ME	CHANICAL SYMBOLS LIST						
TXF-1	EQUIPMENT SYMBOL						
)	RISER SYMBOL						
	AIR DEVICES						
	CEILING DIFFUSER SUPPLY						
	CEILING DIFFUSER RETURN						
	EXHAUST GRILLE						
	DUCT ACCESSORIES						
BD	BACKDRAFT DAMPER						
	VOLUME DAMPER W/ ACCES	S DOOR					
	MOTORIZED DAMPER						
	FIRE DAMPER						
<u>C</u>	ONTROLS AND SENSORS						
S-~-	THERMOSTAT, SENSOR						
)	SMOKE DETECTOR						
	DUCTWORK						
	NEW SHEET METAL DUCTWO	ORK & SIZE					
3	SUPPLY OR OUTSIDE AIR DU	СТ					
]	RETURN AIR DUCT						
	DUCTWORK TRANSITION						
	SUPPLY DUCT ELBOW UP OF	RDOWN					
	RETURN DUCT ELBOW UP OF	R DOWN					
×	DUCT ELBOW WITH FIXED TU	IRNING VANES					
	DUCT BRANCH TAKE-OFF						
	FLEXIBLE DUCTWORK						
CHANIC	AL ABBREVIATIONS						
AIR HAN	DLING UNIT						
BRITISH	THERMAL UNIT						
CEILING	DIFFUSER SUPPLY						
CEILING	DIFFUSER RETURN						
CUBIC FI	EET PER MINUTE						
DOWN							
ENERGY							
FLEXIBI							
GENERA	L CONTRACTOR						
FREQUE	NCY						
MECHAN	IICAL CONTRACTOR						
NOISE C	RITERIA						
AIR COO							
SEASON	AL ENERGY EFFICIENCY RATIO						
BOTTOM	OF DUCT						
BOTTOM							
		MECHANICAL SYMBOLS LIST         TXF-1       EQUIPMENT SYMBOL         RISER SYMBOL       RISER SYMBOL         AIR DEVICES       CEILING DIFFUSER SUPPLY         CEILING DIFFUSER RETURN       EXHAUST GRILLE         DUCT ACCESSORIES       BD         BD       EXHAUST GRILLE         VOLUME DAMPER W/ ACCES       MOTORIZED DAMPER         Image: Controls and sensors       FIRE DAMPER         Image: Controls and sensors       SMOKE DETECTOR         Image: Control and sensors       SMOKE DETECTOR         Image: Control and sensors       SMOKE DETECTOR         Image: Control and sensors       SUPPLY OUCT ELBOW UP OF         Image: Control and sensort t					

FULSHEAR, TX BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF INTERNATIONAL BUILDING CODE 2015 AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.

2. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH INTERNATIONAL BUILDING CODE 2015

3. 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.

4. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION INTERNATIONAL MECHANICAL CODE 301.8 AND THE FOLLOWING SECTIONS OF THE INTERNATIONAL MECHANICAL CODE 2015:

A. REFRIGERATION SYSTEMS - SECTION 1110

5. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD: A. STANDARDS OF HEATING - 2015 INTERNATIONAL MC 309.1 B. DUCT CONSTRUCTION AND INSTALLATION- 2015 INTERNATIONAL MC

C.AIR INTAKES, EXHAUSTS AND RELIEFS - 2015 INTERNATIONAL MC 401.5 D.AIR FILTERS - 2015 INTERNATIONAL MC 605 E.GAS FIRED EQUIPMENT - FUEL GAS CODE

6. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT

7. VENTILATION FOR ALL AREA SHALL COMPLY WITH - 2015 INTERNATIONAL MC 401.

8. 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 2015- INTERNATIONAL MC 403.3

9. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.

10. 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.

11. A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH SECTION 2015-INTERNATIONAL ENERGY CODE, C408.2.1.

12. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA

13. SMOKE DETECTOR SHALL MEET UL268A.

14. INDOOR DUCT AND PLENUM INSULATION SCHEDULE; (SECTION 230713 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: R-6 WITHIN BUILDING ENVELOPE ASSEMBLY: R-8 OUTSIDE OF BUILDING:

	MECHANICAL DRAWIN LIST
001	MECHANICAL COVER SHEET
002	MECHANICAL SPECIFICATIONS
100	MECHANICAL FLOOR AND ROOF PLANS
200	MECHANICAL SCHEDULES
301	MECHANICAL VENTILATION CALCULATIONS
401	MECHANICAL DETAILS (1 OF 3)
102	

MECHANICAL DETAILS (2 OF 3) MECHANICAL DETAILS (3 OF 3)

FULSHEAR, TX CODES AND REGULATIONS

**INTERNATIONAL BUILDING CODE 2015** INTERNATIONAL ENERGY CONSERVATION CODE 2015 INTERNATIONAL FUEL GAS CODE 2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL PLUMBING CODE 2015



EG

TXF

RG

SG

EXHAUST GRILLE

RETURN GRILLE SUPPLY GRILLE

TOILET EXHAUST FAN

**GENERAL NOTES** 

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP THE WORK PROPOSAL.

7. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.

8. 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.

9. 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.

10. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STE SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILA TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOAD INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.

11. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND

DUNNAGE STEEL AS REQUIRED.

12. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).

13. WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGR

14. 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.

15. ACCESS DOORS ARE REQUIRED FOR ALL FANS, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.

16. 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 DENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY OCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.

17. 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.

18. 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.

19. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

20. ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE

21. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

22. 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.

23. 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.

24. SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.

25. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

26. 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 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.

27. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

28. 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

29. 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.

30. WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.

)"PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

)"INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES

3)"FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

# SCOPE OF WORK

SCOPE OF WORK

DEFINITIONS

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.

# GENERAL HVAC NOTES

# <u>GENERAL:</u>

1. PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.

2. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.

3. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE PROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER EFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.

WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE ERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF HE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT. IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.

5. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.

6. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.

7. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.

8. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.

9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.

10. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.

11. LOCATE ALL TEMPERATURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.

12. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.

13. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

14. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT, ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.

15. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.

16. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.

17. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.

18. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.

19. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.

20. ALL RTU AND AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH RTU AND AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.

21. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.

22. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.

23. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.

ENGINEE NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674.

MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGIINEERS.COM



SHEET TITLE:

# MECHANICAL COVER SHEET

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	11/29/2023	
KEV.	DAIE	REWARNS
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HVAC DUCTWORK - SHEET METAL

1. CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC., ARE INDICATED ON THE CONTRACT DOCUMENT DRAWINGS FOR CLARITY FOR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS.

2. CONTRACTOR TO CHECK AND CORRECT ANY AND ALL DEFICIENCIES IN EXISTING DUCTS. ALL NEW DUCTWORK WILL COMPLY WITH THE LATEST SMACNA GUIDELINES AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED BY ASHRAE.

3. PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM.

4. SUPPLY AND RETURN DUCTWORK 10' FROM ALL AC UNITS SHALL BE LINED WITH 1" ACOUSTICAL LINING.

5. RE-INSULATE ALL DUCTWORK AND PIPING IN WHICH INSULATION HAS BEEN REMOVED OR DAMAGED WITH INSULATION EQUAL TO THE EXISTING INSULATION.

6. CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY SUPPLY DIFFUSERS AND RETURN AIR REGISTERS WHERE INDICATED ON THE DRAWING. COORDINATE LOCATION OF DIFFUSERS AND REGISTERS WITH REFLECTED CEILING PLAN.

7. IN CORRIDORS WHERE CEILING SPEAKERS AND AIR DIFFUSERS ARE INDICATED BETWEEN THE SAME LIGHT FIXTURES, INSTALL BOTH DEVICES AT THE QUARTER POINTS BETWEEN THE FIXTURES.

8. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS 4'-0" (CENTER LINE) ABOVE THE FINISHED FLOOR. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE PRECEDING LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.

9. ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.

10. ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.

11. PROVIDE ALL 90-DEGREE SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED. ELBOWS IN KITCHEN EXHAUSTS SHALL BE OF UN-VANED SMOOTH RADIUS CONSTRUCTION WITH A RADIUS EQUAL TO 1-1/2 TIMES THE WIDTH OF THE DUCT. PROVIDE ACCESS DOORS UPSTREAM OF ALL ELBOWS WITH TURNING VANES.

12. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.

13. ALL RTU AND AIR HANDLING UNITS SHALL OPERATE WITHOUT MOISTURE CARRYOVER.

14. LOCATE ALL MECHANICAL EQUIPMENT FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.

15. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS, FANS, AND OTHER EQUIPMENT THAT REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.

16. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF NEEDED.

17. RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FT.

18. ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

19. PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, COILS, AND OTHER ITEMS LOCATED IN THE DUCTWORK THAT REQUIRE SERVICE AND/OR INSPECTION.

20. PROVIDE ACCESS DOORS IN DUCTWORK FOR THE OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.

21. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING STRAPS. GROUNDING STRAPS SHALL BE BOLTED OR SOLDERED TO BOTH THE EQUIPMENT AND THE DUCT

22. SMOKE DETECTORS SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR MOUNTING THE SMOKE DETECTOR IN DUCTWORK AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.

23. SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.

24. EXTERIOR LOUVERS ARE INDICATED FOR SIZE, GENERAL LOCATION AND PERFORMANCE ONLY. DETAILED LOUVER DESCRIPTIONS ARE PROVIDED IN THE ARCHITECTURAL SPECIFICATIONS.

SPECIFICATIONS SECTION 0001 - NOTICE TO BIDDERS

1.1 BIDDERS REPRESENTATIONS

A. THE BIDDER BY MAKING A BID REPRESENTS THAT: THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING 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 WORKMANSHIP** 

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 REMOV

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 JURISDICTION. END OF SECTION 0101

SECTION 0102 - REQUIRED DOCUMENTS

1.1 SHOP DRAWINGS A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NO 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. 1.3 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 UNDEF 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 1 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 078413-PENETRATION FIRE-STOPPING

1.1 QUALITY ASSURANCE A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.

B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL, INTERTEK ETL SEMK OR FM GLOBAL 1.2 PENETRATION FIRESTOPPING

A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E 814 OR UL 1479.

B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PE ASTM E 814 OR UL 1479:

C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479. D. W-RATINGS: PER UL 1479.

1.3 INSTALLATION

A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS. 1.4 FIELD QUALITY CONTROL

A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174. 1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED. THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.

FOR THE FOLLOWING SYSTEMS: METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRANTS, USE ON OR MORE THE FOLLOWING MATERIALS:

a. LATEX SEALANT

**b.SILICONE SEALANT** 

c. INTUMESCENT PUTTY d.MORTAR

h.SILICONE FOAM

i. PILLOWS/BAGS j. INTUMESCENT WRAP STRIPS

k. INTUMESCENT COMPOSITE SHEET

1.6 MANUFACTURERS

1. HILTI CONSTRUCTION CHEMICAL, INC

2. TREMCO INC. 3.3M FIRE PROTECTION PRODUCTS

END OF SECTION 078413

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

1.1 SLEEVE-SEAL SYSTEMS A. FIELD-ASSEMBLED, MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNULAR SPACE BETWEEN PIPING AND SLEEVE.

1. SEALING ELEMENTS: EPDM RUBBER OR NBR. 2. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL.

3. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL. B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENT AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE

INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, FOLLOWING:

1. ADVANCE PRODUCTS & SYSTEMS, INC. 2. CALPICO, INC.

3. METRAFLEX COMPANY (THE).

4. PIPELINE SEAL AND INSULATOR, INC. 5. PROCO PRODUCTS, INC.

**1.2 SLEEVE-SEAL FITTINGS** 

A. MANUFACTURED PLASTIC, SLEEVE-TYPE, PLASTIC OR RUBBER WATER-STOP ASSEMBLY MADE FOR IMBEDDING IN CONCRETE SLAB OR

WALL 1.3 GROUT

A. NON-SHRINK, FACTORY PACKAGED.

1.4 SLEEVE AND SLEEVE-SEAL SCHEDULE A. USE SLEEVES AND SLEEVE SEALS FOR THE FOLLOWING PIPING-PENETRATION APPLICATIONS:

1. INTERIOR PARTITIONS: a. PIPING SMALLER THAN NPS 6 (DN 150): GALVANIZED-STEEL-PIPE

SLEEVES, PVC-PIPE SLEEVES. b. PIPING NPS 6 (DN 150) AND LARGER: GALVANIZED-STEEL-SHEET SLEEVES.

END OF SECTION 230517

SECTION 230518 - ESCUTCHEONS FOR HVAC PIPING

PART 2 - PRODUCTS

2.1 ESCUTCHEONS A. ONE-PIECE, CAST-BRASS TYPE: WITH POLISHED, CHROME-PLATED

AND ROUGH-BRASS FINISH AND SETSCREW FASTENER. B. ONE-PIECE, DEEP-PATTERN TYPE: DEEP-DRAWN, BOX-SHAPED BRASS WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.

C. ONE-PIECE, STAMPED-STEEL TYPE: WITH CHROME-PLATED FINISH AND SPRING-CLIP FASTENERS.

	A. ONE-PIECE FLOOR PLATES: CAST-IRON FLANGE WITH HOLES FOR FASTENERS.
	PART 3 - EXECUTION 3.1 INSTALLATION
	A. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FINISHED FLOORS.
	B. INSTALL ESCUTCHEONS WITH ID TO CLOSELY FIT AROUND PIPE, TUBE, AND INSULATION OF PIPING AND WITH OD THAT COMPLETELY
VE	COVERS OPENING. 1.ESCUTCHEONS FOR NEW PIPING:
	a. PIPING WITH FITTING OR SLEEVE PROTRUDING FROM WALL: ONE- PIECE, DEEP-PATTERN TYPE.
	b. INSULATED PIPING: ONE-PIECE, STAMPED-STEEL TYPE. c. BARE PIPING AT WALL AND FLOOR PENETRATIONS IN FINISHED
	PLATED FINISH OR STAMPED-STEEL TYPE.
Г Э	PIECE, CAST-BRASS TYPE WITH POLISHED, CHROME-PLATED FINISH OR
E	3 2 EIELD QUALITY CONTROL
	A. REPLACE BROKEN AND DAMAGED ESCUTCHEONS AND FLOOR PLATES USING NEW MATERIALS
	END OF SECTION 230518
	SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT
	1.1 PERFORMANCE REQUIREMENTS A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND
	EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING
	PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED. B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC
	PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS
	1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING
R	TEST WATER. 2 DESIGN FOLIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED
	OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND
ГО	3.DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING
	JURISDICTION. 1.2 SUBMITTALS
	A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER
0	<ul> <li>1.3 QUALITY ASSURANCE</li> <li>A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE - STEEL."</li> </ul>
	A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS
	B. TRAPEZE PIPE HANGERS: CARBON OR STAINLESS STEEL
)	COOPER B-LINE D METAL FRAMING SYSTEMS: MEMA MANUFACTURER
0	E. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE F.THERMAL-HANGER SHIELD INSERTS:
R	G. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS
ĒR	H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB-MOUNTED TYPE
	I. EQUIPMENT SUPPORTS. END OF SECTION 230529
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 1.ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 1.ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS 2.MOUNTS: DOUBLE-DEFLECTION TYPE.
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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.
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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.
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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: DUCTUE-IRON OR STEEL HOUSING. WITH
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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.
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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. 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 COL-SPRING AND ELASTOMERIC- INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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. 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 VERTICALLI MIT STOP: COMBINATION COIL-
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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. 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 VERTICAL-LIMIT STOP: COMBINATION COIL- SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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. 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 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.
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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. 6.HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS. 7.ELASTOMERIC HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC- INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION. 9.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 RESILENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR. 11.RESILIENT PIPE GUIDES. 8. AIR-MOUNTING SYSTEMS:
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 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. 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 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. 8. AIR-MOUNTING SYSTEMS: 1.AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS.
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 1.ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS 2.MOUNTS: DOUBLE-DEFLECTION TYPE. 3.RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINED 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 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. 8. AIR-MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR ELLOWS. 2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS. C. DESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.
	<ul> <li>SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT</li> <li>PART 1 - GENERAL</li> <li>1.1 COMPONENTS</li> <li>A. VIBRATION ISOLATORS:</li> <li>1.ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS</li> <li>2.MOUNTS: DOUBLE-DEFLECTION TYPE.</li> <li>3.RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINED MOUNTS: ALL DIRECTION HOUSING.</li> <li>4.SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN- SPRING TYPE.</li> <li>5.RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN- SPRING TYPE.</li> <li>6.HOUSED SPRING MOUNTS: DUCTILE-RON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.</li> <li>7.ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.</li> <li>8.SPRING HANGERS: COMBINATION COLL-SPRING AND ELASTOMERIC- INSERT HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COLL- SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.</li> <li>9.SPRING HANGERS WITH VERTICAL-LIMIT STOP.</li> <li>10.PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.</li> <li>11.RESILIENT PIPE GUIDES.</li> <li>AIR-MOUNTIS SYSTEMS:</li> <li>1.AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELIOWS.</li> <li>2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.</li> <li>C. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.</li> <li>C. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.</li> </ul>
	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1.1 COMPONENTS A. VIBRATION ISOLATORS: 1.ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS 2.MOUNTS: DOUBLE-DEFLECTION TYPE. 3.RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINED SOLATORS: FREESTANDING, LATERALLY STABLE, OPEN- SPRING TYPE. 5.RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN- SPRING TYPE. 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 VERTICAL-LIMIT STOP: COMBINATION COIL- SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL- SPRING HANGERS WITH VERTICAL-LIMIT STOP. 10.PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR. 11.RESILIENT PIPE GUIDES. 8. AIR-MOUNTING SYSTEMS: 1.AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS. 2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS. C. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS. C. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS. C. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS. D. 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 SOLATION EQUIPMENT BASES:
	<ul> <li>SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT</li> <li>PART 1 - GENERAL</li> <li>1.1 COMPONENTS</li> <li>A. VIBRATION ISOLATORS:</li> <li>1.ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS</li> <li>2.MOUNTS: DOUBLE-DEFLECTION TYPE.</li> <li>3.RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.</li> <li>4.SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN- SPRING TYPE.</li> <li>5. RESTRAINED SPRING ISOLATORS: REPESTANDING, STEEL, OPEN- SPRING TYPE.</li> <li>6. HOUSED SPRING ISOLATORS: REPESTANDING, STEEL, OPEN- SPRING TYPE WITH SEISMIC RESTRAINT.</li> <li>6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SANDBERS.</li> <li>7. ELASTOMERIC HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC- INSERT HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC- INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.</li> <li>9.SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL- SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.</li> <li>10.PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.</li> <li>11.AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS.</li> <li>2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.</li> <li>C. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.</li> <li>C. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.</li> <li>C. RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS: FACTORY- ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR- AND WATERTIGHT CURB RAIL; WITH SPRING SIOLATION EQUIPMENT BASES:</li> <li>1.STELE BASE: FACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS.</li> </ul>
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rs, ΗΕ	SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT PART 1 - GENERAL 1. COMPONENTS A. VIBRATION ISOLATORS: 1.SOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERCLASS 2.MOUNTS: DOUBLE-DEFLECTION TYPE: 3.RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINED SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE OPEN- SPRING TYPE: 3.RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS. 7. ELASTOMERIC HANGERS: COMBINATION OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS. 7. ELASTOMERIC HANGERS: COMBINATION OR DELASTOMERIC. INSERT HANGERS: COMBINATION COLL SPRING AND ELASTOMERIC. INSERT HANGERS: WITH VERTICAL-LIMIT STOP: COMBINATION COLL. SPRING HANGERS: WITH VERTICAL-LIMIT STOP: COMBINATION COLL. SPRING HANGERS WITH VERTICAL-LIMIT STOP: 10 PIPE RISER RESULENT SUPPORT - ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR. 11.RESULENT SUPPORT - ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR. 11.RESTRAINED DIR SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS. 2. RESTRAINED DIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS. C. RESTRAINED VIBRATION ISOLATION ROOF-CURB RALS: FACTORY- ASSEMBLED, FULLY ENCLOSED, INSULATED ANE AND WATERTIGHT CURB PALI, WITH SENING SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS. 2. VIBRATION ISOLATION ROUNTE: DONE ELASTOMERIC ISOLATION PADS: AND SAND BER BUSHINGS. 3. VIBRATION ISOLATION ROUNTED ON ELASTOMERIC ISOLATION PADS: AND SUBBER BUSHINGS. 3. VIBRATION ISOLATION SOLATION ROOF-CURB RALS: FACTORY- FASSEMBLED, FULLY ENCLOSED, INSULATED, ARE AND WATERTIGHT CURB PALI, WITH SERSE SACTORY-FABRICATED, WELDED, STRUCTURAL-STEEL BASSE AND RALS READY FOR FIELD-APPLIED, CAST-IN-FLACE CONCRETE .1. STRUETION IS

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.

1.2 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 SISTANCE AS FOLLOWS: JNCONDITIONED SPACES WITHIN BUILDING: R-6 ITHIN BUILDING ENVELOPE ASSEMBLY: R-8 OUTSIDE OF BUILDING: R-8 1.4 ITEMS NOT INSULATED: 1. FIBROUS-GLASS DUCTS. 2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS 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.

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

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

LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING

D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST

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

DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE

E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL

SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE

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

G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD

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

TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.

I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY

J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING

SURFACE-BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE

ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME-SPREAD

COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO

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.

EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

WORKING CONDITION AND ACCURATELY CALIBRATED.

FINAL TESTING, ADJUSTING, AND BALANCING REPORT.

REQUIREMENTS OF THE DESIGN.

END OF SECTION 230593

1.1 QUALITY ASSURANCE

SECTION 230713 - DUCT INSULATION

THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING

- 8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING. 1.5 PRODUCTS
- A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE: 1. JOHNS-MANVILLE
- 2. OWENS-CORNING

1.3 EXECUTION

- 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.
- 1.7 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. 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 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.
- 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 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 TAPF
- 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:
- USG MAX. SIDE INCHES TRANSVERSE JOINTS AND BRACING
- 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

2.2 FLOOR PLATES





# THERMOSTATIC CONTROLS:

A. C403.4.1 THERMOSTATIC CONTROLS (MANDATORY) INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET: RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).

2. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM. B. C403.4.1.2 DEADBAND (MANDATORY).

THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM. EXCEPTIONS: 1.THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.

C. C403.4.1.3 SETPOINT OVERLAP RESTRICTION (MANDATORY).

EXCEPTIONS: 1.ZONES THAT WILL BE OPERATED CONTINUOUSLY.

E. C403.4.2.1 THERMOSTATIC SETBACK (MANDATORY).

F.C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN (MANDATORY). HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

WHERE THE HEAT PUMP CAN PROVIDE THE HEATING LOAD.

$ \begin{array}{c} \text{EX} \\ 8X6 \\ [200] \\ \text{UP} \\ \hline \text{RA} \\ 4 \\ [2150] \\ \text{UP} \\ \hline \text{SA} \\ 32X18 \\ (2400) \end{array} $	NY ENGINEERS
$ \begin{array}{c}             4 \\             \underline{UP} \\             \underline{EX} \\             2 \\             100] \\             UP             UP         $	NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGIINEERS.COM
	Celebree SCHOOL
	SHEET TITLE: MECHANICAL FLOOR PLAN
<b>ES:</b> ( AND RETURN AIR DUCTS PROVIDE ACOUSTICAL LINING WITH R-6 INSULATION RATING UP ICT PLIN FROM RTU/ AC LINITS, PROVIDE R-6 THERMAL, INSULATION AFTER 20' OF DUCT PLIN	
AC UNITS. ZES SHOWN ON MECHANICAL FLOOR PLANS ARE CLEAR INSULATION AFTER 20'OF DUCT RUN AC UNITS. ZES SHOWN ON MECHANICAL FLOOR PLANS ARE CLEAR INSIDE.INTERNAL AND EXTERNAL THICKNESS OF DUCTS SHALL BE CONSIDERED SEPARATELY. POSED BLADE VOLUME DAMPERS AT FACE OF ALL CEILING SUPPLY DIFFUSERS, RETURN ST GRILLES. OL WIRING FROM TEMPERATURE SENSOR TO THE CORRESPONDING THERMOSTAT IN THE DNMOTORIZED) DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 40 ERE LESS THAN 24 INCHES IN EITHER DIMENSION. THE RATE OF AIR LEAKAGE SHALL BE D AT 1.0 INCH WATER GAUGE WHEN TESTED IN ACCORDANCE WITH AMCA 500D FOR SUCH HE DAMPERS SHALL BE LABELED BY AN APPROVED AGENCY. ERANT AND CONDENSATE PIPE TIGHT TO CEILING	3     04/25/2024       11/29/2023     ISSUED FOR CONSTRUCTION       REV.     DATE
NSATE DRAIN SLOPED AT 1/8" PER FT TO TOILET SANITARY UNDER LAVATORY W/ AIR GAP DINATE W/PLUMBING DRAWING.	JOB NUMBER: 2022-02.02 DATE: 01/21/2023 DRAWN BY: NYE CHECKED BY: NYE SHFFT NO
	AND KNOWN AS THE ADCHITECTURAL WORKS CODVDICUT ACT OF 400



	6
8X6 [200] DN	
32X18 [2150]	

D RETURN AIR DUCTS PROVIDE ACOUSTICAL LINING WITH R-6 INSULATION RATING UP
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RUN CONTROL WIRING FROM TEMPERATURE SENSOR TO THE CORRESPONDING THERMOSTAT IN THE

GRAVITY (NONMOTORIZED) DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 40 CFM/FT2 WHERE LESS THAN 24 INCHES IN EITHER DIMENSION. THE RATE OF AIR LEAKAGE SHALL BE DETERMINED AT 1.0 INCH WATER GAUGE WHEN TESTED IN ACCORDANCE WITH AMCA 500D FOR SUCH PURPOSE. THE DAMPERS SHALL BE LABELED BY AN APPROVED AGENCY.

 $\langle$  1 angle Contractor to run condensate drain from rtu's to nearest roof drain. Coordinate in Field.  $\langle 2 \rangle$  CONTRACTOR TO COORDINATE EXACT RTU LOCATION WITH STRUCTURAL DRAWINGS.

 $\langle 3 \rangle$  PROVIDE WEATHER PROOF COATING FOR REFRIGERANT PIPING INSULATION.

 $\overline{\langle 4 
angle}$  TERMINATE WITH GOOSENECK AND BIRD SCREEN, 24 INCHES ABOVE ROOF CONSTRUCTION. COORDINATE EXACT LOCATION IN FEILD.



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NOTES / A 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 TAG EXF-1 EXF-2 EXF-3 EXF-4 NOTES 1) FAN SPE 2)PROVIDE 3) REFER T 4) PROVID	ACCESSORI ALL EQUIP ELECTRICA PROVIDE D CONTRACT CONDENS/ CABINET W UNIT SHAL DRY-BULB PROVIDE 8 REMOTE 8 REMOTE 8 REMOTE 8 REMOTE 8 RETURN AI VFD SUPPL PROVIDE A RETURN AI VFD SUPPL PROVIDE F PROVIDE F PROVIDE F PROVIDE F PROVIDE F CONTOR 1 CONTOR 1 CONT	PMENT I AL CONI DISCONI TOR TO ATE DR/ VITH 1/ L BE CC ECONC 3-WIRE, ENSOR T CYCL VAY 2" EQUIREI ALL CON IR SMO LY FAN. HOT GAS P CONV ACTURE NHECK NHECK NHECK NHECK NHECK NHECK NHECK	MUST BE NECTION NECT SWI FIELD VEI AIN WITH 2" FIBERG MPLETE MIZER W 24 VAC, A 5 SHALL B E TIMER. FILTERS (I 0, PROVID APRESSOF KE DETEC S REHEAT /ERSION F ERSION F E F ERSION F E ERSION F E ERSION F E ERSION F E ERSION F E ERSION F E E E E E E E E E E E E E E E E E E E	STANDA TO BE SI TCH AN RIFY TH 2" DEE GLASS IN WITH G TH BAR AUTOM E PROV MERV 8 DE LOW RS WITH TOR - U WITH A CIT FOR G-095- G-095- G-095- G-095- ADJUST REEN. MOUNT DNNECT	ARD EFFIC INGLE PO ID AN UN E SIZE, LC P VENTEL ISULATIC AS HEAT ROMETRI ATIC CHA IDED IN S I 5 YEAR I NIT MOU ASSOCIAT RTU. EL VG VG VG VG VG VG VG VG VG C VG	CIENCY, I DINT ANE IPOWER DCATION D TRAP I DON. TING SEC IC RELIEF ANGEOV SPACE W T COOLII WARRAI JNTED. TED CON ICOCATI ROO ROO ROO ROO ROO ROO	NEETIN D TO BE ED GFIC I AND C DISCHAF TION. C F / 25% ER, 2-ST /IRED B/ NG CAP NTY. TROLS / ON / F F F F F F F F F F	G OR THRC RECE ONDI RGE T GAS R MANI FAGE ACK T ABILI AND S AREA S SEE SEE SEE SEE SEE SEE	EXCEEDIN DUGH THE EPTACLE. TION OF T O SPLASH EGULATOF UAL OUTSI HEAT / CO O PROGRA TY DOWN SENSORS F SERVED PLAN PLAN PLAN PLAN PLAN OTHERS. CTORY PRO	G THE BOTT HE EX BLOC TO R DE AI OL, RI MMA TO 0 I OR DE CFM 200 100 600 200	E ENERG OM OF ISTING K ON RO ECEIVE R DAMI EMOTEI ABLE, 24 DEGREE EHUMIE EAN PER ES 0. 0. 0. 0. 0. 0. 0. 0. 0.	SY COD         THE UI         CURB,         COF.         (4.5-14)         PER AS:         LY PRO         HOUF         S F.         DIFICAT         RFORM         SP         3         7         5         3         7         5         1         EQUIPI         T TUBE         EL	DE MINIMU NIT. IF IT IS SUI <sup>-</sup> 4)" GAS PRI SEMBLY W DGRAMMAE R, 7 DAY, TH GRAMMAE R, 7 DAY, TH FANS ANCE FAN RPM 1300 917 1725 1300 917 1725 1300	M RE	E L IRE IO HE 10 HE HE 10 H 10 H
NOTES / A         1         2         3         4         5         6         7         8         9         10         11         12         13         14         15         16         17         18         TAG         EXF-1         EXF-2         EXF-3         EXF-4         NOTES         1) FAN SPE         2)PROVIDE         3) REFER T         4) PROVID         TAG         TAG         TAG	ACCESSORI ALL EQUIP ELECTRICA PROVIDE C CONTRACT CONDENS/ CABINET W UNIT SHAL DRY-BULB PROVIDE 8 REMOTE S ANTI SHOF THROWAW WHERE RE PROVIDE 4 RETURN AI VFD SUPPL PROVIDE 1 PROVIDE 1 PROVIDE 1 PROVIDE 1 CONTOR 1 CONTOR 1 CONTOR 1	PMENT I AL CONIDISCONITOR TO ATE DR/ VITH 1/ L BE CC ECONC 3-WIRE, ENSOR T CYCL VAY 2" QUIREI ALL CON IR SMO LY FAN. 10T GAS P CONV ACTURE NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK NHECK	MUST BE JECTION NECT SWI FIELD VEI AIN WITH 2" FIBERG DMPLETE DMIZER W 24 VAC, A 5 SHALL B E TIMER. FILTERS (I D, PROVID MPRESSOF KE DETEC S REHEAT /ERSION I ERS, DISCO MOD DM/48	STANDA TO BE SI TCH AN RIFY TH 2" DEE GLASS IN WITH G ITH BAR AUTOM E PROV MERV 8 DE LOW RS WITH TOR - U WITH A KIT FOR G-095- G-005- G	ARD EFFIC INGLE PO ID AN UN E SIZE, LO P VENTEL ISULATIO AS HEAT ROMETRI ATIC CHA IDED IN S I 5 YEAR IDED IN S IDED IN	CIENCY, I DINT ANE IPOWER DCATION D TRAP I DON. ING SEC IC RELIEF ANGEOV SPACE W T COOLII WARRAI JNTED. TED CON ICOCATI ROO ROO ROO ROO ROO IDPPORT NEMA-31	TION. C F C C C C C C C C C C C C C	G OR THRC RECE ONDI RGE T GAS RI MANI FAGE ACK T ABILI AND S AREA S SEE SEE SEE SEE SEE	EXCEEDIN DUGH THE EPTACLE. TION OF T O SPLASH EGULATOF UAL OUTSI HEAT / CO O PROGRA TY DOWN SENSORS F SERVED PLAN PLAN PLAN PLAN PLAN PLAN OTHERS. CTORY PRO OBAL PLAS POWER (N	G THE BOTT HE EX BLOC TO R DE AI OL, RI MMA TO 0 I OR DE CFM 200 100 600 200	E ENERG OM OF ISTING K ON RO ECEIVE R DAMI EMOTEI ABLE, 24 DEGREE EHUMIE EAN PER ES 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	SY COD         THE UI         CURB,         ODF.         (4.5-14         PER AS:         LY PRO         HOUF         S F.         DIFICAT         RFORM         SP         3         7         5         3         7         5         1         T TUBE         EQ         F PH	DE MINIMU NIT. IF IT IS SUI 4)" GAS PRI SEMBLY W GRAMMAE 3, 7 DAY, TH GRAMMAE 7, 7 DAY, TH FANS ANCE FAN RPM 1300 917 1725 1300 917 1725 1300	M RE	

