SECTION 220100/230100-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. WARNING: These plans and specifications are each part of an integrated design system. Any modifications, alterations, changes, deletions, additions or substitutions, of 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 diagrammaticand indicative of work to be furnished and installed under this contract; refer to architectural, structural, civil and foundations documents for all dimensions. Fifield verified shop drawings %%Umust%%U be provided by sub contractor prior to work effort. Such drawings or approval of such does not release sub from accuracy, work quality, warranty or performance of installation. .

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 building 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. 2014 Florida Mechanical Code with Amendments
3. SMACNA
4. 2010 NFPA & 2012 Florida Fire Code
5. AMCA Standard Handbook 99
6. Air Diffusion Council Test Code 1062R3
7. ANSI
8. ASME
9. AGA
10. UL Fire Resistance Directory
11. 2014 Florida Plumbing Code with Amendments
12. Governing Health Regulations
13. Environmental Regulations
14. 2014 Florida Model Energy Code with Amendments
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 equall 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 at review by Engineer.

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 trusses 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-gasing" 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 hour 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 still be recorded at each device for Engineer review; failure to record both CFM's & FPM's will result in complete system retesting and balance; each air device indicated in documents will include the following typical information at either actual product or as so indicated in schedules:

"Product Face Size Type & Air Pattern
15"x 15" - CD-4
Quantity (CFM's) Velocity (FPM's)
300 - 550
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 spaces maybe 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 roofing contractor for all 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 defrost and drainage.

D. AHUs-HFCs 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 Manufacturer's Association (NEMA).

F. All AHU's, HFCs, & DOAS shall have one-two inch "carbon-pleated" air filters at units equal to American Air Filter (AmairC) or Precisionaire (Pre-Pleat AC) with carbon rated at MERV 13 per ASHRAE 52.2-1999; 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 vendor 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, WFC, HFC and /HP numbers shall match with piping routed above finished ceiling areas to inside cavity of outside walls. Routing must be sloped, pitched, trapped (with double suction risers) in compliance with manufacturer recommendations. Place steel 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 3034 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 Materials: Comply with SFA-5.8, 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 2014 Florida Plumbing Code; 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, storm drain, as indicated with insulated piping, provide through condensate control device equal to or as manufactured by Trent Technologies, in Tyler, Texas called "CostGard", 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, & tubs/showers in accordance with PDI-WH201 & ANSI/ASSE-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 2014 Florida Plumbing Code and Federal Regulations effective 04 January 2014 for lead free systems.

G. All water piping must be disinfected in accordance with 2014 Florida 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 an 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 2014 Florida 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-Storm Piping
   a. schedule 40 PVC (solid) with solvent welding (ASTM-D2665); thin-wall or core type walls (coextruded core) are NOT accepted except for venting systems only
2. Potable Water Piping
   a. below floor-type "K" soft copper (pressure tested) in compliance with ASTM-B.88
   b. above floor-type "L or M" hard drawn copper with ANSI-B16.8 & ASME-B16.22 soldered joint fittings with 95TA tin-antimony soldering; may NOT 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 & SDR11 above finished floor for lines up to 2" with schedule 80 cpvc for lines above 2"; all piping must be based on inside dimensions and not copper tube sizing methods
3. Condensate Piping
   a. copper type "L or M" hard drawn or
   b. schedule 80 CPVC with solvent welding
4. Natural Gas Piping
   a. schedule 40 black iron steel per local code (see schedules)
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 1.5" thick fiberglass insulation (ASTM C547) 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 20x20 glass fabric; Armaflex, RubaTex 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; see Drawing Information Notes.
6. Pipe Hangers
   a. pipe hanger spacing and sizing shall be in accordance with Section 308 of 2014 Florida Plumbing Code; hanger strap or bands will not be permitted
   b. hangers shall be Fee & Mason Figure 364 with Figure 227 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 Fee & Mason Figure 241 riser clamps
7. Cleanouts
   a. floor cleanouts (FCO) to be equal to Wade #W-6030-SV-2TS
   b. outside cleanouts (COTG) to be equal to Wade #W-6030-SV-2 in 18" square by 6" thick concrete pad flush with finished grade
   c. wall cleanout (WCO) to be equal to J.R. Smith #4420
8. Valves
   a. ball valves equal to Hammond #806
   b. check valves equal to Hammond #915
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 model indicated on civil drawings per local code; verify at site per installation

P. All water piping, outside building, shall be buried minimum of 24" below finished grade for freeze protection in accordance with 2014 Florida 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 escutcheon, 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 line size of connecting piping, with ends matching piping system materials. Screens shall be Type 304 stainless steel, with 3/64" perforations at 233 per square inch.

F. Sleeves:

1. Sheet-Metal Sleeves; 10 gage, galvanized sheet metal, round tube 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 links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing 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 "HANDI LAV-GUARD" kits per American With Disabilities Act, as manufactured by Truebro, Inc.

I. Contractor shall maintain the integrity of all fire walls, structures, ceilings and floor systems with "METACAULK" approved fire system materials per UL-CAJ2134 (ceiling-floor systems) or UL-WL2135 (wall systems); verify actual ratings with architectural construction documents; contact manufacturer "RECTORSEAL" at 800-231-[illegible] 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 sealerequal to McGill AirSeal "Uni-weather" non-water base product 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 "Micrelite"(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 DOAS, HFC 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 air device is visible.

J. Wherever 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 and/or fire-smoke damplers 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 3rd edition (2005) with Addendum for G90 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"-18"..... 26 gauge
3) 19"-20"..... 24 gauge
4) 21"-24"..... 22 gauge
5) 25"-26"..... 20 gauge
6) 27"-36"..... 18 gauge
7) 37"-48"..... 16 gauge
6) 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 HFCs for acoustics using Armacell AP-CoilFlex elastomeric closed cell foam; material shall be properly applied, clipped and sealed per SMACNA Standards; products to have Microban coating; see Drawing Information Notes for outside air ducts at DOAS units.

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-n-balance agent.

1.11 SPECIAL PROJECT NOTES:

A. Entire building shall be pressure tested during certified test-n-balance effort to assure positive building pressure of at least 2.5 pascal. Other rooms in building shall also 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 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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MUTUAL AID STAGING & COORDINATION FACILITY
FOR
TALQUIN ELECTRIC COOPERATIVE, INC.
30270 BLUE STAR HIGHWAY GADSDEN COUNTY, FLORIDA

DATE: 7-7-25
REV:

JOB NO: 23-002

Mp.1

SHEET NO.

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E. If used HVAC zone damper control system shall be either Carrier "VVT-3D or Infinity" with no approved equals; systems shall come complete with the following components (verify):

1. governor damper and room thermostat
2. by-pass damper and LOGIC controller
3. nite set-up/set-back function
4. time of day programming with 7-day quartz clock
5. outdoor low ambient control (30-35 degree F)
6. outdoor thermostat (heat pump units only)
7. suction line accumulators
8. oil pressure safety switch
9. 5 minute anti-cycle device for each compressor
10. non-heat pump units to have hot gas by-pass sized at one-half the tonnage of the last stage of unloaded capacity
11. variable speed head pressure control if economizer cycle is used
12. split systems 10 tons and larger to have oil pressure safety switch

F. Provide 7-day, 24-hour quartz time clocks, with battery back-up, for all water heaters, and circulation pump; locate clock at each device for easy programming and set-up; verify requirement prior to installation.

G. Install chrome drainage pipe at all sinks, lavatories and water coolers from P-traps with tail-piece to wall sleeve; material to be same size, gauge and type as device specified; PVC products shall not be used for any exposed components (unless otherwise noted).

H. Some supply, return or exhaust air diffusers, grilles or registers are shown on drawings directly below main air trunk ducts for information only; these lines must be routed in such manner as to prevent direct sound noise from main trunk ducts by either side line tap-in with 3 foot flexible duct extensions or bottom drops with same length flexible ducts; verify exact requirements in field with finished ceilings prior to installation.

I. Water piping over 50 feet in "straight" length shall have pipe expansion joint to prevent leaks due to building & thermal movement; expansion joint loop maybe used in lieu of mechanical fitting if approved by project engineer.

J. All domestic hot water piping in facility shall be delivered at 125 degrees F to last fixture from tank unit unless otherwise noted; this is a mandatory requirement in an attempt to control bacteria growth inside systems such as Legionella; tempered mixing valves shall be installed at each point-of-use in compliance with the American Society of Safety Engineers section 1016 for all showers, bath-tubs, lavatories and sinks; these devices shall be Type T/P for control of both temperature and pressure as noted in ASSE 1016 with water tempered for delivery at 110 degrees F. Heaters shall heat water to 140°F minimum.

K. Back side of all ceiling diffusers, return air grilles and exhaust air registers shall have factory applied foil-faced, R-8 insulation with 181 UL rating formed to fit contour of product back; insulation shall be continuously glued and sealed around outer perimeter of outer cone to form vapor tight seal; contractor shall seal insulation on connecting duct at product to form a vapor tight seal at duct connection; approved sealant or foil-faced UL approved duct tape maybe used with fire rated mastic as noted in specifications.

L. Contractor may use "air admittance valve" in soil-waste-vent plumbing systems as approved by local code for venting systems; products shall be as manufactured by Studor for models: Mini-vent, Maxi-vent, Redi-vent or Tec-vent (plenum systems) or other approved equals. Vents must be checked or serviced in compliance with vendor requirements; submit revised SWV plumbing riser indicating items if not so indicated in current documents; products must be installed as recommended by installation and technical manuals from Studor; verify approval prior to bid effort.

M. Soil and waste piping or storm drain piping installed in structures over two stories shall have expansion joints in vertical lines at each floor in compliance with Charlotte Pipe & Foundry requirements for building movement; verify exact location prior to installation; lines shall be properly supported to allow for pipe movement using expansion joint.

N. All mechanical air distribution systems, refrigerant piping, hot-cold water piping, storm drainage systems and sanitary sewer lines shall be installed in compliance with local seismic requirements including hangers, supports, etc. See structural documents for seismic requirements and category.

O. Plumbing contractor shall install rubber grommet at all wall mounted instantaneous water heaters located under sink or lavatories between unit and wall to limit sound vibration generated during unit operation.

P. During the entire construction phase of project HVAC -Plumbing contractors shall make every effort to maintain a clean and healthy duct or air distribution system. This action shall include, but not be limited to, completely capping each open duct end, including branch ducts and intakes, with minimum 6 mil plastic material. Failure to comply with this requirement may result in complete duct/system cleaning, flushing and inspection by engineer approved certified agents with associated cost paid by project HVAC-mechanical contractor. The purpose of this effort is to assure overall system indoor air quality.

Q. Extra effort was made during design to determine building room height requirements and available space. The documents provided herein are "not" shop or fabrication drawings and shall not be treated as such. It is the bidding contractors responsibility to review all drawings, specs, addendum, details, etc, prior to bid effort. Once contract has been awarded, and after engineer has approved submittal package, contractor may start shop drawing effort. These documents MUST be submitted to architect, structural engineer, general contractor and project mechanical engineer for review. Any fabrication without site visit for verification of available space will not be approved.

1.12 APPROVED MANUFACTURERS

A. The following manufacturers are approved for products specified on construction documents:

1. PLUMBING SYSTEMS
   a) Water Closets: see Plumbing Fixture Schedules
   b) Urinals: see Plumbing Fixture Schedules
   c) Lavatories: see Plumbing Fixture Schedules
   d) Sinks: see Plumbing Fixture Schedules
   e) Floor Drains: J.R.Smith or Zurn
   f) Floor Sinks: J.R.Smith or Zurn
   g) Cleanouts: Wade or Zurn
   h) Valves: Hammonds or Chicago
   i) Faucets: see Plumbing Fixture Schedules
   j) Water Coolers: see Plumbing Fixture Schedules
   k) Water Heaters: A.O.Smith, Rheem/Ruud or State
2. HEATING & AIR CONDITIONING
   a) Carrier, Trane, or Lennox for ducted AHU/HP systems
   a) Carrier, Diakin, Sanyo & Mitsubishi ductless split WFC-HFC/HP systems
   a) PoolComPak, Dectron & Dessertaire for POL/PCU units (if used)
   a) Trane, Reznor, Valent, Aaon, Addison, McQuay, Greenheck, & Sterling for DOAS units
3. VENTILATION
   a) Greenheck, Acme, Penn or Cook
4. AIR DISTRIBUTION
   a) Metalaire, Carnes or Titus

1.13 IDENTIFICATION:

A. Equipment and piping identification marking shall be black stenciled 3/4" high letters applied over finished painting and shall comply with ANSI specifications, local codes or as herein described. Identification must include unit number, area served, flow direction (air, water, refrigerant, gas, etc.) and material type (supply air, return air, exhaust air, chilled water supply, chilled water return, etc.). All valve tags are to be applied to valves controlling main, risers and branches. Valve tags shall be plastic not less than 7-1/2" wide with 3/4" high stamped numbers and coded lettering.

B. All equipment, air distribution and piping shall be properly identified and labeled for easy understanding of systems and flows.

C. Water and refrigerant piping shall be labeled with painted color stencils (minimum 1" high) indicated material type (hot, cold, discharge, liquid, etc.) with flow direction.

D. Duct systems (supply, exhaust, and return) to be labeled (same as piping) with directional arrow for air flow; labeling must be at equipment and every 20 feet of systems.

1.14 ELECTRICAL/CONTROLS:

A. All air handling units (AHUs & DOASs) 2,000 CFMs & above or 5 tons & larger shall have in-line smoke detector installed in supply and/or return air plenums, as so noted in construction documents; detectors shall be type as manufactured by "Honeywell", "Johnson-Controls" or approved equal for photoelectric-ionization type for 24 volts DC; units shall automatically sound audible alarm, turn-off fans and send signal to fire control alarm panel per NFPA72; contractor must provide and install detectors, compatible with fire alarm system, with necessary wiring, controls and transformers; if detectors and wiring are provided by fire alarms contractor then HVAC contractor shall install detectors in ducts; if detectors are not compatible with fire alarm system contractor shall purchase correct units to maintain fire alarm system certification and warranty; all system smoke detectors to have remote indicator light systems located in ceiling area directly above room thermostats served by controlled unit (verify exact location prior to installation).

