EXISTING WATER SOURCE HEAT PUMP SCHEDULE

MARK	UNIT CONFIGURATION	FAN DATA				COND. WATER PIPE SIZE	REF. TYPE	HEATING PERFORMANCE DATA		COOLING PERFORMANCE DATA								POWER CONNECTION				WEIGHT	MANUFACTURER/ MAKE AND MODEL	REMARKS
		SUPPLY AIR CFM	OUTSIDE AIR CFM	E.S.P.	H.P.			CAP. MBH	EWT DEG-F	NET CAPACITY(MBH)		E.A.T.		WATER			EER							
				IN W.G.						TOTAL	SENS	D.B. F.	W.B. F.	EWT F.	GPM	WPD FT. HD		V.	Ph.	MCA	MOCP	LBS.		
WSHP-1(E)	HORIZONTAL	1600 (V.I.F)	310	0.7 (V.I.F)	S.A.E	S.A.E	S.A.E	S.A.E	S.A.E	48 (V.I.F)	S.A.E	S.A.E					S.A.E	208 (V.I.F)	1 (V.I.F)	29.55 (V.I.F)	50 (V.I.F)	S.A.E	TRANE/ GEHE048 (V.I.F)	1,2

NOTES:-

1. S.A.E :- SAME AS EXISTING, V.I.F:- VERIFY IN FIELD.
2. SEE EXISTING SYSTEM NOTES.

1

TOILET EXHAUST FAN SCHEDULE

TAG	DRIVE TYPE	FLOW RATE	EXTERNAL STATIC PRESSURE	SPEED	ELECTRIC DATA				MAXIMUM LOUDNESS	BASIS OF DESIGN		WEIGHTS (LBS)	REMARK
		CFM	IN W.G.	RPM	V/PH/HZ	FLA (AMPS)	MCA	MOCP	DBA	MANUFACTURER	MODEL		
EF-1 (N)	DIRECT	70	0.75	1578	115/1/60	1.5	1.9	15	39	GREENHECK	CSP-A390-VG	24	1,2,3,4

NOTES:

1) PROVIDE FACTORY MOUNTED AND INSTALLED WEATHER PROOF DISCONNECT SWITCH.
2) PROVIDE THERMAL OVERLOAD PROTECTION, BACKDRAFT DAMPER, AMCA SEAL & UL CERTIFIED.
3) PROVIDE ALL NECESSARY ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATIONS.
4) COORDINATE WITH ELECTRICAL CONTRACTOR.

AIR TERMINAL SCHEDULE

MANUFACTURER	MODEL NO.	MARK	SIZE	MAX. NOISE CRITERIEA	REF. NOTE
TITUS	CT-481	S1	2'-0"	25	1,2,3,4,5,6
TITUS	CT-481	S2	1'-6"	25	1,2,3,4,5,6
TITUS	OMNI	S3	24"X24"	25	1,2,3
TITUS	OMNI	S4	4'-0"	25	1,2,3
TITUS	CT-480	R1	60"X6"	25	1,2,3,5,6
TITUS	350FL	R2	8"X8"	25	1,2,3
TITUS	CT-481	E1	18"X4"	25	1,2,3,4,5,6

1. COORDINATE BORDER AND FRAME MOUNTING TYPE WITH ARCHITECTURAL CEILING.
2. COORDINATE FINISH AND COLOR WITH ARCHITECT PRIOR TO ORDERING.
3. VERIFY ACTUAL DIMENSIONS WITH ARCHITECT PRIOR TO ORDERING.
4. PROVIDE TITUS FPBI PLENUM BOOT.
5. MOUNT IN COVE.
6. PROVIDE CORD OPERATED VOLUME CONTROL DAMPER IN INACCESSIBLE CEILINGS.

1

AIR BALANCE TABLE

UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR (CFM)
WSHP-1 (E)	SEE PLAN	1600	310	1290	0 CFM
EF-1 (N)	SEE PLAN	0	0	0	70 CFM
	TOTAL:	1600 CFM	310 CFM	1290 CFM	70 CFM
	BUILDING PRESSURE:	....		240 CFM	POSITIVE

NOTES:

1. CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPER ON WSHP-1(E) TO MATCH VALUES MENTIONED IN ABOVE TABLE.

HVAC EXISTING SYSTEM NOTES

1. T.G.C. SHALL PROVIDE THE FOLLOWING (BUT NOT LIMITED TO): THE COMPLETE LUBRICATION OF ALL SHAFTS AND BEARINGS THAT HAVE LUBRICATION ZERTS.
2. THE REPLACEMENT OF ALL BELTS, HOSES AND FABRIC/RIBBER COATED ITEMS THAT ARE SUBJECT TO WEAR.
3. THOROUGH CLEANING OF COILS. THE STRAIGHTENING (COMBING) OF ALL LOUVERS & FINS.
4. EXAMINE AND REPAIR ALL ELECTRICAL WIRING, CONTROLS, STARTERS, RELAYS, CAPACITORS AND LIKE ITEMS THAT TEND TO DETERIORATE OVER TIME OR BECOME NONOPERATIONAL. THIS INCLUDES SMOKE DETECTORS.
5. THE REPLACEMENT OF "LIFETIME" BUSHINGS AND BEARINGS THAT ARE SEALED AND CANNOT BE LUBRICATED BUT ARE IN FACT WORN BEYOND REASONABLE USE.
6. THE REPLACEMENT OF ALL DISPOSABLE FILTERS ON THE DAY OF THE STORE'S GRAND OPENING.
7. VERIFY ANY WORK REQUIRED BY THE LANDLORD PRIOR TO BID.
8. CHECK/REPAIR CONDENSATE DRAIN LINE AND PAN.
9. CHECK/REPAIR CONDENSER LINES AND OIL LOOP AS REQUIRED. PROVIDE NEW INSULATION ON LINES AS REQUIRED AND RECHARGE SYSTEMS TO MANUFACTURE'S RECOMMENDATIONS.

MECHANICAL SYMBOLS LIST

AC-1 EF-1	EQUIPMENT SYMBOL
◐	POINT OF NEW CONNECTION TO EXISTING
AIR DEVICES	
☰	LINEAR SUPPLY DIFFUSER
▭	RETURN AIR GRILLE
DUCT ACCESSORIES	
VD VD	VOLUME DAMPER W/ ACCESS DOOR
CONTROLS AND SENSORS	
Ⓣ	THERMOSTAT
Ⓣs	TEMPERATURE SENSOR
DUCTWORK	
=======	AIR DUCT W/ 1.5" ACOUSTICAL LINING
∿∿∿	FLEXIBLE DUCT
FC FC	FLEXIBLE CONNECTION
24X12	RECTANGULAR DUCT (WIDTH X DEPTH)
Ø12	ROUND DUCT (DIAMETER)
◯	ROUND DUCT CROSS SECTION
☒	SUPPLY AIR RECTANGULAR DUCT CROSS SECTION
▭	RETURN AIR RECTANGULAR DUCT CROSS SECTION

MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AL	ACOUSTIC LINING
BOD	BOTTOM OF DUCT
BOE	BOTTOM OF EQUIPMENT
CFM	CUBIC FEET OF AIR PER MINUTE
COP	COEFFICIENT OF PERFORMANCE
CP	CONDENSATE PUMP
CD	CONDENSATE DRAIN PIPE
DN	DOWN
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
FC	FLEXIBLE CONNECTION
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
VD	VOLUME DAMPER
WSHP	WATER SOURCE HEAT PUMP
SAE	SAME AS EXISTING
VIF	VERIFY IN FIELD
ESP	EXTERNAL STATIC PRESSURE
(E)	EXISTING
(N)	NEW
SA	SUPPLY AIR
RA	RETURN AIR
T.G.C	TENANT GENERAL CONTRACTOR
T-STAT	THERMOSTAT

MECHANICAL DRAWING LIST

M1.0	MECHANICAL SCHEDULES, LEGEND & DETAILS
M1.1	MECHANICAL SPECIFICATIONS
M2.0	MECHANICAL FLOOR PLAN

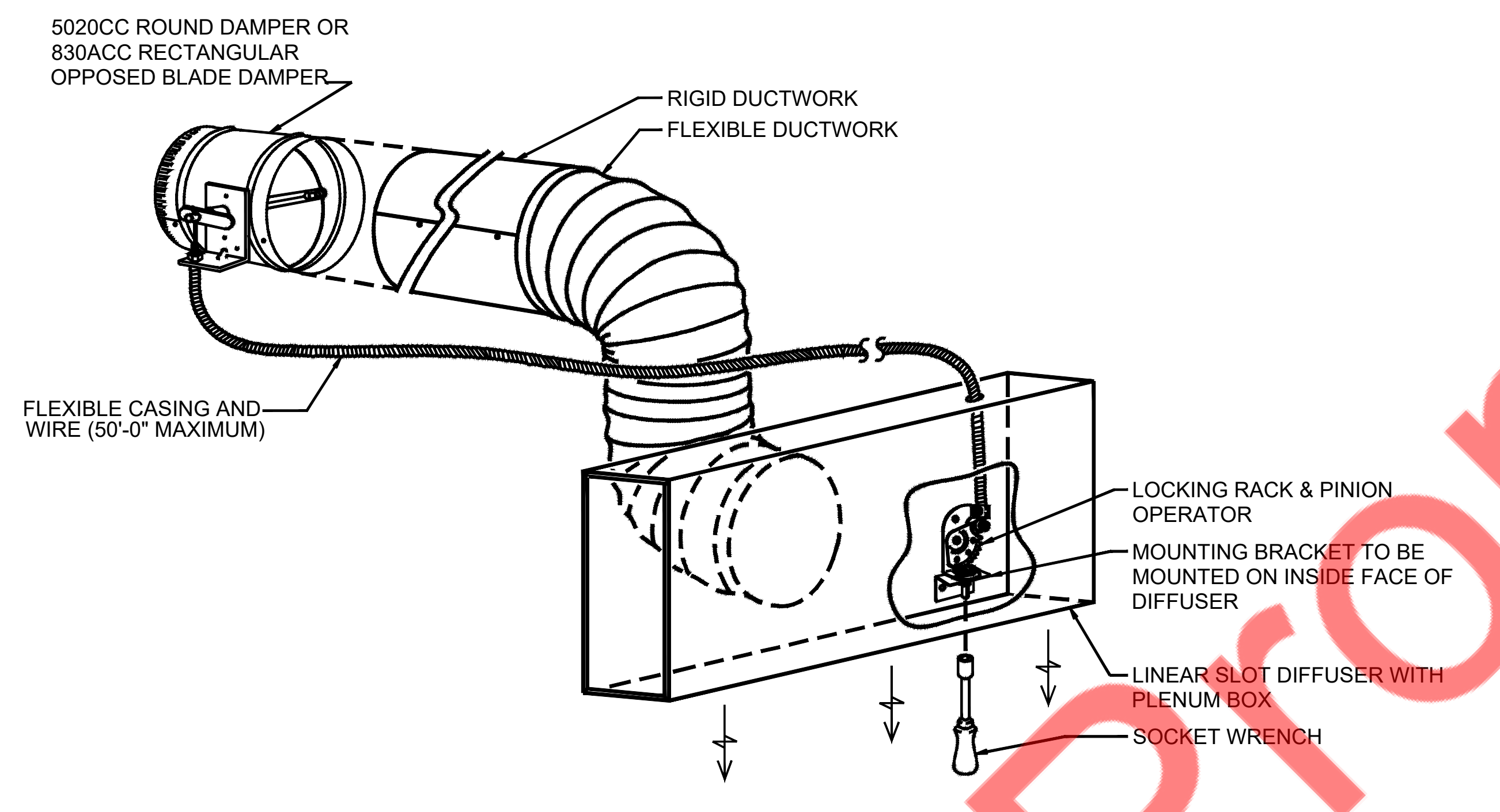
APPLICABLE CODES

A. 2022 DENVER BUILDING CODE
B. 2022 DENVER MECHANICAL CODE
C. 2022 DENVER PLUMBING CODE
D. 2022 DENVER FIRE CODE
E. 2022 DENVER ELECTRICAL CODE
F. 2022 DENVER ENERGY CODE.

1

VENTILATION CALCULATION AS PER 2022 DENVER MECHANICAL CODE - TABLE 403.3.1.1

ROOM NAME	AREA (SQ.FT.) Az	NUMBER OF PEOPLE/1000sq.ft AS PER DMC 2022	NUMBER OF PEOPLE AS PER DMC 2022 (Pz)	NO. OF CHAIR	NO. OF PEOPLE	MIN OUTSIDE AIR AS PER DMC 2022		BREATHING ZONE OUTDOOR AIR (CFM) Vbz=RpPz+RaAz	ZONE AIR DISTRIBUTION EFFECTIVENESS (Ez)	ZONE OUTDOOR AIR REQUIRED (CFM) Voz=Vbz/Ez	ZONE OUTDOOR AIR PROVIDED (CFM)	EXHAUST AIRFLOW RATE CFM/SQ.FT AS PER DMC 2022	REQUIRED EXHAUST (CFM)	PROVIDED EXHAUST (CFM)
						CFM/PEOPLE Rp	CFM/SQ.FT Ra							
BOH	132	5	1	0	1	5	0.06	13	0.8	16	20	-	-	-
HALLWAY	85	0	0	0	0	0	0.12	10	0.8	13	20	-	-	-
RETAIL AREA	923	15	14	0	14	7.5	0.12	216	0.8	270	270	-	-	-
FITTING ROOM -1	25	-	-	-	-	-	-	-	-	-	-	0.25	6	30
FITTING ROOM -2	56	-	-	-	-	-	-	-	-	-	-	0.25	14	40
TOTAL	**1221**	**-**	**15**	**0**	**15**	**TOTAL**		**239**	**-**	**299**	**310**	**-**	**20**	**70**



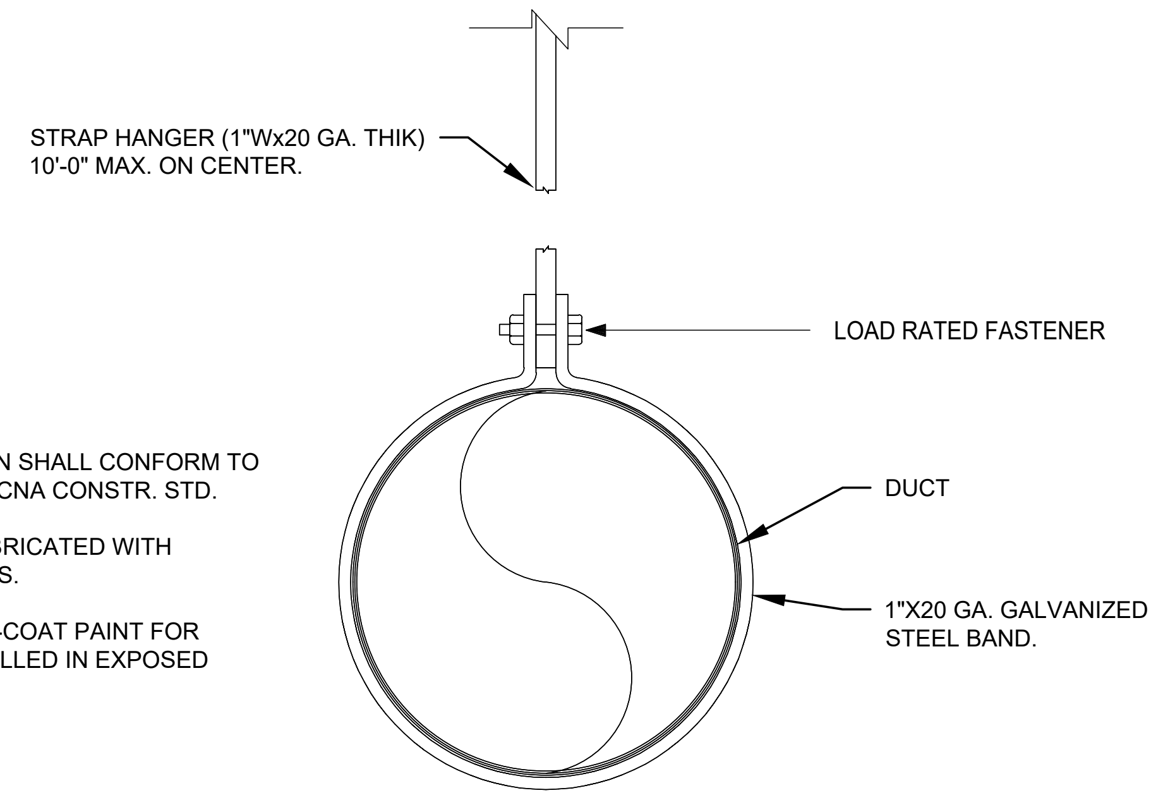
270-275 BOWDEN CABLE CONTROL SYSTEM

NOTES:

1) THE 270-275 BOWDEN CABLE CONTROL SYSTEM IS DESIGNED FOR USE WITH EXTERNALLY CONTROLLED ROUND OR RECTANGULAR DAMPERS, AND CAN BE MOUNTED IN A WIDE VARIETY OF LOCATIONS INCLUDING CEILING JOISTS, LAY-IN CEILINGS, BEHIND GRILLES, ON OR INSIDE OTHER VARIOUS TYPES OF DIFFUSERS, ETC.
2) CABLE SHALL CONSIST OF BOWDEN CABLE 0.054" STAINLESS STEEL CONTROL WIRE ENCAPSULATED IN 1/16" FLEXIBLE GALVANIZED SPIRAL WIRE SHEATH.
3) LOCKING RACK AND PINION GEAR DRIVE SHALL BE CONSTRUCTED OF 14 GAUGE STEEL AND SHALL BE USED TO CONVERT ROTARY MOTION INTO PUSH-PULL MOTION.
4) CONTROL SHAFT SHALL BE "D"-STYLE FLATTENED 1/4" DIAMETER WITH 265° ROTATION PROVIDING 1-1/2" LINEAR TRAVEL CAPABILITY.

REMOTE CABLE DAMPER DETAIL

SCALE:NTS

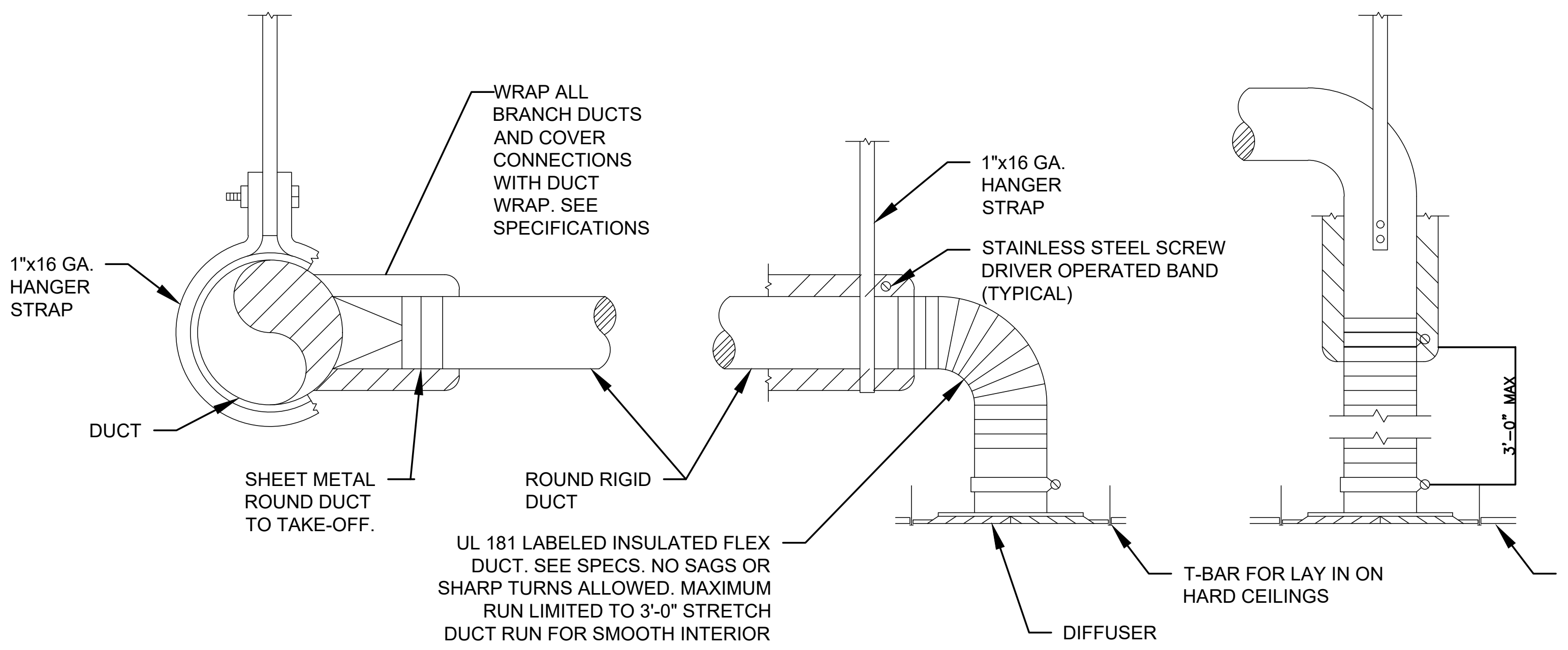


NOTES :

1. DUCT CONSTRUCTION SHALL CONFORM TO LOW PRESSURE MATCNA CONSTR. STD.
2. DUCTS SHALL BE FABRICATED WITH LONGITUDINAL SEAMS.
3. PROVIDE ONE PRIME-COAT PAINT FOR ROUND DUCTS INSTALLED IN EXPOSED AREAS.