												GN: MITSUR	SHI
		ELE	CTRICAL DAT	Α			PIPE SI	ZE					
. ESP.	SOUND PRESS	PH/VOLT/HZ	MCA (A)	FLA	DIMENTIONS	LIQ.	SUCTION	DRAIN (ID)	WEIGHT (	LBS.)	MODEL	NU.	
.6	39	1/208-230/60	2.3	1.84	8X32X28	3/8"	5/8"	1- 1/4 "	67		TPEADA0301	AA80A	
				MAKE:			BUI	LDING AIR BAL					
ELECT	MCA MOP L	SOUND EVEL	EER COP	HSPF MODULE	NO.	RTU-1	3000	550	1R RETURN 4 2450	AIR EXHAUST			
				NTXSK530	Δ112	RTU-2 RTU-3	2400 2000	400	2000				
0/60/1	17 31	55 11.7	18.9 3.6	11.4 AA		RTU-4	2400 880	250 60	2150				
						EXF-1	-	-	-	200 CFN	Λ		
						EXF-2 EXF-3	-	-		100 CFN 600 CFN	<u>Л</u> Л		
						ΕΧϜ-4 ΤΟΤΔΙ ·	- 10680 CEM	- 1660 CEM	- 1 9020 CEI	200 CFN	<u>Л</u> М		
I EXCEED	THE MANUFACT	URER'S STANDARD	RECOMMEN	DED LENGTH.		BUILDING P	RESSURE:		560 CFM	POSITIV	Έ		
ROOF TO	OP UNIT SCHEDUL	.E											
INPL	GAS HEAT	P TOTAL SEN	SI AMBIEN	COOLING T FNTERING	IFAVING			ELECTRICAL		WEIGHT			
MBI	H MBH (°F	F) MBH ME	BH DB (°F)	DB / WB(°F)	DB / WB(°F	-) STAGES	VOLTS PHAS	SE MCA(A)	MOCP(A)	LBS			
120 80	) 97.2 29.6 64.8 24.6	69 88.14 77. 69 71.29 60.	19 101 18 101	80.98/65.77 80.46/65.53	57.04/55.9 56.05/55.3	8 1 8 1	208 3 208 3	42	50 50	1146 1135			
80	64.8 24.6	59         59.96         49.           60         71.20         60	26 101	80.0/67.0	57.54/57.5	4 1	208 3	30	45	797			
80	04.8 24.0	59   71.29   60.	101	80.40/05.53	50.05/55.3	0 1	208 3	58	50	1135			
MENTS.				1	4								
XISTING	ONE , IF NOT THE	N PROVIDE NEW 1	4" ROOF CUR	B - CONTRACTOR SH	ALL FIELD INS	SULATE. SHIP A	ASAP AHEAD	OF THE UNIT.					
M MAIN		חח:											
STAT.	ONET). PROVIDET	00.											
S.													
ELEC	CTRICAL DATA			CONTR		T	AG MANU	FACT MO	DEL	AIR TERMIN TYPE	NAL CFM RANGE	NECK SIZE	NOMINAL FACE SIZ
VOLTS	PHASE	HZ	IGHI					US TN	ISA SUPP		0-105	6"Ø	24X24
115	1	60 CO						US TN	ISA SUPP	LY DIFFUSER	<u>350-350</u>	<u>م م</u> 10"Ø	24X24 24X24
200		60	+1 V/				DR-1 TIT	US TN	1SA RETUR		0-400	8"Ø	24X24
115	1	60	33	TIME CL	OCK	R	G-1 TIT	US 350	ORL RETU	JRN GRILLE	500-1400	24X24	24X24
						E	G-1 ТІТ G-2 тіт	US 350	ORL EXHA		0-100	6X6	6X6
							G-1 TIT	US CT-7	700L DO	OR GRILLE	220-300	-	18X12
			)RDINATE PO	WER REOLIIREMENT	S.		DIES:						
						1)	ALL DIFFUSE				TH LATEST ARC	CHITECTURAL	REFLECTED CEILIN.
				_		2)  3)	REFER ARCH	E COLOR/FINIS	SH WITH ARCH	CEILING TYPE. IITECT.			
AMPS	(A) WEIGHT	T REM	ARKS			4)	PROVIDE OP	POSED BLADE	DAMPER AS A	CCESSARY FO	R ALL AIR TERN	INAL FOR A	R BALANCING.
0.1	1 4 1 1	_											
0.1	<u> </u>	_											
0.2	1 4			_									





G			C VERSION	GPS Air 3101 Yorkmont Rd Suite 400 Charlotte, NC 28208 www.gpsair.com N 2.2 running ASHRAE 62.1	-2016	
			Zone Floor Area (square ft)	Zone Max Occupancy	Table 6.1 OA per Occupant	Table cfm/f
Zone Tag	Facility Type	Zone Use	Az	Pz	Rp	Ra
RTU-1	Educational Facilities	Daycare (through age 4)	1,960.0	65.0	10.0	0.1
Zone Height (feet) Desired Outside Air (Vo) IAQP (C Supply Air (Vs) (CFM) Return Air (Vr) Recirc. Flow Factor (R) Ventilation Effectiveness (Ez) Level of Physical Activity Filter Location HVAC Flow Type Outdoor Air Flow Type	14.0         F       550         3,000       2450         0.82       0.8         Sedentary       B         Constant       Constant         Constant       Constant	$(1-R)V_r$ $\begin{bmatrix} E_r \\ RV_r \\ V_o, C_o \\ F_r \end{bmatrix}$	$\begin{bmatrix} \mathbf{B} \\ (\mathbf{V}_r + \mathbf{V}_o) \end{bmatrix}$ Occupied Zone e, N, C	v.	Air Changes Per Hour Outside Air Per VRP Outside Air Per IAQ Outside Air Savings OA Summer Drybulb OA Summer Wetbulb Coil Leaving Air Drybulb (F Coil Leaving Air Wetbulb (F OA MBH Saved Summer* OA Tons Saved Summer*	
	I	Steady State (lb/ft3)	Steady State (Ib/ft3)	Is Steady State Level	Contaminant	
Indoor Contaminants Generated By People & From Outdoors	Maximum Threshold Value Based on OSHA or NIOSH (PPM)	Using the VRP* (Prescribed OA) Ionization Off	Using the IAQ Method (Reduced OA) Ionization On	Acceptable at Reduced OA Levels?	Generation Rate Ib/nerson/min	Filtrat Effective
Acetaldehyde	100.0	2.0854E-09	8.9774E-10	Yes	1.2903E-08	50%
Acetone	250.0	8.6093E-09	6.8423E-09	Yes	1.2993E-07	50%
Ammonia	25.00	1.9791E-07	1.5997E-07	Yes	3.0522E-06	50%
Benzene	1.0	9.9644E-09	7.7408E-09	Yes	1.4602E-07	50%
2- Butanone (MEK)	200.0	5.7299E-07	4.6324E-07	Yes	8.8396E-06	50%
Carbon dioxide**	5000	4.6556E-05	4.8604E-05	Yes	2.4692E-05	0%
Chloroform	2.0	1.7785E-08	1.4340E-08	Yes	2.7342E-07	50%
Dioxane	100.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%
Hydrogen Sulfide	10.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%
Methane	NA	6.8698E-08	6.8698E-08	Yes	0.0000E+00	0%
Methanol	200.0	7.2355E-09	1.6490E-08	Yes	1.1163E-07	0%
Methylene Chloride	25.0	5.2040E-07	4.2064E-07	Yes	8.0262E-06	50%
Propane	1000.0	1.1242E-09	1.1242E-09	Yes	0.0000E+00	0%
Tetrachloroethane	5.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%
Teluene	100.0	5.9091E-07	4.//b5E-U/	Yes	9.1140E-06	50%
	100.0	2.1213E-U9	1.410/E-09	res		50%
	330.0	2.403/E-U3	2.0001E-05	Tes	3.0318E-04	50%
Луюне	100.0	0.2403E-10	1.10//E-10	165	0.0000E+00	1 50%
						Cartion

Date	29-11-2023
Job Name	Celebree School.CS Katy TX Tammarron
Representative	-
Engineer	NY Engineers
Contractor	-

IMC 2006 & later allows for ASHRAE 62 IAQP through the engineered exception found in Section 403.2 Exhaust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2

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			:	GPS Air 3101 Yorkmont Rd						
			C	Sulle 400						
				www.gpsair.com						
			VERSIO	N 2.2 running ASHRAE 62.1	-2016					
				Zana	Table 6.1	1			Table 6.2	Outdoor Air to
				Zone Max	OA per	Table 6 1	Pz * Rp	Az * Ra	Ventilation	Zone (CEM) with
			Zone Floor Area (square ft)	Occupancy	Occupant	cfm/ft2			Effectiveness	Ez correction
Zone Tag	Facility Type	Zone Use	Az	Pz	Rp	Ra	Pz * Rp	Az * Ra	Ez	(Vbz/Ez)
RTU-3	Educational Facilities	Daycare (through age 4)	1,570.0	56.0	10.0	0.18	560	283	0.8	1053
ne Height (feet)	14.0								L	OA required per VRP
sired Outside Air (Vo) IAQP (C	F 400	(1-R)V <sub>r</sub>			Air Changes Per Hour	5.5		VRP OA C	FM per person	18.8
oply Air (Vs) (CFM)	2,000				Outside Air Per VRP	1053	CFM	IAQ OA C	FM per person	7.1
urn Air (Vr)	1600	$\Box_{\mathbf{RV}}$		V.	Outside Air Per IAQ	400	CFM			
Irc. Flow Factor (R)	0.80	V. C.		4	Outside Air Savings	653	CFM		Winter He	ating Savings
tilation Effectiveness (Ez)	0.8	Ef	в		OA Summer Drybulb	98.	9	OA Winter	Design DB (F)	26
el of Physical Activity	Sedentary	F <sub>r</sub>	$(\mathbf{v}_r + \mathbf{v}_o)$		OA Summer Wetbulb	76.	1	Supply Air I	DB Setpoint (F)	95
er Location	B		Occupied Zone		Coil Leaving Air Drybulb (F	57.	5	MBH Saved	d Winter	48.9
AC Flow Type	Constant		e, N, C,		Coil Leaving Air Wetbulb (F	57.	5 1	KW Saved	Winter	14.3
door Air Flow Type	Constant				OA MBH Saved Summer*	43.	1	*OA = Outs	ide Air	
		Steady State (lb/ft3)	Steady State (lb/ft3)	Is Steady State Level	Contaminant	0.0	, 	***OSHA, N	IIOSH & WHO m	nost conservative values used
Indoor Contaminants	Maximum Threshold Value	Using the VRP*	Using the IAQ Method	Acceptable at Reduced	Generation	Filtration	Cognizant	http://ww	w.cdc.gov/niosh/	/npg/npgsyn-a.html
Concepted Dy Decele	Based on OSHA or NIOSH	(Dressriked OA)	(Deduced OA)		Dete	Effective second	A 4 h a			
& From Outdoors	(PPM)	(Prescribed OA)	(Reduced OA)	OA Levels?	Rate lb/nerson/min	Ellectiveness	Authonity		CO2 Stead	ly State (PPM)
taldehvde	100.0	2.1066E-09	1.1087E-09	Yes	1.2903E-08	50%	OSHA	6000 -		
tone	250.0	8.8228E-09	8.7814E-09	Yes	1.2993E-07	50%	NIOSH		5000	
nonia	25.00	2.0293E-07	2.0545E-07	Yes	3.0522E-06	50%	NIOSH	5000 -		
zene	1.0	1.0204E-08	9.9244E-09	Yes	1.4602E-07	50 <mark>%</mark>	OSHA	4000		
Butanone (MEK)	200.0	5.8751E-07	5.9498E-07	Yes	8.8396E-06	50%	NIOSH	4000 -		
bon dioxide**	5000	4.6597E-05	4.9277E-05	Yes	2.4692E-05	0%	NIOSH	3000		
vane	2.0	0.0000E+00	1.0415E-00	Ves	2.7342E-07	50%				1947
Irogen Sulfide	10.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	NIOSH	2000 —		1047
hane	NA	6.8698E-08	6.8698E-08	Yes	0.0000E+00	0%	NA	1000		949
hanol	200.0	7.4189E-09	1.9535E-08	Yes	1.1163E-07	0%	NIOSH	1000		
thylene Chloride	25.0	5.3358E-07	5.4025E-07	Yes	8.026 <mark>2E-06</mark>	50%	OSHA	0 —		
pane	1000.0	1.1242E-09	1.1242E-09	Yes	0.0000E+00	0%	NIOSH		1	2 3
achioroethane	5.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	OSHA			
	100.0	0.0008E-07 2.7647E-00	0.134/E-U/ 1.7752E_00	res	9.1140E-06	50%			CO2 Limit	
1 - Trichloroethane	350.0	2.5467E-05	2.5791E-05	Yes	3.8318E-04	50%	NIOSH	2 = CO216	evel at Ventilation	n Rate OA Flow Rate
ene	100.0	6.2453E-10	1.2010E-10	Yes	0.0000E+00	50%	OSHA	3 = CO2 L	evel at IAQ Proce	edure OA Flow Rate
ding materials and furnishi	ings assumed to have no VOCs	and off-gassing is complete	Is IAQ acceptable at	Yes		**Carbon dioxic ventilation (DC)	de has been V) setpoints.	provided for The Nationa	reference only fo I Research Cour	r gathering demand control ncil was commissioned by
All yellow shaded boxes r	equire user input or review		reduced outside air levels?	105		the US Navy to	prove CO2 i	is not a conta	minant of conce	rn when using air cleaning
			000			devices to cont	rol the other	contaminants	s of concern, as	tound on submarines.
	I		COPYRIGHT 2021 UNAUTHORIZED U	GPS AIR QUALITY SOFTW GPS AIR,INC - ALL RIGH JSE OR COPYING STRICTL	ARE© TS RESERVED Y PROHIBITED	The University PPM had no in Responses to Ca	of Denmark npact on cog arbon Dioxide,	conducted a nitive function , a Follow-up S	study to confirm 1. Zhang X, Wargo tudy at Recomme	CO2 levels at 5,000 icki P, Lian Z, Human nded Exposure Limits in
4-	00.44	0000								
	29-11-					D there is the st				0
name	Celebree School. CS	Katy IX Tammarron		INC 2006 & later allow	S TOT ASHRAE 62 IAQI	r through the	e engineei	rea except	ion found in	Section 403.2
presentative	-			Exhaust flow rates ma	y differ from Table 6.5	based on A	SHRAE 62	IAQP via	Section 6.5.2	
	NV End	lineero								
gineer										





The University of Denmark conducted a study to confirm CO2 levels at 5,000 PPM had no impact on cognitive function. Zhang X, Wargocki P, Lian Z, Human Responses to Carbon Dioxide, a Follow-up Study at Recommended Exposure Limits in

G	DS®		C	GPS Air 3101 Yorkmont Rd Suite 400 Charlotte, NC 28208						
			VERSIO	www.gpsair.com N 2.2 running ASHRAE 62.1	-2016					
				Zone	Table 6.1				Table 6.2	Outdoor Air to
				Max	OA per	Table 6.1	Pz * Rp	Az * Ra	Ventilation	Zone (CFM) with
			Zone Floor Area (square ft)	Occupancy	Occupant	cfm/ft2			Effectiveness	Ez correction
Zone Tag	Facility Type	Zone Use	Az	Pz	Rp	Ra	Pz * Rp	Az * Ra	Ez	(Vbz/Ez)
RTU-2	Educational Facilities	Daycare (through age 4)	1,520.0	51.0	10.0	<mark>0.1</mark> 8	510	274	0.8	980
										OA required per VRP
Zone Height (feet)	14.0	(1 B)Y								
Desired Outside Air (Vo) IAQP (C	F 400	(1-10) (1-			Air Changes Per Hour	6.8	0.514	VRP OA C	FM per person	19.2
Supply Air (Vs) (CFM)	2,400	ErCA			Outside Air Per VRP	980	CFM	IAQ OA C	-M per person	7.8
Return Air (Vr)	2000	RV.		V.	Outside Air Per IAQ	400	CFM			
Recirc. Flow Factor (R)	0.83				Outside Air Savings	580	CFIM		Winter He	ating Savings
Ventilation Effectiveness (Ez)	0.8		в		OA Summer Drybulb	98.	9	OA Winter	Design DB (F)	26
Level of Physical Activity	Sedentary	F <sub>r</sub>	$(V_r + V_o)$		OA Summer Wetbulb	76.	1	Supply Air [	DB Setpoint (F)	95
Filter Location	В	•			Coil Leaving Air Drybulb (F	56.	1	MBH Saved	l Winter	43.4
HVAC Flow Type	Constant		e, N, C.		Coil Leaving Air Wetbulb (F	55.	4	KW Saved	Winter	12.7
Outdoor Air Flow Type	Constant	· · · · · · · · · · · · · · · · · · ·			OA MBH Saved Summer*	41.	9			
					OA Tons Saved Summer*	3.5	5	*OA = Outs	ide Air	
		Steady State (lb/ft3)	Steady State (lb/ft3)	Is Steady State Level	Contaminant			***OSHA, N	IIOSH & WHO m	nost conservative values used
Indo en Contominonto	Maximum Throshold Value	Union the VDD*	Lising the IAO Method	Assertable of Deduced	Consention	Filtration	Cominent	latter //www		lana lan an un a lateral
Indoor Contaminants	Waxinun Theshold Value	Using the VRP	Using the IAQ Method	Acceptable at Reduced	Generation	Filtration	Cognizant	n	w.cuc.gov/mosn/	mpg/npgsyn-a.num
Generated By People	Based on OSHA or NIOSH	(Prescribed OA)	(Reduced OA)	OA Levels?	Rate	Effectiveness	Authority**	*	000 04	
& From Outdoors	(PPM)	Ionization Off	Ionization On		lb/person/min		1	1	CO2 Stead	dy State (PPM)
Acetaldehvde	100.0	2.0888E-09	8.6950E-10	Yes	1.2903E-08	50%	OSHA	6000 —		
Acetone	250.0									
Ammonia		8.6439E-09	6.7465E-09	Yes	1.2993E-07	50%	I NIOSH	1	5000	
	25.00	8.6439E-09 1.9873E-07	6.7465E-09 1.5778E-07	Yes Yes	1.2993E-07 3.0522E-06	50% 50%	NIOSH NIOSH	5000 —	5000	
Benzene	25.00 1.0	8.6439E-09 1.9873E-07 1.0003E-08	6.7465E-09 1.5778E-07 7.6287E-09	Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07	50% 50% 50%	NIOSH NIOSH OSHA	5000 —	5000	
Benzene 2- Butanone (MEK)	25.00 1.0 200.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07	Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06	50% 50% 50%	NIOSH NIOSH OSHA NIOSH	5000 — 4000 —	5000	
Benzene 2- Butanone (MEK) Carbon dioxide**	25.00 1.0 200.0 5000	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05	Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05	50% 50% 50% 0%	NIOSH NIOSH OSHA NIOSH NIOSH	5000	5000	
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform	25.00 1.0 200.0 5000 2.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08	Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07	50% 50% 50% 50% 0% 50%	NIOSH NIOSH NIOSH NIOSH NIOSH	5000	5000	
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane	25.00 1.0 200.0 5000 2.0 100.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00	Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00	50% 50% 50% 0% 50% 50%	NIOSH NIOSH OSHA NIOSH NIOSH OSHA	5000	5000	1718_
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide	25.00 1.0 200.0 5000 2.0 100.0 10.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 0.0000E+00	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00	Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00	50%           50%           50%           0%           50%           50%           50%           50%	NIOSH NIOSH OSHA NIOSH NIOSH OSHA NIOSH	5000	5000	1718
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 0.0000E+00 6.8698E-08	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00 6.8698E-08	Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 0.0000E+00	50% 50% 50% 0% 50% 50% 50% 0%	NIOSH NIOSH OSHA NIOSH NIOSH OSHA NIOSH NA	5000	5000	938
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane Methanol	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA 200.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 0.0000E+00 6.8698E-08 7.2652E-09	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00 6.8698E-08 1.7791E-08	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 0.0000E+00 1.1163E-07	50% 50% 50% 0% 50% 50% 50% 0% 0%	NIOSH NIOSH OSHA NIOSH NIOSH OSHA NIOSH NA NIOSH	5000	5000	938
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane Methanol Methylene Chloride	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA 200.0 25.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 0.0000E+00 6.8698E-08 7.2652E-09 5.2253E-07	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00 6.8698E-08 1.7791E-08 4.1489E-07	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 0.0000E+00 1.1163E-07 8.0262E-06	50% 50% 50% 0% 50% 50% 50% 0% 0% 50%	NIOSH NIOSH OSHA NIOSH NIOSH OSHA NIOSH OSHA	5000	5000	938
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane Methanol Methylene Chloride Propane	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA 200.0 25.0 1000.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 0.0000E+00 6.8698E-08 7.2652E-09 5.2253E-07 1.1242E-09	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00 6.8698E-08 1.7791E-08 4.1489E-07 1.1242E-09	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 1.1163E-07 8.0262E-06 0.0000E+00	50%           50%           50%           0%           50%           0%           50%           0%           50%           0%           50%           0%           50%           0%           50%           0%           0%           0%           0%           0%           0%	NIOSH NIOSH NIOSH NIOSH NIOSH OSHA NIOSH NIOSH NIOSH	5000	5000	1718 938 2 3
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane Methanol Methylene Chloride Propane Tetrachloroethane	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA 200.0 25.0 1000.0 5.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 0.0000E+00 6.8698E-08 7.2652E-09 5.2253E-07 1.1242E-09 0.0000E+00	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00 6.8698E-08 1.7791E-08 4.1489E-07 1.1242E-09 0.0000E+00	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 1.1163E-07 8.0262E-06 0.0000E+00 0.0000E+00	50%           50%           50%           0%           50%           0%           50%           0%           50%           0%           50%           0%           50%           0%           0%           0%           0%           0%           50%           0%           50%           0%           50%           0%           50%	NIOSH NIOSH NIOSH NIOSH NIOSH OSHA NIOSH NIOSH NIOSH OSHA	5000	5000	1718 938 2 3
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane Methanol Methylene Chloride Propane Tetrachloroethane Tetrachloroethylene	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA 200.0 25.0 1000.0 5.0 100.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 0.0000E+00 6.8698E-08 7.2652E-09 5.2253E-07 1.1242E-09 0.0000E+00 5.9333E-07	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 6.8698E-08 1.7791E-08 4.1489E-07 1.1242E-09 0.0000E+00 4.7112E-07	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 1.1163E-07 8.0262E-06 0.0000E+00 0.0000E+00 9.1140E-06	50%           50%           50%           50%           50%           50%           50%           50%           0%           0%           0%           50%           50%           0%           0%           0%           0%           0%           50%           50%           50%           50%           50%           50%	NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH OSHA OSHA	5000	5000	1718 938 2 3
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane Methanol Methylene Chloride Propane Tetrachloroethane Tetrachloroethylene Toluene	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA 200.0 25.0 1000.0 5.0 100.0 100.0 100.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 6.8698E-08 7.2652E-09 5.2253E-07 1.1242E-09 0.0000E+00 5.9333E-07 2.7333E-09	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00 6.8698E-08 1.7791E-08 4.1489E-07 1.1242E-09 0.0000E+00 4.7112E-07 1.3814E-09	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 1.1163E-07 8.0262E-06 0.0000E+00 0.0000E+00 9.1140E-06 2.2806E-08	50%           50%           50%           50%           50%           50%           50%           0%           0%           50%           0%           50%           0%           0%           0%           50%           50%           50%           50%           50%           50%           50%           50%           50%	NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH OSHA OSHA NIOSH	5000	5000	1718 938 2 3
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane Methanol Methylene Chloride Propane Tetrachloroethane Tetrachloroethylene Toluene 1,1,1 - Trichloroethane	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA 200.0 25.0 1000.0 5.0 100.0 350.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 6.8698E-08 7.2652E-09 5.2253E-07 1.1242E-09 0.0000E+00 5.9333E-07 2.7333E-09 2.4939E-05	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00 6.8698E-08 1.7791E-08 4.1489E-07 1.1242E-09 0.0000E+00 4.7112E-07 1.3814E-09 1.9806E-05	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 1.1163E-07 8.0262E-06 0.0000E+00 9.1140E-06 2.2806E-08 3.8318E-04	50%           50%           50%           50%           50%           50%           50%           0%           0%           50%           0%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%	NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH OSHA OSHA NIOSH NIOSH	5000	5000 1 CO2 Limit evel at Ventilatio	1718 938 2 3
Benzene 2- Butanone (MEK) Carbon dioxide** Chloroform Dioxane Hydrogen Sulfide Methane Methanol Methylene Chloride Propane Tetrachloroethane Tetrachloroethylene Toluene 1,1,1 - Trichloroethane Xylene	25.00 1.0 200.0 5000 2.0 100.0 10.0 NA 200.0 25.0 1000.0 5.0 100.0 100.0 350.0 100.0 100.0	8.6439E-09 1.9873E-07 1.0003E-08 5.7534E-07 4.6563E-05 1.7858E-08 0.0000E+00 0.0000E+00 6.8698E-08 7.2652E-09 5.2253E-07 1.1242E-09 0.0000E+00 5.9333E-07 2.7333E-09 2.4939E-05 6.2453E-10	6.7465E-09 1.5778E-07 7.6287E-09 4.5691E-07 4.8891E-05 1.4143E-08 0.0000E+00 0.0000E+00 6.8698E-08 1.7791E-08 4.1489E-07 1.1242E-09 0.0000E+00 4.7112E-07 1.3814E-09 1.9806E-05 1.0127E-10	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	1.2993E-07 3.0522E-06 1.4602E-07 8.8396E-06 2.4692E-05 2.7342E-07 0.0000E+00 0.0000E+00 1.1163E-07 8.0262E-06 0.0000E+00 9.1140E-06 2.2806E-08 3.8318E-04 0.0000E+00	50%           50%           50%           50%           50%           50%           50%           50%           0%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%           50%	NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH NIOSH OSHA NIOSH OSHA NIOSH NIOSH NIOSH	5000	1 CO2 Limit evel at Ventilatio	1718 938 2 3 n Rate OA Flow Rate edure OA Flow Rate

GPS Air

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ate	29-11-2023	
b Name	Celebree School. CS Katy TX Tammarron	IMC 2006 & later allows for ASHRAE
epresentative		Exhaust flow rates may differ from T
ngineer 🛛 🖌	NY Engineers	
ontractor 🦲	-	

GPS Air 3101 Yorkmont Rd Suite 400 Charlotte, NC 28208

6	5	
Zone Tag	Facility Type	Zone Use
RTU-4	Educational Facilities	Daycare (through a
Zone Height (feet)	14.0	
Desired Outside Air (Vo) IAQP (CF	250	$(1-R)V_r$
Supply Air (Vs) (CFM)	2,400	
Return Air (Vr)	2150	
Recirc. Flow Factor (R)	0.90	R

			VERSIO	www.gpsair.com N 2.2 running ASHRAE 62.1	-2016					
				Zone	Table 6 1				Table 6.2	Outdoor Air to
				Max	OA per	Table 6.1	Pz * Rp	Az * Ra	Ventilation	Zone (CFM) with
			Zone Floor Area (square ft)	Occupancy	Occupant	cfm/ft2			Effectiveness	Ez correction
Zone Tag	Facility Type	Zone Use	Az	Pz	Rp	Ra	Pz * Rp	Az * Ra	Ez	(Vbz/Ez)
RTU-4	Educational Facilities	Daycare (through age 4)	850.0	28.0	10.0	0.18	280	153	0.8	541
										OA required per VRP
Zone Height (feet)	14.0	(1-R)Vr			Air Changes Der Heur	10.1				10.2
Desired Outside Air (Vo) IAQP (C	250	-			All Changes Per Hour	IZ.1	CEM		Fivi per person	19.3
Boturn Air (Vr)	2,400	Er A			Outside Air Per VRP	250			-wiper person	0.9
Return All (VI) Recirc. Flow Factor (R)	0.90			V.	Outside Air Savings	200	CFM		Winter He	ating Savings
	0.90	Va Ca E -		+		291				
Ventilation Effectiveness (Ez)	0.8				OA Summer Drybulb	98.9	<u>y</u>	OA Winter	Design DB (F)	26
Level of Physical Activity	Sedentary		(*, + * 3)		OA Summer Wetbulb	76.1	1	Supply Air I	DB Setpoint (F)	95
Filter Location	В		Occupied Zone		Coil Leaving Air Drybulb (F	56.	1	MBH Saved	Winter	21.8
HVAC Flow Type	Constant		e, N, C,		Coll Leaving Air Wetbulb (H	55.4	1	KW Saved	Winter	6.4
Outdoor Air Flow Type	Constant				OA MBH Saved Summer*	21.0	)			
					OA Tons Saved Summer	1.8		$^{\circ}OA = Outs$	Ide Air	
		Steady State (Ib/ft3)	Steady State (Ib/ft3)	is Steady State Level	Contaminant			ATTOSHA, N	IIOSH & WHO n	lost conservative values used
Indoor Contaminants	Maximum Threshold Value	Using the VRP*	Using the IAQ Method	Acceptable at Reduced	Generation	Filtration	Cognizant	http://ww	w.cdc.gov/niosh/	/npg/npgsyn-a.html
Generated By People	Based on OSHA or NIOSH	(Prescribed OA)	(Reduced OA)	OA Levels?	Rate	Effectiveness	Authority**	•		
& From Outdoors	(PPM)	Ionization Off	Ionization On		lb/person/min		,	1	CO2 Stead	ay State (PPIVI)
Acetaldehyde	100.0	2.0834E-09	5.0102E-10	Yes	1.2903E-08	50%	OSHA	6000 —		
Acetone	250.0	8.5894E-09	3.7683E-09	Yes	1.2993E-07	50%	NIOSH	1	5000	
Ammonia	25.00	1.9745E-07	8.8075E-08	Yes	3.0522E-06	50%	NIOSH	5000 —		
Benzene	1.0	9.9420E-09	4.2647E-09	Yes	1.4602E-07	50%	OSHA			
2- Butanone (MEK)	200.0	5.7163E-07	2.5506E-07	Yes	8.8396E-06	50%	NIOSH	4000 —		
Carbon dioxide**	5000	4.6553E-05	4.8413E-05	Yes	2.4692E-05	0%	NIOSH			
Chloroform	2.0	1.7743E-08	7.8956E-09	Yes	2.7342E-07	50%	NIOSH	3000		
Dioxane	100.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	OSHA	2000		1657
Hydrogen Sulfide	10.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	NIOSH	2000		1557
Methane	NA	6.8698E-08	6.8698E-08	Yes	0.0000E+00	0%	NA	1000 —		935
Methanol	200.0	7.2184E-09	1.5628E-08	Yes	1.1163E-07	0%	NIOSH			
Methylene Chloride	25.0	5.1917E-07	2.3160E-07	Yes	8.0262E-06	50%	OSHA	0 —		
Propane	1000.0	1.1242E-09	1.1242E-09	Yes	0.0000E+00	0%	NIOSH		1	2 3
Tetrachloroethane	5.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	OSHA			
Tetrachloroethylene	100.0	5.8951E-07	2.6299E-07	Yes	9.1140E-06	50%	OSHA			
Toluene	100.0	2.7238E-09	7.8674E-10	Yes	2.2806E-08	50%	NIOSH	1 = NIOSH	CO2 Limit	
1,1,1 - Trichloroethane	350.0	2.4779E-05	1.1056E-05	Yes	3.8318E-04	50%	NIOSH	2 = CO2 Lo	evel at Ventilatio	n Rate OA Flow Rate
Xylene	100.0	6.2453E-10	6.4357E-11	Yes	0.0000E+00	50%	OSHA	] 3 = CO2 Lo	evel at IAQ Proc	edure OA Flow Rate
Building materials and furnishi	ngs assumed to have no VOCs equire user input or review	s and off-gassing is complete	Is IAQ acceptable at reduced outside air levels?	Yes	]	ventilation (DC)	e has been p /) setpoints. prove CO2 is	The Nationa s not a conta	eterence only fo I Research Cou minant of conce	r gathering demand control ncil was commissioned by rn when using air cleaning
· · · · · ·			GPS IND COPYRIGHT 2021	OOR AIR QUALITY SOFTW	ARE© ITS RESERVED	devices to contr The University PPM had no im	of Denmark	contaminants conducted a nitive function	s of concern, as study to confirm n. Zhang X, Wargo	found on submarines. CO2 levels at 5,000 cki P, Lian Z, Human

