## **GENERAL NOTES**

- CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE COMPLETE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET. PAY SPECIAL ATTENTION TO THE RESPONSIBILITY SCHEDULE. WORK DESIGNATED ON SCHEDULE SHALL BE CONSIDERED INCLUDED IN YOUR SCOPE OF WORK AND CONTRACT AMOUNT.
- CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS AND SCHEDULES. IF DIFFERENT NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING, OR PROCEEDING WITH WORK.
- DRAWINGS/DETAILS ARE TO BE CONSIDERED DIAGRAMMATIC, NOT NECESSARILY SHOWING IN DETAIL OR TO SCALE ALL MINOR ITEMS. UNLESS SPECIFIC DIMENSIONS ARE SHOWN, THE STRUCTURAL, ARCHITECTURAL AND SITE CONDITIONS SHALL GOVERN EXACT LOCATIONS. CONTRACTOR SHALL FOLLOW DRAWINGS IN LAYING OUT WORK, AND CHECK/COORDINATE DRAWINGS OF ALL TRADES.
- COORDINATE WITH THE WORK OF OTHERS SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PROVIDE DUCT RISES AND DRIPS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.
- DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.
- ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.
- G. USE OF COMBUSTIBLE MATERIALS IS NOT ALLOWED IN THE RETURN AIR PLENUM. MATERIALS USED IN THE PLENUM SHALL HAVE FLAME SPREAD RATING NOT TO EXCEED 25, AND SMOKE DEVELOPED RATING NOT TO EXCEED 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84. ALL EXPOSED WIRING IN THE PLENUM SHALL BE PLENUM RATED.
- VERIFY LOCATION OF PERMISSIBLE NEW STRUCTURAL ROOF PENETRATIONS AND ADAPT THE REQUIRED DUCTS ACCORDINGLY. THE OPENINGS MUST BE LOCATED USING A REBAR LOCATOR, TRYING TO LEAVE A TRANSVERSE BAR WITHIN 4" FROM THE OPENING. LOCATE OPENINGS AT MID-DISTANCE BETWEEN THE STEMS OF THE DOUBLE TEE AND LONGITUDINAL REINFORCEMENT SHALL NEVER BE CUT. CALL THE ARCHITECT'S OFFICE IN CASE OF UNEXPECTED DIFFICULTIES.
- ALL A/C AND FRESH AIR ROUND EXPOSED DUCTS WILL BE SPIRAL GALVANIZED AND READY FOR PAINTING. ALL RECTANGULAR DUCTS OVER CEILINGS MAY BE SHEET METAI WITH EXTERNAL INSULATION. ALL SG SUPPLY GRILLS WILL BE DOUBLE DEFLECTION WITH VOLUME CONTROLS.
- G.C. SHALL CONTRACT LANDLORD-APPROVED ROOFING CONTRACTOR TO FLASH AND SEAL ALL ROOF PENETRATIONS TO MAINTAIN ROOFING WARRANTY.
- K. IF APPLICABLE CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR KITCHEN VENTILATION SYSTEM INCLUDING TYPE 1 HOOD AND FOR THE WALK-IN COOLER & FREEZE
- REQUIRED INSURANCE SHALL BE PROVIDED BY THE PLUMBING CONTRACTOR FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK
- CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE AND PROVIDE COPY TO LL.
- OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER.

## FLORIDA BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2020 FBC-BUILDING, 7TH EDITION AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- 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.
- TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH TH FOLLOWING SECTIONS OF THE 2020 FBC-MECHANICAL, 7TH EDITION:
- A. REFRIGERATION SYSTEMS MC 1108 I. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
- A. DUCT CONSTRUCTION AND INSTALLATION- 2020 FBC- MECHANICAL 7TH EDITION, 603
- B. AIR INTAKES, EXHAUSTS AND RELIEF 2020 FBC- MECHANICAL 7TH EDITION 401.5
- C. GAS FIRED EQUIPMENT -2020 FBC-FUEL GAS, 7TH EDITION MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING
- SEASON: 68 DEG. FAHRENHEIT. 6. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2020 FBC-MECHANICAL,7TH EDITION
- 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 2020 FBC-MECHANICAL, 7TH EDITION 403.3 REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE
- WALL CONSTRUCTION AND LOCATION. . 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 BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES. 10. MECHANICAL SYSTEMS SHALL BE COMMISSIONED PER 2020 FBC- ENERGY CONSERVATION, 7TH EDITION C403.2.2, C408.2.1, C408.2.5 FINAL COMMISSIONING REPORT SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY.
- 11. A COMMISSIONING PLAN SHALL BE DEVELOPED BY A LICENSED DESIGN PROFESSIONAL, MECHANICAL ENGINEER OR APPROVED AGENCY.
- 12. A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY THE LICENSED DESIGN PROFESSIONAL, ELECTRICAL ENGINEER, MECHANICAL ENGINEER OR APPROVED AGENCY AND PROVIDED TO TH BUILDING OWNER OR OWNER'S AUTHORIZED AGENT AS PER 2020 FBC- ENERGY CONSERVATION, 7TH EDITION C408.2.4.
- 13. A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH SECTION 2020 FBC- ENERGY CONSERVATION, 7TH EDITION, C408.2.1 ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
- 15. SMOKE DETECTOR SHALL MEET UL268A.

## **MECHANICAL SPECIFICATION**

SECTION 0001 - NOTICE TO BIDDERS .1 BIDDERS REPRESENTATIONS

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- A. THE BIDDER BY MAKING A BID REPRESENTS THAT: THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING VIBRATION ISOLATORS: DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.
- B. THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.
- C. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR.
- D. SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.
- E. THE BID IS BASED UPON THE MATERIALS, EQUIPMENT AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.
- 1.2 EXISTING CONDITIONS AND COORDINATION A. THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL
  - CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND HAS CORRELATED THE BIDDER'S PERSONAL OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.
- B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.

1.3 RESPONSIBILITIES

- A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED. LOST OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.
- B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.
- C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUT-DOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUT-DOWNS ARE TO BE KEPT TO A MINIMUM.

END OF SECTION 0001

SECTION 0101 - QUALITY OF WORK

- 1.1 WORKMANSHI
- A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE
- B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.
- C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.
- 1.2 CODE COMPLIANCE

A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING SECTION 230593 - TESTING, ADJUSTING, AND JURISDICTION.

END OF SECTION 0101

SECTION 0102 - REQUIRED DOCUMENTS

- 1.1 SHOP DRAWINGS
- A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.
- 1.2 SUBMITTALS
- A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES AND CHOICES SHALL BE CLEARLY CHECKED, PRINTED OR OTHERWISE INDICATED ON THE SUBMITTALS.
- RECORD DRAWINGS
- A. UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES. ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.
- 1.4 EQUIPMENT OPERATING INSTRUCTIONS
- A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
- B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.
- C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.

END OF SECTION 0102

SECTION 230548 - VIBRATION CONTROLS FOR HVAC SECTION 230713 - DUCT INSULATION PIPING AND EQUIPMENT

PART 1 - GENERAL

- 1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
- 2. MOUNTS: DOUBLE-DEFLECTION TYPE.
- 3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.
- 4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE.
- 5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.
- 6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.
- 7. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.
- 8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
- SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.
- 10. PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.
- 11. RESILIENT PIPE GUIDES.
- AIR-MOUNTING SYSTEMS:
- 1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS.
- RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.
- C. RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS: FACTORY-ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR- AND WATERTIGHT CURB RAIL; WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS.
- D. VIBRATION ISOLATION EQUIPMENT BASES:
- 1. STEEL BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS.
- 2. INERTIA BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE.
- 1.3 FIELD QUALITY CONTROL
- TESTING: BY EITHER: OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR.
- BALANCING FOR HVAC

## 1.1 SUMMARY

- A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
- 1. AIR SYSTEMS: CONSTANT-VOLUME.
- 2. EXISTING SYSTEM
- 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 EFICIENCIES 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 HE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.
- 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. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.
- ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.
- END OF SECTION 230593

