

SECTION B100-MECHANICAL & PLUMBING SPECIFICATIONS

A. Mechanical Specifications provided in this section and on construction documents are in conjunction to other specifications and documents; when conflict occurs between those noted in bid documents or specifications the most restrictive compliance is required.

B. WARNINGS: These plans and specifications are each part of an integrated design system. Any modifications, alterations, changes, deletions, additions or substitutions, or to any specifications(s) or construction document could result in failure of systems designed or property damage, injury and even death, and requires a full review of the entire system by a licensed professional engineer. Any unauthorized modification of this document may constitute unlicensed practice as a professional engineer and may constitute a felony as set forth by state law.

1.2 QUALITY ASSURANCE:

A. The Contractor shall not fabricate or order any equipment, air distribution, piping or materials until he/she has verified that sufficient clearances are available for the installation of HVAC systems or plumbing materials considering requirements for piping, light fixtures, ceiling systems, floor systems, foundations, and/or structures.

B. During the construction document phase Engineer has attempted to obtain all the data necessary for adequate design of facility mechanical, HVAC, plumbing, piping systems, etc. However, some of the required floor plans, elevations, civil-site data, wall details, construction sections, building framing systems and fire rated information were not available. Therefore, it is the expressed requirement that no systems be fabricated, ordered, installed or manufactured until site has been visited and sufficient clearances are field verified for satisfactory installation. Any individual or firm not exercising this effort will place complete financial responsibility on themselves or others with no reimbursable expense or approved change orders for said action.

C. Drawings are diagrammatic and indicative of work to be furnished and installed under this contract; refer to architectural, structural, civil and foundations documents for all dimensions.

D. The terms "provide" and "install" shall be considered synonymous with "furnish" and "install".

E. All work shall be installed in a workmanlike manner by experienced tradesmen with at least 5 years experience in this type project.

F. The submission of a bid or proposal will construed as evidence that the Contractor has familiarized himself/herself with the plans, specifications and bidding site. Claims made subsequent to the proposal for materials and/or labor due to difficulties encountered will not be recognized, unless difficulties could not have been foreseen even though proper examination had been made.

G. Equipment, fixtures, ductwork, dampers, louvers, grilles, registers, diffusers, piping and/or other items noted shall conform to the latest editions of the following:

- 1. ASHRAE
2. 2006 Alabama Mechanical Code with Amendments
3. SMACNA
4. NFPA
5. ANCA Standard Handbook #1
6. Air Division Council Test Code 1062R3
7. ANSI
8. ASME
9. ASA
10. UL Fire Resistance Directory
11. 2006 Alabama Plumbing Code with Amendments
12. Governing Health Regulations
13. Environmental Regulations
14. BOCA Codes
15. Any Local Governing Regulations

H. Deviation from materials, methods and procedures set forth herein must be approved in writing by the Engineer. Approval will not be given unless the Engineer is satisfied that the proposed systems is superior in performance, durability, longevity, and reliability to that specified.

I. Approvals of equipment or systems, by the Engineer, must be in written form no less than ten (10) working days prior to project bid date. Any contractor, sub-contractor, manufacturer or representative wishing to bid equal products must comply with this mandatory requirement. Failure to get pre-approval of systems or products prior to this date will result in immediate "NOT APPROVED" signature from Engineer during shop drawing review phase.

J. Systems on schedules, specifications and construction documents are basis for design only; other systems and manufacturers may be approved after design.

K. Contractor and sub-contractors must pre-qualify with the Engineer prior to bidding project. Qualifications will be reviewed based on contractors/sub-contractors experience with systems proposed, type of facility, time in trade, quality of workmanship, and experience with the Engineer.

L. Contractor or Owner shall not operate HVAC systems, equipment or fans during construction. Failure to comply with this specification item will result in complete cleaning of all fans, blowers, filters, ducts and air distribution systems with approval by Certified Indoor Air Quality Professional.

M. All air distribution systems, piping, equipment, fans, hoods, etc. shall be properly supported from building structural system in compliance with architect and structural engineer requirements; products may NOT be supported from knee brusses or bottom cord-frame wood or steel systems without written approval.

N. In order to comply with Indoor Air Quality standards building mechanical systems may be operated for facility "off-gassing" procedures once Owners have obtained professional services of Certified Indoor Air Quality Professional. If professional is not obtained systems shall not be operated as so noted above.

O. Contractor shall maintain a clean and healthy work premise at all times and shall clean construction site of all his/her debris at the completion of the job or as requested by Owner's representative; this is required prior to release of final project payment to contractor.

1.3 GUARANTEE/WARRANTY:

A. All work and materials shall be guaranteed/warranted (parts and labor) for a period of one year from date of FINAL acceptance by Owner. An additional warranty (parts only) shall be included for a period of four (4) years on all compressors and nine (9) years on all heat exchangers.

1.4 SUBMITTALS/PROJECT MANUALS:

A. Contractor shall supply to the Engineer, five (5) sets of submittals (in three binder form) for approval on the following:

- 1. Air Distribution Materials (turning vanes, extractors, spin-in, diffusers, grilles, registers, louvers, etc.)
2. Heating, Ventilation and Air Conditioning equipment
3. Dampers
4. Fans
5. Insulation Materials
6. Controls
7. Plumbing Fixtures
8. Valves, Arrestors, Supports, Circuit Setters, etc.
9. Isolation Devices and Materials
10. Hangers
11. Pumps

B. All submittals must be APPROVED, in writing, by the Engineer prior to contractor ordering or project delivery.

C. Contractor shall provide a complete set of reproducible (sepia) "as-built" documents of all equipment, systems, air distribution, controls, piping, etc. This documents shall be provided at the completion of the project and prior to Owner acceptance. As-built documents shall include the location of all cleanouts, shut-off valves, balancing valves, dampers, extractors, etc., with the dimensional location of all exterior utilities. Failure to comply with item will result in Architects/Engineers completing effort with professional services payable by this contractor. Marked-up blueprints by contractor will not constitute compliance with this specification.