Date	29-11-2023
Job Name	Celebree School. CS Katy TX Tammarron
Representative	-
Engineer	NY Engineers
Contractor	

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IMC 2006 & later allows for ASHRAE 62 IAQP through the engineered exception found in Section 403.2 Exhaust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2

Responses to Carbon Dioxide, a Follow-up Study at Recommended Exposure Limits in

The University of Denmark conducted a study to confirm CO2 levels at 5,000 PPM had no impact on cognitive function. Zhang X, Wargocki P, Lian Z, Human Responses to Carbon Dioxide, a Follow-up Study at Recommended Exposure Limits in

C 2006 & later allows for ASHRAE 62 IAQP through the engineered exception found in Section 403.2 haust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2















			ELECTRICAL SYMBOLS LIST				
	LIGHTING		POWER AND TELECOMMUNICATION		ELECTRICAL AB	BREVIAT	IONS
	LIGHTING FIXTURE, HALF SHADED FIXTURE OR "EM" INDICATES EMERGENCY FIXTURES	(L)-	JUNCTION BOX WITH BLANK COVER PLATE, WALL MOUNTED.	A	AMPERES	EA	EACH
		(L)	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED.	A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
	FIXTURE SCHEDULE.			AF	AMPERE FRAME/AMP FUSE	EF	EXHAUS FAN
2 a	– CIRCUIT NUMBER : INDICATED BY NUMBER – SWITCHING INDICATED BY LOWER CASE LETTERS.		SIMPLEX RECEPTACLE, +18" AFF OR AS NOTED. SUFFIXE DENOTES FOLLOWING:	AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
<b>⊘</b> ЕМ —	DENOTES LUMINAIRE ON EMERGENCY CIRCUIT.	A	A- NEMA 5-15R B- NEMA 6-15R	AS	AMP SWITCH	FMT	
⊘NL —	DENOTES FIXTURES DESIGNATED AS NIGHTLIGHT, WIRED TO 24 HOURS UNSWITCHED CIRCUIT.		C- NEMA 14-30R D- NEMA 14-50R			EQUID	
	RECESSED	$\square$	DUPLEX CONVENIENCE RECEPTACLE				
$\diamond$	SAME AS ABOVE, EXCEPT WALLWASHER.	•	DUPLEX DEDICATED RECEPTACI E	AI	AMP IRIP	ER	EXISTING TO BE RELOCATED
	STRIP LIGHTING FIXTURE AND OUTLET BOX			ATS	AUTOMATIC TRANSFER SWITCH	ETR	
$\overset{'}{\frown}$	CEILING/WALL MOUNTED EXIT SIGN WITH DIRECTIONAL ARROWS AS INDICATED.		FLUSH IN CELING.	AUTO	AUTOMATIC	EWF	FURNITURE
	SHADED AREA DENOTES FACE(S).	_ •	DUPLEX CONVENIENCE RECEPTACLE, CONTROLLED FROM WALL SWITCH HALE SWITCHED, HALE CONSTANT HOT	AWG	AMERICAN WIRE GAUGE	EWH	ELECTRIC WATER HEATER
	EMERGENCY BATTERY UNIT		DUPLEX RECEPTACLE - 20A-1P 125V NEMA 5-20R	- c	CONDUIT	FA	FIRE ALARM
	SWITCHES AND CONTROLS	Η Η	TELEPHONE/DATA OUTLET WITH CAT 6 CABLE 4"SOLIARE OUTLET BOX WITH	C/B,CB	CIRCUIT BREAKER	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
<b>\$</b> a	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED.		SINGLE GANG COLLAR AND BLANK PLATE. PROVIDE 3/4" E.C., U.O.N., UP TO HUNG CEILING AND TERMINATE WITH 90° ELBOW, BUSHING AND DRAG WIRE.	СКТ	CIRCUIT	FDR	FEEDER
<b>C</b> 3	20A 3-WAY TOGGLE SWITCH U.N.O. "a" DENOTES LIGHTING FIXTURE CONTROLLED			CLG	CEILING	FIBO	FURNISHED & INSTALLED BY
Φ <sub>a</sub> Φ4			1" CONDUIT U.O.N. TO H.C. AND TERMINATED WITH 90 DEGREE ELBOW AND BUSHING, TEL / DATA OUTLET PLATE SHALL BE PROVIDED WITH 1 1/4"DIAMETER	СОММ	COMMUNICATION	FIXT	FIXTURE
<b>ð</b> a	20A 4-WAY TOGGLE SWITCH U.N.O. "a" DENOTES LIGHTING FIXTURE CONTROLLED		GROMMETED OPENING.	СТ		FI	FLOOP
<b>\$</b> <sup>D</sup>	WALL BOX DIMMER SWITCH, LUTRON MAESTRO SERIES. "a" DENOTES LIGHTING FIXTURE CONTROLLED.		DATA OUTLET WITH CAT 6 CABLE - (1) PORT U.N.O, TEL / DATA OUTLET TO BE				
\$ <sup>D</sup> <sub>3</sub>	THREE WAY DIMMER SWITCH		PROVIDED WITH 1" CONDUIT U.O.N. TO H.C. AND TERMINATED WITH 90 DEGREE ELBOW AND BUSHING. TEL / DATA OUTLET PLATE SHALL BE PROVIDED WITH 1		COPPER	FLUOR	FLUORESCENT
-OS	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE.			°C	DEGREE CELSIUS	G	GROUND
\$ <sup>a</sup>	WALL MOUNTED VACANCY SENSOR SWITCH, WATTSTOPPER CS-50PIR SERIES.	∕TV	CABLE TV OUTLET, CEILING-MOUNTED.	°F	DEGREE FAHRENHEIT	GFI	GROUND FAULT INTERRUPTER
Ψvs <b>¢</b> c		(TV)	CABLE TV OUTLET, WALL-MOUNTED.	DIA	DIAMETER	GP	GENERAL PURPOSE
ΨΟ			MOTORS AND CONTROLS	DISC	DISCONNECT	нс	HUNG CEILING
- D	DOOR SWITCH	M	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE	DN	DOWN	HP	HORSEPOWER
PV	PHOTOCELL IN NEMA 3R ENCLOSURE.		AC OUTDOOR UNIT MOTOR AS NOTED WITH WEATHERPROOF CONTROLLER	DP	DISTRIBUTION PANEL	HWH	HOT WATER HEATER
-PV	WALL MOUNTED PHOTOCELL MOUNTED IN NEMA 3R ENCLOSURE.	WP	AND DISCONNECT SWITCH WITH.	DWH	DOMESTIC WATER HEATER	HZ	HERTZ
OS	CEILING OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY	A	30A/480V NON FUSED DISCONNECT SWITCH	DWG	DRAWING	IC	INTERRUPTING CAPACITY
	SENSOR SCHEDULE. (CORRIDOR:AUTO ON, ALL OTHERS;MANUAL ON).	— LB	60A/480V NON FUSED DISCONNECT SWITCH	JB	JUNCTION BOX	PP	POWER PANEL
	WALL OCCUPANCY SENSOR						
$\frown$			100A/480V NON FUSED DISCONNECT SWITCH	KCMII	ONE THOUSAND CIRCULAR MILS	PVC.	
	WALL VACANCY SENSOR		100A/480V NON FUSED DISCONNECT SWITCH	KCMIL	ONE THOUSAND CIRCULAR MILS	PVC	
-vs vs	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE		100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH	KCMIL KV	ONE THOUSAND CIRCULAR MILS	PVC PWR	POLYVINYL CHLORIDE POWER
US US DS	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR.		100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH. FURNISHED BY	KCMIL KV KVA	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES	PVC PWR R	POLYVINYL CHLORIDE POWER REMOVE
VS VS DS	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS		100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.	KCMIL KV KVA KW	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS	PVC PWR R RE	POLYVINYL CHLORIDE         POWER         REMOVE         RELOCATED EXISTING
VS VS DS 3	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF	$- \frac{1}{2} $	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.	KCMIL KV KVA KW LP	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL	PVC PWR R RE REC	POLYVINYL CHLORIDE         POWER         REMOVE         RELOCATED EXISTING         RECEPTACLE
UP-	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. <b>WIRING SYSTEMS</b> POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER.	KCMIL KV KVA KW LP LTG	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING	PVC PWR R RE REC RGS	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEEL
UP- VS UP- 3 5	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. <b>WIRING SYSTEMS</b> POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER.	KCMIL KV KVA KW LP LTG MAX	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM	PVC PWR R RE REC RGS RR	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATE
UP- VS VS DS UP- 3 5 UP-	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. <b>WIRING SYSTEMS</b> POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH         200A/480V NON FUSED DISCONNECT SWITCH         30A/208V NON FUSED DISCONNECT SWITCH         COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.         FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.         COMBINATION SOLID-STATE MOTOR STARTER.         MOTORIZED DAMPER.         FIRE SMOKE DAMPER	KCMIL KV KVA KW LP LTG MAX MC	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER	PVC PWR R RE REC RGS RR SECT	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTION
UP-	<ul> <li>WALL VACANCY SENSOR</li> <li>CEILING VACANCY SENSOR, NUMBER INDICATES TYPE</li> <li>CEILING MOUNTED DAYLIGHT SENSOR.</li> <li>WIRING SYSTEMS</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. &amp; 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION,</li> </ul>	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH	KCMIL KV KVA KW LP LTG MAX MC MCB	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER	PVC PWR R RE REC RGS RR SECT SPDT	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROW
UP- 3 5 UP- 3 5 UP- 3 5 7 UP-	<ul> <li>WALL VACANCY SENSOR</li> <li>CEILING VACANCY SENSOR, NUMBER INDICATES TYPE</li> <li>CEILING MOUNTED DAYLIGHT SENSOR.</li> <li>WIRING SYSTEMS</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. &amp; 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> </ul>	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH         200A/480V NON FUSED DISCONNECT SWITCH         30A/208V NON FUSED DISCONNECT SWITCH         COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY         HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.         FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP         NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.         COMBINATION SOLID-STATE MOTOR STARTER.         MOTORIZED DAMPER.         FIRE SMOKE DAMPER         BELL PUSH	KCMIL KV KVA LP LTG MAX MC MCB MER	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM	PVC PWR R RE REC RGS RRS SECT SPDT SPST	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROW
UP- 3 5 UP- 3 57 UP- 0	<ul> <li>WALL VACANCY SENSOR</li> <li>CEILING VACANCY SENSOR, NUMBER INDICATES TYPE</li> <li>CEILING MOUNTED DAYLIGHT SENSOR.</li> <li>WIRING SYSTEMS</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. &amp; 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 3#12 N. &amp; 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 R. N. &amp; 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.</li> </ul>	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH         200A/480V NON FUSED DISCONNECT SWITCH         30A/208V NON FUSED DISCONNECT SWITCH         COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY         HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.         FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP         NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.         COMBINATION SOLID-STATE MOTOR STARTER.         MOTORIZED DAMPER.         FIRE SMOKE DAMPER         BELL PUSH         DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.	KCMIL KV KVA KW LP LTG MAX MC MCB MER MIN	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM	PVC PWR R RE REC RGS RR SECT SPDT SPST SPEC	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATION
VS VS S 	<ul> <li>WALL VACANCY SENSOR</li> <li>CEILING VACANCY SENSOR, NUMBER INDICATES TYPE</li> <li>CEILING MOUNTED DAYLIGHT SENSOR.</li> <li>WIRING SYSTEMS</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. &amp; 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. &amp; 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.</li> <li>CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.</li> </ul>	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH         200A/480V NON FUSED DISCONNECT SWITCH         30A/208V NON FUSED DISCONNECT SWITCH         COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY         HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR         FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP         NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.         COMBINATION SOLID-STATE MOTOR STARTER.         MOTORIZED DAMPER.         FIRE SMOKE DAMPER         BELL PUSH         DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.         THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL	KCMIL KV KVA KW LP LTG MAX MC MCB MER MIN MLO	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM MAIN LUGS ONLY	PVC PWR R RE REC RGS RR SECT SPDT SPST SPST SPEC SW	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSPECIFICATIONSWITCH
VS VS S S 	<ul> <li>WALL VACANCY SENSOR</li> <li>CEILING VACANCY SENSOR, NUMBER INDICATES TYPE</li> <li>CEILING MOUNTED DAYLIGHT SENSOR.</li> <li>WIRING SYSTEMS</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. &amp; 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.</li> <li>CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.</li> </ul>	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH         200A/480V NON FUSED DISCONNECT SWITCH         30A/208V NON FUSED DISCONNECT SWITCH         COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY         HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR         FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP         NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.         COMBINATION SOLID-STATE MOTOR STARTER.         MOTORIZED DAMPER.         FIRE SMOKE DAMPER         BELL PUSH         DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.         THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING.	KCMIL KV KVA KW LP LTG MAX MC MCB MER MIN MLO MTD	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM MAIN LUGS ONLY MOUNTED	PVC PWR R RE REC RGS RR SECT SPDT SPST SPST SPEC SW SWBD	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARD
$ \begin{array}{c} -VS \\ VS \\ DS \\ \hline DS \\ \hline UP- \\ 3 5 \\ UP- \\ \hline 3 5 7 \\ UP- \\ \hline 0 \\ \hline - \\ - \\ \hline - \\ - \\ - \\ \hline - \\ - \\ \hline - \\ - \\ \hline - \\ - \\ - \\ \hline - \\ - \\ - \\ - \\ \hline - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\$	<ul> <li>WALL VACANCY SENSOR</li> <li>CEILING VACANCY SENSOR, NUMBER INDICATES TYPE</li> <li>CEILING MOUNTED DAYLIGHT SENSOR.</li> <li>WIRING SYSTEMS</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. &amp; 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. &amp; 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED.</li> <li>CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.</li> <li>CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.</li> <li>CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.</li> <li>CONDUIT AND WIRE TO BUILDING GROUND.</li> </ul>	$ \begin{array}{c}                                     $	100A/480V NON FUSED DISCONNECT SWITCH         200A/480V NON FUSED DISCONNECT SWITCH         30A/208V NON FUSED DISCONNECT SWITCH         COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR         FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.         COMBINATION SOLID-STATE MOTOR STARTER.         MOTORIZED DAMPER.         FIRE SMOKE DAMPER         BELL PUSH         DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.         THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING.         MANUAL MOTOR SWITCH	KCMIL KV KVA KVA LP LTG MAX MC MCB MER MIN MLO MTD MTS	ONE THOUSAND CIRCULAR MILS         KILOVOLT         KILOVOLT-AMPERES         KILOWATTS         LIGHTING PANEL         LIGHTING         MAXIMUM         MOTOR CONTROLLER         MAIN CIRCUIT BREAKER         MECHANICAL EQUIPMENT ROOM         MINIMUM         MAIN LUGS ONLY         MOUNTED         MANUAL TRANSFER SWITCH	PVC PWR R RE REC RGS RR SECT SPDT SPDT SPST SPEC SW SWBD	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICAI
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VS VS DS UP- 3 5 UP- 3 5 UP- 0 0 0 0 0 0 0 0 0 0 0 0 0	<ul> <li>WALL VACANCY SENSOR</li> <li>CEILING VACANCY SENSOR, NUMBER INDICATES TYPE</li> <li>CEILING MOUNTED DAYLIGHT SENSOR.</li> <li>WIRING SYSTEMS</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. &amp; 1#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. &amp; 2#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 3#12 N. &amp; 2#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED.</li> <li>POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. &amp; 3#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED.</li> <li>CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.</li> <li>CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITIONS.</li> <li>CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.</li> <li>CONDUIT AND WIRE TO BUILDING GROUND.</li> <li>CABLE TRAY, WIDTH AND MOUNTING AS NOTED.</li> <li>UNDERGROUND</li> </ul>	C C C C C C C C C C C C C C	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING ANNOTATION	KCMIL KV KVA KVA LP LTG MAX MC MCB MER MIN MLO MTD MTD MTS N NE	ONE THOUSAND CIRCULAR MILSKILOVOLTKILOVOLT-AMPERESKILOWATTSLIGHTING PANELLIGHTINGMAXIMUMMOTOR CONTROLLERMAIN CIRCUIT BREAKERMECHANICAL EQUIPMENT ROOMMINIMUMMAIN LUGS ONLYMOUNTEDMANUAL TRANSFER SWITCHNEUTRALNEW DEVICE TO REPLACE EXISTING	PVC PWR R RE REC RGS RR SECT SPDT SPDT SPST SPST SPEC SW SWBD SWBD SYM SYS TELE	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONE
VS VS DS UP- 3 5 UP- 3 5 7 UP- 0 0 0 0 0 0 0 0 0 0 0 0 0	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT AND WIRE TO BUILDING GROUND. CABLE TRAY, WIDTH AND MOUNTING AS NOTED. UNDERGROUND EXISTING	C C D A A A A A A A A	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING MOTORIZED MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.	KCMILKVKVAKVAKWLPLTGMAXMCMCBMERMINMLOMTDMTSNNENIC	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM MAIN LUGS ONLY MOUNTED MANUAL TRANSFER SWITCH NEUTRAL NEW DEVICE TO REPLACE EXISTING NOT IN CONTRACT	PVC PWR R RE REC RGS RR SECT SPDT SPDT SPST SPEC SW SVBD SWBD SWBD SWBD SYM SYS TELE TEMP	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETEMPERATURE
VS         VS         DS	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT AND WIRE TO BUILDING GROUND. CABLE TRAY, WIDTH AND MOUNTING AS NOTED. UNDERGROUND EXISTING NEW	C C C C C C C C C C C C C C	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING ANNOTATION SWITCH INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR. KEYED NOTE REFERENCE	KCMILKVKVAKVAKWLPLTGMAXMCMCBMERMINMLOMTDMTSNNENICNL	ONE THOUSAND CIRCULAR MILSKILOVOLTKILOVOLT-AMPERESKILOWATTSLIGHTING PANELLIGHTINGMAXIMUMMOTOR CONTROLLERMAIN CIRCUIT BREAKERMECHANICAL EQUIPMENT ROOMMINIMUMMAIN LUGS ONLYMOUNTEDMANUAL TRANSFER SWITCHNEUTRALNOT IN CONTRACTNIGHT LIGHT	PVC           PWR           R           RE           REC           RGS           RR           SECT           SPDT           SPST           SPEC           SWBD           SYM           SYM           SYS           TELE           TEMP           TXF	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETEMPERATURETOILET EXHAUST FAN
	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT AND WIRE TO BUILDING GROUND. CABLE TRAY, WIDTH AND MOUNTING AS NOTED. UNDERGROUND EXISTING NEW	$ \begin{array}{c}         C \\         D \\         D \\         A \\         A \\         A \\         $	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR. KEYED NOTE REFERENCE DETAIL PERFORMECE. DETAIL NUMBER INDICATED ON	KCMILKVKVAKVAKWLPLTGMAXMCMCMCBMERMINMLOMTDMTSNNENICNLNTS	ONE THOUSAND CIRCULAR MILSKILOVOLTKILOVOLT-AMPERESKILOWATTSLIGHTING PANELLIGHTINGMAXIMUMMOTOR CONTROLLERMAIN CIRCUIT BREAKERMECHANICAL EQUIPMENT ROOMMINIMUMMAIN LUGS ONLYMOUNTEDMANUAL TRANSFER SWITCHNEUTRALNEUTRALNOT IN CONTRACTNIGHT LIGHTNOT TO SCALE	PVC           PWR           R           RE           RGS           RR           SECT           SPDT           SPST           SPEC           SWBD           SYM           SYS           TELE           TEMP           TXF	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETEMPERATURETOILET EXHAUST FANTYPICAL
	WALL VACANCY SENSOR         CEILING VACANCY SENSOR, NUMBER INDICATES TYPE         CEILING MOUNTED DAYLIGHT SENSOR.         WIRING SYSTEMS         POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED.         POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED.         POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED.         CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.         CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.         CABLE TRAY, WIDTH AND MOUNTING AS NOTED.         UNDERGROUND         EXISTING         NEW         CELING MOUNTED SMOKE DETECTOR.	C C D A A A A A A A A	100AV480V NON FUSED DISCONNECT SWITCH 200AV480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP, NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING DUPLEX PUMP. INDICATES DETAIL NUMBER INDICATED ON INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR. KEYED NOTE REFERENCE: DETAIL REFERENCE: DETAIL NUMBER INDICATED ON BOTTOM	KCMILKVKVAKVAKWLPLTGMAXMCMCBMERMINMLOMTDMTSNNENICNLNTSOC	ONE THOUSAND CIRCULAR MILSKILOVOLTKILOVOLT-AMPERESKILOWATTSLIGHTING PANELLIGHTINGMAXIMUMMOTOR CONTROLLERMAIN CIRCUIT BREAKERMECHANICAL EQUIPMENT ROOMMINIMUMMAIN LUGS ONLYMOUNTEDMANUAL TRANSFER SWITCHNEUTRALNEUTRALNOT IN CONTRACTNIGHT LIGHTNOT TO SCALEON CENTER	PVC           PWR           R           RE           RES           RGS           RR           SECT           SPDT           SPST           SPEC           SWBD           SYM           SYS           TELE           TEMP           TXF           TYP           U.O.N.	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETEMPERATURETOILET EXHAUST FANTYPICALUNLESS OTHERWISE NOTED
-VS VS DS DS UP- 3 5 7 UP- 3 5 7 UP- 0 0 0 0 0 0 0 0 0 0 0 0 0	WALL VACANCY SENSOR         CEILING VACANCY SENSOR, NUMBER INDICATES TYPE         CEILING MOUNTED DAYLIGHT SENSOR.         WIRING SYSTEMS         POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4*C, UNLESS OTHERWISE NOTED.         POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4*C, UNLESS OTHERWISE NOTED.         POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 3#12 G. IN 3/4*C, UNLESS OTHERWISE NOTED.         CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.         CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.         CONDUIT AND WIRE TO BUILDING GROUND.         CABLE TRAY, WIDTH AND MOUNTING AS NOTED.         CABLE TRAY, WIDTH AND MOUNTING AS NOTED.         CEILING MOUNTED SMOKE DETECTOR.         COMBINATION OF SMOKE AND CO DETECTOR.	C C C C C C C C C C C C C C	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR. KEYED NOTE REFERENCE: DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM	KCMIL         KV         KVA         KVA         KW         LP         LTG         MAX         MC         MCB         MER         MIN         MLO         MTD         MTS         N         NE         NIC         NL         NTS         OC         P	ONE THOUSAND CIRCULAR MILSKILOVOLTKILOVOLT-AMPERESKILOWATTSLIGHTING PANELLIGHTING PANELLIGHTINGMAXIMUMMOTOR CONTROLLERMAIN CIRCUIT BREAKERMECHANICAL EQUIPMENT ROOMMINIMUMMAIN LUGS ONLYMOUNTEDMANUAL TRANSFER SWITCHNEUTRALNEUTRALNOT IN CONTRACTNIGHT LIGHTNOT TO SCALEON CENTERPOLES	PVC           PWR           R           REC           RGS           RR           SECT           SPDT           SPST           SPST           SYM           SWBD           SYM           SYS           TELE           TEMP           U.O.N.           V	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYSTEMSTELEPHONETEMPERATURETOILET EXHAUST FANTYPICALVOLT/VOLTAGE
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VS VS DS UP- 3 5 7 UP- 3 5 7 UP- 0 0 0 0 0 0 0 0 0 0 0 0 0	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT AND WIRE TO BUILDING GROUND. CABLE TRAY, WIDTH AND MOUNTING AS NOTED. UNDERGROUND EXISTING NEW CEILING MOUNTED SMOKE DETECTOR. COMBINATION OF SMOKE AND CO DETECTOR. ELECTRICAL DRAWING LIST ELECTRICAL DRAWING LIST	C C D A A A 400 350 400 350 1.5 kW 1.5 kW	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING MOTORIZED NOTE REFERENCE DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP: DRAWING NUMBER INDICATED ON BOTTOM MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED.	KCMIL         KV         KVA         KVA         KW         LP         LTG         MAX         MC         MC         MCB         MIN         MLO         MTD         MTD         NIC         NIC         NL         NE         NIC         NL         NE         NE         P         PB         PC	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM MAIN LUGS ONLY MOUNTED MANUAL TRANSFER SWITCH NEUTRAL NEW DEVICE TO REPLACE EXISTING NOT IN CONTRACT NIGHT LIGHT NOT TO SCALE ON CENTER POLES PULLBOX PERSONAL COMPUTER	PVC           PWR           R           RE           REC           RGS           RR           SECT           SPDT           SPST           SPEC           SWBD           SYS           TELE           TEMP           TXF           TYP           U.O.N.           V           VAV	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETEMPERATURETOILET EXHAUST FANTYPICALVOLT/VOLTAGEVOLT AMPEREVARIABLE AIR VOLUME
-VS VS DS DS UP- 3 5 7 UP- 3 5 7 UP- 0 0 0 0 0 0 0 0 0 0 0 0 0	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 O. N 3/4*C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 A. & 2#12 G. IN 3/4*C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 A. & 2#12 G. IN 3/4*C, UNLESS OTHERWISE NOTED. CONDUIT TURNING USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 0, 3#12 N. & 3#12 G. IN 3/4*C, UNLESS OTHERWISE NOTED. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT AND WIRE TO BUILDING GROUND. CABLE TRAY, WIDTH AND MOUNTING AS NOTED. UNDERGROUND EXISTING NEW CEILING MOUNTED SMOKE DETECTOR. COMBINATION OF SMOKE AND CO DETECTOR. ELECTRICAL DRAWING LIST ELECTRICAL DRAWING LIST ELECTRICAL SPECIFICATIONS & GENERAL NOTES ELECTRICAL SPECIFICATIONS (1 OF 2)	C C D A A A 400 350 400 350 1.5 kW 1.5 kW 1.5 kW	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING MOTORIZED NOTE REFERENCE DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP: DRAWING NUMBER INDICATED ON BOTTOM MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED. BRANCH PANELBOARD, SURFACE MOINTED UN O	KCMIL         KV         KVA         KW         LP         LTG         MAX         MC         MCB         MER         MIN         MLO         MTD         MTD         NIC         NE         NIC         NE         NC         P         PB         PC         Ø	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM MAIN LUGS ONLY MOUNTED MANUAL TRANSFER SWITCH NEUTRAL NEUTRAL NEW DEVICE TO REPLACE EXISTING NOT IN CONTRACT NIGHT LIGHT NOT TO SCALE ON CENTER POLES PULLBOX PERSONAL COMPUTER	PVC           PWR           R           RE           REC           RGS           RR           SECT           SPDT           SPST           SVBD           SYS           TELE           TEMP           TYP           U.O.N.           V           VAV           VAV	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETEMPERATURETOILET EXHAUST FANTYPICALVOLT/VOLTAGEVOLT AMPEREVARIABLE AIR VOLUMEVARIABLE AIR VOLUME
 VS DS DS UP- 3 5 7 UP- 3 5 7 UP- 0 0 0 0 0 0 0 0 0 0 0 0 0	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 A. & 2#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 3#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4°C, UNLESS OTHERWISE NOTED. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT AND WIRE TO BUILDING GROUND. CABLE TRAY, WIDTH AND MOUNTING AS NOTED. UNDERGROUND EXISTING NEW CEILING MOUNTED SMOKE DETECTOR. COMBINATION OF SMOKE DETECTOR. ELECTRICAL DRAWING LIST ELECTRICAL SPECIFICATIONS & GENERAL NOTES ELECTRICAL SPECIFICATIONS (1 OF 2) ELECTRICAL SPECIFICATIONS (2 OF 2))	C C D A A A A A A A A A A A A A	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND DIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER. FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING ANNUAL MOTOR SWITCH INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR. KEYED NOTE REFERENCE DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP: DRAWING NUMBER INDICATED ON BOTTOM MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED. BRANCH PANELBOARD, SURFACE MOUNTED U.N.O. SIZE AS NOTED.	КСМІІ         КV         КVА         КVА         КШ         ПР         ПТG         МАХ         МС         МСВ         МЕП         МІП         МІО         МТD         МТS         N         NIC         NIC         NIC         NE         OC         P         PB         PC         Ø	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM MAIN LUGS ONLY MOUNTED MANUAL TRANSFER SWITCH NOUNTED MANUAL TRANSFER SWITCH NEUTRAL NEUTRAL NEUTRAL NEU DEVICE TO REPLACE EXISTING NOT IN CONTRACT NIGHT LIGHT NOT TO SCALE ON CENTER POLES PULLBOX PERSONAL COMPUTER PHASE	РVС           PWR           R           REC           RGS           RR           SECT           SPDT           SPST           SPST           SVWBD           SYN           SYN           TELE           TEMP           TXF           VA           VAV           VAV	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETEMPERATURETOILET EXHAUST FANTYPICALVOLT/VOLTAGEVARIABLE AIR VOLUMEVARIABLE FREQUENCY DRIVEVARIABLE FREQUENCY DRIVE
    	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N, 8 1#12 G, IN 3/4°C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N, 8 2#12 G, IN 3/4°C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N, 8 2#12 G, IN 3/4°C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N, 8 2#12 G, IN 3/4°C, UNLESS OTHERWISE NOTED. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT AND WIRE TO BUILDING GROUND. CABLE TRAY, WIDTH AND MOUNTING AS NOTED. UNDERGROUND EXISTING NEW CEILING MOUNTED SMOKE DETECTOR. COMBINATION OF SMOKE AND CO DETECTOR. ELECTRICAL DRAWING LIST ELECTRICAL SPECIFICATIONS (2 OF 2) ELECTRICAL SPECIFICATIONS (2 OF 2) ELECTRICAL POWER PI AN	C C D A A A A A A A A A A A A A	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HYAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONTECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR, PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING ANNOTATION INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR. KEYED NOTE REFERENCE DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED. BRANCH PANELBOARD, SURFACE OR ELUSH	KCMIL         KV         KVA         KVA         KW         LP         LTG         MAX         MC         MC         MCB         MER         MIN         MLO         MTD         MTS         N         NE         NIC         NE         OC         P         PB         PC         Ø         PNL	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOVATTS LIGHTING PANEL LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM MAIN LUGS ONLY MOUNTED MANUAL TRANSFER SWITCH NEUTRAL NEW DEVICE TO REPLACE EXISTING NOT IN CONTRACT NIGHT LIGHT NOT TO SCALE ON CENTER POLES PULLBOX PERSONAL COMPUTER PHASE PANEL	PVC         PWR         R         REC         RGS         RR         SECT         SPDT         SPST         SPEC         SWBD         SYN         SYN         TELE         TEMP         TXF         TYP         U.O.N.         V         VA         VAV         VFD         VWE	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETEMPERATURETOILET EXHAUST FANTYPICALVOLT/VOLTAGEVARIABLE AIR VOLUMEVARIABLE FREQUENCY DRIVEVAPORPROOF
	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 A. 1#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4"C, UNLESS OTHERWISE NOTED. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION. CONDUIT AND WIRE TO BUILDING GROUND. CABLE TRAY, WIDTH AND MOUNTING AS NOTED. UNDERGROUND EXISTING NEW CEILING MOUNTED SMOKE DETECTOR. COMBINATION OF SMOKE AND CO DETECTOR. ELECTRICAL DRAWING LIST ELECTRICAL SPECIFICATIONS & GENERAL NOTES ELECTRICAL SPECIFICATIONS (2 OF 2) ELECTRICAL SPECIFICATIONS (2 OF 2) ELECTRICAL SPECIFICATIONS (2 OF 2) ELECTRICAL ROOF PLAN	C C D A A A A A A A A A A A A A	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/208V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER FIRE SMOKE DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER. NUMBER DENOTES HEATER RATING INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR. KEYED NOTE REFERENCE: DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP: DRAWING NUMBER INDICATED ON BOTTOM MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED. BRANCH PANELBOARD, SURFACE MOUNTED U.N.O. SIZE AS NOTED. DISTREDUED AND PANELBOARD, SURFACE OR FLUSH MOUNTED.	KCMIL         KV         KVA         KVA         KW         LP         LTG         MAX         MC         MCB         MER         MIN         MLO         MTD         MTD         NIC         NE         NIC         NL         NE         NC         P         PB         PC         Ø         PNL         W	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MAIN CIRCUIT BREAKER MAIN CIRCUIT BREAKER MAIN LUGS ONLY MOUNTED MANUAL TRANSFER SWITCH NEUTRAL NEW DEVICE TO REPLACE EXISTING NOT IN CONTRACT NIGHT LIGHT NOT TO SCALE ON CENTER POLES PULLBOX PERSONAL COMPUTER PANEL WATT	PVC           PWR           R           RE           RGS           RR           SECT           SPDT           SPST           SYM           SYS           TELE           TYP           U.O.N.           V           VAV           VAV           VP           WP	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYMMETRICALSYSTEMSTELEPHONETOILET EXHAUST FANTYPICALVOLT/VOLTAGEVOLT/VOLTAGEVARIABLE AIR VOLUMEVAPORPROOFWEATHERPROOF
     	WALL VACANCY SENSOR CEILING VACANCY SENSOR, NUMBER INDICATES TYPE CEILING MOUNTED DAYLIGHT SENSOR. WIRING SYSTEMS POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N, & 1#12 G. IN 34*C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES OR CUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N, & 1#12 G. IN 34*C, UNLESS OTHERWISE NOTED. POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES OR CUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N, & 3#12 G. IN 34*C, UNLESS OTHERWISE NOTED. CONDUIT TURNING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES OR CONDITION S. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITION. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITION. CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITION. CONDUIT TURNING DOWN, SEE FLOOR PLANS SECOND PLANS ELECTRICAL SPECIFICATIONS (1 OF 2) ELECTRICAL SPECIFICATIONS (1 OF 2) ELECTRICAL LIGHTING (1 OF 2) ELECTRICAL LIGHTING PLAN ELECTRICAL LIGHTING PLAN	C C D A A A A A A A A A A A A A	100A/480V NON FUSED DISCONNECT SWITCH 200A/480V NON FUSED DISCONNECT SWITCH 30A/200V NON FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURINSHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTES SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE. COMBINATION SOLID-STATE MOTOR STARTER. MOTORIZED DAMPER BELL PUSH DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP. THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS ASPER MOTOR RATING. MANUAL MOTOR SWITCH ELECTRICAL HEATER. NUMBER DENOTES HEATER RATING MANUAL MOTOR SWITCH ELECTRICAL HEATER. NUMBER DENOTES HEATER RATING MANUAL MOTOR SWITCH ELECTRICAL HEATER. NUMBER INDICATES HOR DISHED FLOOR. KEYED NOTE REFERENCE DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP: DRAWING NUMBER INDICATED ON BOTTOM MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED. BRANCH PANELBOARD, SURFACE MOUNTED U.N.O. SIZE AS NOTED.	KCMIL         KV         KVA         KVA         LP         LTG         MAX         MC         MCB         MER         MIN         MLO         MTD         MTS         N         NE         NIC         NE         NC         NE         OC         P         PB         PC         Ø         PNL         W         W	ONE THOUSAND CIRCULAR MILS KILOVOLT KILOVOLT-AMPERES KILOWATTS LIGHTING PANEL LIGHTING MAXIMUM MOTOR CONTROLLER MAIN CIRCUIT BREAKER MECHANICAL EQUIPMENT ROOM MINIMUM MAIN LUGS ONLY MOUNTED MANUAL TRANSFER SWITCH NEUTRAL NEUTRAL NEW DEVICE TO REPLACE EXISTING NOT IN CONTRACT NIGHT LIGHT NOT TO SCALE ON CENTER POLES PULLBOX PERSONAL COMPUTER PHASE PANEL WATT WIRE	PVCPWRRRERECRGSRRSECTSPDTSPSTSPECSWBDSYNSYNSYSTELETEMPTXFTYPU.O.N.VVAVAVVFDVPWPXFMR	POLYVINYL CHLORIDEPOWERREMOVERELOCATED EXISTINGRECEPTACLERIGID GALVANIZED STEELREMOVE & RELOCATESECTIONSINGLE POLE DOUBLE THROWSINGLE POLE SINGLE THROWSPECIFICATIONSWITCHSWITCHBOARDSYSTEMSTELEPHONETELEPHONETOILET EXHAUST FANTYPICALVOLT/VOLTAGEVARIABLE AIR VOLUMEVARIABLE FREQUENCY DRIVEVAPORPROOFWEATHERPROMER
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E001

E002

E003

E101

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E201

E301

E302

E401

E402

ELECTRICAL DETAILS (1 OF 2)

ELECTRICAL DETAILS (2 OF 2)

# **GENERAL NOTES** (APPLY TO ALL "E" DRAWINGS)

- 1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE NATIONAL ELECTRICAL CODE (NEC) 2020.
- 2. CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.
- 3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
- 4. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.
- 5. SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK). NAILS, RAW PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.

LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.

- 7. VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
- 8. CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
- 9. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
- 10. CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.
- 11. MINIMUM SIZE OF CONDUIT SHALL BE 3/4", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
- 12. CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
- 13. PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVIDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CONCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
- 14. SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
- 15. FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.
- 16. ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAINTIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.
- 17. ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
- 18. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- 19. ALL CONDUITS AND EQUIPMENT TO BE CONCEALED IN FINISHED SPACES UNLESS OTHERWISE NOTED.
- 20. ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
- 21. OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES, UNLESS FIRE-RATED BOXES OR PUTTY PADS ARE UTILIZED.
- 22. COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
- 23. LIGHTING FIXTURES DESIGNATED AS EMERGENCY TYPE SHALL BE WIRED AHEAD OF ANY CONTROL DEVICES.
- 24. NUMBER(S) SHOWN AT RECEPTACLES, JUNCTION BOXES AND EQUIPMENT INDICATES CIRCUIT NUMBERS IN PANELBOARD. PROVIDE WIRE AND CONDUIT TO INTERCONNECT EQUIPMENT AND DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANELBOARD.
- 25. PROVIDE RACEWAY, BACK-BOXES, GROUNDING PROVISIONS AND 120V POWER AS NECESSARY FOR LOW VOLTAGE SYSTEMS (SECURITY, TELEPHONE DATA, CABLE TELEVISION, PAGING, INTERCOM. ETC. AS APPLICABLE TO PROJECT). REFER TO ASSOCIATED CONSULTANT'S DRAWING FOR EXACT REQUIREMENTS AND LOCATIONS OF DEVICES.
- 26. PROVIDE HANDLE TIES TO ALLOW FOR SIMULTANEOUS DISCONNECTION OF CONDUCTORS IN ANY MULTI-BRANCH CIRCUITS WITH A SHARED NEUTRAL.

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# SHEET TITLE:

# **ELECTRICAL** SYMBOLS, ABBREVIATIONS & GENERAL NOTES

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	11/29/2023	3 ISSUED FOR CONSTRUCTION	
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# **ELECTRICAL SPECIFICATIONS**

- 1. GENERAL:
- A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
- B. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN THEIR PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.
- . BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- D. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTANANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSAL.
- CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK.CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.
- G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
- H. 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.
- SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.
- PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.
- K. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS.REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.
- 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 DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- M. UNLESS OTHERWISE SPECIFICALLY NOTED OR 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.
- N. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- O. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- P. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, EMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.

- 2. GENERAL PROVISIONS FOR ELECTRICAL WORK:
- A. DEFINITIONS:
- 1. "PROVIDE": TO FURNISH, 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.
- ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
- 5. "WIRING": RACEWAY. FITTINGS, WIRE, BOXES, AND RELATED ITEMS. 6. "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
- 7. "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
- 8. "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.
- B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE, MAINTAIN SYSTEM DURING WORKING HOURS, PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.
- C. QUALITY ASSURANCE
- 1. QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED. 2. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.
- 3. HEIGHTS OF OUTLETS:
- a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:
- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
- WALL SWITCHES: 4 FT-0 IN.
- WALL FIXTURES: 7 FT-0 IN.
- MOTOR CONTROLLERS: 5 FT-0 IN.
- CLOCKS: 7 FT 6 IN
- b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.
- c. REFER TO ARCHITECTURAL AND/OR INTERIOR DESIGNER'S PLANS FOR DEVICE HEIGHTS IN NON BOH SPACES
- D. PRODUCT DELIVERY, STORAGE AND HANDLING
- 1. MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
- 2. ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED. CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.
- E. MATERIALS
- 1. NAMEPLATES: PROVIDE BLACK LAMACOID SHEET WITH 3/4 IN.WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE.NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.
- 2. CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.
- 3. INSERTS AND SUPPORTS:
- a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.
- SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.
- MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.
- CLIP FORM NAILS FLUSH WITH INSERTS.
- MAXIMUM LOADING 75 PERCENT OF RATING.
- b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEA CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.
- c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.
- d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.
- F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL 5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND AND PULL BOXES. AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND R DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER THIS CONTRACT. WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC 3. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.
- BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT
- H. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT. I. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

- 3. SCOPE OF WORK:
- 4. "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS,

- A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE 2020 NATIONAL ELECTRICAL CODE (NEC) AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.
- B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.
- C. 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 PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR
- D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, 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.
- . CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE-2015 EDITION. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.
- F. AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.
- 4. SHOP DRAWINGS
- A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
- B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:
- 1. PROJECT NAME AND LOCATION
- 2. NAME OF ARCHITECT AND ENGINEER
- 3. ITEM IDENTIFICATION
- 4. APPROVAL STAMP OF PRIME CONTRACTOR
- C. SUBMISSIONS:
  - 1. SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE
- 2. SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.
- D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
- 1. SAFETY/DISCONNECT SWITCHES
- 2. FUSE<mark>S</mark>
- 3. CIRCUIT BREAKERS
- PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).
- RACEWAYS
- WIRE AND CABLE
- WALL SWITCHES 8. INSERTION RECEPTACLES
- MOMENTARY CONTACT SWITCHES
- 10. TIME SWITCHES
- 11. LIGHTING FIXTURES.
- ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDERS, CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING. PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER
- BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.
- C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.
- D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

- LOW-VOLTAGE DISTRIBUTION EQUIPMENT:
- A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.
- B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.
- C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6808F. THREE-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810F. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE- QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENER ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.
- 7. FUSES:
- A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.
- B. MOTOR CIRCUITS ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.
- C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER. D. PROVIDE 1 SPACE MATCHING FUSE FOR EACH SET OF 3.
- CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL- MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPPING, OPEN AND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED. RAMES, IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
- 120 VOLTS, 100-AMP FRAME: 10,000 AMPS, 1 POLE.
- 2. 120/240 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM
- 8. DISTRIBUTION PANELBOARDS, CIRCUIT BREAKER TYPE
- A. THREE PHASE, 4 OR 5 WIRE, COPPER BUS BARS, WITH 2, 3, OR 4 WIRE BRANCHES, AS NOTED, CAPACITY OF PANEL AND CIRCUITS, AS NOTED BELOW. PANELBOARD TO HAVE GROUND BUS SAME SIZE AS PHASE BUSES.
- B. CABINETS: CODE GAUGE GALVANIZED SHEET STEEL PRIMED AND PAINTED WITH TRIM AND DOOR, TYPE AS NOTED, LAP AND RIVET CORNERS OR FORM AS APPROVED.
- C. TRIM: ONE PIECE FULL FINISH PRIMED AND PAINTED SHEET STEEL. TRIM SHALL BE MOUNTED WITH A CONTINUOUS PIANO HINGE CONFIGURED IN SUCH A MANNER THAT IT SHALL BE POSSIBLE TO GAIN FULL ACCESS TO CIRCUIT BREAKERS AND WIRING GUTTERS WITHOUT REMOVING THE TRIM. PROVIDE A MULTI-PIN CYLINDER LOCK (YALE, CORBIN OR EQUAL) TO LATCH THE TRIM. KEYS SHALL BE MILLED.
- D. HARDWARE: MULTI-PIN, CYLINDER LOCKS WITH MILLED KEYS. ALL PANELS SHALL BE KEYED ALIKE. DOOR OVER 48" HIGH SHALL BE EQUIPPED WITH A CHROME PLATED VAULT HANDLE, BUILT-IN LOCK AND 3-POINT CATCH FASTENING DOOR AT TOP, BOTTOM AND CENTER.
- E. HINGES: CONCEALED, CONTINUOUS PIANO HINGE AS DESCRIBED ABOVE.
- F. DIRECTORY HOLDER: MEAL FRAME WITH NONBREAKABLE TRANSPARENT COVER AND DIRECTORY CARD. ENTRIES TO BE TYPEWRITTEN BY ELECTRICAL CONTRACTOR. PROVIDE AN ENGRAVED LAMINATED NAMEPLATE ADJACENT TO EACH BRANCH BREAKER. MOUNT WITH SELF TAPPING MACHINE SCREWS.
- G. FURNISH MULTI-CABLE LUGS WHERE REQUIRED. DOUBLE LUGGING NOT PERMITTED. SECURE LUGS TO BUS BY STUD BOLTS.
- H. PANELBOARD CONSTRUCTION FOR BOLTED TYPE BREAKERS. MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, RMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. INDIVIDUAL CIRCUIT BREAKERS SHALL HAVE MINIMUM 100A FRAME, TRIPS SIZED AS SHOW ON THE PLANS.
- . MINIMUM GUTTER SPACES: PANELS WITH 225 AMPERE MAINS. 5-<sup>3</sup>/<sub>4</sub>" MINIMUM, 400 AMPERES AND OVER, MINIMUM GUTTERS 8". FOR PANELS WITH THROUGH FEEDERS, INCREASE GUTTER WIDTH BY 2" MINIMUM AND PROVIDE A SHEET STEEL BARRIER BETWEEN THE PANEL GUTTER AND THE THROUGH FEEDER PORTION OF THE BACK BOX. BRANCH CIRCUIT BREAKERS SHALL BE MECHANICALLY INTERLOCKED WHEN SHOWN ON DRAWINGS.
- J. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.
- K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.
- L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE. BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

- 9. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:
- A. THREE PHASE, 3 OR 4 WIRE WITH COPPER BUS BARS. ALL THROUGH BUS SHALL BE INSULATED.
- B. NEMA CLASS 1 CONSTRUCTION TO ACCOMMODATE FUSIBLE, INDIVIDUALLY ENCLOSED SWITCHES, FRONT REMOVABLE, SWITCH ND DOOR INTERLOCKS. COVERS TO BE PAD-LOCKABLE.
- PANELBOARD SHALL BE CONSTRUCTED OF CODE-GAUGE STEEL, GRAY FINISH OVER RUST INHIBITOR, FOR SURFACE MOUNTING. BOX AND PANEL FRAME SHALL BE FLANGED AND REINFORCED FOR RIGID SUPPORT OF INTERIOR AND ACCURATE ALIGNMENT OF INTERIOR WITH FRONT. TRIMS TO BE FASTENED TO BACK BOX WITH SCREWS.
- ALL BRANCH SWITCHES SHALL HAVE INDIVIDUAL ENGRAVED LAMICOID NAMEPLATES (BLACK WITH WHITE CORE).

DISTRIBUTION PANELBOARD CONSTRUCTION MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, REMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. APPLICATIONS.

- F. DISCONNECTS
- DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.
- 2. SWITCHING MECHANISM SHALL BE QUICK-MAKE, QUICK-BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE MECHANCIALLY INTERLOCKED WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.
- 3. SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT
- 4. SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.
- G. INSTALLATION
- DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDORF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.
- H. IDENTIFICATION
- 1. PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.
- 2. NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF 1/4" HIGH WHITE LETTERING.
- DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.
- J. POWER PANELBOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "OMR", AS MANUFACTURED BY ATLAS SWITCH COMPANY, ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.
- K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS
- L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS)
- 10. MATERIALS

1. RACEWAYS:

THREADED.

GALVANIZED.

- a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED,
- b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADLESS.
- c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP,
- d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
- e. SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN.. COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
- 2. FITTINGS AND ACCESSORIES:

INSULATED THROAT.

- a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.
- b. ELECTROMETALLIC TUBING: COMPRESSION TYPE. GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.
- c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH
- d. BUSHINGS: METALLIC INSULATED TYPE.



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SHEET TITLE:

# ELECTRICAL **SPECIFICATIONS (1 OF 2)**

	11/29/2023	ISSUED FOR CONSTRUCTION
REV.	DATE	REMARKS
JOB NU	MBER: 20	)22-02.02
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# **ELECTRICAL SPECIFICATIONS (CONT.)**

BOXES: a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION. DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4 IN. DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE: FURNISH BLANK COVER. OFFSET BACK-TO-BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION. b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 277/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. C. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED. PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE, STRAP HANGERS, OR WALL BRACKETS. PROVIDE U-BOLTS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB.FOR THROUGH-THE-FLOOR SYSTEMS, UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH-FLOOR BOX SYSTEM, FOR ABOVE FLOOR FITTINGS TELEPHONE SHALL BE BUSHED HOLE AND POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR SECURE ALL RACEWAYS TO SUPPORTS WITH PIPE STRAPS OR U-BOLTS. SPACING OF SUPPORTS SHALL BE A MINIMUM OF 10 FT ON CENTER FOR METALLIC RACEWAY AND AS REQUIRED FOR NONMETALLIC RACEWAY. SPACING SHALL BE 5 FT ON CENTER FOR WIREWAYS AND PER CODE AND AS NOTED FOR OTHERS. MOUNT SUPPORTS TO STRUCTURE MASONRY WITH TOGGLE BOLTS ON HOLLOW MASONRY, EXPANSION SHIELDS OR INSERTS IN CONCRETE AND BRICK, MACHINE SCREWS ON METAL, BEAM CLAMPS ON FRAMEWORK, WOOD SCREWS ON WOOD, AND PAN THROUGH STRAPS IN METAL DECK. NAILS, RAWL PLUGS OR WOOD PLUGS SHALL NOT BE PERMITTED. WHERE REQUIRED BY STRUCTURE, FURNISH THROUGH BOLTS AND FISHPLATES. EXPOSED RACEWAYS SHALL BE RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS. PROVIDE CLEARANCE WITH WATER, STEAM OR OTHER PIPING (MINIMUM 3 IN. SEPARATION FROM STEAM AND HOT WATER PIPES, EXCEPT 1 IN. FROM PIPE COVER AT CROSSINGS AND 18 IN. FOR PARALLEL RUNS). FOR HUNG CEILING OUTLETS, RUN IN HUNG CEILING AND CONNECT TO CEILING SUPPORT CHANNELS. IN MASONRY AND POURED CONCRETE, RUN VERTICALLY ONLY. MAINTAIN GROUNDING CONTINUITY OF INTERRUPTED METALLIC RACEWAYS WITH GROUND CONDUCTOR, AND IN FLEXIBLE CONDUIT FOR FEEDERS AND MOTOR TERMINAL CONNECTIONS. EMPTY RACEWAYS OVER 10 FT LONG: PROVIDE FISH OR PULL WIRE, GALVANIZED OR NYLON ROPE. RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT MALE THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS, CRC-COLD GALVANIZED. EMT SHALL BE PERMITTED FOR BRANCH CIRCUITS ONLY, IN DRY LOCATIONS, DRY WALLS, HUNG CEILINGS, HOLLOW BLOCK WALLS AND FURRED SPACES. EMT SHALL NOT BE PERMITTED IN RAISED FLOORS.FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMER AND OTHER VIBRATING EQUIPMENT: PROVIDE WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR. MINIMUM LENGTH: 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS. CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING. ALL COUPLINGS SHALL BE COMPRESSION TYPE, NO SET SCREW FITTINGS. EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED IN EXPANSION JOINT. PROVIDE A LENGTH OF RUN IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION. 4 RACEWAYS PASSING THROUGH FIRE-RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT. A. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GRIP WEDGING PLUG AS MANUFACTIURED BY OZ-GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

INSTALL CABLE SUPPORTS AT THE TOP OF A VERTICAL RISE AND PROVIDE INTERMEDIATE ADDITIONAL SUPPORTS AS REQUIRED TO LIMIT SUPPORTED CONDUCTOR LENGTHS TO NOT GREATER THAN THOSE SPECIFIED IN TABLE 300 19(A)

B. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

- PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF K. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED CONNECTIONS. OUTLET BOXES, SLEEVES AND FISHWIRES. SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP. COMPANY DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR C. OUTLETS SHALL BE: FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN Μ. PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE 1. WALL: 4 IN. SQUARE WITH BUSHED COVER PLATE. MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME TESTING BELOW MANUFACTURER'S STANDARDS. D. PROVIDE FISHWIRES, IN RACEWAYS OVER 10 FT LONG. WHERE REQUIRED.
- 12. WIRING DEVICES: FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH A. WIRING DEVICES SHALL BE SPECIFICATION GRADE UNLESS FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE-PARTITIONS ROOMS. OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS MOUNTED, UNLESS OTHERWISE NOTED. PROVIDE COMPLETE FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR MATERIAL AND ACCESSORIES AS NOTED.

RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

11. WIRE AND CABLE:

- A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.
- B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.
- C. CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.
- D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPCEA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).
- . ARMORED CABLE (BX) SHALL BE UTILIZED FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF HOSPITAL GRADE 'BX'.
- F. METAL-CLAD CABLE, NFPA 70 ARTICLE 330 TYPE MC:
- 1. INTERLOCKED FLEXIBLE GALVANIZED STEEL ARMOR SHEATH, CONFORMING TO UL REQUIREMENTS FOR TYPE MC METAL CLAD CABLE.
- 2. INSULATED COPPER CONDUCTORS, SUITABLE FOR 600 VOLTS, RATED 90°C, ONE OF THE TYPES LISTED IN NFPA 70 TABLE 310.13(A) OR OF A TYPE IDENTIFIED FOR USE IN TYPE MC CABLE.
- 3. INTERNAL FULL SIZE COPPER GROUND CONDUCTOR WITH GREEN INSULATION.
- 4. ACCEPTABLE COMPANIES: AFC CABLE SYSTEMS INC., SOUTHWIRE, GENERAL CABLE.
- 5. CONNECTORS FOR MC CABLE: AFC FITTING INC.'S AFC SERIES, ARLINGTON INDUSTRIES INC.'S SADDLE GRIP, OR THOMAS & BETTS CO.'S TITE-BITE WITH ANTI-SHORT BUSHINGS.

G. COLOR CODING SHALL BE AS FOLLOWS:

1. NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

- H. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR FEEDERS INDICATE FEEDER NUMBER, SIZE, PHASE AND POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS.
- TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON TANG.
- NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 277/480 VOLT SYSTEMS, EXCEPT 480 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.



- B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/277 VOLT, AC, SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).
- C. STRAIGHT BLADE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.
- SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT).
- 2. USB CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT.
- D. INSERTION RECEPTACLES SHALL BE HOSPITAL GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT. GROUNDED, EXCEPT AS NOTED.
- 1. HEALTH CARE FACILITIES:
- a. DUPLEX, 20 AMP, 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT: SIMILAR TO HUBBELL NO. 8300 HOSPITAL GRADE.
- b. SINGLE, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE, U GROUND SLOT: SIMILAR TO HUBBELL NO. 8310 HOSPITAL GRADE.
- 2. GROUND FAULT INTERRUPTER RECEPTACLES: a. 20 AMP DUPLEX FEED-THROUGH TYPE. SIMILAR TO NO. GF8300.
- E. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.
- F. COLORS: COORDINATE COLORS WITH ARCHITECT.
- G. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.
- 13. LIGHTING FIXTURES:
- A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.
- B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.
- C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, ET1 AND CBM APPROVED. ENERGY SAVING TYPE. TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH. TWO LAMP BALLASTS; NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETEK, UNIVERSAL OR EQUAL.
- D. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47, PART 15 AND COMPLY WITH EMA SSL 1 "ELECTRONIC DRIVERS FOR LED DEVICES, ARRAYS OR SYSTEMS". LED DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.
- DIMMABLE LED DRIVERS SHALL BE CAPABLE OF DIMMING WITHOUT LED STROBING OR FLICKER ACROSS THEIR FULL DIMMING RANGE. PROVIDE TYPE OF LED DRIVER AS PER LIGHTING FIXTURE SCHEDULE, DIMMABLE LED DRIVERS SHALL BE 0-10V WHERE NOT INDICATED.
- CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.
- G. FLUORESCENT LIGHTING FIXTURES, INCLUDING GENERAL CONSTRUCTION, LAMPS AND BALLASTS SHALL CONFORM TO THE ENERGY EFFICIENCY REQUIREMENTS OF CONSOLIDATED EDISON CO. AND QUALITY FOR A UTILITY REBATE TO OWNER UNDER CON EDISON'S ENLIGHTENED ENERGY LIGHTING REBATE PROGRAM. CONTRACTOR SHALL COORDINATE REBATE PROGRAM WITH CON EDISON AND ARRANGE FOR CON EDISON TO PERFORM A SURVEY TO INVENTORY ALL EXISTING FIXTURES PRIOR TO DEMOLITION.
- H. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE MEA APPROVED FOR USE IN NEW YORK CITY. AC POWERED WITH PREMIUM LONG-LIFE NICKEL CADMIUM BATTERY WITH STANDARD UL LISTED 3-HOUR RUN TIME. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

- 14. TELEPHONE CONDUIT SYSTEM:
- A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES,
- B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE

- E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM OUTLET BOX TO BUSHED END THRU WALL 6" BELOW THE PLASTER CEILING.
- F. FACE RACEWAYS IN ROOMS SHALL HUBBELL HBL500, HBL750 OR HBL2000 SERIES OR AS ACCEPTABLE.
- 15. GROUNDING AND BONDING:
- A. PROVIDE GROUNDING SYSTEM IN ACCORDANCE WITH (2017 NATIONAL ELECTRICAL CODE), AND THESE SPECIFICATIONS. TH WIRING SYSTEM SHALL BE INSTALLED AS REQUIRED TO PROVIDE A CONTINUOUSLY GROUNDED SYSTEM. WHERE FLEXIBLE CONDUIT IS USED FOR PART OF A CONDUIT RUN, EXCEPT LIGHTING BRANCH CIRCUITS, AN INSULATED GROUNDING CONDUCTOR SHALL BE PROVIDED IN THE CONDUIT AND CONNECTED TO GROUNDING BUSHINGS AT EACH END OF THE RUN.
- B. USE EXOTHERMIC WELDING PROCESS FOR INACCESSIBLE CONNECTIONS.
- C. EXTEND EXISTING SYSTEM GROUND TO INCLUDE ALL TH ELECTRICAL EQUIPMENT IN THE SCOPE OF WORK.
- D. WHERE FLEXIBLE METALLIC CONDUIT IS USED AN INTERNAL BONDING CONDUCTOR SHALL BE INSTALLED.
- E. IN ADDITION, FURNISH A SEPARATE INSULATED GREEN EQUIPMENT GROUND CONDUCTOR WHERE INDICATED ON DRAWINGS AND FOR THE FOLLOWING BRANCH CIRCUITS:
- CIRCUITS SERVING ANY WALL BOX DIMMER.
- CIRCUITS SERVING ANY ISOLATED GROUND RECEPTACLES. TERMINATE GROUND DIRECTLY AT AN EQUIPMENT GROUNDING CONDUCTOR TERMINAL OF THE SOURCE AT THE SOURCE, OR AS OTHER WISE NOTED ON DRAWINGS.
- 3. CIRCUITS SERVING ANY DUPLEX OR SIMPLEX COMPUTER RECEPTACLES
- 4. ANY CIRCUIT SERVED VIA AN ISOLATION TRANSFORMER OR COMPUTER POWER DISTRIBUTION UNIT.







JNG AG AN ARGHTEGTURAL WURK UNDER GEG. NZ OF THE GOFTRIGHT AGT.	TT U.S.C. AS AIVIENDED DECEIVIDER 1990 AND KINOVIN A	S THE ARUNTLEUTURAL WURKS OUF TRIG	

SHEET NO.

E101



1. COORDINATE EXACT LOCATION OF HVAC EQUIPMENTS ON ROOF WITH MECHANICAL CONTRACTOR/ARCHITECT.

1 ELECTRICAL ROOF POWER PLAN 1/8" = 1'-0"

2. ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN AND PROVIDE AS REQUIRED. COORDINATE LOCATION OF DISCONNECT WITH MANUFACTURER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.

ELECTRICAL POWER ROOF PLAN KEY NOTES:

REQUIRMENTS IN FIELD.

RTU-1

EXF-4 M 1 2 S<sub>M</sub> PP3# 18

2 EXHAUST FANS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. E.C. SHALL COORDINATE FOR SWITCHING AND CONTROLS AND PROVIDE ALL NECCESSARY WIRING REQUIRED. BASE BID ACCORDINGLY.









		LIGHTING FIXTURE SCHEDULE				
TYPE	DESCRIPTION	MANUFACTURER CATALOG NUMBER	LAMP WATT	QUANTITY	VOLTAGE	NOTES
А	2' X 4' RECESSED LED TYPE LIGHT FIXTURE	2BLT BY LITHONIA LIGHTING	38W*	106	120 V	VERIFY FINAL SELECTION WITH ARCHITECT/OWNER
В	2' X 2' RECESSED LED TYPE LIGHT FIXTURE	2BLT2 BY LITHONIA LIGHTING	27W	26	120 V	-
С	RECESSED CAN CEILING MOUNTED DOWNLIGHT-4" LED LIGHT FIXTURE	HLB6-09-9FS-1E-MW-R BY COOPER LIGHTING	14W	18	120 V	-
E	INDOOR WALL MOUNTED LIGHT FIXTURE WITH MINIMUM OF 90 MINUTES OF BATTERY BACKUP	AP2SQLED BY SURE LITES COOPER LIGHTING	5W	19	120 V	-
F	PENDANT LIGHT FIXTURE	TOGP-24-ULO-LED-90-2500-35 BY LUMENWERX	26W	1	120 V	-
G	LED STRIP LIGHT FIXTURE	CSS-L48-4000LM-MVOLT-40K-80CR I BY LITHONIA LIGHTING	36W	1	120 V	-
X	SINGLE OR DOUBLE FACE WALL MOUNTED ILLUMINATED EXIT SIGN WITH MINIMUM OF 90 MINUTES OF BATTERY TIME	APX7R BY SURELITES	5W	3	120 V	-
XE	2 LIGHT HEADS AND BATTERY. MINIMUM OF 90 MINUTES OF BATTERY TIME	APC7R BY SURELITES	5W	22	120 V	VERIFY FINAL SELECTION WITH ARCHITECT/OWNER
Z	EXTERIOR WALL SCONCE	WDGE1 BY LITHONIA LIGHTING	15W	2	120 V	-



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- ELECTRICAL LIGHTING KEY NOTES:
- 1 PROVIDE LOW VOLTAGE VACANCY SENSOR. MANUAL ON/AUTOMATIC OFF. SET OFF TIME FOR 20 MINUTES.
- 2 WALL MOUNTED VACANCY SENSOR, MANUAL ON/AUTOMATIC OFF. SET OFF TIME TO 20 MINUTES FOR OFFICE, PANTRY AND OTHER UTILITY SPACES.
- 3 DIMMER SWITCHES SHALL BE RATED FOR TOTAL LOAD OF SWITCHED CIRCUIT AND LAMP TYPE AS REQUIRED. DIMMERS SHALL BE PROVIDED WITH AN ON/OFF SWITCH.
- PROVIDE LOW VOLTAGE OCCUPANCY SENSOR. INTERCONNECT OCCUPANCY SENSORS SO THAT ANY SENSOR WILL TRIGGER ALL LIGHTS. SET OFF TIME FOR 20 MINUTES.
- 5 WALL MOUNTED OCCUPANCY SENSOR, SET OFF TIME TO 20 MINUTES FOR RESTROOM, OFFICE APPLICATIONS AND OTHER UTILITY SPACES, SET DIP SWITCH TO AUTOMATIC ON.
- 6 NEW 150A(MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "PP1". E.C. SHALL VERIFY THE EXACT LOCATION FOR NEW PANEL "PP1" ON FIELD. BASE BID ACCORDINGLY.
- (7) NEW 100A(MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "PP2". E.C. SHALL VERIFY THE EXACT LOCATION FOR NEW PANEL "PP2" ON FIELD. BASE BID ACCORDINGLY.
- 8 NEW 200A(MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "PP3". E.C. SHALL VERIFY THE EXACT LOCATION FOR NEW PANEL "PP3" ON FIELD. BASE BID ACCORDINGLY.
- EXISTING 225A(MLO), 120/208V, 1-PHASE, 3-WIRE ELECTRICAL PANEL HC SHALL REMAIN AND TO RELOCATE IN ELECTRICAL ROOM. E.C. SHALL VERIFY THE EXACT RATING, OPERABLE CONDITION AND LOCATION OF EXISTING ELECTRICAL PANEL HC. INFORM ENGINEER FOR ANY DISCREPANCY FOUND. BASE BID ACCORDINGLY.
- (10) PROVIDE DAYLIGHT SENSOR IN DAYCARE #8.
- (1) LIGHTING IN THIS AREA SHALL BE CONTROLLED WITH DAYLIGHT SENSOR.
- E.C. SHALL VERIFY EXISTING LIGHTING, LIGHTING CONTROL & CIRCUIT FEEDING LIGHTING IN EXISTING FIRE SUPP. ROOM. IF FOUND INOPERABLE REPLACE WITH NEW ONE. BASE BID ACCORDINGLY.
- WIRE ALL EMERGENCY, NIGHT LIGHT AND EXIT LIGHT TO THE NEAREST CIRCUIT AS SHOWN AHEAD OF ALL CONTROLS & SWITCHING FOR CONTINIOUS OPERATION.

