.
- (E) REMOVE & SALVAGE SMOKE DETECTOR.
- (F) EXG CAMERA. OWNER TO RELOCATE.



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DEMOLITION PLAN A3

1/8"=1'-0"

PLAN & ELEVATIONS - KEY NOTES:

1. REMOVE CARPET TILE AT NEW CORRIDOR
2. ALT #1. - REMOVE ALL CARPET TILES AT ROOM 142.
3. ALT. #1 - REMOVE & RE-INSTALL CABINETS AS REQUIRED TO REMOVE CARPET TILE FLOORING.
4. ALT. #1 - REMOVE CARPET TILE BELOW REFRIGERATOR.
5. REMOVE & SALVAGE FIRE EXTINGUISHER / CABINET FOR REUSE.

NOTES A1

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D101

CONTRACT DOCUMENTS
9-30-2022

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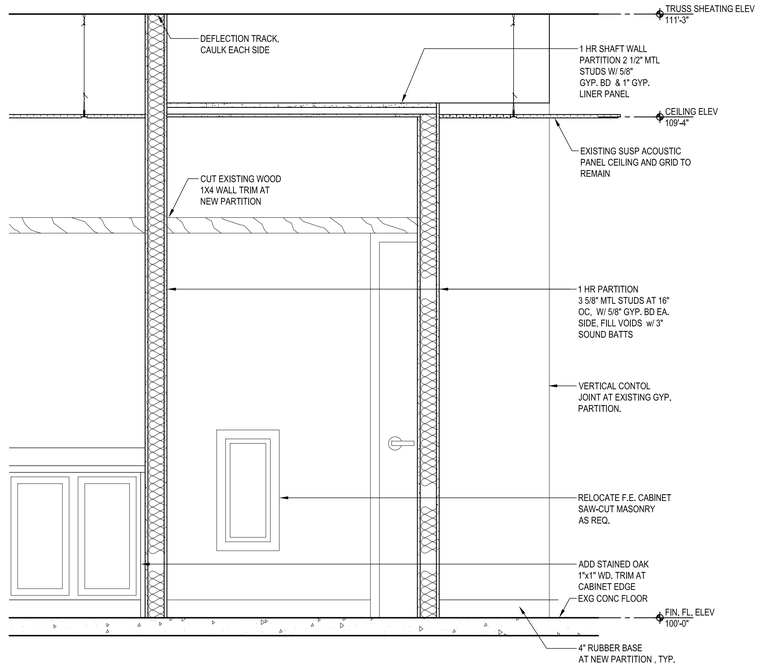
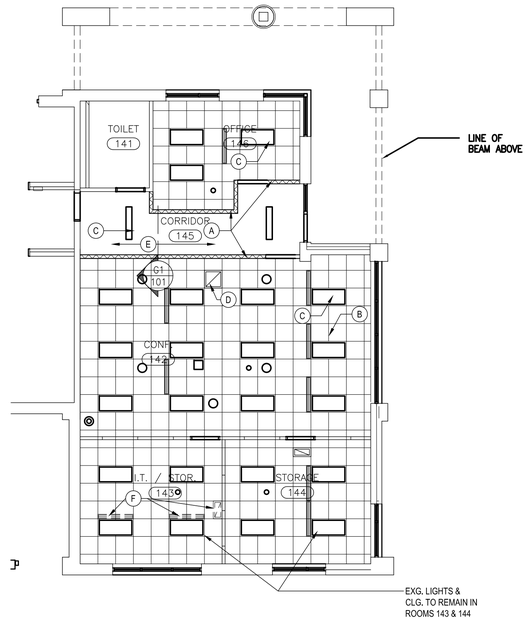
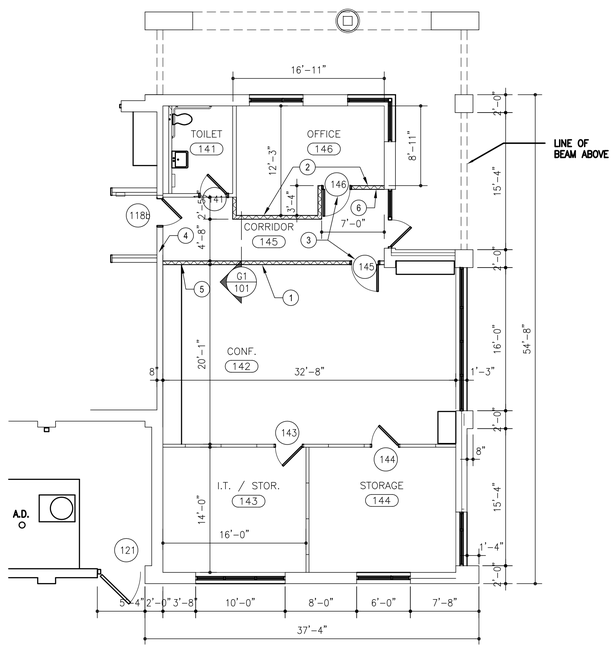


CORRIDOR SECTION G1
3/4" = 1'-0"



REFLECTED CEILING PLAN G7
1/8"=1'-0"



FLOOR PLAN A7
1/8"=1'-0"

CEILING - KEY NOTES:

- (A) CUT EXISTING SUSPENDED CEILING PANELS & GRID, AT NEW CORRIDOR PARTITIONS, TYP.
- (B) INSTALL SALVAGED CEILING PANELS & GRID AT RELOCATED LIGHT FIXTURES.
- (C) NEW LIGHT FIXTURES, REF. ELEC. DWGS.
- (D) INSTALL SALAVAGED RETURNCEILING GRILLE.
- (E) CONT. GYP. SHAFT WALL CEILING AT CORRIDOR, 2 1/2" STUDS AT 9'-4" A.F.F., - PAINT.
- (F) PATCH SUSP. CEILING PANELS & GRID AT REMOVED HVAC GRILLES & DIFFUSERS., REF. MECH DRAWINGS.

ROOM FINISHES:

WALLS:
PAINT, AT NEW PARTITIONS, MATCH EXISTING.

BASE:
4" RUBBER COVE BASE, EACH SIDE OF NEW PARTITIONS, MATCH EXISTING

FLOOR:
Corridor 145,
LVT: SHAW CONTRACT, UNITE 9X48
STYLE: COVE
COLOR: SILT 27504
INSTALL: 1/3 OFF-SET RUNNING BOND

Alternate No.1 - Flooring
Office 146 & Conference 142.
CARPET TILE: SHAW CONTRACT, SET UP 12X48
STYLE: DISCUSSION 5T395
COLOR: PREPARE 94515

PLAN & ELEVATIONS - KEY NOTES:

1. NEW 1-HR FIRE RATED GYPSUM BOARD PARTITION W/ 3 5/8" METAL STUDS AT 16" O.C., & 5/8" TYPE-X GYP. EACH SIDE. FILL VOID W/ 3" SOUND BATTS, AND PAINT BOTH SIDES.
2. 9'-4" HIGH GYP. BD. PARTITION, SAME AS KEYNOTE #1.
3. NEW 3'-0" x 7'-0" x 1 3/4" SOLID CORE RED OAK VENEER WOOD DOOR, 20 MINUTE FIRE RATED IN A 2" x 6" HOLLOW METAL 18 GAUGE STEEL FRAME, PAINT FRAME & STAIN DOOR TO MATCH EXISTING.
4. INSTALL SALVAGED FIRE EXTINGUISHER CABINET IN EXISTING FURRED CMU WALL, SAW-CUT CMU AS REQUIRED / APPROX. 3" DEEP TO ACCOMMODATE CABINET DEPTH.
5. SECURE EXISTING CABINET DOOR AT END OF CABINET, REMOVE HANDEL & PROVIDE WOOD TRIM AS NEED TO FLUSH CABINET END WITH THE NEW PARTITION.
6. INSTALL SALVAGED BUILDING SECURITY ALARM PANEL IN NEW PARTITION.

NOTES A1
NTS

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A101
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15000 - MECHANICAL SPECIFICATIONS

SECTION 15000 – MECHANICAL REQUIREMENTS

1. GENERAL REQUIREMENTS

A. ALL WORK SHALL BE IN ACCORDANCE W/ LATEST EDITION OF INTERNATIONAL BUILDING, MECHANICAL & PLUMBING CODES, CODES AS ADOPTED BY CITY, COUNTY, STATE & ALL OTHER APPLICABLE CODES.
B. FURNISH & INSTALL ALL LABOR & MATERIALS REQUIRED FOR COMPLETE, FUNCTIONING, MECHANICAL & PLUMBING SYSTEMS W/ ALL ASSOCIATED EQUIPMENT & APPARATUS AS SHOWN ON PLANS. "PROVIDE" MEANS TO FURNISH & INSTALL.
C. OBTAIN & PAY FOR ALL PERMITS REQUIRED FOR EXECUTION OF THIS WORK & SHALL MAKE ARRANGEMENTS FOR MODIFICATIONS TO WATER, GAS & SEWER CONNECTIONS TO BUILDING AS REQUIRED.
D. VISIT SITE & OBSERVE CONDITIONS UNDER WHICH WORK WILL BE DONE. ANY DISCREPANCIES SHALL BE CALLED TO ARCHITECT'S ATTENTION. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN CONTRACT FOR ANY ERROR OR NEGLIGENCE ON CONTRACTOR'S PART.
E. FINAL ACCEPTANCE OF WORK SHALL BE SUBJECT TO CONDITION THAT ALL SYSTEMS, EQUIPMENT, APPARATUS & APPLIANCES OPERATE SATISFACTORILY AS DESIGNED & INTENDED. WORK SHALL INCLUDE REQUIRED ADJUSTMENT OF SYSTEMS & CONTROL EQUIPMENT INSTALLED UNDER THESE SPECIFICATIONS.
F. WARRANT TO OWNER QUALITY OF MATERIAL, EQUIPMENT, WORKMANSHIP & OPERATION OF EQUIPMENT PROVIDED UNDER THESE SPECIFICATIONS FOR ONE YEAR FROM & AFTER COMPLETION OF BUILDING & ACCEPTANCE OF MECHANICAL SYSTEMS BY OWNER.
G. ALL MATERIALS INSTALLED IN PLENUMS SHALL BE NONCOMBUSTIBLE OR HAVE FLAME/SMOKE INDEX OF NO MORE THAN 25/50 IN ACCORDANCE W/ ASTM E 84.
H. ROOF PENETRATIONS – MADE BY AUTHORIZED ROOFING CONTRACTOR WHEN REQUIRED.

SECTION 15100 – PLUMBING

2. PIPING

A. WATER PIPING – ALL WATER PIPING SHALL BE 95-5 TIN-ANTIMONY JOINED TYPE L COPPER. INSULATE W/ FIBERGLASS W/ ASJ & PVC COVERS. THINCKNESS IN ACCORDANCE W/ ASHRAE 90.1.
B. WASTE & VENT PIPING – CI BELL & SPIGOT OR HUBLESS CI W/ NEOPRENE GASKET FITTINGS W/ STAINLESS STEEL BANDS. SCHED 40 PVC W/ SOLVENT WELDS MAY BE USED WHERE ALLOWED BY LOCAL CODE. PVC NOT ALLOWED IN PLENUMS.
C. ROOF/STORM DRAIN PIPING – CI BELL & SPIGOT OR HUBLESS CI W/ NEOPRENE GASKET FITTINGS W/ STAINLESS STEEL BANDS. SCHED 40 PVC W/ SOLVENT WELDS MAY BE USED WHERE ALLOWED BY LOCAL CODE. PVC NOT ALLOWED IN PLENUMS. INSULATE W/ MIN ½" FIBERGLASS PIPE WRAP W/ ASJ JACKET.
D. GAS PIPING – PROVIDE SCHED 40 CONT. WELD CARBON STEEL W/ CORRESPONDING FITTINGS. PROVIDE THREADED FITTINGS. PROVIDE IRON BODY-BRASS PLUG GAS STOPS. PAINT ALL EXPOSED GAS PIPING ON THE EXTERIOR OF THE BUILDING INCLUDING ON THE ROOF.

3. VALVES
4. EQUIVALENT VALVES LISTED ON CURRENT COMPARISON CHARTS OF SPECIFIED VALVE MANUFACTURERS BY MILWAUKEE, STOCKHAM, POWELL, RED-WHITE, CRANE, APPOLO, MUELLER, MUESSCO, WATTS, HAYS, ROCKWELL-NORDSTROM.