METHOD OF HANGING DUCTWORK

SCALE:NTS



TYPICAL DIFFUSER CONNECTION DETAIL

SCALE:NTS

CONSULTANTS (ENGINEER):

NY ENGINEERS

NEARBY ENGINEERS
382 NE 191ST STREET
SUITE 49674, MIAMI, FL 33179
PH-914.257.3455
WWW.NY-ENGINEERS.COM

JENNI KAYNE
DENVER

ISSUANCE NAME	DATE
PERMIT SET	10/11/2023
1 CITY COMMENTS	01/05/2024

MECHANICAL
SCHEDULES,
LEGEND & DETAILS

M1.0

DENVER BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF INTERNATIONAL BUILDING CODE 2021 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. THE CONTRACTOR SHALL ENGAGE THE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
2. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
3. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE INTERNATIONAL MECHANICAL CODE 2021:
   A. VENTILATION SYSTEMS - 2021 IMC 403.1.
4. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   A. STANDARDS OF HEATING - 2021 IMC 309.1
   B. DUCT CONSTRUCTION AND INSTALLATION- 2021 IMC 603
   C. AIR INTAKES, EXHAUSTS AND RELIEFS - 2021 IMC 401.5
   D. AIR FILTERS - 2021 IMC 605.
5. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
6. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2021 IMC 403.1.
7. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2021 IMC 403.3.
8. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
9. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
10. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.

GENERAL NOTES

1. CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
2. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
3. BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
4. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
5. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
6. CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
7. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.
8. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
9. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND APPROVED MANNER. RESTORE EXISTING WORK DISTURBED WHILE INSTALLING NEW WORK TO ACCEPTABLE CONDITION AS DETERMINED BY ARCHITECT.
10. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING OWNER. INSTALL ISOLATION VALVES AT POINT OF CONNECTION TO THE EXISTING PIPING. PROVIDE TEMPORARY DUCT CAPS AND/OR CONNECTIONS TO MINIMIZE SHUTDOWN TIME.
11. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
12. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
13. ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
14. REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
15. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
16. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
17. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
18. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE.
19. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
22. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
23. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
24. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING DUCTWORK, PIPING (SIZES, CLEARANCES, ETC) AND CONDITIONS.
25. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
26. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
27. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
28. WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY. DEFINITIONS:

1) "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES. 31.

SCOPE OF WORK

SCOPE OF WORK

1. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFI'S, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.
2. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
3. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

HVAC NOTES

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:

1. AIR SYSTEMS: CONSTANT

1.2 QUALITY ASSURANCE

A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.

1.3 EXECUTION

A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.

E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS S3ECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.

H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.

I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.

J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.

END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

1.1 QUALITY ASSURANCE

SURFACE-BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME-SPREAD INDEX OF 25, AND SMOKE-DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOOR, 75, AND SMOKE-DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTME 84.

1.2 FIELD QUALITY CONTROL

A. FIELD INSPECTIONS: BY OWNER-ENGAGED AGENCY.

1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE;

A. CONCEALED, RECTANGULAR, ROUND AND FLAT-OVAL, SUPPLY-RETURN, OUTDOOR-AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION:

B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET,

MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:

1.4 ITEMS NOT INSULATED:

1. FIBROUS-GLASS DUCTS.
2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE ANDASHRAE/IESNA 90.1.
3. FACTORY-INSULATED FLEXIBLE DUCTS.
4. FACTORY-INSULATED PLENUMS AND CASINGS.
5. FLEXIBLE CONNECTORS.
6. VIBRATION-CONTROL DEVICES.
7. FACTORY-INSULATED ACCESS PANELS AND DOORS.
8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING.

1.5 PRODUCTS

A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:

1. JOHNS-MANVILLE
2. OWENS-CORNING

1.6 ACOUSTICAL TREATMENT

1. WHERE SHOWN ON THE DRAWINGS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R-6 AS MANUFACTURED BY DUCTMATE, 1-1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER. LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED,

END OF SECTION 230713

SECTION 233113 - METAL DUCTS

1.1 CONSTRUCTION

A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 1 INCH WG PRESSURE, SEAL CLASS "A".

B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 1" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:

1. CONSTRUCT SO THAT ALL INTERIOR SURFACES ARE SMOOTH. USE SLIP AND DRIVE OR FLANGED AND BOLTED CONSTRUCTION WHEN FABRICATING RECTANGULAR DUCTWORK. USE SPIRAL LOCK SEAM CONSTRUCTION WHEN FABRICATING ROUND SPIRAL DUCTWORK. SHEET METAL SCREWS MAY BE USED ON DUCT HANGERS, TRANSVERSE JOINTS AND OTHER SMACNA APPROVED LOCATIONS IF THE SCREW DOES NOT EXTEND MORE THAN 1/2 INCH INTO THE DUCT.
2. SHEET STEEL SHALL COMPLY WITH ASTMA653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC IRON ALLOY-COATED (GALVANINEALED) BY HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENT FOR SHEET METALLIC-COATED BY HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES ALL 90° ELBOWS.
3. USE ELBOWS AND TEES WITH A CENTER LINE RADIUS TO WIDTH OR DIAMETER RATIO OF 1.5 WHEREVER SPACE PERMITS. WHEN A SHORTER RADIUS MUST BE USED DUE TO LIMITED SPACE, INSTALL SINGLE WALL SHEET METAL SPLITTER VANES IN ACCORDANCE WITH SMACNA PUBLICATIONS, TYPE RE 3. WHERE SPACE WILL NOT ALLOW AND THE C VALUE OF THE RADIUS ELBOW, AS GIVEN IN SMACNA PUBLICATIONS, EXCEEDS 0.31, USE RECTANGULAR ELBOWS WITH TURNING VANES AS SPECIFIED IN SECTION 23 33 00. SQUARE THROAT-RADIUS HEEL ELBOWS WILL NOT BE ACCEPTABLE. STRAIGHT TAPS OR BULLHEAD TEES ARE NOT ACCEPTABLE.
4. WHERE RECTANGULAR ELBOWS ARE USED, PROVIDE TURNING VANES IN ACCORDANCE WITH SECTION 23 33 00.
5. PROVIDE EXPANDED TAKE-OFFS OR 45 DEGREE ENTRY FITTINGS FOR BRANCH DUCT CONNECTIONS WITH BRANCH DUCTWORK AIRFLOW VELOCITIES GREATER THAN 700 FPM. SQUARE EDGE 90-DEGREE TAKE-OFF FITTINGS OR TRAIGHT TAPS WILL NOT BE ACCEPTED.
6. BUTTON PUNCH SNAP-LOCK CONSTRUCTION WILL NOT BE ACCEPTED ON ALUMINUM DUCTWORK.
7. ROUND DUCTS MAY BE SUBSTITUTED FOR RECTANGULAR DUCTS IF SIZED IN ACCORDANCE WITH ASHRAE TABLE OF EQUIVALENT RECTANGULAR AND ROUND DUCTS. NO VARIATION OF DUCT CONFIGURATION OR SIZES PERMITTED EXCEPT BY WRITTEN PERMISSION OF THE ENGINEER.

C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION, THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:

USG	MAX. SIDE INCHES BRACING	TRANSVERSE JOINTS AND
22	UP TO 12	S SLIP, DRIVE SLIP, ONE INCH POCKET LOCK ON 8 FOOT CENTERS
22	13 TO 24	1"X1"X1/8" ANGLES ON 4 FOOT CENTERS
20	25 TO 35	1"X1"X1/8" ANGLES ON 2 FOOT CENTERS

D. PROVIDE TAPPING IN DUCTS FOR THERMOMETERS WHERE SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED TAPPING LOCATED AS FOLLOWS:

1. UPSTREAM OF EACH REHEAT COIL AND VAV BOX.
2. DOWNSTREAM OF EACH REHEAT COIL AND VAV BOX.

E. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3-6 AND AS SHOWN IN FIG. 3-1 AND 3-2 FOR ROUND DUCTWORK.

F. ALL DUCTWORK SHALL BE SEALED TO CLASS "A" AND LEAK TESTED TO MEAT SMACNA CLASS 6 FOR RECTANGULAR AND CLASS 3 FOR ROUND DUCTS.

1.2 MATERIALS

A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.

B. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.

C. SHEET METAL MATERIALS:

1. GALVANIZED SHEET STEEL.
2. STAINLESS-STEEL SHEETS.
3. ALUMINUM SHEETS.
4. FACTORY-APPLIED ANTI-MICROBIAL COATING.

D. DUCT LINER:

1. FIBROUS GLASS, TYPE I, FLEXIBLE.
   a. WITH ANTI-MICROBIAL EROSION-RESISTANT COATING.
2. FLEXIBLE ELASTOMERIC.
3. NATURAL FIBER.

E. SEALANT MATERIALS:

1. TWO-PART TAPE SEALING SYSTEM.
2. WATER-BASED JOINT AND SEAM SEALANT.
3. SOLVENT-BASED JOINT AND SEAM SEALANT.
4. FLANGED JOINT SEALANT.
5. FLANGE GASKETS.
6. ROUND DUCT JOINT O-RING SEALS.

1.3 DUCT CLEANING

A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.

B. CLEAN THE FOLLOWING ITEMS:

1. AIR OUTLETS AND INLETS.
2. SUPPLY, RETURN, AND EXHAUST FANS.
3. AIR-HANDLING UNITS.
4. COILS AND RELATED COMPONENTS.
5. RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
6. SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
7. DEDICATED EXHAUST AND VENTILATION COMPONENTS AND MAKEUP AIR SYSTEMS.

1.4 DUCT SCHEDULE

A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:

1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.

END OF SECTION 233113

SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES

1.1 PRODUCTS

A. DIFFUSERS, REGISTERS AND GRILLES SHALL BE FURNISHED AND INSTALLED FOR CAPACITIES AND IN LOCATIONS INDICATED ON DRAWINGS. ALL REGISTERS AND DIFFUSERS SHALL BE PRIME COATED STEEL OR EXTRUDED ALUMINUM FINISHED UNLESS OTHERWISE NOTED IN BAKED WHITE ENAMEL.

B. MANUFACTURERS: TITUS

1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:

a. CARNES.
b. HART & COOLEY INC.
c. KRUEGER.
d. METALAIRE, INC.
e. NAILOR INDUSTRIES INC.
f. RUSKIN

C. ALL DIFFUSERS SHALL HAVE CONTROLLING/EQUALIZING GRID AND OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

D. ALL DUCTED RETURN REGISTERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

END OF SECTION 233713

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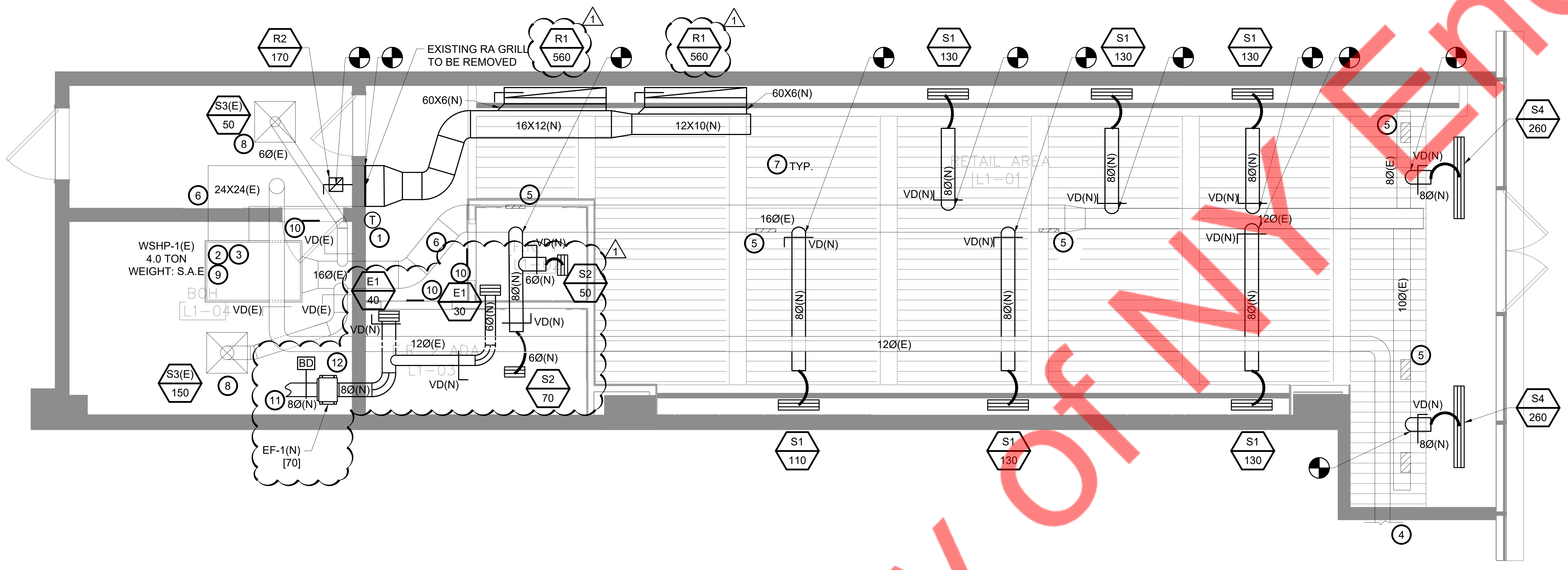
JENNI KAYNE
DENVER

ISSUANCE NAME	DATE
PERMIT SET	10/11/2023
1 CITY COMMENTS	01/05/2024

MECHANICAL
SPECIFICATIONS

M1.1



MECHANICAL FLOOR PLAN 1

1/4" = 1'-0"

MECHANICAL GENERAL NOTES

A. CONTRACTOR TO FAMILIARIZE HIMSELF WITH THE SITE AND VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND ADJUST FOR ACTUAL FIELD CONDITIONS AT NO EXPENSE TO REPORT TO THE ARCHITECT AND OR ENGINEER ANY DISCREPANCIES WITH THE PLANS AND EXISTING CONDITIONS.

B. ALL DUCTWORK, HANGERS, DAMPER CONSTRUCTION, SEAMS, INSTALLATION, ETC., SHALL CONFORM TO THE STANDARDS AS ADOPTED BY A.S.H.R.A.E. & SMACNA. ALL WORK SHALL CONFORM TO ALL APPLICABLE LAWS, RULES & REGULATIONS & RECOMMENDATIONS OF LOCAL BUILDING DEPARTMENT, NATIONAL BOARD OF FIRE UNDERWRITERS, N.F.P.A., & SHOPPING CENTER GENERAL SPECIFICATIONS. ALL DUCTWORK SHALL BE SHEETMETAL CONFORMING TO SMACNA STANDARDS FOR LOW PRESSURE DUCTWORK & A.S.H.R.A.E. STANDARD 90-75.

C. THE MECHANICAL CONTRACTOR SHOULD FURNISH, CONNECT AND INSTALL THE THERMOSTAT/CONTROL WIRING AND THE ELECTRICAL CONTRACTOR SHOULD PROVIDE, INSTALL AND CONNECT THE ELECTRIC TO THE UNITS.

D. SCHEDULE OF WORK: THIS CONTRACTOR SHALL BE REQUIRED TO FAMILIARIZE HIMSELF WITH THE PROPOSED WORK SCHEDULE & SHALL COORDINATE HIS WORK SCHEDULE WITH THE OTHER TRADES, SO THAT WORK PROGRESSES CAN BE PLANNED IN A PROPER SYSTEMATIC FASHION TO AVOID ANY DUPLICATION OF EFFORT & RESULTANT DELAY OF PROJECT.

E. SUPPLY DUCTWORK INSIDE BUILDING SHALL BE INSULATED WITH 1/2" ALUMINUM FOIL FACED FIBERGLASS BLANKET OVERLAPPED ON ALL DUCTWORK SHALL BE INSTALLED IN CONCEALED SPACE ABOVE CEILINGS.

F. PROVIDE CLEAR ACCESS TO ALL EQUIPMENT WITHIN THE LEASED SPACE.

G. CONTRACTOR SHALL PROVIDE OPERABLE H & V SYSTEMS COMPLETE IN ALL RESPECTS AS CONTEMPLATED BY THE INFORMATION INDICATED ON THE DRAWINGS. IT IS NOT INTENDED THAT THE DRAWINGS & SPECIFICATIONS INDICATE EACH & EVERY ITEM OF INFORMATION NECESSARY FOR COMPLETE SYSTEMS BUT INDICATE SUFFICIENT INFORMATION FOR THE CONTRACTOR TO SECURE ADDITIONAL INFORMATION FROM OTHER SOURCES & PROVIDE ALL MATERIALS, EQUIPMENT & LABOR NECESSARY FOR COMPLETE INSTALLATIONS.

H. ALL LABOR, MATERIALS & EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR GUARANTEE FROM DEFECTS.

I. PROVIDE ARCHITECT WITH THREE (3) COPIES OF AIR BALANCE REPORT. INSTRUCT OWNER IN USE OF EQUIPMENT. AIR BALANCE REPORT TO BE AN INDEPENDENT TESTING AIR BALANCE TEST REPORT TO BE TAKEN IN THE LATE AFTERNOON WITH THE FOLLOWING TEMPERATURE READINGS DOCUMENTED (IN ADDITION TO CFM)

1. TEMPERATURE OF AIR LEAVING EACH CEILING DIFFUSER,
2. TEMPERATURE OF AIR LEAVING HVAC UNIT,
3. TEMPERATURE OF OUTSIDE AIR AT HVAC UNIT,
4. TEMPERATURE OF AIR WITHIN SALES AREA (AT THERMOSTAT).

J. COORDINATE WITH LANDLORD'S AUTHORIZED STRUCTURAL ENGINEER AS/IF REQUIRED.

K. THE T.G.C. SHALL FIELD VERIFY THE LOCATIONS OF EXISTING HVAC SYSTEMS, EQUIPMENT AND DEVICES.

L. THE T.G.C. SHALL PROVIDE REQUIRED STRUCTURAL SUPPORT FOR ANY NEW ROOF MOUNTED OR SUSPENDED HEATING, VENTILATION, OR AIR CONDITIONING EQUIPMENT AS REQUIRED. THE T.G.C. SHALL COORDINATE SIZES AND PLACEMENT OF UNITS WITH THE MECHANICAL SUBCONTRACTOR AND THE LANDLORD.

M. ALL WORK SHALL COMPLY WITH ALL LOCAL CODE & STATE CODE & AUTHORITIES HAVING JURISDICTION.

N. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR DUCTWORK ROUTING. OFFSET AND RUN DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.

O. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS. CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR TYPE OF DUCTING (BOARD DUCT/METAL DUCT). INSTALL DUCTING AS PER LOCAL CODES & SMACNA STANDARDS.

P. MOUNT DUCTWORK AS HIGH AS POSSIBLE.

Q. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALLS.

R. PROVIDE MINIMUM R-6 INSULATION (INTERNAL FOR EXPOSED DUCTS AND EXTERNAL FOR CONCEALED DUCTS) FOR SUPPLY & RETURN AIR DUCTS. PROVIDE ACOUSTIC INSULATION ON MAIN SUPPLY AND RETURN DUCTS UP TO 10 FT. FROM HVAC UNIT.

S. CONTRACTOR TO PROVIDE CORD OPERATED VOLUME DAMPERS IN INACCESSIBLE CEILING.

MECHANICAL FLOOR PLAN KEY NOTES

① REUSE EXISTING THERMOSTAT IF IT IS IN GOOD CONDITION, IF EXISTING THERMOSTAT IS NOT IN CONDITION TO REUSE THEN INSTALL & WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT. COORDINATE EXACT LOCATION WITH ARCHITECT & OWNER PRIOR TO ROUGH-IN.

② PROVIDE REMOTE TEMP. SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT.

③ EXISTING MECHANICAL WATER SOURCE HEAT PUMP UNIT ALONG WITH ALL ASSOCIATED PIPING,VALES & ACCESSORIES TO REMAIN. CONTRACTOR TO VERIFY LOCATION IN FIELD PRIOR TO BID. CLEAN AND REFURBISH TO "LIKE-NEW" CONDITION. REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE A FULLY FUNCTIONING VERIFY IN FIELD PRIOR TO BID ENSURE UNIT IS BALANCED TO 1600 CFM PER EXISTING AS-BUILT CONDITIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO BID AND START OF WORK.

④ EXISTING OUTSIDE AIR INTAKE DUCT PROVIDED BY LL ALONG WITH ALL ASSOCIATED DAMPER, LOUVER AND SUPPORTS TO REMAIN. BALANCE OUTSIDE AIR DAMPER TO 310 CFM. CONTRACTOR TO FIELD VERIFY OUTSIDE AIR DUCT CONNECTION TO WSHP-1(E).

⑤ CONTRACTOR TO DEMOLISH THE EXISTING GRILLS & PATCH THE DUCT OPENINGS.

⑥ EXISTING DUCTWORK TO REMAIN. CONTRACTOR SHALL CLEAN AND REFURBISH TO "LIKE NEW" CONDITION, VERIFY EXACT LOCATION AND SIZE IN FIELD, BALANCE CFM'S AS INDICATED ON PLAN. PROVIDE A VOLUME DAMPER OR COLLAR DAMPER IF THE EXISTING ONE IS DAMAGED, PATCH AND SEAL DUCTWORK AIRTIGHT. INSPECT, PATCH, REPAIR, AND/OR REPLACE INSULATION AS REQUIRED. CONTRACTOR TO VERIFY IN FIELD PRIOR TO BID.

⑦ COORDINATE WITH ELECTRICAL LIGHTING PLAN & ELECTRICAL ENGINEER.

⑧ EXISTING SUPPLY AIR DIFFUSER TO REMAIN. CONTRACTOR TO ADJUST DAMPERS TO MAINTAIN CFM AS SHOWN ON PLAN

⑨ EXISTING CONDENSATE DRAIN TO REMAIN & REUSED. CONTRACTOR TO FLUSH EXISTING DRAIN LINE.

⑩ ADD 1 INCH DOOR UNDERCUT GRILLE FOR AIR TRANSFER.

△1

⑪ CONNECT EXHAUST OUTLET TO BUILDING COMMON EXHAUST OUTLET.

⑫ PROVIDE INLINE EXHAUST FAN. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBER PRIOR TO INSTALLATION.

IMPORTANT NOTE:

G.C. TO PROVIDE AND INSTALL "MERV-13" PRE MEDIA FILTRATION OVER EXISTING HVAC EQUIPMENT RETURN DUCT OPENING.

WHEN REQUIRED, IT IS THE OWNER'S RESPONSIBILITY TO CONTACT WITH A COMMISSIONING AUTHORITY TO COMPLY WITH LOCAL CODES.