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: UNCONDITIONED SPACES WITHIN BUILDING: SUPPLY (R-4.2) AND RETURN (R-4.2) OUTSIDE OF BUILDING: SUPPLY (R-6) AND RETURN (R-4.2)
- 1.4 ITEMS NOT INSULATED:
- 1. FIBROUS-GLASS DUCTS. 2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS \_\_\_\_\_B. DOUBLE-WALL RECTANGULAR DUCTS AND FITTINGS. TO COMPLY WITH ENERGY CODE AND ASHRAE/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. NUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE IMUM 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 2-1/2 INCH WG PRESSURE CLASS IS THE BASIS OF COMPLIANCE WITH THESE STANDARDS, REGARDLESS OF THE 1.3 DUCT CLEANING VELOCITY IN THE DUCT.
- B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 2" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:
  - 1. DUCTWORK SHALL BE TRANSVERSELY JOINTED BY CONNECTING SEAMS OF COMPANION ANGLES, FORMED FROM 1-1/2"X1-1/2"X1/8" GALVANIZED ANGLES, TACK-WELDED OR RIVETED TO THE DUCT. THE ANGLE FRAME SHALL BE CONTINUOUSLY FLANGED UP INTO UPRIGHT OF ANGLE AND EACH CORNER SHALL BE FILLED IN AND GROUND SMOOTH. JOINTS SHALL BE GASKETED WITH 1/8" THICK REINFORCED GASKET, OVERLAPPED AT CORNERS, GASKET SIMILAR TO 3M-1202 OR APPROVED EQUAL.
  - 2. RECTANGULAR FITTINGS AND ALL TRANSITION PIECES FROM RECTANGULAR TO ROUND SHALL BE NO. 16 GAUGE ALL WELDED CONSTRUCTION. 1.4 DUCT SCHEDULE
  - 3. HORIZONTAL DUCTS SHALL BE SUPPORTED ON NOT MORE THAN 6' CENTERS. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR.
- 4. LONGITUDINAL SEAMS FOR RECTANGULAR DUCTWORK END OF SECTION 233113 SHALL BE PITTSBURGH LOCK SEAMS WITH SEALING COMPOUND, EQUAL TO BENJAMIN FOSTER NO. 30-03 INSERTED INTO SEAM. ALL SEAMS SHALL BE BRUSHED WITH NO. 30-02 AND COVERED WITH APPROVED SEALING TAPE.
- 5. RECTANGULAR DUCTWORK 18 GAUGE AND HEAVIER, FILLER RODS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR IRON AND STEEL GAS WELDING RODS, ASTM 215; AWG A5.2.
- 6. ALL FITTINGS SUCH AS ELBOWS, TEES, ETC., SHALL BE NO. 20 GAUGE ZINC COATED STEEL. ELBOWS SHALL BE OF FIVE (5) PIECE WELDED AIRTIGHT CONSTRUCTION.
- 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:

- MAX. SIDE INCHES USG BRACING
- 22 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 BO
- 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 DUG

## 1.2 MATERIALS

A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.

- INTERSTITIAL INSULATION.
- PERFORATED INNER DUCT. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS. D. DOUBLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS. FIBROUS-GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR
- INTERSTITIAL INSULATION.
- 2. PERFORATED INNER DUCT E. SHEET METAL MATERIALS:
- 1. GALVANIZED SHEET STEEL.
- PVC-COATED, GALVANIZED SHEET STEEL.
- CARBON-STEEL SHEETS.
- 4. STAINLESS-STEEL SHEETS.
- 5. ALUMINUM SHEETS.
- 6. FACTORY-APPLIED ANTI-MICROBIAL COATING. F. DUCT LINER:
- 1. FIBROUS GLASS, TYPE I, FLEXIBLE. a. WITH ANTI-MICROBIAL EROSION-RESISTANT COATING.
- 2. FLEXIBLE ELASTOMERIC.
- 3. NATURAL FIBER. G. SEALANT MATERIALS:
- 1. TWO-PART TAPE SEALING SYSTEM.
- WATER-BASED JOINT AND SEAM SEALANT.
- 3. SOLVENT-BASED JOINT AND SEAM SEALANT.
- FLANGED JOINT SEALANT.

5. FLANGE GASKETS.

B. CLEAN THE FOLLOWING ITEMS:

3. AIR-HANDLING UNITS.

1. AIR OUTLETS AND INLETS.

MAKEUP AIR SYSTEMS.

COMPLETE HVAC SYSTEM.

EXHAUST FAN.

BALANCING.

### TRANSVERSE JOINTS AND

UP TO 12 S SLIP, DRIVE SLIP, ONE INCH

- FIBROUS-GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR
- 6. ROUND DUCT JOINT O-RING SEALS.
- A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND
- 2. SUPPLY, RETURN, AND EXHAUST FANS.
- 4. COILS AND RELATED COMPONENTS.
- 5. RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES 6. SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANE 7. DEDICATED EXHAUST AND VENTILATION COMPONENTS AN
- A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:
  - 1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.
  - **SCOPE OF WORK**

- PROVIDE 6 NEW AIR HANDLING UNITS ALONG WITH CORRESPONDING OUTDOOR CONDENSING UNITS. PROVIDE 1 SPLIT AC SYSTEM FOR IT ROOM. PROVIDE MODIFICATIONS TO DUCT AS SHOWN AND PROVIDE NEW DUCTWORK WHERE NECESSARY AND PROVIDE NECESSARY ACCESSORIES FOR
- PROVIDE 3 NEW RESTROOM EXHAUST FANS AND 1 JANITOR
- COORDINATE WITH GC ANY ADDITIONAL REFRIGERATION WORK REQUIRED AND WORK REQUIRED ON KITCHEN EXHAUST SYSTEMS AND WITH OC AND REUMBING CONTRACTOR PROVIDING CONDENSATE LINES FOR MECHANICAL EQUIPMENT.

## SECTION 233713 - DIFFUSERS AND GRILLES

- 1.1 PRODUCTS
  - A. DIFFUSERS 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.
- C. ALL DIFFUSERS SHALL HAVE CONTROLLING/EQUALIZING GRID AND OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.
- D. ALL DUCTED RETURN SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.
- END OF SECTION 233713
- THERMOSTATIC CONTROLS
- A. GENERAL:
  - THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE INDIVIDUALLY CONTROLLED BY THERMOSTATIC CONTROLS RESPONDING TO TEMPERATURE.
- B. DEAD BAND:
  - WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
  - EXCEPTIONS:
  - THERMOSTATS THAT REQUIRE MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
- C. SETBACK CONTROLS: HEATING SYSTEMS LOCATED IN CLIMATE ZONES 2-8 SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES ABOVE A HEATING SETPOINT ADJUSTABLE DOWN TO 55°F OR LOWER. COOLING SYSTEMS LOCATED IN CLIMATE ZONES 1B, 2B, AND 3B SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES BELOW A COOLING SETPOINT ADJUSTABLE UP TO 90°F OR HIGHER OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.
- D. AUTOMATIC SHUTDOWN:
  - HVAC SYSTEMS SHALL BE EQUIPPED WITH AT LEAST ONE OF THE FOLLOWING: CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER DIFFERENT TIME SCHEDULES FOR SEVEN DIFFERENT DAY-TYPES PER WEEK, ARE CAPABLE OF RETAINING PROGRAMMING AND TIME SETTING DURING LOSS OF POWER FOR A PERIOD OF AT LEAST TEN HOURS. AND INCLUDE AN ACCESSIBLE MANUAL OVERRIDE, OR EQUIVALENT FUNCTION, THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO TWO HOURS.
- E. SETPOINT OVERLAP RESTRICTION:
  - WHERE HEATING AND COOLING TO A ZONE ARE CONTROLLED BY SEPARATE ZONE THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONE, MEANS (SUCH AS LIMIT SWITCHES, MECHANICAL STOPS, OR, FOR DDC SYSTEMS, SOFTWARE PROGRAMMING) SHALL BE PROVIDED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT MINUS ANY APPLICABLE PROPORTIONAL BAND.