E. BALL VALVES – 2" & UNDER – BRONZE FULL PORT W/ TEFLOW SEATS, BRONZE BALL & INSULATED HANDLE.
F. BALANCING VALVES – ARMSTRONG MODEL CBV I OR CBV II, 125 PSI-WP AT 250 DEGREES F., METER CONNECTIONS W/ BUILT-IN CHECK VALVES SCREWED OR FLANGED ENDS. PROVIDE POLYURETHANE INSULATION COVER.
G. CHECK VALVES – 2" 7 SMALLER SCREWED OR SOLDER BRONZE CHECK VALVE, 200 PSI-WOG/125 PSI-WSP, TEFLON OR BRONZE DISC & SEAT RING. 2-1/2" & LARGER FLANGED, ASTM 126 IRON BODY, BRONZE TRIMMED, 200 PSI-WOG/125 PSI-WSP.
H. BUTTERFLY VALVES – 3" & LARGER LEVER ASTM A126 CI DRILLED & TAPPED FULL LUG BODY, 200 PSI-WOG, EXTENDED NECK, BRONZE DISC, STAINLESS STEEL STEM, FIELD-REPLACEABLE EPDM SLEEVE & STEM SEALS.

FIXTURES – SEE SCHEDULES

A. FIXTURES: AMERICAN STANDARD, KOHLER, CRANE, ZURN, TOTO
B. STAINLESS STEEL FIXTURES: ELKAY, JUST, MOEN COMMERCIAL
C. FITTINGS & SUPPORTS: JOSAM, SMITH, WADE, ZURN, OR JONESPEC.
D. SEATS: CHURCH, OLSONITE, BEMIS OR BENEKE.
E. DRINKING FOUNTAINS: HALSEY TAYLOR, ELKAY, OASIS, OR HAWS.
F. TRIM BY DELTA, ELJER, KOHLER, AMERICAN STANDARD, CRANE, SLOAN.
G. FLUSHVALVES: SLOAN, ZURN, TOTO
H. DRAINS BY WADE, ZURN, WOODFORD, SMITH, JOSAM.
I. ROOF DRAINS – CAST IRON ROOF DRAIN W/ FLANGE, CI MUSHROOM DOME. 2" DAM FOR OVERFLOW DRAINS
J. WALL HYDRANTS JOSAM SERIES 71000 W/ CONNECTIONS FOR 3/4" PIPE & HOSE. NON-FREEZING W/ KEY, VACUUM BREAKER, LOCKING COVER. EQUIVALENT BY J.R. SMITH, WADE, WOODFORD OR ZURN.

EQUIPMENT – SEE SCHEDULES

A. WATER HEATER – STATE, RHEEM, NATIONAL, A.O. SMITH. PORCELAINIZED GLASSLINED TANK. COLD WATER INLET DROP TUBE. MAGNESIUM ANODE RODS. U.L. SEAL, 160 PSI, FACTORY TEMPERATURE & PRESSURE RELIEF VALVE. N.S.F. CONSTRUCTION. 3 YR WARRANTY.
B. SUBMERSIBLE SUMP PUMPS – SIMPLEX/DUPLEX SUBMERSIBLE PUMP SYSTEM AS SCHED/SHOWN. PUMP CASING ONE PIECE CAST IRON W/ SUPPORT LEGS, CI SUCTION STRAINER. VERTICAL MOTOR, NEMA-6, NOT LESS THAN HP SCHED & 1750 RPM. AUTO-RESET THERMAL/OVERLOAD PROTECTION.
C. RECIRCULATION PUMPS – HORIZONTAL, OIL-LUBRICATED, ALL BRONZE. NON-OVERLOADING MOTOR.

EXECUTION

A. PROVIDE UNIONS OR FLANGED JOINTS IN EACH PIPE LINE PRECEDING CONNECTIONS TO EQUIPMENT TO ALLOW REMOVAL FOR REPAIR OR REPLACEMENT. PROVIDE ALL SCREWED & CONTROL VALVES W/ UNIONS ADJACENT TO EACH CONNECTION. PROVIDE SCREWED END VALVES W/ UNION ADJACENT TO VALVE UNLESS VALVE CAN BE OTHERWISE EASILY REMOVED FROM LINE.
B. AFTER PIPING IS IN PLACE TEST LINES TO ENSURE NO LEAKS.
C. ALL PIPING & EQUIPMENT SHALL BE SUPPORTED PROPERLY FROM STRUCTURE.
D. ESCUTCHEONS – PROVIDE NICKEL-BRASS OR CHROME PLATED ON ALL EXPOSED PIPES WHEN PASSING THRU WALL OR CEILING OF FINISHED ROOMS.
E. VERIFY FLOOR MATERIALS USED FROM ARCHITECTURAL PLANS & PROVIDE PROPER CLEANOUT TOPS, WHERE THEY OCCUR IN CARPET, QUARRY TILE, VINYL TILE OR CERAMIC TILE.
F. PROVIDE WATER HAMMER ARRESTORS FOR ALL PLUMBING BANKS W/ FIXTURES UTILIZING FLUSH VALVES IN ANY CAPACITY. LOCATE ARRESTER BETWEEN LAST TWO FIXTURES SERVED ON BRANCH LINE.

SECTION 15300 – HVAC

GENERAL

A. PROVIDE COMPLETE HVAC SYSTEM AS SHOWN ON DRAWINGS INCLUDING ALL NECESSARY EQUIPMENT, DUCTWORK, DIFFUSERS, GRILLES, & FILTERS. PROVIDE OPERATING & MAINTENANCE INSTRUCTIONS ON ALL EQUIPMENT.
B. ALL HVAC WORK SHALL BE DONE IN STRICT ACCORDANCE W/ ALL REQUIREMENTS OF LOCAL BUILDING CODE, ASHRAE, NEC, NFPA, & ALL OTHER APPLICABLE CODES HAVING JURISDICTION.

DUCTWORK

A. HVAC DUCTWORK SHALL BE GALV SHEET METAL OF GAUGES & JOINT TYPES SPECIFIED IN SMACNA MANUAL. PROVIDE TURNING VANES IN ELBOWS.
B. EXPOSED SPIRAL DUCT SHALL BE DOUBLE WALL SPIRAL INTERIOR INSULATED WITH PERFORATED LINER WITH 1" INSULATION R VALUE OF 4 MINIMUM.
C. VOLUME DAMPERS SHALL BE MANUAL LOCKING BLADE TYPE.
D. DISHWASHER EXHAUST DUCT SHALL BE NEW COMMERCIAL QUALITY, BRIGHT TYPE 302 STAINLESS STEEL. CONSTRUCTION SHALL BE WELDED. DUCTWORK SHALL SLOPE TO DRAIN.
E. GREASE DUCT SHALL BE NEW COMMERCIAL QUALITY BLACK STEEL FOR GREASE DUCTS. CONSTRUCTION SHALL BE WELDED, STEEL MINIMUM OF 16 GAUGE.
F. ALL DUCTWORK MUST BE SUPPORTED PROPERLY FROM STRUCTURE.
G. WRAP ALL SUPPLY & OUTSIDE AIR HVAC DUCTWORK W/ CERTAINTEED 1-1/2" THICK INSULATION W/ VAPOR BARRIER IN CONCEALED LOCATIONS. ALSO LINE FIRST 10' OF SUPPLY DUCTWORK FOR SOUND ATTENUATION (IN ADDITION TO WRAP) LINE ALL RETURN AIR DUCTS & TRANSFER BOOTS W/ ½" LINER. DO NO WRAP EXPOSED SPIRAL DUCTS.
H. EXTERNAL FIRE INSULATION FOR GREASE DUCTS – 2 HR. FIRE RESISTANCE RATING SHALL BE PABCO SUPER FIRETIMP-L. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS. EQUIVALENT BY 3M DUCTWRAP, PROVIDE (2) 1 ½" LAYERS.

SPECIALTIES

A. FLEXIBLE DUCTS – THERMAFLEX OR EQUAL SOUND RATED TYPE G-KM INSULATED. (DUCT W/O PUBLISHED ACOUSTICAL ATTENUATION RATINGS NOT ACCEPTABLE) TAKE OFF FITTING SHALL BE HI-EFF STYLE W/ LOCKING DAMPER. MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 7'-0".
B. DIFFUSERS & GRILLES – SEE SCHEDULE. EQUIVALENT BY PRICE, TUTTLE & BAILEY, TITUS, MATEL-AIRE, KREUGER, NAILOR. COORDINATE COLOR, MOUNTING W/ DUCT, CEILINGS, ARCHITECT.
C. LOUVERS – GREENHECK TYPE FSK-400 FABRICATED GALVANIZED STEEL LOUVER W/ TRIM FLANGE. EQUIVALENT BY RUSKIN, LOUVERS & DAMPERS, GREENHECK, AMERICAN WARMING 7 VENTILATING, INDUSTRIAL LOUVERS, ACME. COORDINATE FINISH W/ ARCHITECT.

PIPING

A. REFRIGERANT PIPING – COPPER TUBE TYPE ACR, HARD TEMPER NITROGENIZED REFRIGERANT TUBE, ASTM B-88. TYPE L OR K. BRAZED JOINTS. INSULATE W/ ARMAFLEX IN THICKNESS PER ASHRAE 90.1. PROVIDE EXTERIOR RATED OR COATED ARMAFLEX OUTDOORS.
B. HOT WATER PIPING – SCHED 40 CARBON STEEL ASTM-A53/A106 W/ CORRESP FITTINGS. PROVIDE THREADED FITTINGS THROUGH 2-1/2", WELDED JOINTS 3" & LARGER. CONTRACTOR OPTION TO USE COPPER TYPE L. INSULATE W/ FIBERGLASS PIPE INSULATION W/ ASJ JACKET IN THICKNESS PER ASHRAE 90.1.
C. CHILLED WATER PIPING – SCHED 40 CARBON STEEL ASTM-A53/A106 W/ CORRES FITTINGS. PROVIDE THREADED FITTINGS THROUGH 2-1/2", WELDED JOINTS 3" & LARGER. CONTRACTOR OPTION TO USE COPPER TYPE L, INSULATE W/ FIBERGLASS PIPE INSULATION W/ ASJ JACKET IN THICKNESS PER ASHRAE 90.1.
D. CONDENSER WATER PIPING – SCHED 40 CARBON STEEL ASTM-A53/A106 W/ CORRESP FITTINGS. PROVIDE THREADED FITTINGS THROUGH 2-1/2", WELDED JOINTS 3" & LARGER. CONTRACTOR OPTION TO USE COPPER TYPE L.
E. STEAM PIPING – SCHED 40 CARBON STEEL ASTM-A53/A106 W/ CORRESP FITTINGS. PROVIDE THREADED FITTINGS THROUGH 2-1/2", WELDED JOINTS 3" & LARGER. INSULATE W/ FIBERGLASS PIPE INSULATION W/ ASJ JACKET IN THICKNESS PER ASHRAE 90.1.
F. STEAM CONDENSATE PIPING – SCHED 80 CARBON STEEL ASTM-A53/A106 W/ CORRESP FITTINGS. PROVIDE THREADED FITTINGS THROUGH 2-1/2", WELDED JOINTS 3" & LARGER. INSULATE W/ FIBERGLASS PIPE INSULATION W/ ASJ JACKET IN THICKNESS PER ASHRAE 90.1.