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△ ISSUANCE NAME	DATE
PERMIT SET	10/11/2023
△1 CITY COMMENTS	01/05/2024

MECHANICAL
FLOOR PLAN

M2.0

ELECTRICAL LEGEND

NOTES:
- ALL MOUNTING HEIGHTS GIVEN ARE TO CENTERLINE OF DEVICE UNLESS OTHERWISE NOTED.
- ALL SYMBOL MAY NOT BE USED.

SYMBOL	DESCRIPTION
$a	SINGLE POLE TOGGLE SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$3 a	THREE WAY TOGGLE SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$4 a	FOUR WAY TOGGLE SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$K a	SINGLE POLE KEYED TOGGLE SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$3K a	THREE WAY KEYED TOGGLE SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$4K a	FOUR WAY KEYED TOGGLE SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$DM a	DIMMER SWITCH WITH MOMENTARY ON/OFF BUTTON - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$M a	MOMENTARY ON/OFF SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$LV a	LOW VOLTAGE ON/OFF SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$D a	LOW VOLTAGE ON/OFF/DIMMING SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$VS a	WALL MOUNTED DUAL TECHNOLOGY VACANCY SENSOR SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
$OS a	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH - MOUNT AT 48" A.F.F. · SUB-SMALL LETTER INDICATED SWITCH LEG.
ST	THERMAL OVERLOAD SWITCH - MOUNT AT FRACTIONAL HP MOTOR
OS a	CEILING MOUNTED OCCUPANCY SENSOR - DUAL TECHNOLOGY · SUB-SMALL LETTER INDICATED SWITCH LEG.
VS a	CEILING MOUNTED VACANCY SENSOR - DUAL TECHNOLOGY · SUB-SMALL LETTER INDICATED SWITCH LEG.
PC	PHOTOCELL
▥	INVERTER WITH INTEGRAL BACK-UP BATTERY
⊠ a PPx	POWER PACK. · SUB-SMALL LETTER INDICATED SWITCH LEG.
⊖	GROUNDED DUPLEX RECEPTACLE (NEMA5-20R) - MOUNT AT 15" A.F.F. U.N.O.
⊖A	GROUNDED DUPLEX RECEPTACLE (NEMA5-20R) - MOUNT ABOVE COUNTER BACKSPLASH OR 42" A.F.F.
⊖C	GROUNDED DUPLEX RECEPTACLE (NEMA5-20R) - MOUNT AT CEILING
⊖GFI	GROUNDED DUPLEX RECEPTACLE (NEMA5-20R) - GFI TYPE - MOUNT AT 18" A.F.F. U.N.O.
⊖WP	GROUNDED DUPLEX GFI RECEPTACLE (NEMA5-20R) W/ "WEATHERPROOF WHILE IN USE" COVER
◒	GROUNDED DUPLEX RECEPTACLE (NEMA5-20R) WITH TOP RECEPTACLE CONTROLLER BY SWITCH/SENSOR AND BOTTOM RECEPTACLE SHALL NOT BE CONTROLLED BY SWITCH/SENSOR. CONTROLLED RECEPTACLE SHALL BE PERMANENTLY MARKED AS PER NEC 406.3 (E) AND PROVIDED IN GREEN COLOR.
⊖USB	GROUNDED DUPLEX RECEPTACLE WITH INTEGRAL USB-A & USB-C CHARGING PORTS (EQUAL TO HUBBELL, #USB20AC5) - MOUNT AT 15" A.F.F. U.N.O.
⊗	SPECIAL PURPOSE RECEPTACLE - MATCH NEMA CONFIGURATION OF EQUIPMENT SERVED - MOUNT AT 15" A.F.F. U.N.O.
⊕	GROUNDED DOUBLE DUPLEX RECEPTACLE (NEMA5-20R) - MOUNT AT 15" A.F.F. U.N.O.
◑	GROUNDED DOUBLE DUPLEX RECEPTACLE (NEMA5-20R) WITH TOP RECEPTACLE CONTROLLER BY SWITCH/SENSOR AND BOTTOM RECEPTACLE SHALL NOT BE CONTROLLED BY SWITCH/SENSOR. CONTROLLED RECEPTACLE SHALL BE PERMANENTLY MARKED AS PER NEC 406.3 (E) AND PROVIDED IN GREEN COLOR.
X ▼ D-xx	DATA OUTLET W/ JACKS, BACK BOX, 1" CONDUIT TILL CEILING SPACE WITH PULL STRING, ONE 90° ELBOW AND PLASTIC BUSHING AT BOTH ENDS AND CAT6 PLENUM RATED CABLES TO IT RACK - MOUNT AT 15" A.F.F. U.N.O. "X" INDICATE NUMBER OF JACKS IN OUTLET: 1: ONE DATA. 2: TWO DATA. 3: THREE DATA. 4: FOUR DATA. "D-xx" INDICATE OUTLET ID
WAP	WIRELESS ACCESS POINT (WAP) WITH JUNCTION BOX, 1" CONDUIT TILL CEILING SPACE WITH PULL STRING, ONE 90° ELBOW AND PLASTIC BUSHING AT BOTH ENDS WITH TWO (2) CAT6 PLENUM RATED DATA CABLES TO IT RACK.
⊟ ⊞	FLUSH MOUNTED FLOOR BOX WITH RECEPTACLE AS LISTED ABOVE
▼	FLUSH MOUNTED FLOOR BOX WITH DATA DEVICES AS LISTED ABOVE
⊞▼	FLUSH MOUNTED FLOOR BOX WITH RECEPTACLE/DATA DEVICES AS LISTED ABOVE
J Ⓙ	JUNCTION BOX
⊵—	MOTORIZED DAMPER
⌀	MOTOR
⊏□	EMERGENCY SWITCH - MOUNT AT 48" A.F.F, M - MASTER, S = SLAVE
□	NON-FUSED SAFETY DISCONNECT SWITCH -MOUNT TOP AT 75" A.F.F. U.N.O.
⊘	FUSED SAFETY DISCONNECT SWITCH - MOUNT TOP AT 75" A.F.F. U.N.O.
⊡	PUSH BUTTON
□	BUZZER SYSTEM
T F	STEP DOWN TRANSFORMER
▬	SURFACE MOUNTED ELECTRIC PANEL - REFER TO PANEL SCHEDULES & POWER RISER DIAGRAM FOR VOLTAGE, RATING AND FEEDER SIZE.
▨	RECESSED MOUNTED ELECTRIC PANEL - REFER TO PANEL SCHEDULES & POWER RISER DIAGRAM FOR VOLTAGE, RATING AND FEEDER SIZE.
⧓	TRANSFORMER
▭	LIGHTING CONTROL RELAY PANEL
TC	TIMECLOCK
Ⓢ	CEILING MOUNTED SPEAKER. PROVIDE JUNCTION BOX AND 1" CONDUIT TILL CEILING SPACE WITH PULL STRING, ONE 90° ELBOW AND PLASTIC BUSHING AT BOTH ENDS. COORDINATE WIRING'S REQUIREMENT WITH SOUND SYSTEM'S VENDOR.
◁	WALL MOUNTED SPEAKER. PROVIDE JUNCTION BOX AND 1" CONDUIT TILL CEILING SPACE WITH PULL STRING, ONE 90° ELBOW AND PLASTIC BUSHING AT BOTH ENDS. COORDINATE WIRING'S REQUIREMENT WITH SOUND SYSTEM'S VENDOR.
VC	VOLUME CONTROL. PROVIDE JUNCTION BOX AND 1" CONDUIT WITH PULL STRING TO A/V RACK. COORDINATE WIRING'S REQUIREMENT WITH SOUND SYSTEM'S VENDOR.
⌒	BRANCH CIRCUIT WIRING
⌒→	BRANCH CIRCUIT FEEDER
- - -	UNSWITCHED BRANCH CIRCUIT WIRING
—⏚	ELECTRICAL GROUND

CODES & STANDARDS

2020 EDITION OF THE NATIONAL ELECTRICAL CODE (NEC)
2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

ABBREVIATION

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
A	AMPERE	J	JUNCTION BOX
A.F.F.	ABOVE FINISH FLOOR	KEF	KITCHEN EXHAUST FAN
APS	AUXILIARY POWER SUPPLY	LCP	LIGHTING CONTROL PANEL
C	CONDUIT	LTG	LIGHTING
CKT	CIRCUIT	LV	LOW VOLTAGE
CU	CONDENSING UNIT	MCB	MAIN CIRCUIT BREAKER
DE	DEMOLITION	MD	MOTORIZED DAMPER
DF	DESTRATIFICATION FAN	MDP	MAIN DISTRIBUTION PANEL
DWCP	DOMESTIC WATER CIRCULATING PUMP	MH	MOUNTING HEIGHT
E.C.	ELECTRICAL CONTRACTOR	MLO	MAIN LUGS ONLY
EF	EXHAUST FAN	N	NEW
EM	ITEM PROVIDED WITH OR CONNECTED TO EMERGENCY POWER	NL	NIGHT LIGHT
		P	POLE
EMT	ELECTRICAL METALLIC TUBING	PE	PRIMARY ELECTRIC SERVICE
ER	EXISTING TO REMAIN	PP	POWER PANEL
ETP	ELECTRONIC TRAP PRIMER	PVC	POLYVINYL CHLORIDE CONDUIT
ETR	EXISTING TO REMAIN	RE	RELOCATE
EV	EVAPORATOR UNIT	RGS	RIGID GALVANIZED STEEL CONDUIT
EWC	ELECTRIC WATER COOLER	RTU	ROOF TOP UNIT
EWH	ELECTRIC WATER HEATER	SF	SAFETY SWITCH
EX	EXISTING TO REMAIN	SW	SWITCHBOARD
FACP	FIRE ALARM CONTROL PANEL	T.B.D.	TO BE DETERMINED
FATC	FIRE ALARM TERMINAL CABINET	TR	TAMPER RESISTANT
G.C.	GENERAL CONTRACTOR	TV	TELEVISION
GFI	GROUND FAULT INTERRUPTER	TX	TRANSFORMER
HT	HEAT TRACE	U.N.O.	UNLESS NOTED OTHERWISE
HVAC	HEATING VENTILATION AIR CONDITIONING	WH	WATER HEATER
		WP	WEATHER PROOF
IG	ISOLATED GROUND	ZD	ZONE DAMPER