D. Operation Instructions/Manuals:

a) Upon completion of work contractor shall supply to the Owner a minimum of four bound sets of all work, tests and necessary instructions for the complete operation and maintenance of all equipment and products installed.

b) Contractor must provide at least a forty-eight (48) hours notice to Owner of training task for Owner personnel on operation and basic maintenance all systems installed; training period shall not be less than one (1) eight work day.

c) Manufacturer's advertising information or catalogs will not be accepted for operating and maintenance manuals.

d) Operation and Maintenance Manuals shall include:

- 1. maintenance and operating instructions for all equipment and products installed at this job
2. characteristics and curves of all equipment
3. date on all the equipment and products installed to include item, make, model, capacity, electrical characteristics, etc.
4. name, address and telephone number of service agent

1.5 TEST AND BALANCE:

A. A complete certified test and balance report shall supplied by an independent certified test and balance agency per AABC Test and Balance Report Manual (latest edition); this action must take effect prior to Owners final acceptance of the facility. This agency shall actually be an active member, with at least 5 years membership, certified and in good standing with AABC or NEBB national organizations. Licensed professional engineer (PE) working as certified firm agent will not be approved as qualification for this effort.

B. Once Owners have occupied facility agency shall again re-visit site and re-adjust systems based on actual space usage. If this event occurs during one season (cooling or heating) agency shall make an additional adjustment during other remaining season (heating or cooling), as required.

C. Testing shall be for all air distribution, hydronic systems, equipment, fans, controls, dampers, etc.

D. Air distribution devices shall be in compliance with construction documents; Test and Balance agency shall provide all sizes, quantities, and "velocities" noted in documents; air velocities (FPM) not indicated in bid documents shall be recorded at each device for Engineer review; failure to record both CFMs & FPMs will result in complete system retesting and balance; each air device indicated in documents will include the following technical information at either actual product or as so indicated in schedules:

Table with 4 columns: \*Product, Face Size, Type & Air Pattern, Quantity (CFMs), Velocity (FPMs). Includes rows for 15'x15' CD-4, 300 - 350, and Branch duct size serving air device w/10'.

\*Does not include T-bar panel or framing

E. Actual air velocities (FPM) and sound levels MUST be accurately tested and recorded at each air distribution device. See Diffuser, Grille & Register Schedule for additional information. The purpose of this action is to determine if the sound waves and air moving qualities are performing as designed-engineered. Failure to provide this requirement will result in rejection and not-approved status of certified report.

F. Certified Test and Balance agency shall be approved by the Engineer, prior to bidding project.

G. All domestic hot water systems shall also be tested and adjusted to meet design requirements as required by governing codes or as so noted in specifications.

H. All building structures shall have air balance systems to assure slight positive air pressure via designed mechanical systems; this effort shall be field verified by either digital manometer or blower door method; readings to be recorded during typical occupied building usage; additional building systems may be required to be tested at request of project Engineer.

1.6 EQUIPMENT/SCHEDULES/FIXTURES:

A. All equipment schedules, fixtures and construction document information notes are hereby noted in specifications and construction documents.

B. All roof curbs for fans, outside air intakes, exhaust and equipment shall be provided and installed by this contractor; coordinate with metal roofing contractor for all metal roof systems.

C. Equipment foundations for HP units shall be reinforced concrete 6" thick with pad 6' wider and longer than unit; provide 12" pea-gravel trench, framed in 2" x 12" treated lumber (12" in depth) around entire concrete pad for system deffrost and drainage.

D. AHUs shall have spring type vibration isolators as manufactured by Mason Industries; isolator products shall properly sized with minimum of one inch deflection.

E. Materials and products specified shall be listed by the Underwriters Laboratories (UL) or National Electrical Manufacturers' Association (NEMA).

F. All AHU's shall have one inch "carbon-pleated" air filters at units equal to American Air Filter (Amaric) or Plecoaire (Pre-Pleat AC) with carbon rated at MERV 13 per ASHRAE 52.2-1994; fiberglass throw-away type filters are NOT acceptable; provide one extra set of filters to Owner after final acceptance.

G. Locate all equipment which must be serviced, operated and/or maintained in fully accessible position based on manufacturer recommendations, code requirements, or as so indicated in drawings. Contractor shall review equipment installation instructions for compliance and guidelines to assure proper air movement, component replacement, etc. Doors for access to electric heating coils shall have disconnect switch to break circuits as door is opened. Furnish all doors/panels in accordance with local codes and manufacturer's recommendations for each control valve, control, damper, motor, or other device requiring service.

1.7 REFRIGERANT PIPING:

A. All piping sizes shown are clear net inside dimensions.

B. Refrigerant piping shall be sized and installed in strict accordance with the manufacturer's recommendations for liquid, vapor horizontal and vapor risers. If piping is not indicated on drawing documents then contractor shall immediately assume that corresponding AHU and CUHP numbers shall match with piping routed above finished ceiling areas to inside cavity of outside walls. Roving must be stopped, pitched, trapped (with double suction risers) in compliance with manufacturer recommendations. Please seal or metal guard over any piping subject to structural framing nails, anchors and screws.

C. Refrigerant tubing shall be installed with a moisture indicator sight glass located in the liquid line adjacent to the outdoor unit.

D. Thoroughly clean refrigerant pipe and fittings before assembly. All joints are to be made with silver alloy braze with melting above 1100 F. No acid flux shall be used on any joint or pipe.

E. Refrigerant piping under slab floors or below grade shall be installed in PVC schedule 80/84 material; piping shall be sized sufficient to allow installation of refrigerant piping with insulation; seal open ends with proper sealant material and slope per manufacturer recommendations.

F. Brazing Material: Comply with SFA-3.8, Section II, ASME Boiler and Pressure Vessel Code for brazing filler metal materials appropriate for the materials being joined.

G. All refrigerant piping materials shall be of the following:

- 1. Refrigerant Piping
a. below floor-type "L" soft copper
b. above floor-type "L" hard copper
2. Insulation
a. refrigerant piping shall be equal to Armaflex (1" thickness) with aluminum jacket and plastic "Zeston" fitting covers
3. Pipe Hangers
a. pipe hanger spacing and sizing shall be in accordance with Section 308 of Alabama Plumbing Code (2006); hanger strap or bands will not be permitted

1.8 PLUMBING/CONDENSATE DRAIN PIPING:

A. All condensate drains shall terminate to floor drains, indirect waste drains, dry-wells or french drains with concrete pipe minimum 24" in diameter at 24" height filled with pea gravel and 12" sand bed bottom approximately 36" in diameter with approved lid cover and anchored drainage not less than 6" below grade; provide through condensate control device as manufactured by Trent Technologies, in Tyler, Texas called "CostGuard"; deep seal P-traps with cleanouts are NOT acceptable for condensate drains at equipment.

B. Unless otherwise noted, all water piping shall be routed above sheet-rock ceilings and/or in walls or chases with offsets, as required, to miss obstacles; coordinate with other trades prior to installation.