EQUIPMENT

A. FURNACES, EVAPORATORS, & CONDENSING UNITS AS SCHEDULED. MIN 90% EFF NATURAL GAS, AGA CERT. ALUMINIZED STEEL HX, MULTI-SPEED DIRECT DRIVE BLOWER MOTOR. PROVIDE 2" OR 3" PLASTIC C/A & FLUE PIPING COMPLETE W/ CONCENTRIC TERMINATION KITS. 2" MERV 7 FILTERS. MOUNT FILTER IN SLIDE RACK W/ HINGED DOOR & LATCH IN R/A DUCT WORK. COIL – BLOW-THRU D/X MODULE, FULLY INSULATED METAL CASING W/ DRAIN PAN & DUCT FLANGES, COPPER TUBES W/ ALUMINUM FINS, W/ TXV. CONDENSING UNIT – HEAVY GAUGE BASE, SCROLL COMPRESSOR(S). RATED SEER NOT LESS THAN 10.3. (1) YR PARTS & LABOR SYSTEM WARRANTY & ADDITIONAL 4 YR COMPRESSOR ONLY WARRANTY. ANTI-SHORT CYCLE PREVENTION CONTROLS. LOUVERED COIL HAIL GUARDS. 30 DEG LOW AMBIENT. EQUIVALENT BY TRANE, LENNOX, YORK, CARRIER, DAIKIN.
B. ROOFTOP UNITS AS SCHEDULED. EQUIVALENTS BY TRANE, CARRIER, YORK, LENNOX, AAON, DAIKIN. MIN 14" ROOF CURB. PROVIDE SLOPED CURB AS REQUIRED FOR LEVEL UNIT INSTALLATION. ECONOMIZER W/ BAROMETRIC RELIEF, FIXED DRY BULB CONTROL. 2" MERV 7 FILTERS. LOUVERED HAIL GUARDS. 30 DEG LOW AMBIENT.
C. SPLIT SYSTEM AHUS, EVAPORATORS, & CONDENSING UNITS AS SCHEDULED. FACTORY ASSEMBLED INCLUDING COIL, CONDENSATE PAN, FAN MOTOR(S), FILTERS & CONTROLS IN INSULATED CASING W/ TXV. ARI RATED, UL LISTED & LABELED FOR INDOOR BLOWER COIL UNITS. HEAVY GAUGE, GALV STEEL. FILTERS & CONTROLS IN INSULATED CASING W/ TXV. ARI RATED, UL LISTED & LABELED FOR INDOOR BLOWER COIL UNITS. HEAVY GAUGE, GALV STEEL. FILTERS & CONTROLS IN INSULATED CASING W/ TXV. ARI RATED, UL LISTED & LABELED FOR INDOOR BLOWER COIL UNITS. HEAVY GAUGE, GALV STEEL. INSULATED W/ FIBERGLASS. UL & CSA ELECTRIC HEAT MODULES. HEATERS AS SCHEDULED SINGLE-POINT CONNECTION & TERMINAL STRIP CONNECTIONS. HD NI-CHROM ELEMENTS. INTEGRAL DISC SWITCH & INTERNAL FUSING. 2" MERV 7 FILTERS. MOUNT FILTER IN SLIDE RACK W/ HINGED DOOR & LATCH IN R/A DUCTWORK. CONDENSING UNIT – HEAVY GAUGE BASE, SCROLL COMPRESSOR(S). RATED SEER NOT LESS THAN 10.3. (1) YR PARTS & LABOR SYSTEM WARRANTY & ADDITIONAL 4 YR COMPRESSOR ONLY WARRANTY. ANTI-SHORT CYCLE PREVENTION CONTROLS. LOUVERED COIL HAIL GUARDS. 30 DEG LOW AMBIENT. EQUIVALENT BY TRANE, LENNOX, YORK, CARRIER, AAON, DAIKIN.
D. EXHAUST FANS – EQUIVALENT BY COOK, PENN, ACME, GREENHECK, JENNAIRE, TWIN CITY. PROVIDE W/ SPEED CONTROLS FOR ALL FANS LESS THAN 1/3HP TO BE FURNISHED TO E/C FOR MOUNTING AT FAN. PROVIDE W/ 14" MIN. CURB. PROVIDE GREASE TRIM & VENTILATED CURB EXTENSIONS FOR GREASE FANS.
E. PROVIDE PROGRAMMABLE THERMOSTATS W/ STAGES OF HEATING AND COOLING AS REQUIRED BY STAGES OF HEATING AND COOLING ON SPECIFIED EQUIPMENT. SEVEN (7) DAY PROGRAMMING CAPABILITY W/ 2 OCC/UNOCC PERIODS/DAY. AUTO HEAT/COOL CHANGE OVER. LOCKING SETPOINTS TO PREVENT TAMPERING. PROVIDE W/ ALL INTERFACES TO OTHER EQUIPMENT AS REQUIRED. THERMOSTATS BY HONEYWELL, JOHNSON CONTROLS, WHITE-ROGERS, TRANE, CARRIER, AAON, LENNOX, DAIKIN, OR APPROVED EQUAL.
F. MAKE-UP AHU – SEE SCHEDULE. HEAVY GAUGE GALV STEEL CONSTRUCTION. 1" METAL MESH FILTERS, BELT DRIVEN DWDI, FC FAN. FAN & MOTOR ASSEMBLY MTD ON VIBRATION ISOLATORS. SHAFT SHALL BE MTD IN HD, SEALED BALL BEARINGS. ADJUSTABLE SHEAVES. 150% HP DRIVES AGA DIRECT GAS FIRED & C.G.A. APPROVED. CONTROLS SHALL INCLUDE MAIN GAS PRESSURE REGULATOR, MODULATING GAS VALVE, ELECTRIC SPARK IGNITION PILOT RE-LIGHT SYSTEM, SAFETY PILOT, HIGH LIMIT & 24V CONTROL TRANS. EQUIVALENTS BY CAPTIVEAIR, GREENHECK, TRANE, ENGINEERED AIR, REZNOR, HASTINGS, STERLING, AAON, DAIKIN.
G. HOOD FIRE-EXTINGUISHING EQUIPMENT – PROVIDE STAND ALONE, AUTOMATIC EXTINGUISHING SYSTEM FOR EXHAUST HOODS & DUCT SYSTEM MEETING REQUIREMENTS OF NFPA 96 & 17. INCLUDE ALL TANKS, PIPING, HEADS, ALARMS, INDICATORS, VALVES & CHARGE TO PROPERLY PROTECT EXHAUST SYSTEM. SYSTEM SHALL COMPLETELY SHUT-DOWN POWER & GAS TO ALL APPLIANCES LOCATED BENEATH HOOD IN EVENT OF ALARM CONDITIONS. GAS SHUT DOWN SHALL BE BY MECHANICAL GAS VALVE. COORDINATE ALL WIRING W/ EQUIPMENT & REQUIREMENTS LOCAL JURISDICTION.

EXECUTION

B. COORDINATE W/ E/C TO PROVIDE ALL WIRING BETWEEN EQUIPMENT, DAMPERS, THERMOSTATS & ALL OTHER REQUIRED CONTROLS & DEVICES. PROVIDE ANY REQUIRED INTERFACES TO FIRE ALARM OR SIMILAR SYSTEMS.
C. PROVIDE GROUND-MOUNTED UNITS ON 4", REINFORCED CONCRETE BASE, 4" LARGER THAN UNIT ON EACH SIDE.
D. ROOF-MOUNTED UNITS ON EQUIPMENT SUPPORTS OR CURBS. ANCHOR UNITS TO SUPPORTS
E. PROVIDE FACTORY-AUTHORIZED SERVICE START UP ON EQUIPMENT. TRAIN OWNER'S MAINTENANCE PERSONNEL ON STARTUP, SHUTDOWN, TROUBLESHOOTING, SERVICING, PREVENTIVE MAINTENANCE.

SECTION 15900 – SYSTEM TESTING & BALANCING

A. CONTRACTOR SHALL PROCURE SERVICES OF INDEPENDENT TAB CONTRACTOR WHICH SPECIALIZES IN TAB OF HVAC SYSTEMS, TO BALANCE, ADJUST, & TEST AIR MOVING EQUIPMENT & DISTRIBUTION & EXHAUST SYSTEMS & ALL WATER FLOW CIRCUITS. WORK SHALL BE DONE UNDER ENGINEER EMPLOYED TAB. ALL INSTRUMENTS USED SHALL BE ACCURATELY CALIBRATED & MAINTAINED IN GOOD WORKING ORDER. IF REQUESTED TESTS SHALL BE CONDUCTED IN PRESENCE OF A/E RESPONSIBLE FOR PROJECT &/OR REPRESENTATIVE. TAB CONTRACTOR SHALL BE CERTIFIED BY NEBB OR AABC & ALL WORK SHALL BE PERFORMED IN ACCORDANCE W/ ORGANIZATIONS PUBLISHED PROCEDURE MANUALS.
B. TESTING & BALANCING (TAB) OF BUILDING HVAC SYSTEMS WILL BE COMPLETED NEAR END OF CONSTRUCTION. M/C HAS RESPONSIBILITY TO COOPERATE W/, MAKE ADJUSTMENTS FOR & PROVIDE EQUIPMENT NECESSARY FOR TAB CONTRACTOR TO COMPLETE JOB.
C. PRIOR TO REQUESTING TAB CONTRACTOR TO PERFORM WORK, INSTALLING CONTRACTOR SHALL MAKE ALL NECESSARY INSPECTIONS & ADJUSTMENTS TO ENSURE THAT SYSTEMS ARE COMPLETELY INSTALLED & OPERATING ACCORDING TO MANUFACTURER'S RECOMMENDATIONS & CONTRACT DOCUMENTS.
D. CHECKS SHALL BE PERFORMED ON EACH SYSTEM INSTALLED UNDER THIS CONTRACT. REPORT SHEET SHALL BE PREPARED FOR EACH SYSTEM INDICATING CHECKS MADE, CORRECTIVE ACTION TAKEN WHERE REQUIRED, DATE & NAME OF INSPECTOR. SUBMIT (1) COPY TO TAB CONTRACTOR & (1) INDICATING CHECKS MADE, CORRECTIVE ACTION TAKEN WHERE REQUIRED, DATE & NAME OF INSPECTOR. SUBMIT (1) COPY TO TAB CONTRACTOR & (1) TO A/E. TAB CONTRACTOR WILL NOT BEGIN UNTIL CHECKLIST HAS BEEN RECEIVED & REVIEWED.
E. TAB CONTRACTOR SHALL AT MINIMUM: VERIFY & INSPECT THAT SYSTEMS ARE CLEAN, FAN ROTATION, BEARINGS, CLEARANCES, ALIGNMENT, VIBRATION ISOLATORS, FILTERS, DAMPER OPERATION & POSITION, EQUIPMENT IS INSTALLED, TRANSFER OPENINGS IN WALLS, AIR LEAKS, COIL FINS/DAMAGE.
F. BALANCING CONTRACTOR SHALL PREPARE CERTIFIED REPORT OF ALL TESTS PERFORMED. REPORT SHALL BE WRITTEN ON STANDARD FORMS PREPARED BY NEBB OR AABC OR FACSIMILES THEREOF. BALANCING CONTRACTOR SHALL SUBMIT 3 COPIES OF THIS REPORT TO M/C WHO SHALL SUBMIT THEM TO A/E FOR REVIEW & DISTRIBUTION.
G. AIR HANDLING UNIT AS INSTALLED SHOWING OUTDOOR, RETURN & SUPPLY AIR CONNECTIONS, COIL & DAMPERS ARRANGEMENTS, PSYCHOMETRIC CHART ON EACH AHU, W/ COOLING COIL, SHOWING OUTDOOR RETURN, MIXED AIR TEMPS AT MINIMUM OUTDOOR AIR CONDITION, COIL LEAVING AIR CONDITION AT FULL COOLING COIL FLOW. TAB REPORT SHALL INCLUDE ALL NEBB OR AABC FORMS COMPLETED AS REQUIRED BY CERTIFICATION.
H. TAB CONTRACTOR SHALL CYCLE EACH AHU THROUGH CONTROL SEQUENCE OF OPERATION TO VERIFY PROPER OPERATION. ANY INCONSISTENCY W/ CONTRACT DOCUMENTS SHALL BE REPORTED TO A/E & TEMP CONTROL CONTRACTOR. TEMP CONTROL CONTRACTOR SHALL TAKE ACTION TO CORRECT ANY CONTROL INCONSISTENCY AS REPORTED BY TAB CONTRACTOR.
I. DURING INSTALLATION OF HVAC SYSTEMS TAB CONTRACTOR SHALL PERIODIC INSPECTION VISITS TO PROJECT SITE. PROPER PLACEMENT & INSTALLATION OF CONTROL & BALANCING DEVICES SHALL BE VERIFIED BY THESE INSPECTIONS. M/C SHALL MAKE ALL CORRECTIONS IN CONTROL & BALANCING DEVICE LOCATIONS AS REQUESTED BY TAB CONTRACTOR. FOLLOWING EACH VISIT TAB CONTRACTOR SHALL REPORT TO A/E ALL ITEMS NOTED, ACTION TAKEN & PROGRESS OF INSTALLATION.