	EXHAUST FAN		EXHAUST FAN WITH LIGHT
$\bowtie$	SUPPLY OR OUTSIDE AIF		OPPOSED BLADE DAMPER
	RETURN OR EXHAUST AI		DUCT SMOKE DETECTOR
	INSULATED RIGID DUCTV	VORK ①	PROGRAMMABLE THERMOS
$\rightarrow$	DUCT TRANSITION	RS	REMOTE SENSOR
┢╧┥	MANUAL VOLUME DAMPI	ER Ø	ROUND DUCT DIAMETER
$\checkmark$	FLEXIBLE DUCTWORK R-	6.0 CFM	CUBIC FEET/ MINUTE
	ROOF MOUNTED	S/A	SUPPLY AIR
	EXHAUST FAN OUTLET	R/A	RETURN AIR
		SG	SUPPLY GRILLE
		— — CD —	· CONDENSATE PIPING
	SUPPLY DIFFUSE REFER TO DIFFUSE SCHEDULE FOR SPECIFICAT		RETURN DIFFUSER REFER TO DIFFUSEF SCHEDULE FOR





					AC SPLIT L	INIT SCHED	ULES					
	AC	2-1	A	C-2	A	C-3	A	C-4	A	C-5	AC	C-6
	CU-1	AHU-1	CU-2	AHU-2	CU-3	AHU-3	CU-4	AHU-4	CU-5	AHU-5	CU-6	AHU-6
STATUS	NEW	NEW										
	CARRIER	CARRIER										
MANOFACTORER	(OR EQUIVALENT)	(OR EQUIVALENT										
MODEL	25HBC560A0030	FX4DNB0610000	25HBC560A0030	FX4DNB0610000								
IVIODEL	(OR EQUIVALENT)	(OR EQUIVALENT										
COOLING CAPACITY (TR)	5	.0	5	5.0	5	5.0	5	5.0	5	5.0	5	.0
TOTAL COOLING BTU/HR	578	880	57	880	57	880	57	880	57	880	578	880
SENSIBLE COOLING BTU/HR	44	750	44	750	44	750	44	750	44	750	44	750
HSPF	8.7	-	8.7	-	8.7	-	8.7	-	8.7	-	8.7	-
EER/SEER	12.5/15	-	12.5/15	-	12.5/15	-	12.5/15	-	12.5/15	-	12.5/15	-
SUPPLY CFM	-	2000	-	2000	-	2000	-	2000	-	2000	-	2000
OUTSIDE AIR (CFM)	400	-	400	-	400	-	400	-	400	-	400	-
HEATING CAPACITY BTU/HR	57	720	57	720	57	720	57	720	57	720	57	720
FAN HP	3/4	-	3/4	-	3/4	-	3/4	-	3/4	-	3/4	-
VOLTAGE/PHASE	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1
MCA (A)	34.2	7.5	34.2	7.5	34.2	7.5	34.2	7.5	34.2	7.5	34.2	7.5
MOCP/MCB (A)	50	15	50	15	50	15	50	15	50	15	50	15
LOCATION	OUTSIDE	MEZZANINE	OUTSIDE	MEZZANINE								
WEIGHT (LBS)	294	201	294	201	294	201	294	201	294	201	294	201
NOTES:												

1. PROVIDE SECONDARY DRAIN PAN WITH LEAK DETECTOR FOR ALL AHU. 2. EQUIVALENT DAIKIN MAKE UNITS CAN BE USED IN LIEU OF CARRIER.

DIFFUSER SCHEDULES							
MANUFACTURER	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS	
DESIGNATION	A	В	С	D	E	F	
USE	SUPPLY	SUPPLY	SUPPLY	SUPPLY	RETURN	RETURN	
MODEL	OMNI	OMNI	ML-39	350 RL	350 FL	ML-39	
MOUNTING	CEILING	CEILING	CEILING	WALL/DUCT	CEILING	CEILING	
LOCATION	SEE PLAN	SEE PLAN	SEE PLAN	SEE PLAN	SEE PLAN	SEE PLAN	
	24"\\24"	10"//10"	4' LENGTH, 1" SLOT		24////24//	4' LENGTH, 1" SLOT	
FACE SIZE	24 724		40 CFM/FT	SEE PLAN	24 724	40 CFM/FT	
NECK SIZE MANUFACTURER RECOMMENDED							
FRAME TYPE	LAY IN	LAY IN	-	-	LAYIN	-	
FINISH	WHITE	WHITE	WHITE	-	WHITE	WHITE	
NOISE CRITERIA	<30	<30	<30	<30	<30	<30	
ACCESSORIES	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	
NOTES:-							
1.							

1) DIFFUSERS SHALL BE 4-WAY UNLESS OTHERWISE NOTED. 2) MOUNTING FRAME TYPE SHALL BE COORDINATED WITH CEILING/ WALL CONSTRUCTION.

3) COORDINATE FINAL FINISH/COLOR WITH ARCHITECT/OWNER.

FAN SCHEDULES					
DESIGNATION	JEF-1	BEF-1			
STATUS	NEW	NEW			
QUNATITY	1	3			
MANUFACTURER	GREENHECK	GREENHECK			
MODEL	SP-A90	SP-A110			
AIRFLOW (CFM)	60	70			
E.S.P. (IN. OF W.G.)	0.3	0.3			
AMPS	0.17	0.19			
ACCESSORIES	BDD, LITE KIT	BDD,LITE KIT			
WEIGHT (LBS)	12	17			
VOLT./PH/HZ	115/1/60	115/1/60			
NOTES:-					
1) BEE-1 EANS SHALL BE INTERLOCKED WITH LIGHTS IN					
RESTROOMS AND CONTROLLED VIA OCCUPANCY SENSOR.					
2) JEF-1 SHALL BE CONTROLLED VIA MANUAL SWITCH LOCATED					
IN JANITOR ROOM.					
3) PROVIDE ALL REQUIRED ACCESSORIES FOR ALL FANS.					
4) COORDINATE ELECTR	ICAL POWER REQU	JIREMENTS WITH			
ELECTRICAL CONTRACTO	OR.				

|--|

MARK	LV-1			
QUANTITY	4			
MANUFACTURER	GREENHECK			
MODEL	ESJ-401			
SIZE	48"X30"			
FREE AREA	5.08 SQ.FT.			
CFM	3000			
ESP (IN W.C.)	0.08			
VELOCITY	4540			
NOTES:				

1. PROVIDE WITH SLEEVE AND BR-30 BAROMETRIC RELIEF DAMPER.

	2020 FBC- 7TH EDITION MECHANICAL													
DESCRIPTION	AREA(FT2) (Az)	PEOPLE OUTDOOR AIR RATE CFM/PERSON TABLE 403.3 RP	AREA OUTDOOR AIRFLOW RATE CFM/FT2 TABLE 403.3 Ra	DEFA DEN 403.:	SULT OCCUPANT SITY PER TABLE 3 (PEOPLE/1000 FT2)	AREA OUTDOOR AIR Ra*Az (CFM)	ZONE POPULATION O* Az/1000= Pz	OCCUPANT OUTDOOR AIR RP*Pz	BREATHING ZONE OUTDOOR AIR V <sub>BZ</sub> = RP*PZ + Ra*Az (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS Ez	ZONE OUTDOOR AIR REQUIRED Voz= Vbz/Ez (CFM)	ZONE OUTDOOR AIR PROVIDED (CFM)	SUPPLY AIR DESIGN VPZ (CFM)	OUTDOOR AIR PERCENT ZP= VOZ/VPZ (%)
LOBBY/WAITING	849.0	7.50	0.06		50	51	6	45	96.0	0.80	120		1170.00	
SALES	3717.0	7.50	0.12		15	446	56	418	865.0	0.80	1081		6570.00	
VAULT	859.0	7.50	0.12		15	103	13	97	200.0	0.80	250		900.00	
SERVICE COUNTER	290.0	7.50	0.12		15	35	4	33	68.0	0.80	85		500.00	
RECEIVING	224.0	5.00	0.06		30	13	7	34	48.0	0.80	60		500.00	
OFFICE	120.0	5.00	0.06		5	7	3	15	23.0	0.80	29	2400	500.00	20.00
BREAK ROOM	475.0	7.50	0.12		70	57	10	75	132.0	0.80	165		1200.00	
CORRIDOR/HALLWAY	341.0	0.00	0.06		5	20	2	0	21.0	0.80	26		200.00	
CONSULTANCY ROOM	170.0	5.00	0.06		5	10	3	15	26.0	0.80	33		260.00	
JANITOR/ TOILET ROOMS	186.0	0.00	0.00		0	0	0	0	0.0	0.80	0		200.00	
TOTAL	7231.0				210	743	103	731	1479.0		1849		12000.00	