ELECTRICAL GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH CURRENT APPLICABLE CODES, ORDINANCES, THE REGULATORY AGENCIES HAVING JURISDICTION AND THE SPECIFICATIONS. THE SPECIFICATIONS MAY EXCEED THE REQUIREMENTS OF THE CODE, THE MOST STRINGENT CONDITION WILL APPLY.
2. THE INTENT OF THESE DOCUMENTS IS FOR THE MEP TRADES TO FURNISH AND INSTALL COMPLETE MECHANICAL AND ELECTRICAL SYSTEMS. THE SPECIFIED ELECTRICAL SYSTEM SHALL BE COMPLETE IN ALL RESPECTS; OPERATIONAL, TESTED, ADJUSTED, APPROVED BY THE AUTHORITIES HAVING JURISDICTION AND READY FOR BENEFICIAL USE BY THE OWNER.
3. THE TRADES SHALL OBTAIN AND REVIEW ALL CONTRACT DOCUMENTS BEFORE SUBMITTING A BID. INFORMATION IS PROVIDED ON THE VARIOUS DRAWINGS, SCHEDULES, SPECIFICATIONS AND ALL OF THE VARIOUS DOCUMENTS IN THE BIDDING PACKAGE. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY AND FORM A TOTAL PROJECT DESIGN AND INFORMATION SOURCE FOR CONSTRUCTION PURPOSES.
4. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT. COORDINATE LOCATIONS OF EQUIPMENT WITH OTHER TRADES BEFORE AND DURING CONSTRUCTION. ANY MODIFICATION TO THE EQUIPMENT LAYOUT, REQUIRED FOR INSTALLATION, IS TO BE PERFORMED UNDER THE CONTRACT AGREEMENT, AT NO ADDITIONAL COST. REFER TO DETAILS, SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
5. THE CONTRACTOR SHALL BECOME THOROUGHLY FAMILIAR WITH THE PROJECT DOCUMENTS OF ALL TRADES. THE DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND CONDUITS. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF EQUIPMENT AND CONDUITS INSTALLATION WITH ALL THE TRADES BEFORE COMMENCING WORK.
6. EQUIPMENT SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS, WHEN EQUIPMENT MUST BE LOCATED ABOVE AN INACCESSIBLE CEILING (GYP BOARD OR EQUIVALENT), OR BEHIND A WALL, AN APPROPRIATE ACCESS DOOR SHALL BE PROVIDED. IF AN ACCESS DOOR IS REQUIRED, IT SHALL BE OF A RATING APPROPRIATE FOR THE WALL/CEILING IN WHICH IT IS TO BE INSTALLED. THE CONTRACTOR SHALL COORDINATE LOCATIONS OF ACCESS PANELS FOR ALL DEVICES, REQUIRING ACCESS, WITH THE ARCHITECT, PRIOR TO INSTALLATION OF SUCH DEVICES OR OTHER APPURTENANCES.
7. WHERE A CONFLICT OCCURS BETWEEN THE DOCUMENTS, IT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. CARRY AS PART OF THE BID THE LARGER QUANTITY AND/OR MORE EXPENSIVE ITEM(S).
8. THIS CONTRACT SHALL INCLUDE ALL THE NECESSARY CONDUITS, FITTINGS, TRANSITIONS ETC. AS REQUIRED TO INSTALL CONDUITS AND EQUIPMENT, AND TO AVOID ANY CONFLICTS WITH OTHER TRADES AND THE BUILDING STRUCTURE. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY ASSUMPTIONS, OMISSIONS OR ERRORS HE MAKES AS A RESULT OF HIS FAILURE TO COORDINATE WITH OTHER TRADES OR BECOME FULLY FAMILIAR WITH THE PROJECT DOCUMENTS OF ALL TRADES.
9. DO NOT INSTALL ANY ELECTRICAL PANELS, TRANSFORMERS, SPECIAL EQUIPMENT, BELOW PIPING OR THROUGH MECHANICAL ROOMS, THAT ARE NOT ASSOCIATED WITH OR SERVE THE RESPECTIVE ROOMS. COORDINATE THE LOCATION OF MECHANICAL EQUIPMENT IN THE FIELD AND ADJUST AS NECESSARY.
10. CONTRACTOR TO FOLLOW EXISTING BASE BUILDING PHASING COLOR CODE. IF BASE BUILDING PHASING COLOR CODE IS UNKNOWN, FOLLOW COLOR CODE AS MENTIONED IN SPECIFICATION.
11. FIELD VERIFY WITH MANUFACTURER'S PROVIDED EXACT ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS OF ALL OPERATIONAL EQUIPMENT PRIOR TO MAKING ELECTRICAL POWER CONNECTION. FURNISH AND INSTALL SAFETY DISCONNECT AS REQUIRED BY NEC.
12. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL LOCATIONS OF EQUIPMENT WITH DIV. 21, 22 AND 23 PRIOR TO ROUGHING OR INSTALLING OUTLETS.
13. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE OWNER, ALL LOCATIONS OF EQUIPMENT BEING FURNISHED BY THE OWNER PRIOR TO ROUGHING OR INSTALLING OUTLETS.
14. REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATIONS AND EXACT LOCATION OF DEVICES PRIOR TO ROUGHING OR INSTALLATION OF OUTLETS.
15. REFER TO ARCHITECTS REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF CEILING MOUNTED DEVICES.
16. CONTRACTOR SHALL PROVIDE ALL NECESSARY MISCELLANEOUS STEEL FOR THE SUPPORT OF ALL EQUIPMENT, PIPING, CONDUIT AND DUCTWORK. SUSPENDED FROM SLAB, STEEL, WALL OR TRUSSWORK.
17. ELECTRICAL CONTRACTOR SHALL SEAL ALL CONDUITS PENETRATING EXTERIOR WALLS WITH FIRE STOPPING MATERIAL.
18. ALL PENETRATIONS OF FLOORS AND WALLS (WHETHER OR NOT FIRE RESISTANCE RATED) SHALL BE PROVIDED WITH A THROUGH PENETRATION PROTECTION SYSTEM (FIRESTOPPING). EACH THROUGH - PENETRATION PROTECTION SYSTEM SHALL BE TESTED IN ACCORDANCE WITH ASTM E814 AND BE LISTED FOR THE TYPE OF FLOOR OR WALL ASSEMBLY PENETRATED AND THE TYPE OF PROTECTION SYSTEM.
19. IT IS NOT THE INTENTION TO SHOW EVERY FITTING, HANGER, WIRE OR DEVICE, ALL SUCH ITEMS SHALL BE FURNISHED AND INSTALLED AS NECESSARY FOR A COMPLETE SYSTEM.
20. SEE SPECIFICATION SECTION "ELECTRICAL IDENTIFICATION" FOR PROPERLY LABELING EQUIPMENT WIRING, PANELS, SWITCHBOARD, DISCONNECT SWITCHES, BOXES, CONDUITS,.. ETC.
21. CONTRACTOR SHALL DETERMINE THE QUANTITY OF CONDUCTORS REQUIRED FOR PROPER OPERATION OF ALL SWITCHING SCHEMES.
22. SEISMICALLY SUPPORT THE EQUIPMENT AS REQUIRED BY CODE, THE AUTHORITY HAVING JURISDICTION, AND/OR AS SPECIFIED. SUBMIT ENGINEERED INSTALLATION DETAILS PER THE SPECIFICATIONS. THE CONTRACTOR'S SEISMIC ENGINEER SHALL REVIEW THE INSTALLATION AND PROVIDE A DETAILED REPORT FOR THE RECORD.
23. PROVIDE ALL BONDING AND GROUNDING REQUIRED BY THE NATIONAL ELECTRIC CODE, NFPA 70 AND AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
24. ALL REQUIRED BONDING CONDUCTORS SHALL BE MINIMUM #8 SOLID INSULATED COPPER, PROVIDE ALL NECESSARY FITTINGS, JUNCTION BOXES, END FITTINGS, ETC., FOR A COMPLETE, CONTINUOUS INSTALLATIONS.
25. ALL BONDING/GROUNDING CONNECTIONS SHALL BE MADE BY LISTED CLAMP OR CONNECTORS AS REQUIRED BY ARTICLE 250 OF NFPA 70, THE NATIONAL ELECTRIC CODE (CURRENT ADOPTED EDITION).
26. AN INSULATED (GREEN) EQUIPMENT GROUND WIRES SHALL BE PROVIDED WITH ALL FEEDERS AND BRANCH CIRCUITS.
27. AN EXTRA SEPARATE ISOLATED GROUND CONDUCTOR SHALL BE PROVIDED FOR EACH ISOLATED GROUND RECEPTACLE IN ADDITION TO THE REGULAR GROUND CONDUCTOR. THIS EXTRA SEPARATE ISOLATED GROUND CONDUCTOR SHALL BE TERMINATED AT THE GROUND BAR OF THE MAIN PANEL BOARD AND IS NOT ALLOWED TO GROUND RACEWAYS, BOXES...ETC.
28. ISOLATED GROUND RECEPTACLES SHALL BE IDENTIFIED BY ORANGE TRIANGLE LOCATED ON THE FACE OF THE RECEPTACLE.
29. RECEPTACLE CONTROLLED BY SWITCH SHALL BE PERMANENTLY MARKED AS PER NEC 406.3 (E).
30. RECEPTACLES LOCATED WITHIN 6' OF A WATER SOURCE, OR OUTSIDE, AND WHERE REQUIRED BY CODE SHALL BE PROVIDED WITH GFCI PROTECTION, WHETHER INDICATED OR NOT.
31. EXTERIOR RECEPTACLES SHALL BE PROVIDED WITH "CAST ALUMINUM" LOCKABLE COVERS RATED "WEATHER-PROOF WHILE IN USE". LOCKS SHALL BE KEYED ALIKE.
32. ALL 15- AND 20-AMPERE, 125V- AND 250-VOLT NON-LOCKING RECEPTACLE SHALL BE LISTED TAMPER RESISTANT.
33. WHERE INDICATED, PROVIDE FIXTURES WITH EMERGENCY BATTERY TO OPERATE LAMPS FOR 1 1/2 HOURS UPON LOSS OF NORMAL POWER. WIRE EMERGENCY BATTERY AND EXIT LIGHTS TO LINE SIDE OF AREA LIGHTING CIRCUIT.
34. DIRECTIONAL CHEVRONS FOR EXIT SIGN SHALL CONFORM TO NFPA 5-10.4.1.2 AND SHALL BE IDENTIFIABLE AS A DIRECTIONAL INDICATOR AT A MINIMUM OF 40 FT. UNDER ALL SPACE CONDITIONS. PROVIDE DIRECTIONAL CHEVRONS AS INDICATED ON PLAN.
35. VERIFY ALL LIGHT FIXTURE FINISHES WITH ARCHITECT/OWNER PRIOR TO PURCHASE.
36. VERIFY ALL LIGHT FIXTURE MOUNTING HEIGHTS WITH ARCHITECT/OWNER PRIOR TO INSTALLING LIGHT FIXTURE.
37. VERIFY LOCATION OF ALL OUTLETS WITH OWNER PRIOR TO ANY WORK
38. ALL 1 POLE, 15 AND 20 AMPERE BRANCH CIRCUITS SERVING RECEPTACLE OR LIGHTING SHALL BE 2 WIRE CIRCUITS PROVIDING AN INDIVIDUAL NEUTRAL CONDUCTOR FOR EACH UNGROUNDED (HOT) CIRCUIT CONDUCTOR. DO NOT SHARE NEUTRAL CONDUCTORS.
39. BRANCH CIRCUIT WIRING IS SHOWN ON THE FLOOR PLANS. NUMERALS ADJACENT TO THE HOMERUN SYMBOLS FOR LIGHTING, RECEPTACLES, MOTORS, APPLIANCES, ETC. INDICATE THE CIRCUIT NUMBER TO WHICH THE ITEMS ARE TO BE CONNECTED. PROVIDE BRANCH CIRCUIT WIRING FOR ALL ITEMS SHOWN IN ACCORDANCE WITH THESE GENERAL NOTES AND THE ELECTRICAL SPECIFICATIONS.
40. ALL FEEDERS & BRANCH CIRCUITS SHALL BE COPPER.
41. ALL HOMERUNS SHALL BE 2#12, 1#12G., 3/4"C TO 20A-1P CIRCUIT BREAKER IN PANEL DESIGNATED UNLESS OTHERWISE NOTED.
42. ALL 120 VAC CIRCUITS EXCEEDING 75' IN LENGTH SHALL BE INCREASED TO 2#10, 1#10G, 3/4" CONDUIT.
43. ALL 120 VAC CIRCUITS EXCEEDING 150' IN LENGTH SHALL BE INCREASED TO 2#8, 1#10G, 3/4" CONDUIT.
44. ALL BRANCH CIRCUITS SHALL BE PROVIDED WITH SEPARATE NEUTRALS. USE OF COMMON NEUTRALS WILL NOT BE ALLOWED.
45. ALL WIRING SHALL BE IN CONDUIT, UNLESS OTHERWISE INDICATED. CONDUITS SHALL BE RUN CONCEALED IN NEW AND ABOVE CEILINGS.
46. ALL EXPOSED WIRING IN CEILING OR INTERIOR WALLS MUST BE IN EMT.
47. METAL CLAD CABLE "MC" MAY BE USED ABOVE ACCESSIBLE CEILINGS AND IN DRYWALL. FOR RECEPTACLES AND LIGHTING FIXTURES ONLY. MC CABLE IS LIMITED TO BRANCH CIRCUITS NOT EXCEEDING 30AMP. HOME RUN FROM FIRST RECEPTACLE/LIGHT FIXTURE TO PANEL BOARD SHALL BE IN CONDUIT.
48. ALL HOME RUNS FROM FIRST RECEPTACLE/LIGHT FIXTURE/KITCHEN EQUIPMENT/HVAC EQUIPMENT...ETC TO PANEL BOARD SHALL BE IN CONDUIT.
49. NO "MC" CABLE IS ALLOWED IN DEMISING WALLS.
50. CABLES TYPES NM, NMC, NMS AND ROMEX IS NOT PERMITTED.
51. FLEXIBLE CONDUIT MAY BE USED ONLY FOR FINAL CONNECTIONS FROM OUTLET/JUNCTION BOXES TO LIGHT FIXTURES, MOTORS, APPLIANCES..ETC. LENGTH OF FLEXIBLE CONDUITS SHALL NOT EXCEED 6'.
52. ALL EXPOSED CABLES OF ANY TYPE IN PLENUM CEILING SPACE SHALL BE PLENUM RATED.
53. NO MORE THAN FOUR (4) 90 DEGREE BENDS IN ONE RUN FOR ELECTRICAL POWER SYSTEM.
54. ALL EMPTY CONDUITS SHALL HAVE A PULL STRING WITH A MINIMUM 10' OF SLACK ON BOTH END.
55. CONTRACTOR TO INSTALL EXPOSED CONDUIT IN NEAT AND ORGANIZED WAY IN STRAIGHT LINES AND PARALLEL OR IN RIGHT ANGLES TO THE BUILDING STRUCTURE. DO NOT LOOP EXCESS FLEXIBLE CONDUIT IN CEILING SPACE OR WALL CAVITY.
56. CONTRACTOR TO PROVIDE RIGHT ANGLES TURNS USING FITTINGS OR SYMMETRICAL BENDS.
57. CONTRACTOR TO PAINT ALL EXPOSED CONDUITS.
58. NO CONDUIT TO BE SUPPORTED FROM THE DECK.
59. CONTRACTOR TO RUN CONDUITS ABOVE SUSPENDED CEILING AND UP-HIGH AS POSSIBLE IN AREAS WITH NO SUSPENDED CEILING.
60. CONDUITS INSTALLED ON ROOF SHALL HAVE A MINIMUM DISTANCE OF 7/8" BETWEEN BOTTOM OF CONDUIT AND TOP OF ROOF OTHERWISE CONTRACTOR TO USE "XHHW-2" INSULATED CONDUCTOR "AS PER NFPA 310.15(B)(3)(C).".
61. NO MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS TO BE INSTALLED IN ONE CONDUIT. IF MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS INSTALLED IN ONE CONDUIT, CONTRACTOR TO ADJUST THE SIZE WIRING AS PER TABLE 310.15(B)(3)(a), NEC 2017.
62. ALL EQUIPMENT, DEVICES AND FIXTURES SHALL BE GROUNDED IN COMPLIANCE WITH NEC & UL REQUIREMENT.
63. ALL ELECTRICAL PANELS TO BE UL LABELED WITH BOLT ON TYPE CIRCUIT BREAKER.
64. VERIFY EXACT LOCATION AND ELECTRICAL REQUIREMENT OF ALL HVAC EQUIPMENT WITH MECHANICAL DRAWINGS PRIOR TO ANY WORK AND MODIFY AS NEEDED.
65. VERIFY EXACT LOCATION AND ELECTRICAL REQUIREMENT OF ELECTRIC WATER HEATER WITH PLUMBING DRAWINGS PRIOR TO ANY WORK AND MODIFY AS NEEDED.
66. COORDINATE ALL FLOOR CUT MEANS (TRENCHING/CORING) OF EXISTING FLOOR SLAB WITH LANDLORD PRIOR TO ANY WORK.
67. FLOOR OUTLETS SHALL BE FED FROM THE NEAREST AVAILABLE FULL HEIGHT WALL. CONTRACTOR TO COORDINATE CONDUIT ROUTING AND TRENCHING OF EXISTING FLOOR SLAB WITH LANDLORD AND EXISTING CONDITION IN THE FIELD PRIOR TO ANY WORK. SEAL ALL PENETRATION WITH FIRE STOPPING MATERIALS (TYPICAL NOTE).
68. NOTHING IS PERMITTED TO BE ATTACHED TO, SUSPENDED FROM OR PENETRATE LANDLORD'S STRUCTURE, FLOOR DECK OR ROOF DECK. TENANT'S CONTRACTOR MAY ATTACH, NON-DESTRUCTIVELY, TO OR SUSPEND FROM THE TOP CHORD OF THE JOIST OR THE STRUCTURE STEEL WHICH EXISTS ABOVE TENANT SPACE. WHEN ATTACHING TO LANDLORD'S STRUCTURE, DO NOT DRILL, WELD, SCREW OR SHOOT INTO STRUCTURE, ALTERNATIVE METHODS OF ATTACHMENT ONLY, NOTHING TO DAMAGE LANDLORD'S BASE BUILDING STRUCTURE. TENANT'S CONTRACTOR SHALL PROVIDE SIGNED AND SEALED STRUCTURAL DRAWINGS BY A STRUCTURAL ENGINEER WITH LEGALLY ACTIVE REGISTRATION AS INDICATED BY ALL JURISDICTIONAL REQUIREMENTS, FOR ALL ELECTRICAL INSTALLATION AND ALL STRUCTURE MODIFICATIONS FOR LANDLORD RECORDS.
69. SLAB ON GRADE:
70. TENANT'S GENERAL CONTRACTOR SHALL ADVISE THE OPERATION TEAM PRIOR TO ANY SLAB MODIFICATION OR REMOVAL. TENANT'S GENERAL CONTRACTOR SHALL VERIFY THAT WORK SHALL NOT CONFLICT WITH ANY EXISTING STRUCTURE, UTILITY OR OTHER UNDER-SLAB CONDITION. NON-DESTRUCTIVE VERIFICATION MAYBE REQUIRED. ANY DAMAGE OR DOWNTIME CAUSED BY TENANT'S GENERAL CONTRACTOR WORK SHALL BE REPAIRED AND REIMBURSED AT TENANT'S GENERAL CONTRACTOR EXPENSES.
71. ELEVATED SLABS:
72. TENANT'S GENERAL CONTRACTOR SHALL ADVISE THE OPERATION TEAM PRIOR TO ANY SLAB MODIFICATION OR REMOVAL. IF ANY ELEVATED SLAB IS TO BE MODIFIED IN ANYWAY (DRILLED, CORED OR PENETRATED), TENANT'S GENERAL CONTRACTOR SHALL PROVIDE STAMPED AND CERTIFIED DRAWINGS BY A LICENSED STRUCTURAL ENGINEER CERTIFIED IN THE LOCAL JURISDICTION. ALL PENETRATIONS SHALL BE CORE BORED ONLY. SAW CUTTING, JACK HAMMERING AND TRENCHING IS STRICTLY PROHIBITED. ALL PENETRATIONS SHALL BE SLEEVED, SEALED, FIRE STOPPED AND WATERPROOFED. THE PENETRATION SLEEVE SHALL EXTEND A MINIMUM OF 4" ON EITHER SIDE OF THE SLAB AND BE LABELED WITH THE REQUIRED NFPA RATING. TENANT'S GENERAL CONTRACTOR SHALL VERIFY THAT WORK SHALL NOT CONFLICT WITH ANY EXISTING STRUCTURE, UTILITY OR OTHER UNDER-SLAB CONDITION. NON-DESTRUCTIVE VERIFICATION MAYBE REQUIRED. ANY DAMAGE OR DOWNTIME CAUSED BY TENANT'S GENERAL CONTRACTOR WORK SHALL BE REPAIRED AND REIMBURSED AT TENANT'S GENERAL CONTRACTOR EXPENSES.
73. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED SLEEVES AND FIRE STOP FOR CONDUITS AND CABLES PENETRATING FIRE RATED WALLS AND FLOORS.
74. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION OF DUCT SMOKE DETECTORS WITH DIV. 23. DUCT SMOKE DETECTORS SHALL BE FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR, INSTALLED BY DIV. 23.
75. CONDUITS AND/OR WIRING SHALL NOT PENETRATE STAIR ENCLOSURES UNLESS SPECIFICALLY SERVING EQUIPMENT OR DEVICES LOCATED WITHIN STAIR ENCLOSURE.
76. ANY CONDUITS, WIRING, CIRCUITS, FIRE ALARM LOOPS, DEVICES, EQUIPMENT,...ETC RELATED FOR LANDLORD'S SYSTEM INSIDE TENANT'S SPACE TO REMAIN, VERIFY WITH LANDLORD.
77. ROOF PENETRATION IF NEEDED SHALL BE DONE BY LANDLORD'S ROOF CONTRACTOR AT ELECTRICAL CONTRACTOR EXPENSES TO MAINTAIN ROOF WARRANTY. CONTRACTOR TO COORDINATE WITH LANDLORD PRIOR TO ANY WORK.
78. ELECTRICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL INSPECTOR TO FILED VERIFY THE EXIT AND MEANS OF EGRESS LIGHTING ONCE ALL FIXTURE, FURNITURE,..ETC ARE IN PLACE. ELECTRICAL CONTRACTOR TO PROVIDE ADDITIONAL EXIT SIGN/EMERGENCY LIGHT AS REQUIRED.
79. WATER HEATER SHALL BE JUMPERED BETWEEN THE COLD AND HOT WATER PIPES WITH A JUMPER SIZED ACCORDING TO NEC TABLE 250.66, PER NEC 250.104(A)(1).
80. CONTRACTOR TO MAINTAIN THE PROPER CLEARANCES FOR THE ELECTRICAL PANELS/SWITCHBOARD AND NOT USED AS STORAGE. CLEARANCE IN FRONT OF PANEL/SWITCHGEAR SHALL BE AS PER NEC 110.26.
81. CONTRACTOR TO PROVIDE EQUIPMENT GROUNDING CONDUCTOR SUITABLE FOR CONDUCTOR'S SIZE. ANY INCREASE IN CONDUCTOR SIZE IN ORDER TO COMPENSATE FOR VOLTAGE DROP REQUIRES A PROPORTIONAL INCREASE IN THE SIZE OF THE EQUIPMENT GROUNDING CONDUCTOR FOR THAT FEEDER OR CIRCUIT.
82. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE SHORT CIRCUIT STUDY, ARC FLASH LABEL AND COORDINATION STUDY FOR ALL PANEL BOARDS PRIOR OF PURCHASING OR SUBMITTAL.
83. AIC RATING OF PANEL BOARDS IS SHOWN FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE TO VERIFY AIC RATING OF EACH PANEL BOARDS VIA SHORT CIRCUIT STUDY.
84. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO REPLACE ANY DEVICES/EQUIPMENT AS REQUIRED BY SHORT CIRCUIT STUDY AND COORDINATION STUDY REPORTS.
85. ELECTRICAL CONTRACTOR TO PROVIDE LABEL ON EACH POWER PANEL INDICATES THE MAXIMUM AVAILABLE FAULT CURRENT.
86. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO BALANCE ALL PHASES WITHIN 10% USING ACTUAL LOADS.
87. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE PRINTED CIRCUIT DIRECTORY FOR EACH PANEL BOARD (EITHER NEW PANEL OR EXISTING PANEL) IN PROTECTIVE PLASTIC SLEEVE. CIRCUIT DIRECTORY FOR EACH PANEL SHALL ENOUGH DETAIL SO THAT EACH CIRCUIT CAN BE DISTINGUISHED FROM ALL OTHERS.
88. ALL PANELS SHALL BE UL LABELED WITH BOLT ON TYPE CIRCUIT BREAKERS. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE LABEL/TAGS FOR EACH PANEL BOARD & DISCONNECT SWITCH. LABEL/TAG SHALL INDICATES NAME OF PANEL/DISCONNECT SWITCH, SOURCE OF ORIGIN, VOLTAGE, NUMBER OF PHASES AND AMPERAGE. FOR DISCONNECT SWITCH, INDICATES NAME OF LOAD/EQUIPMENT BEING SERVED BY DISCONNECT SWITCH. ALL PANELS SHALL NOT BE RECESSED IN DEMISING AND SHALL BE MOUNTED ON PLYWOOD BACKER PANELS UNLESS RECESSED INTO A FURRED OUT OR INTERIOR WALL.

ELECTRICAL DEMOLITION GENERAL NOTES

1. BEFORE SUBMITTING BID, THE CONTRACTORS SHALL VISIT THE JOB SITE AND BECOME FULLY FAMILIAR WITH THE EXISTING CONDITIONS AND THE DOCUMENTS OF OTHER TRADES UNDER WHICH THEIR WORK WILL BE ACCOMPLISHED. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY ASSUMPTIONS, OMISSIONS OR ERRORS MADE AS A RESULT OF FAILURE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
2. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ANY DAILY INTERRUPTIONS OR SHUTDOWNS OF THE EXISTING SYSTEMS IN ADVANCE WITH OWNER'S DESIGNATED REPRESENTATIVE. THIS SHALL INCLUDE SERVICES INTERRUPTIONS AND CONNECTIONS, MECHANICAL AND ELECTRICAL DISRUPTIONS EFFECTING OTHER TRADES. INCLUDE ALL WORK REQUIRED TO ALLOW PHASED CONSTRUCTION WHERE NECESSARY.
3. DEMOLITION DRAWINGS ARE STRICTLY DIAGRAMMATIC AND SHOW GENERAL ARRANGEMENT AND APPROXIMATE LOCATION OF EXISTING MECHANICAL AND ELECTRICAL EQUIPMENT. IT IS NOT THE INTENT OF THESE DRAWINGS TO SHOW ALL EQUIPMENT, PIPING OR CONDUIT TO BE REMOVED. EQUIPMENT NOT BEING REUSED SHALL BE REMOVED, INCLUDING ALL ASSOCIATED HANGERS, SUPPORTS, PIPES, CONDUITS, WIRES, AND CONTROLS BACK TO THE POINT OF ORIGIN.
4. REFER TO THE ARCHITECTURAL DEMOLITION DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. THE FULL EXTENT OF THE DEMOLITION AND RECONSTRUCTION SCOPE OF WORK SHALL BE DETERMINED BY THE ENTIRE SET OF BID DOCUMENTS.
5. THE CONTRACTORS SHALL COORDINATE THE DEMOLITION SCOPE OF WORK WITH THE GENERAL CONTRACTOR'S OR CONSTRUCTION MANAGER'S PHASING SCHEDULE PRIOR TO COMMENCEMENT OF WORK. CARE MUST BE TAKEN SO AS NOT TO DESTROY, REMOVE OR DEMOLISH ANY EQUIPMENT, APPURTENANCES OR DEVICES INTENDED TO REMAIN. PROVIDE TEMPORARY SERVICES AND SYSTEM MODIFICATIONS TO ACCOMMODATE CONTINUOUS OPERATION OF ACTIVE SYSTEM.
6. THE LOCATION OF EXISTING ELECTRICAL SYSTEM SHOWN ON FLOOR PLANS, IS BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL FIELD VERIFY PRIOR TO COMMENCEMENT OF CONSTRUCTION, EXACT QUANTITY AND LOCATION(S) OF EXISTING EQUIPMENT, PANELS, CONDUITS, LIGHTING, ETC. TO BE REMOVED AND ADJUST AS NECESSARY.
7. ALL EQUIPMENT, AND ASSOCIATED WIRING, CONDUITS INDICATED TO BE REMOVED OR RELOCATED, SHALL BE DISCONNECTED AND REMOVED, INCLUDING HANGERS AND OTHER COMPONENTS. NO EQUIPMENT, WIRING OR CONDUITS SHALL BE ABANDONED IN PLACE, UNLESS SPECIFICALLY NOTED.
8. ALL SYSTEMS TO BE REMOVED SHALL BE REMOVED BACK TO THE POINT OF SOURCE. THE CONTRACTOR SHALL VERIFY WHICH SYSTEMS MUST REMAIN ACTIVE TO SERVE ADJACENT SPACES DURING CONSTRUCTION. SHOULD THE CONTRACTOR ENCOUNTER, DURING DEMOLITION OF EXISTING WALLS OR CHASES, ANY WIRING OR CONDUIT WHICH MUST REMAIN ACTIVE, IMMEDIATELY GIVE NOTICE TO THE ENGINEER, GENERAL CONTRACTOR OR CONSTRUCTION MANAGER.
9. ALL SALVAGEABLE MATERIALS OR EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER AT THE END OF EACH DAY. ITEMS REMOVED AND NOT REUSED OR CLAIMED BY THE OWNER SHALL BECOME PROPERTY OF THE TRADE CONTRACTOR AND SHALL BE TRANSPORTED FROM THE SITE. SITE STORAGE OF REMOVED ITEMS WILL NOT BE PERMITTED.
10. PROPERLY DISPOSE OF ALL DEMOLISHED EQUIPMENT IN COMPLIANCE WITH CODES AND REGULATIONS; THIS APPLIES TO HAZARDOUS MATERIALS AND CONTAMINATED ITEMS TO BE DEMOLISHED.
11. THE CONTRACTOR SHALL OBTAIN EXISTING ELECTRICAL DRAWINGS FROM THE OWNER IF AVAILABLE TO HELP DETERMINE FULL SCOPE OF WORK.
12. PROMPTLY REPAIR DAMAGES CAUSED TO ADJACENT FACILITIES BY DEMOLITION WORK.
13. RETURN ELEMENTS OF CONSTRUCTION AND SURFACES TO REMAIN TO CONDITION EXISTING PRIOR TO START OF DEMOLITION. REPAIR ADJACENT CONSTRUCTION OR SURFACE SOILED OR DAMAGED BY DEMOLITION WORK.
14. CONTRACTOR SHALL DEMOLISH THE WIRING THAT IS NO LONGER IN SERVICE COMPLETELY BACK TO SOURCE. EXISTING CONDUIT AND WIRING FOR BRANCH CIRCUITS SHALL NOT BE REUSED UNLESS OTHERWISE NOTED. CIRCUITS THAT REMAIN SHALL BE LEFT IN OPERATING CONDITION.
15. WHERE EXISTING CONDUITS ARE CONCEALED, REMOVE EXISTING CONDUCTORS AND CUT CONDUIT FLUSH WITH SURROUNDING SURFACE AND CAP.
16. CONTRACTOR SHALL PROVIDE HEAVY DUTY COVER FOR BACK BOXES INSTALLED IN COLUMNS OR EXISTING WALLS TO REMAIN. PAINT COVER TO MATCH SURROUNDING SURFACE.
17. CONTRACTOR TO SEAL ANY PENETRATION WITH FIRE STOPPING MATERIALS.
18. ANY UNUSED ELECTRICAL EQUIPMENT, FEEDERS, CONDUITS, PANELS,..ETC WITHIN THE PREMISES MUST BE COMPLETELY REMOVED TO POINT OF ORIGIN. DO NOT ABANDON IN PLACE.
19. CONTRACTOR SHALL CONFIRM THAT ANY CONDUIT, WIRING CIRCUITS, FIRE ALARM LOOPS...ETC THAT FEED ANY EQUIPMENT OUTSIDE OF SCOPE OF WORK SPACE SHALL MAINTAINED AND KEPT IN GOOD WORKING CONDITIONS.
20. CONTRACTOR SHALL REFERENCE ARCHITECTURAL AND ELECTRICAL PLANS FOR MORE INFORMATION.
21. COORDINATE DEMOLITION WORK WITH ALL OTHER TRADES.
22. CONTRACTOR IS RESPONSIBLE TO VERIFY THE EXACT LOCATION OF ALL EXISTING DEVICES (LIGHTING FIXTURES, RECEPTACLES. SWITCHES, TELEPHONE/DATA OUTLETS, FIRE ALARM DEVICES, PANELS.... ETC) AT THE FILED.
23. CONTRACTOR SHALL CONFIRM THAT ANY CONDUITS, WIRING, CIRCUITS, FIRE ALARM LOOPS. DEVICES, EQUIPMENT,..ETC RELATED FOR LANDLORD'S SYSTEM INSIDE TENANT'S SPACE TO REMAIN.
24. INDICATED HERE OF EXISTING LAYOUT IS GENERAL IN NATURAL AND SHALL NOT RELIEVE THE CONTRACTOR FROM VERIFYING ALL CONDITIONS IN THE FILED.
25. STORAGE OR SALE OF UNREGULATED REMOVED ITEMS ON THE SITE WILL NOT BE PERMITTED.
26. UPON COMPLETION OF DEMOLISH WORK, REMOVE TOOLS, EQUIPMENT AND DEMOLISHED MATERIALS FROM SITE.
27. LEAVE INTERIOR AREAS BROOM CLEAN.
28. ALL MATERIALS REMOVED UNDER THIS DIVISION AND NOT SCHEDULED FOR REUSE OR REQUESTED BY THE OWNER, SHALL BE DISPOSED OF OFF SITE.
29. DEMOLITION PLANS ARE BASED ON THE AVAILABLE INFORMATION AND FOR REFERENCE ONLY.