16000 - ELECTRICAL SPECIFICATIONS

SECTION 16000 – ELECTRICAL REQUIREMENTS

GENERAL REQUIREMENTS

A. ALL WORK SHALL BE IN ACCORDANCE W/ LATEST EDITION OF INTERNATIONAL BUILDING CODE, NATIONAL ELECTRICAL CODE, NFPA, CODES AS ADOPTED BY CITY, COUNTY, STATE & ALL OTHER APPLICABLE CODES.
B. ALL MATERIALS & EQUIPMENT SHALL BE NEW & SHALL BEAR U.L. LABEL WHERE APPLICABLE. PROVIDE WATERPROOF EQUIPMENT ENCLOSURES WHERE REQUIRED.
C. OBTAIN & PAY FOR ALL PERMITS REQUIRED FOR EXECUTION OF THIS WORK & SHALL MAKE ARRANGEMENTS FOR MODIFICATIONS TO ELECTRICAL CONNECTIONS TO BUILDING AS REQUIRED.
D. CONTRACTOR SHALL PROVIDE ALL LABOR & MATERIALS REQUIRED TO HAVE COMPLETE FUNCTIONING ELECTRICAL LIGHTING & POWER SYSTEMS TOGETHER W/ ALL ASSOCIATED EQUIPMENT & APPARATUS AS SHOWN ON PLANS.
E. WHERE AN ELECTRICAL DEVICE IS REQUIRED BY CODE BUT NOT SHOWN, IT SHALL BE PROVIDED AS THOUGH FULLY SHOWN & SPECIFIED.
F. CONTRACTOR SHALL VISIT SITE & OBSERVE CONDITIONS UNDER WHICH WORK WILL BE DONE. ANY DISCREPANCIES SHALL BE CALLED TO ARCHITECT'S ATTENTION. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION FOR ANY ERROR OR NEGLIGENCE ON CONTRACTOR'S PART.
G. FINAL ACCEPTANCE OF WORK SHALL BE SUBJECT TO CONDITION THAT ALL SYSTEMS, EQUIPMENT, APPARATUS & APPLIANCES OPERATE SATISFACTORILY AS DESIGNED & INTENDED. WORK SHALL INCLUDE REQUIRED ADJUSTMENT OF SYSTEMS & CONTROL EQUIPMENT INSTALLED UNDER THESE SPECIFICATIONS.
H. WARRANT TO OWNER QUALITY OF MATERIALS, EQUIPMENT, WORKMANSHIP & OPERATION OF EQUIPMENT PROVIDED UNDER THESE SPECIFICATIONS FOR ONE YEAR FROM & AFTER COMPLETION OF BUILDING & ACCEPTANCE OF MECHANICAL SYSTEMS BY OWNER.
I. ALL MATERIALS INSTALLED IN PLENUMS SHALL BE NONCOMBUSTIBLE OR HAVE FLAME/SMOKE INDEX OF NO MORE THAN 25/50 IN ACCORDANCE W/ ASTM E 84.

SECTION 16100 – CONDUIT & CONDUCTORS

A. FOLLOW CIRCUITING SHOWN ON PLANS. USE NO CONDUIT SMALLER THAN 1/2" & NO CONDUCTORS SMALLER THAN #12 GA. UNLESS NOTED OTHERWISE.
B. WIRE SHALL BE IN NON-FLEXIBLE METALLIC CONDUIT (EMT, IMC OR RMC) FOR ALL CIRCUITS AND FEEDERS GREATER THAN 30A, LIGHT SWITCH RISERS, KITCHEN CIRCUITS & HOME RUNS.
C. MC CABLE ACCEPTABLE FOR BRANCH CONVENIENCE CIRCUITS AND LIGHTING CIRCUITS. DO NOT DAISY CHAIN LIGHT FIXTURES. PROVIDE MC LUMINARY CABLE WITH BUILT-IN TWISTED JACKETED PAIR FOR LIGHTING CIRCUITS FOR LIGHTING CONTROLS. PROVIDE HEALTH CARE RATED MC FOR MEDICAL TREATMENT AREAS WHEN NOT IN CONDUIT.
D. CONDUIT INSTALLED BELOW GRADE SHALL BE SCHEDULE 80 PVC HEAVY WALL PLASTIC CONDUIT MEETING NEMA STANDARDS & UL LISTED FOR UNDERGROUND & EXPOSED USE. PROVIDE GRS RADIUS BENDS & RISERS AS CONDUITS RISE ABOVE GRADE OR ABOVE FLOOR SLAB.
E. PROVIDE INTERLOCKING SPACERS FOR MULT RUNS OF UG CONDUITS IN SAME TRENCH.
F. LIGHTING & RECEPTACLE CIRCUIT CONDUCTORS SHALL BE COPPER THWN/THHN 600 VOLT, 75 DEG C, COLOR CODED AS DESCRIBED UNDER APPLICABLE CODES. NO ROMEX, PLASTIC FLEX TUBING ETC PERMITTED. LIGHT FIXTURE WIRE INSULATION SHALL HAVE TEMP RATING NOT LESS THAN INDIVIDUAL FIXTURE MANUF RECOMMENDED RATING.
G. CIRCUITS W/ NO. 8 OR LARGER CONDUCTORS, MOTOR CIRCUITS, POWER & FEEDER CIRCUITS & BUILDING SERVICE FEEDERS SHALL BE COPPER THWN/THHN 600 VOLT, 75 DEG C.
H. ALL CONDUIT, JUNCTION BOXES, ETC. ABOVE CEILINGS SHALL BE SUPPORTED FROM STRUCTURE. PIPE SLEEVES, HANGERS & SUPPORTS SHALL BE FURNISHED & SET & CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER & PERMANENT LOCATIONS.

SECTION 16200 – GROUNDING

A. SUPPLEMENT GROUNDED NEUTRAL OF SECONDARY DISTRIBUTION SYSTEM W/ EQUIPMENT GROUNDING SYSTEM, INSTALLED SO THAT METALLIC STRUCTURES, ENCLOSURES, RACEWAYS, JUNCTION BOXES, OUTLET BOXES, CABINETS, MACHINE FRAMES, PORTABLE EQUIPMENT & OTHER CONDUCTIVE ITEMS OPERATE CONTINUOUSLY AT GROUND POTENTIAL & PROVIDE LOW IMPEDANCE PATH FOR GROUND FAULT CURRENTS.
B. SYSTEM SHALL COMPLY W/ NATIONAL ELECTRICAL CODE, DRAWINGS & AS SPECIFIED.
C. PROVIDE EQUIPMENT GROUND BUS IN BASE OF LOW VOLTAGE, SWITCHGEAR BRAZED OR OTHERWISE ADEQUATELY CONNECTED BY AN APPROVED METHOD TO GROUND RODS.
D. PROVIDE IN CONDUIT GREEN INSULATED COPPER GROUND CONDUCTOR TO MAIN METALLIC WATER SERVICE ENTRANCE & CONNECT BY MEANS OF ADEQUATE GROUND CLAMPS.
E. EQUIPMENT GROUNDING CONDUCTORS FOR BRANCH CIRCUIT HOME RUNS SHOWN ON DRAWINGS SHALL INDICATE AN INDIVIDUAL & SEPARATE GROUND CONDUCTOR FOR THAT BRANCH CIRCUIT WHICH SHALL BE TERMINATED AT BRANCH CIRCUIT PANELBOARD, SWITCHBOARD, OR OTHER DISTRIBUTION EQUIPMENT.
F. PROVIDE LOW VOLTAGE DISTRIBUTION SYSTEM W/ SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR FOR EACH SINGLE OR THREE-PHASE FEEDER. SINGLE PHASE 120 VOLT BRANCH CIRCUITS FOR LIGHTING & POWER SHALL CONSIST OF PHASE & NEUTRAL CONDUCTORS & GREEN GROUND CONDUCTOR INSTALLED IN COMMON CONDUIT WHICH SHALL SERVE AS GROUNDING CONDUCTOR.
G. GROUNDING CONDUCTORS SHALL BE AS SHOWN ON PLANS OR IF NOT SPECIFICALLY SHOWN SHALL BE NO SMALLER THAN THAT REQUIRED BY NEC.

SECTION 16300 – ELECTRICAL EQUIPMENT

A. JUNCTION BOXES & OUTLET BOXES SHALL BE GALVANIZED KNOCKOUT TYPE. LIGHTING FIXTURE BOXES IN CEILINGS SHALL NOT BE LESS THAN 4" OCTAGONAL KNOCKOUT TYPE. OUTLETS SHALL BE INSTALLED IN LOCATIONS SHOWN ON DRAWINGS EXCEPT OUTLETS MAY BE MOVED 4 FEET IN EITHER DIRECTION IF SO DIRECTED, WITHOUT ADDITIONAL COST. BOXES SHALL BE FLUSH MOUNTED ON WALLS FOR CONCEALED WORK. GANGABLE BOXES SHALL BE USED IN ALL GYPBOARD SURFACES.

PANELBOARDS

A. BRANCH CIRCUIT 208/240V PANELS SHALL BE CAPACITY SHOWN W/ TIN PLATED COPPER BUSSING & BRACED FOR MINIMUM OF 22,000A AIC OR AS OTHERWISE NOTED OR REQUIRED (SERIES RATED ACCEPTABLE). BOLT ON CIRCUIT BREAKERS. 480V PANELS SAME EXCEPT 25,000A AIC MIN. MINIMUM 20" WIDE W/ GALV STEEL ENCLOSURE W/ HINGED DOOR & KEYED LOCK. COORD TRIM WITH MOUNTING LOCATION. PANELS TO BE RECESSED WHENEVER POSSIBLE.
B. DISTRIBUTION PANELS SHALL BE CAPACITY SHOWN & SHALL BE SQUARE D I-LINE W/ TIN PLASTED COPPER BUSSING. 65KAIC MIN OR AS OTHERWISE NOTED/REQ'D. BOLT ON CIRCUIT BREAKERS (SERIES RATED ACCEPTABLE). GALV STEEL ENCLOSURE.
C. EQUIVALENT BY SQUARE D, SIEMENS, CUTLER HAMMER, OR GE.

TRANSFORMERS

A. DRY-TYPE AS SCHEDULED. SOUND LEVEL SHALL NOT EXCEED DB PER ANSI C89.2 & NEMA TR-1. (2)2-1/2% TAPS BELOW & (2)2-1/2% TAPS ABOVE PRIMARY VOLTAGE. ALUMINUM WINDINGS. 150 DEG C. MINIMUM IMPEDANCE OF 2.5%. VENTILATED ENCLOSURE. SUSPEND AS REQ'D.

SECTION 16350 – ELECTRICAL IDENTIFICATION

A. MANUFACTURED LABELS FOR EACH PANELBOARD & TRANSFORMER. TYPEWRITTEN PANEL SCHEDULES MOUNTED IN PANELS
B. PRINTED TAPE STYLE LABEL FOR EACH RECEPTACLE INDICATING PANEL & CIRCUIT #.
C. MANUFACTURED LABELS FOR ALL DISCONNECT SWITCHES INDICATING EQUIPMENT SERVED.
D. BRANCH CIRCUITS – IDENTIFY EACH CIRCUIT W/ WIRE MARKERS WHEN ENCLOSURE LABEL AND WIRE COLORS DO NOT PROVIDE ENOUGH INFORMATION TO IDENTIFY EACH CIRCUIT WITHOUT TRACING. FEEDERS & BRANCH CIRCUIT HOME RUNS W/ WIRE MARKER W/ PANEL & CKT #. BOX COVERS ABOVE LAY-IN CEILINGS NEATLY MARKED W/ INDELIBLE MARKER.
E. FIRE ALARM – NAMEPLATE ON EACH FIRE ALARM TERMINAL CABINET. LABEL ALL WIRING.

SECTION 16400 – WIRING DEVICES

A. CONVENIENCE OUTLETS – SPEC GRADE 20 AMP DUPLEX W/ GROUND & SS WALL PLATES. OTHER OUTLETS SHALL BE VERIFIED W/ EQUIPMENT SUPPLIERS FOR PROPER NEMA CONFIGURATIONS. PROVIDE GFIC RATED DEVICES WHERE INDICATED AND AS REQ'D PER CODE.
B. PROVIDE GFIC RATED DEVICES WHERE INDICATED AND ANYWHERE REQUIRED PER THE NEC.
C. PROVIDE AFCI PROTECTION ON ALL CIRCUITS REQUIRED PER THE NEC.
D. PROVIDE TAMPER RESISTANT RECEPTACLES ON ALL RECEPTACLES IN PUBLIC AREAS, AREAS ACCESSIBLE TO CHILDREN, AND WHERE OTHERWISE REQUIRED TO BE TAMPER RESISTANT PER THE NEC.
E. LIGHT SWITCHES – SPEC GRADE 20 AMP TOGGLE SWITCHES W/ SS WALL PLATES.
F. WALL MOTION SWITCHES – SPEC GRADE, PIR, OVERRIDE.
G. CEILING MOTION SWITCHES – SPEC GRADE, DUAL TECHNOLOGY, MODEL AS REQ'D BY ROOM CONFIGURATION, ALL NECESSARY POWER PACKS AND RELAYS.
H. WALL MOTION SWITCHES (BATHROOM) – DUAL RELAY, SPEC GRADE, PIR, 2ND RELAY FOR OPERATION OF EXHAUST FAN DELAY.
I. COLOR OF DEVICES AS DIRECTED BY ARCHITECT.
J. EQUIVALENT DEVICES BY LEVITON, BRYANT, HUBBEL, WATTSTOPPER, LITHONIA, SENSOR SWITCH.

