MECHANICAL SPECIFICATIONS:

1) Provide all heating, ventilation and air conditioning items indicated on the drawings, described in this specification or required for a complete and proper installation.

2) Comply with all pertinent codes, ordinances and regulations. Refer to website for Dept. of community Affairs at http://www.dca.state.ga.us/development/constructioncodes/programs/codes2.asp for current Codes Editions.

3) The contractor shall not attempt to precisely scale dimensions from these drawings to obtain construction dimensions and clearances. The contractor shall verify all actual dimensions and clearances. Although these plans are diagrammatic in nature, they shall be followed as closely as site conditions, new construction, and work by other trades shall permit. Deviations from these drawings, which are required to conform to the available space or the actual building construction, shall be made at no additional cost to the owner.

4) Furnish without extra charge, any additional material and labor required to comply with the above codes and standards, even though the work may not be described in the contract documents. Where the requirements of the contract documents exceed the requirements of the above codes and standards, the contract documents shall take precedence.

5) All equipment and material shall be new and of first quality. Equipment and material shall be the same or equal to the basis of design listed on these drawings and shall be UL listed.

6) Cooperate and coordinate with other trades in order that all systems in the work may be installed in the best arrangement.

7) Examine the areas and conditions under which work of this section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Notify Architect of any discrepancies. Do not proceed until unsatisfactory conditions have been corrected.

8) Avoid interference with structure, and with work of other trades. Install all equipment per manufacturer's instructions. Install accessible parts, including equipment, coils, valves, dampers, controls, and filters with adequate clearance for inspection, adjustments, repair and replacement.

9) All other materials not specifically described but required for a complete and proper installation shall be as selected by the contractor subject to acceptance by the Engineer.

10) All ductwork shall be fabricated from galvanized sheet metal duct and conform to SMACNA "HVAC Duct Construction Standards–Metal and Flexible. Seal all joints in ductwork with mastic sealant.

11) Provide fire and smoke rated flexible connections between fans and ducts. Material shall comply with NFPA 90A requirements for material in supply air stream.

12) Install all equipment in accordance with manufacturer's instructions and recommendations including clearances recommended for proper operation or service. All filters and serviceable parts shall be readily available.

13) Make all duct elbows right angle type with single –thickness turning vanes or construct with centerline radius 1–1/2 times the duct width.

14) Duct sizes shown on plans are clear, interior dimensions.

15) Do not cut into or reduce the size of any structural member without the permission of the Architect.

16) Provide weather–proof flashing at all duct and pipe penetrations through the building walls and roof. As a minimum, flashings shall be designed and installed in accordance with SMACNA standards. Flashings shall be guaranteed weatherproof for the duration of the guarantee.

17) Support all HVAC units, ductwork, piping and other appurtenances from structure, provide vibration isolation at all fans which are not internally isolated. Provide hanger rod with built in rubber–in–shear isolator. Between drain pan and unit provide 4 each rubber–in–shear isolator. Do not attach vibration isolator to drain pan. Do not screw or drive fasteners into non–structural components such as roof decks or non–load bearing walls.

18) Thoroughly clean all components and remove all dirt, scale, oil, and other foreign substances. Provide clean air filters for all equipment.

19) Perform all tests necessary to demonstrate the integrity of the complete installation to the approval of the Engineer and all other authorities having jurisdiction. Make all adjustments necessary and balance the completed system in accordance with the data shown. Balance the systems in accordance with NEBB or AABC standards. Acceptable tolerances shall be minus ten percent to plus five percent of all measurements. Balancing shall be done by an independent licensed (by NEBB or AABC) TAB contractor. Make the following tests and submit reports to the Architect:
   a) Airflow rate at each supply, return and exhaust outlet or inlet.
   b) Total airflow rate and total static pressure for each supply and exhaust fan. Test exhaust fans with room doors closed.
   c) Motor speed, for multiple speed fans (e.g. high, medium, low).
   d) For direct drive fans, provide speed settings and actual rpm, including ECM motor driven fans
   e) Provide fan and motor rpm for belt driven fans. Provide sheave sizes.
   f) Outside airflow rate to each HVAC unit and supply fan.
   g) Motor current (and compare with nameplate data) at all motors.
   h) Entering and leaving air dry–bulb and wet–bulb conditions at all cooling coils.
   i) Heat output capacity for unit heaters, heating devices and coils (kW or MBH).
   j) Manufacturer, model and serial number for each piece of HVAC equipment scheduled on drawings.
   k) Calibrate thermostats to be within one degree of actual temperature at thermostat.
   l) Verify that all HVAC devices operate as scheduled or indicated (i.e. ON–OFF, 2–stage, variable output (SCR heaters), etc.