# HEDULES

# SPLIT SYSTEM OUTDOOR UNIT

UN	IIT TAG	ACCU-1 ACCU-2				
NUMBER	OF MODULES	1	1			
QU	ANTITY	1	2			
LO	CATION	SEE PLAN	SEE PLAN			
INDOOR U	JNITS SERVED	IDU-1	IDU-2			
C	AP.TR	1	2			
COOL	.ING MBH	13.6	22.5			
COMPR	ESSOR TYPE	DC- INVERTER	DC- INVERTER			
UNIT DIMENS	IONS IN.(HXWXD)	32X12X22	33X12X34			
WEIG	GHT (LBS)	81	119			
PIPING	LIQUID-HI PRESSURE	1/4"	5/8"			
DIMENSION	GAS LOW-PRESSURE	3/8"	3/8"			
	PH/VOLT/HZ	208-230/60/1	208-230/60/1			
ELECTRICAL	MCA (A)	7	17.1			
	MOP (A)	15	20			
SOUND	LEVEL (Dba)	49	55			
	EER	13	12.5			
	SEER	23.1	20.5			
MO	DEL NO.	MUY-GL12NA-U1	MUY-CL24NA			
NOTES:-						
1) UNIT SHALL HA	VE TEN YEAR EXTENDED	O WARRANTY FOR CO	MPRESSORS/PARTS.			
2) PROVIDE LOW	2) PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN					
3) PROVIDE COMPRESSOR CYCLE PROTECTOR.						
4) PROVIDE STEEL RAILS FOR CONDENSER MOUNTING.						
5) STEEL RAILS TO BE PROVIDED BY MECH. CONTRACTOR.						
6) CONTRACTOR S	HALL PROVIDE A LONG	G LINE SET FOR REFRIG	ERANT PIPING IN THE			
EVENT THAT TOTA	L REFRIGERANT LENGT	H EXCEED THE MANUE	ACTURER'S			
STANDARD RECO	STANDARD RECOMMENDED LENGTH.					

# SPLIT SYSTEM INDOOR UNIT

	UNI	Г ТАG	IDU-1	IDU-2		
	QUA	ΝΤΙΤΥ	1	2		
	LOCA	ATION	IT ROOM	VAULT		
	AREA	SERVED	IT ROOM	VAULT		
	T	'PE	WALL MOUNTED	WALL MOUNTED		
	CAP.	(TON)	1.0	2.0		
	COOLII	NG MBH	13.6	22.5		
	TOTAL CF	<sup>E</sup> M (MAX.)	628			
	MAX. SOUND		42	49		
	ELECTRICAL	PH/VOLT/HZ	1/208-230/60	1/208-230/60		
<		MCA (A)	1	1		
	DATA	MOP (A)	15	15		
	DIMENTION S (HXWXD)	(IN.)	32X12X9	44X12X9		
	DRAIN (ID) (IN.)		5/8"	5/8"		
	WEIGHT (LBS.)		22	37		
	MOD	EL NO.	MSY-GL12NA	MSY-GL24NA		
	NOTEC.		· · · · · · · · · · · · · · · · · · ·			

NOTES:-1) SUPPLY AIR CFM BASED ON HIGH SPEED.

2) REFRIGERANT R410A SHALL BE PROVIDED.

3) PROVIDE MOUNTING BRACKETS AND ALL ASSOCIATED ACCE 4) ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURER 5) PROVIDE FILTER ON ALL RETURNS TO UNIT. ROVIDED.

5) PROVIDE FILTER ON ALL RETORNS TO ON
6) INDOOR UNIT ACCESS PANEL FIELD-PRC

2





# **ELECTRICAL LIGHTING PLAN GENERAL NOTES**

BASE BID ACCORDINGLY.

- 1. E.C. TO FIELD VERIFY WORKING CONDITION OF EXTERIOR LIGHTS AND SHALL REPLACE NON
- FUNCTIONING LIGHTS. BASE BID ACCORDINGLY.
- 2. E.C. TO FIELD VERIFY WORKING CONDITION OF DRIVE THRU LIGHTS AND SHALL REPLACE NON FUNCTIONING LIGHTS. BASE BID ACCORDINGLY. 3. E.C. TO FIELD VERIFY CIRCUIT CONNECTION FOR EXTERIOR AND DRIVE THRU LIGHTS. E.C. TO PROVIDE NEW CIRCUIT CONNECTION AS APPLICABLE THROUGH SPARE CIRCUITS IN THE PANEL.







#### **ELECTRICAL POWER PLAN GENERAL NOTES**

1. E.C. SHALL COORDINATE RECEPTACLES MOUNTING HEIGHT WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.





2

## ELECTRICAL SECURITY PLAN KEYED WORK NOTES

(1) camera to be mounted at 8'.

(2) CAMERA TO BE CEILING MOUNTED TO GYPSUM BOARD CEILING.

CAMERA TO BE PENDANT MOUNTED ABOUT 6' A.F.F. DIRECTLY ABOVE THE POS TERMINAL. LOCATION TO BE ADJUSTED ACCORDINGLY TO THE SCHEDULED PENDANT LIGHT FIXTURES. SECURITY VENDOR TO COORDINATE IN FIELD WITH G.C. PRIOR TO INSTALLATION OF SECURITY CAMERA.

CAMERA TO BE MOUNTED ABOVE TRANSACTION WINDOW ON CEILING. SECURITY VENDOR TO COORDINATE INSTALLATION WITH SCHEDULED ROLL DOWN GATE. SECURITY VENDOR TO COORDINATE IN FIELD WITH G.C. PRIOR TO INSTALLATION OF SECURITY CAMERA.

5 CAMERA TO BE WALL MOUNTED AT 8'6" A.F.F 6 E.C. SHALL PROVIDE CONDUITS ABOVE DROP CEILING FOR THE SECURITY CAMERAS AND SPEAKER AS PER SECURITY SPECIALIST REQUIREMENTS. E.C. SHALL COORDINATE WITH SECURITY SPECIALIST FOR THE INSTALLATION AND REQUIREMENT OF CONDUITS.

#### ELECTRICAL SECURITY PLAN GENERAL NOTES

A. SECURITY PLAN IS FOR REFERENCE ONLY. G.C. TO COORDINATE WITH OWNER AND OWNER'S SECURITY VENDOR PRIOR TO CONSTRUCTION.

B. ALL EXTERNAL MOUNTED CAMERAS TO BE PROVIDED WITH WEATHER PROOF PROTECTION.



## **SCOPE OF WORK**

USE THE EXISTING 400 AMP - 120/208 V - 3¢ ELECTRICAL SERVICE, USE THE EXISTING PANEL AND PROVIDE ALL NECESSARY EQUIPMENT AND ALL WIRING, LIGHTING AND LIGHTING CONTROLS FOR NEW ONE PLANT BUILDOUT.

## **GENERAL LIGHTING NOTES**

- A. WHERE LIGHT FIXTURE IS FOLLOWED BY "NL", THIS FIXTURE IS DESIGNATED AS A NIGHT LIGHT AND SHALL BE CONNECTED TO AN UNSWITCHED HOT CONDUCTOR.
- B. UPPER CASE LETTER NEXT TO LIGHT FIXTURE DENOTES FIXTURE TYPE AND LOWER CASE LETTER DENOTES SWITCHING SCHEME.
- C. ALL EMERGENCY FIXTURES SHALL BE CONNECTED TO AN UNSWITCHED HOT CONDUCTOR

SYMBOL	DESCRIPTION							
	EXHAUST FAN	EXHAUST FAN						
	COMBINATION EXHAUST FAN	COMBINATION EXHAUST FAN/LIGHT (REFER TO MECHANICAL PLANS)						
S	SPEAKERS @ CEILING	SPEAKERS @ CEILING						
J	JUNCTION BOX							
SD	CEILING MOUNTED SMOKE D BACKUP. SMOKE DETECTOR	ETECTOR 110V., INTERCONNECTED W/ BATT SHALL COMPLY WITH NFPA 72						
	BATTERY BACK UP EXIT LIGH	Г						
20	BATTERY BACK UP EMERGEN	ICY LIGHT						
\$	WALL SWITCH (SINGLE, DOUI	JLE, )						
\$,	WALL SWITCH (3 WAY, 4 WAY	)						
\$ <sub>τ</sub>	WALL SWITCH (TIMER)							
\$ <sub>n</sub>	DIMMER WALL SWITCH							
\$ <sub>os</sub>	OCCUPANCY SENSOR WALL	SWITCH						
\$ <sub>vs</sub>	VARIABLE SPEED SWITCH							
0	SINGLE RECEPTACLE							
ŧ	DUPLEX RECEPTACLE							
●=	DUPLEX DEDICATED RECEPTA	CLE, 46" TO AFF AT KITCHEN, BATHS AND TO						
<del>\$</del>	HALF SWITCHED DUPLEX REC	CEPTACLE						
۲	230 VOLT RECEPTACLE							
_ <u>+</u>	QUADRUPLEX RECEPTACLE							
Ð	FLOOR MOUNTED. FLUSH DU	PLEX RECEPTACLE						
	FLOOR MOUNTED. FLUSH QL	IAD. RECEPTACLE						
	FLOOR MOUNTED. FLUSH 230	) VOLT RECEPTACLE						
	ELECTRICAL PANEL							
	DISCONNECT SWITCH							
_ <del></del>	USB CHARGER RECEPTACLE							
	TELEVISION OUTLET							
	TELEPHONE OUTLET							
	TELEPHONE/DATA OUTLET							
$\square$	DATA OUTLET							
	FLOOR MTD. FLUSH TELEPHONE/DATA OUTLET							
	QUAD. DATA OUTLET RJ45							
<u>BREVI</u> ATIC	) <u>NS</u> :							
	EINISH ELOOB= A E E	COUNTER TOP   EVEL = $C$						
GROUN	D FAULT INTERRUPTER = GFCI ER PROOF = WP	VERIFY PRIOR TO INSTALL= VH BELOW COUNTER= BC						
		LINDER CABINET - LIC						