C. No PVC piping or other materials shall be routed or installed in return air plenums or free pulling mechanical rooms; insulate vent stacks with PVC materials in these areas with 2" external R-6 duct wrap with FSK foil backing and vapor seal with SMACNA approved tape.

D. Water piping below slab floor and finished grade shall be sleeved with 3/4" Armaflex tubing insulation; insulation minimum length shall be three feet; piping shall be tested at 300 PSI prior to earth fill and covering.

E. Water hammer arrestors shall be installed at all water closets, urinals, drinking fountains, washing machines, dishwashers, & tub/showers in accordance with PD-HH201 & ANSI/ASEE-1010-1996 as manufactured by Wade or Sioux Chief. Devices to be installed within 6 feet of valve served in hot & cold water lines. Size shall be "A" unless noted otherwise. Vent stacking is not permitted for water hammer arrestors.

F. All copper pressure piping for potable water and condensate drains shall be soldered entirely with silver solder with less than 0.2% lead per 2009 Alabama Plumbing Code.

G. All water piping must be disinfected in accordance with 2009 Alabama Plumbing Code and verified by written report from the local and State Boards of Health.

H. Utility connections indicated on documents are the best information available to the design engineer and shall be field verified by the contractor prior to installation.

I. All piping inverts will be established after finished floor elevations and utility sewer inverts are determined.

J. Prior to cover-up or back-fill of soil-waste-vent piping (below finished grade/floor areas) systems shall be filled with water and tested at ten (10) foot head with all fittings and joints open for review by Engineer and/or local building inspection department. Any piping not inspected will be removed with damages to be fully repaired by this contractor. After plumbing fixtures have been set and their traps filled with water the entire sanitary sewer system shall be tested with air pressure of not more than 0.1 inches of water column and smoke peppermint test. Perform the air or smoke test with an approved smoke testing machine which will show a clear passage of smoke and air throughout the entire system. The system shall be proven absolutely tight under such test.

K. All water piping shall be tested at a minimum of 150 PSI for 2 hours, with no leaks, prior to insulation or connections to local utilities; review of test shall be by Engineer or local utility official.

L. Route all temperature-pressure relief lines to outside per 2006 Alabama Plumbing Code.

M. Route all vent lines to common stacks in order to limit roof penetrations; roof penetrations shall be routed to backside of roof at all times; verify locations and slopes at site.

N. All piping sizes shown are clear net inside dimensions.

O. All piping materials shall be of the following:

- 1. Soil-Waste-Vent Piping
a. schedule 40 PVC (solid) with solvent welding; thin-wall or core type walls (construted core) are NOT accepted except for venting systems only
2. Potable Water Piping
a. below floor-type "L" soft copper (pressure tested) in compliance with ASTM-B88
b. above floor-type "L" or "M" hard drawn copper with ANSI-B16.8 & ASME-B16.22 soldered joint fittings with 197A In-Trimony soldering; may use Rigid Viega ProPress fitting system in accordance with manufacturer's published instructions
c. stop valves shall be bronze ball valves with stainless steel balls & Teflon packing & gaskets
d. contractor may use cpvc material in compliance with ASTM-D2846 & SDRI above finished floor for lines up to 2" with schedule 80 cpvc for lines above 2"; all must be approved by local Authority Having Jurisdiction
3. Condensate Piping
a. copper type "L" or "M" hard drawn or
b. schedule 40 PVC with solvent welding
4. Natural Gas Piping
a. schedule 40 black iron steel per local code (if required)
5. Insulation
a. ALL potable water piping, including hot water, hot water return and cold water piping (in non-conditioned areas and outside walls) shall be 1 1/2" thick fiberglass insulation (ASTM C541) with Universal Jacket (secured with Foster 85-75); provide protection blocking & shields at each hanger; fittings shall be furnished with "Zeston" plastic fitting covers; all joints shall be finished with Foster 30-36 & reinforced with 20020 glass fabric; Armaflex, Rubotex or similar tubing insulation is NOT approved

- b. All roof drains shall be insulated with 3/4" Armaflex tubing type material for rated plenum systems from roof drain areas to vertical lines inside insulated walls
6. Pipe Hangers
a. pipe hanger spacing and sizing shall be in accordance with Section 308 of 2006 Alabama Plumbing Code; hanger strap or bands will not be permitted; b. hangers shall be Fes & Mason Figure 364 with Figure 221 adjustable for copper pipe
c. hangers for horizontal sanitary piping shall be expansion ring or clevis type spaced no more than 5 feet apart; vertical pipe passing thru slabs shall be supported with Fes & Mason Figure 241 riser clamps
7. Cleanouts
a. Floor cleanouts (FCO) to be equal to Made #M-6030-5V-2T5
b. outside cleanouts (COTB) to be equal to Made #M-6030-5V-2 in 18" square by 8" thick concrete pad flush with finished grade
c. wall cleanout (WCO) to be equal to UR Smith #4420
8. Valves
a. ball valves equal to Hammond #806
b. check valves equal to Hammond #106
9. Meters
a. water meter/regulators equal to Hays Model MT Series in underground vault with traffic lid per local code
10 Backflow Preventors
a. equal to Watts Model 494GT in underground vault with traffic lid per local code

P. All water piping, outside building shall be buried minimum of 18" below finished grade for freeze protection in accordance with 2006 Alabama Plumbing Code.

Q. All floor drains or floor sinks serving ice machines or similar products shall be insulated with sealed 1/2" Armaflex tubing material from drain to a minimum of 10 feet down stream; purpose is to prevent possible condensation issues; actual length maybe increased if so deemed necessary by Engineer.

R. All trap primers for floor drains shall be sloped to allow proper water discharge for primers to floor drain unit.

S. Upon completion of project contractor shall fill all floor drain traps with liquid mineral oil for air tight seal.

1.9 PIPING SPECIALTIES:

A. Escutcheons: Chrome-plated, stamped steel, hinged, split-ring escutcheons, with set screw. Inside diameter shall closely fit pipe outside diameter, or outside of pipe insulation where pipe is insulated. Outside diameter shall completely cover the opening in floors, walls, or ceilings. All exposed pipes, refrigerant lines and/or water piping & drains under cabinets or counters shall have escutcheons installed; this action also applies to piping systems installed in mechanical rooms, outside structures or other exposed areas.

B. Unions: Malleable-iron, class 150 for low pressure service and class 250 for high pressure service; hexagonal stock, with ball-and-socket joints, metal-to-metal bronze seating surfaces; female threaded ends.