ELEC	CTRICAL LIGHTING GENERAL NOTES:
1.	CONTRACTOR SHALL ADJUST THE EMERGENCY AND EXIT LIGHTING QUATITIES/LOCATION AS REQUIRED TO MEET THE LOCAL AHJ REQUIREMENTS.BASE BID ACCORDINGLY.
2.	ALL EMERGENCY, EXIT AND NIGHT LIGHTS SHALL BE CONNECTED TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROL FOR CONTINEOUS OPERATION.
3.	CONTRACTOR SHALL PROVIDE THE LIGHTING CONTROLS AND ALL REQUIRED DEVICES/ACCESSORIES/WIRING AS PER IECC 2015 CODE REQUIREMENTS.
4.	PROVIDE AN UN-SWITCH HOT LEG TO ALL EMERGENCY AND EXIT FIXTURES.
5.	ACCESS/MAINTAINACE DOOR IN CEILING SHALL NOT BE BLOCKED BY ANY DUCTS, PIPES OR OTHER PERMANENT FOREIGN ITEMS.
6.	MAXIMUM VOLTAGE DROP FOR FEEDER AND BRANCH CIRCUIT CONDUCTORS COMBINED, SHALL NOT EXCEED A 5% VOLTAGE DROP.
7.	COORDINATE WITH OWNER FOR TIME SCHEDULE PROGRAM INTO LIGHTING CONTROL SYSTEM.
8.	ALL LIGHTING FIXTURE TYPES AND LAYOUTS TO BE VERIFIED WITH ARCHITECT/OWNER.FOR EXACT LOCATION AND MOUNTING HEIGHTS OF ALL LIGHTING FIXTURES SWITCHES AND JUNCTION BOXES, SEE ARCHITECTURAL DRAWINGS.
9.	ALL LIGHTING FIXTURES WHICH ARE CONTROLLED BY A DIMMER SWITCH SHALL BE WIRED TO A CIRCUIT HAVING DEDICATED NEUTRAL WIRE.
10.	CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER FOR DIMMING REQUIREMENTS. ALL THE LIGHT FIXTURE SHALL BE DIMMABLE WHICH ARE CONTROLLED THROUGH DIMMER.
<u>LIG</u>	HTING CONTROL NARRATIVE
OPEN	AREAS/CORRIDORS (OCCUPANCY SENSOR CONTROLLED):
1. CO 2. AU OV	NTROLLED VIA OCCUPANCY SENSORS. TOMATIC ON/AUTOMATIC OFF. 20-MINUTE OFF SETTING PROVIDE LOCAL ERRIDE SWITCH
CLAS 1. CO 2. MA 3. PRO	SROOMS/CLOSETS/STORAGE/OFFICE (VACANCY SENSOR CONTROLLED): NTROLLED VIA OCCUPANCY SENSORS IN VACANCY MODE. NUAL ON/AUTOMATIC OFF. 20-MINUTE OFF SETTING OVIDE LOCAL OVERRIDE SWITCH.
REST 1. CO 2. AU OV	ROOMS (OCCUPANCY SENSOR CONTROLLED): NTROLLED VIA OCCUPANCY SENSORS. TOMATIC ON/AUTOMATIC OFF. 20-MINUTE OFF SETTING PROVIDE LOCAL ERRIDE SWITCH

UTILITY ROOMS (MANUALLY ON/OFF): 1. CONTROLLED VIA LOCAL MANUAL ON/OFF SWITCH.

# NOTE:

E.C. SHALL COORDINATE WITH ARCHITECT/OWNER FOR FINAL LIGHTING CONTROL REQUIREMENTS AND PROVIDE ALL LIGHTING CONTROLS IN COMPLIANCE WITH IECC-2015 CODE AND ACOORDINGLY PROVIDE REQUIRED DEVICES, ACCESORIES, WIRING WITH NO ADDITIONAL COST FOR PROPER FUNCTIONING AND OPERATION OF LIGHTING SYSTEM.

NY ENGINEERS NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674.

MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGIINEERS.COM



SHEET TITLE:

# ELECTRICAL LIGHTING PLAN

1	1/29/2024	PERMIT COMMENT RESPONSE
	11/29/2023	ISSUED FOR CONSTRUCTION
REV.	DATE	REMARKS
JOB NU	IMBER: 20	22-02.02
DATE:	01	/21/2023
DRAWN	NBY: N	/E
CHECK	ED BY: N	Έ
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H NEW 100A(MLO), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "PP2". E.C. SHALL VERIFY THE EXACT LOCATION FOR NEW PANEL "PP2" ON FIELD. BASE BID ACCORDINGLY.

NEW 200A(MLO), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "PP3". E.C. SHALL VERIFY THE EXACT 🕥 🛛 EXISTING 225A(MLO), 120/208V, 1-PHASE, 3-WIRE ELECTRICAL PANEL HC SHALL REMAIN AND TO 🃹 RELOCATE IN ELECTRICAL ROOM. E.C. SHALL VERIFY THE EXACT RATING, OPERABLE CONDITION AND LOCATION OF EXISTING ELECTRICAL PANEL HC. INFORM ENGINEER FOR ANY DISCREPANCY FOUND.

LOCATION FOR NEW PANEL "PP3" ON FIELD. BASE BID ACCORDINGLY.

BASE BID ACCORDINGLY.

NARBY ENGINEERS 38 NE 191ST STREET SUITE 49674, MAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGIINEERS.COM
SHEET TITLE: ELECTRICAL RISER DIAGRAM
I 1/29/2024 PERMIT COMMENT RESPONSE 1/29/2023 ISSUED FOR CONSTRUCTION REV. DATE REMARKS JOB NUMBER: 2022-02.02 JATE: 01/21/2023 DRAWN BY: NYE CHECKED BY: NYE SHEET NO. SHEET NO.

V	OLTA	GE: 1	20/20	8 Wye				· · · · ·		MA	INS TYPE	МСВ					MC
	PHA	SE: 3		- <b>J</b>						MAINS	RATING:	150 A				PANE	LLO
	W	<b>RE:</b> 4									BUS:	225 A				SI	JPPL
KT.	TRIP AMP	POLE	=	CIR		ON	LOAD	WIRE SIZE	ļ	4		В		С	WIRE SIZE		>
1	20	1				:	R	2#12 #12G 3//"C	0.54	0.18					2#12 #126 3//"0		
3	20	1	DA'	YCARE#	#1 RECEPTACLES	) ;	R	2#12, #120, 3/4 C	0.04	0.16	0.72	1.50			2#12, #12G, 3/4 C	R	
5	20	1	DA	YCARE#	\$3 RECEPTACLES	5	R	2#12, #12G, 3/4"C					0.90	1.20	2#12, #12G, 3/4"C	E	DA
7	20	1	DA	YCARE#	#4 RECEPTACLES	5	R	2#12, #12G, 3/4"C	0.72	0.18	0.70	4.50			2#12, #12G, 3/4"C	E	
9 11	20	1			#5 RECEPTACLES	<u> </u>	R	2#12, #12G, 3/4"C			0.72	1.50	0.72	1 20	2#12, #12G, 3/4"C		
13	20	1		YCARE#	7 RECEPTACLES	, ;	R	2#12, #12G, 3/4 C	0.90	0.18			0.72	1.20	2#12, #12G, 3/4°C	E	
15	20	1	DA	YCARE#	#8 RECEPTACLES	;	R	2#12, #12G, 3/4"C			0.90	1.50			2#12, #12G, 3/4"C	R	DA
17	20	1	DA	YCARE#	#9 RECEPTACLES	;	R	2#12, #12G, 3/4"C					0.72	1.20	2#12, #12G, 3/4"C	E	DA
19	20	1		YCARE#	#8 UC REFRIGERA		E B	2#12, #12G, 3/4"C	0.18	0.18	1.50	1.50			2#12, #12G, 3/4"C	E	
23	20	1		YCARE#	#8 MICROWAVE	NCE3	E	2#12, #12G, 3/4 C			1.50	1.50	1.20	1.20	2#12, #12G, 3/4 C	E	
25	20	1	DA	YCARE#	#9 UC REFRIGERA	ATOR	E	2#12, #12G, 3/4"C	0.18	0.18					2#12, #12G, 3/4"C	E	DA
27	20	1	DA	YCARE#	#9 SMALL APPLIA	NCES	R	2#12, #12G, 3/4"C			1.50	1.50			2#12, #12G, 3/4"C	R	DA
29	20	1		YCARE#	#9 MICROWAVE		E	2#12, #12G, 3/4"C	E 04	0.40			1.20	1.20	2#12, #12G, 3/4"C		
31	50	3		J-1			н	3#8, #10G, 3/4°C	5.04	0.18	5.04	1 50			2#12, #12G, 3/4°C 2#12_#12G_3/4°C		
35											0.04	1.00	5.04	1.20	2#12, #12G, 3/4"C	E	
37	20	1	Spa	are					0.00	0.18					2#12, #12G, 3/4"C	E	DA
39	20	1	Spa	are							0.00	1.50			2#12, #12G, 3/4"C	R	DA
41	20	1	Spa	are			<u> </u>						0.00	1.20	2#12, #12G, 3/4"C	ΓĒ	IDA'
						TOTAL C	ONNE	CTED LOAD (KVA):	8.	82	20	.88	18	8.18			
						то	TAL CO	ONNECTED AMPS:	73.	.53	180	6.03	16	3.53			
OAD	TYPE			CL	LOAD ASSIFICATION		CTED D	DEMAND FACTOR	ES	TIMATE	D DEMAN	D			PA	NEL	ΤΟΤΑ
IGHTI	NG				L	0 V/	4	0.00%		0 \	/A					TOT	
RECEF	PTACL	E			R	20340	VA	74.58%		1517	0 VA				TOTAL	ESTIN	IATEI
HVAC					Н	15130	VA	100.00%		1513	0 VA				ТОТ	TAL C	ONNE
					<u>M</u>	0 V/	<u>\</u>	0.00%		0	/A				TOTAL ESTI	MATE	<u>D DE</u>
					0	0.12420	<u>v</u> A 1	0.00%		013	/A						
ΡΔΙ	NFI	• F		3													
PAI		_: F	<b>PP</b> ( 20/20/	<b>3</b> 8 Wye	(NEW)	)				MA	INS TYPE	MLO 200.4				DANE	
PAI	NEI Olta Pha	<b>_:</b> F GE: 11 SE: 3 RE: 4	<b>PP</b> ( 20/20/	<b>3</b> 8 Wye	(NEW)	)				MA	INS TYPE RATING: BUIS:	MLO 200 A 225 A				PANE	MO
	VEL OLTA PHA WI	<b>_:</b> F GE: 11 SE: 3 RE: 4	<b>PP</b> ( 20/20	<b>3</b> 8 Wye	(NEW)	)				MA	INS TYPE RATING: BUS:	MLO 200 A 225 A				PANE	MO L LO JPPL
<b>РАІ</b> v хкт. no.	OLTA PHA WI TRIP AMP	_: F GE: 1 SE: 3 RE: 4 POLE S	<b>₽₽</b> ( 20/20	3 <sup>8 Wye</sup> CIR	(NEW)	0N	LOAD TYPE	WIRE SIZE		MA MAINS	INS TYPE RATING: BUS:	MLO 200 A 225 A B		C	WIRE SIZE	PANE SI LOAI TYPE	MO L LO JPPL
PAI V CKT. NO.	VOLTAG PHA WII TRIP AMP	<b>GE:</b> 1: <b>SE:</b> 3 <b>RE:</b> 4 <b>POLE</b> <b>S</b> 3	20/20	3 8 Wye CIR	(NEW)	ON	LOAD TYPE H	<b>WIRE SIZE</b> 3#8, #10G, 3/4"C	4.56	MA MAINS A 1.77	INS TYPE RATING: BUS:	MLO 200 A 225 A B		c	<b>WIRE SIZE</b> 2#12, #12G, 3/4"C	PANE SI LOAI TYPE	MO LLO JPPL
PAI v ckt. NO. 1 3 5	VEL OLTA PHA WI TRIP AMP 50 	GE: 11 SE: 3 RE: 4 POLE S 	20/20	B Wye CIR	(NEW)	0N	LOAD TYPE H 	WIRE SIZE 3#8, #10G, 3/4"C  	4.56	MA MAINS A 1.77	NS TYPE RATING: BUS: 4.56	MLO 200 A 225 A B	4.56	<b>C</b>	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G. 3/4"C	PANE SI LOAI TYPE H  M	MO L LO JPPL ACC
PAI v ckt. <u>NO.</u> 1 3 5 7	<b>NEI</b> OLTA PHA WI TRIP AMP 50   40	GE: 1: SE: 3 RE: 4 POLE S  3  3	20/20	3 8 Wye CIR J-2	(NEW)	) ON	LOAD TYPE H  H	WIRE SIZE 3#8, #10G, 3/4"C   3#8, #10G, 3/4"C	4.56	MA MAINS 4 1.77	INS TYPE RATING: BUS: 4.56	MLO 200 A 225 A B 1.77	4.56	<b>C</b>	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M	MO L LO JPPL ACC EXF
PAI v ckt. NO. 1 3 5 7 9	<b>NEI</b> OLTA PHA WI TRIP AMP 50   40 	_: F GE: 1 SE: 3 RE: 4 POLE S 3  3  3 	20/20	3 8 Wye CIR J-2 J-3		ON	LOAD TYPE H  H 	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C	4.56	MA MAINS A 1.77 0.90	NS TYPE RATING: BUS: 4.56 3.60	MLO 200 A 225 A B 1.77 0.45	4.56	C	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M	MO L LO JPPL ACC EXF
PAI V CKT. NO. 1 3 5 7 9 11 11	<b>NEI</b> OLTAG PHA WI TRIP AMP 50   40   50	<b>GE</b> : 1: <b>SE</b> : 3 <b>RE</b> : 4 <b>POLE</b> <b>S</b>  3  3  3	20/20	3 8 Wye CIR J-2 J-3	(NEW)	ON	LOAD TYPE H  H 	WIRE SIZE 3#8, #10G, 3/4"C   3#8, #10G, 3/4"C   3#8, #10G, 3/4"C	4.56	MA MAINS 4 1.77 0.90	INS TYPE RATING: BUS: 4.56 3.60	MLO 200 A 225 A B 1.77 0.45	4.56	C 0.70 0.45	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C  2#12, #12C, 3/4"C	PANE SI LOAI TYPE H  M M M	
PAI v ckt. NO. 1 3 5 7 9 11 13 15	NEI OLTA PHA VII TRIP AMP 50  40  50  50 	_: F GE: 1 SE: 3 RE: 4 POLE S 3   3  3  3  3  3	20/20 20/20 E RTI  RTI  RTI  RTI	3 <sup>8</sup> Wye CIR J-2 J-3 J-4		ON	LOAD TYPE H  H  H  H 	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C	4.56	MA MAINS A 1.77 0.90 0.60	NS TYPE RATING: BUS: 4.56	MLO 200 A 225 A B 1.77 0.45 0.30	4.56	C 0.70 0.45	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M	MO LLLO JPPL ACC EXF EXF EXF EXF
PAI v v CKT. NO. 1 3 5 7 9 11 13 15 17	NEI OLTA PHA WI TRIP AMP 50  40  50  50  50  	GE: 1 SE: 3 RE: 4 POLE S 3   3  3 	20/20 20/20	3 8 Wye CIR J-2 J-3 J-4		ON	LOAD TYPE H  H  H  H  H 	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C	4.56	MA MAINS 4 1.77 0.90 0.60	NS TYPE RATING: BUS: 4.56	MLO 200 A 225 A B 1.77 0.45 0.30	4.56	C 0.70 0.45 0.90	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M	MO LLO JPPL
PAI v CKT. NO. 1 3 5 7 9 11 13 15 17 19	NEI OLTA PHA WI 50  40  50  50  20	GE: 1: SE: 3 RE: 4 POLE S 3   3  3  1	20/20 20/20 RTI  RTI  RTI  FOI	3 8 Wye CIR J-2 J-3 J-4 R GPS-1	(NEW)	ON	LOAD TYPE H  H  H  H  O	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C	4.56	MA MAINS 4 1.77 0.90 0.60 0.60	NS TYPE RATING: BUS: 4.56 3.60 4.56	MLO 200 A 225 A <b>B</b> 0.45 0.30	4.56	C 0.70 0.45 0.90	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI TYPE H  M M M  O M M 	MO L LO JPPL ACC EXF EXF EXF EXF EXF Spa
PAI v v CKT. NO. 1 3 5 7 9 11 13 15 17 19 21 22	<b>NEI</b> OLTA PHA WI TRIP AMP 50  40  50  50  50  20 20	GE: 1 SE: 3 RE: 4 POLE S 3   3  3  1 1	20/20 20/20 RTI  RTI  RTI  FOI Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are	(NEVV) CUIT DESCRIPTION	ON	LOAD TYPE H  H H  H H  O O	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C	4.56 3.60 4.56 0.04	MA MAINS A 1.77 0.90 0.60 0.60	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00	MLO 200 A 225 A B 1.77 0.45 0.30 0.30 0.00	4.56	C 0.70 0.45 0.90	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M  O M M  O M	MO L LO JPPL ACC EXF EXF EXF EXF EXF EXF Spa
PAI v v CKT. NO. 1 3 5 7 9 11 13 15 17 19 21 23 25	NEI OLTA PHA WI TRIP AMP 50   40  50   20 20 20 20 20 20	<b>GE</b> : 1 <b>SE</b> : 3 <b>RE</b> : 4 <b>POLE</b> <b>S</b> 3  3  3  3  1 1 1 1	20/20 20/20 RTU  RTU  RTU  Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are	(NEW)	ON	LOAD TYPE H  H  H  H  O   O   O 	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C	4.56	MAINS A 1.77 0.90 0.60 0.60 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00	MLO 200 A 225 A B 1.77 0.45 0.30 0.30 0.00	4.56	C 0.70 0.45 0.90 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M M  O M    -	MO LLO JPPL JPPL ACC  EXF EXF EXF Spa Spa Spa Spa
PAI v v CKT. NO. 1 3 5 7 9 11 13 15 17 19 21 23 25 27	NEI OLTA PHA WI TRIP AMP 50   40  50  50  20 20 20 20 20 20 20 20 20 20	<b>GE</b> : 1 <b>SE</b> : 3 <b>RE</b> : 4 <b>POLE</b> <b>S</b> 3   3   3  1 1 1 1 1 1	20/20 20/20 RTI  RTI  RTI  RTI Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are	(NEW)	ON	LOAD TYPE H  H  H  H   O   O       	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C	4.56 3.60 4.56 0.04 0.00	MA MAINS A 1.77 0.90 0.60 0.60 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00	MLO 200 A 225 A B 1.77 0.45 0.30 0.30 0.00	4.56	C 0.70 0.45 0.90 0.90	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M  M M  O M M     	MO LLO JPPL ACC EXF EXF EXF EXF Spa Spa Spa Spa Spa
PAI v v CKT. NO. 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29	NEI OLTAG PHA WII TRIP AMP 50  40  50  20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE S 3   3  3  1 1 1 1 1 1 1 1 1	20/20 20/20 RTU  RTU  RTU  Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are	(NEVV)	ON	LOAD TYPE H  H  H  H  H   O 0      	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C	4.56	MA MAINS A 1.77 0.90 0.60 0.60 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00	MLO 200 A 225 A <b>B</b> 0.45 0.30 0.30 0.00 0.00	4.56 3.60 4.56 0.00	C 0.70 0.45 0.90 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M M  O M M     -	MO LLO JPPL' ACC  EXF EXF EXF EXF EXF Spa Spa Spa Spa Spa
PAI v v CKT. NO. 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31	NEI OLTA PHA WI 50  40  50  50  20 20 20 20 20 20 20 20 20 20 20 20 20	<b>GE</b> : 1 <b>SE</b> : 3 <b>RE</b> : 4 <b>POLE</b> <b>S</b> 3   3   3  1 1 1 1 1 1 1 1 1	20/20 20/20 20/20 RTI  RTI  RTI  RTI  Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are are are are are	(NEW)	ON	LOAD TYPE H  H  H H    O      	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C	4.56 3.60 4.56 0.04 0.00	MA MAINS 1.77 0.90 0.60 0.00 0.00 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00	MLO 200 A 225 A 3 1.777 0.45 0.45 0.30 0.30 0.30 0.30 0.00 0.00	4.56 3.60 4.56 0.00 0.00	C 0.70 0.45 0.90 0.90 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M M M  O M M     -	MO LLO JPPL JPPL ACC EXF EXF EXF EXF Spa Spa Spa Spa Spa
PAI v v CKT. NO. 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 325	NEI OLTA PHA WI 50  40  50  50  20 20 20 20 20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE S 3   3  3  1 1 1 1 1 1 1 1 1 1 1	20/20 20/20 RTI  RTI  RTI  Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are are are are are are	(NEW)	ON	LOAD TYPE H  H  H H   O O        	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C	4.56 3.60 4.56 0.04 0.00	MA MAINS A 1.77 0.90 0.60 0.60 0.00 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00	MLO 200 A 225 A 1.77 0.45 0.30 0.30 0.00 0.00 0.00	4.56 3.60 4.56 0.00 0.00	C 0.70 0.70 0.45 0.90 0.90 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  M M  0 M M  0 M M         	MO LLO JPPL ACC EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PAI V V CKT. NO. 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37	NEI OLTA PHA WI 50  50  40  50  20 20 20 20 20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE S 3   3  3  1 1 1 1 1 1 1 1 1 1 1	20/20 20/20 RTU  RTU  FOI Spa Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are are are are are are are	(NEW)	ON	LOAD TYPE H  H  H  H  H    	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C	4.56 3.60 4.56 0.04 0.00 0.00	MA MAINS 1.77 0.90 0.90 0.60 0.00 0.00 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00	MLO 200 A 225 A 3 1.77 0.45 0.45 0.30 0.00 0.00 0.00 0.00	4.56	C 0.70 0.70 0.45 0.90 0.90 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M M  O M M            -	MO LLO JPPL JPPL ACC  EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PAI v v xt. no. 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39	NEI OLTA PHA WI 50   50  20 20 20 20 20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE S 3   3  3  1 1 1 1 1 1 1 1 1 1 1	20/20 20/20 20/20 RTI  RTI  RTI  RTI  RTI Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are are are are are are are	(NEW)		LOAD TYPE H  H  H  H      	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C	4.56 3.60 4.56 0.04 0.00	MA MAINS 1.77 0.90 0.90 0.60 0.00 0.00 0.00 0.00 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00 0.00	MLO 200 A 225 A 1.77 0.45 0.30 0.30 0.30 0.00 0.00 0.00 0.00	4.56 3.60 4.56 3.60 0.00 0.00	C 0.70 0.70 0.45 0.90 0.90 0.90 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  M M  M M    	MO EL LO JPPL ACC EXF EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PAI v v CKT. NO. 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41	NEI OLTA PHA WI TRIP AMP 50   40  50   20 20 20 20 20 20 20 20 20 20	GE: 11 SE: 3 RE: 4 POLE S 3  3  3  3  1 1 1 1 1 1 1 1	20/200 20/200 E RTU  RTU  RTU  RTU  Spa Spa Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are are are are are are are	(NEVV)		LOAD TYPE H  H  H  H      	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C	4.56 3.60 4.56 0.04 0.00 0.00 0.00	MA MAINS 1.77 0.90 0.90 0.60 0.00 0.00 0.00 0.00 0.00 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00	MLO 200 A 225 A B 1.77 0.45 0.30 0.30 0.00 0.00 0.00 0.00	4.56	C 0.70 0.45 0.90 0.00 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  M M  M M    	MO LLO JPPL ACC  EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PAI v v x x x x x x x x x x x x x x x x x	NEI OLTA PHA WII TRIP AMP 50  40  50  20 20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE S 3   3  3  1 1 1 1 1 1 1 1 1 1 1	20/20 20/20	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are are are are are are are	(NEW)		LOAD TYPE H  H  H  H      	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C	4.56 3.60 4.56 0.04 0.00 0.00 0.00 1	MA MAINS 1.77 0.90 0.90 0.60 0.00 0.	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00 0.00	MLO 200 A 225 A B 1.77 0.45 0.30 0.30 0.00 0.00 0.00 0.00 0.00 0.0	4.56	C 0.70 0.70 0.45 0.90 0.90 0.00 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M M M  O M M  C           	MO L LO JPPL ACC EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PA v v v v v v v v v v v v v	NEI OLTA PHA Will TRIP AMP 50  40  50  20 20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE S 3   3  1 1 1 1 1 1 1 1 1 1 1 1 1	20/20 20/20 RTI  RTI  RTI  FOI Spa Spa Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are are are are are are are are are are	(NEW)		LOAD TYPE H  H  H  H      	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C   2#12, #12G, 3/4"C   2#12, #12G, 3/4"C   2#12, #12G, 3/4"C    2#12, #12G, 3/4"C        -	4.56 3.60 4.56 0.04 0.00 0.00	MA MAINS A 1.77 0.90 0.60 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00 0.00 0.00	MLO 200 A 225 A B 1.77 0.45 0.30 0.00 0.00 0.00 0.00 0.00	4.56 3.60 4.56 0.00 0.00 0.00	C 0.70 0.45 0.90 0.90 0.00 0.00 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  M M  M M    	MO L LO JPPL ACC EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PA V KT. NO. 1 3 5 7 9 11 13 15 17 19 21 23 27 29 31 33 35 37 39 41 OAD	NEI OLTA PHA WI TRIP AMP 50   40   20 20 20 20 20 20 20 20 20 20	GE: 11 SE: 3 RE: 4 POLE S 3   3  3  1 1 1 1 1 1 1 1 1	20/20 20/20 RTU  RTU  RTU  FOI Spa Spa Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 R GPS-1 are	(NEW)		LOAD TYPE H  H  H  H  H    	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C   2#12, #12G, 3/4"C   2#12, #12G, 3/4"C   2#12, #12G, 3/4"C    2#12, #12G, 3/4"C        -	4.56 3.60 4.56 0.04 0.00 0.00 0.00	MA MAINS 1.77 0.90 0.60 0.00 0.	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00 0.00 0.00 0.00 1.00 1.00 1.0	MLO 200 A 225 A B 1.77 0.45 0.30 0.30 0.00 0.00 0.00 0.00 0.00 0.0	4.56 4.56 3.60 4.56 0.00 0.00  14 12	C 0.70 0.70 0.45 0.90 0.90 0.00 0.00 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  M M  M M    	MO L LO JPPL ACC  EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PAI V X X X X X X X X X X X X X	NEI OLTA PHA WII TRIP AMP 50  40  50  20 20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE S 3   3   3  1 1 1 1 1 1 1 1 1	20/20 20/20 RTI  RTI  RTI  FOI Spa Spa Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 CIR Are			LOAD TYPE H  H  H  H      	WIRE SIZE 3#8, #10G, 3/4"C 3#8, #10G, 3/4"C 3#8, #10G, 3/4"C 3#8, #10G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C CTED LOAD (KVA): DNNECTED AMPS: DEMAND FACTOR 0.00%	4.56 3.60 4.56 0.04 0.00 0.00 0.00 134 ES	MAINS A 1.77 0.90 0.60 0.00 0.	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00 0.00 0.00 0.00 100 100 100 10	MLO 200 A 225 A 1.77 0.45 0.30 0.00	4.56 4.56 3.60 4.56 0.00 0.00 0.00 1.11 14 12	C 0.70 0.45 0.90 0.00 0.00 0.00 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M M  O M M            -	MO L LO JPPL ACC EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PAI V × × × × × × × × × × × × ×	NEI OLTA PHA WII TRIP AMP 50   40   50   20 20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE 3  3  3  1 1 1 1 1 1 1 1 1 1 1	20/20 20/20 RTU  RTU  RTU  Spa Spa Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 CIR Are	(NEVV)	ON ON TOTAL C TOTAL C TO CONNEC LOA 0 V/ 0 V/	LOAD TYPE H   H  H       	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C  2#12, #12G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C   2#12, #12G, 3/4"C   2#12, #12G, 3/4"C   2#12, #12G, 3/4"C   2#12, #12G, 3/4"C    2#12, #12G, 3/4"C        -	4.56 3.60 4.56 0.04 0.00 0.00 0.00  16. 134 ES	MA MAINS 1.77 0.90 0.90 0.60 0.00 0.	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 4.56 0.00 0.00 0.00 0.00 1.0 1.0 1.0 1.0 1.0	MLO 200 A 225 A 1.77 0.45 0.30 0.30 0.00	4.56 3.60 4.56 0.00 0.00  14 12	C 0.70 0.45 0.90 0.00 0.00 0.00 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C	PANE SI LOAI TYPE H  M M M  O M M            -	MO L LO JPPL ACC EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PAI V X X X X X X X X X X X X X	NEI OLTA PHA WII TRIP AMP 50  40  50  20 20 20 20 20 20 20 20 20 20	<b>GE</b> : 1 <b>SE</b> : 3 <b>RE</b> : 4 <b>POLE</b> <b>S</b> 3   3  3  1 1 1 1 1 1 1 1 1 1 1 1 1	20/20 20/20 RTI  RTI  RTI  FOI Spa Spa Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 J-4 R GPS-1 are	(NEW)	ON TOTAL C TOTAL C TO CONNEC LOA 0 V/ 0 V/ 41724	LOAD TYPE H  H  H  H      	WIRE SIZE 3#8, #10G, 3/4"C 3#8, #10G, 3/4"C 3#8, #10G, 3/4"C 3#8, #10G, 3/4"C 2#12, #12G, 3/4"C 3#8, #10G, 3/4"C	4.56 3.60 4.56 0.04 0.00 0.00 0.00  16. 134 ES	MAINS A 1.77 0.90 0.60 0.00 0.	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00 0.00 0.00 0.00 10.00	MLO 200 A 225 A B 1.77 0.45 0.30 0.30 0.00 0.00 0.00 0.00 0.00 0.0	4.56 3.60 4.56 0.00 0.00 0.00 0.00	C 0.70 0.70 0.45 0.90 0.00 0.00 0.00 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C   2#12, #12G, 3/4"C        -	PANE SI LOAI TYPE H  M M M  O M M            -	MO LLO JPPL ACC EXF EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa
PAI V CKT. NO. 1 3 5 7 9 11 13 15 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 LOAD LIGHTI RECEF IVAC MOTOF	NEI OLTA PHA VII TRIP AMP 50   40   50   20 20 20 20 20 20 20 20 20 20	GE: 1 SE: 3 RE: 4 POLE 3  3  3  3  1 1 1 1 1 1 1 1	20/20 20/20 RTI  RTI  RTI  FOI Spa Spa Spa Spa Spa Spa Spa Spa Spa Spa	B Wye CIR J-2 J-3 J-4 CIR Are	(NEVV)	ON TOTAL C TOTAL C CONNEC LOA 0 V/ 0 V/ 41724 3700 0	LOAD TYPE H  H  H  H      	WIRE SIZE 3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  3#8, #10G, 3/4"C  2#12, #12G, 3/4"C  0.00% 0.00% 100.00% 100.00%	4.56 3.60 4.56 0.04 0.00 0.00 0.00  16. 134 ES	MA MAINS A 1.77 0.90 0.60 0.00 0.00 0.00 0.00 0.00 0.00	NS TYPE RATING: BUS: 4.56 3.60 4.56 0.00 0.00 0.00 0.00 0.00 0.00 1.0 1.0 1	MLO 200 A 225 A 1.77 0.45 0.30 0.30 0.00	4.56 3.60 4.56 0.00 0.00 0.00  14 12	C 0.70 0.45 0.90 0.00 0.00 0.00 0.00 0.00	WIRE SIZE 2#12, #12G, 3/4"C  2#12, #12G, 3/4"C 2#12, #12G, 3/4"C 1#10, 1#10	PANE SI LOAI TYPE H  M M M  O M M            -	MO L LO JPPL ACC EXF EXF EXF EXF Spa Spa Spa Spa Spa Spa Spa Spa

NTING: SURFACE			
ATION: ELECTRICAL ROOM			
FROM: NEW MDP PANEL			
CIRCUIT DESCRIPTION	POLE S	trip Amp	CKT NO.
CARE#1 UC REFRIGERATOR	1	20	2
CARE#1 SMALL APPLIANCES	1	20	4
CARE#1 MICROWAVE	1	20	6
CARE#2 UC REFRIGERATOR	1	20	8
CARE#2 SMALL APPLIANCES	1	20	10
CARE#2 MICROWAVE	1	20	12
CARE#3 UC REFRIGERATOR	1	20	14
CARE#3 SMALL APPLIANCES	1	20	16
CARE#3 MICROWAVE	1	20	18
ARE#4 UC REFRIGERATOR	1	20	20
CARE#4 SMALL APPLIANCES	1	20	22
CARE#4 MICROWAVE	1	20	24
CARE#5 UC REFRIGERATOR	1	20	26
CARE#5 SMALL APPLIANCES	1	20	28
CARE#5 MICROWAVE	1	20	30
CARE#6 UC REFRIGERATOR	1	20	32
CARE#6 SMALL APPLIANCES	1	20	34
CARE#6 MICROWAVE	1	20	36
CARE#7 UC REFRIGERATOR	1	20	38
CARE#7 SMALL APPLIANCES	1	20	40
CARE#7 MICROWAVE	1	20	42
LOAD SUMMARY			

.