- ELECTRICAL CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THIS SET. CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS | 36. ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS W/TYPE WRITTEN AND SCHEDULES. IF DIFFERENT, NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING, OR PROCEEDING WITH WORK.
- ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL NEW ELECTRICAL WORK INDICATED. CONSTRUCTION SHALL BE IN ACCORDANCE WITH DRAWINGS AND APPLICABLE SPECIFICATIONS. IF A PROBLEM IS ENCOUNTERED IN COMPLYING WITH THIS REQUIREMENT. CONTRACTOR AFTER DISCOVERY OF THE PROBLEM AND SHALL NOT PROCEED WITH THAT PORTION OF THE WORK UNTIL OWNER HAS DIRECTED CORRECTIVE ACTION TO BE TAKEN.
- ELECTRICAL CONTRACTOR SHALL VISIT JOB SITE AND FAMILIARIZE HIMSELF 40. BREAKER AND PANELS -- ALL CURRENT CARRYING BUSSES SHALL BE WITH ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATIONS INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. EXISTING CONDITIONS OF ELECTRICAL EQUIPMENT, LIGHT FIXTURES, ETC... THAT ARE PART OF THE FINAL SYSTEM SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO SUBMITTING HIS BID.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2020 EDITION OF THE NATIONAL ELECTRIC CODE AND ALL CODES AND ORDINANCES OF THE AUTHORITY HAVING JURISDICTION.
- CONFIRM WITH OWNER'S REPRESENTATIVE.
- GALVANIZED STEEL.
- O. CIRCUIT BREAKERS AND PANELS TO BE BOLT ON TYPE.
- RECOGNIZED TESTING COMPANY.
- 12. SUBMIT SERVICE ENTRANCE EQUIPMENT FOR SEPARATE APPROVAL 3. ALL LOW VOLTAGE MUST BE IN CONDUIT TO ABOVE THE DROP CEILING. BRIDAL RINGS OR "J" HOOKS REQUIRED.
- 14. SEPARATE PERMITS ARE REQUIRED FOR ALL LOW VOLTAGE SUCH AS TELEPHONE, DATA, THERMOSTAT, MUSIC, ALARMS ETC.
- 17. ELECTRICIAN MUST BE ON SITE FOR ALL INSPECTIONS. 1. OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO 8. MINIMUM WIRE SIZE SHALL BE #12 A.W.G. EXCLUDING CONTROL WIRING. ALL THE BUILDING OWNER. CONDUCTORS SHALL BE COPPER AND UNLESS OTHERWISE NOTED THHN
- INSULATION.
- SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.
- 20. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF FLEXIBLE CONDUIT IN CEILING SPACE OR WALL CAVITY. NO CONDUIT TO BE CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL SUPPORTED FROM THE ROOF DECK. ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL 54. CABLE TYPES AC AND NM CABLES ARE NOT ACCEPTABLE. TYPE MC CABLE, REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER ELECTRIC METALLIC TUBING (EMT) AND RIGID GALVANIZED CONDUIT ARE WORKING ORDER. PERMITTED.
- 1. ELECTRICAL SYSTEM SHALL BE COMPLETE AND EFFECTIVELY GROUNDED AS REQUIRED BY THE N.E.C. OR LOCAL CODES. 22. ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS' LABELS WHERE
- APPLICABLE.
- IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER/ARCHITECT. 24. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
- 25. ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE THAT CERTIFICATE OF OCCUPANCY IS ISSUED. WARRANTY SHALL BE PROVIDED IN WRITING. PROVIDE COPY TO LL.
- 26. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY. 7. ALL REQUIRED INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST
- PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK 28. CONTRACTOR SHALL PAY FOR ALL PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS
- PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT CONCRETE CUTTING. 29. THE ELECTRICAL INSTALLATION SHALL MEET ALL STANDARD REQUIREMENTS OF POWER AND TELEPHONE COMPANIES. 63. CONFIRM ELECTRICAL METER REQUIREMENTS WITH MALL OPERATIONS.
- PROVIDE ALL NECESSARY CONTROL WIRING. ALL CIRCUIT BREAKERS FEEDING MECHANICAL EQUIPMENT SHALL BE HACR TYPE CIRCUIT BREAKERS.
- 30. CONTRACTOR SHALL COORDINATE WITH MECHANICAL DRAWINGS AND
- PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES, DEVICES, ETC. FOR ALL OUTLETS AS INDICATED.
- MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SUCH AS APPEAR ON THE UL LIST OF APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF N.E.C. NEMA, AND IECE.
- 34. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR CUT SHEETS OF LIGHTING FIXTURES, SWITCHES, AND OTHER ELECTRICAL ITEMS FOR APPROVAL BY ENGINEER/ARCHITECT.

## LIGHTING FIXTURE SCHEDULE

DESCRIPTION	MANUFACTURER	MODEL	COLOR	LAMP TYPE	REMARKS
4" RECESSED LED DOWNLIGHT	ELITE	#H4-LED-3000L-DIMI0-MV0LT- WD-35K-90 #HH4-450I-W-WH	WHITE	32 WATTS 120 VOLTS	
4" RECESSED LED DOWNLIGHT	ELITE	#H4-LED-3000L-DIMI0- MVOLT-WD-35K-90-EMG-LED-LOW 3HH4-450I-W-WH	WHITE		REFER TO ELECTRICAL DRAWINGS FOR FINAL LOCATION
2X4 LAY-IN LED FIXTURE	CREE	C-LITE LED FLAT PANEL, #C-TR-C-FP24-62L-35K-WH	WHITE	53 WATTS 120 VOLTS	
2X4 LAY-IN LED FIXTURE	CREE	C-LITE LED FLAT PANEL, #C-TR-C-FP24-62L-35K-WH-EB	WHITE	53 WATTS 120 VOLTS	
4FT LINEAR LED STRIP, DIMMABLE	MERCURY	#LSA-4-4000-35K-HTA-U55-UNI	WHITE	33 WATTS 120 VOLTS	INSTALLED 9'-0" A.F.F.
4FT LINEAR LED STRIP, DIMMABLE	MERCURY	#LSA-4-4000-35K-HTA-U55-UNI -BSL3102WM	WHITE	33 WATTS 120 VOLTS	INSTALLED 9'-0" A.F.F.
PENDANT LIGHT FIXTURE	SEAGULL LIGHTING	#6022EN3-15 LAMP: TCP, #21396 TCP FA119D4027EW	WHITE	4 WATTS	INSTALLED 6'-8" A.F.F.
SINGLE CIRCUIT LINE VOLTAGE TRACK AND DIE CAST CYLINDER TRACKHEAD	TRACK HEAD: LF ILLUMINATION TRACK: CONTECH	TRACK HEAD: LFTX SERIES, #TXAOI-B-J-13C-92-30-DI-I-WW TRACK: #LT-PER PLAN-P	WHITE	PER TRACK HEAD 13 WATTS 120 VOLTS	INSTALLED 10'-0" A.F.F.
ED EXIT SIGNS – SINGLE ACE	CONTECH LIGHTING	#REXA-SF-R-EM-P	WHITE WITH RED LETTERS	_	WITH BATTERY BACKUP
ED EXIT SIGNS	ELITE LIGHTING	#ELX-603-R-W	WHITE WITH RED LETTERS	_	WITH BATTERY BACKUP
OCCUPANCY WALL SWITCH	LEVITON	ODS10			
DIMMER WALL SWITCH	COMMERCIAL LIGHTING INDUSTRIES	CLI-NAROSDS			
TIMER WALL SWITCH	LEVITON	6124			
EXHAUST FAN	SEE MECHANICAL PLAN				

DESIGNATED EM/NIGHT LIGHT SHOWN ON PLANS.