EXECUTION

A. ALL OUTLETS, SHALL BE MOUNTED W/ BOTTOM AT 18" AFF & SWITCHES W/ BOTTOM AT 44" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE ON PLANS. REFER TO ARCH FOR OTHER REQUIRED ELEVATIONS AND CABINETRY COORDINATION.

SECTION 16500 – LED LUMINAIRES

LUMINAIRES

A. PROVIDE LIGHTING FIXTURES W/ ALL ACCESSORIES REQ'D FOR HANGING. COORD MOUNTING OF LIGHTING FIXTURES W/ ARCHITECT & G/C. ADDITIONAL FIXTURE SUPPORTS SHALL BE PROVIDED BY E/C. SUPPORTS SHALL COMPLY W/ LATEST EDITION OF NEC. PROVIDE LIGHTING FIXTURE SECURING CLIPS AS REQUIRED. CONSULT ARCH PLANS FOR CEILING TYPES & PROVIDE SURFACE & RECESSED LIGHTING FIXTURES W/ APPROPRIATE MOUNTING COMPONENTS & ACCESSORIES.
B. REFER TO LIGHTING FIXTURE SCHEDULE PLANS FOR FIXTURE TYPES.
C. EQUIVALENT LUMINAIRES BY CREE, COOPER, HUBBELL, INFINITY, LITHONIA, WILLIAMS, COLUMBIA, EXITRONICS, LITEALARM, EXIDE, MULE, DUALLITE

SECTION 16600 – FIRE ALARM SYSTEM

A. PROVIDE COMPLETE & OPERATIONAL MICROPROCESSOR BASED FIRE ALARM SYSTEM. SYSTEM SHALL MONITOR SPRINKLER SYSTEM TAMPER & FLOW SWITCHES, OPERATE AIR HANDLING UNIT DUCT SMOKE DETECTORS & UNIT SHUTDOWN, CONTROL NOTIFICATION APPLIANCES & PROVIDE THIRD PARTY/CENTRAL STATION MONITORING THROUGH DIGITAL ALARM COMMUNICATOR OR DIALER.
B. PROVIDED W/ BATTERY BACKUP FOR 24 HOURS OF OPERATION & 5 MINUTES OF ALARM.
C. SUBMIT SHOP DRAWINGS W/ WIRING DIAGRAMS & BATTERY CALCS FOR APPROVAL TO FIRE MARSHALL AND AHJ.

PRODUCTS

A. MICROPROCESSOR BASED FIRE ALARM CONTROL PANEL W/ INDICATION & NOTIFICATION CIRCUITS REQUIRED BASED ON DEVICES & DESCRIPTION HEREIN. COMPLETE CONTROL PANEL W/ POWER SUPPLY, BATTERIES, PROCESSOR, DIALER, ETC. IN SINGLE CABINET. CABINET TO HAVE HINGED LOCKABLE DOOR. SURFACE OR SEMI-RECESSED MOUNTING. MANUFACTURED BY SIEMENS, SIMPLEX, NOTIFIER, OR APPROVED EQUAL.
B. PHOTOELECTRIC DUCT SMOKE DETECTORS W/ SAMPLING TUBE. PROVIDE REMOTE TEST SWITCH & INDICATOR FOR EACH. LOCATION APPROVED BY ARCHITECT. ACTIVATION OF DUCT SMOKE DETECTORS SHALL SHUT DOWN RESPECTIVE AIR HANDLING UNIT.
C. PHOTOELECTRIC CEILING MOUNTED SMOKE DETECTORS.
D. SINGLE ACTION PULL STATIONS.
E. REMOTE ANNUNCIATOR FOR RECESSED MOUNTING. COORDINATE LOCATION WITH FIRE DEPARTMENT.
F. PROVIDE ALL REQUIRED FAN AND OTHER SHUTDOWN RELAYS FOR DOORS, DAMPERS, ETC. COORDINATE W/ OTHER TRADES.
G. NOTIFICATION APPLIANCES – STROBES & COMBINATION HORN/STROBES. 15/75 CANDELA RATING UNLESS OTHERWISE NOTED OR REQUIRED. WEATHERPROOF WHERE EXTERIOR MOUNTED.
H. HEAT DETECTORS – RATE OF RISE OR FIXED AS REQUIRED BY APPLICATION.
I. COORDINATE TO PROVIDE POWER & SHUTDOWN OR OPERATION OF FIRE/SMOKE DAMPERS, DOOR HOLD OPENS, POWER TO DOOR LOCKS &ACCESS CONTROL & OTHER SIMILAR SYSTEMS.
J. MODULES FOR MONITORING STATUS OF SPRINKLER SYSTEM TAMPER & FLOW SWITCHES.

EXECUTION

A. INSTALLED & TESTED PER NFPA 72 & APPLICABLE SECTIONS OF NFPA 70. PROVIDE COMPLETE FIRE ALARM SYSTEM AS DESCRIBED HEREIN & SHOWN TO BE WIRED, CONNECTED, & IN FIRST CLASS CONDITION. INCLUDE SUFFICIENT CONTROL UNIT(S), ANNUNCIATOR(S), MANUAL STATIONS, AUTOMATIC FIRE DETECTORS, SMOKE DETECTORS, AUDIBLE & VISIBLE NOTIFICATION APPLIANCES, WIRING, TERMINATIONS, ELECTRICAL BOXES, & ALL NECESSARY MATERIAL FOR COMPLETE OPERATING SYSTEM.
B. SYSTEM SHALL BE UL LISTED.
C. SYSTEM WIRING: WIRE & CABLE SHALL BE LISTED FOR ITS INTENDED USE BY AN APPROVAL AGENCY ACCEPTABLE TO AHJ & SHALL BE INSTALLED IN ACCORDANCE W/ APPROPRIATE ARTICLES FROM CURRENT APPROVED EDITION OF NEC.

SECTION 16700 – LOW VOLTAGE CABLING

A. PROVIDE BROADBAND RG COAXIAL CABLE FOR CABLE TELEVISION OUTLETS.
B. PROVIDE ALL NECESSARY CABLING, EQUIPMENT, BOXES, SPLITTERS, CONNECTORS, COVERS, ETC. FOR COMPLETE & OPERATIONAL SYSTEM.

EXECUTION

A. CABLING SHALL BE INSTALLED CONCEALED IN NEW & EXISTING CONSTRUCTION.
B. CABLING SHALL BE UL LISTED FOR INTENDED USE & INSTALLED IN ACCORDANCE W/ APPROPRIATE ARTICLES FROM LATEST NEC.

ABBREVIATIONS

A/E	ARCHITECT / ENGINEER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AG	ABOVE GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
ARCH	ARCHITECT
BFP	BACKFLOW PREVENTER
BG	BELOW GRADE
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CD	CANDELA
CD	COLD DECK
CLG	COOLING
CM	COORDINATE MOUNTING HEIGHT
CO	CLEAN OUT
CTE	CONNECT TO EXISTING
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DCW	DOMESTIC COLD WATER
DDC	DIRECT DIGITAL CONTROLS
DF	DRINKING FOUNTAIN
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
DIA	DIAMETER
DN	DOWN
E/C	ELECTRICAL CONTRACTOR
EA	EXHAUST AIR
EDF	ELECTRIC DRINKING FOUNTAIN
ELEV	ELEVATION
EM	EMERGENCY FIXTURE/DEVICE
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING ITEM
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FFCO	FINISHED FLOOR CLEAN OUT
FGCO	FLUSH GRADE CLEAN OUT
FL	FLOW LINE
FLR	FLOOR
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FWCO	FLUSH WALL CLEAN OUT
G	GROUND / GANG
G/C	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERUPTER
GPM	GALLONS PER MINUTE
HD	HOT DECK
HTG	HEATING
IG	ISOLATED GROUND
JB	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LWT	LEAVING WATER TEMPERATURE
M/C	MECHANICAL CONTRACTOR
MA	MIXED AIR
MAU	MAKE UP AIR UNIT
MCB	MAIN CIRCUIT BREAKER
MECH	MECHANICAL
MH	MANHOLE
MLO	MAIN LUGS ONLY
NFA	NET FREE AREA
NL	NIGHT LIGHT
OA	OUTSIDE AIR
ORD	OVERFLOW ROOF DRAIN
P/C	PLUMBING CONTRACTOR
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYLCHLORIDE
RA	RETURN AIR
RE/REF	REFER / REFERENCE
RF	RELIEF FAN
RL	RELOCATED ITEM
RPZ	REDUCED PRESSURE ZONE
RR	RESTROOM
SA	SUPPLY AIR
SPD	SURGE PROTECTIVE DEVICE
ST	SHUNT TRIP
TA	TRANSFER AIR
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TP	TAMPERPROOF
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VRF	VARIABLE REFRIGERANT FLOW
VTR	VENT THROUGH ROOF
WCO	WALL CLEANOUT
WG	WIRE GUARD
WP	WEATHERPROOF

FIRE SEALING NOTES

1. COORDINATE CONSTRUCTION OF OPENINGS AND PENETRATING ITEMS TO ENSURE THAT THROUGH-PENETRATION FIRESTOP SYSTEMS ARE INSTALLED ACCORDING TO SPECIFIED AND APPLICABLE UL REQUIREMENTS.
2. COORDINATE SIZING OF SLEEVES, OPENINGS, CORE-DRILLED HOLES, OR CUT OPENINGS TO ACCOMMODATE THROUGH-PENETRATION FIRESTOP SYSTEMS.
3. DO NOT COVER UP THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATIONS UNTIL EXAMINED BY NSPECTOR, IF REQUIRED BY AUTHORITIES HAVING JURISDICTION.
4. COMPATIBILITY: PROVIDE THROUGH-PENETRATION FIRESTOP SYSTEMS THAT ARE COMPATIBLE WITH ONE ANOTHER; WITH THE SUBSTRATES FORMING OPENINGS; AND WITH THE ITEMS, IF ANY, PENETRATING THROUGH-PENETRATION FIRESTOP SYSTEMS, UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
5. PROVIDE COMPONENTS FOR EACH THROUGH-PENETRATION FIRESTOP SYSTEM THAT ARE NEEDED TO INSTALL FILL MATERIALS. USE ONLY COMPONENTS SPECIFIED BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER AND APPROVED BY QUALIFIED TESTING AND INSPECTING AGENCY FOR FIRESTOP SYSTEMS INDICATED.
6. PROVIDE SLEEVES THROUGH ALL FIRE_RATED WALLS AND FILL VOIDS SURROUNDING SLEEVES AND INTERIOR TO SLEEVES AROUND PIPING WITH FIRE STOP PUTTY WITH U.L. LISTED 3 HOUR RATING INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS.
7. FIRE SEAL ALL PIPING, CONDUIT, CABLE, ETC PENETRATIONS ROUTED THROUGH FIRE RATED WALLS.
8. PROVIDE FIRE RATED ENCLOSURES OR WRAPS ON LIGHT FIXTURES AND OTHER ITEMS PENETRATING FIRE RATED CEILINGS, FLOOR/CEILING/ CEILING/ROOF ASSEMBLIES TO MAINTAIN UL LISTING FOR CONSTRUCTION.

GENERAL ELECTRICAL NOTES

1. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE NATIONAL ELECTRICAL CODE, LOCAL AND STATE CODES, AND REQUIREMENTS OF THE AHJ.
2. COORDINATE LOCATIONS OF RECEPTACLES, SWITCHES, ETC. WITH ARCHITECTURAL CASEWORK AND ELEVATIONS.
3. REFER TO MOUNTING HEIGHTS DETAIL FOR MOUNTING HEIGHTS OF ALL DEVICES NOT INDICATED OTHERWISE.
4. PROVIDE ALL EMPTY CONDUITS WITH PULL STRINGS AND BUSHED ENDS.
5. CONTRACTOR SHALL CONCEAL ALL CONDUIT, FITTINGS, AND DEVICES FROM VIEW WHERE REASONABLY POSSIBLE.