D DEMAND LOAD:	38.37 kVA
ECTED CURRENT:	132.93 A
MAND CURRENT:	106.51 A

UNTING: SURFACE				1
CATION: ELECTRICAL ROOM				Î
Y FROM: NEW MDP PANEL				
CIRCUIT DESCRIPTION	POLE S	trip Amp	CKT. NO.	
CU-1	2	20	2	1
			4	]
F-1	1	20	6	]
F-2	1	20	8	]
F-3	2	20	10	ļ
			12	ļ
NITION FOR WATER HEATER	1	20	14	
CIRCULATING PUMP (RCP-1)	1	20	16	
F-4	1	20	18	
are	1	20	20	
are	1	20	22	
are	1	20	24	
are	1	20	26	
are	1	20	28	
are	1	20	30	
are	1	20	32	ł
	1		34	ł
	1		36	ł
	1		38	
	1		40	
ace			42	ł
L LOAD SUMMARY				
DNNECTED LOAD: 46.06 kVA				1
D DEMAND LOAD: 46.06 kVA				1
ECTED CURRENT: 127.86 A				1
MAND CURRENT: 127.86 A				1
				1
				1
				1

PA	NEI	_: F	P2	(NEW)	)														
	VOLTA	<b>GE:</b> 12	20/208 \	Nye					MA	NS TYPE	MLO /	1		:		MOUNTING: SURFACE			
	PHA	<b>SE:</b> 3		-					MAINS	RATING:	100 A 🖉	<u>1 \</u>			PANEL	LOCATION: ELECTRICAL ROOM			
	14/1									DUC.	105 4				0.11				
	VVI	RE: 4			I		1			B05:	125 A	-		1	50	PPLIFROM: NEW MDP PANEL			
CKT. NO.	trip Amp	POLE S	1		ON I	LOAD TYPE	WIRE SIZE	ļ	4	E	3		C	WIRE SIZE	LOAD TYPE	CIRCUIT DESCRIPTION	POLE S	trip Amp	CKT. NO.
1	20	1	TOILE	ET & STAFF TOILET		R	2#12, #12G, 3/4"C	0.90	0.76					2#12, #12G, 3/4"C	L	DAYCARE#1,2, I.T. & OFFICE	1	20	2
3	20	1	TOILE	ET RECEPTACLES		Е	2#12, #12G, 3/4"C			0.72	0.78			2#12, #1 <mark>2G</mark> , 3/4"C		DAYCARE#3, TOILET & RECEPTION	1	20	4
5	20	1	CORF	RIDOR RECEPTACLES		R	2#12, #12G, 3/4"C					1.08	0.58	2#12, # <mark>12G</mark> , 3/4"C	L	DAYCARE#4 LIGHTING	1	20	6
7	20	1	ART S	STOR., BUGGY ST., JAN	NITOR	R	2#12, #12G, 3/4"C	0.54	0.61					2#12, #12G, 3/4"C	L	DAYCARE#5 LIGHTING	1	20	8
9	20	1	ELEC	TRICAL ROOM RECEP	TACLE	R	2#12, #12G, 3/4"C			0.18	0.61			2#12, #12G, 3/4"C		DAYCARE#6 LIGHTING	1	20	10
11	20	1	PANI	RY FREEZER		<u> </u>	2#12, #12G, 3/4"C	4.50	0.05			0.32	0.90	2#12, #12G, 3/4"C		DAYCARE#7 & ELEC. ROOM LIGHTING	1	20	12
13	20	1	PANI	RY SMALL APPLIANCE	S	<u></u>	2#12, #12G, 3/4"C	1.50	0.85	4.50	0.70			2#12, #12G, 3/4"C		DAYCARE#8 LIGHTING	1	20	14
15	20	1	PANT		.5		2#12, #12G, 3/4°C			1.50	0.70	1 20	0.26	2#12, #12G, 3/4°C			1	20	10
10	20					<u> </u>	2#12, #12G, 3/4 C	2.50	0.86			1.20	0.30	2#12, #12G, 3/4 C		COPPIDOP LIGHTING	1	20	10
21						<u> </u>	2#10, #100, 3/4 0	2.50	0.00	2 50	1 50			2#12, #12G, 3/4 C			1	20	20
23	20	1	PANT	RY MICROWAVE		F	2#12 #12G 3/4"C			2.00	1.00	1 20	0.72	2#12, #12G, 3/4"C	R	EXTERIOR RECEPTACIES	1	20	24
25	20	1	PANT	RY REFRIGERATOR		E	2#12, #12G, 3/4"C	0.18	0.72			1.20	0.12	2#12, #12G, 3/4"C	R	EXTERIOR RECEPTACLES	1	20	26
27	20	1	PANT	RY RECEPTACLES		R	2#12, #12G, 3/4"C	0110	0=	0.36	0.54			2#12, #12G, 3/4"C	R	CCTV MONITOR	1	20	28
29	20	1	RECE	PTION COFFEE MAKE	R	E	2#12, #12G, 3/4"C					1.20	0.80	2#12, #12G, 3/4"C	0	CARD READER	1	20	30
31	20	1	RECE	EPTION FRIDGE		Е	2#12, #12G, 3/4"C	1.20	1.00					2#12, #12G, 3/4"C	R	DRINKING FOUNTAIN	1	20	32
33	20	1	RECE	EPTION QUAD RECEPT.	ACLES	R	2#12, #12G, 3/4"C			0.72	0.50			2#12, #12G, 3/4"C	0	KNOX BOX	1	20	34
35	20	1	RECE	EPTION RECEPTACLES		R	2#12, #12G, 3/4"C					0.54	0.36	2#12, #12G, 3/4"C	R	IT RACK EQUIPMENT	1	20	36
37	20	1	OFFIC	CE PC RECEPTACLES		R	2#12, #12G, 3/4"C	0.36	0.36		6			2#12, #12G, 3/4"C	R	IT RACK EQUIPMENT	1	20	38
39	20	1	OFFIC	CE RECEPTACLES		R	2#12, #12G, 3/4"C			0.54	0.03			2#12, #12G, 3/4"C	L	EXTERIOR LIGHTING	1	20	40
41	20	1	ROOF	F RECEPTACLE		R	2#12, #12G, 3/4"C	<u> </u>				0.54	0.00			Spare	1	20	42
					TOTAL CO	ONNEC	CTED LOAD (KVA):	12.	.34	11.	.18	9.	80						
				LOAD				104	.61	94.	.96	81	.63						
LOAD	TYPE			CLASSIFICATION	LOAD		DEMAND FACTOR	ES	TIMATE					PA	NEL TO	DTAL LOAD SUMMARY			
LIGH	ING			L	7039 V	A	125.00%		8798	3 VA					ΤΟΤΑ	CONNECTED LOAD: 33.32 kVA			
RECE	PTACL	E		R	13960 V	/A	85.82 <mark>%</mark>		1198	0 VA				TOTAL	ESTIM/	TED DEMAND LOAD: 29.24 kVA			
HVAC				Н	0 VA		0.00%		0 \	/A				TO	TAL CO	NNECTED CURRENT: 92.48 A			
MOTO	R			М	0 VA		0.00%		0 \	/A				TOTAL EST	IMATE	DEMAND CURRENT: 81.16 A			
KITC	IEN/EQ	UIPME	NTS	E	11020 V	/A	65.00%		7163	3 VA									
OTHE	R			0	1300 V	A	100.00%		1300	) VA									
NOTE	S:																		

PA	NEL	: HP	(EXIS	TING)												
V	/OLTAGE	<b>E:</b> 120/20	8 Sin <mark>gle</mark>				M	AINS TYPE	E MLO				MOUNTING: SURFACE			
	PHASE	<b>Ξ:</b> 1					MAIN	S RATING	: 100 A			P	ANEL LOCATION: ELECTRICAL ROOI	N		
	WIRE	<b>:</b> 3						BUS	: 225 A				SUPPLY FROM: EX. 100A DISCONN	ECT		
CKT. NO.		POLES			OAD YPE WIRE SIZ	E		<b>A</b>		в	WIRE SIZE	LOAD TYPE	CIRCUIT DESCRIPTION	POLES	trip Amp	CKT. NO.
1	20	1	SIGNAGE		O EXISTING	;	1.44	1.44			EXISTING	0	SIGANGE	1	20	2
3	20	1	RECEPTS		R EXISTING	3			0.36	0.10	EXISTING	0	LCP	1	20	4
5	20	1	BUILDING EXTERIOR LI	GHTING	L EXISTING	}	0.95	0.45			EXISTING	L	BUILDING EXTERIOR LIGHTING	1	20	6
7	20	1	SIGNAGE LIGHTING		L EXISTING	3			0.35				Space	1		8
9	-	1	Space										Space	1		10
11		1	Space										Space	1		12
13		1	Space										Space	1		14
15		1	Space										Space	1		16
17	20	1	SITE LIGHTING		L EXISTING	}	1.00						Space	1		18
19	20	1	SITE DECORATIVE LIGH	ITING	L EXISTING	}			0.14				Space	1		20
		1	Space										Space	1		22
		1	Space										Space	1		24
25		1	Space										Space	1		26
27		1	Space										Space	1		28
29		1	Space										Space	1		30
31		1	Space										Space	1		32
<u> </u>		1	Space										Space	1		26
37		1	Space										Space	1		30
30		1	Space										Space	1		40
41		1	Snace										Space	1		42
<u> </u>			opuoc	TOTAL C	ONNECTED LOAD (	(VA):	5.	21	C	.94			opuoc			
				то		MPS:	44	.63	8	.99						
LOAD	TYPE		LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	E	STIMATE	ED DEMAN				PAN	EL TOTAL LOAD SUMMARY			
LIGHT	ING		L	2885 VA	125.00%		360	06 VA				Т	OTAL CONNECTED LOAD: 6.15 kVA			
RECE	PTACLE		R	360 VA	100.00%		36	0 VA	<b> </b>				TIMATED DEMAND LOAD: 6.86 kVA			
HVAC			н	0 \/A	0.00%		0	VA				TOTA	L CONNECTED CURRENT 29 55 A			
	R		M		0.00%		0		<b> </b>		τοτ/		ATED DEMAND CURRENT: 32 08 A			
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# ELECTRICAL PANEL SCHEDULE

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PLUMBING DRAWING LIST	EXPANSION TANK SCHEDULE	
	TAG     LOCATION     SERVICE     CAPACITY (GALLONS)     MANUFACTURER & MODEL     DIMENSION (DIA X HEIGHT)     WEIGHT (LBS)     NO. OF EXPANSION TANK	
P002 PLUMBING SPECIFICATION	SYSTEMS       PIPE       FITTINGS       JOINTS       ET-1       REFER FLOOR PLANS       HW       6.4       THERM-X-TROL ST-12 C       12" X 14"       42       1	
P100 PLUMBING WASTE PLAN		
P101 PLUMBING SUPPLY PLAN		
P200 PLUMBING RISER DIAGRAMS(1 OF 2)		
P201 PLUMBING RISER DIAGRAM (2 OF 2)	F ITEM QUANTITY GPM TOTAL MOTOR MANUFACTURER REMARKS	
P300 PLUMBING DETAILS (1 OF 2)	$\begin{array}{c c c c} & & & & & & & & & & & & & & & & & & &$	
P301 PLUMBING DETAILS (2 OF 2)	$\begin{bmatrix} 0 & 0 \\ 0 $	
PLUMBING SYMBOLS LIST		
	MIN. MAX. MIN. MAX. MIN. MAX. MIN. MAX.	
	SANITARY BUILDING  A A A A A A A A A A A A A A A A A A A	
	SANITARY BRANCHES  A A A A A A A A A A A A A A A A A A A	
HOT WATER RETURN PIPING	VENT STACKS I A A A A A A A A A A A A A A A A A A	
GAS PIPING	VENT BRACHES   A A A A A A A A A A A A A A A A A A	
	C.W. (SERVICE)       C.W. (SERVICE)     Image: Comparison of the servine of	
	C.W (DISTRIBUTION)	
	H.W (DISTRIBUTION)	
	GAS (DISTRIBUTION)	
	FLUE POWER VENTING  A  A A A A A A A A A A A A A A A A A	ATION.
	INDIRECT WASTE  A A A A A A A A A A A A A A A A A A A	
	NOTES:- 'A' - PROVIDE DEDUCT ALTERNATE PRICE TO INSTALL ALTERNATE MATERIAL.	
	ALL MATERIAL INSTALLED WITHIN A PLENUM ARE TO HAVE A 25 FLAME SPREAD & 50 SMOKE DEVLOPED WHEN TESTED ACCORDING TO ASTM E84 OR BE INSULATED WITH 3M FIRE BARRIER PLENUM WRAP 5A+, OR APPROVED EQUAL. SO AS TO COMPLY WITH THE ABOVE REQUIREMENTS.	
GAS PLUG VALVE		
4	AD AREA DRAIN           AD         AREA DRAIN         TAG         DESCRIPTION         MAKE         MODEL         FAUCET         PIPING CONNECTIONS         COMMENTS	
	AFF ABOVE FINISH FLOOR	
	BFP       BACK FLOW PREVENTER       STAINLESS STELL, SELF -RIMMING, SINGLE       STAINLESS STELL, SELF -RIMMING, SINGLE         CS-1       COMPARTMENT SINK. FURNISH SINK. WITH TOP       ELKAY       LRDQ2521       SYMMONS         1/2"       1/2"       1/2"       1-1/2"       1-1/2"	
	BT BATH TUB MOUNT SINGLE, PULL- OUT, ADA FAUCET	
	CO     CLEANOUT     CS-3     3-COMPARTMENT SINK       NA     NA     NA     3/4"     3/4"     2"	
	CODP CLEAN OUT DECK PLATE CONNECT TO THE GREASE INTERCEPTOR.	
— – — — — SHOCK ABSORBER		
BALANCING VALVE	DW DOWN WALL HUNG, STAINLESS STEEL, HAND WASH SINK. FURNISH WITH WALL MOUNT TWO HANDLE HS-1 HS-1 HS-1 ADA FAUCET	
	EXAMPLES ADA FAUCE 1 EQUAL. PROVIDE TRAP INSULATION KITS.	
	EXIST. EXISTING WALL HUNG, VITREOUS CHINA LAVATORY FURNISH UTH WIDESPREAD, TWO HANDLE ADA FAUCET AMERICAN STANDARD 0356.015 MOEN 1-1/2" 1-1/2" PROVIDE WITH ASSE 1070 THERMOSTIC MIXING VALVE HONYWELL AM100C1070 OR	
	FD     FLOOR DRAIN     DROP_INI VITREOUS CHINALAVATORY FURNISH	
POINT OF DISCONNECTION	GAS GAS LAVE OF THE VITE COSCINING LAVATOR TO DIVISIT AMERICAN STANDARD 0475.020 MOEN 3/8" 3/8" 1-1/2" PROVIDE WITH ASSE 1070 THERMOSTIC MIXING VALVE HONYWELL AM100C1070 OR	
	GR     GAS RANGE       GR     GAS RANGE       ADA COMPLIANT ELONGATED. PRESSURE ASSISTED       PROVIDE WITH A SPLIT FRONT FLONGATED SEAT	
	HW     HOT WATER     WATER CLOSET WITH 1.1 GPH FLUSH FLOOR OUTLET     AMERICAN STANDARD     1/2"     NA     INTEGRAL     2"     COORDINATED FLUSH CONTROL LOACTION WITH OPEN SIDE OF THE WATER CLOSET.	

GREASE INTERCEPTOR SCHEDULE					
ITEM	QUANTITY	MANUFACTURER& MODEL NO.	DESCRIPTION		
GI-1	1	SCHIER GB-2	OUTOOR, 50 GPM FLOW RATE (RECESSED ON GROUND)		

TYP. ST V W WC WM NIC BACKFLOW PREVENTORS/VACUUM BREAKERS SCHEDULE DESCRIPTION MANUFACTURER MODEL REMARK DOMESTIC WATER SERVICE WATTS LF009QT REDUCED PRESSURE ZONE ASSEMBLY DUAL CHECK ASSE 1024 COFFEE BREWERT LF7 WATTS

HOT WATER RETURN HOT WATER HEATER KITCHEN SINK LAVATORY OVERFLOW DRAIN PUMP DISCHAGE ROOF DRAIN SOIL SANITARY SHOWER SQUARE FEET TYPICAL STORM VENT WASTE WATER CLOSET WASHING MACHI NOT IN CONTRACT

HWR

HWHT

KS

LAV

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SQ.FT

					<b>N</b>				
TAG	DESCRIPTION	MAKE	MODEL	FAUCET		PIPING CON	NECTIONS		COMMENTS
					COLD	НОТ	TRAP	VENT	COMMENTS
CS-1	STAINLESS STELL, SELF -RIMMING, SINGLE COMPARTMENT SINK.FURNISH SINK. WITH TOP MOUNT SINGLE, PULL- OUT, ADA FAUCET	ELKAY	LRDQ2521	SYMMONS S-2610	1/2"	1/2"	1-1/2"	1-1/2"	
CS-3	3-COMPARTMENT SINK	NA	NA	NA	3/4"	3/4"	2"		DRAIN INDIRECTLY TO FLOOR SINK WITH APPROVED AIR GAP AND THEN CONNECT TO THE GREASE INTERCEPTO
HS-1	WALL HUNG, STAINLESS STEEL, HAND WASH SINK. FURNISH WITH WALL MOUNT TWO HANDLE ADA FAUCET	ELKAY	CHSB1716	ELKAY LKB400 W/0.5 GPM AERATOR	1/2"	1/2"	1-1/2"	1-1/2"	PROVIDE WITH ASSE 1070 THERMOSTIC MIXING VALVE HONYWELL AM100C1070 EQUAL. PROVIDE TRAP INSULATION KITS
LAV-1	WALL HUNG, VITREOUS CHINA LAVATORY FURNISH WITH WIDESPREAD, TWO HANDLE ADA FAUCET 0.5 GPM	AMERICAN STANDARD	0356.015	MOEN 8924 W/0.5 GPM AERATOR	3/8"	3/8"	1-1/2"	1-1/2"	PROVIDE WITH ASSE 1070 THERMOSTIC MIXING VALVE HONYWELL AM100C1070 EQUAL.PROVIDE TRAP INSULATION KITS
LAV-2	DROP-IN, VITREOUS CHINA LAVATORY FURNISH WITH WIDESPREAD, TWO HANDLE ADA FAUCET 0.5 GPM	AMERICAN STANDARD	0475.020	MOEN 8924 W/0.5 GPM AERATOR	3/8"	3/8"	1-1/2"	1-1/2"	PROVIDE WITH ASSE 1070 THERMOSTIC MIXING VALVE HONYWELL AM100C1070 EQUAL
WC-1	ADA COMPLIANT ELONGATED. PRESSURE ASSISTED WATER CLOSET WITH 1.1 GPH FLUSH. FLOOR OUTLET	AMERICAN STANDARD	2467.100		1/2"	NA	INTEGRAL	2"	PROVIDE WITH A SPLIT FRONT ELONGA COORDINATED FLUSH CONTROL LOACT OPEN SIDE OF THE WATER CLOSET.
WC-2	CHILDREN'S HEIGHT (10") WATER CLOSET WITH 1.28 GPF FLUSH. FLOOR OUTLET.	AMERICAN STANDARD	2282.001		1"	NA	INTEGRAL	2"	PROVIDE WITH A SPLIT FRONT SEAT AMERICAN STANDARD 5001G.005. FLUSH SHALL HAVE 1.5" CLEARANCE BETWEEN COMPLIANT GRAB BAR MOUNTING- MAY CUSTOM HEIGHT FLUSH VALVE STEM.
MS-1	MOLDED STONE MOP SERVICE BASIN 24"X24"X10" WITH CHROME PLATED SERVICE FAUCET WITH BRACE HOSE THREAD ON SPOUT & INTERGAL VACCUM BREAKER	CRANE/ FIAT	MSB2424	FIAT 830 AA	1/2"	1/2"	3"	2"	
WF-1	DUEL HEIGHT, BARRIER- FREE, WALL MOUNT WATERCOOLER WITH FILTER & BOTTLE FILLER , 8 GPH	ELKAY	LZSTL8WSLK		3/8"	NA	1-1/4"	1-1/4"	
WF-2	OUTDOOR, FREEZE RESISTANT, WALL MOUNTED DRINKING FOUNTAIN.	ELKAY	LK4405FRK		3/8"	NA	1-1/4"	1-1/4"	COORDINATE COLOR WITH ARCHITEC
WM-1	WASHING MACHINE & DRYER	NA	NA		1/2"	1/2"	1-1/2"	1-1/2"	COORDINATE WITH MECHANICAL AND VENT AND POWER REQUIREMENTS
CM-1	COFFEE MAKER	-	-	-	3/8"	NA	NA	NA	PROVIDE BACKFLOW PREVENTION ON
FD-1	FLOOR DRAIN WITH LIGHT DUTY, 5" DIA, ROUND, NICHEL BRONZE TOP AND 2" OUTLET	ZURN	EZ1-PV2		NA	NA	2"	1-1/2"	PROVIDE WITH ASSE 1072 TRAP SEAL P DEVICE, SURESEAL OR EQUAL
FD-2	7" DIA MEDIUM DUTY FLOOR DRAIN FOR UTILITY ROOMS	ZURN	Z507-3NH		NA	NA	3"	2"	PROVIDE WITH ASSE 1072 TRAP SEAL P DEVICE, SURESEAL OR EQUAL
HB-1	ANIT-SIPHON, AUTOMATIC DRAINING NON FREEZE WALL HYDRANT WITH INTEGRAL BACKFLOW PREVENTER	ZURN	Z1321-C		3/4"	NA	NA	NA	PROVIDE SHUTOFF VALVE IN PLENUM
FS-1	FLOOR SINK 12" X 12", 3" OUTLET	ZURN			NA	NA	3"	2"	

) NO. OF EXPANSION TANK 1 1 ARKS NDFOS AQUASTAT SMER 599388. REMARKS -LEAD FREE VAST COPPER SILICON ALLOY BODY -ASSE 1017 LISTED -CSA APPROVED		
) NO. OF EXPANSION TANK 1 1 ARKS NDFOS AQUASTAT SMER 599388. REMARKS -LEAD FREE VAST COPPER SILICON ALLOY BODY -ASSE 1017 LISTED -CSA APPROVED		
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## BUILDING DEPARTMENT PLUMBING NOTES

ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT WATER DISTRIBUTION PIPING SYSTEMS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2015 INTERNATIONAL PLUMBING CODE.

- 1. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 2015 TABLE 702.2
- 2. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION PC 305
- 3. TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION PC 306
- 4. RODENT PROOFING AS PER PER SECTION PC 304
- 5. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 303, PC 605, PC 702, PC 902, PC
- 6. EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTERS 4, 5, 6, 7 AND 9.
- 7. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER IPC 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE **REQUIREMENTS OF SECTION PC 708**
- 8. DRAINAGE PIPE CLEANOUTS AS PER SECTION PC 708.
- 9. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS PER SECTION PC 308
- 10. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 SECTION PC 601-603, 604, 606, 607, 608, 610
- 11. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 SECTION PC 701, 704, 705, 706, 707, 708, 711.
- 12. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 9 SECTIONS PC 901 THROUGH PC 912 THROUGH PC 917
- 13. GAS PIPING INSTALLATION SHALL IN ACCORDANCE WITH 2015 IFGC.

# PLUMBING SPECIFICATIONS:

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS

- 1.01 SCOPE
- A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
- B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.
- C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.
- D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.
- F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS. THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.
- G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.
- H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.
- MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.
- THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.
- K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

## 1.02 SUBMITTALS

- A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.
- 1. PIPE AND FITTINGS 2. VALVES
- HANGERS AND SUPPORTS 4. PLUMBING PIPING LAYOUT
- TESTS
- PLUMBING FIXTURES WATER HEATERS & ACCESSORIES
- MIXING VALVES 9. ALL SCHEDULED PLUMBING EQUIPMENT
- B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR
- THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.
- C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.
- D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM. THE CONTRACTOR SHALL BE LIABLE FOR OMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.
- E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.
- F. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY
- G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL NSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS- BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.
- H. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

1.03 SUBSTITUTIONS

- A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURER'S EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.
- B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.05 DEFINITIONS

- A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.
- B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.
- C. PROVIDE: TO FURNISH AND INSTALL.
- D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.
- E. REFER TO THE NATIONAL STANDARD PLUMBING CODE FOR ADDITIONAL DEFINITIONS.

1.06 DRAWINGS

- A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.
- B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.
- C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.
- D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.
- E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.
- F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS. 1.07 PRODUCTS
- A. DOMESTIC WATER PIPING:
- 1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD- DRAWN COPPER TUBE.
- 2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE WROUGHT COPPER OR CAST BRASS
- 3. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
- 4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
- 5. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER- SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
- 6. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY- APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY- APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH ENERGY CONSERVATION CODE 2015 SECTION C403.3.11 REFER BELOW TABLE.

MINIMUM PIPE INSULATION THICKNESS NOMINAL PIPE OR TUBE INSULATION CONDUCTIVITY FLUID SIZE (INCHES) OPERATING **TEMPERATURE** RANGE AND CONDUCTIVITY | MEAN RATING <1-1/2 <4 USAGE (°F) <1 BTU IN./ |TEMPERATURE,| <1 | to to to <8 <1-1/2 <4 <8 (H· FT2· °F) 105-140 0.21-0.28 1.0 1.0 1.5 1.5 1.5 100 75 0.21-0.27 40-60 0.5 0.5 0.5 0.5 0.5

7. WATER-HEATING EQUIPMENT AND HOT WATER STORAGE TANKS SHALL MEET THE MINIMUM PERFORMANCE REQUIREMENTS GIVEN IN THE IECC 2015. SECTION C404.2, TABLE 404.2. THE EFFICIENCY SHALL BE VERIFIED THROUGH DATA FURNISHED BY THE MANUFACTURER OF THE EQUIPMENT OR THROUGH CERTIFICATION UNDER AN APPROVED CERTIFICATION PROGRAM.

8. HW SYSTEPIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2015 C404.5, THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE (INCHES)	MAXIMUM PIPING LENGTH			
	PUBLIC LAV	OTHER FIXTURE		
1/2"	2'	43'		
3/4"	0.5'	20'		
1"	0.5'	13'		
1-1/4"	0.5'	8'		
1-1/2"	0.5'	6'		
2" OR LARGER	0.5'	4'		

9. WATER DISTRIBUTION SYSTEM AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2015 C404.7, HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED-WATER SUPPLY PIPE BACK TO THE HEATED-WATER SOURCE THROUGH A COLD-WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM. PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:

a. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.

b. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).

10. AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2015 C404.6.1 HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER N THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.

11. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER IECC 2015 C404.5.1. THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

B. SANITARY AND VENT PIPING:

- 1. ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.
- 2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
- 3. PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE INSTALLED IN CEILING PLENUM SPACES.
- ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

. SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.

PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

AS PER IECC 2015 C404.3 STORAGE TANK TYPE WATER HEATERS AND HOT WATER STORAGE TANKS THAT HAVE VERTICAL WATER PIPES CONNECTING TO THE INLET AND OUTLET OF THE TANK SHALL BE PROVIDED WITH INTEGRAL HEAT TRAPS AT THOSE INLETS AND OUTLETS OR SHALL HAVE PIPE CONFIGURED HEAT TRAPS IN THE PIPING CONNECTED TO THOSE INLETS AND OUTLETS.

C. HANGERS AND SUPPORTS:

- 1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
- 2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
- 3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
- 4. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL. STATE AND LOCAL CODES AND STANDCSARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
- 5. UNLESS OTHERWISE INDICATED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION, THE FOLLOWING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS AS REQUIRED BY THE BOCA NATIONAL BUILDING CODE, SECTION 1610.6.4: ALL EQUIPMENT AND MACHINERY, ALL NEW PIPING 2-1/2" AND LARGER (1-1/4" AND LARGER INBOILER/MECHANICAL ROOMS) WITH HANGERS GREATER THAN 12" IN LENGTH FROM THE TOP OF PIPE TO THE STRUCTURE.
- 6. SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

# D. VALVES:

- 1. PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PRO BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4". PROVIDE ( VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT-OF
- 2. ALL FIXTURES WITH THE EXCEPTION O FLUSHOMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.
- 3. ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.
- 4. ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.
- 5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQU FOR VALVE ACCESS.
- 6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.
- E. SLEEVES AND ESCUTCHEONS:
- 1. SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGH GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAGE GALVANIZE SHEET METAL WITH LOCK SEAM JOINTS. USG THERMAFIBER SAFING INSULA
- SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE. 2. PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILINGS, AND FLOORS AND SHALL BE MINIMUM 2 GAGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED ARFAS

F. DRAINAGE ACCESSORIES F.

- 1.GENERAL a. INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED
- b. SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESIST FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.
- G. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILIN SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.
- H. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTIONWITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHOR GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATE CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEE 30'-0" IN LENGTH.
- IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.
- J. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTIN BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RIS
- K. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.
- . IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
- M. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.
- N. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.
- O. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENE CONTRACTOR.
- P. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.
- Q. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILING SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRII CAULK OR APPROVED EQUAL.
- R. WHEN THE WATER PIPING SYSTEM IS COMPLETE. THOROUGHLY R. FLUSH ALL SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VA STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.
- S. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS,
- T. FLOORS, AND CEILINGS. WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SH BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUS WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOS AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.
- U. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHOMETER VALVES AND QUICK-CLOSING VALVES.
- V. MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBIN SYSTEM COMPONENTS AND EQUIPMENT.

2. INSTALLATION

- 2.01 GENERAL
- A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE B A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.
- B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.
- C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
- D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND TH CONSTRUCTION SCHEDULE.
- E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPF
- F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY
- G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS. H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE
- OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK O ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.
- I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

ON WIDE GATE F	J.	PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB	
THE S	К.	THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE PROPERTY MANAGER IS REQUIRED. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS	
IRED	L	WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.	
	2.0 a.	2 ABOVE GRADE INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.	
ED TION 20	b.	ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT- OFF VALVES AND ALL LOW POINTS IN PIPING.	
	C.	USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.	NV EMGINIEEDQ
6	2.0	3 INSULATION	
TANT E OF NG		COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 11/4" AND 11/2" THICK FOR PIPE SIZE 11/2" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH 1/2" THICK FOR PIPE SIZE UP TO 11/4" AND 1" THICK FOR PIPE SIZE 11/2" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULAT-ED FITTING COVERS. INSTALL ALL	382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGIINEERS.COM
RS, ER ED		INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE 2015 INTERNATIONAL BUILDING CODE REQUIREMENT OF A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50. ALL PIPE INSULATION SHALL COMPLY WITH 2015 INTERNATIONAL ENERGY CONSERVATION CODE.	
NGS. SERS	A.	3. TESTING AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.	Celebree
olino.	В.	TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.	
	C.	THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM, OR PORTION OF THE SYSTEM, HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING, EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR WALL PARTITION OR BEAM	SCHOOL
AND ERAL	D.	THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.	
is Ier Dirt, Alve	E.	ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES NECESSARY TO CONDUCT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.	
ALL	F.	WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.	
SH SED	G.	ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.	
	H.	ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.	
NG	I.	ALL EQUIPMENT WILL BE FACTORY TESTED.	PLUMBING SPECIFICATION
	J.	CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.	
Y	K.	REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.	
0	L.	TESTING REQUIREMENTS a.TEST ALL DOMESTIC WATER PIPING HYDROSTATICALLY TO 125 PSIG. b.HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO VARIATION FOR 120 MINUTES. c.TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER. d.THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE TEST AREA AND ADJACENT	
ΗE	М	TENANT OR ESB SPACES. REFILL ENTIRE POTABLE HOT AND COLD WATER SLIPPLY SYSTEM WITH CHLODINE	
D	.vi.	SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS	
Ξ	N.	THOUATED. THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.	11/29/2023     ISSUED FOR CONSTRUCTION       REV.     DATE     REMARKS
)F	4. A.	WARRANTY EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.	JOB NUMBER:       2022-02.02         DATE:       01/21/2023         DRAWN BY:       NYE         CHECKED BY:       NYE         SHEET NO.       CONCUMPATION
			P002





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# $1 \frac{\text{PLUMBING SUPPLY PLAN}}{1/8" = 1'-0"}$











![](_page_25_Figure_0.jpeg)

THESE PLANS ARE COPYRIGHTED AND ARE SUBJECT TO COPYRIGHT PROTECTIONS AS AN "ARCHITECTURAL WORK" UNDER SEC. 102 OF THE COPYRIGHT ACT, 17 U.S.C. AS AMENDED DECEMBER 1990 AND KNOWN AS THE ARCHITECTURAL WORKS COPYRIGHT ACT OF 1990.