REFER TO SHEET A-2 - REFLECTED CEILING PLAN IN ARCHITECTURAL DRAWINGS FOR MORE INFORMATION ON COLORS AND TRIMS REQUIRED

REFER TO CS-5 FOR VENDORS INFORMATION

(\*) EXISTING FIXTURES ARE ACCEPTABLE. IF THEY NEED TO BE REPLACED, REPLACE W/ EXACT MATCH OR MATCH SCHEDULE

SUBSTITUTIONS TO THE ABOVE FIXTURE SCHEDULE MUST BE SUBMITTED 14 DAYS PRIOR TO BID & REVIEWED BY THE ARCHITECT, ENGINEER & OWNER. SUBSTITUTIONS WILL NOT BE REVIEWED AFTER THIS TIME. SUBMITTAL PACKAGES MUST INCLUDE COLOR, CUT SHEETS, ALL PHOTOMETRICS & FIXTURE SAMPLES FOR ALL DECORATIVE FIXTURES, LANDSCAPE FIXTURES & OUTDOOR FIXTURES. WITHOUT THIS INFORMATION NO REVIEW WILL BE PROVIDED.



## **ELECTRICAL PLAN NOTES**

- DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATION FOR ALL EQUIPMENT.
- ALL ELECTRICAL NOT BEING REUSED MUST BE REMOVED IN ITS ENTIRETY. ALL CONDUIT IN OR UNDERGROUND OR IN CONCRETE MUST BE RIGID
- 10. ALL EQUIPMENT SHALL BE APPROVED BY UL OR OTHER NATIONALLY
- 11. ALL RECEPTACLES SHALL BE GROUNDED AS REQUIRED BY NEC 250.146
- 15. SEPARATE PERMIT REQUIRED FOR SIGNAGE.
- GENERAL CONTRACTORS IS REQUIRED.
- 19. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, PLASTIC AND CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS, AND

- 35. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, PATCHING AND FIRED CAULKING REQUIRED OF HIS WORK.
- DIRECTORIES.
- 37. ALL ELECTRICAL AND COMMUNICATIONS OUTLETS TO BE AT 24" A.F.F. UNLESS NOTED OTHERWISE, AND VERTICALLY MOUNTED. 38. ALL LIGHT SWITCHES TO BE AT 42" A.F.F.
- SHALL NOTIFY THE OWNER OR HIS REPRESENTATIVE AS SOON AS POSSIBLE 39. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL ELECTRICAL WIRING FOR HVAC SYSTEM INCLUDING CONTROLS, THERMOSTATS, POWER, ETC. SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
  - COPPER. ALL GROUND BUS BARS SHALL BE COPPER. PANEL BOARD ENCLOSURES SHALL BE FURNISHED WITHOUT PRE-PUNCHED CONCENTRIC HOLES. A.I.C. RATINGS SHALL BE AS INDICATED ON PANEL BOARD SCHEDULES.
  - 1. DISCONNECT SWITCHES SHALL BE H.P. RATED, GENERAL DUTY, QUICK-MAKE, QUICK-BREAK ENCLOSURES AS REQUIRED BY EXPOSURE.
  - 42. MOTOR STARTERS SHALL BE MANUAL OR MAGNETIC, WITH OVERLOAD RELAYS IN EACH HOT LEG.
  - 43. THE TERM "PROVIDE" USED IN THE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS INDICATES THE CONTRACT SHALL FURNISH AND INSTALL.
  - 44. CONTRACTOR SHALL CONFIRM WITH ANY AND ALL REQUIREMENTS SUCH AS LUG SIZE RESTRICTIONS, CONDUIT ENTRY, TRANSFORMER SIZE, SCHEDULED DOWN TIME FOR OWNERS CONFIRMATION, ETC. ANY CONFLICTS SHALL BE BROUGHT TO ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK.
  - 45. VOLTAGE DROP FOR ALL BRANCH CONDUCTORS SHALL NOT EXCEED 3%. WHERE VOLTAGE DROP EXCEEDS 3%, CONTRACTOR SHALL INCREASE SIZE OF CONDUCTORS.
  - 46. CONTRACTOR SHALL PROVIDE GFI TYPE BREAKER FOR ALL EXTERIOR 120V CIRCUITS OR GFI PROTECTION -- FOR THE WHOLE CIRCUIT. 7. GAS PIPING SHALL BE BONDED.
  - 48. ELECTRICAL CONTRACTOR SHALL COORDINATE SERVICE ENTRY WITH SERVICE PROVIDER PRIOR TO DETERMINING EXACT LOCATION OF THE METER BOX IN ORDER TO AVOID DISCREPANCIES BETWEEN DRAWINGS AND JOB CONDITIONS.
  - 49. ALL OUTDOOR EQUIPMENT SHALL BE WEATHERPROOF.
- 16. PRIOR TO ANY CONSTRUCTION WORK BEGINNING AN ON-SITE MEETING WITH 50. CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE. PROVIDE A COPY TO LL.
  - 2. ABSOLUTELY NO FLEXIBLE CONDUIT IS PERMITTED IN DEMISING WALLS. FLEXIBLE CONDUIT IS PERMITTED FOR SHORT FINAL CONNECTIONS ONLY (6'-0" OR LESS).
  - 53. EXPOSED CONDUIT SHALL BE INSTALLED IN STRAIGHT LINES, PARALLEL OR IN RIGHT ANGLES TO THE BUIDING STRUCTURE. DO NOT LOOP EXCESS
  - 55. ALL EQUIPMENT, DEVICES AND FIXTURES SHALL BE GROUNDED IN COMPLIANCE WITH NEC AND UL REQUIREMENTS.
  - 56. ALL PANELS TO BE UL LABELED WITH BOLT-ON TYPE CIRCUIT BREAKERS.
- 23. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR 57. 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.
  - 58. TENANT IS REQUIRED TO MAKE A FIELD SURVEY OF THE EXISTING ELECTRICAL SERVICE TO ENSURE THAT THE TOTAL CONNECTED LOAD DOES NOT EXCEED THE ELECTRIC 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.
  - 59. ALL ELECTRICAL PANELS TO BE MOUNTED ON PLYWOOD BACKER BOARD.
  - 60. PANEL PHASE LOADS TO BE BALANCED WITHIN 10%.
  - 61. ELECTRICAL PANELS MAY NOT BE RECESSED IN DEMISING PARTITIONS. SURFACE MOUNT OR FULL FUR OUT WALL TO ACHIEVE FLUSH FINAL APPEARANCE.
  - 62. COORDINATE ALL CONCRETE TRENCHING/CORING TO ENSURE THAT ANY UNDER SLAB UTILITIES, ETC. ARE NOT DAMAGED DURING FLOOR CUT. ANY DAMAGE TO BE REPAIRED AT TENANT'S EXPENSE. PRIOR APPROVAL AND COORDINATION WITH PROPERTY MANAGEMENT IS REQUIRED FOR ALL