C. Dielectric Unions: Provide dielectric unions with appropriate end connections for pipe materials in which installed (screwed, soldered, or flanged), which effectively isolate dissimilar metals, to prevent galvanic action, and stop corrosion.

D. Dielectric Waterway Fittings: Electroplated steel or brass nipple, with an inert and non-corrosive, thermoplastic lining.

E. Y-Type Strainers: Provide strainers full the size of connecting piping, with ends matching piping system materials. Screens shall be Type 304 stainless steel, with 3/64" perforations at 255 per square inch.

F. Sleeves:
1. Sheet-Metal Sleeves: 10 gage, galvanized sheet metal, round size closed with welded longitudinal joint.
2. Steel Sleeves: Schedule 40 galvanized, welded steel pipe, ASTM A53, Grade A.

G. Mechanical Sleeve Seals: Modular mechanical type, consisting of interlocking synthetic rubber rings shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber seating elements to expand when tightened, providing watertight seal and electrical insulation.

H. P-Traps and water piping underneath handicapped lavatories, sinks and drinking fountains shall be wrapped with "HAND LAY-GUARD" kits per American With Disabilities Act, as manufactured by Trueborn, Inc.

I. Contractor shall maintain the integrity of all fire walls, structures, ceilings and floor systems with "METAGULK" approved fire system materials per UL-CAL2134 (ceiling-floor systems) or UL-M2109 (wall systems); verify actual ratings with architectural construction documents; contact manufacturer "RECTORSEAL" at 800-291-9549 for additional information.

1.10 AIR DISTRIBUTION:

A. All air distribution shall be air tight and free of leaks, and must be inspected for leaks prior to installation of fan units or finished ceiling/floor systems; ductwork shall be sealed with air duct sealer per SMACNA Standards and UL ratings.

B. All supply, return, exhaust and outside air ducts shall be galvanized metal with 3" external insulation having vapor, retarding jacket (FSK type) with R-8.5 value equal to Johns Manville "Mcrrolite" (formaldehyde-free product). Insulation shall comply with UL 181 and must have flame spread rating of 25 and a smoke developed rating no higher than 50. Apply white mastic fire rated duct insulation sealer to all joints and seams per SMACNA Standards.

C. No ducts shall be internally insulated, unless otherwise noted.

D. Fibrous Ductboard systems are NOT approved.

E. Install flexible duct connectors at all fans, air handling units, roof-top-units, package units and other air moving equipment.

F. All ducts are to have air extractors (adjustable type) on square or rectangular take-offs with spin-in volume dampers (no scoops) on round or oval take-offs.

G. Square or rectangular 90 degree and 45 degree elbows shall have "air-foil" type turning vanes, installed per SMACNA Standards.

H. Flexible ducts must comply with UL 181 and shall not exceed six feet in length; remaining branch line shall be galvanized metal with R-8 external insulation and white fire mastic sealant; flexible ducts are to have foil backing (FSK type).

I. The interior face of all ductwork housing supply, return and exhaust air diffusers, registers or grilles shall be painted "flat-black" so when viewed from below and above nothing beyond surface of an air device is visible.

J. Whenever the depth of a trunk duct is less the round runout duct diameter noted contractor shall provide transition fittings (manufactured) of equivalent area to the round duct.

K. All exhaust (including plumbing vents) shall be separated at least ten (10) feet from air intakes.

L. Fire dampers shall be rated at a minimum of 2 hours per UL555, equal to RUSKIN, with approved access doors (insulated); dampers shall be FREE area type.

M. Install backdraft dampers, volume dampers, insect screens and approved weather proof wall louvers or door grilles on all outside air intakes.

N. All duct sizes shown are clear net inside dimensions.

O. Ducts shall be properly supported from structure per SMACNA Standards.

P. All square or rectangular ducts 24" wide or larger shall be connected using "Ductmate" type fittings; bar locks, "S" locks, etc. for larger ducts will NOT be accepted for joints; joints smaller than 24" shall be screwed bar lock type with drives & mastic duct sealer.

Q. Galvanized metal ducts must be constructed in compliance with SMACNA "HVAC Duct Construction" manual 2nd edition (1985) with Addendum No. 1 (11/97) for GPO material using US Steel products; other galvanized metal from other countries (outside the USA) shall be constructed of the following minimum gauge requirements using either cross-breaking bead construction or mechanical stiffeners:

- 1) 10' & down.....26 gauge
2) 11'-15'.....26 gauge
3) 16'-20'.....24 gauge
4) 21'-24'.....22 gauge
5) 25'-26'.....20 gauge
6) 27'-36'.....18 gauge
7) 37'-48'.....16 gauge
8) 49' & up.....must verify with Engineer

Failure to comply with this requirement will result in complete product removal and replacement at no additional cost to owner.

R. Provide 1" duct liner as indicated in Mechanical Material Schedule for all AHU's and EF's for acoustics using Armacell AF-Colliflex elastomeric closed cell foam; material shall be properly applied, clipped and sealed per SMACNA Standards; products to have hospital sealer or biological treatment; apply lining to both supply and return ducts but NOT outside air intakes.

S. All supply return & exhaust air ducts shall have galvanized elbows with 3" (R-8.5) external duct insulation at diffusers, grilles or registers; this requirement is to prevent air restrictions caused by typical flexible duct materials.

T. All supply main trunk ducts shall extend minimum of 24" beyond last air distribution device for "cushion-head" air balance effect; failure to comply with this request will demand field adjustment by installing contractor at each branch line with new control products and additional re-testing by certified test-and-balance agent.

1.11 SPECIAL PROJECT NOTES:

A. Entire building shall be pressure tested during certified test-and-balance effort to assure positive building pressures of at least 2.5 pascal. Other rooms in building shall also be tested based on the following requirements:

- 1. toilet rooms, lockers, kitchens, outside storage or electrical rooms shall be under negative air pressure from 0.0 to -1.0 pascal
2. office areas, work rooms, sanctuary rooms, class rooms, etc. shall be under positive room pressure from 0.00 to 2.5 pascal

Certified room map testing and recording shall be submitted with certified system report by project approved certified test and balance contractor. Project will not be accepted until this effort has been approved by project engineer.

B. Facility materials used during the construction and operation of building shall in compliance with government regulations for indoor air quality contaminants. Typical levels shall not exceed time weight averages (TWA) for CO (carbon monoxide) of 9 parts per million for 8-hour sampling, CO2 (carbon dioxide) 1000 ppm (TWA) or formaldehyde 0.1 ppm (TWA).