GEN. MECHANICAL NOTES

1. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED VERISION OF THE INTERNATIONAL MECHANICAL CODE, LOCAL AND STATE CODES, AND REQUIREMENTS OF THE AHJ.
2. ANY POWER FOR CONTROL SYSTEMS TO BE PROVIDED BY E/C IS INDICATED ON ELECTRICAL PLANS. ANY ADDITIONAL LINE VOLTAGE OR LOW VOLTAGE POWER REQUIRED BY THE M/C OR SUBCONTRACTORS TO HAVE A FULLY FUNCTIONING SYSTEM SHALL BE PROVIDED BY THE M/C CONTRACTOR OR SUBS.
3. ALL EQUIPMENT SHALL BE ADEQUATELY AND PROPERLY SUPPORTED AND FASTENED FROM STRUCTURE.
4. ALL EQUIPMENT AND ACCESSORIES INSTALLED IN CONCEALED SPACES REQUIRING ACCESS SHALL BE PROVIDED WITH ACCESS DOORS MEETING ANY FIRE REQUIREMENTS OF THE WALL/CEILING THEY ARE INSTALLED.
5. EACH AIR HANDLING UNIT OVER 2000CFM SHALL BE PROVIDED WITH A SMOKE DETECTOR TO SHUT DOWN THE UNIT PER IMC 606 AS REQUIRED BY AHJ. COORDINATE WITH OTHER TRADES.
6. START UP AND ADJUST ALL EQUIPMENT AND VERIFY ALL MECHANICAL SYSTEMS IN OPERATE IN ACCORDANCE WITH THEIR INTENDED PURPOSES. SUBMIT BALANCE AND START UP REPORTS TO THE A/E. REFER TO SPECIFICATIONS FOR ANY ADDITIONAL REQUIREMENTS.

GENERAL NOTES

1. SOME ROOM NAMES MAY NOT BE SHOWN FOR PURPOSE OF CLARIFYING PLAN. REFER TO ARCHITECTURAL PLANS FOR REFERENCE TO ROOM NAMES NOT SHOWN.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AND KEEP AT THE JOB SITE, AN UP TO DATE SET OF "RECORD DRAWINGS" SHOWING ALL CHANGES FROM THE ORIGINAL PLANS. THE CONTRACTOR SHALL DELIVER THE "RECORD DRAWINGS" TO THE ENGINEER AT THE CONCLUSION OF THE PROJECT ELECTRONICALLY.
3. THESE DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS (NEW AND EXISTING), DIMENSIONS, AND CLEARANCES PRIOR TO THE COMMENCEMENT OF WORK AND SHALL INCLUDE ALL COSTS, EQUIPMENT, MATERIAL, ACCESSORIES, ETC. REQUIRED FOR A FULLY COMPLETE, FUNCTIONAL AND CODE COMPLIANT INSTALLATION.
4. FINAL LOCATIONS OF ALL DEVICES, LIGHT FIXTURES, EQUIPMENT ETC SHALL BE INDICATED ON THE ARCHITECTURAL DRAWINGS. ALL DIMENSIONAL INFORMATION SHALL BE OBTAINED FROM ARCHITECTURAL PLANS. NO DIMENSIONAL INFORMATION SHALL BE OBTAINED FROM MEP DRAWINGS.
5. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS, APPROVALS, LICENSES, ETC. AS NEEDED FOR THE COMPLETE INSTALLATION AND PROJECT. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR ALL FEES AND DATA NEEDED FOR THIS.

MECHANICAL AND PLUMBING SYMBOL LEGEND

SOME SYMBOLS AND ABBREVIATIONS ON THIS LEGEND MAY NOT BE USED

SHEET METAL

- HIGH EFFICIENCY ROUND DUCT TAKEOFF (WITH & WITHOUT MANUAL DAMPER)
- SPIN-IN ROUND DUCT TAKEOFF (WITH & WITHOUT MANUAL DAMPER)
- CONICAL BELLMOUTH ROUND TAKEOFF
- ROUND DUCT RUNOUT WITH FLEX DUCT
- DUCTWORK ELBOW (WITH & WITHOUT TURNING VANES)
- XD — FD:FIRE DAMPER FS:FIRE/SMOKE DAMPER SD:SMOKE DAMPER BD:BACKDRAFT DAMPER (GRAVITY)
- MD — AUTOMATIC MOTORIZED DAMPER
- 8"ø A 225 — SUPPLY DIFFUSER AND DIFFUSER CALLOUT (NECK SIZE, TYPE AND CFM)
- LINEAR/SLOT DIFFUSER
- RETURN GRILLE OR EXHAUST REGISTER
- SUPPLY AIR FLOW INDICATOR
- RETURN AND EXHAUST AIR FLOW INDICATOR
- THERMOSTAT
- TEMPERATURE SENSOR
- HUMIDISTAT
- CONTROL WIRING

GENERAL SYMBOLS

- INDICATES CONNECT TO EXISTING
- INDICATES ELEVATION

ELECTRICAL SYMBOL LEGEND

SOME SYMBOLS AND ABBREVIATIONS ON THIS LEGEND MAY NOT BE USED

CIRCUITING

- HOME RUN (2#12 1#12G UNO)
- INDICATES 2 PHASE, 1 N, & 1 GRD CONDUCTOR
- HOME RUN: INDICATES SHARED CIRCUIT

LIGHTING

- LED LIGHT FIXTURE
- LED STRIP FIXTURE
- EXIT LIGHT
- BATTERY-OPERATED EMERGENCY LIGHT (WALL MTD)
- BATTERY-OPERATED EMERGENCY LIGHT (CEILING MTD)
- $MD — WALL-MOUNTED MOTION SWITCH – DIMMER
- M — CEILING-MOUNTED MOTION SWITCH

POWER DEVICES

- DUPLEX RECEPTACLE.
- LINE THRU DEVICE INDICATES ABOVE COUNTER
- E T — THERMOSTAT – ELECTRIC

TELEPHONE/DATA

- TELEPHONE/DATA OUTLET (DOUBLE-GANG BOX WITH (2) 3/4" CONDUITS TO ABOVE ACCESSIBLE CLG.)

FIRE ALARM

- F — MANUAL PULL STATION
- D — CEILING SMOKE DETECTOR

EQUIPMENT

- DISCONNECT SWITCH. RE: PLANS FOR INFORMATION.
- SURFACE PANELBOARD

COORDINATION NOTES

1. COORDINATE REQUIREMENTS FOR INSTALLATION OF SYSTEMS AND EQUIPMENT WITH ALL OTHER TRADES.
2. THE CONTRACTOR SHALL COORDINATE THE ROUTING AND PATH OF ALL SYSTEMS, CONDUITS, PIPES, DUCTS, ETC WITH THE POSITION AND LAYOUT OF THE STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING NECESSARY OFFSETS, TURNS, RISES AND DROPS FOR SYSTEMS AND COMPONENTS AS NEEDED TO INSTALL THE MEP SYSTEMS TO CLEAR STRUCTURE, CEILINGS, ETC AND OTHER SYSTEMS IN POTENTIAL CONFLICT WITH ROUTING.
3. COORDINATE WORK WITH OTHER TRADES TO INSTALL SYSTEMS ABOVE CEILING HEIGHTS INDICATED ON ARCHITECTURAL PLANS.
4. CHECK SPACE REQUIREMENTS WITH OTHER TRADES AND STRUCTURE/CONSTRUCTION TO INSURE THAT ALL MATERIALS AND EQUIPMENT CAN BE INSTALLED IN THE SPACE ALLOTTED INCLUDING FINISHED SUSPENDED CEILINGS AND OTHER SPACES, CHASES, ETC WITHIN THE BUILDING. MAKE MODIFICATIONS THERETO AS REQUIRED AND APPROVED.
5. TRANSMIT TO OTHER TRADES ALL INFORMATION REQUIRED FOR WORK TO BE PROVIDED UNDER THEIR RESPECTIVE SECTIONS IN AMPLE TIME FOR INSTALLATION.
6. WHEREVER WORK INTERCONNECTS WITH WORK OF OTHER TRADES, COORDINATE WITH THOSE TRADES TO INSURE THAT ALL SUBCONTRACTORS HAVE THE INFORMATION NECESSARY SO THAT THEY MAY PROPERLY INSTALL ALL CONNECTIONS AND EQUIPMENT. IDENTIFY ALL ITEMS OF WORK THAT REQUIRE ACCESS SO THAT THE CEILING TRADE WILL KNOW WHERE TO INSTALL ACCESS DOORS AND PANELS.
7. COORDINATE, PROJECT AND SCHEDULE WORK WITH OTHER TRADES IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE.
8. DRAWINGS SHOW THE GENERAL RUNS OF CONDUITS, PIPING AND DUCTWORK AND APPROXIMATE LOCATION OF OUTLETS. ANY SIGNIFICANT CHANGES IN LOCATION OF ITEMS NECESSARY IN ORDER TO MEET FIELD CONDITIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT/ENGINEER AND RECEIVE HIS APPROVAL BEFORE SUCH ALTERATIONS ARE MADE. ALL SUCH MODIFICATIONS SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION AND REPAIR OF SURFACES, AREAS AND PROPERTY THAT MAY BE DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
10. ADJUST LOCATION OF PIPING, DUCTWORK, ETC. TO PREVENT INTERFERENCES, BOTH ANTICIPATED AND ENCOUNTERED. DETERMINE THE EXACT ROUTE AND LOCATION OF EACH ITEM PRIOR TO FABRICATION. MAKE OFFSETS, TRANSITIONS AND CHANGES IN DIRECTION IN SYSTEMS AS REQUIRED TO MAINTAIN ADEQUATE CLEARANCES AND HEADROOM.
11. WHEREVER THE WORK IS OF SUFFICIENT COMPLEXITY, PREPARE ADDITIONAL COORDINATION DRAWINGS AND ORGANIZE ON-SITE MEETINGS WITH ALL RELATED SUBCONTRACOTRS TO COORDINATE THE WORK BETWEEN TRADES . DRAWINGS SHALL CLEARLY SHOW THE WORK AND ITS RELATION TO THE WORK OF OTHER TRADES, AND BE SUBMITTED FOR REVIEW PRIOR TO COMMENCING SHOP FABRICATION OR ERECTION IN THE FIELD.
12. COORDINATE WITH LOCAL UTILITY PROVIDERS FOR THEIR REQUIREMENTS FOR SERVICE CONNECTIONS AND PROVIDE ALL NECESSARY PAYMENTS, MATERIALS, LABOR AND TESTING TO ACCOMPLISH THE WORK.

GEN. RENOVATION NOTES

1. DISCONNECT AND REMOVE ANY EQUIPMENT, PIPING OR DUCTWORK THAT WAS INSTALLED AS PART OF THE BUILDING SHELL THAT IS NOT NEEDED OR CONFLICTS WITH THIS BUILD OUT.
2. EXISTING UNDERGROUND PIPING LOCATIONS ARE ESTIMATED BASED UPON ANTICIPATED ROUTINGS. FIELD VERIFY EXACT LOCATIONS DURING CONSTRUCTION AND PROVIDE ALL NECESSARY MODIFICATIONS.
3. SAWCUT GRADE FLOOR SLABS TO INSTALL NEW PIPING, MECHANICAL SYSTEMS, ELECTRICAL FLOOR BOXES AND ALL ASSOCIATED CONDUIT, ETC. PATCH FLOOR TO MAKE LIKE NEW AFTER INSTALLATION. TAKE CARE TO LOCATE EXISTING CONDUIT, ETC AND AVOID CUTTING EXISTING CONDUITS BY NOT OVERCUTTING SLAB DEPTH.
4. SAWCUT AND CORE DRILL OPENINGS AS REQUIRED FOR ABOVE GRADE SLAB PENETRATIONS. XRAY SLABS TO ASCERTAIN STEEL AND EXISTING CONDUIT PENETRATIONS PRIOR TO CUTTING. VERIFY OPENINGS WITH STRUCTURAL ENGINEER PRIOR TO CUTTING.
5. HOMERUN CIRCUITS TO 20 AMP, SINGLE POLE BREAKERS IN PANELBOARDS INDICATED. UTILIIZE SPARE BREAKERS MADE AVAILABLE BY DEMOLITION, IF NO SPARE BREAKER IS AVAILABLE, PROVIDE NEW BREAKER.
6. EXISTING CIRCUITING MAY BE RE-USED WHERE POSSIBLE.
7. CONCEAL NEW CIRCUITING IN WALLS WHERE POSSIBLE. FOR NEW DEVICES INSTALLED ON EXISTING SOLID WALLS, CONCEAL CIRCUITING IN WIREMOLD. COORDINATE FINISH AND GENERAL ROUTING OF WIREMOLD WITH ARCHITECT TO BE AS CONCEALLED AND/OR ROUTED IN A NEAT AND ORGANIZED CONSISTENT MANNER.