208Y/120	VOLTS,		3	PHASE,			4	WIRE							
MAIN CB	400A			BUS	400A		MIN,								
	TRIP	 	DESCRIPTION				LOAD	LOAD	MINIMUM BRANCH	PE	R PHASE (	KVA)	MINIMUM BRANCH	LOAD	LOAD
	AMPS				TYPE	(KVA)	CIRCUIT	Α	В	С	CIRCUIT	(KVA)	TYPE		
1	م پ				Н	3.56	2#8 #106 2/4"6	4.34			2#12 #12G 2//"C	0.78	Н		
3	22	0-1			Н	3.56	2#0, #100, 374 C		4.34		2#12, #120, 3/4 C	0.78	Н		
5	مي م				Н	3.56	2#9 #106 2/4"6			4.34	2#12 #12C 2/4"C	0.78	Н		
7	2	CU - 2			Н	3.56	2#8, #100, 3/4 C	4.34			2#12, #120, 3/4 C	0.78	Н		
9	م				Н	3.56	2#8 #100 2/4"0		4.34		2#12 #126 2/4"6	0.78	Н		
11	22	0-5			Н	3.56	2#8, #100, 5/4 C			4.34	2#12, #120, 5/4 C	0.78	Н		
13	م	CU - 3 CU - 4			Н	3.56	3.56 2#8 #10G 3/4"C				2#12 #126 2/4"6	0.78	Н		
15	22	CU - 4			Н	3.56	2#8, #100, 5/4 C		4.34		2#12, #120, 3/4 C	0.78	Н		
17	ي م				Н	3.56	2#9 #106 2/4"6			4.34	2#12 #126 2/4"6	0.78	Н		
19	25	0-5			Н	3.56	2#8, #100, 5/4 C	4.34			2#12, #120, 3/4 C	0.78	Н		
21	.00				E	15.23			15.23		EVICTING				
23	_ 2°.2°	TO PANEL	C VIA ATS		E	15.23	2#3/0, #6G, 1 1/2"C			15.23	EXISTING				
25	20	RECEPTAC	LE		R	0.36	2#12, #12G, 3/4"C	0.36			EVICTING				
27	~	CDADE					EVICTINIC		0.00		EXISTING				
29	_ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	SPARE					EXISTING			0.36	2#12, #12G, 3/4"C	0.36	R		
		-				1	1						-		

	~~~	SDARE					FXISTING		0.00								•
29	22	JEANL					EXISTING			0.36	2#12, #12G, 3/4	"C   C	.36 R	RECEPTACL	E		20
					TOTA	AL LOAD	(KVA)	17.72	2 28.25	28.61							
		1	1					I		1						I	
						1											1
PANEL:	B (EX)													MOL	INTING:	SURFACE	
2002/420				DUACE													
2084/120	VOLIS,		3	PHASE,			4	WIRE									
	200.4			DUIC	2004		ΜΙΝ										
VIAIN CB	200A			BO2	200A		IVIIIN,										
								DF	B DHASE (K)	ν(Δ)			1015				CI/T
CKT NO.	AMPS	DE	SCRIPTION	N OF LOAD	TYPE	(KVA)	CIRCUIT				CIRCUIT	(KVA)	TYPE	DESCRI	PTION OF LOAD	AMPS	NO.
1	20	REFRIGERAT	OR		F	1 20	2#12, #12G, 3/4"C	1 7/	D	C	2#12, #12G, 3/4"C	0.54	R	RECEPTACIE		20	2
3	20	RECEPTACIE			R	0.18	2#12. #12G. 3/4"C	1.74	0.36		2#12. #12G. 3/4"C	0.34	R	RECEPTACIE - RE	STROOM	20	<u> </u>
5	20	RECEPTACLE	- BREAK	ROOM	R	-0.36	2#12, #12G, 3/4"C		0.50	0.72	2#12. #12G. 3/4"C	0.10	R	RECEPTACLE - OF	FICE	20	6
$\sqrt{7}$	20	RECEPTACLE	- PROCES	SING, STORAGE	R	0.54	2#12, #12G, 3/4"C	0.72		0.72	2#12, #12G, 3/4"C	0.18	R	RECEPTACLE - RE	STROOM	20	8
₩ g		DRINKING F	DUNTAIN		-R	1.00	2#12, #12G, 3/4"C		1.18		2#12, #12G, 3/4"C	0.18	R	RECEPTACLE - RE	STROOM	20	10
11	20	RECEPTACLE	- SALES A	REA	R	0.54	2#12, #12G, 3/4"C			1.62	2#12, #12G, 3/4"C	1.08	R	RECEPTACLE - SA	LES AREA	20	12
13	20	RECEPTACLE	- SALES A	REA	R	0.36	2#12, #12G, 3/4"C	0.86		-	2#12, #12G, 3/4"C	0.50	E	RECEPTACLE - AT	M	20	14
15	20	RECEPTACLE	- SALES A	REA	R	0.54	2#12, #12G, 3/4"C		0.60		2#12, #12G, 3/4"C	0.06	М	CP-1		20	16
17	20	SPARE					EXISTING			1.00		1.00	М			20	18
19	20	SPARE					EXISTING	1.00			2#12, #12G, 3/4"C	1.00	М	WATER HEATER		28-1	20
21	20	RECEPTACLE	- VAULT		R	0.90	2#12, #12G, 3/4"C		1.62		2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - LO	BBY/WAITING AR	EA 20	22
23	20	LIGHTING - V	/AULT		L	0.50	2#12, #12G, 3/4"C			1.22	2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - LO	BBY/WAITING AR	EA 20	24
25	20	LIGHTING - I	BREAK,RES	TROOM,OFFICE	L	0.85	2#12, #12G, 3/4"C	0.85			EXISTING			SPARE		20	26
27	20	LIGHTING - S	SALES ARE	٩	L	0.16	2#12, #12G, 3/4"C		1.16		2#12, #12G, 3/4"C	1.00	L	LIGHTING - SALES	S AREA	20	28
29	20	LIGHTING - I	OBBY/WA	ITING AREA	L	0.70	2#12, #12G, 3/4"C			1.50	2#12, #12G, 3/4"C	0.80	L	LIGHTING - EM/N	IL	20	30
31	20	RECEPTACLE	- OFFICE		R	0.36	2#12, #12G, 3/4"C	1.86			2#12, #12G, 3/4"C	1.50	E	HAND DRYER		20	32
33	20	HAND DRYE	R		E	1.50	2#12, #12G, 3/4"C		3.00		2#12, #12G, 3/4"C	1.50	E	HAND DRYER		20	34
35	30	STOREFRON	T SIGN		L	1.20	2#10, #10G, 3/4"C			1.22	2#12, #12G, 3/4"C	0.02	Н	JEF-1		20	36
37	30	STOREFRON	T SIGN		L	1.20	2#10, #10G, 3/4"C	1.70			2#12, #12G, 3/4"C	0.50	L	RESERVED FOR E	X. ATTIC FL. LIGHT	ING 20	38
39	25	TO LCP PAN	EL		E	0.10	2#12, #12G, 3/4"C		0.10		EXISTING			SPARE		30	40
41	20	CANOPY LIG	HTING	T	L	0.50	2#12, #12G, 3/4"C			0.50	EXISTING			SPARE		20	42
					TOTAL	LOAD (K	(VA)	8.73	8.02	7.78							

PANEL SCHEDULE GENERAL NOTES:

PANEL: A (EX)

- A. ALL CIRCUITING SHOWN IS FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY CIRCUITING OF THE EXISTING DEVICES IN FIELD AND INFORM ENGINEER FOR DISCREPANCIES.
  B. ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE.

	•	
		AUTOMATIC TRANSFER SWITCH F F C C
EXISTING 100 KVA GENERATOR	EXISTING MAIN DISC. 3P #88 EXISTING EXISTING	
	EXISTING	
ELECTRICAL RIS	SER KEYED WORK NOTES:	
<ul> <li>▲ EXISTING 100KV OF GENERATOR</li> <li>▲ EXISTING 400A, CONDITION OF T</li> <li>▲ EXISTING 400A, CONDITION OF T</li> <li>▲ EXISTING 250A, CONDITION 050A, CONDITION 050A, CON</li></ul>	A GENERATOR. E.C. SHALL VERIFY EXACT A. 120/208V, DISCONNECT SWITCH FOR OUR THE FEEDER ON FIELD. REPLACE WITH AD. 120/208V, 3-PHASE ELECTRICAL PANEL"A"   PANEL ON FIELD. REPLACE WITH ADJUSTA 120/208V, 3-PHASE ELECTRICAL PANEL"B"   PANEL ON FIELD. REPLACE WITH ADJUSTA 208V, 1-PHASE ELECTRICAL PANEL"C". E.C. WITH NEW 200A PANEL "C". PROVIDED BY LANDLORD. E.C SHALL VERIF ONS AND PROVIDE THE SAME AS APPLICAE 20 RATING. BASE BID ACCORDINGLY. Y INCOMING SERVICE AMPERAGE, WIRE SI TRACTOR TO COORDINATE FAULT CURREN	LOCATION ON FIELD. E.C. SHALL VERIFY EXACT SI SPACE PROVIDED BY LANDLORD. E.C. SHALL VERI JUSTABLE RATING AS PER NEC IF FOUND INOPERA PROVIDED BY LANDLORD. E.C SHALL VERIFY EXAC BLE RATING AS PER NEC IF FOUND INOPERABLE. E PROVIDED BY LANDLORD. E.C SHALL VERIFY EXAC BLE RATING AS PER NEC IF FOUND INOPERABLE. E SHALL COORDINATE WITH ARCHITECT/ OWNER FO Y EXACT SIZE, RATING AND OPERABLE CONDITION BLE. REPLACE WITH ADJUSTABLE RATING AS PER I ZING AND DISTRIBUTION. NT (Isc) RATING WITH UTILITY COMPANY AND AHJ