C. Water and sewer systems shall connect to local utilities; verify at site prior to installation and connection. If existing systems are not adequate to handle additional load requirements then contractor shall immediately notify Owners and Engineers.

D. Water heaters shall be mounted in steel pans with drain routed to outside area per code.

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STATE OF FLORIDA REGISTERED ARCHITECT G MARK PEPE #AR92644

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A NEW BUILDING FOR USDA, QUINCY, FL CORPORATE COURT, QUINCY, FL, 32351

REVISIONS

FOR PERMITS - FOR PRICING - CLIENT REVIEW

DRAWN BY: JWP/MP PLOT DATE: 8-20-24 PROJ. DATE: 8-1-25 SHEET

MP1 OF 2 562. 41 OF 54 JOB No. 25020



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A NEW BUILDING FOR  
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REVISIONS

FOR PERMITS

FOR PRICING

CLIENT REVIEW

DRAWN BY:  
JW/MP

PLOT DATE  
9-24-25

PROJ. DATE  
2-1-25

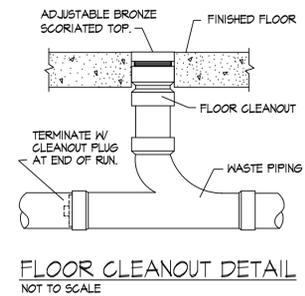
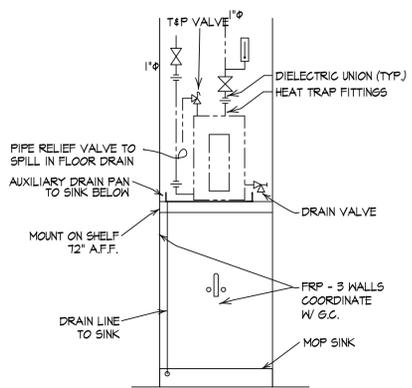
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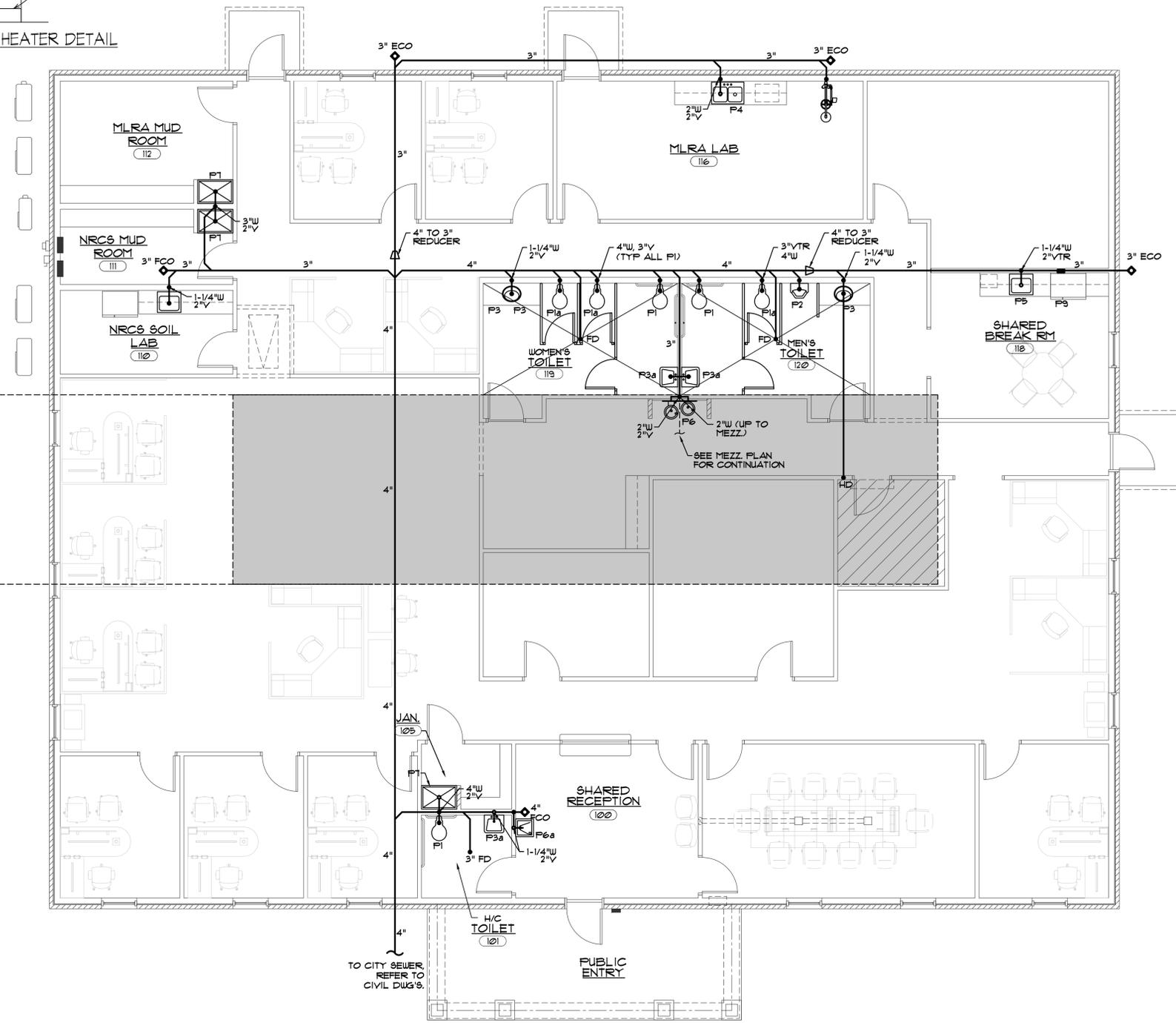
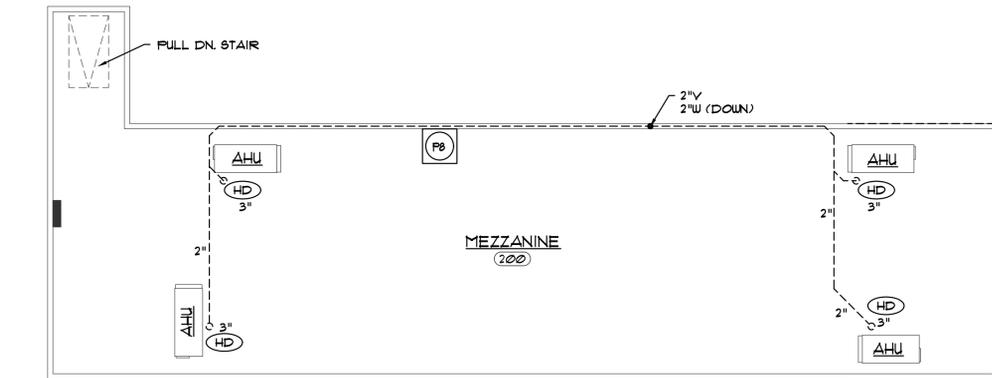
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PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE TYPE	QTY	FIN. IN.	SAN. IN.	REMARKS
(F-1)	ADA WATER CLOSET	1	-	4	ZURN ONE #Z5665250.02.03.00 CONSISTING OF A ZURN Z5665 VITREOUS CHINA 128 GPF ADA WATER CLOSET, ZURN Z6002AV-HET 128 GPF FLUSH VALVE, ZURN Z99588-A1-878 SOLID PLASTIC OPEN FRONT ANTI-MICROBIAL SEAT W/88 CHECK HINGE. MOUNT SEAT 11"-18" AFF PER ADA GUIDELINES
(F-1a)	WATER CLOSET	1	-	4	ZURN ONE #Z5665250.02.03.00 CONSISTING OF A ZURN Z5665 VITREOUS CHINA 128 GPF WATER CLOSET, ZURN Z6002AV-HET 128 GPF FLUSH VALVE, ZURN Z99588-A1-878 SOLID PLASTIC OPEN FRONT ANTI-MICROBIAL SEAT W/88 CHECK HINGE.
(F-2)	URINAL	3/4	-	2	ZURN ONE #Z5138207.01 CONSISTING OF A ZURN Z5138 VITREOUS CHINA PINT FLUSH URINAL AND A ZURN Z6003AV-ULF 1/8" GPF MANUAL DIAPHRAGM FLUSH VALVE, MOUNT URINAL RIM 24" AFF
(F-3)	LAVATORY - DROP IN	1/2	3/8	1 1/4	KOHLER K-2196 W/ CHICAGO 2200 CP # MCGUIRE 155A DRAIN