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Quincy Street Station
SOUTH OFFICE REMODEL
Topeka Metropolitan Transit Authority
820 SE QUINCY STREET TOPEKA, KS. 66612

PROJECT NUMBER: 22004

#	ISSUE/REVISION	DATE

MEP COVER AND SPECIFICATIONS
ME100
CONTRACT DOCUMENTS
9-30-2022

MINI-SPLIT DUCTLESS EVAPORATOR/HEAT PUMP SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	NOMINAL SIZE	MAX CFM	ENTERING AIR DRY/WET	COOLING MBH	HEATING MBH	ELECTRICAL	MOCP AMPS	MIN CIRCUIT AMPS	DISCONNECT	NOTES
MSEV/MSHP-1	*MITSUBISHI*	*NTXCKS18A112AA/NTXSKH18A112AA*	*1.5 TON*	*475/475*	*80/67*	*18.0*	*18.8*	*208/240V, 1#*	*31*	*17.0*	*YES*	*1,2,3*

NOTES LEGEND

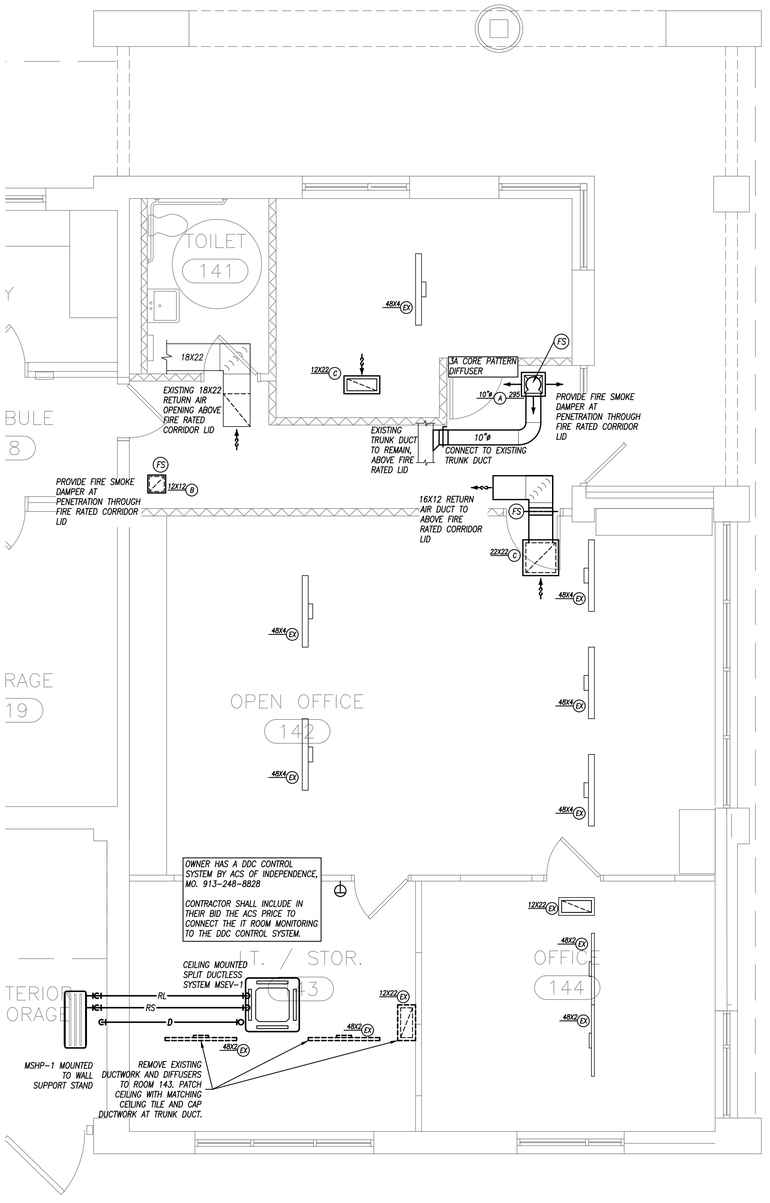
1. PROVIDE WIRED REMOTE THERMOSTAT, AND CONDENSATE PUMP.
2. PROVIDE ALL NEEDED ACCESSORIES FOR A COMPLETE INSTALLATION WITH LOW AMBIENT COOLING DOWN TO 0 DEG AMBIENT.
3. VERIFY EXACT REFRIGERANT LINE SIZES WITH MANUFACTURER.

GRILLE, REGISTER & DIFFUSER SCHEDULE

PLAN MARK	MANUFACTURER	MODEL NUMBER	SERVICE	MOUNT TYPE	VOLUME DAMPER	MATERIAL	MATERIAL COLOR	NOTES
A	*PRICE*	*SMD-3A1*	*SUPPLY*	*FLANGE*	*YES*	*STEEL*	*WHITE*	*3*
B	*PRICE*	*535*	*RETURN/EXHAUST*	*FLANGE*	*NO*	*STEEL*	*WHITE*	*3*
C	*PRICE*	*535-0*	*RETURN*	*GRID*	*NO*	*STEEL*	*WHITE*	*1*

NOTES LEGEND

1. PROVIDE WITHOUT SCREW HOLES WHERE USED IN A GRID CEILING
2. PAN TO FIT A 2'X2' GRID.
3. PROVIDE FIRE RADIATION DAMPER AT GYPBOARD CEILING.



FLOOR PLAN - HVAC

1/4" = 1'-0"

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HVAC PLAN

M100

CONTRACT DOCUMENTS
9-30-2022

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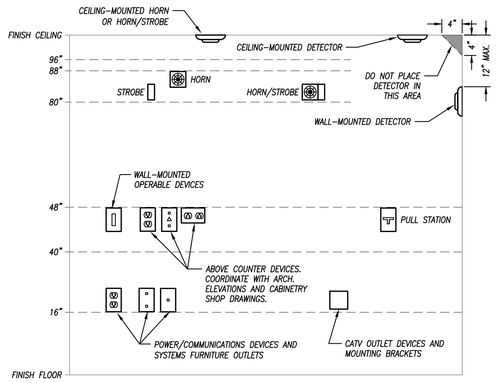
SHEET FILE LOCATION: Z:\22\22.024 TOPEKA METRO QUINCY OFFICE REMODEL\DRAWINGS\MEP-TOPEKA METRO QUINCY STREET STATION.DWG LAST SAVED: 9/30/2022 2:53 PM BY: ELI THOMPSON



GENERAL NOTES:
1. MOUNTING HEIGHTS SHOWN IN THIS DETAIL ARE TYPICAL UNLESS OTHERWISE NOTED ON THE PLANS.
2. SEE ARCHITECTURAL ELEVATIONS FOR SPECIAL CONDITIONS. NOTIFY ARCHITECT IMMEDIATELY OF ANY CONFLICTS.
3. ALL INSTALLATIONS SHALL COMPLY WITH ADA.

VISUAL FIRE ALARM NOTIFICATION DEVICES (STROBE)
LOCATE DEVICE SO THE BOTTOM OF THE DEVICE IS BETWEEN 80" AND 96" A.F.F. (NFPA) OR 6" BELOW CEILING, WHICHEVER IS LOWER (ADA 2010).

AUDIBLE FIRE ALARM NOTIFICATION DEVICES (HORN)
LOCATE DEVICE SO THAT THE TOP OF UNIT IS NOT MORE THAN 90" A.F.F. AND NOT LESS THAN 6" BELOW CEILING (NFPA)

FIRE ALARM ACTIVATION DEVICES (PULL STATION)
LOCATE FRONT-APPROACH DEVICES SO THAT THE HIGHEST OPERABLE PORTION OF THE DEVICE IS NOT MORE THAN 48" A.F.F (ADA 2010) AND NOT LESS THAN 42" A.F.F. (NFPA).

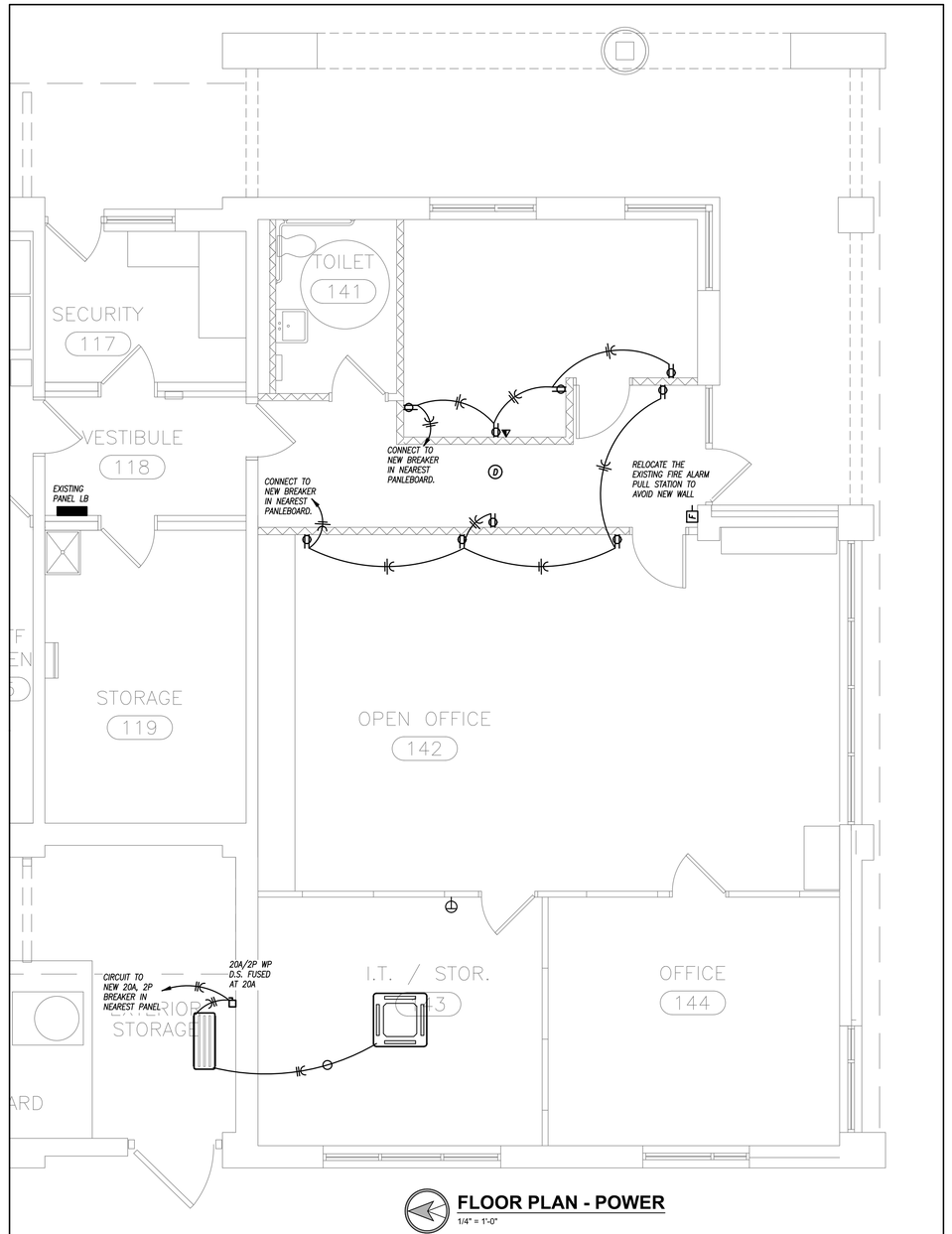
POWER/COMMUNICATION DEVICES:
OUTLETS SHALL BE LOCATED AT 16" A.F.F. TO THE BOTTOM OF THE BOX. ABOVE COUNTER DEVICES SHALL BE LOCATED AT 2" ABOVE THE BACKSPLASH OF THE COUNTER TO THE BOTTOM OF THE DEVICES. VERIFY WITH ARCHITECTURAL DETAILS.

WALL-MOUNTED OPERABLE DEVICES:
OPERABLE DEVICES SHALL BE LOCATED AT 48" A.F.F. TO THE TOP OF THE OPERABLE PORTION OF THE DEVICE.

WALL-MOUNTED OPERABLE DEVICES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
- LIGHT SWITCHES, DIMMERS, CONTROLS, ETC.
- PUSH BUTTONS
- NURSE/PATIENT CALL DEVICES (INLUIDING THOSE FOR STAFF USE)
- OTHER CONTROL OR "CALL" DEVICES

MOUNTING HEIGHTS FOR WALL-MOUNTED DEVICES

NOT TO SCALE



FLOOR PLAN - POWER

1/4" = 1'-0"

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Quincy Street Station
SOUTH OFFICE REMODEL
Topeka Metropolitan Transit Authority
820 SE QUINCY STREET TOPEKA, KS. 66612

PROJECT NUMBER: 22004

#	ISSUE/REVISION	DATE

POWER PLAN

E100

CONTRACT DOCUMENTS
9-30-2022

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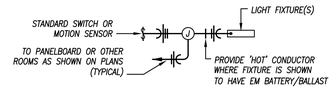
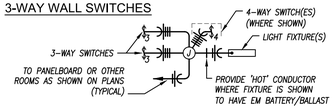
TYPICAL WIRING OF CONTROLS AND LIGHT FIXTURES

THE WIRING AND/OR TIC MARKS SHOWN BELOW ARE NOT SHOWN ON PLANS FOR CLARITY. PROVIDE WIRING FROM JUNCTION BOX(ES) TO SWITCHES/CONTROLLERS AND LIGHTS AS SHOWN BELOW FOR EACH ROOM/AREA.