B. All controls, wiring, relays, transformers, starters, disconnects and accessories for HVAC systems and equipment shall be under this contractor for a complete heating, ventilation and air conditioning system.

C. Room thermostats shall be equal to Carrier Model "thermidistat" mounted at 48 inches above finished floor; thermostats to be programmable type with night set-up/set-back and 7-day clock functions with battery back-up; digital thermostat controls shall be with bi-metallic actuated adjustment sensing elements and have internal mounting plate and tamper proof blank cover plate in lieu of locking cover device; if manufacturer can not provide tamper proof product then locking cover product maybe substituted (with approval from Engineer); heat pump units shall have outdoor thermostats; all indoor fans shall be cycled "on" (SMART fan control) during normal occupancy for facility air balance with system operating at "auto" fan position during unoccupied periods; heating and cooling cycles must be AUTO switched type; control contractor shall guarantee the control system installed to be free from defects and must provide service for one full year after date of final acceptance by Owner.

D. All control wiring shall be plenum rated cable; wiring in walls & exposed locations shall be installed in EMT per latest edition of the National Electrical Code, with correct turns and pull-boxes.

E. Motor starters shall be supplied by HVAC Contractor and installed by Electrical Contractor; motor starters must be approved with automatic controls capable of making frequent starts as device demands; horsepower rating each starter shall not be less than the motor it controls; each starter shall be equipped with a TwinBreak type contact for each ungrounded line to motor.

1.15 PIPING INSTALLATIONS:

A. Ream ends of pipes and tubes, and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag and dirt for both inside and outside of piping and fittings before assembly.

C. Conceal all pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade of floors, unless indicated otherwise.

D. Install piping free of sags or bends and with ample space between piping to permit proper insulation applications.

E. Install exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted, unless expressly indicated on the construction documents.

F. Install piping tight to slabs, beams, joists, columns, walls and other permanent elements of the building. Provide space to permit insulation applications, with 1" clearance outside the insulation. Allow sufficient space above removable ceiling panels to allow for panel removal.

G. Locate groups of pipes parallel to each other, spaced to permit applying full insulation and servicing of valves.

H. Install drains at low points in mains, risers and branch lines consisting of a tee fitting, 3/4" ball valve, and a short 3/4" threaded nipple and cap.

I. Wall Penetrations: Seal all pipe penetrations through interior and exterior walls using sleeves and mechanical sleeve seals. Pipe sleeves smaller than 6" shall be steel; pipe sleeves 6" and larger shall be sheet metal.

J. Fire Barrier Penetrations: Where pipes pass through fire rated walls, partitions, ceilings, or floors, the fire rated integrity shall be maintained with "Metacaulk" material.

K. Use pipe fittings for all changes in directions and all branch connections.

L. Remake leaking joints using new materials.

M. Install strainers on the supply side of each piping control valve, pressure reducing or regulating valve; solenoid valve, and elsewhere as required.

N. Install unions adjacent to each valve, and at the final connection to each piece of equipment and plumbing fixture having 2" and smaller connections, and elsewhere as required.

O. Install flanges in piping 2-1/2" and larger, adjacent to each valve, at the final connections.

P. Install dielectric unions to connect piping materials of dissimilar metals in dry and wet piping systems (water, steam, gas, compressed air, vacuum).

Q. Refrigerant or natural gas lines under slab floors or below grade shall be installed in PVC schedule 3034; seal open ends with proper slope per manufacturer recommendations.

R. All underground piping shall be painted with a minimum of two coats of black asphaltum; material embedded in concrete need not be painted. Pipes protruding through concrete floors shall be bitumastic coated at the point of breach.

1.16 SEQUENCE OF OPERATIONS FOR HVAC SYSTEMS:

A. All heat pump systems whether split remote type or package shall perform as follows:
1) room thermostats shall be digital programmable type with auto change over for heat-cool mode with 2 hour occupant over-ride
2) upon pre-determined time of day, approximately one hour before facility scheduled opening, indoor fan shall cycle to "on" position for continued ventilation with room temperature to maintain comfort level between 70-75 degrees F for cooling mode and 68-73 degrees F for heat set-point
3) at the end of scheduled day when building occupants have vacated facility systems shall continue to operate for approximately one additional hour at occupied set-points for both auto changeover and fan ventilation to assure structure purging
4) during occupied and unoccupied periods system dehumidification shall be controlled by wall mounted digital humidistat or thermostat with built-in humidity control component; set-point for this device shall be set at 55% dehumidification or as so noted in construction documents; products shall maintain facility dehumidification requirement by energizing HVAC equipment via hot gas reheat or "heat-pipe" technology; electric re-heat method is not acceptable method for this feature
5) after facility is vacated mechanical system thermostats shall cycle indoor fans to "auto" position with indoor temperatures allowed to rise to 80 degrees F for cooling mode and drop to 55 degrees F for heating mode
6) if systems are designed using "Demand Control Ventilation" (DCV) as provided by Carrier Corporation with remote room sensor, products shall be set to open outside air dampers to full open position upon rise in room carbon-dioxide levels above 700ppm with dampers closing completely or minimum damper setting as so noted in documents
7) effort should be made to program system start-up in morning or occupied period allowing units to be staggered to limit building electric demand charge; this cycle maybe approximately 15 minutes apart or as determined by local utility
8) electric heaters used for auxiliary or secondary heat shall only be energized upon call for system defrost cycle to limit cold air discharge by indoor blowers during heating cycle or when outdoor air temperatures demand based on factory set-point; room thermostat shall have outdoor thermostat to assure this compliance
9) all electric heaters weather used for primary or secondary heat shall be staged in compliance with state energy codes

B. Systems with outdoor air for ventilation shall have low leakage 24 volt motorized dampers at louvers, vent caps or hoods controlled by interlock relay at AHU, RTU or DOAS units with volume noted in document schedules. These dampers shall open to set position upon activation of indoor fans. Systems using carbon-dioxide detectors for control shall open to minimum damper position when unit indoor fans are energized with full open position from room CO2 detectors. Once room levels have been satisfied by room CO2 sensor then dampers shall move back to minimum setting with products in full closed once indoor fans cycle off.

C. Minimum damper settings shall be adjusted based on building pressure as indicated in specifications. Contractor shall have certified test-n-balance firm assure compliance with this requirement to prevent building from operating under negative pressure.

D. If construction documents demand economizer package with either powered exhaust or barometric relief then effort should be made to operate components based on enthalpy controller as required by vendor manufacturer. Contractor to connect CO2 functions to economizer package for building ventilation as so required by vendor manufacturer.

E. Building systems using natural gas as primary heat source shall be programmed as so noted in this section with heat exchangers staged for low AND high heat depending on facility-space load requirements. Single rooms served by several units (ie. church sanctuary, fellowship hall, auditorium, etc.) shall have gas heating systems set to low heat, unless otherwise noted, to prevent over-heating of space

F. All facility exhaust fans, make-up air fans, supply fans and/or fly fans shall be controlled as so noted in schedules. Effort shall include time of day programming for 24-hour, 7-day function as stated with actual building operation determined by owner. Fans controlled by room light switch with time delay on break shall energize room fan when space lights are turned "on" with fans continuing to operate approximately 5 minutes after room light is turned off to purge space of any un-wanted odors.

G. 100% outside air systems (DOAS-1 & DOAS-2) serving building shall be controlled by vendor approved microprocessor with sensors located in fourth floor corridor as indicated in Drawing Information Notes. Systems shall maintain positive building air pressure with indoor fans operating in continuous mode. Space temperature shall be maintained at 70-73 degrees F with dehumidification set-point at 55%. Products shall energize unit DX cooling, hot gas reheat, natural gas heater, etc. in order to assure air quality as set forth by Mariott. See manual for additional requirements for set-up and procedure guidelines.

1.17 OPERATIONS & MAINTENANCE:

A. The requirements of this section must comply with ASHRAE 62.1-2013 for all mechanical and ventilation systems installed and/or renovated at this facility. The ventilation systems shall be operated and maintained at a minimum in accordance with the provisions of noted standard.

B. Ventilation system design, operation and maintenance shall be reevaluated when changes in building use or occupancy category, significant building alterations, significant changes in occupancy density, or other changes inconsistent with system design assumptions are made.

C. An operation and maintenance manual, either written or electronic, shall be developed and maintained on site or in a centrally accessible location for working life of the applicable mechanical and ventilation systems. This manual shall be updated as necessary. The manual shall include, at a minimum, the operation and maintenance procedures, final design drawings, operations and maintenance schedules and any changes made thereto, and maintenance requirements and frequencies detailed in ASHRAE 62.1-2013.

D. Mechanical and natural ventilation systems shall be operated and maintained in a manner consistent with the Operations and Maintenance Manual or as required by Table 8-1 "Minimum Maintenance Activity and Frequency" per ASHRAE 62.1-2013.

E. Filters and air cleaning devices shall be replaced or maintained at a minimum of every 30 days during initial start-up with additional cycle of 60-90 days depending on actual building usage and traffic patterns. Additional cleaning and/or replacement may be required as set forth in Operations and Maintenance Manual as recommended by manufacturer.

F. Outdoor air intake dampers, controls, actuators and indoor fan motors must be checked once every three months. These devices shall be visually inspected or remotely monitored to verify that the are functioning in accordance with Operation and Maintenance manuals. Physical damage to louvers, vent caps, screens, etc. shall be repaired if such damage impairs their function in preventing contaminant entry. The total quantity of outside air to air handling equipment shall be measured and verified once every five years with tolerance rate of 5%+-.

G. Dehumidification coils (AC coils) shall be visually inspected for cleanliness and microbial growth no less than once a year or as specified in Operation and Maintenance manuals and shall be thoroughly cleaned when fouling or microbial growth is observed.

H. Drain pans shall be visually inspected for cleanliness and microbial growth at a minimum of once per year during the cooling season and must be cleaned if necessary. Areas adjacent to drain pans that were subjected to wetting shall be investigated, cleaned if necessary, and the cause of unintended wetting rectified.

I. Outdoor intake louvers, bird-bug screens, mist eliminators, and adjacent areas shall be visually inspected for cleanliness and integrity at a minimum of once every six months and cleaned as needed. When visible debris or visible biological material is observed, it shall be removed. Physical damage to louvers, screens, or mist eliminators shall be repaired if such damage impairs their function in preventing contaminant entry.

J. Sensors whose primary function is dynamic minimum outdoor air control, such as demand control ventilation, carbon-dioxide detectors, flow stations, etc. as well as heating and cooling shall have their accuracy verified at a minimum of every six months. A sensor or control failing to meet the accuracy specified shall be recalibrated or replaced.

K. Outdoor air flow verification shall be checked every five years. If measured minimum air flow rates are less than the design minimum rate (+-10% balancing tolerance) then they shall be adjusted or modified to bring them to the minimum design rate or evaluated to determine if the measured rates are in compliance with standard ASHRAE 62.1-2013.

L. The space provided around mechanical equipment shall be kept clear for routine maintenance, repairs and inspections.

M. Floor drains in mechanical rooms must be installed and maintained to prevent transport of contaminants from the floor drain to the mechanical room in both ducted and plenum type spaces.

N. ANY visible microbial contamination shall be investigated and rectified immediately.

O. Water intrusion or accumulation in ventilation and air conditioning systems or components such as ducts, plenums, air handlers, equipment, etc. shall be investigated and immediately rectified.

P. All pumps, controls, timers, flow switches, circuit setters, mixing values, etc. for water heating systems shall be visually inspected once a year to assure original design performance. Items not functioning properly shall be recalibrated or replaced to maintain compliance.

Q. Water heaters, expansion tanks, etc. shall be inspected and verified a minimum of once every six months. This effort shall include adjustments to assure temperature settings in compliance with design and maintenance manuals. Components not performing must be recalibrated or replaced immediately.

R. All floor drain traps shall be filled with mineral oil semi-annually to prevent sewer gas from leaking into conditioned space.

1.18 EXECUTION:

A. Contractor shall pay for all inspection permits, certificates, meters, connection fees,systems charges and license fees in connection with his/her work.

B. It is the intent of said documents as defined in these or architectural drawings to properly prepare the facility for the new work which as so illustrated. Effort has been made to identify the work required to accomplish this task. However, not all new work may not be clearly identified as to the exact extent or nature necessary. It shall be the contractors responsibility to fulfill the intent of these construction documents, whether specifically shown on the drawings or not.

C. During construction document phase design-engineer attempted to obtain all the data necessary for adequate design of facility mechanical, plumbing, piping systems, etc. However, some information such as up-dated floor plans, elevations, civil-site data, wall details, construction sections, building framing systems &fire ratings may have not been readily available.Therefore, it is the expressed intent 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.

END OF SECTION 220100/230100

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MUTUAL AID STAGING & COORDINATION FACILITY
FOR
TALQUIN ELECTRIC COOPERATIVE, INC.
30270 BLUE STAR HIGHWAY GADSDEN COUNTY, FLORIDA

DATE: 7-7-25
REV:

JOB NO: 23-002

Mp.2

SHEET NO.