(F-3a)	ADA WALL HUNG LAVATORY	1/2	1/2	1 1/4	ZURN ONE #Z5364119.3.01.03.6 CONSISTING OF A ZURN Z5364 20"x18" WALL HUNG VITREOUS CHINA 4" CENTERSET LAVATORY, ZURN Z1440-XL 4" CENTERSET SINGLE LEVER FAUCET WITH CERAMIC DISC CARTRIDGE, OFFSET WHEEL, CHAIR GRID STRAINER, CHROME PLATED BRASS TRAP, BRAIDED SS SUPPLIES, ASSE 1070 MIXING VALVE. MOUNT LAVATORY RIM 34" ABOVE FINISH FLOOR PER ADA GUIDELINES
(F-4)	DOUBLE BOUL SINK	1/2	1/2	1 1/2	ELKAY LR3322 W/ LK99 DRAIN, CHICAGO 1100-31TCP FAUCET, MCGUIRE 8912 TRAP
(F-5)	SINGLE BOUL SINK	1/2	1/2	1 1/2	ELKAY LR41910 66 SINGLE BOUL, STAINLESS STEEL SINK WITH 16"x11-1/2"x6" DEEP BOUL, ZURN ONE #99004004.013.01.01 SINK TRIM TRIM CONSISTING OF A ZURN Z8124-XL 4" CENTERSET FAUCET W/ 3-3/8" GOOSENECK RIGID SPOUT, CERAMIC DISC CARTRIDGES & 4" WRIST BLADE HANDLES, 2.0 GPM AERATOR, GRID STRAINER, BRAIDED SS RISERS
(F-6)	ADA H2/O DRINKING FOUNTAIN W/ BOTTLE FILLER	1/2	-	1 1/2	ELKAY EZ37LDU88K ADA H2/O DRINKING FOUNTAIN (RIGHT-HAND HIGH-SIDE MODEL) INSTALL SO THAT HIGH SPOUT IS 39-1/2" AFF AND LOWER SPOUT IS 33" AFF WITH 21" CLEARANCE BELOW APRON PER ADA GUIDELINES
(F-6a)	DRINKING FOUNTAIN	1/2	-	1 1/2	ELKAY LZ89L ADA DRINKING FOUNTAIN. INSTALL SO THAT SPOUT IS 33" AFF WITH 21" CLEARANCE BELOW APRON PER ADA GUIDELINES
(F-7)	MOP SINK	1/2	1/2	3	FIAT- MOLDED STONE SERVICE BASIN M98-3624. FURNISH WITH ZURN Z843M1 ROUGH CHROME FAUCET WITH QUARTER TURN CERAMIC DISC CARTRIDGES, VACUUM BREAKER SPOUT WITH MALE HOSE THREAD OUTLET, PAIL HOOK AND SUPPORT BRACKET.
(F-8)	WATER HEATER	3/4	-	-	A.O. SMITH DEL-1B, 15 GALLON, 4.5kW, 208/3/60 30A 2P 2-W, 1-W2 GRND (ON EQUIP. MEZZ)
(F-9)	ICE MAKER BOX	1/2	-	-	WATERTITE AB9100 ICE MAKER OUTLET BOX W/ QUARTER TURN VALVE
(HD)	WALL HYDRANT	3/4	-	-	WOODFORD MODEL #65 ANTI-SIPHON, ANTI-FREEZE, WITH VACUUM BREAKER
(FD)	FLOOR DRAIN	-	-	3	ZURN ZN415B FLOOR DRAIN WITH SECURED TYPE "B" STRAINER WITH TRAP PRIMER
(HD)	HUB DRAIN	-	-	2"	(ON MEZZANINE)



EQUAL FIXTURES ACCEPTED BY ZURN, WADE, SLOAN, TOTO, KRANE, MIFAB, METCRAFT, AMERICAN STANDARD, T&B BRASS, STERIS, OR FIRE-APPROVED EQUAL



