

DIVISION 23 - MECHANICAL SPECIFICATIONS

230500 COMMON WORK RESULTS FOR HVAC

- A. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL HEATING, VENTILATING AND AIR CONDITIONING SYSTEM... B. WITHOUT RESTRICTING THE GENERALITY OF THE FIRST STATEMENT... C. ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED... D. ALL FINISH PAINTING SHALL BE PERFORMED BY GENERAL CONTRACTOR... E. ALL WORK SHALL CONFORM TO CODES, RULES, AND REGULATIONS... F. ALL PERMITS REQUIRED BY LAWS, ORDINANCES AND BUILDING CODES... G. THIS CONTRACTOR SHALL OBTAIN ALL INSPECTIONS... H. PIPING AND EQUIPMENT LAYOUT IS SCHEMATIC... I. MATERIALS AND EQUIPMENT INSTALLED IN THE WORK SHALL MEET THE REQUIREMENTS... J. CATALOG DATA FOR EQUIPMENT REVIEWED BY THE OWNER... K. WHEN SUBMITTED FOR REVIEW, SHOP DRAWINGS SHALL BEAR CONTRACTOR'S CERTIFICATION... L. CONTRACTOR SHALL VERIFY LOCATION OF UTILITIES... M. PROVIDE INSTRUCTION TO OWNER'S OPERATING PERSONNEL... N. COMPILE WRITTEN MANUAL OF OPERATING INSTRUCTIONS...

- 1. TITLE PAGE: TITLE OF JOB, OWNER, ADDRESS, DATE OF SUBMISSION, CONTRACTOR AND ENGINEER. 2. INDEX. 3. LIST OF MAJOR EQUIPMENT USED IN PROJECT... 4. ONE COPY OF EACH SHOP DRAWING GROUPED BY TYPES OF EQUIPMENT... 5. SECTION FOR EACH SYSTEM INCLUDING: a. BRIEF DESCRIPTION OF SYSTEM OPERATION... b. HVAC SYSTEM MAINTENANCE AND CALIBRATION INFORMATION... O. SUBMIT A COMPLETED COPY TITLED "HVAC OPERATING INSTRUCTION MANUAL"... P. WITHIN 90 DAYS AFTER DATE OF SYSTEM ACCEPTANCE... Q. THIS CONTRACTOR IS TO BECOME INFORMED OF THE EXACT DIMENSIONS OF FINISHED WORK... R. IN THE ERECTION OF DUCTWORK, SPECIAL CARE SHALL BE USED... S. ALL DUCTWORK SHALL BE PLACED SO AS TO AVOID INTERFERENCES... T. ALL DUCTWORK SHALL BE PROVIDED WITH SUFFICIENT DISTANCE FROM WALLS, PIPES, AND OTHER OBSTACLES...

230593 TESTING, ADJUSTING, & BALANCING HVAC

- A. THE CONTRACTOR SHALL COMPLETE INSTALLATION OF HOOD SYSTEM, ROOFTOP EQUIPMENT, AND CONTROL SYSTEM IN ACCORDANCE WITH THE DRAWINGS... B. CONTRACTOR SHALL COMPLETE ALL CALIBRATIONS AND TESTS OUTLINED IN WENDY'S TEST PROTOCOLS... C. ALL CONTRACTORS WORKING ON PROJECT ARE REQUIRED TO HAVE COMPLETED THE WENDY'S RESTAURANT VENTILATION COURSE FROM IGNITOR LABS... D. PROCEDURE/CHECKLISTS:

A COMPLETION CERTIFICATE FROM IGNITOR LABS WITH A SCORE OF 80% OR HIGHER IS REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE NOMINAL COSTS REQUIRED FOR PROJECT PERSONNEL TO TAKE THE COURSE.

Table with columns: CHECKLIST PROCEDURE/TROUBLESHOOTING, BREAKER PANELS, ROOFTOP UNITS, HOOD SYSTEM, QUALIFICATIONS.

- 1. BALANCER SHALL BE A MEMBER IN GOOD STANDING AND CERTIFIED WITH THE ASSOCIATED AIR BALANCE COUNCIL (AABC), OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

BALANCER SHALL BE TOTALLY INDEPENDENT, HAVING NO AFFILIATION WITH ANY PROJECT CONTRACTOR, DESIGN PROFESSIONAL, EQUIPMENT MANUFACTURER OR SUPPLIER OF HVAC RELATED EQUIPMENT...