ABBREVIATIONS

A/E ARCHITECT / ENGINEER
AD AREA DRAIN/ACCESS DOOR
AFC ABOVE FINISHED CEILING
AFF ABOVE FINISH FLOOR
AFG ABOVE FINISH GRADE
AG AIR GAP
AP ACCESS PANEL
AS AUTOMATIC SPRINKLER
ASD ADJUSTABLE SPEED DRIVES
ASD AUTOMATIC SPRINKLER DRAIN
ASHRAE AMERICAN SOCIETY OF HEATING, REFRIGERATION, AIR CONDITIONING ENGINEERS
ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASPE AMERICAN SOCIETY OF PLUMBING ENGINEERS
ASR AUTOMATIC SPRINKLER RISER
AV ACID VENT
AW ACID WASTE
BFG BELOW FINISHED GRADE
BFF BELOW FINISHED FLOOR
BPP REDUCED PRESSURE BACKFLOW PREVENTER
BHP BREAK HORSEPOWER
BSP BLACK STEEL PIPE
BT BATHTUB
BTU BRITISH THERMAL UNIT
BTUH BRITISH THERMAL UNIT PER HOUR

C CELSIUS
CA COMPRESSED AIR
CGA COMPRESSED GAS ASSOCIATION
CFM CUBIC FEET PER MINUTE
CI CAST IRON
CO CLEANOUT
CS CLINICAL SINK
CV CONTROL VALVE

DCW DOMESTIC COLD WATER
DFU DRAINAGE FIXTURE UNITS
DHW DOMESTIC HOT WATER
DHWR DOMESTIC HOT WATER RETURN
DHWS DOMESTIC HOT WATER SUPPLY
DI DEIONIZED WATER
DN DOWN
DOE DEPARTMENT OF ENERGY
DS DOWNSPOUT
DW DISHWASHER
DWG DRAWING
DWH DOMESTIC WATER HEATER
DWR DRINKING WATER RETURN
DWS DRINKING WATER SUPPLY
DWV DRAIN WASTE VENT

EL ELEVATION
EMCS ENERGY MONOSERRAT AND CENTRAL SYSTEM
EPA ENVIROMENTAL PROTECTION AGENCY
EPACTENERGY POLICY ACT
ESC ESCUTCHEON
ESH EMERGENCY SHOWER
ET EXPANSION TANK
EWH ELECTRIC WATER HEATER
EWS EYE WASH STATION
EWS/SH EYE WASH/DRENCH SHOWER
EX EXISTING

F FAHRENHEIT
FCO FLOOR CLEANOUT
FCW FILTERED COLD WATER
FD FLOOR DRAIN
FDC FIRE DEPARTMENT (HOSE) CONNECTION
FM FLOW METER
FOP FUEL OIL PUMP
FOR FUEL OIL RETURN
FOS FUEL OIL SUPPLY
FOV FUEL OIL VENT
FS FLOOR SINK
FS FLOW SWITCH
FU FIXTURE UNITS

GAL GALLON
GCO GRADE CLEANOUTS
GPD GALLONS PER DAY
GPH GALLONS PER HOUR
GPM GALLONS PER MINUTE
GPR GAS PRESSURE REGULATOR
GRS GAS REGULATOR STATION
GT GREASE TRAP
GVTR GAS VENT THROUGH ROOF
GWH GAS FIRED WATER HEATER

H&CW HOT AND COLD WATER
HB HOSE BIBB
HD HUB DRAIN
HEX HEAT EXCHANGER
HP HORSEPOWER
HS HAND SINK
HST HOT WATER STORAGE TANK (DOMESTIC)
HWB HOT WATER BOILER
HWCP HOT WATER CIRCULATING PUMP
HWP HOT WATER PUMP
HYD HYDRANT

ID INSIDE DIAMETER
IE INVERT ELEVATION
ICW INDUSTRIAL COLD WATER
IHW INDUSTRIAL HOT WATER
INV INVERT
IPC INTERNATIONAL PLUMBING CODE
IRW IRRIGATION WATER
IW INDIRECT WASTE
IWH INSTANTANEOUS WATER HEATER
IWR INDUSTRIAL WATER RETURN
IWS INDUSTRIAL WATER SUPPLY

KW KILOWATT
KWH KILOWATT-HOUR

L/S LITER PER SECOND
LA LABORATORY AIR
LAV LAVATORY
LBS/HR POUNDS PER HOUR
LCW LABORATORY COLD WATER
LHW LABORATORY HOT WATER
LNG LIQUID NATURAL GAS
LOX LIQUID OXYGEN
LV LABORATORY VACUUM
LW LOW WATER

M METER
MA MEDICAL AIR
MAV MANUAL AIR VENT
MBH 1000 BTUH
MED MEDICAL
MER MECHANICAL EQUIPMENT ROOM
MH MANHOLE
MOU MEMORANDUM OF UNDERSTADING
MSB MOP SERVICE BASIN
MV MEDICAL VACUUM

N2 NITROGEN
N20 NITROUS OXIDE
NC NORMALLY CLOSED
NG NATURAL GAS
NIC NOT IN CONTRACT
NO NORMALLY OPEN
NOM. NOMINAL
NPW NON POTABLE WATER
NTS NOT TO SCALE

O2 OXYGEN
OC ON CENTER
OD OUTSIDE DIAMETER
OFD OVERFLOW DRAIN
OR OPERATING ROOM
OVFL OVERFLOW

IPC INTERNATIONAL PLUMBING CODE
PA PASCAL
PD PRESSURE DROP OR DIFFERENCE
PDI PLUMBING AND DRAINAGE INSTITUTE
PG PRESSURE GAGE
PP PLUMBING PUMP
PPM PARTS PER MILLION
PRS PRESSURE REDUCING STATION
PRV PRESSURE REDUCING VALVE
PSI POUNDS PER SQUARE INCH
PSIA POUNDS PER SQUARE INCH ATMOSPHERE
PSIG POUNDS PER SQUARE INCH GAGE
PTRV PRESSURE TEMPERATURE RELIEF VALVE
PW POTABLE WATER

RD ROOF DRAIN
RDL ROOF LEADER
RL ROOF LEADER
RP RECIRCULATION PUMP
RO REVERSE OSMOSIS WATER
RWL RAIN WATER LEADER-LINE

SAN SANITARY SEWER
SMACNA SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SCFM STANDARD CUBIC FOOT/MINUTE
SCW SOFTENED COLD WATER
SDMH STORM DRAIN MANHOLE
SMH SANITARY MANHOLE
SP SUMP PUMP
SPR SPRINKLER LINE
SQFT/SF SQUARE FEET
SS STAINLESS STEEL
ST STORAGE TANK
SW STORM WATER

TCV TEMPERATURE CONTROL VALVE
TD TEMPERATURE DIFFERENCE
TD TRENCH DRAIN
TDH TOTAL DYNAMIC HEAD
TEMP TEMPERATURE
TMV THERMOSTATIC MIXING VALVE
TP TRAP PRIMER
TSTAT THERMOSTAT
TWR TEMPERED WATER RETURN
TWS TEMPERED WATER SUPPLY
TYP TYPICAL

V VENT
VAC VACUUM
VB VACUUM BREAKER
VCO VACUUM CLEANER OUTLET
VP VACUUM PUMP
VS VENT STACK
VSD VARIABLE SPEED DRIVE
VTR VENT THROUGH ROOF

W WASTE
WC WATER CLOSET
WCO WALL CLEANOUT
WG WATER GAGE
WH WALL HYDRANT
WH WATER HEATER
WHA WATER HAMMER ARRESTER
WL WATER LINE
WM WATER METER
WPD WATER PRESSURE DROP
WS WASTE STACK
WSFU WATER SUPPLY FIXTURE UNITS

YCO YARD CLEANOUT
YH YARD HYDRANT

PLUMBING PIPING SYMBOLS

CW — DOMESTIC COLD WATER, COLD WATER
HW — DOMESTIC HOT WATER, HOT WATER
HWR — DOMESTIC HOW WATER RETURN, HOT WATER RETURN
HW-140 — DOMESTIC HOW WATER AT 140°F
HW-160 — DOMESTIC HOW WATER AT 160°F
SAN — SANITARY SEWER, BELOW GRADE OR FLOOR
GREASE — GREASE LINE
OIL — OIL LINE
CA — COMPRESSED AIR
MA — MEDICAL AIR
MV — MEDICAL VACUUM
LA — LABORATORY AIR
LV — LABORATORY VACUUM
OA — ORAL EVACUATION
IA — INDUSTRIAL AIR
D — DRAIN
VENT (SANITARY)
SS — SOIL, WASTE, OR SANITARY SEWER
SD — STORM WATER
SD — STORM WATER, BELOW GRADE
SCW — SOFTEN COLD WATER
FCW — FILTERED COLD WATER
DWS — DRINKING WATER SUPPLY
DWR — DRINKING WATER RETURN
TWS — TEMPERED WATER SUPPLY
TWR — TEMPERED WATER RETURN
N_2O — NITROUS OXIDE
O — OXYGEN
N_2 — NITROGEN
NG — NATURAL GAS
NG — NATURAL GAS, BELOW GRADE
FOD — FUEL OIL DISCHARGE
FOS — FUEL OIL SUPPLY
FOV — FUEL OIL VENT
FOR — FUEL OIL RETURN
TEPID — TEPID WATER

GENERAL PIPING SYMBOLS

DIRECTION OF PIPE PITCH (DOWN)
DIRECTION OF FLOW
ANCHOR
REDUCER OR INCREASER
ECCENTRIC REDUCER
TOP CONNECTION, 45° OR 90°
BOTTOM CONNECTION, 45° OR 90°
SIDE CONNECTION
CAPPED OUTLET
RISE OR DROP IN PIPE
UNION
PIPE UP
PIPE DOWN
POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
LIMIT OF DEMOLITION
INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES
FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES
STRAINER
THERMOMETER
PRESSURE GAGE
FE — FLOW ELEMENT
NON-FREEZE TYPE HOSE BIB (KEYED LOCK BOX with VACUUM BREAKER)
WATER HAMMER ARRESTER
FLOOR DRAIN
FLOOR SINK
HUB DRAIN
WALL HYDRANT
IN LINE PUMP
FLOOR CLEANOUT
CLEANOUT TO GRADE
WALL CLEANOUT
END OF LINE CLEANOUT
P-TRAP
M — WATER METER
PIPE TURNED DOWN
PIPE TURNED UP
END OF PIPE; SEE CONTINUATION
TEE FITTING
ELBOW FITTING (90 DEGREE)
LATERAL FITTING
ELBOW FITTING (45 DEGREE)
DOUBLE COMBINATION WYE 1/8 BEND FITTING
COMBINATION WYE 1/8 BEND FITTING
COMBINATION WYE FITTING

PLUMBING VALVE SYMBOLS

PRESSURE REGULATING VALVE
AUTOMATIC FLOW CONTROL VALVE
PRESSURE RELIEF VALVE
MANUAL AIR VENT
TEST PLUG (PRESSURE/TEMPERATURE)
AV — AUTOMATIC AIR VENT
BALANCING VALVE THERMOMEGATECH "CIRCUIT SOLVER" WITH ISOLATION BALL VALVES
BALL VALVE
CHECK VALVE
TWO WAY VALVE
THREE WAY VALVE
OS&Y VALVE
GATE VALVE
STEM VALVE
STEM WITH LOCK VALVE
PLUG
STRAINER
STRAINER WITH DRAIN
TEMPERATURE-PRESSURE RELIEF
BUTTERFLY VALVE
SOLENOID VALVE
RISER
JANITORIAL VAC
PRESSURE VALVE
SAFETY VALVE
QUICK OPEN VALVE
FLOAT VALVE
M — MOTORIZED GATE VALVE
M — MOTORIZED GLOBE VALVE
MANUAL AIR VENT
PRESSURE REDUCING VALVE
PRESSURE REGULATING w/FILTER
DIAPHRAM
ZERO STATIC

MISC SYMBOLS

DRAWING REVISION CLOUD TO REFLECT CHANGES; MUST REFERENCE ADDENDUM NO, OR SUPPLEMENTAL INSTRUCTION NO. WITH DATE
X — VAV BOX TAG NUMBER
X / X — DETAIL NUMBER / SHEET ON WHICH DETAIL IS SHOWN
SI-X — SUPPLEMENTAL INSTRUCTION REFERENCE; DATE REQUIRED
X — ADDENDUM ITEM REFERENCE WITH DATE REQUIRED
X — DRAWING INFORMATION NOTES
XX / X — EQUIPMENT TYPE (EF, AHU, RTU, ETC.) SEE SCHEDULES FOR INFORMATION / UNIT NUMBER
XXX — PLUMBING FIXTURE NUMBER
EXISTING FIXTURE, PIPING or DRAIN TO BE REMOVED

FIXTURE SYMBOLS

3 Compartment Scullery
Janitor Floor Sink
Laundry Sink
Counter Lavatory
Wall Sink or Lavatory
Single Counter Sink
Double Counter Sink
Tripple Counter Sink
Electric Wall Hung Water Cooler
Flush Valve Water Closet
Tank Type Water Closet
Wall Mounted Urinal
Floor Mounted Urinal
Shower Unit
Outside Can Wash
Ice Machine
Residential Washer
Residential Dryer
Emergency Eye, face or Shower
Handicapped Accessible Tub
Standard Tub Units
Handicapped Accessible Shower
Alternating Booster Pumps
Primary-Jockey Fire Pumps
Commercial Washer
Commerical Gas Dryer

SPECIAL NOTE:

PLEASE NOTE, SOME SYMBOLS & ABBREVIATIONS MAY NOT BE USED ON THESE DRAWINGS OR CONSTRUCTION DOCUMENTS. SEE PROJECT DRAWING INFORMATION NOTES FOR ADDITIONAL DIRECTION & CLARIFICATION.

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MUTUAL AID STAGING & COORDINATION FACILITY
FOR
TALQUIN ELECTRIC COOPERATIVE, INC.
30270 BLUE STAR HIGHWAY GADSDEN COUNTY, FLORIDA

DATE: 7-7-25
REV:

JOB NO: 23-002

P0.0
SHEET NO.