PLUMBING NOTES

- ALL PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL CODES WITH THE LATEST REVISIONS. (2019 INTERNATIONAL PLUMBING CODE)
- THE DRAWING ARE AS ACCURATE AS SCALE PERMITS, HOWEVER THEY ARE DIAGRAMMATIC IN NATURE. DO NOT SCALE FROM DRAWING.
- VERIFY ALL CONDITIONS RELATING TO THE SCOPE OF WORK PRIOR TO INSTALLATION.
- INCLUDE ALL MATERIALS AND LABOR REQUIRED FOR A COMPLETE PLUMBING SYSTEM AS SHOWN.
- ALL WORK SHALL BE DONE IN A NEAT WORKMAN LIKE MANNER BY SKILLED TRADESMAN.
- COMPLY WITH OSHA STANDARDS AND CODE OF FEDERAL REGULATIONS, TITLE 29 - LABOR PART 1926.
- SECURE ALL PERMITS RELATIVE TO THE WORK AND PAY ALL ASSOCIATED FEES.
- REPAIR ALL DAMAGE TO ANY ITEM DURING THE EXECUTION OF THE CONTRACT.
- MAINTAIN AND RECORD ALL CHANGES TO THE WORK ON A SET OF AS-BUILT DRAWINGS FOR THE OWNER.
- PROVIDE A ONE YEAR GUARANTEE IN WRITING TO THE OWNER PRIOR TO FINAL APPROVAL.
- TEST ALL DRAIN PIPING FOR A PERIOD OF EIGHT HOURS AT A HYDROSTATIC HEAD OF 10 FEET GREATER THE HIGHEST FIXTURE AND ACCORDING TO LOCAL CODE REQUIREMENT.
- TEST ALL WATER PIPING AT A PRESSURE OF 125 PSIG FOR A PERIOD OF 24 HOURS.
- PROVIDE DIELECTRIC UNIONS BETWEEN FERROUS AND NON-FERROUS METALS, PIPING, VALVES AND EQUIPMENT.
- INSULATE ALL WATER PIPING WITH 1" THICK ARMAFLEX INSULATION AND PAINT EXPOSED INSULATION TO MATCH ADJACENT COLOR SURFACES.
- ALL WATER PIPING TO BE RUN OVERHEAD TO ALL FIXTURES.
- RESERVED -
- ALL SANITARY PIPES SHALL BE CAST IRON, PVC, OR COPPER. ALL DOMESTIC PIPE SHALL BE 1" COPPER. PVC WATER LINES ARE NOT ALLOWED PER OK IF ALLOWED BY CITY OF MADISON.
- ALL DOMESTIC PIPE ABOVE GRADE SHALL BE INSULATED W/ 1" FIBERGLASS INSULATION W/ A WHITE ALL-SERVICE JACKET FACTORY APPLIED TO THE INSULATION.
- ALL PIPING SHALL BE LABELED W/ LABELS THAT INDICATE TYPE OF FLUID AND FLOW ARROWS. LABELS SHALL BE APPLIED IN 40' INTERVALS OR AT A MINIMUM OF ONE PER ROOM.
- ALL DOMESTIC WATER LINES SHALL BE FLUSHED AND DISINFECTED UPON COMPLETION OF WORK.

PLUMBING LEGEND

- SD - SANITARY DRAIN
- SV - SANITARY VENT
- DCW - DOMESTIC COLD WATER SUPPLY
- DHW - DOMESTIC HOT WATER SUPPLY
- DHR - DOMESTIC HOT WATER - RECIRCULATION
- SH - SHUT-OFF VALVE
- SDR - SANITARY DRAIN REDUCER