- 2. ALL INSTRUMENTS USED FOR TAB SHALL BE ACCURATELY CALIBRATED WITHIN TWELVE (12) MONTHS OF BALANCING AND MAINTAINED IN GOOD WORKING ORDER... 3. UNLESS OTHERWISE NOTED RESTAURATEUR SHALL PROCURE THE SERVICES OF AND CONTRACT DIRECTLY WITH AN INDEPENDENT TAB CONTRACTOR... 4. IF CONTRACTOR IS REQUIRED TO PROCURE TAB SERVICES DIRECTLY... 5. CONTRACTORS SHALL COOPERATE AND ASSIST BALANCER AS REQUIRED... 6. CONTRACTOR SHALL COMPLETE THE FOLLOWING PRIOR TO TAB: PERMANENT POWER SHALL BE PROVIDED, ROOFTOP UNIT FULL INSTALLED AND STARTED... 7. REPLACE BELTS AND DRIVES AS REQUIRED FOR PROPER BALANCING... 8. KITCHEN HOODS ARE UL LISTED AND SHALL BE BALANCED FROM 100% TO 105% OF DESIGN AIRFLOW... 9. OVERALL SYSTEM SHALL BE BALANCED TO POSITIVE CFM AS SHOWN ON THE VENTILATION SCHEDULE WITH ALL FANS IN OPERATION.

- 10. KITCHEN HOODS ARE UL LISTED AND SHALL BE BALANCED FROM 100% TO 105% OF DESIGN AIRFLOW... 11. TOTAL OF ALL AIR DISTRIBUTION DEVICES ON SAME ROOFTOP UNIT DUCT SYSTEM SHALL BE BALANCED TO 100% TO 105% OF DESIGN... 12. ROOFTOP UNITS SHALL PROVIDE OUTDOOR AIR CFM BETWEEN 100% TO 105% OF DESIGN FOR ALL FAN SPEEDS... 13. ECONOMIZERS SHALL PROVIDE REQUIRED OUTDOOR AIR WHEN CLOSED FOR BUSINESS (MINIMUM ONLY)... 14. CONTACT RTU MANUFACTURER TO RESOLVE AIRFLOW DELIVERY IF ROOFTOP UNIT AIRFLOWS ARE BELOW DESIGN... 15. PLAN REVIEW: PROVIDE WRITTEN TESTING AND BALANCING PLAN REVIEW WITHIN FIVE (5) BUSINESS DAYS... 16. EQUIPMENT SUBMITTAL DATA: CONTRACTOR SHALL PROVIDE RESTAURANT EQUIPMENT SUBMITTAL DATA TO THE BALANCER... 17. UPDATED DESIGN REQUIREMENTS: IF ANY, SHALL BE PROVIDED TO BALANCER PRIOR TO TAB... 18. BALANCER TEST AND BALANCE REPORT: 1. PERFORM TAB WORK ASSOCIATED WITH THE RESTAURANT VENTILATION SYSTEM PER DESIGN DOCUMENTS... 2. A SUMMARY THAT SHALL INCLUDE A GENERAL DESCRIPTION OF PROJECT... 3. A DESCRIPTIVE LIST OF ALL EQUIPMENT AND TEST RESULTS... 4. COPIES OF REDUCED PLAN DRAWINGS THAT UNIQUELY IDENTIFY AND CROSS REFERENCE AIR DEVICES AND HVAC EQUIPMENT... 5. PROVIDE BUILDING PRESSURE TABLES THAT INDICATE DESIGN AND ACTUAL RESULTS... 6. REPORTS THAT ARCHITECT AND/OR ENGINEER DETERMINES IS INACCURATE, OR INCOMPLETE, SHALL BE RETURNED FOR CORRECTION... 7. TEST & BALANCE CONFIRMATION FORM: BALANCER SHALL COMPLETE A WENDY'S TEST & BALANCE CONFIRMATION FORM WHILE PERFORMING SYSTEM TESTING... 8. CONTRACTOR'S RESPONSIBILITIES FOR TAB: 1. CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH ALL PROVISIONS AND RESPONSIBILITIES OF THE BALANCER AND SHALL PROVIDE COOPERATION AND SUPPORT REQUIRED... 2. CONTRACTOR SHALL CORRECT OR REPAIR DEFICIENCIES NOTED BY BALANCER IMMEDIATELY... 3. CONTRACTOR SHALL PROVIDE DOCUMENTATION OF CORRECTION OF ANY OPEN ISSUES PRIOR TO SUBMISSION OF FINAL REPORT... 4. CONTRACTOR IS RESPONSIBLE FOR CORRECTION OF IDENTIFIED ITEMS AND FOR SUBSEQUENT TESTS IN THE EVENT OF THE FOLLOWING: a. NO PERMANENT POWER FOR THE RESTAURANT... b. DIFFUSERS NOT INSTALLED FOR THE TEST... c. CEILING TILES NOT INSTALLED... d. PASSWORD FOR RTU THERMOSTATS NOT PROVIDED... e. INOPERABLE EQUIPMENT... f. THERMOSTATS NOT PROGRAMMED...