ROOF DRAINS, VERTICAL AND HORIZONTAL PIPING

PROJECT NAME: Talquin Training
PROJECT NUMBER: 0.0
DATE: 10.22.24

RAINFALL RATE FOR 100 YEAR, 60 MINUTE DURATION STORM IN LOCAL AREA (INCHES/HR):	4.60

SIZING ROOF DRAINS, LEADERS AND VERTICAL RAINWATER PIPING

DRAIN OR VERTICAL PIPE SIZE (INCHES)	2	3	4	5	6	8				
MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREA (SQ. FEET)	626	1913	4000	7522	11739	25217				
MAXIMUM ALLOWABLE FLOW RATE (GPM)	**30**	**92**	**192**	**360**	**563**	**1208**				

SIZING OF HORIZONTAL RAINWATER PIPING

HORIZONTAL PIPE SIZE (INCHES) AT 1/16"/FT. SLOPE	2	3	4	5	6	8	10	12	15	
MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREA (SQ. FEET)	0	0	0	0	0	0	0	0	0	
MAXIMUM ALLOWABLE FLOW RATE (GPM)	**15**	**39**	**81**	**117**	**243**	**505**	**927**	**1480**	**2908**	

SIZING OF HORIZONTAL RAINWATER PIPING

HORIZONTAL PIPE SIZE (INCHES) AT 1/8"/FT. SLOPE		3	4	5	6	8	10	12	15	
MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREA (SQ. FEET)	0	715	1635	2904	4652	10000	18000	28957	51739	
MAXIMUM ALLOWABLE FLOW RATE (GPM)	**22**	**55**	**115**	**165**	**344**	**714**	**1311**	**2093**	**3566**	

SIZING OF HORIZONTAL RAINWATER PIPING

HORIZONTAL PIPE SIZE (INCHES) AT 1/4"/FT. SLOPE		3	4	5	6	8	10	12	15	
MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREA (SQ. FEET)	0	1009	2304	4104	6565	14174	25391	40870	73043	
MAXIMUM ALLOWABLE FLOW RATE (GPM)	**31**	**79**	**163**	**234**	**487**	**1010**	**1858**	**2960**	**5016**	

SIZING OF HORIZONTAL RAINWATER PIPING

HORIZONTAL PIPE SIZE (INCHES) AT 1/2"/FT. SLOPE		3	4	5	6	8	10	12	15	
MAXIMUM ALLOWABLE HORIZONTAL PROJECTED ROOF AREA (SQ. FEET)	0	1430	3270	5809	9304	20000	36000	57913	103478	
MAXIMUM ALLOWABLE FLOW RATE (GPM)	**44**	**111**	**231**	**331**	**689**	**1429**	**2623**	**4197**	**7093**	

SOURCES: 2021 IPC; ASPE

WASTE & VENT SIZING FOR INDIVIDUAL PIPES

BUILDING DRAIN - FIXTURE UNITS (FU):	105
SIZE AT 1/16"/FT. SLOPE (Inches)	**8**
SIZE AT 1/8"/FT. SLOPE (Inches)	**4**
SIZE AT 1/4"/FT. SLOPE (Inches)	**4**
SIZE AT 1/2"/FT. SLOPE (Inches)	**4**

HORIZONTAL BRANCH - FIXTURE UNITS (FU):	105
SIZE OF BRANCH PIPE (Inches)	**4**

WASTE STACKS - FIXTURE UNITS (FU)	48
SIZE FOR 1 BRANCH INTERVAL	**4**
3 OR LESS BRANCH INTERVALS	**3**
4 OR MORE BRANCH INTERVALS	**3**

STACK VENTS - FIXTURE UNITS (FU)	40
DIAMETER OF WASTE STACK	4
TOTAL LENGTH OF VENT (FEET)	28
REQ'D SIZE OF VENT (INCHES)	**2**

PROJECT NAME: Talquin Training
PROJECT NUMBER: 0.0
DATE: 10.22.24

"OTHER" VENTS - FIXTURE UNITS (FU)	105
MINIMUM VENT SIZE (INCH)	**2**

	SIZES											
	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	15
BUILDING DRAINS AND SEWERS (Note a,b)	**MAXIMUM DRAINAGE FIXTURE UNITS**											
1/16"/FT. SLOPE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1400	2500	3900	7000	
1/8"/FT. SLOPE	N/A	N/A	N/A	N/A	36	180	390	700	1600	2900	4600	8300
1/4"/FT. SLOPE	1	3	21	24	42	216	480	840	1920	3500	5600	10000
1/2"/FT. SLOPE	1	3	26	31	50	250	575	1000	2300	4200	6700	12000
HORIZONTAL BRANCHES (Note c)	**MAXIMUM DRAINAGE FIXTURE UNITS**											
TOTAL FOR BRANCH	N/A	3	6	12	20	160	360	620	1400	2500	3900	7000
WASTE STACKS (Note d)	**MAXIMUM DRAINAGE FIXTURE UNITS**											
TOTAL INTO ONE BRANCH INTERVAL	N/A	2	6	9	20	90	200	350	600	1000	1500	(Note e)
STACK OF 3 OR LESS BRANCH INTERVALS	N/A	4	10	20	48	240	540	960	2200	3800	6000	(Note e)
STACK OF MORE THAN 3 BRANCH INTERVALS	N/A	8	24	42	72	500	1100	1900	3600	5600	8400	(Note e)
VENT PIPING												
STACK VENTS:	STACK VENTS ARE THE EXTENSION OF A SOIL OR WASTE STACK ABOVE THE HIGHEST HORIZONTAL DRAIN CONNECTED TO THE STACK.											
VENT STACKS:	A VENT STACK IS A VERTICAL VENT PIPE INSTALLED TO PROVIDE CIRCULATION OF AIR TO AND FROM ANY PART OF THE DRAINAGE SYSTEM.											
"OTHER VENTS":	"OTHER" VENTS INCLUDE INDIVIDUAL VENTS, HORIZONTAL VENTS, BRANCH VENTS, CIRCUIT VENTS, AND RELIEF VENTS. MINIMUM SIZE IS 1/2 THE DIAM. OF THE DRAIN SERVED, BUT NOT LESS THAN 1-1/4". VENTS EXCEEDING 40 FEET IN DEVELOPED LENGTH SHALL BE INCREASED BY ONE NOMINAL PIPE SIZE FOR THE ENTIRE DEVELOPED LENGTH OF THE VENT PIPE.											

SOURCES: 2021 IPC; ASPE

FIXTURE UNIT CALCULATIONS

PROJECT NAME: Talquin Training
PROJECT NUMBER: 0.0
DATE: 10.22.24

FLUSH VALVES = 1, FLUSH TANKS = 2	1

FIXTURE TYPE	QUANTITY	COLD WATER FIXTURE UNITS		HOT WATER FIXTURE UNITS		COMBINED CW & HW		WASTE FIXTURE UNITS		WATER GPM
		FU EACH	CW FU	FU EACH	HW FU	COMBINED FU - EACH	TOTAL FU	FU EACH	TOTAL FU	
DRINKING FOUNTAIN	1	0.25	0.25	0		0.3	0.25	0.5	0.5	
FLOOR DRAINS	4	0		0		0.0		2.0	8	
FLOOR SINKS - 3" *	2	0		0		0.0		5.0	10	
KITCHEN SINK - HOTEL, RESTAURANT	1	3	3	3	3	4.0	4	3.0	3	
LAVATORY - PUBLIC	7	1.5	10.5	1.5	10.5	2.0	14	1.0	7	
SERVICE SINK	3	2.25	6.75	2.25	6.75	3.0	9	2.0	6	
SHOWER HEAD - PUBLIC - 5.7 GPM OR LESS	6	3	18	3	18	4.0	24	2.0	12	
SINK	3	3	9	3	9	4.0	12	2.0	6	
URINAL - PUBLIC - 3/4" FLUSH VALVE	2	5	10	0		5.0	10	2.0	4	
WASHING MACHINE - PUBLIC - (15 LB.)	2	3	6	3	6	4.0	8	3.0	6	
WATER CLOSET - PRIVATE - FLUSH VALVE	4	6	24	0		6.0	24	4.0	16	
KITCHEN EQUIPMENT - WATER GPM										15
TOTALS			**98.5**		**53.25**		**105.25**		**78.5**	**73**
			CW FU		HW FU		COMBINED FU		WASTE FU	WATER GPM

SOURCES: 2021 IPC, ASPE

WATER PIPE SIZING CALCULATIONS

PROJECT NAME: Talquin Training
PROJECT NUMBER: 0.0
DATE: 10.22.24

FLUSH VALVES = 1, FLUSH TANKS = 2	1

AVAILABLE WATER PRESSURE CALCULATIONS		
DEMAND FLOW RATE (GPM)	73	
WATER MAIN PRESSURE (PSIG)	60	
PRESSURE DROP THRU METER (PSIG)	12	
PRESSURE REDUCING VALVE - PRESSURE (IF REQUIRED)	0	
PRESSURE DROP THRU BACKFLOW PREVENTER (PSIG)	5	
STATIC HEIGHT OF HIGHEST FIXTURE ABOVE MAIN (FT)	12	5
PRESSURE DROP THROUGH WATER TREATMENT (PSIG)	0	
RESIDUAL PRESSURE REQUIRED AT LAST OUTLET (PSIG)	35	
PRESSURE AVAILABLE FOR PIPING LOSS (PSIG)	3	
PRESSURE BOOSTER PUMP (IF REQUIRED) (PSIG)	0	0
TOTAL DEVELOPED LENGTH OF LONGEST PIPE RUN (FT)	150	
MAXIMUM ALLOWABLE PIPE PRESS. DROP (PSIG/100 FT)	**2.2**	

PIPE SIZE SCHEDULE (@ MAX. ALLOWABLE PD/100 FT)

SIZE	MAX. GPM	VEL.	PSI/100 FT.	MAX. FV FU	MAX. FT FU	SIZE
1/2	1	1.4	1.2	#N/A	#N/A	1/2
3/4	4	1.8	1.3	#N/A	1	3/4
1	7	2.4	1.4	#N/A	3	1
1 1/4	17	3.5	2.0	5	14	1 1/4
1 1/2	22	3.5	1.8	7	25	1 1/2
2	45	4.2	1.8	35	100	2
2 1/2	71	5.0	1.7	100	225	2 1/2
3	140	4.5	1.3	400	500	3
4	270	5.0	1.2	1500	1500	4
5	460	6.8	1.6	3000	3000	5
6	700	8.0	1.8	5000	5000	6
8	1200	8.2	1.4	5000	5000	8

SOURCES: 2021 IPC; ASPE

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PROJECT PLUMBING MATERIAL SCHEDULE

SOIL, WASTE, VENT & STORM PIPING	WATER PIPING			INSULATION DATA				CLEANOUT DATA						WATER HAMMER ARRESTORS				VALVES							PIPE HANGERS & SUPPORTS	BACKFLOW DEVICE	WATER METER	PIPE PENETRATIONS	NATURAL GAS PIPING		HOT WATER MIXING VALVES AT LAVATORIES & SINKS	REMARKS
								FLOOR (FCO)		WALL (WCO)		OUTSIDE (COTG)						BALL		GATE		CHECK											
	BELOW FINISHED FLOOR	BELOW GRADE-OUTSIDE	ABOVE FINISHED FLOOR	FITTINGS	JACKET	THICKNESS	LOCATION	MANUF.	MODEL NO.	MANUF.	MODEL NO.	MANUF	MODEL NO.	MANUF.	MODEL	TYPE	LOCATIONS	MANUF.	MODEL NO.	MANUF.	MODEL NO.	MANUF.	MODEL NO.					PRIMARY SUPPLY LINE METER TO REGULATOR	REGULATOR TO EQUIPMENT OR APPLIANCE			
SOLID SCHEDULE 40 PVC WITH SOLVENT WELD PVC FITTINGS EQUAL TO CHARLOTTE PIPE & FOUNDRY; CORE-EXTRUDED, WELL-CASING OR THIN WALL TYPE MATERIALS ARE NOT APPROVED & WILL BE REMOVED AT CONTRACTORS COST	COPPER TUBING-TYPE "K" SOFT ANNEALED TEMPER NO JOINTS BELOW FLOOR	SCHEDULE 80 CPVC WITH SOLVENT WELD CPVC FITTINGS; IF APPROVED BY LOCAL CODES	COPPER TUBING-TYPE "L" HARD DRAWN TEMPER; WROUGHT COPPER FITTINGS; SOLDER JOINTS MAY USE INSIDE DIAMETER SIZED CPVC MATERIAL AS INDICATED IN SPECS	ZESTON	UNIVERSAL	1.5" FIBERGLASS 3/4" ARMACELL AP-WHITE ELASTOMERIC CLOSED CELL FOAM	ALL HOT WATER & RECIRCULATING PIPE SYSTEMS LOCATED IN CONDITIONED & NON-CONDITIONED AREAS. & ALL COLD WATER PIPING FITTING FOR SYSTEMS IN NON-CONDITIONED AREAS	WADE	W-603G-SV-2TS	J.R. SMITH	442I W/STAINLESS STEEL COVER	WADE	W-603G-SV-2	PRECISION	SC500	"A"	WATER CLOSETS, URINALS, SINKS, WATER HEATERS, LAVATORIES & WATER COOLERS INSTALL PER 2014 FPC & DETAIL	NIBCO	T-F600ALF LEAD-FREE	NIBCO	T113-LF S113-LF LEAD-FREE	NIBCO	T413Y-LF S412Y-LF	CLEVIS TYPE by UNISTRUT or B-LINE PRODUCTS WITH THREADED RODS IN COMPLIANCE WITH 2014 FLORIDA PLUMBING CODE SECTION 308, PER TABLE 308.5 FOR HORZ & VERTICAL SPACING	WATTS 909QT WILKINS 975 SEE CIVIL DRAWINGS & SHEET P1.2	HAYS MT SERIES; SEE CIVIL DRAWINGS & SHEET P1.2 FOR REQ'TS	METACAULK UL-CAJ2134 UL-WL2135	SCHEDULE 40 STEEL PER 2014-FFGC TABLE 402.4.1C INLET PRESSURE= 2 PSI PRESSURE DROP= 1.0 IN WC SPECIFIC GRAVITY= 0.60	SCHEDULE 40 STEEL PER 2014-FFGC TABLE 402.4.(2) INLET PRESSURE = LESS THAN 2 PSI PRESSURE DROP =0.5 IN WC SPECIFIC GRAVITY= 0.60 OR AS RECOMMENDED BY PRODUCT VENDOR	POWERS MODEL LFLM495; DEVICE TO BE INSTALLED AT PUBLIC RESTROOMS & BREAK ROOM	VERIFY LOCAL UTILITIES PRIOR TO INSTALLATION; SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION & INVERT ELEVATION REQ'TS