![](_page_26_Figure_0.jpeg)

FIRE ALA	FIRE ALARM SYMBOLD LIST			ARM DRAWING INDEX
SYMBOLS	DESCRIPTION		DWG.#	DRAWING NAME
FACP	FIRE ALARM CONTROL PANEL		FA001	FIRE ALARM SYMBOLS AND GENER
FAAP	FIRE ALARM ANNUNCIATOR PANEL		FA101	FIRE ALARM FLOOR PLAN
FSD	FIRE SMOKE DAMPER		FA201	FIRE ALARM RISER DIAGRAM
Н	HEAT DETECTOR			
S	SMOKE DETECTOR	_		
DS	DUCT SMOKE DETECTOR			
CO	CARBON MONOXIDE DETECTOR COMBINATION WITH TEMPORAL 4 SOUNDER BASE			
S/CO	SMOKE/CARBON MONOXIDE DETECTOR COMBINATION DEVICE			
нЦ	FIRE ALARM 75 CD VISUAL NOTIFICATION DEVICE			
MF	MANUAL FIRE ALARM PULL STATION			
ĒQ	FIRE ALARM 75 CD AUDIO/VISUAL NOTIFICATION DEVICE			
CM	CONTROL MODULE			
$\triangleright$	TELEPHONE OUTLET			

FIRE ALARM GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND PLACE IN OPERATING CONDITION, A COMPLETE FIRE ALARM SYSTEM AS SPECIFIED IN THIS SECTION, THE FURNISHING OF ALL LABOR, EQUIPMENT, MATERIALS AND THE PERFORMANCE OF ALL OPERATIONS ASSOCIATED WITH THE INSTALLATION OF THE FIRE ALARM S SHOWN ON THE CONTRACT DRAWINGS AND HEREIN SPECIFIED.

2. THE COMPLETE SYSTEM INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE NATIONAL FIRE SAFETY CODE, THE (ADA) AMERICAN DIS/ THE NATIONAL ELECTRICAL CODE, REQUIREMENTS, AND ALL THE REQUIREMENTS OF THE LOCAL FIRE DEPARTMENT.

3. THE REQUIREMENTS OF THE GENERAL CONDITIONS AND THE SUPPLEMENTARY CONDITIONS OF THE CONTRACT DOCUMENTS SHALL APPLY TO ALL WORK SPECIFIED SECTION.

4. THE WORK COVERED UNDER THIS SECTION OF THE CONTRACT SPECIFICATIONS SHALL BE COORDINATED WITH ALL OTHER WORK SPECIFIED IN THE OTHER SECTION CONTRACT SPECIFICATIONS.

5. THE FIRE ALARM SYSTEM DESCRIBED HEREIN AND AS SHOWN ON THE PLANS; SHALL BE WIRED, CONNECTED, TESTED AND LEFT IN FIRST CLASS OPERATING CONDITION ELECTRICAL CONTRACTOR SHALL PROVIDE THE PROPER CONTROL EQUIPMENT, CONTROL INTERFACE ANNUNCIATORS, ALARM INITIATING DEVICES, ALARM NOTIFICA APPLIANCES, WIRING, TERMINATIONS, ELECTRICAL BOXES, AND ALL OTHER NECESSARY MATERIALS FOR A COMPLETE OPERATING SYSTEM.

![](_page_27_Figure_7.jpeg)

	FIRE ALARM SPECIFICATIONS	5. ELECTRIC WIRING AND POWER SUPPLIES
	A. FIRE ALARM OPERATION:	ELECTRICAL WRING AND COMPONENTS SHALL CONFORM TO THE FOLLO STANDARDS:
RALNOTES	1. UPON ACTIVATION OF ANY MANUAL PULL STATION THE FOLLOWING SHALL OCCUR:	INSTALLATION OF CONDUIT, WIRE, SLEEVES, OUTLET BOXES, INSULATING BUSHINGS, SYSTEM CABINETS, TERMINAL BOXES, PULL BOXES, JUNCTIO BOXES, INSERTS, ANCHORS, SYSTEM DEVICES AND SIMILAR ELEMENTS, S
	a. AUDIBLE AND VISUAL ANNUNCIATION OF ALARM TYPE AND LOCATION AT THE FIRE COMMAND STATION ALONG WITH A HARD COPY OF ALL EVENTS AND A FLASHING FIRE SIGNAL.	BE IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS OF THESE SPECIFICATIONS AND IN ACCORDANCE WITH THE APPLICABLE SECTIONS LATEST ADAPTED NEC CODE FOR SIGNALING SYSTEMS, AND ALL AUTHOI HAVING JURISDICTION.
	b. AUDIBLE AND VISUAL ANNUNCIATION OF ALARM TYPE AND LOCATION AT THE MECHANICAL CONTROL CENTER.	COMPONENTS SHALL BE LISTED OR APPROVED BY BSA/MEA AND UNDER WRITERS LABORATORIES, INC. (UL), OR FACTORY MUTUAL (FM). ALL LIFE
	c. AUDIBLE AND VISUAL ANNUNCIATION OF ALARM DEVICE TYPE AND LOCATION AT THE FIRE SAFETY DIRECTOR'S LOCATION.	SYSTEM WIRING AND SYSTEM OPERATION SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF LOCAL OFFICIALS, WHOSE APPR ON THE COMPLETED SYSTEM IS REQUIRED.
	d. FLASH ALL VISUAL SIGNALS (STROBES) AND SOUND STANDARD EVACUATION ALARM SIGNAL ON THE FLOOR OF INCIDENCE AND THE FLOOR ABOVE.	ALL CABLE USED SHALL BE No. 16 AWG MINIMUM. MULTICONDUCTOR CAE SHALL BE PROVIDED WITH A MINIMUM OF 10% SPARE PAIRS.
	e. SOUND STANDARD INQUIRY TONE ON ALL FLOORS OTHER THAN THE ALARM FLOOR AND THE FLOOR ABOVE.	ALL CABLING SHALL COMPLY WITH UL-1424 AND UL910. ADDITIONALLY, CA SHALL CONFORM TO THE FOLLOWING:
	f. SEND THE APPROPIATE SIGNAL TO THE CENTRAL STATION.	a. A MINIMUM TEMPERATURE RATING OF 200° C.
	2. THE ACTIVATION OF ANY DUCT SMOKE DETECTOR OR AIR CONDITIONING AREA SMOKE DETECTORS SHALL CAUSE THE FOLLOWING TO OCCUR:	b. A MINIMUM AVERAGE INSULATION THICKNESS OF 15 MILS.
	a. AUDIBLE AND VISUAL ANNUNCIATION OF ALARM TYPE AND LOCATION AT THE FIRE COMMAND STATION ALONG WITH A HARD COPY OF ALL EVENTS AND A FLASHING FIRE SIGNAL.	c. A MINIMUM AVERAGE JACKET THICKNESS OF 25 MILS. d. THE COLOR OF THE CABLE SHALL BE RED.
	<ul> <li>b. AUDIBLE AND VISUAL ANNUNCIATION OF ALARM TYPE AND LOCATION AT THE MECHANICAL CONTROL CENTER.</li> </ul>	e.THE CABLE SHALL BE A TYPE FPLP (PLENUM TYPE). f. THE CABLE SHALL BE VISIBLY MARKED EXTERNALLY THAT IT MEETS TH
	c. AUDIBLE AND VISUAL ANNUNCIATION OF ALARM DEVICE TYPE AND LOCATION AT THE FIRE SAFETY DIRECTOR'S LOCATION.	REQUIREMENTS AND IS LISTED BY UL. g. THE CABLE SHALL HAVE THE FOLLOWING MARKINGS:
	d. FLASH ALL VISUAL SIGNALS (STROBES) AND SOUND STANDARD EVACUATION ALARM SIGNAL ON THE FLOOR OF INCIDENCE AND THE FLOOR ABOVE.	COMPANY NAME "TYPE FPLP"
TO INCLUDE SYSTEM, AS	e. SOUND STANDARD INQUIRY TONE ON ALL FLOORS OTHER THAN THE ALARM FLOOR AND THE FLOOR ABOVE.	SIZE (AWG) TEMPERATURE RATING THE UL REGISTER MARK
SABILITIES ACT,	f. SEND THE APPROPIATE SIGNAL TO THE CENTRAL STATION.	6. AUTOMATIC SMOKE DETECTORS
D IN THIS	g. RELEASE ALL FAIL-SAFE STAIR RE-ENTRY DOORS, ALL FAIL-SAFE ELECTRIC LOCKING DEVICES, AND ALL ELECTRICALLY HELD OPEN FIRE OR SMOKE DOORS IN THE PATH OF EGRESS.	PRODUCTS OF COMBUSTION DETECTORS SHALL OPERATE ON THE IONIZ PRINCIPLE TO DETECT THE PRESENCE OF COMBUSTION GASES, FIRE AN SMOKE. IT SHALL BE OF THE TWO (2) CHAMBER DESIGN. THE FIRST, OR
INS OF THE	h. STOP THE AIR SUPPLY INTO AND RETURN AIR FROM THE FLOOR OF INCIDENCE ASSOCIATED FAN.	REFERENCE CHAMBER, SHALL COMPENSATE AGAINST SENSITIVITY CHAP DUE TO TEMPERATURE, BAROMETRIC PRESSURE AND HUMIDITY VARIATI THE SECOND, OR SENSING CHAMBER, SHALL BE OPEN TO THE OUTSIDE
TION. THE ATION	3. THE ACTIVATION OF ANY OTHER AUTOMATIC ALARM INITIATING DEVICE (IE. WATER FLOW, AREA SMOKE DETECTOR AND/OR HEAT DETECTOR) SHALL CAUSE THE FOLLOWING TO OCCUR:	ELEMENTS. THE DETECTOR SHALL CONTAIN NO HOT FILAMENT TUBES OF MOVING PARTS, AND SHALL PLUG INTO A BASE HAVING AN LED ALARM INDICATING LAMP. THE DETECTOR SHALL NOT REQUIRE REPLACEMENT OF READJUSTMENT AFTER A FIRE ALARM HAS BEEN GIVEN. THE DETECTOR
	a. AUDIBLE AND VISUAL ANNUNCIATION OF ALARM TYPE AND LOCATION AT THE FIRE COMMAND STATION ALONG WITH A HARD COPY OF ALL EVENTS AND A FLASHING FIRE SIGNAL.	DETECTORS SHALL DE INDIVIDUALLY ADJUSTABLE. AUTOMATIC SMOKE DETECTORS SHALL OPERATE ON THE PHOTO-ELECTRONIC PRINCIPLE, S RESPOND TO A PREDETERMINED SMOKE DENSITY. A NOMINAL 1.5% LIGH OBSCURATION PER FOOT IS CONSIDERED MAXIMUM DETECTED WITH A S
	<ul> <li>AUDIBLE AND VISUAL ANNUNCIATION OF ALARM TYPE AND LOCATION AT THE MECHANICAL CONTROL CENTER.</li> </ul>	STATE LIGHT EMITTING DIODE AND A HIGH-SPEED LIGHT SENSING PHOTO WITHIN A LIGHT SENSING CHAMBER. COMPONENTS SHALL BE LONG-LIFE STATE, WITH A DESIGN LIFE IN EXCESS OF 40 YEARS. THIS INCLUDES THE ON/ALABM LED, WHICH IS BUILSED UNDER NORMAL CONDITIONS AND CON
	c. AUDIBLE AND VISUAL ANNUNCIATION OF ALARM DEVICE TYPE AND LOCATION AT THE FIRE SAFETY DIRECTOR'S LOCATION.	IN ALARM.
	d. FLASH ALL VISUAL SIGNALS (STROBES) AND SOUND STANDARD EVACUATION ALARM SIGNAL ON THE FLOOR OF INCIDENCE AND THE FLOOR ABOVE.	IONIZATION PRINCIPLES. IN ADDITION, THIS DEVICE SHALL BE PROVIDED V FULL LENGTH SAMPLING TUBES IN LOCATIONS AS DIRECTED BY THE HVA
4'	e. SOUND STANDARD INQUIRY TONE ON ALL FLOORS OTHER THAN THE ALARM FLOOR AND THE FLOOR ABOVE.	UNIT USING ANALOG AND/OR INTELLIGENT TECHNOLOGY. INCLUDE IN SH DRAWING SUBMISSION THE METHODS AND EXPECTED LEVELS FOR TEST DEVICE SENSITIVITY AND REQUIRED VELOCITY. WITH VERIEICATION OF T
(MIN)	f. SEND THE APPROPIATE SIGNAL TO THE CENTRAL STATION.	STATED VALUES INCLUDED IN THE SYSTEM SITE APPROVAL AND TESTING PROCEDURE. THE DUCT TYPE SMOKE DETECTORS SHALL BE EQUIPPED
(MAX)	LOCKING DEVICES, AND ALL ELECTRICALLY HELD OPEN FIRE OR SMOKE DOORS IN THE PATH OF EGRESS.	<ol> <li>AUXILIARY CONTACTS FOR REMOTE INDICATION.</li> <li>ALL DEVICES THAT ARE RECESSED OR SEMI-RECESSED INTO TWO-HOUR DATED DARTITIONS SHALL:</li> </ol>
	<ol> <li>ACTIVATION OF AN ELEVATOR SMOKE DETECTOR SHALL, IN ADDITION TO 20-2g, INITIATE ELEVATOR RECALL.</li> </ol>	a. PENETRATE INTO THE PARTITION A MAXIMUM OF 2-1/2 INCHES.
ŧ	5. TENANT FIRE PROTECTION SUB-SYSTEMS SHALL BE MONITORED BY THE BUILDING CLASS 'E' FIRE ALARM SYSTEM AND UPON ALARM ACTIVATION SHALL. IN	b. ALLOW A MAXIMUM PENETRATION OF 25 SQUARE INCHES PER 10 SQUAR
	ADDITION TO THE SPECIFIC SUB-SYSTEM FUNCTIONS, PERFORM THE SAME FUNCTIONS AS DESCRIBED IN 10 THROUGH 11. 6. WHEN LOCATED WITHIN THE ROOM SERVED, LOCAL SUPPLEMENTARY AIR	8. ALL STROBES, SPEAKERS, SPEAKER/STROBES, SMOKE DETECTORS, DU AREA, OR HEAT SHALL BE BASE BUILDING STANDARD, COMPATIBLE WITH EXISTING CLASS "E" SYSTEM. DUCT TYPE SMOKE DETECTORS SHALL BE OF BEING INTERFACED WITH THE H V A C. FOUIPMENT AND ASSOCIATED
	CONDITIONING UNIT DUCT SMOKE DETECTORS SHALL STOP THE ASSOCIATED UNIT SYSTEM AND INDICATE AUDIBLE AND VISUAL SIGNALS AT THE FIRE COMMAND STATION	
		<ol> <li>ALL EQUIFMENT AND WINING STALE BE BRAMEA AFFROVED.</li> <li>10. ALL ELECTRICAL LOCKING SYSTEMS (IF ANY) INTERFACED WITH MEANS</li> </ol>
	<ul> <li>B. FIRE ALARM EQUIPMENT SPECIFICATIONS:</li> <li>1. ALL DEVICES AND WORK SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM</li> </ul>	EGRESS MUST FAIL-SAFE ON POWER FAILURE. PROVIDE CONNECTION CLASS 'E' SYSTEM'S DOOR RELEASE CIRCUIT. ALL COMPONENTS SHALI BSA/MEA APPROVED.
	SYSTEM AND HAVE B.S.A. APPROVAL.	C. FIRE ALARM INSTALLATION PROCEDURE:
	a. IF REQUIRED, FIRE ALARM SYSTEM STROBE PANELS SHALL BE B.S.A. APPROVED PANELS WITH INTEGRAL BATTERY BACK-UP. PANELS SHALL BE CAPABLE OF	<ol> <li>FURNISH AND INSTALL ALL NEW LIFE SAFETY DEVICES AND ASSOCIATE CABLING AND CONDUIT. CONDUIT SHALL FURNISHED AS REQUIRED BY (U.O.N.)</li> </ol>
	SUPPLYING AT LEAST 30 A.D.A. APPROVED, 75 CANDELA STROBES PER FLOOR. PANELS SHALL BE NON-LATCHING TYPE ALLOWING FOR MANUAL RESETTING OF PANEL FROM THE FIRE COMMAND STATION. CONTRACTOR SHALL PROVIDE ADDITIONAL STROBE CARDS & POWER SUPPLIES IN ORDER TO SERVE ALL	2. COORDINATE AND PAY FOR ALL REQUIRED MODIFICATIONS AND CONNECTIONS TO THE EXISTING FIRE ALARM SYSTEM WHICH INCLUDE ARE NOT LIMITED TO THE FOLLOWING:
	ADDITIONAL DEVICES REQUIRED.	a. HARDWARE MODIFICATIONS TO FIRE COMMAND STATION DISPLAY PAN
	LOCAL UTILITY PANEL FOR A LIFE SAFETY STROBE PANEL. LOCATE THE CUT-OUT NEAR ITS ASSOCIATED POWER PANEL AND SIZE THE WIRES ACCORDING TO DENNISYLVANIA ELECTRICAL CODE EUSE CUT OUT SHALL BE DAINTED FIDE	b. MODIFICATIONS TO SYSTEM SOFTWARE.
	ALARM RED AND LABELED WITH A PHENOLIC NAME PLATE READING "VISUAL ALARM POWER" IN A LOCKABLE NEMA 1 ENCLOSURE. IT SHALL BE RATED FOR 120V-2P WITH A SOLID CORPER NEUTRAL BAR AND ALBN 200 EUSE	d. ADDITIONAL POWER FROM FUSED CUT-OUTS TO SERVE ADDITIONAL S
	3. FIRE STROBE LIGHTS	OR SUB-SYSTEM PANELS.
	FIRE ALARM STROBE LIGHTS, WHETHER IN COMBINATION WITH A SPEAKER UNIT,	3. PAY ALL REQUIRED FEES TO THE EXISTING FIRE ALARM SYSTEM VENDO MAKE ALL FINAL CONNECTIONS AND REVISE THE LIFE SAFETY RISER DI

FIRE ALARM STROBE LIGHTS, WHETHER IN COMBINATION WITH A SPEAKER UNIT, OR AS A STANDALONE DEVICE, SHALL HAVE A XENON STROBE OR EQUIVALENT, WITH A CLEAR OR WHITE LENS WITH A FINISHED WHITE PLATE, MAXIMUM PULSE DURATION OF 0.2 SECONDS (MAX DUTY CYCLE OF 40%), 75 CANDELA MINIMUM, FLASH RATE MINIMUM OF 1 HZ/MAXIMUM 3 HZ, AND A.D.A. AND B.S.A. APPROVAL. UNIT SHALL BE AS MANUFACTURED BY FARADAY, WHEELOCK OR AS APPROVED.

4.

5.

THE ASSEMBLY SHALL MOUNT ON A STANDARD OUTLET BOX. THIS DEVICE CAN BE MOUNTED AS AN INTEGRAL ASSEMBLY WITH SURFACE MOUNTED RE-ENTRANT LIFE SAFETY HORNS USING SPECIAL MOUNTING ASSEMBLY TO HORN, WHICH WILL NOT AFFECT THE RATED AUDIO-OUTPUT OF THE SPEAKER ATTACH TAP SETTING.

COMBINATION FIRE ALARM SPEAKER/FLASHING "FIRE" STROBE LIGHT UNITS SHALL BE AN INTEGRAL UNIT, COMBINING THE INDIVIDUAL FEATURES OF THE SPEAKER AND STROBE LIGHT DESCRIBED ABOVE.

4. ONE-WAY AUDIO ALARM DEVICES

RECESSED MOUNTED SPEAKERS SHALL BE OF THE DOUBLE RE-ENTRANT TYPE, WITH AN AUDIO POWER RATING OF 15 WATTS (SPEECH/MUSIC) AND A FREQUENCY RESPONSE OF 475 TO 14,000 HZ. IT SHALL HAVE A DISPERSION ANGLE OF 180 DEGREES AND THE SOUND PRESSURE LEVEL SHALL BE 102 DB AT 6. TEN FEET ON AXIS AT RATED POWER. THE SPEAKER SHALL HAVE A TRANSFORMER WITH POWER TAPS AT 0.9, 1.8, 3.8, 7.5 AND 15 WATTS. THE SPEAKER SHALL HAVE A FLANGE FOR FLUSH MOUNTING. PROVIDE, AT EACH FLUSH TYPE CEILING SPEAKER, A WATTE GRILLE WHICH MEETS THE APPROVAL OF THE ARCHITECT.

		,
ELECTRIC WIRING AND POWER SUPPLIES	7. SURVEY ALL SPACES PRIOR TO BID SUBMISSION, AND INCLUDE IN THE BID PROPOSAL, THE REPLACEMENT OF ALL LIFE SAFETY DEVICES WHICH WERE	
STANDARDS:	INTENDED TO BE REUSED, AND HAVE BEEN DESTROYED OR LOST DURING DEMOLITION.	
BUSHINGS, SYSTEM CABINETS, TERMINAL BOXES, PULL BOXES, JUNCTION BOXES, INSERTS, ANCHORS, SYSTEM DEVICES AND SIMILAR ELEMENTS, SHALL BE IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS OF THESE SPECIFICATIONS AND IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF LATEST ADAPTED NEC CODE FOR SIGNALING SYSTEMS, AND ALL AUTHORITIES	B. PROVIDE RIGID CONDUIT FOR BOTH POWER AND DATA CABLING ASSOCIATED WITH ALL SUB-SYSTEMS AND AS REQUIRED BY CODE. INCLUDE ALL RACEWAYS AS SHOWN ON THE PLANS AND AS DESCRIBED IN THE SPECIFICATIONS. PROVIDE CONDUIT FOR ALL FIRE ALARM CABLING WHICH IS EITHER RUN BELOW 8'-0" OR ROUTED WHERE SUBJECT TO DAMAGE.	
HAVING JURISDICTION. COMPONENTS SHALL BE LISTED OR APPROVED BY BSA/MEA AND UNDER- WRITERS LABORATORIES, INC. (UL), OR FACTORY MUTUAL (FM). ALL LIFE SAFETY	9. SEPARATELY ZONE LIFE SAFETY DEVICES AND CONNECT TO THE FIRE ALARM CLASS "E" SYSTEM SO THAT THE SYSTEM OPERATION AS DESCRIBED ABOVE IS PERFORMED IN CONFORMANCE WITH THE BUILDING CODE.	· •
ACCORDANCE WITH REQUIREMENTS OF LOCAL OFFICIALS, WHOSE APPROVAL ON THE COMPLETED SYSTEM IS REQUIRED.	10. FUSED CUTOUTS SHALL BE TAPPED AHEAD OF THE MAIN OF A 120 VOLT PANEL (SUBMIT LOCATION TO ENGINEER/ARCHITECT FOR REVIEW), AND BE MOUNTED IN AN ACCESSIBLE LOCATION ADJACENT TO THE PANEL FROM WHICH IT IS FED.	
ALL CABLE USED SHALL BE No. 16 AWG MINIMUM. MULTICONDUCTOR CABLE SHALL BE PROVIDED WITH A MINIMUM OF 10% SPARE PAIRS.	NEUTRAL BARS AND CONTAIN LPN FUSES AS REQUIRED. LABEL ALL FCO'S.	
ALL CABLING SHALL COMPLY WITH UL-1424 AND UL910. ADDITIONALLY, CABLING SHALL CONFORM TO THE FOLLOWING:	SHOP DRAWINGS AND MANUFACTURER'S DATA SHEETS SHALL BE SUBMITTED	
<ul><li>a. A MINIMUM TEMPERATURE RATING OF 200° C.</li><li>b. A MINIMUM AVERAGE INSULATION THICKNESS OF 15 MILS.</li></ul>	a. MANUFACTURER'S DRAWINGS, SHOWING ALL EQUIPMENT TERMINALS, WIRING DIAGRAMS, INSTALLATION INSTRUCTIONS AND OTHER PERTINENT	
C. A MINIMUM AVERAGE JACKET THICKNESS OF 25 MILS.	<ul><li>INFORMATION FOR ALL ITEMS BEING FURNISHED.</li><li>b. CATALOGUE CUTS OF EQUIPMENT AND SENSORS FURNISHED IN THIS SECTION,</li></ul>	
<ul><li>d. THE COLOR OF THE CABLE SHALL BE RED.</li><li>e.THE CABLE SHALL BE A TYPE FPLP (PLENUM TYPE).</li></ul>	INCLUDING (BUT NOT LIMITED TO) THE FOLLOWING:	
f. THE CABLE SHALL BE VISIBLY MARKED EXTERNALLY THAT IT MEETS THE ABOVE REQUIREMENTS AND IS LISTED BY UL.	SMOKE DETECTORS - SPACE MOUNTED.	
g. THE CABLE SHALL HAVE THE FOLLOWING MARKINGS:	HEAT DETECTORS (HEAT ACTUATED DEVICES).	
COMPANY NAME "TYPE FPLP"	VOICE ALARM AND COMMUNICATION SYSTEM EQUIPMENT.	
SIZE (AWG) TEMPERATURE RATING	MANUAL FIRE ALARM STATIONS.	NY ENGINEERS
AUTOMATIC SMOKE DETECTORS	FLASHING "FIRE" STROBE LIGHTS.	NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674.
PRODUCTS OF COMBUSTION DETECTORS SHALL OPERATE ON THE IONIZATION	c. A WRITTEN DESCRIPTION OF THE SYSTEM OPERATION FOR EACH ALARM	MIAMI, FL 33179
SMOKE. IT SHALL BE OF THE TWO (2) CHAMBER DESIGN. THE FIRST, OR REFERENCE CHAMBER, SHALL COMPENSATE AGAINST SENSITIVITY CHARGES DUE TO TEMPERATURE, BAROMETRIC PRESSURE AND HUMIDITY VARIATIONS. THE SECOND, OR SENSING CHAMBER, SHALL BE OPEN TO THE OUTSIDE	d. SUBMIT SAMPLES, AS DIRECTED, FOR APPROVAL.	PH-914.257.3455 WWW.NY-ENGIINEERS.COM
ELEMENTS. THE DETECTOR SHALL CONTAIN NO HOT FILAMENT TUBES OR MOVING PARTS, AND SHALL PLUG INTO A BASE HAVING AN LED ALARM INDICATING LAMP. THE DETECTOR SHALL NOT REQUIRE REPLACEMENT OR READJUSTMENT AFTER A FIRE ALARM HAS BEEN GIVEN. THE DETECTOR	e. SUBMIT A PARAGRAPH-BY-PARAGRAPH LETTER OF COMPLIANCE (OF THIS SPECIFICATION) FOR THE LIFE SAFETY SYSTEM, IDENTIFYING COMPLIANCE OR NON- COMPLIANCE AND REASONS FOR NON-COMPLIANCE.	
SENSITIVITY SHALL BE INDIVIDUALLY ADJUSTABLE. AUTOMATIC SMOKE DETECTORS SHALL OPERATE ON THE PHOTO-ELECTRONIC PRINCIPLE, SET TO RESPOND TO A PREDETERMINED SMOKE DENSITY. A NOMINAL 1.5% LIGHT OBSCURATION PER FOOT IS CONSIDERED MAXIMUM DETECTED WITH A SOLID	2. WIRE AND CABLE FOR POWER, SPRINKLER AND MOTOR CONTROL SHALL BE COPPER AND HAVE CURRENT CARRYING CAPACITY PER CODE REQUIREMENTS AND SHALL CONFORM TO THE STANDARDS OF THE UNDERWRITERS LABORATORIES, INC. CONDUCTOR SIZES SHALL NOT BE LESS THAN No 12 AWG	
STATE LIGHT EMITTING DIODE AND A HIGH-SPEED LIGHT SENSING PHOTO-DIODE WITHIN A LIGHT SENSING CHAMBER. COMPONENTS SHALL BE LONG-LIFE, SOLID STATE, WITH A DESIGN LIFE IN EXCESS OF 40 YEARS. THIS INCLUDES THE POWER ON/ALARM LED, WHICH IS PULSED UNDER NORMAL CONDITIONS AND CONSTANT	FOR POWER WORK AND No.14 AWG FOR SPRINKLER AND MOTOR CONTROL UNLESS OTHERWISE INDICATED OR SPECIFIED. VOLTAGE RATING OF CONDUCTORS SHALL BE 600 VOLTS. PLENUM RATED CABLE SHALL BE USED FOR ALL SIZES OF WIRE, UNLESS OTHERWISE NOTED ON PLANS.	Celebree
DUCT TYPE DETECTORS SHALL BE PRODUCT-OF-COMBUSTION DETECTORS WITH	3. MANUAL PULL STATIONS	SCHOOL
IONIZATION PRINCIPLES. IN ADDITION, THIS DEVICE SHALL BE PROVIDED WITH FULL LENGTH SAMPLING TUBES IN LOCATIONS AS DIRECTED BY THE HVAC SECTION OF THE SPECIFICATIONS. THIS DEVICE SHALL BE A FULL ADDRESSABLE UNIT USING ANALOG AND/OR INTELLIGENT TECHNOLOGY. INCLUDE IN SHOP DRAWING SUBMISSION THE METHODS AND EXPECTED LEVELS FOR TESTING THE DEVICE SENSITIVITY AND REQUIRED VELOCITY, WITH VERIFICATION OF THE STATED VALUES INCLUDED IN THE SYSTEM SITE APPROVAL AND TESTING	1. PROVIDE ADDRESSABLE PULL STATIONS WHICH CONTAIN ELECTRONICS THAT COMMUNICATE THE STATION'S STATUS (ALARM, NORMAL) TO THE CONTROL PANEL OVER ONE TWISTED PAIR. THE ADDRESS WILL SET ON THE STATION. THEY WILL BE MANUFACTURED FROM HIGH IMPACT RED LEXAN. STATION WILL MECHANICALLY LATCH UPON OPERATION AND REMAIN SO UNTIL MANUALLY RESET BY OPENING WITH A KEY COMMON TO ALL SYSTEM LOCKS. PULL STATIONS WILL BE DOUBLE ACTION AND AS IDENTIFIED BY A SCHEDULE ON THE	
PROCEDURE. THE DUCT TYPE SMOKE DETECTORS SHALL BE EQUIPPED WITH AUXILIARY CONTACTS FOR REMOTE INDICATION.	PRINTS.	
ALL DEVICES THAT ARE RECESSED OR SEMI-RECESSED INTO TWO-HOUR FIRE- RATED PARTITIONS SHALL: . PENETRATE INTO THE PARTITION A MAXIMUM OF 2-1/2 INCHES.	MUST BE OPENED WITH A KEY TO RESET THE STATION. THE KEY SHALL BE COMMON WITH THE CONTROL PANELS. STATIONS WHICH USE ALLEN WRENCHES OR SPECIAL TOOLS TO RESET WILL NOT BE ACCEPTED. THE STATION SHALL CONSIST OF HIGH IMPACT LEXAN PLASTIC, RED IN COLOR.	
. ALLOW A MAXIMUM PENETRATION OF 25 SQUARE INCHES PER 10 SQUARE FEET.	3. THE ADDRESSABLE MANUAL STATION SHALL BE CAPABLE OF FIELD PROGRAMMING OF ITS "ADDRESSABLE" LOCATION ON AN ADDRESSABLE	
ALL STROBES, SPEAKERS, SPEAKER/STROBES, SMOKE DETECTORS, DUCT, AREA, OR HEAT SHALL BE BASE BUILDING STANDARD, COMPATIBLE WITH THE EXISTING CLASS "E" SYSTEM. DUCT TYPE SMOKE DETECTORS SHALL BE CAPABLE OF BEING INTERFACED WITH THE H.V.A.C. EQUIPMENT AND ASSOCIATED DUCT	<ul> <li>4. THERE SHALL BE NO LIMIT TO THE NUMBER OF STATIONS, DETECTORS OR ZONE ADAPTER MODULES, WHICH MAY BE ACTIVATED OR "IN ALARM"</li> </ul>	
ALL EQUIPMENT AND WIRING SHALL BE BSA/MEA APPROVED.	SIMULTANEOUSLY. 5. THE ADDRESSABLE MANUAL STATION SHALL BE UNDERWRITER'S LABORATORIES	
ALL ELECTRICAL LOCKING SYSTEMS (IF ANY) INTERFACED WITH MEANS OF EGRESS MUST FAIL-SAFE ON POWER FAILURE. PROVIDE CONNECTION TO THE CLASS 'E' SYSTEM'S DOOR RELEASE CIRCUIT. ALL COMPONENTS SHALL BE	INC. LISTED. 6. PROVIDE PROTECTIVE COVERS, EQUAL TO STOPPER II, WHERE REQUIRED BY THE AHJ.	
RE ALARM INSTALLATION PROCEDURE:	4. WARRANTY:	
FURNISH AND INSTALL ALL NEW LIFE SAFETY DEVICES AND ASSOCIATED CABLING AND CONDUIT. CONDUIT SHALL FURNISHED AS REQUIRED BY CODE (U.O.N.)	1. THE CONTRACTOR SHALL WARRANT THE COMPLETE FIRE ALARM SYSTEM WIRING AND EQUIPMENT TO BE FREE FROM INHERENT MECHANICAL AND ELECTRICAL DEFECTS FOR A PERIOD OF (3) THREE YEARS FROM THE DATE OF THE COMPLETED AND CERTIFIED TEST OR FROM THE DATE OF FIRST	FIRE ALARM SYMBOLS AND
COORDINATE AND PAY FOR ALL REQUIRED MODIFICATIONS AND CONNECTIONS TO THE EXISTING FIRE ALARM SYSTEM WHICH INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:	BENEFICIAL USE. 2. THE EQUIPMENT MANUFACTURE SHALL MAKE AVAILABLE TO THE OWNER A MAINTENANCE CONTRACT PROPOSAL TO PROVIDE A MINIMUM OF TWO (2)	GENERAL NOTES
a. HARDWARE MODIFICATIONS TO FIRE COMMAND STATION DISPLAY PANEL.	INSPECTIONS AND TEST PER YEAR IN COMPLIANCE WITH NFPA-72H GUIDELINES.	
c. ADDITIONS TO THE EXISTING REMOTE DATA GATHERING PANELS TO INCORPORATE NEW PANELS OR DEVICES.	<ul><li>SUBMITTALS</li><li>1. PROVIDE COMPLETE SETS OF DOCUMENTATION TO INCLUDE THE FOLLOWING:</li></ul>	
d. ADDITIONAL POWER FROM FUSED CUT-OUTS TO SERVE ADDITIONAL SYSTEM OR SUB-SYSTEM PANELS.	A. A COMPLETE POINT TO POINT RISER DIAGRAM OF THE FIRE ALARM SYSTEM SHOWING ALL DEVICES AND EQUIPMENT AND SIZE, TYPE AND NUMBERS OF ALL	
PAY ALL REQUIRED FEES TO THE EXISTING FIRE ALARM SYSTEM VENDOR TO MAKE ALL FINAL CONNECTIONS AND REVISE THE LIFE SAFETY RISER DIAGRAM FOR FILING TO INCORPORATE THE ASSOCIATED SYSTEM MODIFICATIONS.	B. BATTERY STANDBY AND POWER SUPPLY CALCULATIONS SHOWING TOTAL POWER REQUIRED TO MEET THE SPECIFIED SYSTEM REQUIREMENTS	
ALL RELOCATED OR NEW EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL AND BUILDING CODES AND THE REQUIREMENTS SET FORTH BY THE NEW AMERICANS WITH DISABILITIES ACT (A.D.A.). WHICH	INCLUDING SPARE CAPACITY ALLOWANCES. CALCULATIONS SHALL INCLUDE A COMPLETE LIST OF CURRENT REQUIREMENTS DURING NORMAL, SUPERVISORY, TROUBLE AND ALARM CONDITIONS. CALCULATIONS SHALL ALSO DEMONSTRATE PROPER CONSIDERATION OF CURRENT REQUIREMENTS,	
A STROBE LIGHTS PLACED 80 INCHES ABOVE THE FLOOR OR 6 INCHES BELOW	WIRE SIZE, WIRE LENGTH AND VOLTAGE DROP CHARACTERISTICS. C. MANUFACTURER'S ORIGINAL CATALOG DATA SHEETS SHALL BE SUPPLIED FOR ALL OF THE EQUIPMENT TO BE SUPPLIED. ALL EQUIPMENT SHALL BE SUBJECT	11/29/2023 ISSUED FOR CONSTRUCTION
<ul> <li>b. AUDIBLE DEVICES TAPPED AT WATTAGE SETTINGS WHICH ALLOW FOR SOUND PRESSURE LEVELS OF THE UNIT TO EXCEED THE LEVEL IN THE ROOM BY 15DBA OR THE 60 SECOND MAXIMUM LEVEL OF THE ROOM BY 5 DBA WHICH EVER IS</li> </ul>	D. LARGE SCALE DRAWINGS OF THE MAIN CONTROL PANEL AND EACH REMOTE	REV. DATE REMARKS
HIGHER, BUT NOT TO EXCEED 120 DBA. SPEAKERS, STROBES, SMOKE DETECTORS, WARDEN STATIONS AND PULL	E. DOCUMENTATION OF THE SUPPLIER'S QUALIFICATIONS INDICATING YEARS IN	JOB NUMBER: 2022-02.02 DATE: 01/21/2023
SIGNAL CIRCUITS AND THESE CIRCUITS MUST BE INSTALLED IN SEPARATE CONDUIT IN ORDER TO PROVIDE RELIABLE ALARM SIGNALS SO THAT LOSS OF A PORTION OF THE WIRING ON A FLOOR SHALL NOT DISABLE THE ENTIRE ALARM CAPABILITY OF THAT FLOOR.	BUSINESS SERVICE POLICIES, WARRANTY DEFINITIONS, AND A LIST OF SIMILAR INSTALLATIONS IN THE LOCAL MUNICIPALITY. F. PROVIDE A COMPLETE DETAILED DESCRIPTION OF THE SYSTEM OPERATION.	DRAWN BY: NYE CHECKED BY: NYE
RECONNECT ALL EXISTING BASE BUILDING LIFE SAFETY DEVICES WHICH HAVE BEEN RELOCATED OR TEMPORARILY REMOVED DURING CONSTRUCTION.	G. ADDRESSES FOR ALL FIELD DEVICES SHALL BE SHOWN ON FLOOR PLANS SUPPLIED WITH THIS SUBMITTAL.	SHEET NO.
OURDINATE CHANGES IN LOCATION WITH ARCHITECT AND LEAVE IN AN OPERATIONAL STATE AND IN ACCORDANCE WITH ALL GOVERNING CODES, INCLUDING A.D.A.		FA001