- 19. PLAN REVIEW: PROVIDE WRITTEN TESTING AND BALANCING PLAN REVIEW WITHIN FIVE (5) BUSINESS DAYS... 20. EQUIPMENT SUBMITTAL DATA: CONTRACTOR SHALL PROVIDE RESTAURANT EQUIPMENT SUBMITTAL DATA TO THE BALANCER... 21. UPDATED DESIGN REQUIREMENTS: IF ANY, SHALL BE PROVIDED TO BALANCER PRIOR TO TAB... 22. BALANCER TEST AND BALANCE REPORT: 1. PERFORM TAB WORK ASSOCIATED WITH THE RESTAURANT VENTILATION SYSTEM PER DESIGN DOCUMENTS... 2. A SUMMARY THAT SHALL INCLUDE A GENERAL DESCRIPTION OF PROJECT... 3. A DESCRIPTIVE LIST OF ALL EQUIPMENT AND TEST RESULTS... 4. COPIES OF REDUCED PLAN DRAWINGS THAT UNIQUELY IDENTIFY AND CROSS REFERENCE AIR DEVICES AND HVAC EQUIPMENT... 5. PROVIDE BUILDING PRESSURE TABLES THAT INDICATE DESIGN AND ACTUAL RESULTS... 6. REPORTS THAT ARCHITECT AND/OR ENGINEER DETERMINES IS INACCURATE, OR INCOMPLETE, SHALL BE RETURNED FOR CORRECTION... 7. TEST & BALANCE CONFIRMATION FORM: BALANCER SHALL COMPLETE A WENDY'S TEST & BALANCE CONFIRMATION FORM WHILE PERFORMING SYSTEM TESTING... 8. CONTRACTOR'S RESPONSIBILITIES FOR TAB: 1. CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH ALL PROVISIONS AND RESPONSIBILITIES OF THE BALANCER AND SHALL PROVIDE COOPERATION AND SUPPORT REQUIRED... 2. CONTRACTOR SHALL CORRECT OR REPAIR DEFICIENCIES NOTED BY BALANCER IMMEDIATELY... 3. CONTRACTOR SHALL PROVIDE DOCUMENTATION OF CORRECTION OF ANY OPEN ISSUES PRIOR TO SUBMISSION OF FINAL REPORT... 4. CONTRACTOR IS RESPONSIBLE FOR CORRECTION OF IDENTIFIED ITEMS AND FOR SUBSEQUENT TESTS IN THE EVENT OF THE FOLLOWING: a. NO PERMANENT POWER FOR THE RESTAURANT... b. DIFFUSERS NOT INSTALLED FOR THE TEST... c. CEILING TILES NOT INSTALLED... d. PASSWORD FOR RTU THERMOSTATS NOT PROVIDED... e. INOPERABLE EQUIPMENT... f. THERMOSTATS NOT PROGRAMMED...

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ADDITIONAL RESPONSIBILITIES INCLUDE: PROVIDE REQUIRED SHOP DRAWINGS AND EQUIPMENT DATA INCLUDING ANY APPROVALS OF DESIGN MODIFICATIONS, PROVIDE SAFE AND CLEAR ACCESS TO ALL HVAC SYSTEMS AS NEEDED TO PERFORM TAB WORK (LADDERS, LIFTS, ROOF ACCESS, ACCESS PANELS AND THE LIKE)...