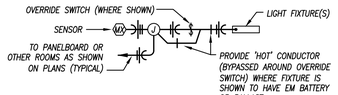
LINE VOLTAGE STANDARD WALL SWITCHES



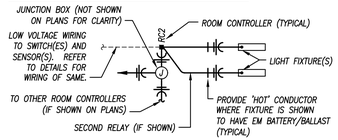
3-WAY WALL SWITCHES



LINE VOLTAGE CEILING SENSORS



ROOM CONTROLLERS / POWER PACKS



ROOM CONTROLLER SCHEDULE

MARK	MANUFACTURER	MODEL	RELAYS NO.	RELAYS TYPE	VOLTAGE
RCD1	WATTSTOPPER	LMRC-211	1	DIMMING (0-10V)	120 V
RCD2	WATTSTOPPER	LMRC-212	2	DIMMING (0-10V)	120 V
RC1	WATTSTOPPER	LMRC-101	1	ON/OFF	120 V
RC2	WATTSTOPPER	LMRC-102	2	ON/OFF	120 V

LIGHTING CONTROL DEVICE SCHEDULE

MARK	MANUFAC.	MODEL	DESCRIPTION	VOLTAGE
CEILING SENSORS				
ML	WATTSTOPPER	LMDC-100	DUAL-TECHNOLOGY CEILING SENSOR. 24V OPERATION WITH CAT5 CONNECTION.	24 V
SWITCHES				
L#	WATTSTOPPER	LMSW-100 SERIES	DIGITAL DECORA PUSHBUTTON SWITCH WITH LED PILOT LIGHT. CAT5 CONNECTION TO CONTROLLER. # REFERS TO QUANTITY OF BUTTONS ON FACE.	24 V
LD1	WATTSTOPPER	LMDM-101	DIGITAL DECORA DIMMING SWITCH WITH LED PILOT AND INDICATING LIGHTS. CAT5 CONNECTION TO CONTROLLER.	24 V

GENERAL LIGHTING NOTES

1. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
2. LIGHT FIXTURES INDICATED AS EMERGENCY FIXTURES ARE TO FUNCTION AS NIGHT LIGHTS UNLESS SPECIFICALLY SHOWN SWITCHED.
3. ALL CIRCUITING SHOWN ON THIS PLAN IS DIAGRAMMATIC.
   - 3.1. ALL FIXTURES SHALL BE FED FROM JUNCTION BOXES WITH LIGHT FIXTURE WHIPS (<6'). DAISY-CHAINING OF FIXTURES IS NOT ALLOWED.
   - 3.2. SWITCH BOX LOCATIONS SHALL BE WIRED SO THAT A NEUTRAL WIRE IS AVAILABLE AT THE SWITCH BOX LOCATION, EITHER IN THE BOX OR AVAILABLE TO BE ADDED VIA RACEWAY OR AN ACCESSIBLE WALL CAVITY.
   - 3.3. WALL SWITCHES FOR SEPARATE LOAD TYPES (EM/NORMAL, 120/277V, ETC.) SHALL NOT BE IN A SINGLE BOX.
   - 3.4. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

LIGHT FIXTURE SCHEDULE

PLAN MARK	MANUFACTURER/MODEL	MANUFACTURER/MODEL	SIZE	MOUNTING	FINISH	MIN LUMEN/MAX WATTS	CRI/CCT	NOTES
A	LITHONIA LIGHTING	CPX 2X4 ALO8 SWW7 M2	2X4	RECESSED	WHITE	3,813 LUMENS/29 WATTS	80/3500K	1
B	WILLIAMS ASM-4-SA-DRV-UNV	CREE CR-LE-1X4-10V	1X4	SURFACE	WHITE	4,000 LUMENS/47 WATTS	82/3500K	1
EM	MULE LTG MRD-HO-12V-12W	DUAL LITE LZ25N-12V-5W	SURFACE	SURFACE	WHITE	--	--	1,2
X	MULE LIGHTING	NYMD-A-1-R-BA		SURFACE WALL/CEILING	ALUMINUM	LED	--	2

NOTES LEGEND

1. PROVIDE DIMMABLE LED DRIVER UNIVERSAL VOLTAGE
2. PROVIDE EMERGENCY BATTERY MINIMUM OF 1000 LUMENS FOR 90 MINUTES

LIGHTING CONTROLS

SYMBOLS

- $_{M}$ — *WALL SWITCH VACANCY SENSOR: PASSIVE INFRARED, 120/277V, WALL SWITCH DECORA STYLE SENSOR. (WATTSTOPPER PW-101, OR EQUAL)*
- $_{L\#}$ — *ROOM CONTROLLER LOW VOLTAGE SWITCHES: PUSHBUTTON SWITCHES WITH LED PILOT LIGHT. SINGLE GANG IN DECORA STYLE FACEPLATE WITH UP TO EIGHT (8) CONTROLS. # REFERS TO QUANTITY OF SWITCHES ON FACE. (WATTSTOPPER LMSW SERIES, OR EQUAL)*
- $_{LD}$ — *ROOM CONTROLLER LOW VOLTAGE DIMMING SWITCHES: PUSHBUTTON SWITCHES WITH LED INDICATING LIGHTS. SINGLE GANG IN DECORA STYLE FACEPLATE. (WATTSTOPPER LMDM-101)*
- (M) — *CEILING-MOUNTED MOTION SENSORS: DUAL TECHNOLOGY (PASSIVE INFRARED AND ULTRASONIC) LINE VOLTAGE CEILING SENSOR. (WATTSTOPPER DT-355)*
- (ML) — *LOW VOLTAGE CEILING-MOUNTED MOTION SENSOR: DUAL TECHNOLOGY (PASSIVE INFRARED AND ULTRASONIC), LOW VOLTAGE, CEILING SENSOR. (WATTSTOPPER DT-300, OR EQUAL)*
- RC# — *ROOM CONTROLLER: DIGITAL ON/OFF ROOM CONTROLLER. 120/277V INPUT. # INDICATES NUMBER OF RELAYS (STD 1-2, UNITS SHALL BE GANGED FOR MORE THAN 2 RELAYS/ZONES) (WATTSTOPPER LMRC-100 SERIES, OR EQUAL)*
- RCD# — *ROOM CONTROLLER: DIGITAL ON/OFF 0-10V DIMMING ROOM CONTROLLER. 120/277V INPUT. # INDICATES NUMBER OF RELAYS (STD 1-3, UNITS SHALL BE GANGED FOR MORE THAN 3 RELAYS/ZONES) (WATTSTOPPER LMRC-200 SERIES OR EQUAL)*

TRAINING AND PROGRAMMING

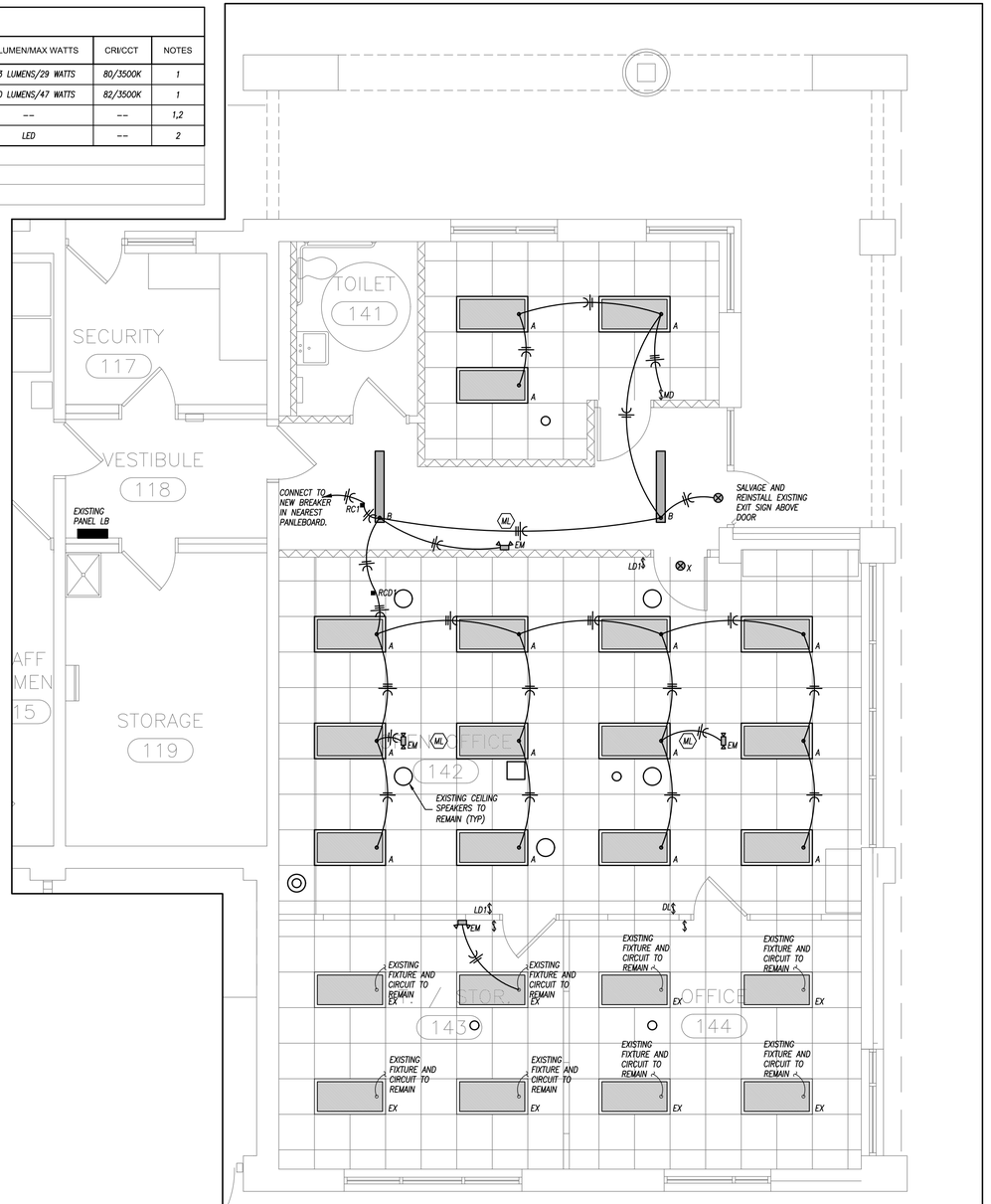
OWNER TRAINING:
- *PROVIDE FACTORY REPRESENTATIVE TRAINING TO OWNER FOR EACH LIGHTING CONTROL SYSTEM UTILIZED, INCLUDING PROGRAMMING FOR SCHEDULING AND OPERATION OF EACH ROOM PER OWNER DIRECTION.*
- *PROVIDE RECORD OF TIME DELAY SETTINGS ON ALL SENSOR DEVICES FOR OWNER USE.*

SENSOR ADJUSTMENTS AND SETTINGS:
- *SYSTEMS SHALL BE SET/PROGRAMMED TO OPERATE TYPICALLY IN MANUAL ON/AUTO OFF MODE.*
  1. *SET WALL MOUNTED MOTION SENSOR TO MANUAL ON MODE.*
  2. *SET POWER PACKS AND ROOM CONTROLLERS CONTROLLED BY MOTION SENSORS TO MANUAL ON AND CONTROL WITH MOMENTARY WALL SWITCH.*
- *PROVIDE FINAL SETTINGS/ADJUSTMENTS PER OWNER'S DIRECTION.*

CONTROLS SEQUENCES

WALL-MOUNTED LINE VOLTAGE SENSORS:
- *TURN ON LIGHTS IN ROOM/AREA UPON BUTTON ON SENSOR BEING ACTIVATED BY OCCUPANT.*
- *TURN OFF LIGHTS AFTER NO MOTION IS DETECTED AND DELAY EXPIRES.*

OPEN OFFICE:
- *MANUAL ON/OFF AND DIMMING CONTROL OF LIGHTING VIA DIMMING SWITCHES.*
- *TURN OFF LIGHTS AFTER NO MOTION IS DETECTED AND DELAY EXPIRES.*
- *SWITCHES ARE TO BE LOCATED AT EACH DOOR.*
- *EACH SWITCH IS TO FUNCTION AS A THREE-WAY SWITCH IN CONJUNCTION WITH THE SWITCH SERVING SAME LOAD AT THE OTHER DOOR IN THE ROOM.*



FLOOR PLAN - LIGHTING

1/4" = 1'-0"

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