WATER HEATER SCHEDULE

ITEM NO.	AREA OR FIXTURES SERVED	DESCRIPTION	TANK CAPACITY	ENTERING WATER TEMP	LEAVING WATER TEMP	RECOVERY @100 DEG. F. RISE	FIRST HOUR RECOVERY	THIRD HOUR RECOVERY	EST STORAGE RECOVERY	INPUT POWER V-PH-Hz	HEATER AMPS	GAS INPUT MBH	GAS OUTPUT MBH	GAS EFFICIENCY AFUE (%)	GAS CONN.	WATER CONN.	FLUE CONN.	DIMENSIONS HEIGHT	DIMENSIONS WIDTH	DIMENSIONS LENGTH	DIMENSIONS WEIGHT	MANUFACTURER & MODEL	APPLICATION PEAK DEMAND REQUIREMENT	REMARKS
INS1 INS2 INS3	HOT WATER FOR ENTIRE BUILDING	HIGH EFFICIENT NATURAL GAS WATER HEATER	0	40°F	140°F	3.8 GPH	-	-	-	120-1-60	20	199	194	97	3/4"	3/4"	(2") (4")	66"	35"	70"	170 LBS	RINNAI CUe199	415 GPH 100°F RISE	(3)199,000 BTUH NATURAL GAS FIRED HIGH EFFICIENT INSTANTANEOUS WATER HEATER ON EXTERIOR FACTORY WALL RACK; INSTALL PER VENDOR REQUIREMENTS

PROJECT PLUMBING FIXTURE SCHEDULE

Symbol	Description	Manufacturer	Model Number	Cold Water Line Size	Hot Water Line Size	Hot Water Return Size	Hot Water Temp (F)	Sanitary Waste Size	Sanitary Vent or Trap Size	2010 ANSI/ADA-A117.1 Height	Water Usage GPM	Drain Usage GPF-DFU	Fixture Color Finish	Remarks
GT1	GREASE INTERCEPTOR 750 GALLONS	PARKS-USA	GT750					4"	3"					WITH SECURED LID PER VENDOR REQUIREMENTS. DEVICE SHALL BE INSTALLED TO PREVENT TRIP HAZARDS. PRODUCT SHALL BE "PDI" RATED FOR APPLICATION PER LOCAL REQUIREMENTS. SEE DETAIL FOR ADDITIONAL REQUIREMENTS
WC-2	Handicapped Comfort Height Floor Mounted Water Closet	Kohler Kohler	k-11451 K-4670-CA	1/2"				3"	2"	seat positioned at 17"-19"AFF		1.28 GPF	White	Handicapped comfort height floor mounted fixture with low volume tank. lid locks & open front seat with chrome studs & hinges; install per ANSI/ADA-117.1-2010 requirements
WC-1	Handicapped Accessible Floor Mounted Water Closet	Kohler Kohler Sloan	K-96057-0 K-4670-CA 186-1.28ESS	3/4"				3"	2"	seat positioned at 17"-19"AFF		1.28 GPF	White	Handicapped floor mounted fixture with low volume hands free flush valve with flush button & open front seat with chrome studs & hinges; install per ANSI/ADA-117.1-2010 requirements; provide with transformer for electrical contractor
LV-1	Handicapped Wall Mounted Lavatory	Kohler Kohler Kohler	K-2867 K-16100-4-CP K-9033-CP	1/2"	1/2"		Tepid	2"	1-1/4"	34" AFF to lav rim	.25 gpm		White	Counter mounted china lavatory mounted at handicapped accessible height with manual low volume faucet with mixing valve for Tepid water (see detail); provide with chrome stops/supplies & P-trap with tailpiece
LV-2	Standard Counter Mounted Lavatory	Kohler Kohler Kohler	K-2205 k-15592F K-9033-CP	1/2"	1/2"		Tepid	2"	1-1/4"	34" AFF to lav rim	.25 gpm		White	Counter mounted china lavatory mounted at standard height with manual low volume faucet with mixing valve for Tepid water (see detail); provide with chrome stops/supplies & P-trap with tailpiece
FD-1	Floor Drain	J.R. Smith	DX2310	3/8"				3"	2"			2 dfu	Brass	floor drain with square adjustable top, deep seal trap and trap primer to water closet as indicated in detail; Trap-Guard product is NOT approved
FS-1	Floor Sink	J.R. Smith	3004	3/8"				3"	2"			2 dfu	Brass	floor sink with square adjustable top, deep seal trap, removable sediment bucket and trap primer to water closet as indicated in detail; Trap-Guard product is NOT approved
ICE IMB	Ice Machine Connection Box	Oatey	38608	1/2"										unit to include water hammer arrestor with fire rated faceplate & vacuum breaker; verify wall rating prior to installation
UR-1	Handicapped Wall Mounted Urinal	Kohler Sloan	K-4904-ET 186-0.5	3/4"				2"	1-1/2"	17" AFF to rim	.50 gpm		White	Wall mounted urinal with low volume flush valve & J.R.Smith wall carrier; install in compliance with handicapped accessible requirements
UR-2	Standard Wall Mounted Urinal	Kohler Sloan	K-4904-ET 186-0.5	3/4"				2"	1-1/2"		.50 gpm		White	Wall mounted urinal with low volume flush valve & J.R.Smith wall carrier
EWC	Hi-Lo Electric Water Cooler with Filtered Bottle Water Filler	Elkay	LZSTL8WSLK	1/2"				2"	1-1/2"	See Detail				Wall mounted hi-lo electric water cooler with J.R. Smith wall carrier; fixture water connection, drain & electric power to be protected by fixture apron in compliance with 2010 ANSI/ADA-A117.1 accessible requirements (see details)
SR1	TILED SHOWER UNIT	KOHLER WATERPIK TECH.	K-9132 K-304-KS-NA K-P15601-X4-G 16810-MA-G MODEL SM-621	3/4"	3/4"		120	2"	1-1/2"		2.5 GPM		BRUSHED CHROME	Shower shall be tiled with seat, grab bars, shower valve kit with slider arm, valves, controls, stainless steel shower rod with rings & flanges, white shower curtain, chrome dome light, etc.; provide with shower pan per 2014 Florida Plumbing Code; coordinate light with electrical contractor ; actual shower to be tiled type with shower pan; verify with project arhitect for exact requirements & sizes
WHY	Outside Wall Hydrant	Woodford	B67	3/4"							1.00 gpm			keyed box anchored to prevent movement with vacuum breaker & freeze protection per detail
SK-1	Single Compartment Deept Sink	Elkay	DLH252212C LK2432	3/4"	3/4"		120	2"	1-1/2"		2.25 gpm		Stainless Steel	three compartment drop-in sink with swivel gooseneck faucet & spray; provide with chrome stops/supplies & P-trap with tailpiece & indirect drain
SK-2	Two Compartment Deep Sink	Kohler Kohler Kohler Brizo	K-3822-1 K-8801 1177161 63064LF-PC	1/2"	1/2"		110	2"	1-1/2"		2.25 gpm		Stainless Steel	two compartment sink with faucet & spray; provide with chrome stops/supplies & P-trap with tailpiece drain
JC-1	Floor Mounted Janitor Sink	Kohler	K-6710 K-8906 K-8940 K-9140	3/4"	3/4"		120	3"	2"		2.25 gpm		White	floor mounted janitor-mop sink with wall board as indicated in detail; provide with wall faucet at 36"AFF with pale hook, vacuum breaker, 6 ft hose, spray nozzle, rim guard, etc.
YHY	YARD Mounted Hydrant	J.R. Smith	5909	1"							3.0 gpm			ground mounted hydrant as indicated in detail with freeze protection

SPECIAL NOTES:
1. WSFU = WATER SIZING FIXTURE UNITS
2. DFU = DRAINAGE FIXTURE UNITS
3. GPF = GALLON PER FLUSH
4. GAL/MIN= GALLON PER MINUTE
5. OTHER APPROVED VENDOR PRODUCTS FOR NOTED MANUFACTURERS ARE: MANSFIELD, ELJER, DAYTON, RHEEM/RUUD, WADE, ZURN, SILVER CAST, ELKAY, TOTO, AND AMERICAN STANDARD

GAS SCHEDULE

ITEM	GAS SIZE CONNECT-EQUIP	GAS SIZE FROM MAIN	SERVICE	BTU/HR TOTAL	REMARKS
-	1/2"*	1/2	FOODSERVICE EQUIPMENT	346,000 TOTAL BTU/HR	TOTAL OF ALL COOKING EQUIPMENT,
INS-1	3/4"*	3/4"	WATER HEATING	1,990,000 BTU/HR	MECHANICAL YARD
INS-2	3/4"*	3/4"	WATER HEATING	1,990,000 BTU/HR	MECHANICAL YARD
INS-3	3/4"*	3/4"	WATER HEATING	1,990,000 BTU/HR	MECHANICAL YARD
GEN	1-1/4"*	1-1/4"	GENERATOR	3,084,000 BTU/HR	MECHANICAL YARD
TOTAL	2 1/2"** MAIN			9,400,000 BTU/HR	

*DENOTES LINES TO HAVE MAXITROL PRESSURE REGULATOR WITH DRIP LEG, ISOLATION VALVE & CSST FLEXIBLE PIPE CONNECTION

**2021 IFGC TABLE 402.4(5) BASED ON ESTIMATED 120 FEET 2 PSIG GAS WITH 1.0 PSI PRESSURE DROP & 0.60" WC SPECIFIC GRAVITY

PIPING SYSTEM PRESSURE TEST TABLE

SYSTEM	MEDIA	PRESS. (*)	PERMISSIBLE PRESS. DROP
BELOW GROUND WATER	WATER	200 PSIG	1 PSIG IN 2 HRS @ 73.4°F
ABOVE GROUND WATER	WATER	200 PSIG	1 PSIG IN 2 HRS
STEAM AND CONDENSATE	WATER	125 PSIG	1 PSIG IN 2 HRS
LAB VACUUM	AIR	75 PSIG	2 PSIG IN 2 HRS
COMPRESSED AIR	AIR	150 PSIG	2 PSIG IN 2 HRS
NATURAL GAS	AIR	100 PSIG	0 PSIG IN 2 HRS
STORM, WASTE AND VENT	WATER	10 FEET	0 LEAKAGE IN 10 MINUTES**

(*) OR 1-1/2 TIMES OPERATING PRESSURE, WHICHEVER IS GREATER.
(**) SMOKE TEST FOR WASTE & VENT INSIDE BUILDING PRIOR TO WALL COVER-FINISH.

SLOPE OF HORIZONTAL DRAINAGE PIPE

SIZE (INCHES)	MINIMUM SLOPE (INCHES PER FOOT)
2-1/2" OR LESS	1/4"
3" TO 6"	1/8"
8" OR LARGER	1/16"

SOURCE: 2014 FPC & ASPE DESIGN MANUAL

DFU for FIXTURE DRAINS-TRAPS

FIXTURE DRAIN OR TRAP SIZE (INCHES)	DRAINAGE FIXTURE UNIT VALUE (DFU)
1-1/4"	1
1-1/2"	2
2"	3
2-1/2"	4
3"	5
4"	6

SOURCE: 2014 FPC & ASPE DESIGN MANUAL

DISTANCE of FIXTURE TRAP from VENT

SIZE OF TRAP (INCHES)	SLOPE (INCH PER FOOT)	DISTANCE FROM TRAP (FEET)
1-1/4"	1/4"	5
1-1/2"	1/4"	6
2"	1/4"	8
3"	1/8"	12
4"	1/8"	16

SOURCE: 20014 FPC & ASPE DESIGN MANUAL

WATER USAGE RATES

Fixture Type	Federal EPAct of 2005 Code Required Flow Rate	Selected Fixture Flow Rate
Public Water Closet	1.6 gallons per flush	1.28 gallons per flush
Public Urinals	1.0 gallons per flush	0.5 gallons per flush
Public Lavatory-Sink	2.2 gallons per minute	0.25 gallons per minute
Janitor Mop or Service Sink	2.5 gallons per minute	1.00 gallons per minute
Children Age 2-3 Water Closet	1.6 gallons per flush	1.28 gallons per flush
Shower Heads	2.5 gallons per minute	1.0 gallons per minute
Clothes Washer	9.5 gallons/cycle/cubic feet	8.0 gallons/cycle/cubic feet
Ice Machine	less 300 lbs 24 hours at 25 gallons per 100 lbs	less 300 lbs 24 hours at 25 gallons per 100 lbs
Pre-rinse	less than 1.6 gallons per minute	less than 1.6 gallons per minute
Drinking Fountain	8 gallons per hour at 90°F	8 gallons per hour at 90°F
Metered Faucet	0.25 gallons per minute	0.25 gallons per minute

NOTES:
1. VALUES & PRODUCTS SHOWN MAY NOT BE USED ON PROJECT; VERIFY EXACT AMOUNT BASED ON PROJECT PLUMBING FIXTURE SCHEDULE

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MUTUAL AID STAGING & COORDINATION FACILITY
FOR
TALQUIN ELECTRIC COOPERATIVE, INC.
30270 BLUE STAR HIGHWAY GADSDEN COUNTY, FLORIDA

DATE: 7-7-25
REV:

JOB NO: 23-002

P0.2

SHEET NO.