- 61. DURING TAB PERIOD, OPERATE ALL HVAC EQUIPMENT AS NECESSARY TO PERMIT SYSTEMS TO BE TESTED AND BALANCED AS FULLY OPERATING FUNCTIONAL SYSTEMS... 62. REPLACE BELTS AND DRIVES AS REQUIRED FOR PROPER BALANCING - DRIVES SHALL BE ADJUSTED AND ALIGNED BY CONTRACTOR TO PREVENT ABNORMAL BELT WEAR AND VIBRATION... 63. SYSTEM READY NOTICE: ALLOW ADEQUATE TIME TO PERFORM TESTING AND BALANCING WORK... 64. BALANCER RESPONSIBILITIES: 1. RECORD DATA REQUIRED BY AABC OR NEBB FORMS... 2. PROVIDE TABLE IN THE REPORT THAT ITEMIZES ALL SUPPLY AND EXHAUST AIR CFM... 3. BALANCER SHALL COMPLETE A WENDY'S TEST & BALANCE CONFIRMATION FORM WHILE PERFORMING SYSTEM TESTING... 65. BALANCER TEST AND BALANCE REPORT: 1. PERFORM TAB WORK ASSOCIATED WITH THE RESTAURANT VENTILATION SYSTEM PER DESIGN DOCUMENTS... 2. A SUMMARY THAT SHALL INCLUDE A GENERAL DESCRIPTION OF PROJECT... 3. A DESCRIPTIVE LIST OF ALL EQUIPMENT AND TEST RESULTS... 4. COPIES OF REDUCED PLAN DRAWINGS THAT UNIQUELY IDENTIFY AND CROSS REFERENCE AIR DEVICES AND HVAC EQUIPMENT... 5. PROVIDE BUILDING PRESSURE TABLES THAT INDICATE DESIGN AND ACTUAL RESULTS... 6. REPORTS THAT ARCHITECT AND/OR ENGINEER DETERMINES IS INACCURATE, OR INCOMPLETE, SHALL BE RETURNED FOR CORRECTION... 7. TEST & BALANCE CONFIRMATION FORM: BALANCER SHALL COMPLETE A WENDY'S TEST & BALANCE CONFIRMATION FORM WHILE PERFORMING SYSTEM TESTING... 8. CONTRACTOR'S RESPONSIBILITIES FOR TAB: 1. CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH ALL PROVISIONS AND RESPONSIBILITIES OF THE BALANCER AND SHALL PROVIDE COOPERATION AND SUPPORT REQUIRED... 2. CONTRACTOR SHALL CORRECT OR REPAIR DEFICIENCIES NOTED BY BALANCER IMMEDIATELY... 3. CONTRACTOR SHALL PROVIDE DOCUMENTATION OF CORRECTION OF ANY OPEN ISSUES PRIOR TO SUBMISSION OF FINAL REPORT... 4. CONTRACTOR IS RESPONSIBLE FOR CORRECTION OF IDENTIFIED ITEMS AND FOR SUBSEQUENT TESTS IN THE EVENT OF THE FOLLOWING: a. NO PERMANENT POWER FOR THE RESTAURANT... b. DIFFUSERS NOT INSTALLED FOR THE TEST... c. CEILING TILES NOT INSTALLED... d. PASSWORD FOR RTU THERMOSTATS NOT PROVIDED... e. INOPERABLE EQUIPMENT... f. THERMOSTATS NOT PROGRAMMED...