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△ ISSUANCE NAME	DATE
PERMIT SET	10/11/2023
△1 CITY COMMENTS	01/05/2024

ELECTRICAL
LEGENDS &
DETAILS

E1.0

GENERAL

1. REQUIREMENTS SPECIFIED ON COVER SHEET, ALONG WITH ELECTRICAL SPECIFICATIONS AND ALL ITS SECTIONS, COMPRISE THE CONTRACT DOCUMENTS FOR THE ELECTRICAL CONTRACT. DRAWINGS AND ALL THEIR REVISIONS UP TO THE BID SUBMITTAL DATE BECOME A BINDING PART OF THE CONTRACT, ALONG WITH THESE SPECIFICATIONS AS THOUGH THEY WERE ONE, AND ANYTHING IMPLIED BY THE SPECIFICATIONS SHALL BE INTERPRETED AS ALSO IMPLIED BY THE DRAWINGS AND VICE VERSA. PROVIDE NECESSARY ITEMS FOR A COMPLETE INSTALLATION OF ALL ELECTRICALLY OPERATED EQUIPMENT LISTED IN THE SPECIFICATIONS OR SHOWN ON THE CONTRACT DRAWINGS.
2. THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING AND EQUIPMENT DRAWINGS AND SPECIFICATIONS ARE INCORPORATED INTO, AND BECOME A PART OF THIS DIVISION. THIS CONTRACTOR SHALL EXAMINE ALL SUCH DRAWINGS AND SPECIFICATIONS AND BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS CONTAINED THEREIN. THE SUBMISSION OF HIS BID SHALL INDICATE SUCH KNOWLEDGE.
3. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. THEY ARE INTENDED TO SHOW THE APPROXIMATE LOCATIONS OF EQUIPMENT AND CONDUIT. DIMENSIONS GIVEN ON THE PLANS, IN FIGURES, SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONSAND SHALL BE VERIFIED IN THE FIELD. THE ELECTRICAL CONTRACTOR SHALL LAYOUT ALL EQUIPMENT ROOMS TO MAKE SURE THE EQUIPMENT, AS PURCHASED, FITS IN THE ROOM OR SPACE SHOWN. EXACT LOCATION OF ALL EQUIPMENT SHALL BE VERIFIED IN THE FIELD AND ROUTING OF CONDUITS SHALL SUIT FIELD CONDITIONS.
4. UNTIL THE TIME OF INSTALLATION, THE ARCHITECT RESERVES THE RIGHT TO MAKE MINOR CHANGES IN THE LOCATION OF CONDUIT AND EQUIPMENT WITHOUT ADDITIONAL COST TO THE CONTRACT.
5. THE ELECTRICAL DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER. MATERIAL AND LABOR NECESSARY TO THE PROJECT SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. LABOR AND/OR MATERIALS NEITHER SHOWN NOR SPECIFIED, BUT OBVIOUSLY NECESSARY FOR THE COMPLETION AND PROPER FUNCTIONING OF THE SYSTEM, SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST.
6. ARRANGE ALL EQUIPMENT SUBSTANTIALLY AS SHOWN ON THE DRAWINGS. MAKE DEVIATIONS ONLY WHERE NECESSARY TO AVOID INTERFERENCE. CHECK ALL EQUIPMENT SIZES AGAINST AVAILABLE SPACE PRIOR TO SHIPMENT TO AVOID INTERFERENCE.
7. EXAMINE THE WORK OF OTHER TRADES INSOFAR AS THEIR WORK COMES IN CONTACT WITH OR IS COVERED BY THIS WORK. IN NO CASE ATTACH TO, OR FINISH AGAINST ANY DEFECTIVE WORK OR INSTALL WORK IN A MANNER WHICH WILL PREVENT PROPER INSTALLATION OF THE WORK OF OTHER TRADES.
8. ELECTRICAL CONTRACTOR SHALL VERIFY WITH OTHER TRADES ALL ELECTRICAL CHARACTERISTICS OF EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS. CONTRACTOR SHALL VERIFY VOLTAGE, PHASE AND HORSEPOWER AND SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO START OF WORK. ELECTRICAL CONTRACTOR SHALL PROVIDE DISCONNECTING MEANS AND OVERLOAD PROTECTION FOR ALL EQUIPMENT, UNLESS FURNISHED INTEGRAL WITH EQUIPMENT PACKAGE.
9. IT IS THE INTENT OF THESE DRAWINGS THAT THIS BE A COMPLETE ELECTRICAL JOB. ANY ERRORS OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BIDDING THE JOB.

VISIT TO THE SITE

1. THE CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING HIS WORK. THE SUBMISSION OF HIS PROPOSAL SHALL INDICATE SUCH KNOWLEDGE. NO ADDITIONAL PAYMENT SHALL BE MADE ON CLAIMS THAT ARISE FROM A LACK OF KNOWLEDGE OF THE EXISTING CONDITIONS.

CODE AND PERMITS

1. INSTALLATION SHALL BE IN FULL ACCORDANCE WITH ALL CODES, RULES AND REGULATIONS OF MUNICIPAL, CITY, COUNTY, STATE AND PUBLIC UTILITIES AND ALL OTHER AUTHORITIES HAVING JURISDICTION OVER THE PREMISES.
2. COMPLY WITH ANY SPECIFICATION REQUIREMENTS THAT ARE IN EXCESS BUT NOT IN CONFLICT WITH CODE REQUIREMENTS.
3. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, PLAN REVIEWS AND CERTIFICATES OF INSPECTION IN CONNECTION WITH HIS WORK, REQUIRED BY THE FOREGOING AUTHORITIES. BEFORE FINAL PAYMENT OF THE CONTRACT IS ALLOWED, ALL CERTIFICATES SHALL BE DELIVERED TO THE ARCHITECT IN DUPLICATE.
4. ELECTRICAL MATERIAL AND EQUIPMENT SHALL BEAR THE UL LABEL EXCEPT WHERE UL DOES NOT LABEL SUCH TYPES OF MATERIAL AND EQUIPMENT.

SHOP DRAWINGS SUBMITTALS

1. THE ELECTRICAL CONTRACTOR SHALL SUBMIT FIVE (5) SETS OF SHOP DRAWINGS. THE SHOP DRAWINGS OF THE FOLLOWING EQUIPMENT USING THE INDICATED NUMBERING SYSTEM AND TITLES, SHALL BE SUBMITTED THROUGH THE ARCHITECT TO THE ENGINEER AND THEN RESUBMITTED FOR FINAL APPROVAL, IF NECESSARY. SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS:
   - A. WIRING DEVICES
   - B. PANELBOARDS AND SAFETY SWITCHES INCLUDING FAULT CURRENT STUDY BASED ON EQUIPMENT BEING SUPPLIED.
   - C. CONTACTORS, TIME SWITCHES AND PHOTOCELL
   - D. LIGHTING FIXTURES
   - E. SUPERVISORY ALARM SYSTEM
2. ALL SUBMITTED SHOP DRAWINGS (MANUFACTURERS "EQUIPMENT DESCRIPTIVE SHEETS OR VENDORS" PREPARED DRAWINGS) SHALL HAVE THE GENERAL CONTRACTOR'S OR SUBCONTRACTOR'S "STAMP OF APPROVAL" INDICATING THAT THE ITEM SUBMITTED IS AS CALLED FOR ON THE PLANS AND SPECIFICATIONS, IS APPROVED BY THE GENERAL CONTRACTOR OR SUBCONTRACTOR, THE DATE OF APPROVAL AND INITIALED BY THE PERSON APPROVING THE SUBMITTAL AND THE NAME OF THE COMPANY SUBMITTING SAID EQUIPMENT FOR APPROVAL.
3. SUBMIT BOUND BROCHURES COMPLETE WITH A TABLE OF CONTENTS. LOOSE OR STAPLED TOGETHER SHEETS ARE NOT ACCEPTABLE. ANY SUBMITTALS NOT IN BROCHURE FORM OR NOT AS SPECIFIED SHALL BE RETURNED AT THE CONTRACTOR'S EXPENSE FOR RESUBMITTAL.
4. ALL DESCRIPTIVE LITERATURE SHALL BE SUBMITTED IN A THREE (3) HOLE BROCHURE WITH A COVER IDENTIFYING THE FOLLOWING:
   - A. NAME OF THE JOB.
   - B. LOCATION OF THE JOB, ADDRESS, CITY AND STATE.
   - C. NAME AND ADDRESS OF THE COMPANY SUBMITTING THE BROCHURES.
   - D. DATE OF THE SUBMITTAL.
5. EVERY EFFORT SHALL BE MADE, IN CHECKING THE SHOP DRAWINGS, TO DETECT AND CORRECT ALL ERRORS, OMISSIONS AND INACCURACIES. FAILURE TO DO THIS WILL NOT RELIEVE THE ELECTRICAL CONTRACTOR OF THE RESPONSIBILITY FOR THE PROPER AND COMPLETE INSTALLATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

RECORD DRAWINGS

1. SUBMIT TO THE ARCHITECT ONE SET OF REPRODUCIBLE (MYLARS) ELECTRICAL DRAWINGS SHOWING THE RECORD CONDITIONS.

STANDARDS AND SUBSTITUTIONS

1. WHEREVER THE WORDS "APPROVED BY", "APPROVED EQUAL", "AS DIRECTED" OR SIMILAR PHRASES ARE USED IN THE FOLLOWING SPECIFICATIONS, THEY SHALL BE UNDERSTOOD TO REFER TO THE OWNER AS THE APPROVING AGENCY. THE NAME OR MAKE OF ANY EQUIPMENT OR MATERIALS NAMED IN THIS SPECIFICATION (WHETHER OR NOT THE WORDS "OR APPROVED EQUAL" ARE USED) SHALL BE KNOWN AS THE "STANDARD".
2. THESE SPECIFICATIONS ESTABLISH QUALITY STANDARD OF MATERIALS AND EQUIPMENT TO BE PROVIDED. SPECIFIC ITEMS ARE IDENTIFIED BY MANUFACTURER, TRADE NAME OR CATALOG DESIGNATION. THIS CONTRACTOR SHALL SUBMIT HIS BASE BID PRICE BASED UPON STANDARD SPECIFIED EQUIPMENT DESCRIBED HEREIN AND AS DETAILED ON DRAWINGS AND ASSOCIATED CONTRACT DOCUMENTS. THESE SPECIFICATIONS ARE NOT TO BE CONSIDERED PROPRIETARY THE CONTRACTOR MAY SUBMIT INFORMATION ON MATERIALS AND MANUFACTURERS (OTHER THAN THOSE LISTED) FOR REVIEW BY THE ARCHITECT AND ENGINEER NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. IN ADDITION, SAMPLES OF PROPOSED EQUIPMENT MAY BE REQUIRED TO BE SUBMITTED TO THE ENGINEER FOR REVIEW NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. MANUFACTURERS OF PRODUCTS ACCEPTED BY THE ARCHITECT AND ENGINEER WILL BE LISTED IN AN ADDENDUM TO THE SPECIFICATIONS AS AN ACCEPTABLE SUBSTITUTION EQUIPMENT ACCEPTED AS DETAILED BELOW AND SHALL BE SHOWN AS A SEPARATE ADD OR DEDUCT PRICE TO BE FACTORED INTO THE BASE BID PRICE BY THE ARCHITECT AND OWNER IF ACCEPTED.
3. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS AND EQUIPMENT OTHER THAN THOSE SPECIFIED OR APPROVED BY ADDENDUM, SUBMIT A WRITTEN REQUEST FOR SUBSTITUTIONS TO THE ARCHITECT AT THE BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID; BE ACCOMPANIED WITH COMPLETE DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. FAILURE BY THIS CONTRACTOR TO SUBMIT THE REQUISITE DOCUMENTATION DETAILED ABOVE SHALL BE UNDERSTOOD BY THE ARCHITECT AND ENGINEER TO INDICATE THAT SUBSTITUTE EQUIPMENT WILL NOT BE PRESENTED BY THE CONTRACTOR FOR CONSIDERATION. SUCH SUBSTITUTIONS WILL NOT BE CONSIDERED AFTER THE BID OPENING DATE AND DELAY OF PROJECT WILL NOT BE PERMITTED FOR FURTHER INSPECTION AND EVALUATION AFTER THIS DATE.
4. WHERE SUCH SUBSTITUTIONS ALTER THE DESIGN OR SPACE REQUIREMENTS INDICATED ON THE DRAWINGS, INCLUDE ALL ITEMS OF COST FOR THE REVISED DESIGN AND CONSTRUCTION INCLUDING COST OF ALL ALLIED TRADES INVOLVED.
5. ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO APPROVAL OF THE ARCHITECT AND ENGINEER. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT (AT HIS COST) INSPECTION SAMPLES OF BOTH THE SPECIFIED AND PROPOSED SUBSTITUTE ITEMS.
6. IN ALL CASES WHERE SUBSTITUTIONS ARE PERMITTED, THE CONTRACTOR SHALL BEAR ANY EXTRA COST OF EVALUATING THE QUALITY OF THE MATERIAL AND EQUIPMENT TO BE PROVIDED, INCLUDING ALL ARCH/ENGINEER FEES ASSOCIATED WITH CHANGE.

TESTING AND PLACING IN SERVICE

1. ANY MATERIAL OR EQUIPMENT FAILING A TEST SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
2. TESTS SHALL INCLUDE THE FOLLOWING:
   - A. MEASURE THE LOAD ON EACH PHASE OF THE MAIN SERVICE AND EACH PHASE OF EVERY FEEDER UNDER FULL LOAD CONDITIONS.
   - B. MEASURE THE NO-LOAD AND FULL-LOAD VOLTAGES (PHASE TO PHASE, PHASE TO NEUTRAL AND PHASE TO GROUND FOR EACH PHASE OF EACH SERVICE, OF EACH SEPARATELY DERIVED SYSTEM, AND AT EACH PANELBOARD OR TRANSFORMER).
   - C. MEASURE THE GROUND RESISTANCE OF THE MAIN SERVICE GROUNDING ELECTRODE AND THE GROUND RESISTANCE OF EACH SEPARATELY DERIVED SYSTEM'S GROUNDING ELECTRODE.
   - D. MAKE INSULATION RESISTANCE TESTS ON ALL DRY TYPE TRANSFORMERS AND MOTORS.

INTERFERENCES

1. BEFORE THE INSTALLATION OF ANY ITEM BEGINS, THE ELECTRICAL CONTRACTOR SHALL CAREFULLY ASCERTAIN THAT IT DOES NOT INTERFERE WITH CLEARANCES FOR THE ERECTION OF FINISH BEAMS, COLUMNS, PILASTERS, WALLS OR OTHER STRUCTURAL OR ARCHITECTURAL MEMBERS AS SHOWN ON THE ARCHITECTURAL DRAWINGS. IF ANY WORK IS INSTALLED AND THE ARCHITECTURAL DESIGN CANNOT BE FOLLOWED, THIS CONTRACTOR SHALL, AT HIS OWN EXPENSE, MAKE CHANGES IN HIS WORK AS DIRECTED BY THE ARCHITECT TO PERMIT THE COMPLETION OF THE ARCHITECTURAL WORK IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
2. IT SHALL BE THE DUTY OF THIS CONTRACTOR TO REPORT ANY INTERFERENCES BETWEEN HIS WORK AND THAT OF ANY OF THE OTHER CONTRACTORS AS SOON AS THEY ARE DISCOVERED. THE ARCHITECT SHALL DETERMINE WHICH EQUIPMENT WILL BE RELOCATED, REGARDLESS OF WHICH WAS INSTALLED FIRST. HIS DECISION WILL BE FINAL.

QUALITY ASSURANCE

1. ALL PRODUCTS SHALL BE NEW AND OF THE TYPE AND QUALITY SPECIFIED. WHERE MATERIALS, EQUIPMENT, APPARATUS OR OTHER PRODUCTS ARE SPECIFIED BY MANUFACTURER, BRAND NAME, TYPE OF CATALOG NUMBER, SUCH DESIGNATION SHALL ESTABLISH THE STANDARDS OF THE DESIRED QUALITY AND STYLE. IT IS THE INTENT OF THESE SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY OF MATERIALS AND EQUIPMENT INSTALLED.

NAMEPLATES

1. FURNISH AND MOUNT ON EACH PANELBOARD, SWITCHBOARD (INCLUDING BRANCH SWITCHES), LARGE JUNCTION BOX, SAFETY SWITCH, STARTER, REMOTE CONTROL, PUSH BUTTON STATION, AND ALL SIMILAR CONTROLS, A NAMEPLATE DESCRIPTIVE OF THE EQUIPMENT OR EQUIPMENT CONTROLLED.
2. PROVIDE BLACK AND WHITE NAMEPLATES CONSTRUCTED FROM LAMINATED PHENOLIC WITH A WHITE CENTER CORE. LETTERS SHALL BE ENGRAVED IN THE PHENOLIC TO FORM WHITE LETTERS 3/8" HIGH. FASTEN THE NAMEPLATES WITH SCREWS AND AN ADHESIVE TYPE FASTENER.

MOUNTING ACCESSORIES

1. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL ANGLE IRON, CHANNEL IRON, RODS, SUPPORTS, HANGERS, CONCRETE OR PLYWOOD REQUIRED TO INSTALL, MOUNT AND SUPPORT ANY ELECTRICAL EQUIPMENT OR DEVICE CALLED FOR ON THE PLANS.
2. SUPPORTING MATERIAL SHALL BE COMPLETE WITH HANGERS, CONNECTORS, BOLTS, CLAMPS AND NECESSARY ACCESSORIES TO MAKE A COMPLETE INSTALLATION. SUPPORTING MATERIAL SHALL BE GALVANIZED, PAINTED OR OTHERWISE SUITABLY FINISHED. PRODUCTS BY BRINKLEY, STEEL CITY OR RACO WILL BE ACCEPTABLE.
3. ALL SURFACE-MOUNTED EQUIPMENT ON BLOCK WALLS SHALL BE MOUNTED ON 3/4" PLYWOOD BACKBOARD. ALL FLOOR-MOUNTED EQUIPMENT SHALL BE INSTALLED ON A 4" HIGH CONCRETE HOUSEKEEPING PAD.

EXECUTION

1. THE ELECTRICAL WORK FOR CONSTRUCTION PROPOSED SHALL CONFORM TO ALL FEDERAL (OSHA), STATE, ALL SPECIFIC SAFETY REQUIREMENTS AND THE REQUIREMENTS OF THE CURRENT EDITION OF THE NEC.
2. CHECK THE HVAC AND PLUMBING SPECIFICATIONS FOR ELECTRICAL REQUIREMENTS AND INCLUDE THE SAME IN THE CONTRACT COST.
3. EQUIPMENT CONNECTIONS, STARTERS, DISCONNECT SWITCHES, CONTROL TRANSFORMERS AND PUSHBUTTON STATIONS FOR THE EQUIPMENT FURNISHED BY THE OWNER OR UNDER A SEPARATE CONTRACT SHALL BE INSTALLED AND CONNECTED UNDER THIS DIVISION, AS INDICATED ON THE CONTRACT DRAWINGS.
4. ALL CUTTING, PATCHING, EXCAVATING, BACKFILLING AND CONCRETE WORK RELATED TO THIS CONTRACT WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. THIS CONTRACTOR SHALL ASSUME THE RESPONSIBILITY OF PROVIDING THE SLEEVES, CHASES AND OPENINGS NECESSARY FOR THE ELECTRICAL INSTALLATION AND FOR THEIR REPAIR IN AN ACCEPTABLE MANNER, AS DETERMINED BY THE ARCHITECT. ALL HOLES SHALL BE CORE-DRILLED. PROVIDE FIRE STOP IN ALL OPENINGS CREATED THROUGH FIRE-RATED WALLS, FLOORS OR CEILINGS.
5. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED ACCESS PANELS NECESSARY FOR HIS WORK, COORDINATE WITH ARCHITECT PRIOR TO INSTALLATION.

MATERIALS AND WORKMANSHIP

1. ALL WORK SHALL BE INSTALLED IN A PRACTICAL AND WORKMANLIKE MANNER, BY MECHANICS SKILLED IN THE SEVERAL TRADES NECESSARY.
2. ALL MATERIALS SHALL BE NEW AND FREE FROM DEFECTS AND SHALL BE THE BEST OF THEIR SEVERAL KINDS UNLESS SPECIFIED OR INDICATED ON THE DRAWINGS TO HE CONTRARY.
3. DURING EACH PHASE AND AT THE COMPLETION OF THE CONSTRUCTION, THIS CONTRACTOR SHALL REMOVE ALL DEBRIS AND EXCESS MATERIALS CAUSED BY HIS WORK. HE SHALL LEAVE THE AREA OF OPERATION BROOM CLEAN.
4. ALL ELECTRICAL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OR ETL LABEL.
5. THIS CONTRACTOR SHALL GUARANTEE HIS WORKMANSHIP AND MATERIAL (LAMPS EXCEPTED) FOR A PERIOD OF ONE YEAR FROM THE DATE OF BUILDING OPENING AND LEAVE HIS WORK IN PERFECT ORDER AT THE COMPLETION. SHOULD DEFECTS DEVELOP WITHIN THE GUARANTEE PERIOD, THE CONTRACTOR SHALL, UPON NOTICE OF THE SAME, REMEDY THE DEFECTS AND HAVE ALL DAMAGES TO OTHER WORK OR FURNISHINGS CAUSED BY THE REPAIRS CORRECTED AT HIS EXPENSE TO THE CONDITION BEFORE SUCH DAMAGE.