PRIOR TO COMME	ENCING ANY WORK.	

		MOUNTING	SLIREA	CF	
			55011 A		
LOAD TYPE	D	ESCRIPTION OF L	OAD	TRIP AMPS	CKT NO.
Н				.5	2
Н	AHU - 1			22.2	4
Н				.5	6
Н	AHU - 2			28-2-	8
Н				<u>بې</u>	10
Н	AHU - 3			28:22	12
Н				ను	14
Н	AHU - 4			28.2	16
Н				స	18
Н	AHU - 5			28.2	20
				<i>"</i> 0	22
	JEANL			22."	24
	CDADE			20	26
	SPAKE			25	28
R	RECEPTACL	E		20	30

											0						
PANEL:	C (NEW)																
120/240	VOLTS,		1	PHASE,		3		WIRE									
MAIN CB	200A			BUS	225A	MIN,											
CKT NO.	TRIP AMPS	DESC	CRIPTION O	F LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHA	SE (KVA) B	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DES	CRIPTION OF	LOAD	TRIP AMPS	CKT NO.
1	20	RECEPTACL	E - SERVICE	COUNTER	R	1.08	2#12, #1 <mark>2G</mark> , 3/4"C	2.16		2#12, #12G, 3/4"C	1.08	R	RECEPTACLE	- SERVICE CO	UNTER	20	2
3	20	RECEPTACL	E - SERVICE	COUNTER	R	1.08	2#12, #12G, 3/4"C		2.16	2#12, #12G, 3/4"C	1.08	R	RECEPTACLE	- SERVICE CO	UNTER	20	4
5	20	RECEPTACL	E - IT ROON	Л	R	0.72	2#12, #12G, 3/4"C	1.08		2#12, #12G, 3/4"C	0.36	R	RECEPTACLE	- IT ROOM		20	6
7	20	RECEPTACL	E - VAULT		R	1.08	2#12, #12G, 3/4"C		1.8	2#12, #12G, 3/4"C	0.72	R	RECEPTACLE	- LOBBY/WAI	TING AREA	20	8
9	స				Н	0.78	2#12 #126 2/486	0.96		2#12, #12G, 3/4"C	0.18	R	RECEPTACLE	- IT ROOM		20	10
11	28	AHU - 6			Н	0.78	- 2#12, #12G, 3/4 C		1.61	2#12 #126 2/486	0.83	Н				స్	12
13	20	UPS RECEP	TACLE		R	3.00	2 <b>#10, #1</b> 0G, 3/4"C	3.83		- 2#12, #126, 3/4 C	0.83	Н	ACCU-1			2	14
15	20	GENERATO	R BATTERY	CHARGER	E	0.50	2 <b>#12, #12G, 3/4</b> "C		4.06	2#8 #100 2/4"0	3.56	Н				40	16
17	20	GENERATO	R JACKET H	EATER	М	1.00	2#12, #12G, 3/4"C	4.56		2#8, #100, 3/4 C	3.56	Н	- 0-6			25	18
19	20				н	1.88	2#12 #126 2/4"6		3.76	2#12 #126 2/4"6	1.88	Н				<u>1</u> 0	20
21	28.1	ACCU-2			н	1.88	2#12, #12G, 3/4 C	3.76		2#12, #126, 3/4 C	1.88	Н	ACCU-2			29.1	22
23	20	RECEPTACL AREA	.E - LOBBY/V	WAITING	R	0.90	2#12, #12G, 3/4"C		0.9				SPARE			20	24
25	20	SPARE						0					SPARE			20	26
27		SPACE							0				SPACE				28
29		SPACE						0					SPACE				30
				TOTA	AL LOAD (K	VA)		16.35	14.29								

C



# **PLUMBING NOTES**

- ALL EQUIPMENT WHICH IS TO REMAIN MUST BE REFURBISHED TO A LIKE NEW CONDITION. WITH ALL EXISTING CONDITIONS. ALL MATERIALS SHALL BE NEW.
- OF THIS CONTRACT.
- PLUMBING CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, INSPECTION AND TESTS. PLUMBING CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT. PLUMBING CONTRACTOR MUST BE PRESENT OR ALL INSPECTIONS OF HIS WORK BY REGULATORY AUTHORITIES.
- PIPING, EQUIPMENT, ETC.

- ASSEMBLIES OR IN PLENUMS.
- MARKED ACCESS PANELS. COORDINATE LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION.
- CODE AND WITH GOOD ENGINEERING PRACTICE.
- EQUIPMENT CONNECTIONS; EXCEPT AT WATER HEATER AS PER CODE.
- PLUMBER'S WORK.
- DEFECTS FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF CERTIFICATE OF OCCUPANCY. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE WITHIN 72 HOURS OF NOTIFICATION AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED. PROVIDE
- PANEL FOR ALL CLEANOUTS.
- WHERE USED AS RETURN AIR PLENUMS.
- EQUIPMENT ROOMS.
- 1/2" THICK ARMAFLEX INSULATION. 25. CONDENSATE DRAIN LINES TO BE RUN UNDER SLAB IN PVC SCH40 PIPE AND STUBBED OUT OF WALL TO UNIT. TIE-IN OF A/C TO BE BY OTHERS. PVC PIPING WITH 1/2" THICK ARMAFLEX INSULATION MAY BE USED IN LOCATIONS WHERE ALLOWED BY LOCAL CODES. SEE PLUMBING
- 28. PLUMBING FIXTURES SHALL COMPLY WITH IPC. 29. WATER HAMMER ARRESTORS AS PER IPC.

- FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE.
- SHALL BE LIMITED TO 110°F.
- 5.AS PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE C404.7, AUTOMATIC

PLUMBING I	LEGEND
<b>∫</b> SAN	SANITARY SEWER PIPING
<u></u>	VENT PIPING
<u>∽−−−∽</u>	DOMESTIC COLD WATER PIPING
<del>ب</del>	HOT WATER PIPING
<del>بر</del>	HOT WATER RETURN PIPING
<u>۶                                    </u>	PIPE RISE OR DROP
<u>}</u>	PIPE RISER UP
Ø	BALANCING VALVE
[	CAPPED END OF PIPE
	CLEAN OUT
0>-0	P-TRAP
S.O.V.	SHUT-OFF VALVE
COTC	CLEAN OUT TO GRADE
CW	DOMESTIC COLD WATER
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
VTR	VENT THRU ROOF
$\bowtie$	GATE VALVE
	CHECK VALVE
Ŕ	BALANCING VALVE
$\Box$	WATER HAMMER ARRESTER
<pre>   FD </pre>	FLOOR DRAIN
I.W.	INDIRECT WASTE
	FLOOR SINK
	THERMOSTATIC MIXING VALVE

DOMESTIC CW AND HW LINE





ESTF	ROC	OM FIXTURE SCHED	DULE		WAT	ſER	WA	STE	
em No.	Qty.	Description	Manufacturer	Model	Hot	Cold	Direct	Indired	rt
C1	2	LAVATORY	AMERICAN STANDARD	355.012	-	-	1 1/2"	-	
C1A	2	LAVATORY FAUCET	AMERICAN STANDARD	7413201.002	1/2"	1/2"	-	-	
C2	2	WATER CLOSET	AMERICAN STANDARD	CADET 3	-	1"	4"	-	
-	1	LAVATORY	EXISTING	EXISTING	-	-	-	-	
-	1	WATER CLOSET	EXISTING	EXISTING	-	-	-	-	
TMV	5	THERMAL MIXING VALVE	WATTS	LFMMV	1/2"	1/2"	-	-	
CP-1	1	CIRCULATION PUMP	TACO	005-SF2	-	-	-	-	
B5A	1	MOP SINK & FAUCET	REGENCY	600FMS89	3/4"	3/4"	-	-	
B5	1	MOP SINK	REGENCY	600SM16206	-	-	3"	-	
C9	1	DRINKING FOUNTAIN	ELKAY	EZSTL8LC		1/2"	1 1/2"		
C10	1	WATER HEATER	EXISTING	EXISTING	-	-	-	-	
		KITCHEN EQUI	PMENT PLUMBIN	G SCHEDULE		WA	TER	WAST	E
Item No.	. (	Qty. Description	MANUFACTURER	MODEL		Hot	Cold	Direct	Indire
B4		1 KITCHEN SINK & FAUCET	REGENCY	600DI12812	600DI12812			2"	-