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230700 HVAC INSULATION

- 71. DUCT INSULATION AND APPURTENANCES SHALL HAVE FLAME SPREAD RATING NOT EXCEEDING TWENTY-FIVE (25) AND SMOKE DEVELOPED RATING NOT EXCEEDING FIFTY (50)... 72. ALL CONCEALED SUPPLY DUCTWORK SHALL HAVE FLEXIBLE FIBERGLASS DUCT WRAP LAMINATED TO FOIL REINFORCED KRAFT VAPOR BARRIER FACING WITH 2" STAPLING FLANGE... 73. INSULATION SHALL NOT BE APPLIED UNTIL CONSTRUCTION HAS PROGRESSED SUFFICIENTLY TO ENSURE AGAINST PHYSICAL OR MOISTURE DAMAGE TO INSULATION... 74. HANGER RODS SHALL BE PERPENDICULAR TO DUCTWORK BEFORE INSULATION IS INSTALLED... 75. INSTALL ALL INSULATION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS... 76. INSULATION SHALL BE APPLIED OVER FLANGES, JOINTS AND SEAMS IN PIPING AND DUCTWORK... 77. ALL JOINTS AND SEAMS IN INSULATION SHALL BE PROPERLY SEALED TO MAINTAIN VAPOR BARRIER... 78. INSULATION SHALL BE OWENS-CORNING, EQUAL PRODUCT BY ARMSTRONG, CERTAINTEED, SCHULLER OR KNAUF MAY BE PROVIDED AT CONTRACTOR'S OPTION.

230800 COMMISSIONING OF HVAC

- 79. THIS CONTRACTOR SHALL COORDINATE COMMISSIONING OF HVAC SYSTEMS AND SHALL ASSIST OWNERS TEST AND BALANCE CONTRACTOR TO COMPLETION... 80. CONTRACTOR SHALL PROVIDE DOCUMENTATION OF ALL TESTING AND COMMISSIONING TO BE INCLUDED IN OPERATING INSTRUCTIONS MANUAL... 81. CONSTRUCTION AND SYSTEM CHECKLISTS. 82. CERTIFICATE OF READINESS. 83. INTERIM AND FINAL TEST AND INSPECTION REPORTS AND CERTIFICATES. 84. APPROVED SUBMITTALS. 85. CERTIFICATE OF COMPLETION. 86. AS-BUILT DOCUMENTATION.

233133 METAL DUCTS

- 87. THIS SECTION INCLUDES SPECIFICATIONS FOR ALL DUCTWORK EXCEPT 'GREASE DUCT'... 88. THIS CONTRACTOR SHALL PROVIDE COMPLETE DUCT SYSTEM CONSISTING OF DUCTWORK, PLENUMS, FITTINGS AND CONNECTORS OF SIZE AND LOCATION AS INDICATED ON DRAWINGS... 89. ALL PORTIONS OF DUCT SYSTEM SHALL BE DESIGNED, FABRICATED AND INSTALLED PER THE FOLLOWING REQUIREMENTS: 1. LATEST EDITION OF SMACNA 'HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE'. 2. RIGID GALVANIZED SHEET METAL OF THICKNESS AND WITH STIFFENERS AS INDICATED IN SMACNA PER 2" WATER COLUMN CHART. 3. AIR VELOCITIES NO MORE THAN 2000 FPM AND STATIC PRESSURE IN DUCT OF 2" OR LESS. 4. SEALING PER SMACNA 'CLASS B' OR AS REQUIRED TO MEET AIR BALANCE. 5. CROSS-BREAKING, STIFFENING, BRACES, TOES, ANGLES AND OTHER BRACING AND SUPPORT REQUIRED TO MAINTAIN DUCT CONFORMITY TRUE TO SHAPE... 6. ALL VERTICAL DUCTS SHALL BE ABLE TO CARRY AN ADDITIONAL 100 LBS. SUSPENDED LOAD FROM HANGERS WITHOUT BUCKLING. 7. SEAMS OF ALL DUCTS AND JOINTS SHALL BE HAMMERED TO A SMOOTH SURFACE ON THE INSIDE... 90. FLEXIBLE CONNECTIONS SHALL BE INSTALLED AT ROOFTOP UNIT SUPPLY AND RETURN AIR CONNECTIONS... 91. PROVIDE VOLUME CONTROLLER AND EXTRACTOR AT ALL BRANCH TAKEOFFS IN SUPPLY AND RETURN AND AT OTHER LOCATIONS IN SUPPLY AND RETURN MAIN DUCTS AS REQUIRED TO PROPERLY BALANCE SYSTEMS... 92. PROVIDE TURNING VANES IN ALL ELBOWS OF RECTANGULAR DUCTS. THE BLADES SHALL BE HOLLOW-FORMED DOUBLE THICKNESS VANES.

HOLLOW-FORMED DOUBLE THICKNESS VANES.