20) The entire system shall be warranted for a period of one (1) year beginning with Owner's acceptance of the work. Compressors shall include a minimum of five (5) year parts only warranty from the manufacturer. All labor and materials necessary to repair or replace the system or portions thereof, during that time shall be warranted for a period of one (1) year from the repair of replacement.

21) SUBMITTALS AND SUBMITTAL PROCEDURES:
   a. Contractor shall review the submittal data and check for the purpose of compliance with safety requirements, verification of dimensions, contract documents and methods and means prior to submitting to design professional. Contractor shall indicate approval by indicating such on the submittal.
   b. Transmit each submittal electronically in PDF format.
   c. Sequentially number submittal files and transmittal form. Revise submittals with original number and a sequential alphabetic suffix. File names shall describe item included in file.
   d. Identify Project, the Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy. Each file shall include an index of items included in file.
   e. Apply the Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
   f. Submittal data for all items in project shall be submitted at one time. Submittal shall be divided into groups with file sizes not exceeding 6 MB. If there is unavailable data such as control submittal, etc., that may be submitted later if not doing so would delay project progress. Data shall include capacities, complete installation instructions, dimensional data and electrical data, BHP, motor HP, operating weights and load distribution at mounting points.
   g. Deliver submittals electronically to the Design Professional.
   h. Schedule submittals to expedite the Project, and coordinate submission of related items.
   i. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
   j. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
   k. Provide space for the Contractor and the Architect/ review stamps.
   l. When revised for resubmission, identify all changes made since previous submission.
   m. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
   n. Submittals not requested will not be recognized or processed.
   o. Provide files containing only related items (such as piping, equipment, air distribution, etc.)

22) Instruct Owner's representative in the operation of the systems, using the operation and maintenance manual as a teaching aid.

23) Provide an operation and maintenance manual. As a minimum, the manual shall contain:
   a. A complete list of all equipment and appurtenances with equipment designations (per Drawings), manufacturers, and catalog numbers.
   b. Copies of manufacturers' brochures and instructions for operation and maintenance of all mechanical equipment, including replacement parts list.
   c. Typed system operation and maintenance instructions, including inspection, lubrication, and service instructions and schedules.
   d. List of names, addresses and phone numbers of distributors of all equipment and appurtenances.
   e. Manufacturers' warranties.

24) Grilles, Registers and Diffusers: As scheduled.

25) Basic motor requirements: basic requirements apply to mechanical equipment motors, unless otherwise indicated. Motors 1/2 hp and larger: Polyphase, unless otherwise scheduled. Motors smaller than 1/2 hp: single phase. Frequency rating: 60 Hz. Service factor: according to NEMA MG 1, general purpose continuous duty, design type "B." Enclosure: open drip–proof, unless otherwise indicated. Efficiency: motors shall have a higher efficiency rating than industry standard average motor as delineated in IEEE Standard 112, test method 13. Thermal protection: where indicated or required, internal protection automatically opens power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal protection device automatically resets when motor temperature returns to normal range, unless otherwise indicated.

26) Hangers and supports: Building attachments: concrete inserts or structural–steel fasteners appropriate for building materials, and beam clamps. Hanger materials: galvanized, sheet steel or round, threaded steel rod. Hangers installed in corrosive atmospheres: electrogalvanized, all–thread rod or galvanized rod with threads painted after installation. Straps and rod sizes: comply with SMACNA's "HVAC Duct Construction Standards––Metal and Flexible" for sheet steel width and thickness and for steel rod diameters. Duct attachments: sheet metal screws, blind rivets, self–tapping metal screws; compatible with duct materials. Trapeze and riser supports galvanized steel shapes and plates: steel shapes complying with ASTM A 36/A 36M.

27) Sealant materials: joint and seam sealants, general: the term "sealant" is not limited to materials of adhesive or mastic nature but includes tapes and combinations of open–weave fabric strips and mastics. Joint and seam tape: 2 inches wide; glass–fiber fabric reinforced. Joint and seam sealant: one–part, nonsag, solvent–release–curing, polymerized butyl sealant, formulated with a minimum of 75 percent solids. Flanged joint mastics: one–part, acid–curing, silicone, elastomeric joint sealants, complying with ASTM C 920, type S, grade NS, class 25, use O.

28) All HVAC equipment such as AH, CU, EF, FC, HP, and RTU shall have visible nameplates with their associated marks on them.