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J. KYLE COX LICENSE NO.62881 STATE OF FLORIDA PROFESSIONAL ENGINEER
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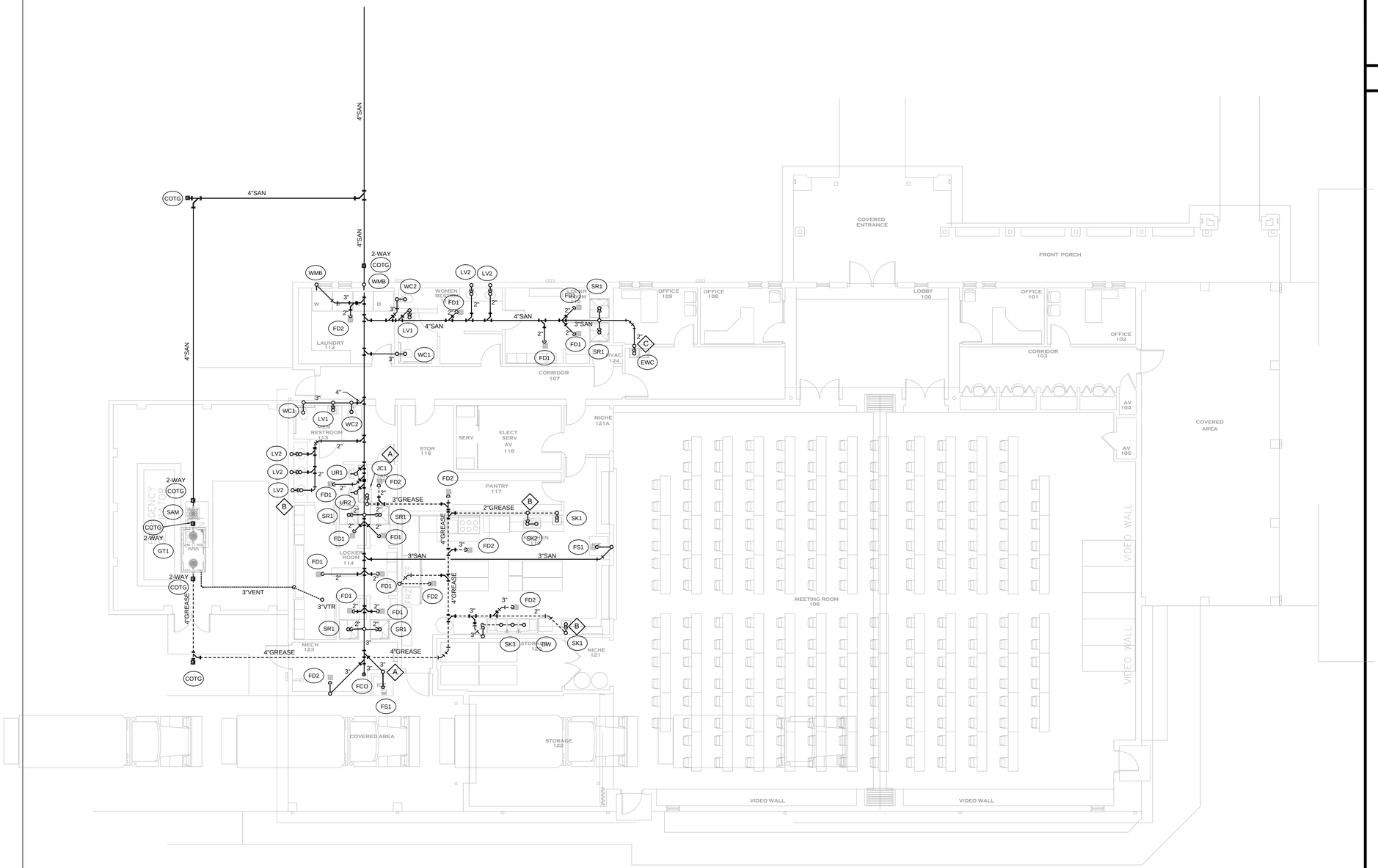

OVERALL BUILDING SOIL-WASTE-VENT-GREASE PLUMBING PLAN

SCALE: 1/8" = 1'-0"

0 4ft 8ft 32ft
2ft 6ft 16ft

DRAWING INFORMATION NOTES

A. TYPICAL STUDOR AAV WITH BOX GRILLE.

B. TYPICAL STUDOR AAV UNDER COUNTER PER VENDOR REQUIREMENTS.

C. WALL MOUNTED FIXTURE WITH 2" DRAIN & VENT ABOVE FINISHED CEILING INSTALL STUDOR AAV ABOVE CEILING PER VENDOR DESIGN MANUAL.

SPECIAL PROJECT NOTES

1. SANITARY SEWER SYSTEM TO BE STUDOR SINGLE STACK AIR ADMITTANCE CONFIGURATION PER VENDOR DESIGN MANUAL & 2020 FPC. AT LEAST ONE 3" VTR SHALL BE ROUTED THRU ROOF PER DETAIL IN COMPLIANCE REQUIREMENTS.

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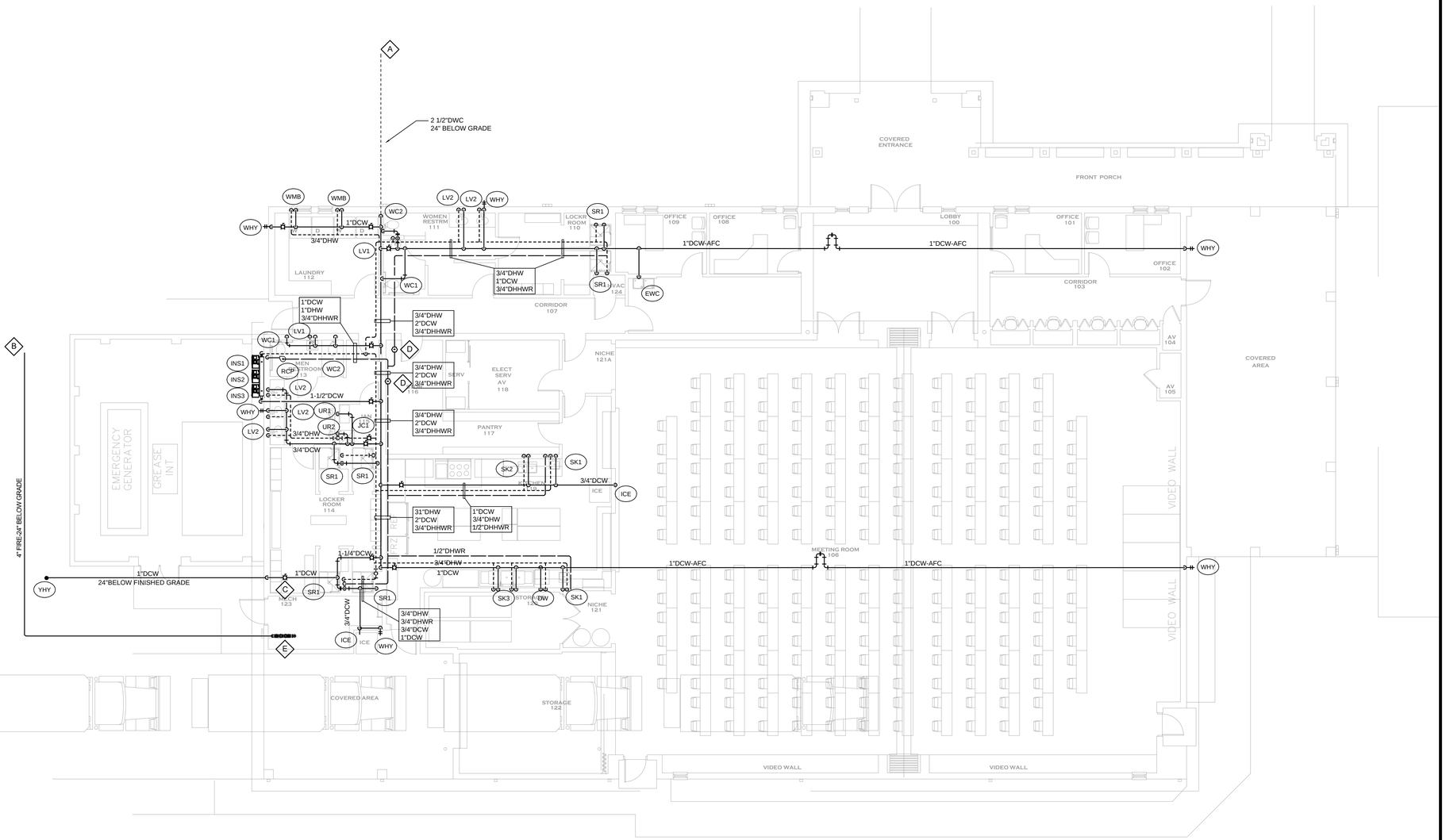

PARTIAL BUILDING DOMESTIC WATER PIPING PLAN

SCALE: 1/8" = 1'-0"

0 4ft 8ft 32ft

2ft 6ft 16ft

DRAWING INFORMATION NOTES

A. DOMESTIC WATER LINE BELOW GRADE WITH LINE CONNECTED TO LOCAL PUBLIC UTILITY; PROVIDE WITH 2 1/2" LINE TAP, 1 1/2" METER, 2 1/2" BACKFLOW DEVICE & 2 1/2" SERVICE LINE AS SHOWN; SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION & REQUIREMENTS.

B. 4" FIRE SERVICE LINE TO SITE MAIN LINE WITH BACKFLOW DEVICE; SEE CIVIL DRAWINGS FOR REQUIREMENTS.

C. TYPICAL ISOLATION BALL VALVES WITH CHAIN & TAG.

D. TYPICAL HOT WATER RETURN BALANCING VALVE EQUAL TO CALEFFI PER DETAIL.

E. FIRE SPRINKLER RISER PER 2016 NFPA 13.

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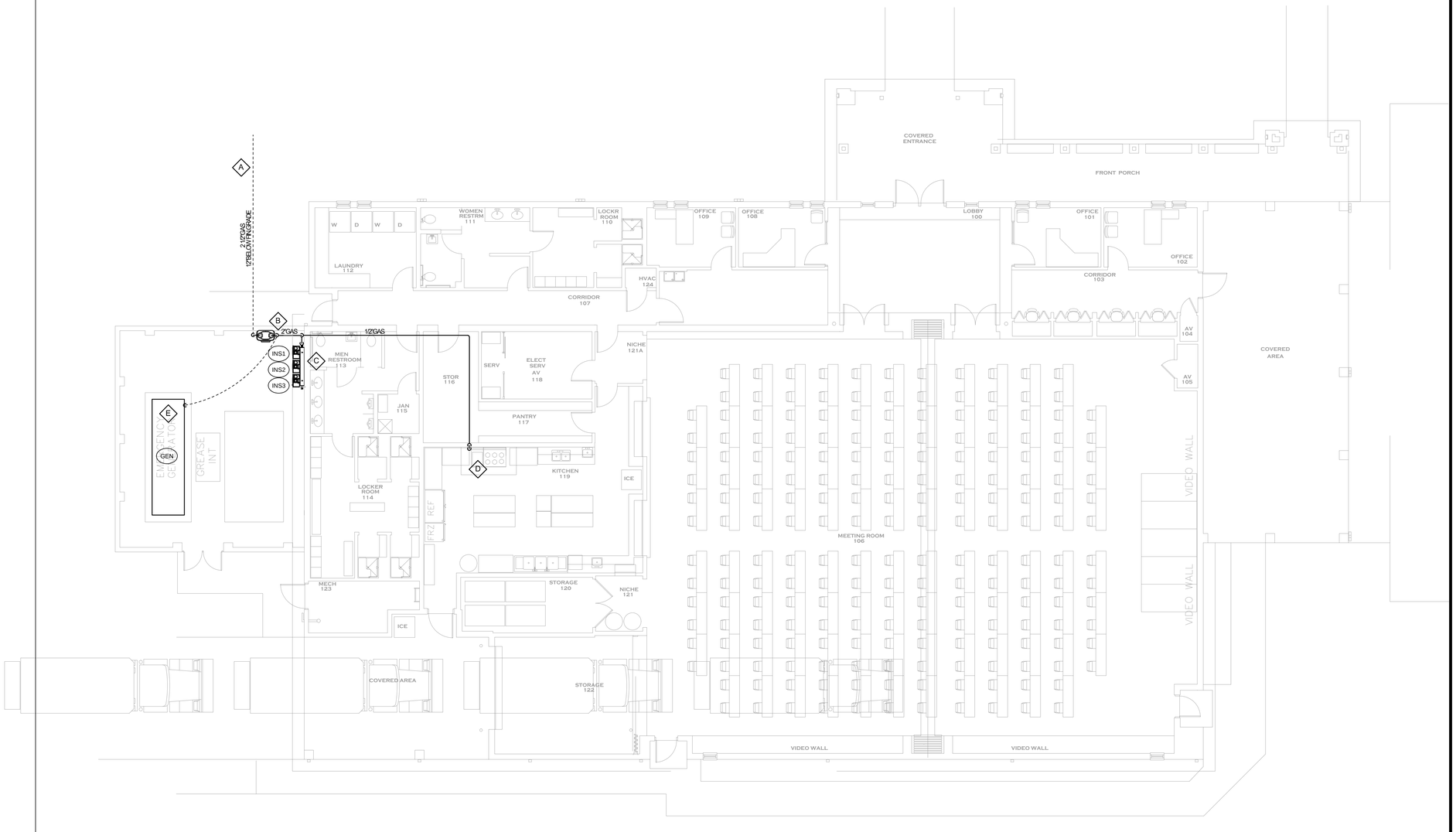

BUILDING NATURAL GAS PIPING PLAN

SCALE: 1/8" = 1'-0"

0 4ft 8ft 32ft

2ft 6ft 16ft

DRAWING INFORMATION NOTES

A. NATURAL GAS LINE FROM LOCAL GAS UTILITY-AGENCY.

B. 1" NATURAL GAS LINE DOWN TO GAS METER AS INDICATED IN DETAIL; ROUTE LINE THRU EXTERIOR WALL WITH AIR-WATER TIGHT SLEEVE TO AREA ABOVE FINISHED CEILING PER 2021 IFGC; LINE TO BE PAINTED WITH LABEL PER OSHA REQUIREMENTS; METER TO DELIVER 2 PSI NATURAL GAS 9,400 CFH PER 2021 IFGC TABLE 402.4(5) FOR APPROXIMATELY 120 EQUVIL. FEET.