SCOPE OF WORK

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, STORAGE, UNPACKING AND PLACEMENT; TO INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING ITEMS:
   - A. COMPLETE POWER AND LIGHTING DISTRIBUTION SYSTEM INCLUDING ALL PANELS AND FEEDERS.
   - B. COMPLETE BRANCH CIRCUIT WIRING SYSTEM.
   - C. COMPLETE POWER WIRING FOR ALL AIR CONDITIONING EQUIPMENT, PLUMBING SYSTEM, HEATING EQUIPMENT, VENTILATING AND EXHAUST EQUIPMENT.
   - D. LIGHTING FIXTURE INSTALLATION, INCLUDING ALL FLUORESCENT LAMPS.
   - E. COMPLETE TELEPHONE AND COMMUNICATION CONDUIT SYSTEM INCLUDING PULL BOXES, OUTLET BOXES, AND CONDUIT AS SPECIFIED, SHOWN ON THE DRAWINGS AND REQUIRED BY THE LOCAL TELEPHONE COMPANY AND/OR OWNER. FROM EACH OUTLET PROVIDE A 1" EMPTY EMT CONDUIT ROUTED INTO THE CEILING CAVITY OR TO THE CLOSEST TELECOMMUNICATIONS CLOSET. PROVIDE A DRAG LINE IN EACH RUN AND TERMINATE IN A BUSED ELBOW.
   - F. TEMPORARY ELECTRICAL POWER AND LIGHTING AS REQUIRED FOR CONSTRUCTION.
   - G. TESTING OF ALL CABLES AND CIRCUIT WIRING AFTER INSTALLATION.
   - H. EXIT LIGHT SYSTEM.
   - I. WIRING DEVICES.
   - J. LIGHTING CONTROLS.
   - K. GROUNDING OF THE ELECTRICAL SYSTEM.
   - L. IDENTIFY RACEWAYS AND CABLES WITH COLOR BANDING AS FOLLOWS:
2. COLORS:
   - A. FIRE ALARM SYSTEM: RED
   - B. SECURITY SYSTEM: BLUE AND YELLOW.
   - C. TELECOMMUNICATION SYSTEM: GREEN AND YELLOW.

GROUNDING AND BONDING

1. GROUND ALL EQUIPMENT PER N.E.C.
2. ALL CONDUITS SHALL CONTAIN A CODE-SIZED GROUND WIRE SIZED PER N.E.C. IN ADDITION TO THE CONDUCTORS SHOWN ON THE PLANS. WHERE CIRCUIT CONDUCTORS ARE INCREASED IN SIZE FOR VOLTAGE DROP, THE GROUND WIRE SIZE SHALL BE INCREASED PROPORTIONATELY.
3. AFTER INSTALLING GROUNDING SYSTEM BUT BEFORE PERMANENT ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, TEST FOR COMPLIANCE WITH REQUIREMENTS.

WIRE AND CABLE

1. COLOR CODE CONDUCTORS (EXCEPT CONTROL AND INSTRUMENTATION CONDUCTORS) AS FOLLOWS:

208/120V SYSTEM
- A. PHASE A BLACK;
- B. PHASE B RED;
- C. PHASE C BLUE;
- D. NEUTRAL WHITE;
- E. GROUND GREEN.
  - a. #12 AND #10 CONDUCTORS SHALL HAVE CONTINUOUS INSULATION COLOR, AS LISTED ABOVE.
  - b. COLOR CODE CONDUCTORS LARGER THAN ABOVE, WHICH DO NOT HAVE CONTINUOUS INSULATION COLOR BY APPLICATION OF AT LEAST TWO LAPS OF COLORED TAPE ON EACH CONDUCTOR AT ALL POINTS OF ACCESS INCLUDING JUNCTION BOXES. COLOR TAPE SHALL BE THE EQUAL OF 3M PRODUCTS SCOTCH #35.
  - c. CONDUCTORS SHALL BE SOFT ANNEALED COPPER INSULATED FOR 600 VOLTS UNLESS SPECIFICALLY INDICATED OTHERWISE. ALUMINUM AND NM (ROMEX) CONDUCTORS ARE NOT ALLOWED ON THIS PROJECT.

1. INSULATION TYPE SHALL BE TYPE THWN FOR WIRE SIZES #8 AWG AND LARGER AND THHN OR THWN FOR #10AWG AND SMALLER. THHN SHALL NOT BE USED IN WET OR DAMP LOCATIONS.
2. FLEXIBLE CORD SHALL BE HEAVY DUTY TYPE SO WITH AN EQUIPMENT GROUND CONDUCTOR IN ADDITION TO THE CURRENT CARRYING CONDUCTORS.
3. PROVIDE #12 CONDUCTORS, UNLESS OTHERWISE INDICATED.
   - A. CONTROL CONDUCTORS SHALL BE #14 MINIMUM FOR NEC CLASS I AND #16 FOR NEC CLASS II.
4. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED.
5. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID.
6. INSTALL WIRING IN CONDUIT. CONCEALED WIRING IN WALLS OR ABOVE CEILINGS, OR EXPOSED IN UNFINISHED AREAS (WHERE NOT SUBJECT TO PHYSICAL DAMAGE) MAY BE RUN IN MC OR AC CABLE.
7. CONNECT #10 AND SMALLER WIRES WITH CONSTANT PRESSURE EXPANDABLE SPRING TYPE CONNECTORS, "SCOTCHLOK" BY 3M OR B-CAP BY BUCHANAN.
8. CONNECT #8 AND LARGER WIRES WITH COMPRESSION CONNECTORS OR SPLICES AS MANUFACTURED BY BURNDY OR T&B.
9. INSULATE SPLICING CONNECTORS TO AT LEAST 200% OF THE WIRE INSULATION. USE PRE-STRETCHED TUBING CONNECTOR INSULATORS, 3M PST FOR #2 AND LARGER CONDUCTORS.
10. PULL CONDUCTORS USING RECOGNIZED METHODS AND EQUIPMENT LEAVING AT LEAST 6" WIRE AT ALL JUNCTION BOXES FOR CONNECTIONS.
    - A. CLEANOUT EACH CONDUIT SYSTEM BEFORE PULLING WIRE.
11. FORM AND TIE ALL WIRING IN PANELBOARDS.
12. THERE SHALL BE NO WIRENUT JOINTS OR SPLICES MADE INSIDE SWITCHBOARDS/PANELBOARDS.
13. BRANCH CIRCUIT WIRE SIZES (AND CONDUITS) SHALL BE INCREASED FROM THOSE INDICATED ON THE PLANS TO PREVENT EXCESSIVE VOLTAGE DROP. BRANCH CIRCUITS SHALL BE INSTALLED WITH WIRES OF SUFFICIENT SIZE SO THAT VOLTAGE DROP BETWEEN THE PANEL AND THE LOADS DOES NOT EXCEED LIMIT OF 3%.
14. WIRE SIZES SHALL BE BASED ON THE 75 DEGREES C. AMPACITIES.
15. CIRCUITS MAY BE MULTI-PLEXED IN CONDUIT PROVIDED WIRE IS PROPERLY DERATED AND CONDUIT SIZED PER CODE. UNDER NO CIRCUMSTANCE SHALL MORE THAN (8) CURRENT CARRYING CONDUCTORS BE RUN IN A SINGLE CONDUIT.

RACEWAYS

1. ALL WIRE SHALL BE RUN IN ACCORDANCE WITH CODE IN CORROSION RESISTANT, RIGID, THREADED, METAL CONDUIT OR ELECTRICAL METALLIC TUBING (E.M.T.) UNLESS OTHERWISE SPECIFICALLY STATED HEREIN.
   - A. CONDUIT IN EXTERIOR WALLS, BELOW FLOOR SLAB, OR UNDERGROUND SHALL BE RIGID, THREADED, GALVANIZED, HEAVY WALL TYPE.
   - B. CARLON PVC TYPE 40 HEAVY WALL CONDUIT WITH GROUND WIRE MAY BE USED BELOW FLOOR SLAB OR UNDERGROUND IN LIEU OF RIGID, THREADED, GALVANIZED CONDUIT. PVC 40 CONDUIT SHALL NOT BE RUN IN OR ABOVE FLOOR SLAB. PVC CONDUIT SHALL TERMINATE BELOW FLOOR SLAB WITH RIGID, THREADED METAL CONDUIT ADAPTER. CONDUIT ABOVE SLAB SHALL BE METAL.
   - C. CONDUIT RUN EXPOSED TO THE WEATHER SHALL BE HEAVY WALL, METAL THREADED TYPE.
   - D. PROVIDE BRANCH CIRCUIT CONDUCTORS THAT ARE TYPE THHN OR THWN AS REQUIRED. MC CABLE CAN BE USED FOR LIGHT FIXTURE TO LIGHT FIXTURE.
2. CONDUIT SIZE SHALL BE 3/4" MINIMUM.
3. CONDUIT SHALL BE SECURELY FASTENED IN PLACE.
4. ALL CONDUIT SHALL BE CONCEALED IN WALLS, FLOOR AND CEILINGS WHEREVER POSSIBLE. EXPOSED CONDUIT IN FINISHED AREAS WILL NOT BE PERMITTED. EXPOSED CONDUIT WILL BE PERMITTED IN UNFINISHED AREAS WITH THE SPECIFIC APPROVAL OF THE ARCHITECT.
5. USE FLEXIBLE CONDUIT FOR THE CONNECTION TO RECESSED OR SEMI-RECESSED LIGHTING FIXTURES (6' LENGTH MAXIMUM). USE LIQUID TIGHT METAL CONDUIT FOR ALL CONNECTIONS TO MOTORS AND OTHER EQUIPMENT SUBJECT TO VIBRATION AND IN AREAS SUBJECT TO MOISTURE.
6. USE WATERTIGHT JOINTS WITH BURIED AND CONCRETE ENCASED CONDUIT. ALL BURIED CONDUITS OUTSIDE OF BUILDINGS SHALL HAVE A MINIMUM OF 24" OF COVER. METAL CONDUITS BURIED IN EARTH SHALL BE PAINTED (TWO COATS) WITH HEAVY ASPHALTUM PAINT.
7. SUPPORT RUNS OF CONDUIT AS DETAILED IN THE APPROPRIATE TABLE OF THE NATIONAL ELECTRICAL CODE (NEC).
8. INSTALL EXPOSED RUNS OF CONDUIT AND CONDUIT ABOVE LAY-IN CEILINGS PARALLEL OR PERPENDICULAR TO THE WALLS, STRUCTURAL MEMBERS OF INTERSECTIONS OF VERTICAL PLANES AND CEILINGS. PROVIDE RIGHT ANGLE TURNS USING FITTINGS OR SYMMETRICAL BENDS. SUPPORT CONDUITS WITHIN 1" OF ALL CHANGES IN DIRECTION.
9. IF A CONDUIT IS SUSPENDED, IT SHALL BE SUPPORTED ON TRAPEZE HANGERS WHICH USE "ALL-THREAD" RODS FROM THE STRUCTURAL STEEL. THE USE OF CEILING SUPPORT WIRE OR SIMILAR MATERIAL WILL NOT BE ACCEPTED.
10. INSTALL EMPTY CONDUIT FOR FUTURE USE AS INDICATED ON THE DRAWINGS. CONDUIT SHALL BE COMPLETE WITH JETLINE OR PULL ROPE, JUNCTION/OUTLET BOXES, TILE RINGS AND APPROPRIATE COVER PLATES.
11. PROVIDE PITCHPOCKETS WHERE CONDUITS PENETRATE THE ROOF.
12. THREAD LUBRICATION/SEALANT IS REQUIRED ON OUTDOOR AND UNDERGROUND THREADED METAL JOINTS.
13. INSTALL FIRE SEAL FITTINGS WHERE CONDUITS PENETRATE CONCRETE FLOOR SLABS OR MASONRY WALLS REQUIRED TO BE FIRE RATED.
14. HORIZONTAL PORTION OF CONDUIT EXPOSED ON THE ROOF AND FEEDING EQUIPMENT SHALL NOT BE MORE THAN 5'-0" UNLESS THE WRITTEN APPROVAL FROM ARCHITECT OR ENGINEER IS OBTAINED.

PULL AND JUNCTION BOXES

1. INSTALL PULL AND JUNCTION BOXES WHERE SHOWN ON THE DRAWINGS, AND WHERE REQUIRED FOR CHANGES IN DIRECTION, AT JUNCTION POINTS, AND TO FACILITATE WIRE PULLING. FURNISH BOX SIZES IN ACCORDANCE WITH NEC UNLESS LARGER BOXES ARE INDICATED.
2. PROVIDE STEEL BOXES AND REMOVABLE COVERS OF CODE GAUGE, HOT ROLLED SHEET STEEL, HOT DIPPED GALVANIZED INSIDE AND OUTSIDE, FOR ABOVE GROUND WORK. FURNISH WEATHERPROOF BOXES WHEN INSTALLED ABOVE GROUND OUTSIDE.
3. PROVIDE CAST IRON BOXES, HOT DIPPED GALVANIZED INSIDE AND OUTSIDE WHERE SHOWN ON THE DRAWINGS. FURNISH REMOVABLE COVERS WITH GASKETS AND STAINLESS STEEL, BRASS OR BRONZE SCREWS.
4. PROVIDE CONCRETE BOXES FOR UNDERGROUND WORK UNLESS OTHERWISE INDICATED ON THE DRAWINGS. FURNISH STEEL FRAMES AND COVERS WITH THE COVER ATTACHED TO THE FRAME WITH HEXAGON HEAD, BRASS OR BRONZE CAP SCREWS, 3/8" DIAMETER. PROVIDE A RUBBER GASKET FOR SEALING BETWEEN THE COVER AND THE FRAME. PAINT THE COVER WITH TWO COATS OF HEAVY ASPHALTUM.

OUTLET BOXES

1. USE SHEET STEEL BOXES, ZINC COATED OR CADMIUM PLATED, FOR CONCEALED INTERIOR WORK.
2. USE CAST BOXES, ZINC-CADMIUM FINISH MALLEABLE IRON, FOR EXPOSED INTERIOR WORK, AND FOR EXPOSED OR CONCEALED WORK IN WET, DAMP OR EXTERIOR LOCATIONS.
3. WALL BOX SIZES (MINIMUM) SHALL BE 4" SQUARE x 2-1/2" DEEP WHERE WALL CONSTRUCTION PERMITS. WHERE WALL CONSTRUCTION DICTATES, THE WIDTH MAY BE REDUCED TO 2-1/8" OR 1-1/2" UNDER SPECIAL CONDITIONS.
4. FIXTURE OUTLETS IN CEILINGS (MINIMUM) SHALL BE 4" OCTAGONAL x 1-1/2" DEEP (4-11/16" OCTAGONAL x 2-1/2" DEEP WHERE REQUIRED TO ACCOMMODATE LARGER CONDUIT OR LARGER NUMBER OF WIRES).
5. GANG BOXES SHALL BE ONE PIECE (MINIMUM), 2-1/8" DEEP.
6. PROVIDE CONCRETE-TIGHT FLOOR BOXES WITH ADJUSTABLE COVERS SET FLUSH AND LEVEL WITH THE FINISHED FLOOR, WITH OUTLETS AS INDICATED ON THE DRAWINGS. PROVIDE WIREMOLD #EFB6S SERIES BOXES WITH LEVELING SCREWS FOR ABOVE GRADE APPLICATIONS, AND WIREMOLD #EFB6S-OG FOR ON-GRADE APPLICATIONS. FLUSH TYPE COVERS AND OPENINGS TO SERVE OUTLETS USED. FURNISH FLUSH CAPS FOR CLOSING OFF BOX WHEN NOT IN USE.
7. PROVIDE WIREMOLD EVOLUTION SERIES WALL BOX BEHIND ALL WALL MOUNTED FLAT SCREEN MONITORS. COORDINATE HEIGHT WITH ARCHITECT.
8. FLUSH MOUNT BOXES IN ALL FINISHED WALLS. INSTALL THE PLASTER RINGS IN DRYWALLED PLASTERED WALLS AND RAISED COVERS AS REQUIRED IN WALLS WITH OTHER FINISHES SO THAT THE COVER PLATES FIT TIGHTLY AGAINST BOXES OR RINGS, 3/16" MAXIMUM GAPS ARE ALLOWED FOR NONCOMBUSTIBLE WALLS.
9. ADJUST LOCATION OF OUTLETS IN MASONRY OR TILE CONSTRUCTION TO OCCUR IN THE NEAREST JOINT TO THE HEIGHT SPECIFIED. HEIGHTS SHALL MEET A.D.A. REQUIREMENTS.
10. SUPPORT ALL BOXES TO MAINTAIN PROPER ALIGNMENT AND RIGIDITY.
11. CLEAN BOXES OF ALL FOREIGN MATTER PRIOR TO THE INSTALLATION OR WIRING OF DEVICES.
12. MOUNTING HEIGHTS ON THE DRAWINGS ARE TO THE CENTERLINE OF THE BOX UNLESS OTHERWISE NOTED.

WIRING DEVICES

1. WIRING DEVICE COLOR SHALL BE WHITE, UNLESS OTHERWISE INDICATED.
2. OCCUPANCY SENSOR SWITCHES SHALL BE 120/277 VOLT, DUAL TECHNOLOGY 0-10V DIMMING WALL SWITCH OCCUPANCY SENSORS, WATTSTOPPER #DW-311.
3. DIMMER SWITCHES SHALL BE WIDE SLIDE 0-10V PRESET DIMMER WITH INTEGRATED POWER PACK EQUAL TO PASS & SEYMOUR WS4FBL3PW.
4. GENERAL SWITCHES SHALL BE SPECIFICATION GRADE AS MANUFACTURED BY PASS & SEYMOUR.
5. CEILING MOUNTED OCCUPANCY SENSORS SHALL BE LOW VOLTAGE DUAL TECHNOLOGY, WATTSTOPPER #DT-300.
6. PROVIDE NEMA CONFIGURATION 5-20R DUPLEX 125 VOLT GROUNDING TYPE RECEPTACLES RATED FOR 20 AMPERES UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
7. RECEPTACLES SHALL BE SPECIFICATION GRADE AS MANUFACTURED BY PASS & SEYMOUR.
8. RECEPTACLES REQUIRING AMPERAGES, VOLTAGES OR CONFIGURATIONS DIFFERENT FROM THE DUPLEX CONVENIENCE RECEPTACLES ABOVE SHALL BE AS INDICATED ON THE DRAWINGS.
9. PROVIDE OTHER RECEPTACLES OF A QUALITY, MATERIAL AND WORKMANSHIP EQUAL TO THAT SPECIFIED FOR DUPLEX CONVENIENCE RECEPTACLES.
10. PROVIDE COVER OR DEVICE PLATES FOR OUTLET BOXES AS FOLLOWS UNLESS OTHERWISE NOTED:
    - A. FINISHED AREAS: STAINLESS STEEL.
    - B. UNFINISHED AREAS: ZINC COATED SHEET METAL, ALUMINUM, OR CAST METAL, AS APPROPRIATE FOR THE TYPE OF BOX.
    - C. EXTERIOR AREAS: COPPER FREE ALUMINUM WITH GRAY, POWDER EPOXY FINISH, GASKET, WEATHERPROOF. TELEPHONE, COMMUNICATION, AND SIGNAL OUTLET PLATES, SHALL MATCH THOSE USED FOR RECEPTACLES AND SWITCHES. ALL OUTLET AND/OR JUNCTION BOXES SHALL BE COMPLETE WITH A COVER PLATE BY THIS CONTRACTOR.
    - D. WHERE DEVICES ARE GANGED, THEY SHALL BE INSTALLED UNDER A COMMON COVERPLATE.
11. LOCATE THE SWITCHES APPROXIMATELY 4'-0" ABOVE THE FINISHED FLOOR ELEVATION OR NEAREST BLOCK COURSE (WITHIN A.D.A. REQUIREMENTS), UNLESS OTHERWISE INDICATED. THE LONG DIMENSION OF THE SWITCHES SHALL BE VERTICAL.
12. LOCATE RECEPTACLES APPROXIMATELY 1"-6" ABOVE THE FINISHED FLOOR ELEVATION OR NEAREST BLOCK COURSE (WITHIN A.D.A. REQUIREMENTS), UNLESS NOTED OTHERWISE. THE LONG DIMENSION OF RECEPTACLES SHALL BE VERTICAL.

SAFETY SWITCHES

1. SAFETY SWITCHES SHALL BE THE ENCLOSED HEAVY-DUTY TYPE (TYPE HD) WITH QUICK-MAKE, QUICK-BREAK MECHANISM AND EXTERNAL PAD LOCKABLE OPERATING HANDLE.
2. SAFETY SWITCHES SHALL BE RATED FOR 240 OR 600 VOLTS AS APPLICABLE. THEY SHALL BE HORSEPOWER RATED WHEN USED IN MOTOR CIRCUITS.
3. SAFETY SWITCHES SHALL BE FUSIBLE OR NON-FUSIBLE, 2, 3, OR 4 POLE AS INDICATED ON THE DRAWINGS.
4. SAFETY SWITCHES SHALL BE SINGLE THROW UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
5. ENCLOSURES SHALL BE NEMA 1 INDOORS AND NEMA 3R OUTDOORS UNLESS OTHERWISE INDICATED ON DRAWINGS.
6. MANUFACTURER SHALL BE SQUARE D, SIEMENS, OR CUTLER-HAMMER. ALL SAFETY SWITCHES SHALL BE BY ONE MANUFACTURER.
7. MOUNT THE SAFETY SWITCHES SECURELY BETWEEN 3' & 6' LEVELS ABOVE THE FLOOR UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
8. SWITCHES ON BLOCK WALLS SHALL BE MOUNTED ON A 3/4" PLYWOODBACKBOARD, WHERE LOCATED INDOORS.