FIRE ALARM PLAN GENERAL NOTES:

- 1. FIRE ALARM PULL STATIONS SHALL BE EQUIPPED WITH LIFT COVER AND AUDIBLE SIGNAL. AUDIBLE SIGNAL SHALL SOUND WHEN COVER IS LIFTED TO PREVENT ACCIDENTAL ACTIVATION OF THE FIRE ALARM SYSTEM.

![](_page_28_Figure_3.jpeg)

![](_page_28_Figure_4.jpeg)

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FIRE ALARM GENERAL NOTES:

- 1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS WITH SINGLE LINE RISER DIAGRAM SHOWING ALL EQUIPMENT, CONNECTIONS, NUMBER, VOLTAGE DROP & BATTERY CALCS, AND SIZE OF ALL CONDUCTORS.
- 2. PROVIDE NEW ADDRESSABLE FIRE ALARM SYSTEM.

BUILDING CONTROL SYSTEM

120V CIRCUIT PP2#22

PRIMARY AND SECONDARY SUPERVISED PHONE LINES (-

1 FIRE ALARM RISER DIAGRAM 1/8" = 1'-0"

FOR DOOR COMPONENT

- 3. ALL EQUIPMENT AND DEVICES USED SHALL BE BY APPROVED MANUFACTURERS AND SHALL BE LISTED FOR THEIR USE.
- 4. PROVIDE SUFFICIENT CAPACITY FOR FUTURE DEVICES.
- 5. PROVIDE CLASS A WIRING FOR ALL NOTIFICATION CIRCUITS AND CLASS B WIRING FOR ALL INITIATION CIRCUITS.
- 6. RADIO ENHANCED COMMUNICATIONS MAY BE REQUIRED DEPENDING ON FINAL INSPECTION REVIEW.
- 7. REFER TO PLAN FOR EXACT QUANTITIES AND LOCATION OF ALL DEVICES.
- 8. ALL FIRE ALARM WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF NFPA, STATE, AND LOCAL BUILDING CODES AND THE AMERICANS WITH DISABILITIES ACT (ADA).

FIRE ALARM DESIGN CRITERIA:

FURNISH AND INSTALL FIRE ALARM CONTROL SYSTEM THAT CAN DO THE FOLLOWING:

• DETECT FIRE, SMOKE, AND WATER FLOW

INITIATING AN ALARM OF FIRE

INITIATING OTHER ACTION AS ARRANGED

FIRE ALARM CIRCUITS SHALL CONSIST OF VISUAL AND/OR AUDIBLE WARNING. UPON ACTIVATION, SYSTEM SHALL DEACTIVATE DESIGNATED KITCHEN EQUIPMENT AND SEND SIGNAL TO EACH LIGHTING CONTROL UNIT. SYSTEM SHALL ALSO INCLUDE MANUAL ACTIVATION.

SYSTEM SHALL BE ABLE TO TRANSMIT REQUIRE DATA TO LOCAL FIRE DEPARTMENT AND SHALL FUNCTION IN OVERRIDE MANUAL MODE BY OFFICIALS FOR MANDATORY ROUTINE INSPECTION.

SYSTEM SHALL BE EQUIPPED WITH THE POSITIVE ALARM SEQUENCE (PAS) FEATURE.

IN ADDITION TO NFPA STANDARDS, FIRE ALARM SYSTEM SHALL CONTAIN A ONE-WAY PRIVATE RADIO ALARM SYSTEM AND TWO-WAY RADIO FREQUENCY MULTIPLEX SYSTEM.

FIRE ALARM PLAN KEYED NOTES:

 $\langle 1 \rangle$  FAAP SHOULD BE COMPATIBLE WITH BASE BUILDING FACP AND SHALL BE INTERGRATED.

 $\langle 2 \rangle$  FIRE ALARM CONTROL PANEL. CONTRACTOR SHALL COORDINATE WITH BASE BUILDING/OWNER FOR MORE DETAILS.

RTU-1 RTU-2 RTU-4 -(DS)--(DS)--(DS)

FAAP

FACP

 $\langle 2 \rangle$ 

-(S/CO)

-(s/co)---

–(S/CO)–

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# SPRINKLER GENERAL NOTES

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2013 AND ALL LOCAL AUTHORITIES.

2. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.

3.ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE IF CEILING IS PROVIDED.

4. GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING.

5. THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (2) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.

6. PIPES SIZES SHOWN ARE BASED ON DESIGN PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.

7. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.

8.G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.

9. ALL SPRINKLER WORK SHALL BE TESTED AND MADE OPERATIONAL PRIOR TO CARPET AND FURNITURE INSTALLATION. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES DAMAGED BY DEFECTIVE SPRINKLER WORK AT HIS EXPENSE.

10. ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.

11. G.C. SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS REQUIRED BY BUILDING INSPECTOR AND FIRE MARSHALL IN CONJUNCTION WITH CHANGES TO EXISTING SPRINKLER SYSTEM.

12. REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.

13. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.

14. UPON COMPLETION OF ALL SPRINKLER WORK, CONTRACTOR SHALL TEST AND INSPECT ENTIRE SPRINKLER SYSTEM. ENTIRE SYSTEM SHALL BE FULLY OPERATIONAL AND APPROVED IN COMPLIANCE WITH ALL AHJ.

15. UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.

16. CONTRACTOR SHALL INCLUDE IN HIS BID THE COST TO PROVIDE (5) FIVE ADDITIONAL SPRINKLERS INSTALLED. EXACT LOCATIONS OF THESE SPRINKLER HEADS SHALL BE DETERMINED IN FIELD.

17. FOR SPRINKLER WORK DONE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2013, HYDROSTATIC TESTS IN ACCORDANCE WITH REFERENCE STANDARD NFPA 13-2013, AS MODIFIED FOR TOWN OF ABINGTON, DALLAS, ARE NECESSARY.

18. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.

19. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.

20. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.

21. PIPES SIZES SHOWN ARE BASED ON SCHEDULE OF PIPE SIZE PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.

22. PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA.

23. GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/ EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING PRIOR TO INSTALLATION.

24. COMPOSITE DRAWINGS

CONTRACTOR SHALL BE GIVEN A SEPIA TRANSPARENCIES TO IMPOSE THEIR WORK FOR A COORDINATED ALLOCATION OF SPACE. PROCEDURE SHALL INCLUDE HVAC CONTRACTOR TO INDICATE DUCT WORK, PIPING, STRUCTURAL AND ARCHITECTURAL DETAILS. SEPIAS SHALL BE GIVEN TO PLUMBING, SPRINKLER AND ELECTRICAL TRADES WHO WILL DRAW HIS WORK ON DRAWINGS. HVAC CONTRACTORS SHALL HOLD A COORDINATION MEETING WITH ALL CONTRACTORS TO ELIMINATE INTERFERENCE OR CONFLICTS IN INSTALLING WORK. IF UNABLE TO EACH AGREEMENT ISSUE, ARCHITECT SHALL MAKE BINDING DECISION.

25. CONTRACTOR SHALL COORDINATE SPRINKLER MAIN AND BRANCHES WITH NEW CONSTRUCTION TO AVOID CONFLICTS WITH CEILING HEIGHTS, DUCTWORK, LIGHTING FIXTURES, BEAMS. CONTRACTOR TO ADJUST PIPING ACCORDINGLY TO ACCOMMODATE NEW CONSTRUCTION.

# **BUILDING DEPARTMENT SPRINKLER NOTES**

1. THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE 2015 INTERNATIONAL BUILDING CODE (IBC 2015) SECTION 903.

2. ONLY APPROVED MATERIALS SHALL BE USED AS PER 2015 INTERNA FIRE CODE (IFC 2015), SECTION 104.8.

3. DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYST SHALL CONFORM TO 2015 INTERNATIONAL BUILDING CODE (IBC 2015) S 903.3.5

4. SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY PER NFPA 13-2013 CHAPTER 8 SECTION 8.16.

5. THE OCCUPANCY OF THE AREAS TO BE SPRINKLERED IN ACCORDA WITH 2015 INTERNATIONAL BUILDING CODE (IBC 2015), SECTION 903.2.

6. PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TES PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGEF SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER WITH 2015 INTERNATIONAL BUILDING CODE, SECTION 903.2.

7. STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS PER NFPA 1 SECTION 16.2.7 (REQUIRED FOR EACH TEMPERATURE RATING).

8. SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH 2015 INTERNATIONAL BUILDING CODE (IBC 2015), SECTION 907.

9. SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER INTERNATIONAL BUILDING CODE, SECTION 903.3.

10. ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONT COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.

11. ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION 2 INTERNATIONAL BUILDING CODE, SECTION 714.

12. THERE IS NO HIGH PILED STORAGE AS DEFINED IN 2015 INTERNATION FIRE CODE (IFC 2015), SECTION 301.

13. DISTANCE OF SPRINKLERS FROM HEAT SOURCE SHALL BE AS PER 13-2013 SECTION 8.3.2.5.

14. THIS APPLICATION IS NOT FILED AS A RESULT OF ACTION BY THE FI COMMISSIONER AS AUTHORIZED BY BS & A TO MODIFY THE CERTIFICATION OCCUPANCY NOR IS SUCH ACTION PENDING.

15. ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY NFPA 13-2015, SECTION 7.6.3.

16. A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USE WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER NFPA 13-2 SECTION 6.4.7.

17. ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.

18. DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PE NFPA-13-2015 SECTION 6.7.3.

19. HANGERS SHOULD BE SUPPORTED BY WROUGHT IRON U TYPE OR APPROVED ADJUSTABLE HANGERS. HANGERS SHALL BE OF THE TYPE APPROVED FOR USE WITH THE PIPE OR TUBE INVOLVED, AS PER NFPA SECTION 9.1.

20. TEMPERATURE RATING SHALL COMPLY WITH NFPA-13-2015 SECTIO 21. 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS P NFPA-13-2015 SECTION 8.5.6

24. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").

25. THIS APPLICATION IS MADE ONLY FOR WORK INDICATED ON THE SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

26. WET SPRINKLER SYSTEM SUBJECTED TO FREEZING SHOULD COMP WITH NFPA 13-2015 SEC. 8.16.4.

27. INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS 2015 INTERNATIONAL BUILDING CODE (IBC 2015), SECTION 904.4.

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	•	UPRIGHT	STANDARD	OPEN AREAS	BRASS	165	5.6	1/2"	түсо	SERIES TY-FRL TY3121	FM APPF

NOTE: 1. COORDINATE ALL SPRINKLER COLOR FINISHES WITH ARCHITECT. 2. ALL SPRINKLER SHOULD BE UL/FM APPROVED

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# SPRINKLER SPECIFICATIONS

PART 1 - GENERAL

1.01 REQUIREMENTS

A. THE SPRINKLER CONTRACTOR SHALL BE A LICENSED, AUTHORIZED INSTALLER OF SPRINKLER SYSTEMS AND SHALL HAVE HAD A MINIMUM OF FIVE YEARS EXPERIENCE IN THE INSTALLATION OF SPRINKLER SYSTEMS IN THE TOWN OF MIDDLETOWN, PA.

B. BEFORE SUBMITTING HIS BID. THE SPRINKLER CONTRACTOR SHALL VISIT THE SITE AND SHALL FULLY FAMILIARIZE HIMSELF WITH, AND BECOME FAMILIAR WITH THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING HIS PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

C. UPON REVIEW OF THE DRAWINGS AND SPECIFICATIONS, PRIOR TO SUBMITTING HIS PROPOSAL. THE SPRINKLER CONTRACTOR SHALL INFORM ARCHITECT AND/OR ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION IN WRITING, IF NECESSARY, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE SPRINKLER SYSTEM INSTALLATION. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OF MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.

D. THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH BUILDING MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER.

E. NECESSARY SHUT-DOWNS OF BASE BUILDING SPRINKLER SYSTEM MUST BE COORDINATED WITH BUILDING MANAGEMENT. SHUT-DOWNS OF BASE BUILDING SYSTEMS SHALL TAKE PLACE AFTER OR BEFORE NORMAL BUSINESS HOURS AND SHALL BE CONSIDERED OVERTIME WORK. THE CONTRACTOR MUST GIVE BUILDING MANAGEMENT AND LOCAL FIRE DEPARTMENT 48 HOURS NOTICE PRIOR TO SHUT-DOWN OF SPRINKLER. OR OTHER SYSTEMS.

1.02 WORK INCLUDED

A. WORK SHALL INCLUDE ALL SPRINKLER WORK FURNISHED AND INSTALLED AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN.

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE 2015 DALLAS BUILDING CODE (IBC 2015), N.F.P.A. STANDARD 13-2013, DALLAS FIRE CODE 2018 (IFC 2021), LOCAL FIRE DEPARTMENT AND OWNERS INSURANCE RATING ORGANIZATION.

2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM FIELD MEASUREMENTS.

3. PROVIDE COMPUTER GENERATED HYDRAULIC CALCULATIONS IN ACCORDANCE WITH LOCAL BUILDING DEPARTMENT AND NFPA STANDARDS.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:

- 1. PIPE AND FITTINGS
- 2. VALVES HANGERS AND SUPPORTS
- 4. SPRINKLER PIPING LAYOUT
- 5. TESTS SPRINKLER HEADS
- HYDRAULIC CALCULATIONS 8. SIAMESE CONNECTION

A. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL SUBMIT CALCULATIONS WITH SHOP DRAWINGS. CALCULATIONS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF NFPA 13-2013, DALLAS FIRE CODE 2021 (IFC 2021). AND 2015 DALAAS BUILDING CODE (IBC 2015).

1.04 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES

A. THE SPRINKLER CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS AND HYDRAULIC CALCULATIONS WITH THE BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FINAL APPROVAL.

B. ARRANGE FOR INSPECTION AND TESTS OF ANY AND ALL PARTS OF THE WORK AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY ALL CHARGES FOR SAME.

1.05 INSPECTION AND TESTING

A. THE SPRINKLER SYSTEM SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2015 DALLAS BUILDING CODE (IBC 2015) WITH FIRE DEPARTMENT INSPECTOR.

B. THE SPRINKLER SYSTEM SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST FOR A PERIOD OF TWO HOURS AT A PRESSURE OF AT LEAST 200 PSIG OR 50 PSI IN EXCESS OF THE MAXIMUM PRESSURE TO BE MAINTAINED WHEN THE MAXIMUM PRESSURE IN THE SYSTEM IS IN EXCESS OF 150 PSI AS PER NFPA.

C. THE BUILDING DEPARTMENT SHALL BE NOTIFIED THAT THE SYSTEM IS READY FOR REINSPECTION AND TESTING. THE BUILDING DEPARTMENT INSPECTOR SHALL WITNESS THE TEST. FINAL APPROVAL OF THE SPRINKLER SYSTEM SHALL BE OBTAINED FROM BUILDING DEPARTMENT, AND FIRE DEPARTMENT.

PART 2 - MATERIALS

2.01 GENERAL

A. THE SPRINKLER SYSTEM SHALL BE COMPLETE WITH ALL PIPE, FITTINGS, VALVES, DRAINAGE SYSTEM AND VALVES, HANGERS AND SUPPORTS. ALSO, MISCELLANEOUS WORK ITEMS, SUCH AS, SIGNS AS REQUIRED, VALVE TAGS, ETC., AND ALL OTHER RELATED EQUIPMENT, APPARATUS AND MATERIAL ITEMS NECESSARY FOR COMPLETE, APPROVED TYPE SYSTEM, READY FOR FUTURE EXTENSION.

B. ALL PIPE, FITTINGS, HANGERS, SUPPORTS, SPRINKLER HEADS, ETC., SHALL CONFORM TO THE 2015 DALLAS BUILDING CODE (IBC 2015) AND NATIONAL FIRE PROTECTION ASSOCIATION'S REQUIREMENTS AS TO TYPES OF MATERIALS, ARRANGEMENT, SIZES AND INSTALLATION. PIPING PENETRATING FIRE RATED PARTITIONS SHALL HAVE OPENING SEALED WITH U.L. APPROVED FIREPROOF SEALANT.

2.02 SPRINKLER PIPING

A. ALL SPRINKLER PIPING SHALL BE SCHEDULE 40, IN ACCORDANCE WITH NFPA 13-2013. PIPE SHALL BE UL/FM APPROVED.

B. STEEL PIPE SHALL BE BETHLEHEM STEEL CO., ALLIED TUBE, BERGER INDUSTRIES OR APPROVED.

C. AS PER NFPA 13-2013 PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN TABLE 6.3.1.1 OR SHALL BE IN ACCORDANCE WITH

D. AS PER NFPA 13-2013, FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN TABLE 6.4. OR SHALL BE IN ACCORDANCE WITH 6.4. FITTING SHALL BE UL/FM APPROVED. CONTRACTOR.

2.03 CUTTING AND PATCHING

1. DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.

2. FOR REPLACEMENT OF THE WORK REMOVED, MATCH EXISTING IN NATURE, CONSTRUCTION AND FINISH.

3. MAINTAIN THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH COVERED BY THE WORK, REMOVE ALL SURPLUS MATERIALS, TOOLS ETC. AND LEAVE PREMISES CLEAN.

2.04 FIRE STOPPING

INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED DIRECTIONS AND PER FIRE TESTED DESIGNS THAT HAVE BEEN ACCEPTED BY THE APPROPRIATE CODE AUTHORITY HAVING JURISDICTION. 2.05 PHASING

PHASING SHALL BE COORDINATED BETWEEN THE SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR. SPRINKLER INSTALLATION SHALL BE PHASED IN A MANNER WHICH WILL ALLOW FULL OCCUPANCY OF THE EXISTING FACILITY WHILE THE INSTALLATION IS IN PROGRESS.

2.06 ALTERNATES/SUBSTITUTIONS

SUBSTITUTIONS OF THE MATERIALS OR METHODS OF INSTALLATION FROM THAT SPECIFIED. THESE ALTERATIONS SHALL BE LISTED ON THE PROPOSAL AS CONTRACTOR ALTERNATIVE.

2.07 LEAK DAMAGE

THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY LOSS OR DAMAGE TO THE WORK OF OTHERS, TO THE BUILDING, IT'S CONTENTS ETC. CAUSED BY LEAKS IN THE EQUIPMENT. BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS ETC. OR BY OVERFLOW, AND SHALL PAY FOR THE NECESSARY REPLACEMENTS OR REPAIRS TO THE WORK OF OTHERS, DAMAGED BY SUCH LEAKAGE.

2.08 INSERTS, HANGERS, ETC.

A. ALL SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED AND SHALL COMPLY WITH THE STANDARDS FOR THE NATIONAL FIRE PROTECTION ASSOCIATION FOR THE INSTALLATION OF SPRINKLER SYSTEMS AND AS REQUIRED BY THE 2015 DALLAS BUILDING CODE (IBC 2015)

B. HANGERS AND THEIR COMPONENTS SHALL BE FERROUS. HANGERS SHALL BE ADJUSTABLE FLAT IRON TYPE OF CLEVIS TYPE.

C. SPRINKLER PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON-SYSTEM COMPONENTS.

D. SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE WHICH MUST SUPPORT THE ADDED LOAD OF THE WATER-FILLED PIPE PLUS A MINIMUM OF 250 LBS. APPLIED AT THE POINT OF HANGING. CONTRACTOR SHALL SUBMIT DETAIL OF SUPPORT FOR REVIEW AND APPROVAL.

E. SPRINKLER PIPING SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SHEATHING.

F. WHEN SPRINKLER PIPING IS INSTALLED BELOW DUCTWORK, PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE, NOT FROM THE DUCTWORK.

G. MAXIMUM DISTANCE BETWEEN HANGERS SHALL NOT EXCEED 12 FT. FOR 1 AND 1-1/4" SIZES NOR 15' FOR SIZES 1-1/2" AND LARGER.

H. EXPANSION SHIELDS FOR SUPPORTING PIPES UNDER CONCRETE CONSTRUCTION MAYBE USED IN A HORIZONTAL POSITION IN THE SIDES OF BEAMS. IN CONCRETE HAVING GRAVEL OR CRUSHED STONE AGGREGATE, EXPANSION SHIELDS MAY BE USED IN THE VERTICAL POSITION TO SUPPORT PIPES 4" OR LESS IN DIAMETER.

2.09 ESCUTCHEONS

PROVIDE ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS. ESCUTCHEON SHALL BE HELD IN PLACE BY INTERNAL TENSION OR SET SCREW.

2.10 AS-BUILT DRAWINGS

PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

2.11 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (135/165 DEG. F) EXCEPT AS REQUIRED NEAR HEATERS OR LOCATIONS WHERE ELEVATED TEMPERATURES MAY NORMALLY BE EXPECTED OR AS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS.

B. SPRINKLER HEADS SHALL BE BY TYCO SPRINKLER CO., INC. MANUFACTURE OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:

AUTOMATIC TYCO MODEL TY3531.

2. UPRIGHT SPRINKLER HEADS SHALL BE AUTOMATIC TYCO MODEL TY3121. 3. PROVIDE SPARE SPRINKLER EMERGENCY CABINETS CONFORMING TO NFPA 13-2016.

4. SPRINKLER EMERGENCY CABINETS SHALL BE OF TYCO SPRINKLER CO., INC. OR APPROVED EQUAL, UL AND FM APPROVED.

5. CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.

CABINET SHALL CONTAIN A MINIMUM OF 6 SPRINKLER HEADS OF EACH YPE EMPLOYED

CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY CONTRACTOR PROPOSED

1. SPRINKLER HEADS IN FINISHED CEILINGS WITH CONCEALED PIPING SHALL BE

2.12 PRESSURE GAUGE

A. ASHCROFT SERIES 1079, OR APPROVED OTHER, 4-1/2" DIAMETER, 0-200 P.S.I. RANGE, 20 P.S.I. INTERVALS.

PART 3 - EXECUTION

3.01 GUARANTEE

A. GUARANTEE FOR A PERIOD OF ONE (1) YEAR FORM THE DATE OF ACCEPTANCE BY THE OWNER, ALL MATERIALS, APPARATUS AND WORKMANSHIP WHETHER FURNISHED BY HIMSELF OR BY HIS SUBCONTRACTORS AND HE SHALL REPLACE OR REPAIR IN A MANNER APPROVED BY THE ARCHITECTS, WITHOUT COST TO THE OWNER, ANY PART OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITH IN THE PERIOD OF THE GUARANTEE.

3.02 INSTALLATION

A. PIPING

1. INSTALL PIPING AS SHOWN ON THE CONTRACT DRAWINGS AND STRAIGHT AND DIRECT AS POSSIBLE, FORMING RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS, NEATLY SPACED, WITH RISERS PLUMB AND TRUE.

2. SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.

3. PIPE SHALL BE REMOVED BY REAMING.

4. BEFORE INSTALLING PIPE, THOROUGHLY CLEAN THE INSIDE FREE OF CUTTING AND FOREIGN MATTER. CUT ALL PIPE SQUARE AND SMOOTH AND MAKE UP ALL JOINTS TO REQUIRED LIMITS.

B. PIPE JOINTS

1. THREADED JOINTS SHALL BE MADE UP OF TIGHT USING PIPE JOINT TEFLON COMPOUND OR TAPE, APPLIED ON THE MALE THREADS ONLY.

![](_page_31_Figure_93.jpeg)

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RISER NIPPLE SPRINKLER BRANCH MAIN	
EAD DETAIL UPRIGHT	
R FOR REQUIREMENT.	
ONNECTION FOR TRAPPED DE SPRINKLER SYSTEMS	
ERS REQUIRED ON PIPING LARGER THAN 1" POSE HANGERS MAY BE USED ON 1" SPRINKLER PIPING ONLY.	

# NY ENGINEERS NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGIINEERS.COM Celebree SCHOOL SHEET TITLE: FIRE PROTECTION DETAILS 11/29/2023 ISSUED FOR CONSTRUCTION DATE REMARKS REV. JOB NUMBER: 2022-02.02 01/21/2023 DATE: DRAWN BY: NYE NYE CHECKED BY: SHEET NO. FP003

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1 FIRE PROTECTION PLAN 1/8" = 1'-0"

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FIRE PROTECTION GENERAL NOTES:		
1. THE SPRINKLER SYSTEM SHALL BE DESIGNED TO MEET THE BUILDING C REQUIREMENTS. THE CELEBREE SCHOOL SPRINKLER SYSTEM SHALL BE D	ODE AND NFPA-13-2013 DESIGNED AS A	
2. ALL CONSTRUCTION INCLUDING EQUIPMENT AND PIPING SHOULD COMP PLENUM STANDARDS.	YLY WITH RETURN AIR	
3. ALL SPRINKLER HEADS IN AREA OF WORK TO BE FULLY COORDINATED V ELEMENTS NEW AND EXISTING IN ADDITION TO WORK FROM OTHER TRADE	WITH ALL CEILING ES.CONTRACTOR TO	
4. CONTRACTOR TO PROVIDE SPRINKLER HYDRAULIC CALCULATIONS BASI	ED ON HYDRANT FLOW	
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		382 NE 191ST STREET SUITE 49674,
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	0 T	Celebree
CONCEALED PENDENT     SPRINKLER HEADS	0	SCHOOL
	0	
CONCEALED PENDER HEADS IS LOCATED A	NT SPRINKLER AT HIGH LEVEL	
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	0 0	SHEET TITLE:
		FIRE PROTECTION PLAN
		3         4/25/2024         HEALTH COMMENT           11/29/2023         ISSUED FOR CONSTRUCTION
		REV. DATE REMARKS
		JOB NUMBER: 2022-02.02
		DATE: 01/21/2023 DRAWN BY: NYE
		CHECKED BY: NYE