C. ROUTE 3/4" NATURAL GAS LINE ALONG EXTERIOR WALL UP TO INSTANTANEOUS WATER HEATER RACK.

D. 1/2" NATURAL GAS LINE DOWN TO FINISHED FLOOR WITH ISOLATION VALVE, MAXITROL 2 PSI TO LOW PRESSURE REGULATOR, 6" DRIP LEG, & KITCHEN HOOD GAS SOLENOID FROM KITCHEN HOOD VENDOR, ETC.; CONTRACTOR TO RUN LINE NEAR FLOOR TO APPLIANCES INDICATED IN KITCHEN VENDOR USING LOW PRESSURE GAS, ISOLATION VALVES & "CSST" FLEXIBLE PIPE CONNECTIONS; GAS VALUE INDICATED IS BASED ON APPROXIMATE USAGE PER APPLIANCE DEMAND; CONTRACTOR MUST VERIFY ALL APPLIANCE REQUIREMENTS & LINE CONNECTION SIZE PRIOR TO INSTALLATION; ESTIMATED VOLUME IS RATED AT 346 CFH.

E. ROUTE 1-1/4" NATURAL GAS LINE 12" BELOW FINISHED GRADE TO GROUND MOUNTED EMERGENCY GENERATOR RATED AT 3,084 MBH.

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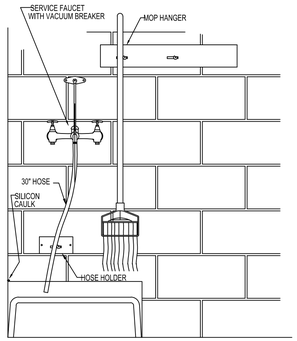
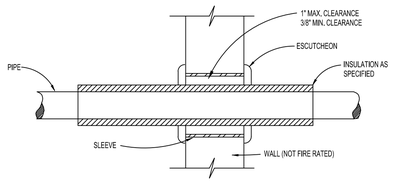
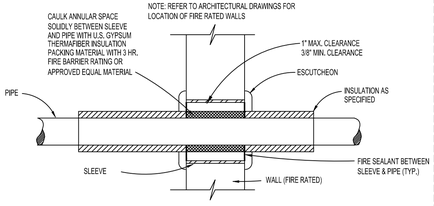


MOP HOLDER DETAIL
NTS



PIPE PENETRATION OF NON-FIRE RATED WALL
NOT TO SCALE



FIRE RATED PIPE PENETRATION
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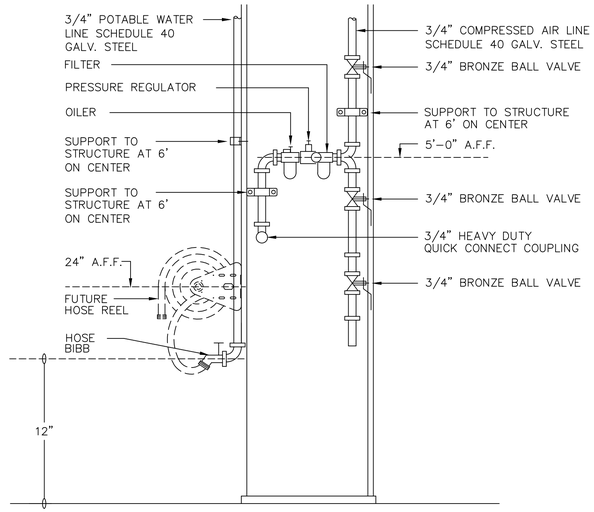
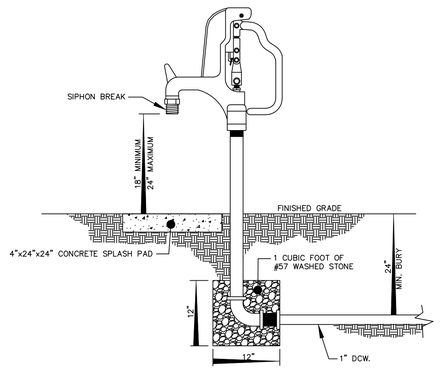
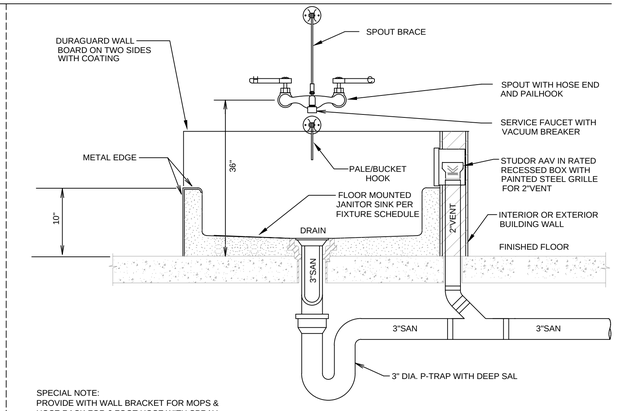


AIR/WATER REEL DETAIL
SCALE: N.T.S.



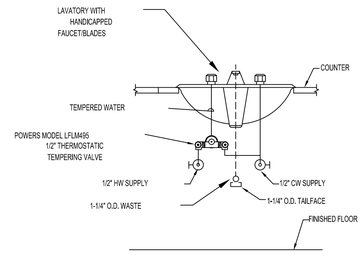
YARD HYDRANT DETAIL (YHY)
N.T.S.



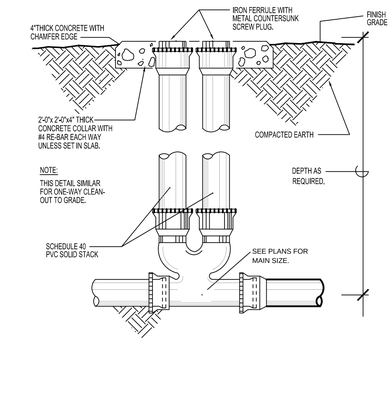
SPECIAL NOTE:
PROVIDE WITH WALL BRACKET FOR MOPS & HOSE RACK FOR 6 FOOT HOSE WITH SPRAY NOZZLE & VACUUM BREAKER

JANITOR MOP SINK DETAIL (JC1)
N.T.S.

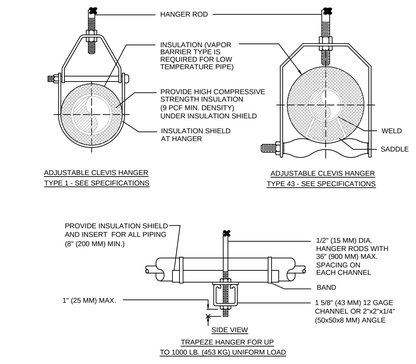
SPECIAL NOTE:
POWERS MODEL LFLM495 THERMOSTATIC MIXING VALVES SHALL BE INSTALLED IN ALL EMPLOYEE ROOMS & PUBLIC AREA SINKS/LAVATORIES; SEE ACTUAL FLOOR PLANS & ARCHITECTURAL DRAWINGS FOR REQUIRED FIXTURES.



LOCAL MIXING VALVE DETAIL
NTS



OUTSIDE CLEANOUT DETAIL
NOT TO SCALE



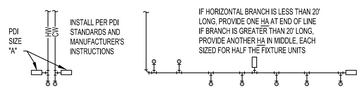
ADJUSTABLE CLEVIS HANGER TYPE 1 - SEE SPECIFICATIONS

ADJUSTABLE CLEVIS HANGER TYPE 43 - SEE SPECIFICATIONS

TRAPEZE HANGER FOR UP TO 1000 LB. (453 KG) UNIFORM LOAD

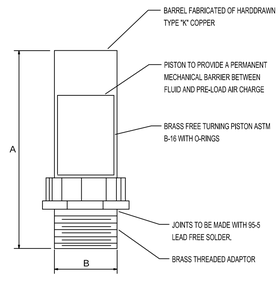
		MAXIMUM PIPE/TUBING SUPPORT SPACING										
NOM. SIZE	IN. (MM)	THRU 3/4 THRU (20)	1 (25)	1 1/4 (32)	1 1/2 (40)	2 (50)	2 1/2 (65)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)
PIPE	FT. (M)	7 (2.1)	7 (2.1)	7 (2.1)	9 (2.7)	10 (3.0)	11 (3.4)	12 (3.7)	14 (4.1)	16 (4.9)	17 (5.2)	19 (5.8)
TUBING	FT. (M)	5 FT 5 FT	6 (1.8)	7 (2.1)	8 (2.4)	8 (2.4)	9 (2.7)	10 (3.0)	12 (3.7)	13 (4.0)	14 (4.1)	16 (4.9)
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.												

TYPICAL PIPE HANGER DETAILS
NTS



	PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
HA-	A	1/2"	1-11
HA-	B	3/4"	12-32
HA-	C	1"	33-60
HA-	D	1-1/4"	61-113
HA-	E	1-1/2"	114-154
HA-	F	2"	154-330

FIXTURE UNIT TABULATION		
FIXTURE	COLD	HOT
VALVE WATER CLOSET	10	--
TANK WATER CLOSET	5	--
URINAL	5	--
LAVATORY/SINK	1.5	1.5
JANITOR'S SINK	3	3
SHOWER/BATHTUB	2	2



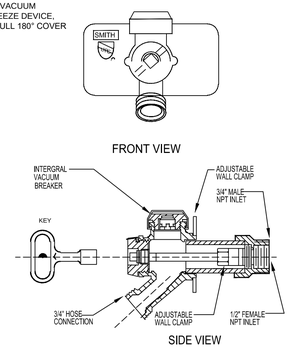
PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH- 201, ASSE #1010 AND ANSI #A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE. PROVIDE ACCESS PANEL FOR SERVICING OR REPLACEMENT, WHERE REQUIRED.

NOTE: INSTALL AT WATER CLOSETS, LAVATORIES, WASHING MACHINE BOX, SINKS, DISHWASHERS, & WATER HEATERS AS NOTED IN SPEC'S.

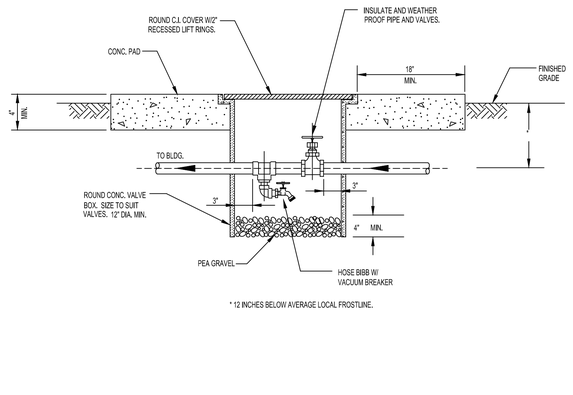
WATER HAMMER ARRESTOR DETAIL
NOT TO SCALE

NOTES:
1. TURN PIPING UP INSIDE WALL AS REQUIRED WITH BOX ANCHORED TO WALL SYSTEM

2. WITH INTEGRAL VACUUM BREAKER, NON-FREEZE DEVICE, "T"HANDLE KEY & FULL 180° COVER OPENING



TYPICAL WALL HYDRANT DETAIL
NTS



* 12 INCHES BELOW AVERAGE LOCAL FROSTLINE.

TYPICAL ISOLATION GROUND VALVE BOX DETAIL
N.T.S.

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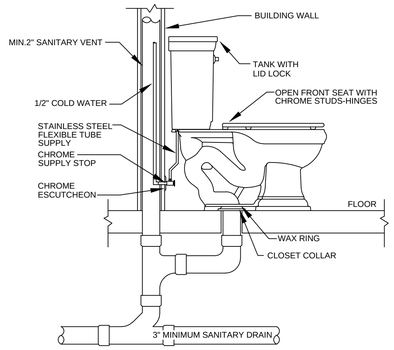
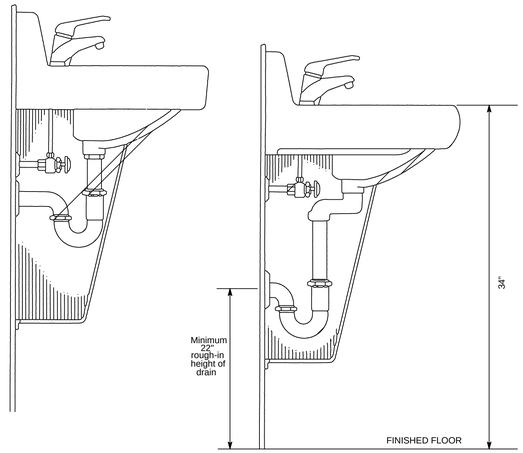
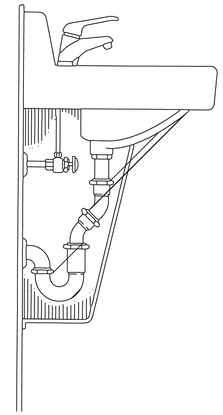


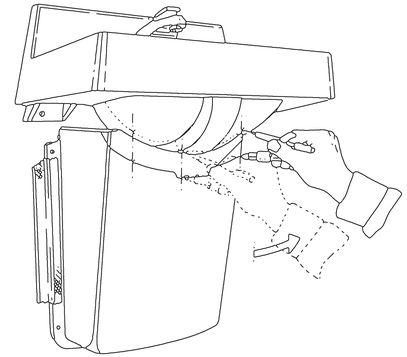
NOTE:
REFER TO FIXTURE MANUFACTURER ROUGH-IN DATA SHEETS FOR DIMENSIONAL INFORMATION.

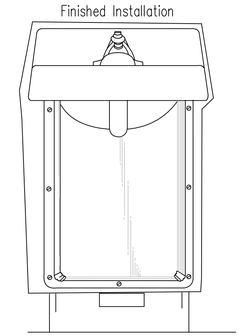
TYPICAL TANK TYPE WATER CLOSET DETAIL

NOT TO SCALE









Standard Installation:

TheLav Shieldis designed to be used in combination with ADA conforming 20" x 18" wall-hung china lavatories with waste outlets a maximum of 8.5" from wall (Illustration #1).

IMPORTANTRecommended height of 22 inches from floor is best for waste drain rough-in to allow for P-trap clearance.