DISTRIBUTION AND PANELBOARDS

1. PANELBOARDS SHALL BE FULLY RATED TO INTERRUPT SYMMETRICAL SHORT CIRCUIT AT THE TERMINALS.
2. PANELBOARDS SHALL BE LABELED WITH PHENOLIC NAMEPLATES INSCRIBED AS INDICATED ON THE DRAWINGS. PROVIDE LABELS AFFIXED TO PANELBOARDS AS REQUIRED BY NFPA 70E.
3. PANELBOARDS SHALL BE ENCLOSED DEAD FRONT SAFETY TYPE WITH FEATURES AND RATINGS AS SCHEDULED ON THE DRAWINGS.
4. MOLDED CASE CIRCUIT BREAKERS SHALL BE AS SCHEDULED ON THE DRAWINGS AND SPECIFIED IN THIS DIVISION.
5. ALL BUS BARS SHALL BE RECTANGULAR TIN PLATED ALUMINUM.
6. SPACE, WHERE SHOWN IN PANEL SCHEDULES, DESIGNATES SPACE FOR FUTURE PROTECTIVE DEVICES AND SHALL INCLUDE BUS AND SUPPORT.
7. INSTALL CABINETS SO THAT CENTER OF THE TOP BREAKER DOES NOT EXCEED 6'-6" ABOVE THE FINISHED FLOOR.
8. ENTRIES ON DIRECTORY CARDS SHALL BE TYPED, COMPLETE AND ACCURATE.
9. ALL BOLTED CONNECTIONS SHALL BE TORQUED IN ACCORDANCE WITH MANUFACTURER'S STANDARDS.
10. ELECTRICAL CONTRACTOR SHALL ARRANGE CIRCUITS AS NEAR AS POSSIBLE TO CIRCUIT NUMBERS ON THE DRAWINGS. AT COMPLETION OF JOB, ELECTRICAL CONTRACTOR SHALL TAKE CURRENT READING CHECKS OF RESPECTIVE PHASES. A MINIMUM OF CIRCUIT CONNECTIONS SHALL BE REARRANGED TO BALANCE, AS CLOSELY AS POSSIBLE, THE LOAD IN THE PANEL.
11. ALL BREAKERS SHALL BE BOLT-ON TYPE.
12. MANUFACTURER SHALL BE SQUARE D AS THE PREFERRED SWITCHGEAR.

LIGHTING FIXTURES

1. NEW LIGHTING FIXTURES SHALL BE AS LISTED IN THE LIGHTING FIXTURE SCHEDULE.
2. ALL LIGHTING FIXTURES SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR AS INDICATED ON THE LIGHTING FIXTURE SCHEDULE, INCLUDING LAMPS. LAMPS SHALL BE OF SAME MANUFACTURER FOR ALL TYPES.
3. ALL FIXTURES SHALL BEAR THE UNDERWRITER'S LABORATORIES LABEL AND SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
4. BALLASTS FOR LINEAR FLUORESCENT LAMPS SHALL BE AS LISTED IN THE LIGHTING FIXTURE SCHEDULE.
5. HIGH INTENSITY DISCHARGE BALLASTS SHALL BE CONSTANT WATTAGE TYPE.
6. THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY SUPPORT MEDIA FOR ALL LIGHTING FIXTURES INCLUDING STRUCTURAL STEEL, ANGLE, RODS, ETC. IN GENERAL, FLUORESCENT AND HIGH INTENSITY DISCHARGE FIXTURES SHALL BE SUPPORTED IN A MANNER ACCEPTABLE TO THE LOCAL INSPECTION AUTHORITIES. ALL FIXTURES SHALL BE FIRMLY SUPPORTED FROM BEAMS OR JOISTS.
   - A. PROVIDE ALL NECESSARY BACKING, BLOCKING AND SUPPORTS FOR WALL MOUNTED FIXTURES.
   - B. FIXTURES SHALL NOT BE SUPPORTED FROM ROOF DECK.
7. ALL FIXTURES SHALL BE U.L. LISTED AND APPROVED FOR THE PURPOSE INTENDED.
8. RECESSED FIXTURES IN FIRE RATED CEILING OR SUPPLY AIR PLENUMS SHALL BE APPROVED FOR THE FIRE RATING OF THE CEILING. PROVIDE AIR-TIGHT GASKETS TO SEAL AROUND OPENINGS.
9. ALL ADJUSTABLE FIXTURES SHALL BE AIMED AND ADJUSTED DURING EVENING HOURS TO THE SATISFACTION OF THE ARCHITECT.

GENERAL NOTES

1. E.C TO MAKE A FIELD SURVEY OF THE EXISTING ELECTRICAL SERVICE TO ENSURE THAT THE TOTAL CONNECTED LOAD DOES NOT EXCEED THE ELECTRICAL SERVICE. ANY/ ALL MODIFICATIONS OR UPGRADES NEEDED ARE SUBJECT TO LANDLORD'S PRIOR APPROVAL, AND WILL BE COMPLETED BY TENANT/ TENANT'S GC, AT TENANT'S SOLE EXPENSE.
2. EMT (ELECTRIC METALLIC TUBING) SHALL BE USED IN ALL DEMISING WALLS, HOME RUNS, AND BETWEEN J-BOXES AND PULL BOXES. MC CABLE MAY BE USED IN OTHER APPLICATION AS ALLOWED BY THE AUTHORITY HAVING JURISDICTION (AHJ). ALL EXPOSED CONDUIT, RIGID OR MC CABLE, SHALL BE INSTALLED IN TIGHT STRAIGHT LINES, PARALLEL OR IN RIGHT ANGLES TO THE BUILDING STRUCTURE. DO NOT LOOP EXCESS MC CABLE IN CEILING SPACE OR WALL CAVITY.
3. 7 DAY, 24 HOUR TIME CLOCK IS REQUIRED TO CONTROL STOREFRONT ENTRY LIGHTS, SHOW WINDOW LIGHTS, SHOW WINDOW RECEPTACLES AND STOREFRONT SIGNAGE. ILLUMINATED STOREFRONT SIGNS MUST REMAIN LIT DURING ALL MALL BUSINESS HOURS.
4. ALL PENETRATIONS SHALL BE CORE BORED ONLY. SAW CUTTING, JACK HAMMERING, AND TRENCHING IS STRICTLY PROHIBITED. ALL PENETRATIONS SHALL BE SLEEVED, SEALED, FIRE STOPPED, AND WATERPROOFED. THE PENETRATION SLEEVE SHALL EXTEND A MINIMUM OF 4" ON EITHER SIDE OF THE SLAB AND BE LABELED WITH THE REQUIRED NFPA.
5. EC SHALL VERIFY THAT WORK SHALL NOT CONFLICT WITH ANY EXISTING STRUCTURAL, UTILITY, OR OTHER UNDER-SLAB CONDITION. (NONDESTRUCTIVE VERIFICATION MAYBE REQUIRED.) ANY DAMAGE OR DOWNTIME CAUSED BY TENANT'S WORK SHALL BE REPAIRED AND REIMBURSED AT TENANT'S EXPENSE.
6. EC TO USE OF ENERGY STAR PRODUCTS AND/OR EQUIPMENT WHENEVER POSSIBLE DURING TENANT BUILD OUT, WHICH CAN REDUCE ENERGY CONSUMPTION.

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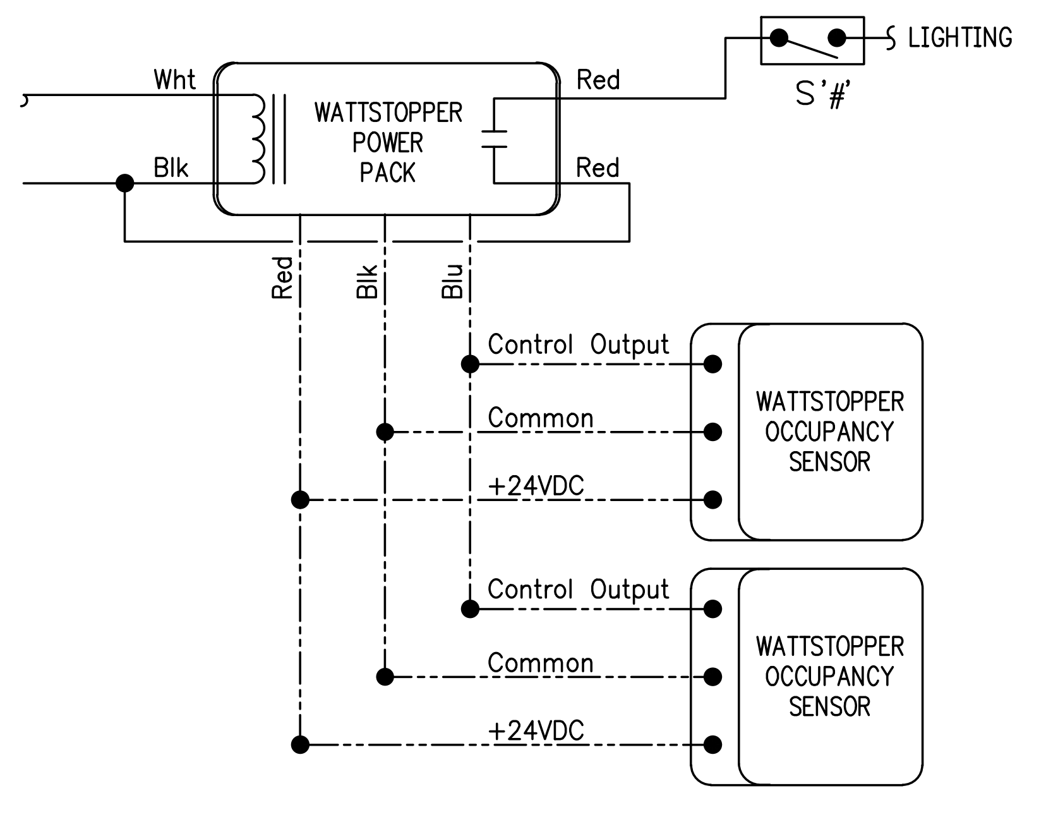
ELECTRICAL
SPECIFICATIONS

E1.1



OCCUPANCY SENSOR DETAIL

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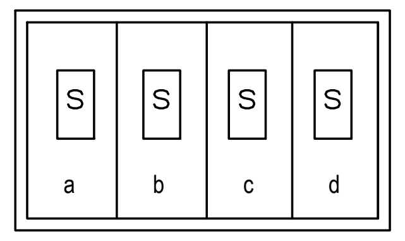

SWITCHBANK DETAIL

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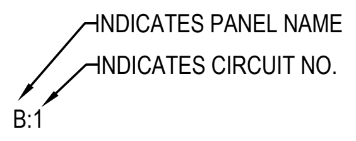


LIGHTING CONTACTORS (LC) TYPICAL DETAIL

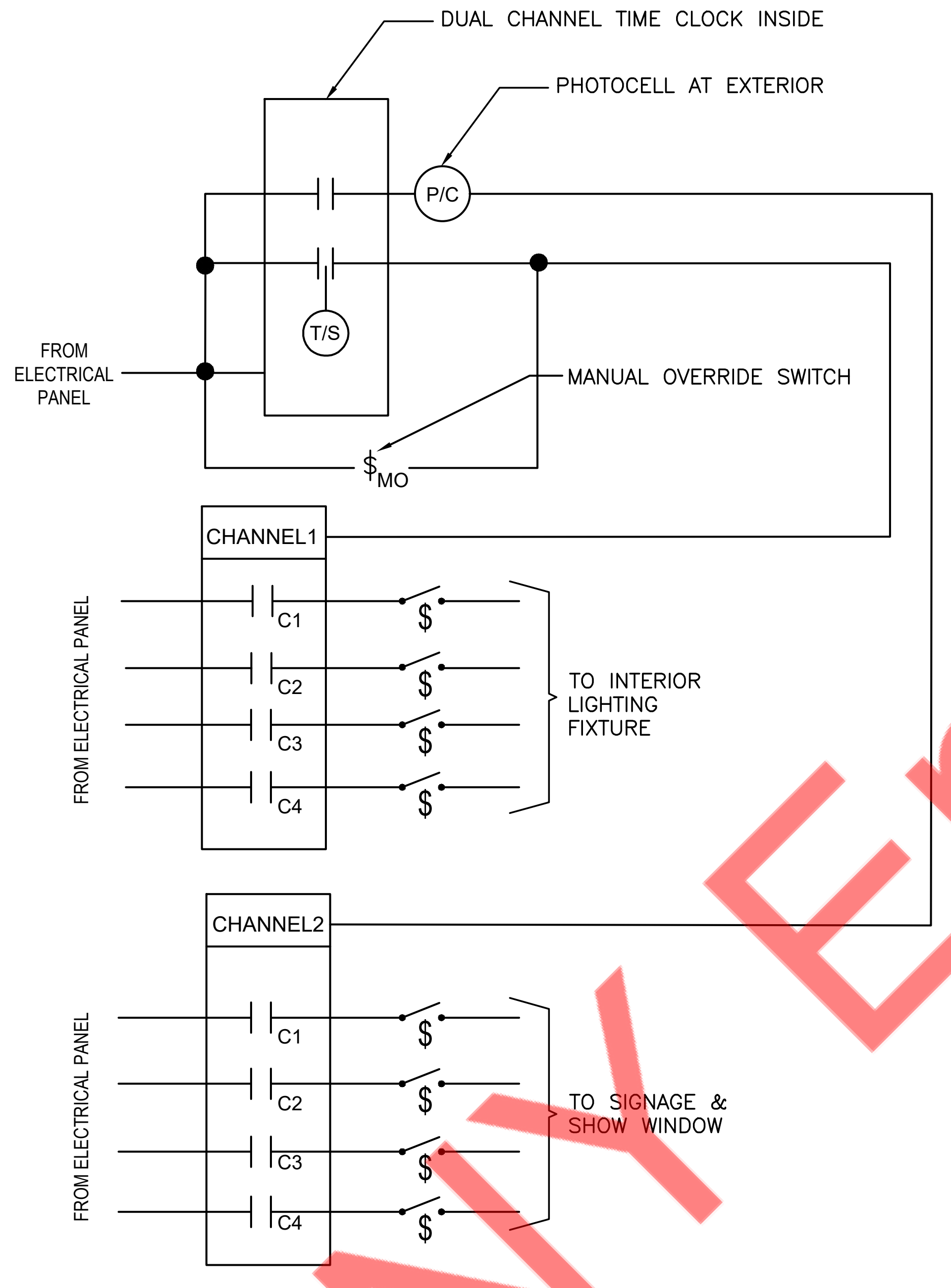
A. LIGHTING CONTACTOR PANEL SHALL BE LOCATED NEAR THE ELECTRICAL PANEL.

B. PROVIDE DUAL CHANNEL TIME CLOCK (TC), LOCATE NEAR PANEL.

C. PROVIDE MANUAL OVERRIDE SWITCH (MO) LOCATE NEAR PANEL.

D. PROVIDE PHOTOCELL (PC) LOCATE AT EXTERIOR OF THE BUILDING.

E. DIAGRAM BELOW INDICATES THE GENERAL ARRANGEMENT OF THE CONTACTOR PANEL. SEE ELECTRICAL LIGHTING PLAN FOR CIRCUIT AND CONTROL DETAILS. CONTRACTOR SHALL SELECT THE QUANTITY OF THE CONTACTORS AS REQUIRED.



LIGHTING FIXTURE SCHEDULE				
TAG	FIXTURE DETAILS	MANUFACTURER/CAT NO.	WATTS	REMARKS
L-01	RECESSED DOWNLIGHT	NL-467WW	8.5	
L-02	TRACK LIGHTING	NEL-87030 X 10W	10	
L-03	FITTING ROOM SCONECE	SCONE 2.25"	27	
L-05	RETAIL AREA MILLWORK UNDERSHELF STRIP LIGHTING	STRIP LIGHTING	10/FT	
L-07	CONE PENDANT - US LARGE	TBD	60	
L-12	SOFFIT STRIP LIGHTING	DL-F28AV80V24-3000K	6.4/FT	
E-1	EXISTING	EXISTING	EXISTING	
EX-01	EXIT SIGN	NX-815-LEDRCW	-	
EM-01	EM LIGHTING	TBD	0	

LIGHTING FIXTURE SCHEDULE NOTES:

A. VERIFY FINAL SELECTION OF THE LIGHT FIXTURE WITH THE ARCHITECT PRIOR TO BID.

B. EMERGENCY FIXTURES AND EXIT SIGNS SHALL HAVE MINIMUM 90 MINUTE BATTERY BACKUP.

LIGHTING GENERAL NOTES:

A. VERIFY ALL LUMINAIRE COLORS, TRIMS, LENGTHS, ETC. WITH THE ARCHITECT PRIOR TO PLACING FINAL PURCHASE ORDERS. SUBMISSION PF SHOP DRAWINGS WILL BE INTERPRETED AS HAVING BEEN COORDINATED WITH THE ARCHITECTURAL DRAWINGS.

B. PROVIDE ALL LENGTHS, FEEDS, ACCESSORIES, CONNECTORS, WIRING, POWER SUPPLIES, DRIVERS ETC. FOR A COMPLETE INSTALLATION. THE E.C. SHALL VERIFY THE COMPLETE BILL OF MATERIAL WITH MANUFACTURER'S REPRESENTATIVE AND ENSURE ALL EQUIPMENT ARE INCLUDED IN BID PRICE. COORDINATE INSTALLATION WITH ARCHITECTURAL DETAILS.

C. VERIFY FINAL LUMINAIRE LOCATIONS WITH OTHER CEILING MOUNTED EQUIPMENTS SUCH AS DIFFUSER WITH ARCHITECTURAL REFLECTED CEILING PLANS.

D. VERIFY EXACT MOUNTING HEIGHT AND LOCATIONS OF ALL WALL MOUNTED LUMINAIRE WITH ARCHITECTURAL PLANS AND ELEVATIONS PRIOR TO ROUGH–IN

E. ANY PROPOSED ALTERNATE LUMINAIRES SHALL BE APPROVED BY THE ARCHITECT PRIOR TO FINAL BID PRICING.

F. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS, EQUIPMENT AND DEVICES OTHER THAN THOSE SPECIFIED AND LISTED, THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST FOR SUBSTITUTIONS, TO THE ENGINEERS AT LEAST TEN (10) BUSINESS DAYS PRIOR TO BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID AND SHALL INCLUDE A COMPLETE SPECIFICATIONS CUTSHEET SUBMITTAL AS OUTLINED IN THE SPECIFICATIONS, COMPLETE WITH DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. INDICATE ANY ADDITIONS OR DEDUCTIONS TO THE CONTRACT PRICE WITH THE SUBSTITUTION SUBMITTAL AND ON THE BID FORM.

G. ALL FIXTURES INDICATED AS EMERGENCY SHALL BE PROVIDED WITH 90–MINUTE BATTERY PACK AND ALL FLORECENT FIXTURES INDICATED AS EMERGENCY SHALL BE PROVIDED WITH 1300LUMENS, 90MINUTE BATTERY PACK.

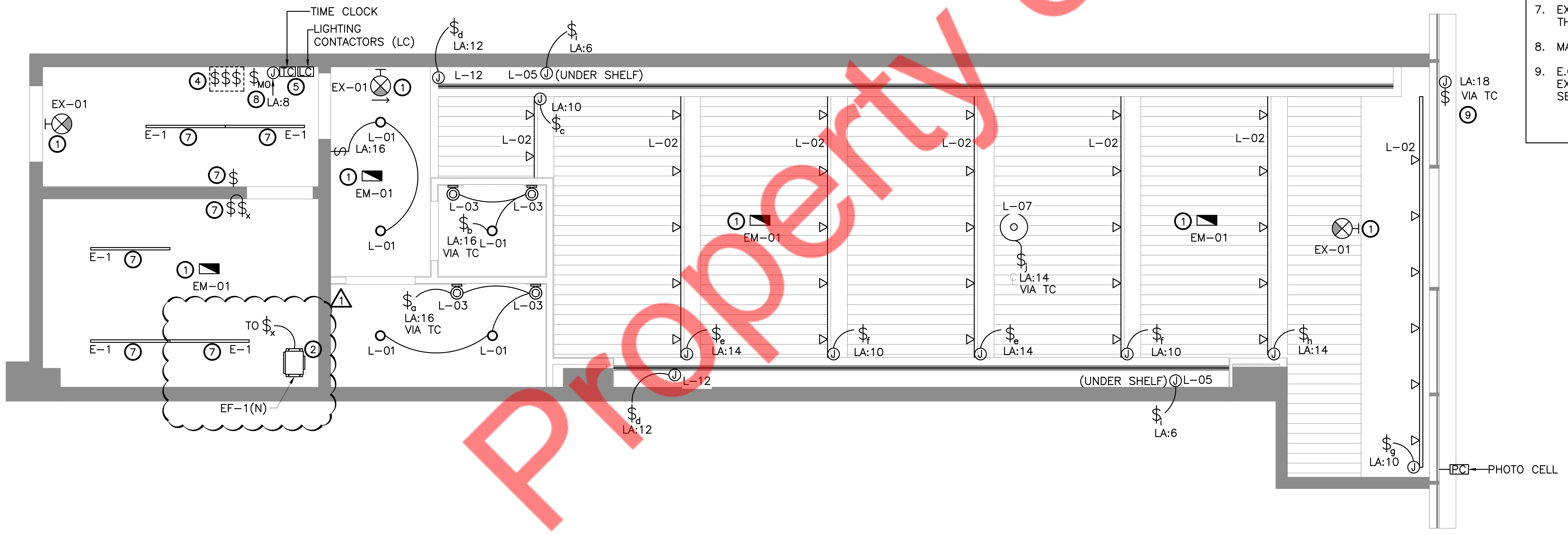
H. PROVIDE SHATTER–RESISTANT LAMPS OR PROVIDE CLEAR LENSES ON ALL FIXTURES LOCATED ABOVE ALL KITCHEN AREA.

I. VERIFY FINAL SELECTION OF LIGHT FIXTURES WITH ARCHITECT.

J. E.C. SHALL COORDINATE WITH THE LIGHTING VENDOR FOR LIGHTING FIXTURE DRIVER REQUIREMENT.

ELECTRICAL LIGHTING PLAN KEY NOTES: (#)

1. ALL THE EMERGENCY LIGHTS, EXIT SIGNS AND NIGHT LAMPS SHALL BE CONNECTED TO THE NEAREST LIGHTING CIRCUIT AHEAD OF SWITCHING FOR CONTINUOUS OPERATIONS.
2. CONNECT TO THE NEAREST LIGHTING CIRCUIT. PROVIDE CONTROL SWITCH NEAR DOOR. COORDINATE WITH THE MECHANICAL CONTRACTOR.
3. NOT USED.
4. SWITCH BANK. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
5. COORDINATE FINAL SELECTION AND LOCATION OF THE TIME CLOCK & LIGHTING CONTACTORS WITH ARCHITECT / OWNER. PROVIDE ELECTRICAL CONNECTIONS AS REQUIRED.
6. NOT USED.
7. EXISTING LIGHTING SHALL REMAIN CONNECTED TO THE EXISTING CIRCUIT, E.C. SHALL VERIFY OPERABLE CONDITION OF THE LIGHTING & CIRCUIT REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
8. MANUAL OVERRIDE SWITCH.
9. E.C. SHALL COORDINATE EXACT LOCATION OF THE SIGNAGE, AND PROVIDE JUNCTION BOX AND TOGGLE SWITCH FOR EXTERIOR SIGNAGE. CONNECT TO THE INDICATED CIRCUIT VIA TIME CLOCK. COORDINATE WITH THE OWNER FOR TIME SETTING.