PROVIDE SUPPLY, RETURN, AND EXHAUST REGISTERS, GRILLES AND DIFFUSERS AS INDICATED ON DRAWINGS AND/OR SCHEDULES. VERIFY AIR DEVICE REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO ORDERING.

PROVIDE FLEXIBLE SUPPLY AIR DUCTWORK WITH 1" THICK FIBERGLASS BLANKET INSULATION WITH METALIZED FILM VAPOR BARRIER OUTER JACKET IN LENGTHS THAT DO NOT EXCEED FIVE FEET, AT ALL AIR DEVICE CONNECTIONS (GRILLES, REGISTERS AND DIFFUSERS).

233300 DAMPERS

- 93. THIS CONTRACTOR SHALL PROVIDE RECTANGULAR AND ROUND GALVANIZED STEEL MANUAL AND/OR MOTORIZED VOLUME CONTROL DAMPERS THAT SHALL BE: 1. NO MORE THAN 6" IN ONE DIMENSION (LARGER DAMPERS SHALL BE OPPOSED-BLADE WITH EACH BLADE BEING NO MORE THAN 6"). 2. MINIMUM OF 16 GAUGE AND AT LEAST 2 GAUGES HEAVIER THAN DUCT INSTALLED IN. 3. CHANNEL FRAME WITH BRACED CORNERS, CONCEALED LINKAGE, TEFLON FILLED BEARINGS, BLADE STOPS. 4. REPLACEABLE BUTYL RUBBER SEALS INSTALLED ALONG TOP, BOTTOM AND SIDES OF FRAME AS WELL AS ALONG ALL SIDES OF EACH BLADE. 5. 6" LONG CONTROL SHAFT WITH INSULATION STAND-OFF. 6. LOCKING QUADRANT MANUAL HANDLES OR MOTORIZED OPERATORS COMPATIBLE WITH CONTROL SYSTEM. 7. OPERATING FROM FULL OPEN TO FULL CLOSED... 94. PROVIDE ACCESS AND PROPER CLEARANCES AS REQUIRED TO OPERATE DAMPERS. 95. CHECK DAMPERS FOR PROPER OPERATION BEFORE AND AFTER INSTALLATION. 96. INSTALL BALANCE DAMPERS WHERE INDICATED ON DRAWINGS AND ELSEWHERE AS NECESSARY TO OBTAIN PROPER SYSTEM BALANCE. 97. AIR DISTRIBUTION DEVICES: 98. ALL DIFFUSERS, REGISTERS AND GRILLES SHALL BE PROVIDED BY CONTRACTOR. 99. COORDINATE AIR DISTRIBUTION DEVICE LOCATIONS WITH ALL AFFECTED CONTRACTORS BEFORE INSTALLING DUCTWORK... 100. SUSPEND CEILING AIR DEVICES FROM STRUCTURE ON WIRE HANGERS OR FROM RIGID DUCTWORK... 101. SECURELY FASTEN SIDE WALL AIR DEVICES TO RIGID DUCTWORK OR STRUCTURE.

Table with columns: SITE NUMBER, BUILDING TYPE, ASSET TYPE, CLASSIFICATION, OWNER, BASE VERSION, UPGRADE CLASSIFICATION, PROJECT YEAR, DESIGN TYPE, DRAWING RELEASE.



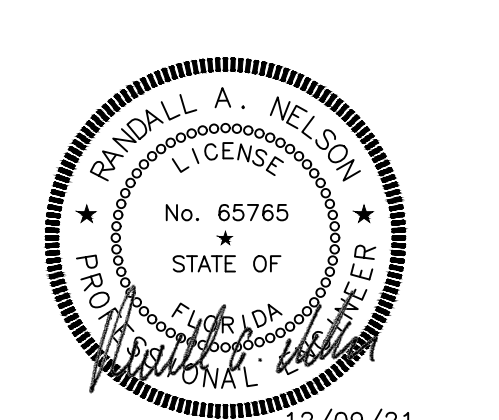
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Table with columns: REV., DATE, DESCRIPTION

ISSUE DATE: 12/09/2021 PROJECT NUMBER: 21-121 DRAWN BY: MS/BS CHECKED BY: AR/CF

SEAL



12/09/21

SHEET NAME MECHANICAL SPECIFICATIONS SHEET NUMBER

SP5