Installation Variations:

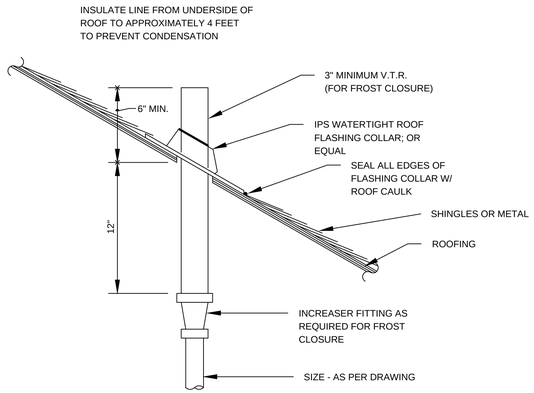
If drain rough-in is less than 22" from floor or P-trap interfers with slanted front surface of Lav Shield, complete installation by flexing Lav Shield into place (for minor interference) or modify drain piping with offset tailpiece piping

Installation Note:

Depending on the make and model of the lavatory, some scribing and coping may be required for satisfactory fit to underside of lavatory.

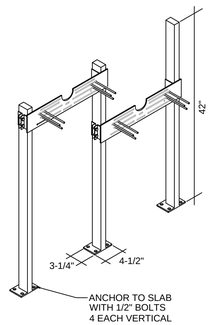
TYPICAL "LAV-SHIELD" LAVATORY-SINK PER 2014 FLORIDA ACCESSIBILITY CODE

NOT TO SCALE



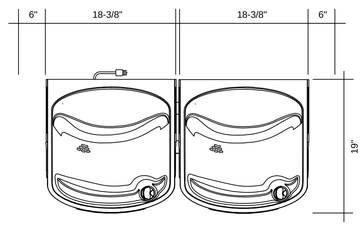
PLUMBING VENT THROUGH PITCHED ROOF DETAIL

NOT TO SCALE



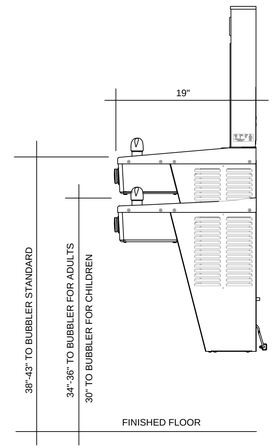
ISOMETRIC J.R.SMITH WALL CARRIER DETAIL

NOT TO SCALE



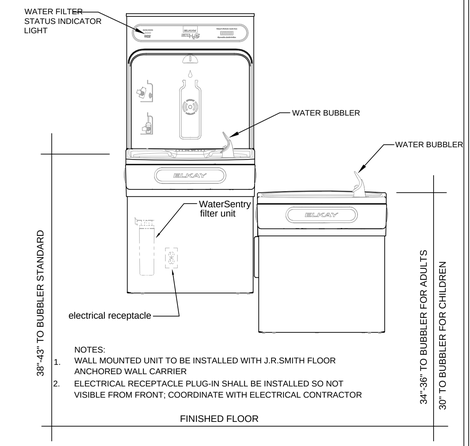
TOP VIEW HI-LO ELECTRIC WATER COOLER MOUNTING HEIGHT

NOT TO SCALE



SIDE VIEW HI-LO ELECTRIC WATER COOLER MOUNTING HEIGHT

NOT TO SCALE



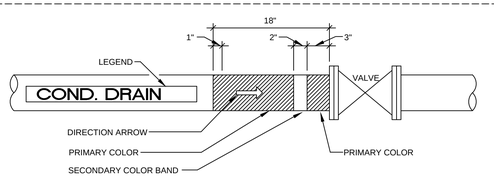
NOTES:
1. WALL MOUNTED UNIT TO BE INSTALLED WITH J.R.SMITH FLOOR ANCHORED WALL CARRIER
2. ELECTRICAL RECEPTACLE PLUG-IN SHALL BE INSTALLED SO NOT VISIBLE FROM FRONT; COORDINATE WITH ELECTRICAL CONTRACTOR

FRONT VIEW ELECTRIC WATER COOLER with BOTTLE WATER FILLER MOUNTING HEIGHT

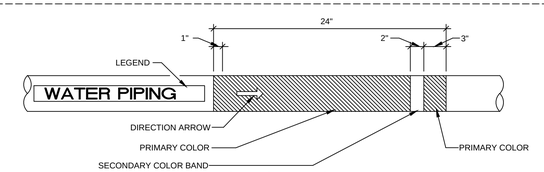
NOT TO SCALE

ELECTRIC WATER COOLER MOUNTING HEIGHT BASED ON 2014 FLORIDA ACCESSIBILITY CODE

NOT TO SCALE



AT FITTINGS AND VALVES



STRAIGHT RUNS

1. PAINTING OF PRIMARY AND SECONDARY MARKING BANDS FOR INDENTIFICATION OF PIPES BY DIVISION 220100-230100
2. STENCILLING OF DIRECTION ARROWS AND LEGEND BY DIVISION 220100-230100.
3. PIPE PAINTING BY DIVISION 220100-230100.

PIPE IDENTIFICATION LABELING DETAIL

N.T.S.

JOEL SAMPSON ARCHITECT
212 NORTH ADAMS ST
QUINCY, FLORIDA 32351
FLA LIC NO AA26000893
850-875-4348

MUTUAL AID STAGING & COORDINATION FACILITY
FOR
TALQUIN ELECTRIC COOPERATIVE, INC.
30270 BLUE STAR HIGHWAY GADSDEN COUNTY, FLORIDA

DATE: 7-7-25
REV:

JOB NO: 23-002

P2.2

SHEET NO.

P.O.BOX 3194
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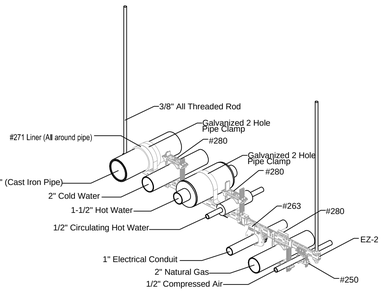
FL License No. 31813

the Design Group of Florida inc.
division of The Design Group, Inc.

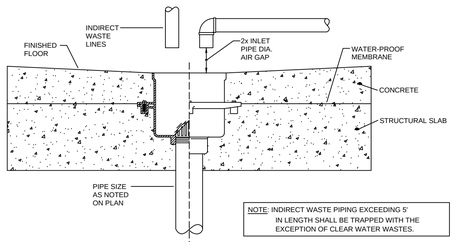
J. KYLE COX LICENSE NO.62881 STATE OF FLORIDA REGISTERED PROFESSIONAL ENGINEER
Digitally signed by J. Kyle Cox
Date: 2025.08.28 09:52:27-05'00'



SHOWN WITH HOLDRITE EZ-2 ADJUSTABLE TRAPEZE WITH VARIOUS METHODS OF ACOUSTICAL PIPING PROTECTION.

OVERHEAD TRAPEZE PIPING VIBRATION DETAIL

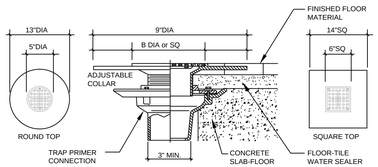
NTS



NOTE: INDIRECT WASTE PIPING EXCEEDING 5' IN LENGTH SHALL BE TRAPPED WITH THE EXCEPTION OF CLEAR WATER WASTES.

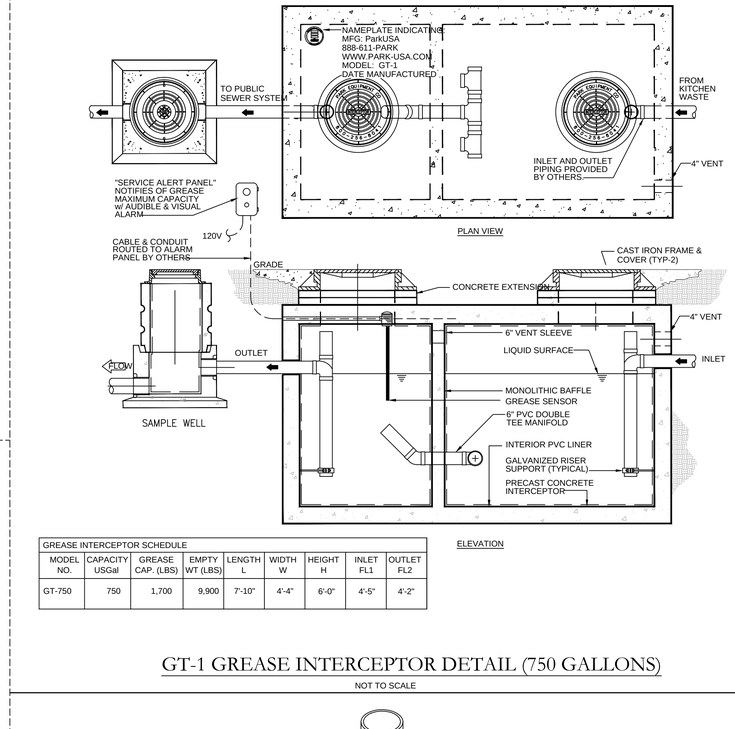
TYPICAL FLOOR SINK (FS1) DETAIL

NOT TO SCALE



TYPICAL FLOOR DRAIN (FD1) DETAIL

NTS



GREASE INTERCEPTOR SCHEDULE								
MODEL NO.	CAPACITY USGal	GREASE CAP. (LBS)	EMPTY WT (LBS)	LENGTH L	WIDTH W	HEIGHT H	INLET FL1	OUTLET FL2
GT-750	750	1,700	9,900	7'-10"	4'-4"	6'-0"	4'-5"	4'-2"

GT-1 GREASE INTERCEPTOR DETAIL (750 GALLONS)

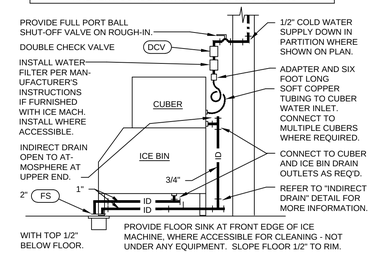
NOT TO SCALE

10 GAGE STEEL BEARING PLATES FOR PIPE SUPPORT

RISER CLAMP ISOLATION MEMBER VIBRATION DETAIL

NTS

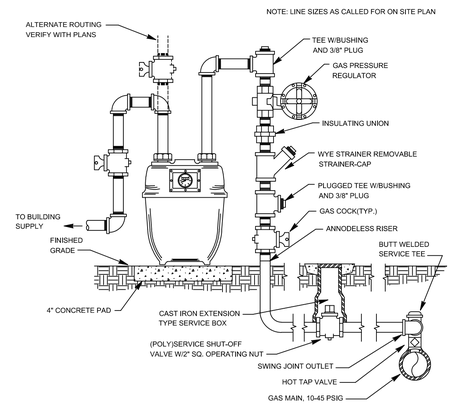
NOTE: INSULATE DRAINS & LINES AT ICE MACHINES TO PREVENT CONDENSATION ISSUES & CONCERNS



PROVIDE COLD WATER ROUGH-IN AT TOP OF ICE MACHINE. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST AS REQUIRED TO SUIT CONDITIONS. VERIFY CONNECTIONS WITH MANUFACTURER.

ICE MACHINE CONNECTION DETAIL

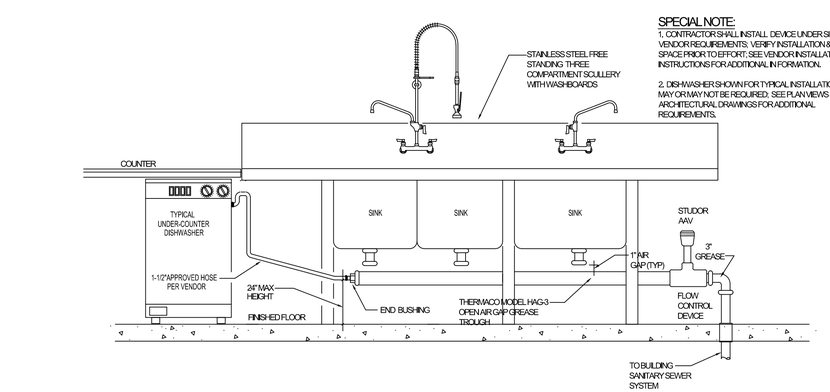
NOT TO SCALE



NOTE:
GAS METER & REGULATOR SHALL BE BY THE LOCAL GAS COMPANY. ALL COSTS WILL BE INCURRED BY THE PLUMBING CONTRACTOR.

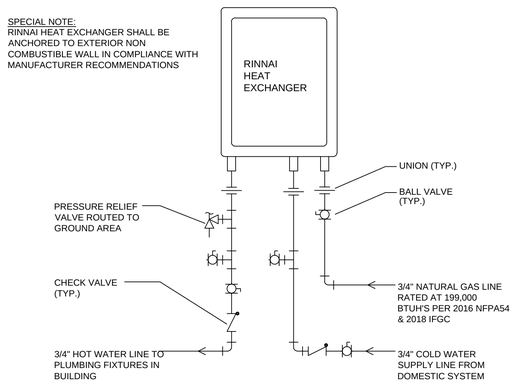
TYPICAL GAS SERVICE CONNECTION DETAIL

N.T.S.



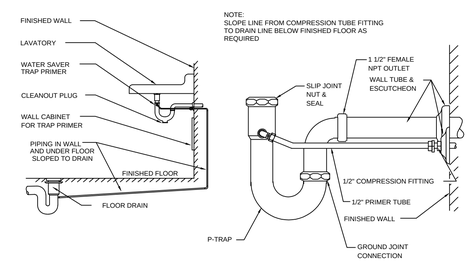
THREE COMPARTMENT SINK & DISHWASHER INSTALLATION DETAIL

NTS



NATURAL GAS INST. WATER HEATER DETAIL

NOT TO SCALE



TYPICAL TRAP PRIMER FOR FD-1 GUEST ROOM DETAIL

NTS

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