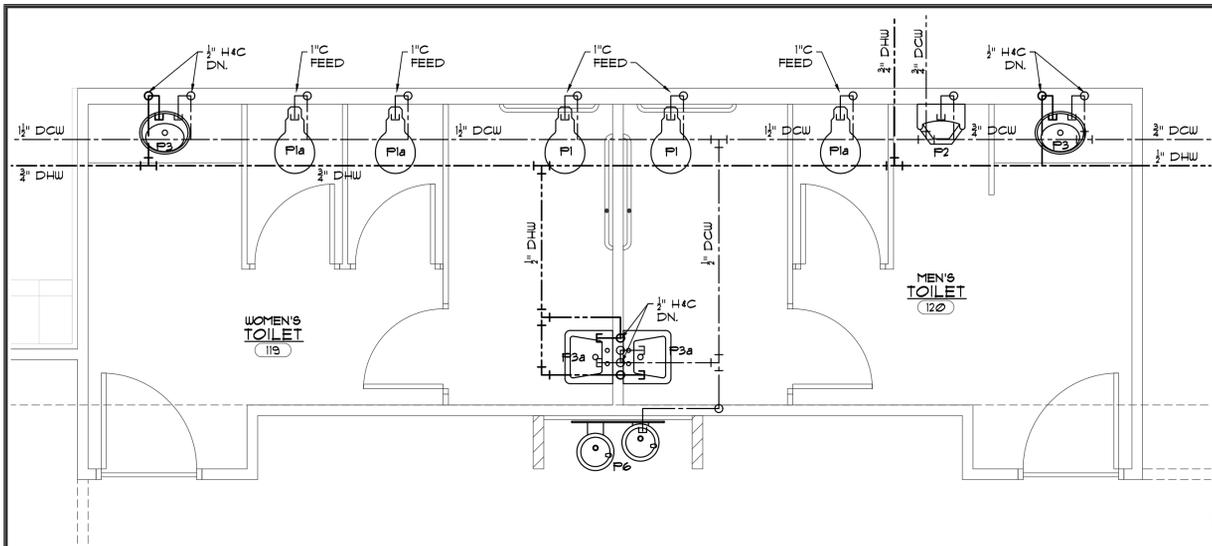


PLAN - SOIL-WASTE-VENT PLUMBING PLAN

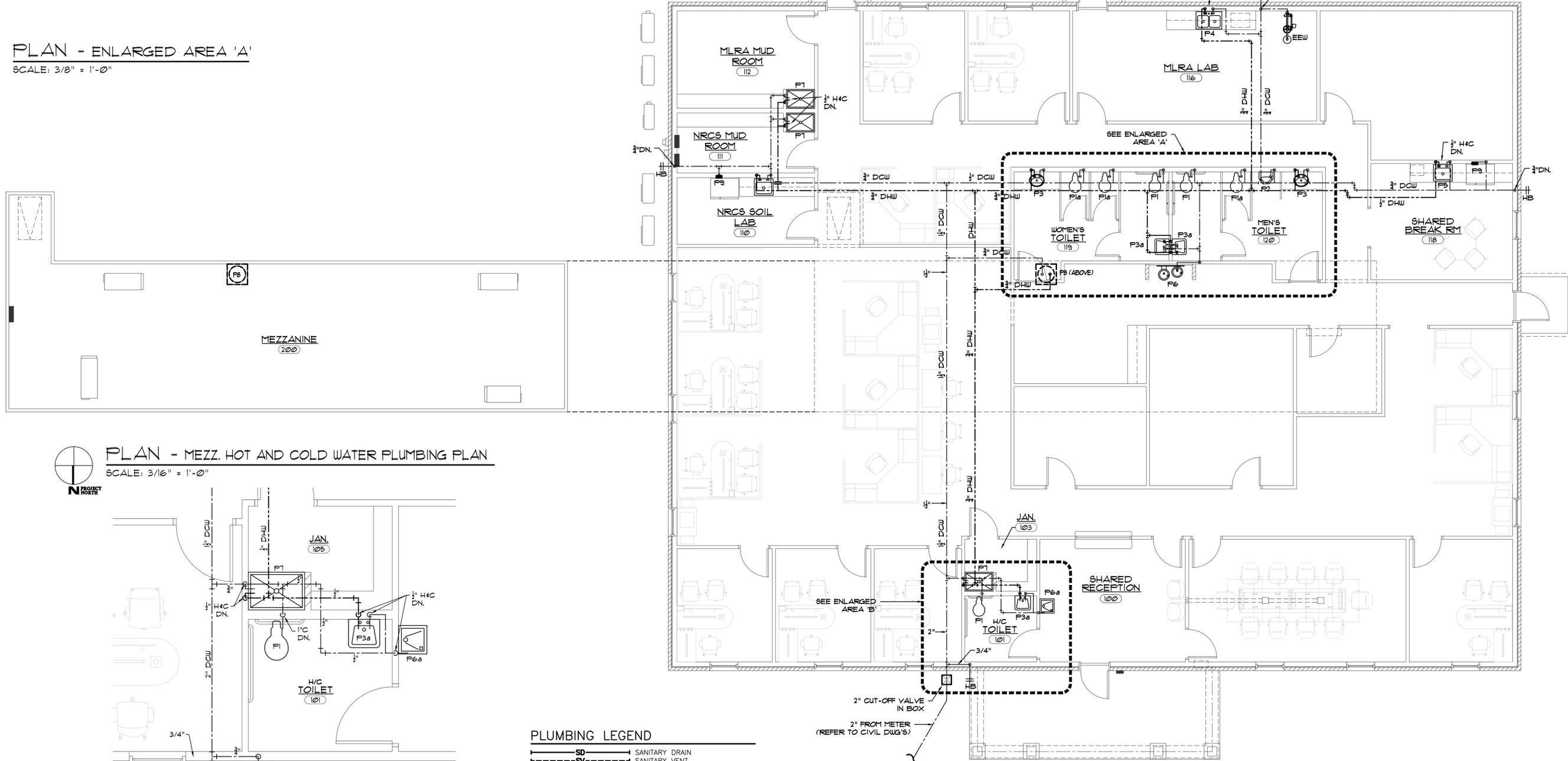
SCALE: 3/16" = 1'-0"  
SEE SHT. A12 FOR DIMENSIONS.

- SHADING INDICATES MECH. MEZZANINE ABOVE.
- HATCH INDICATES 5/8" GYP. BOARD ATTACHED TO TRUSS BOTTOM CHORD ABOVE ACOUST. CEILING.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. THE USER OF THESE DRAWINGS WITHOUT WRITTEN APPROVAL BY ARCHITECT/OWNER IS PROHIBITED.

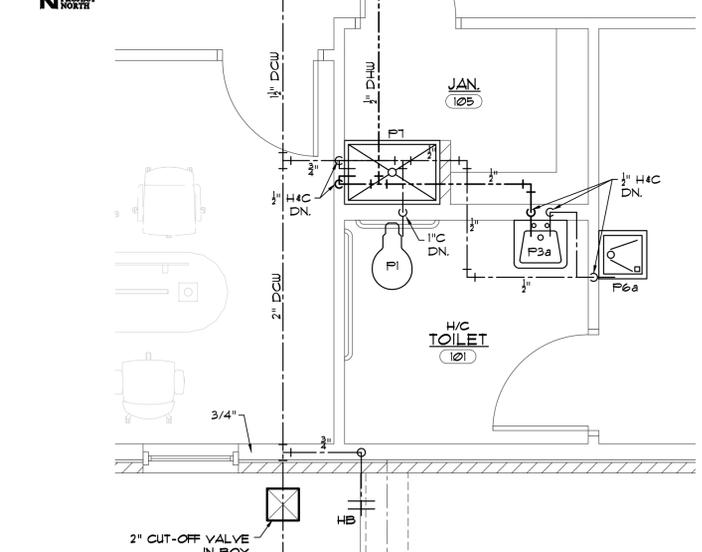


**PLAN - ENLARGED AREA 'A'**  
SCALE: 3/8" = 1'-0"



**PLAN - HOT AND COLD WATER PLUMBING PLAN**  
SCALE: 3/16" = 1'-0"  
SEE SHT. A12 FOR DIMENSIONS.

**PLAN - MEZZ. HOT AND COLD WATER PLUMBING PLAN**  
SCALE: 3/16" = 1'-0"



**PLAN - ENLARGED AREA 'B'**  
SCALE: 3/8" = 1'-0"

**PLUMBING LEGEND**

SD	SANITARY DRAIN
SV	SANITARY VENT
DCW	DOMESTIC COLD WATER SUPPLY
DHW	DOMESTIC HOT WATER SUPPLY
DHR	DOMESTIC HOT WATER - RECIRCULATION
SV	SHUT-OFF VALVE
SDR	SANITARY DRAIN REDUCER

SHADING INDICATES MECH. MEZZANINE ABOVE.  
HATCH INDICATES 5/8" GYP. BOARD ATTACHED TO TRUSS BOTTOM CHORD ABOVE ACoust. CEILING.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY, CHECK AND CORRECT ALL DIMENSIONS AND REVISIONS MINIMUM FLOOR ELEVATIONS. VERIFY ALL RESTRICTIONS OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. THE SIZE OR COLOR OF THESE DRAWINGS WITHOUT WRITTEN APPROVAL BY ARCHITECT/TOWERS IS PROHIBITED.

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**A NEW BUILDING FOR USDA, QUINCY, FL**  
CORPORATE COURT, QUINCY, FL, 92351

REVISIONS

NO.	DATE	DESCRIPTION

FOR PERMITS -  
FOR PRICING -  
CLIENT REVIEW -  
DRAWN BY: JW/MP  
PLOT DATE: 10-28-25  
PROJ. DATE: 2-1-25  
SHEET: P1.2 of 8  
REV. 56 OF 54  
JOB No. 25020