29) Electric Wall Mount Heater: Heater shall be UL listed and labelled with terminal box and cover, and built–in controls. Heater shall be made in three pieces consisting of back enclosure, heater assembly and front panel. Front panel shall be attached with concealed fasteners. Heating Elements: Nickel–chromium heating element wire shall be encased in a steel or copper sheath. Aluminum fins shall be pressure bonded to the sheath. Enclosure: Enclosure shall be minimum 20–gauge painted steel for surface mounting. Front Panel: Bar grille type with down deflection toward floor. Finish shall be paint on steel bars. Grille shall be surrounded by decorative satin finished aluminum accent frame. Unit shall be fan forced type including fan motor, fan and controls with thermostat adjustment accessible through front grille. Unit shall also include thermal safety cutouts in the event of over temperature conditions. Refer to Schedule on Drawings for additional specifications.

30) Large Ceiling fans (Greenheck SP): Ceiling mounted exhaust fans shall be of the centrifugal direct drive type. The fan housing shall be constructed of heavy–gauge galvanized steel. The housing interior shall be lined with 0.5 in. acoustical insulation. Outlet shall be adaptable for horizontal or vertical discharge. The grille shall be constructed of aluminum. Grilles shall be non–yellowing. The access for wiring shall be external. The motor disconnect shall be internal and of the plug–in type. The motor shall be mounted on vibration isolators. The fan wheel shall be of the forward–curved centrifugal type and dynamically balanced. All fans shall bear the AMCA Certified Ratings program AMCA Sound and Air Performance seal and shall be UL/cUL Listed. Ceiling or wall mount fans shall be model SP as manufactured by Greenheck Fan Corporation, Schofield, Wisconsin. Refer to Schedule on Drawings for additional specifications.

31) Acceptable Manufacturers are:

Grilles, Registers & Diffusers:	Titus, Nailor, Price, Tuttle & Bailey (Color selection submitted to Architect)
Fans:	Twin–City, Cook, Greenheck, PennBarry, Acme, American CoolAir
Electric Heaters:	Markel, Q–Mark, Raywall

AIR DEVICE SCHEDULE

MARK	SERVICE	NECK SIZE	FACE SIZE	MATERIAL	TYPE	PATTERN	MOUNTING TYPE	LAYOUT BASIS	NOTES
T1	TRANSFER	SEE PLANS	28"X28"	ALUMINUM	FIXED BLADE	----	SURFACE	TITUS T–700	1

1. GRILL SHALL BE SAME COLOR AS DOOR IT IS MOUNTED ON.

ELECTRIC CABINET HEATER SCHEDULE

MARK	HEATER KW	VOLTS/PH	BASIS OF DESIGN	NOTES
EWH–1	4.0	208/1	Q–MARK AWH4408	1; 2; 3
EWH–2	4.0	208/1	Q–MARK AWH4408	1; 2; 3

1. MOUNT UNIT HEATERS AT 8' AFF.
2. VERTICAL WALL MOUNTED EXPOSED HEATER.
3. VERIFY ELECTRIC POWER REQUIREMENTS WITH ELECTRICAL PLANS, WHICH TAKE PRECEDENCE OVER THIS INFORMATION.

FAN SCHEDULE

MARK	CFM	EXT. SP IN W.G.	DRIVE TYPE	MOTOR WATTS	MAX FAN (RPM)	MAX SONES	POWER/ PHASE	BASIS OF DESIGN	NOTES
EF–1	210	0.25	DIRECT	48 W	1966	1.5	115/1	GREENHECK SP–A200	1; 2; 3; 4
EF–2	210	0.25	DIRECT	48 W	1966	1.5	115/1	GREENHECK SP–A200	1; 2; 3; 4

1. CENTRIFUGAL CEILING MOUNTED FAN. PROVIDE MANUFACTURER'S CEILING GRILL.
2. VERIFY ELECTRIC POWER REQUIREMENTS WITH ELECTRICAL PLANS, WHICH TAKE PRECEDENCE OVER THIS INFORMATION.
3. INTERLOCK FAN WITH LIGHT. PROVIDE 15 MINUTE TIME DELAY. PROVIDE MANUFACTURER'S FAN SPEED CONTROLLER.
4. PROVIDE MOTOR WITH THERMAL OVERLOAD, BACK DRAFT DAMPER AND SOLID STATE SPEED CONTROLLER.

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Revisions:	

Sheet Title:
RESTROOM MECHANICAL SPECIFICATIONS & SCHEDULES

Project #: 1819
Date: 12/23/19

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