LIGHTING PLAN | 1

1/4" = 1'-0"

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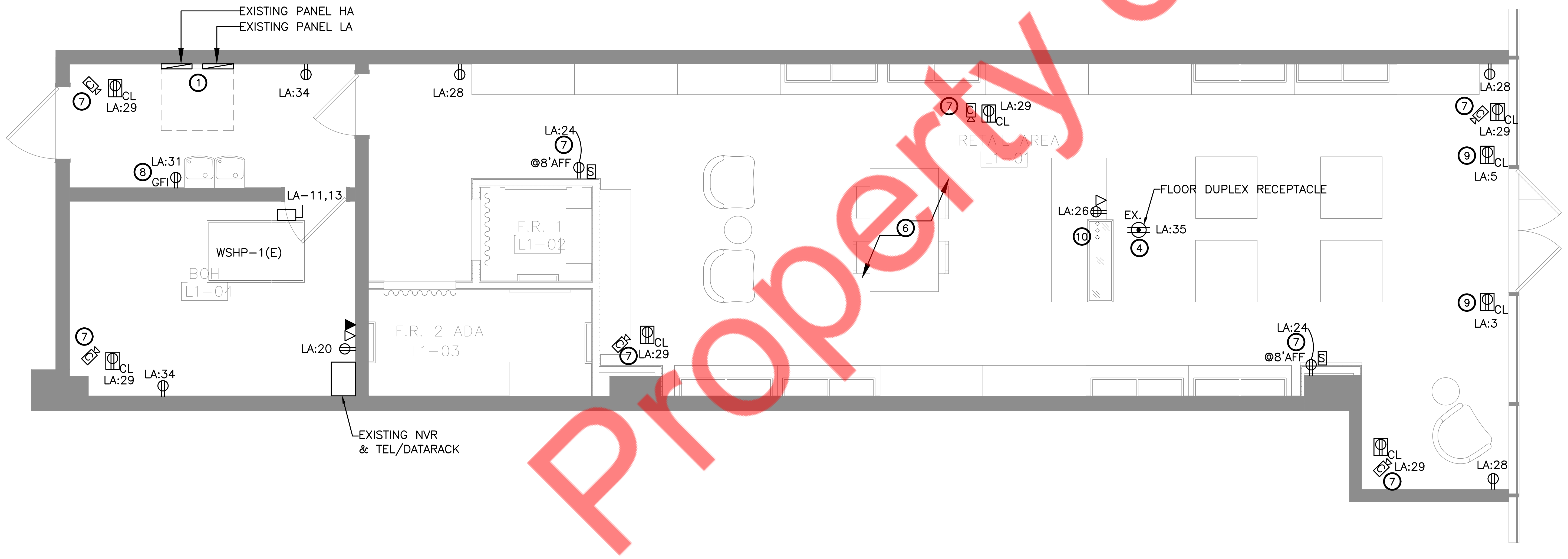
LIGHTING PLAN

E2.0



POWER PLAN | 1

1/4" = 1'-0"

ELECTRICAL POWER PLAN GENERAL NOTES:

A. ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE INDICATED.

B. MOUNT ALL RECEPTACLES AT 18" ABOVE FINISHED FLOOR TO CENTER OF THE COVER PLATE UNLESS OTHERWISE INDICATED.

C. FOR OUTLETS REQUIRING GFCI PROTECTION WHERE THE RECEPTACLE IS CONCEALED SUCH AS IN THE CASE OF A WATER FOUNTAIN OR VENDING MACHINE INSTALLATION, THE CONTRACTOR SHALL PROVIDE A STANDARD RECEPTACLE WITH GFCI CIRCUIT BREAKER IN THE ASSOCIATED PANEL. BLANK FACE GFCI TEST/RESET BUTTONS ARE NOT PERMITTED UNLESS EXPLICITLY LOCATED ON THESE DRAWINGS.

D. FURNISH AND INSTALL ALL EXTERIOR RECEPTACLES WITH WEATHERPROOF COVERS. EXTERIOR RECEPTACLES SHALL BE GFCI TYPE.

E. FOR ALL EXTERIOR ELECTRICAL EQUIPMENT, FURNISH AND INSTALL WITH NEMA 3R ENCLOSURES MINIMUM. IN THE EVENT THAT THERE IS A DISCREPANCY BETWEEN THIS REQUIREMENT AND INFORMATION LOCATED ELSEWHERE IN THE ELECTRICAL DOCUMENTS, THE CONTRACTOR SHALL BID ACCORDING TO THE MOST STRINGENT REQUIREMENT.

F. IN BREAK ROOMS AND SIMILAR SPACES, THE CONTRACTOR SHALL REFER TO ARCHITECTURAL DOCUMENTS AND LOCATE ELECTRICAL DEVICES AT LOCATIONS AND ELEVATIONS TO BEST SERVE EACH DEDICATED APPLIANCE.

G. COORDINATE WITH OTHER DISCIPLINES IN THE FIELD TO ENSURE THAT THE INTEGRITY OF FIRE RATED CONSTRUCTION IS PRESERVED WHERE PENETRATING RATED WALLS AND FLOORS.

H. THE CONTRACTOR SHALL ROUTE ALL EXPOSED CONDUIT NEATLY AND TIGHT TO SUPPORTING SURFACES. IN THE EVENT THAT THE OWNER IS NOT SATISFIED WITH WORKMANSHIP, THE CONTRACTOR SHALL MAKE CORRECTIONS AT NO ADDITIONAL COST TO THE OWNER. MC CABLE IS NOT PERMITTED IN EXPOSED AREAS.

I. FOR ALL CONDUIT RUNS SHOWN ON ELECTRICAL DRAWINGS, THE ROUTING IS APPROXIMATE. THE CONTRACTOR SHALL MAKE ROUTING ADJUSTMENTS AS REQUIRED BASED ON FIELD CONDITIONS AND COORDINATION WITH OTHER DISCIPLINES.

J. IN THE EVENT THAT THERE IS A DISCREPANCY IN THE MINIMUM CIRCUIT AMPACITY (MCA) AND/OR THE MAXIMUM OVERCURRENT PROTECTION (MOCP) BETWEEN THE DIVISION 26 AND DIVISION 22/23 SCHEDULES, THE CONTRACTOR SHALL BID ACCORDING TO THE MORE STRINGENT REQUIREMENTS.

K. MECHANICAL, PLUMBING, AND OTHER EQUIPMENT FURNISHED AND INSTALLED BY OTHER DIVISIONS IS SHOWN ON ELECTRICAL DRAWINGS FOR CIRCUITING PURPOSES ONLY. THE CONTRACTOR SHALL REFER TO OTHER DISCIPLINE CONSTRUCTION DOCUMENTS FOR EXACT LOCATIONS OF EQUIPMENT PRIOR TO ROUGH-IN OF THE ASSOCIATED ELECTRICAL CIRCUITS, DISCONNECTING MEANS, OUTLETS, ETC. AND ADJUST ROUTING AND LOCATIONS ACCORDINGLY.

L. THE RECEPTACLES MARKED AS "GFI" ON THE FLOOR PLAN INDICATES THAT THE RECEPTACLE SHALL BE GFI PROTECTED. E.C. SHALL PROVIDE GFI BREAKER IN PANEL IF GFI RECEPTACLE IS NOT READILY ACCESSIBLE OR FOR THE RECEPTACLES OTHER THAN 20A.

M. TAMPER RESISTANT "TR" RECEPTACLES SHALL BE PROVIDED AS PER ARTICLE 406.12 OF NEC WHERE EVER REQUIRED.

N. ALL THE RECEPTACLES SHALL BE GFI PROTECTED EITHER AT RECEPTACLE OR AT ELECTRICAL PANEL AS SPECIFIED IN 210.8(B)

O. ELECTRICAL CONTRACTOR SHALL VERIFY AND PROVIDE THE EXACT ELECTRICAL REQUIREMENT INCLUDING RECEPTACLE, PLUG, CORD, CIRCUIT BREAKER AND CABLES FOR ALL THE EQUIPMENT IN COORDINATION WITH THE EQUIPMENT SUPPLIER/MANUFACTURER IN THE FIELD. BASE BID ACCORDINGLY.

ELECTRICAL FLOOR POWER PLAN KEYED NOTES: (#)

1. CLEAR WORKING & DEDICATED SPACE SHALL BE PROVIDED FOR THE ELECTRICAL PANELS IN ACCORDANCE WITH THE NEC 110.26.
2. NOT USED.
3. NOT USED.
4. EXISTING FLOOR PLACE; GC TO PROVIDE NEW COVER PLATE WITH BRASS FINISH FOR OWNER. EXISTING FLOOR POWER TO BE CAPPED.
5. NOT USED.
6. ALL LOW VOLTAGE WIRING TO BE IN CONDUIT UNLESS OTHERWISE APPROVED BY AHJ.
7. PROVIDE CCTV AND AUDIO SYSTEM WITH NECESSARY WIRING, POWER REQUIREMENT AS REQUIRED. COORDINATE WITH OWNER/ARCHITECT FOR EXACT LOCATION AND QUANTITY. BASE BID ACCORDINGLY.
8. EXISTING RECEPTACLES SHALL REMAIN CONNECTED TO THE EXISTING CIRCUIT. E.C. SHALL VERIFY OPERABLE CONDITION OF THE CIRCUIT IN THE FIELD. PROVIDE NEW CIRCUIT IF NOT IN THE INOPERABLE CONDITION.
9. PROVIDE CEILING MOUNTED RECEPTACLES FOR SHOW WINDOW AS REQUIRED BY CODE. VERIFY EXACT LOCATION OF OUTLETS WITH ARCHITECT.
10. CASHWRAP POWER AND DATA CONDUIT TO STUB UP FROM GROUND AND ONCE CABINET IS SET IN PLACE, MOUNT RECEPTACLE AT BACK OF CABINET.

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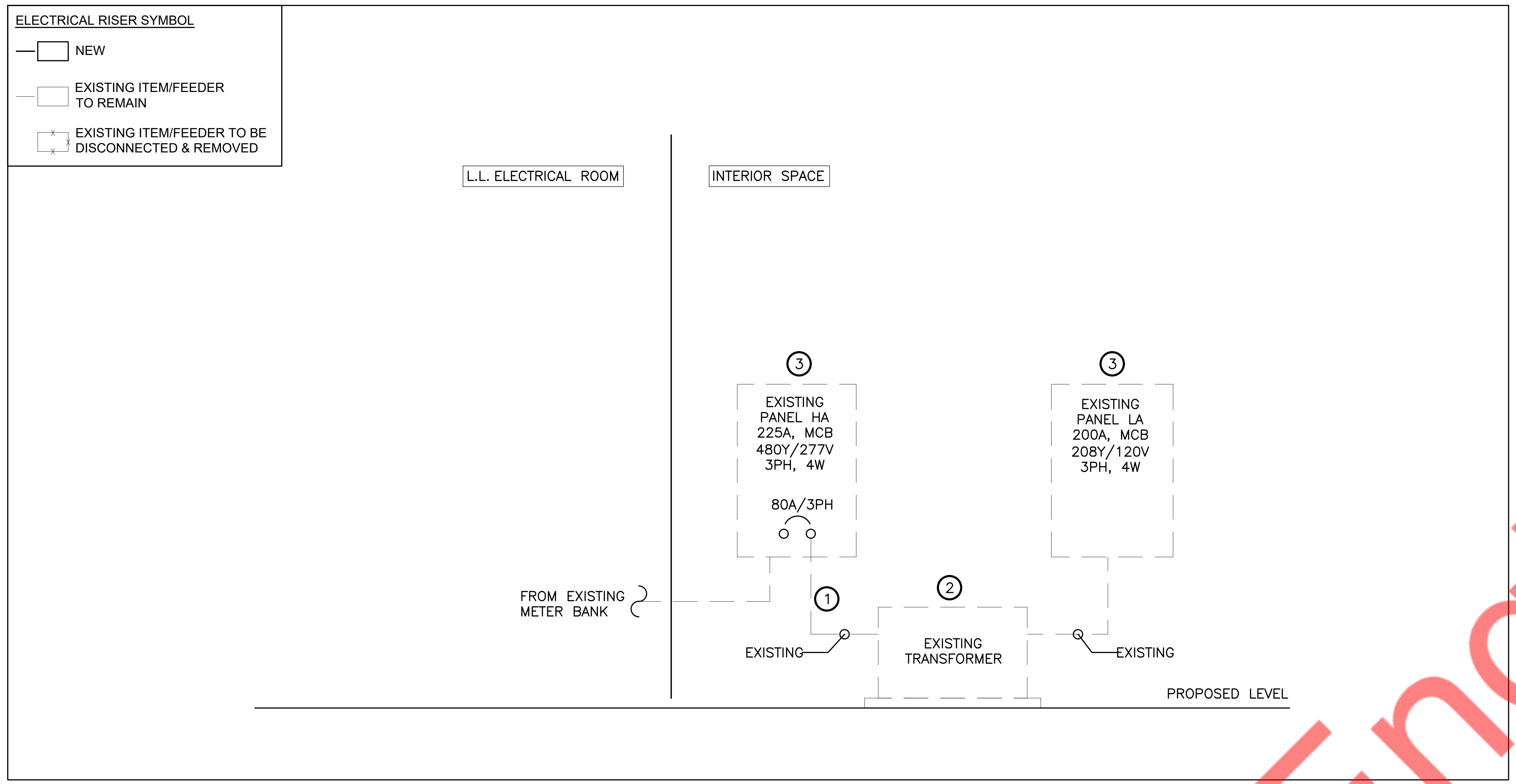
POWER PLAN

E2.1



ELECTRICAL RISER DIAGRAM | 1

NTS

ELECTRICAL RISER DIAGRAM GENERAL NOTES:

A. ELECTRICAL CONTRACTOR (E.C.) SHALL PROVIDE AND INSTALL ALL THE DEVICES IN FIELD IN COORDINATION WITH THE OWNER AND UTILITY. ALL THE INSTALLATIONS SHALL BE IN COMPLIANCE WITH THE NEC AND LOCAL CODES.

B. E.C. SHALL COORDINATE WITH THE UTILITY COMPANY AND AHJ FOR EXACT FAULT CURRENT (Isc) RATING AVAILABLE IN THE FIELD. PRIOR TO BID.

C. E.C. SHALL COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF ALL THE DEVICES SHOWN, WITH THE ARCHITECT/OWNER AND UTILITY.

D. PROVIDE SEPARATE GROUND CONDUCTOR IN ALL CONDUITS.

E. E.C. SHALL COORDINATE WITH THE ARCHITECT / OWNER / FOR EXACT SCOPE OF WORK PRIOR TO BID.

F. E.C. SHALL COORDINATE WITH THE ARCHITECT / OWNER / LANDLORD FOR ANY TYPE OF ADDITION / ALTERATION TO THE EXISTING SYSTEM PRIOR TO BID. NO WORK SHALL BE PERFORMED WITHOUT THEIR CONSENT.

G. ALL THE FEEDERS SHALL BE NEW (U.N.O.). SIZE SHALL BE AS PER RISER.

H. E.C. SHALL VERIFY OPERABLE CONDITION OF ALL THE EXISTING & RELOCATED EXISTING EQUIPMENT PRIOR TO BID. REPLACE EQUIPMENT WITH NEW ONE. KEEPING ALL THE PARAMETERS SAME.

ELECTRICAL RISER DIAGRAM KEY NOTES: (#)

1. EXISTING SERVICE FEEDER TO REMAIN. E.C. TO VERIFY RATING, OPERABLE CONDITION AND EXACT LOCATION IN FIELD. REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

2. EXISTING TRANSFORMER TO REMAIN. E.C. TO VERIFY EXISTING TRANSFORMER RATING, OPERABLE CONDITION AND EXACT LOCATION IN FIELD. REPLACE IF FOUND INOPERABLE BASE BID ACCORDINGLY.

3. EXISTING PANEL TO REMAIN. E.C. TO VERIFY EXISTING PANEL RATING, OPERABLE CONDITION AND EXACT LOCATION IN FIELD. REPLACE IF FOUND INOPERABLE BASE BID ACCORDINGLY.

PANEL:	**LA**	**(EXISTING)**			**MOUNTING:**	SURFACE
208Y/120	VOLTS	**3**	PHASE	**4**	WIRE	**PANEL LOCATION:** BOH
MCB	**200A**	**BUS:**	EXISTING	MINIMUM		**FED FROM:** EX. TRANSFORMER
NOTE:						

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	SPARE				0.00						SPARE	20	2
3	20	SHOW WINDOW RECEPTACLE	R	1.00	2-12 + 1#12G, 3/4"C		1.00					SPARE	20	4
5	20	SHOW WINDOW RECEPTACLE	R	1.00	2-12 + 1#12G, 3/4"C			1.80	2-12 + 1#12G, 3/4"C	0.80	L	LED STRIP LIGHTS UNDER SHELVES	20	6
7	20	SPARE				0.50			2-12 + 1#12G, 3/4"C	0.50	L	TIME CLOCK	20	8
9	20	SPARE					0.20		2-12 + 1#12G, 3/4"C	0.20	L	LIGHTING - RETAIL AREA	20	10
11	50/2P**	WSHP-1 (E)	H	3.00	2-8 + 1#10G, 3/4"C			3.52	2-12 + 1#12G, 3/4"C	0.52	L	LIGHTING - RETAIL AREA	20	12
13			H	3.00		3.15			2-12 + 1#12G, 3/4"C	0.15	L	LIGHTING - RETAIL AREA	20	14
15	20/2P	SPARE					0.35		2-12 + 1#12G, 3/4"C	0.35	L	LIGHTING - FR-1&2, PASSAGE	20	16
17			0	0.00				0.80	2-12 + 1#12G, 3/4"C	0.80	L	EXTERIOR SIGNAGE	20	18
19	20	SPARE				0.18			2-12 + 1#12G, 3/4"C	0.18	R	EXISTING NVR & TEL/DATARACK	20	20
21	20	SPARE					0.00					SPARE	20	22
23	20	SPARE						0.36	2-12 + 1#12G, 3/4"C	0.36	R	SPEAKER	20	24
25	20/2P	SPARE				0.36			2-12 + 1#12G, 3/4"C	0.36	R	CASH WRAP RECEPTACLE	20	26
27			0	0.00			0.54		2-12 + 1#12G, 3/4"C	0.54	R	GENERAL RECEPTACLE RETAIL	20	28
29	20	CCTV	R	1.08	2-12 + 1#12G, 3/4"C			1.08				SPARE	20	30
31	20	DRINKING FOUNTAIN	R	0.18	2-12 + 1#12G, 3/4"C	0.18						SPARE	20	32
33	20	SPARE					0.36		2-12 + 1#12G, 3/4"C	0.36	R	GENERAL RECEPTACLE BOH	20	34
35	20	EX. FLOOR & CASHWRAP RECEPTACLE	R	0.36	2-12 + 1#12G, 3/4"C			0.36				SPARE	20	36
37	20	SPARE				0.00						SPARE	20	38
39	20	SPARE					0.00					SPARE	20	40
41	20	SPARE						0.00				SPARE	20	42
43	20	SPARE				0.00						SPARE	20	44
45	20	SPARE					0.00					SPARE	30/2P	46
47	20	SPARE						0.00		0.00	0			48
49	20	SPARE				0.00						SPARE	20	50
51	20	SPARE					0.00					SPACE		52
53		SPACE						0.00				SPACE		54
						4.37	**2.45**	**7.92**						

LOAD CLASSIFICATION		**CONNECTED LOAD (KVA)**	**DEMAND FACTOR**	**DEMAND LOAD (KVA)**	**PANEL TOTAL LOAD**		
TOTAL LIGHTING	L	3.32	125%	4.15			
TOTAL RECEPTACLE	R	5.42	100%	5.42	**TOTAL CONNECTED LOAD**	14.74	KVA
TOTAL HVAC	H	6.00	100%	6.00	**TOTAL DEMAND LOAD**	15.57	KVA
TOTAL MOTOR	M	0.00	100%	0.00	**TOTAL CONNECTED CURRENT**	40.96	AMP
TOTAL EQUIPMENTS	E	0.00	100%	0.00	**TOTAL DEMAND CURRENT**	43.27	AMP
TOTAL OTHER	O	0.00	100%	0.00	**SYSTEM VOLTAGE**	208	VOLTS

PANEL SCHEDULE GENERAL NOTES:

A. ELECTRICAL CONTRACTOR SHALL VERIFY THE BREAKER AND CABLE RATING WITH EQUIPMENT SUPPLIER/OWNER AND ACCORDINGLY UPDATE THE BREAKER RATING CABLE SIZE IN FIELD.

B. GFI MARKED ON THE POWER PLAN INDICATES THAT THE CIRCUIT SHALL BE GFCI PROTECTED. E.C. SHALL PROVIDE GFCI BREAKER FOR THE GFI MARKED RECEPTACLES, IF EITHER RECEPTACLE IS NOT ACCESSIBLE OR NOT AVAILABLE.

C. PROVIDE HACR BREAKER FOR HAVC UNITS. COORDINATE WITH HVAC DRAWINGS.

D. PROVIDE LOCKING DEVICES ON CIRCUIT BREAKER WHERE EVER REQUIRED.

E. E.C. TO VERIFY SCOPE OF WORK WITH OWNER/ARCHITECT. PRIOR TO BID.

F. VERIFY EXACT POWER DISTRIBUTION IN FIELD.

PANEL SCHEDULE ABBREVIATIONS:

L=LIGHTING
R=RECEPTACLE
H=HVAC
M=MOTOR
O=OTHER

(*) GFCI BREAKER
(**) NEW BREAKER IN EXISTING PANEL
(***) PROVIDE HACR BREAKER

CONSULTANTS (ENGINEER):

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JENNI KAYNE
DENVER

△ ISSUANCE NAME	DATE
PERMIT SET	10/11/2023
△1 CITY COMMENTS	01/05/2024

ELECTRICAL
PANELS AND
RISER DIAGRAM

E3.0