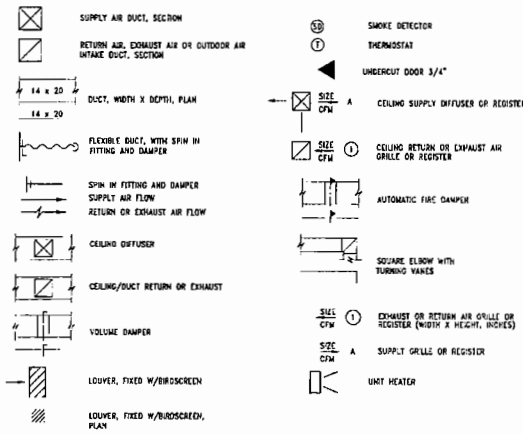


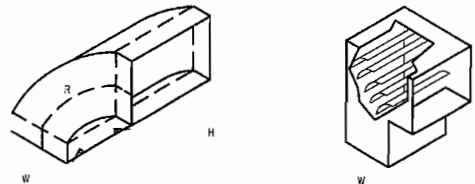
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MECHANICAL SYMBOLS



GENERAL NOTES

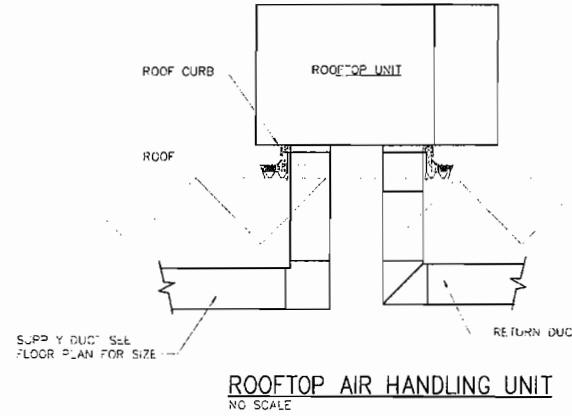
- ALL MECHANICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE (2009 IBC) AND THE LOCAL AMENDMENTS.
- CONTRACTOR SHALL COORDINATE MECHANICAL WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION AND INSTALLATION. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DOORS, WINDOWS, AIR DISTRIBUTION DEVICES ETC.
- COORDINATE THE SIZE OF ALL WALL OPENINGS, ROOF OPENINGS AND EQUIPMENT PADS WITH ACTUAL EQUIPMENT PURCHASED. ALL MECHANICAL ITEMS EXTENDING THRU WALL & ROOF SHALL FLASHED AND COUNTER FLASHED. ALL ROOF CURBS FOR MECHANICAL EQUIPMENT SHALL BE BY MECHANICAL CONTRACTOR.
- FIRE DAMPERS SHALL BE INSTALLED WHERE SHOWN ON PLANS AND IN ALL FIRE PARTITIONS.
- THIS CONTRACTOR SHALL PROVIDE & INSTALL ALL MISCELLANEOUS STEEL AS REQUIRED FOR INSTALLATION OF ALL MECHANICAL ITEMS.
- ALL DUCTWORK SIZES ARE INSIDE CLEAR FREE AREA AND SHALL BE INCREASED WHERE REQUIRED TO INCLUDE INTERNAL INSULATION.
- MOTOR STARTERS AND DISCONNECTS SHALL BE FURNISHED UNDER DIVISION 15 AND INSTALLED BY THE ELECTRICAL CONTRACTOR. COORDINATE SIZE, VOLTAGE AND TYPE OF ALL HVAC EQUIPMENT PRIOR TO PURCHASING.
- CONTRACTOR SHALL NOTE THAT THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT INDICATE ALL OFFSETS, TRANSITIONS, OR OTHER APPURTENANCES REQUIRED FOR A COMPLETE HVAC SYSTEM. PROVIDE ALL EQUIPMENT NECESSARY FOR A COMPLETE SYSTEM.
- CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING, THERMOSTATS, CONTROL TRANSFORMERS, DAMPERS, DAMPER OPERATORS ETC., NECESSARY TO ACHIEVE THE SEQUENCE OF OPERATION.
- LOCATE ALL SPACE CONTROL INSTRUMENTS 4'-8" ABOVE FINISHED FLOOR FROM BOTTOM OF DEVICE.
- ALL PIPING AND DUCTWORK SHALL RUN CONTINUOUSLY THRU FLOORS, ROOFS AND PARTITIONS.



TYPE RE 1 RADIUS ELBOW CENTERLINE = 3W AT STD RADIUS
TYPE RE 2 SQUARE THROAT ELBOW WITH VANES

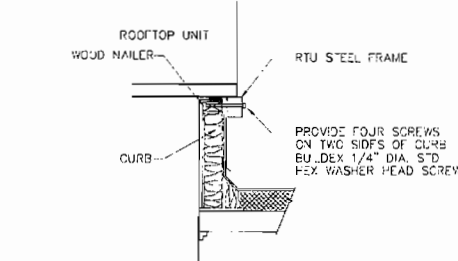
RECTANGULAR SHEET METAL DETAIL

NO SCALE



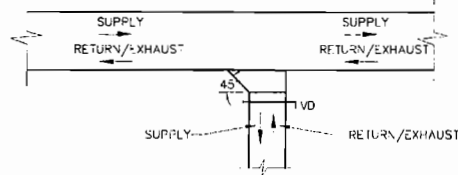
ROOFTOP AIR HANDLING UNIT

NO SCALE



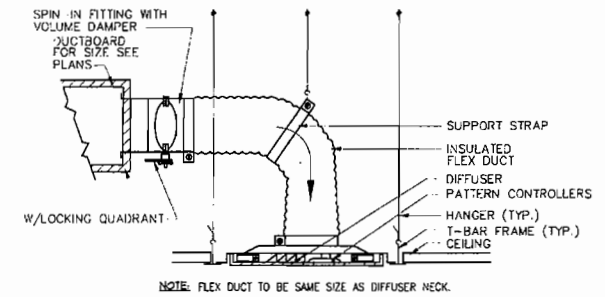
RTU ATTACHMENT TO CURB

NO SCALE



BRANCH TAKE-OFF DETAIL

NO SCALE



LAY-IN CEILING DIFFUSER (CD) DETAIL

NO SCALE

NOTE: FLEX DUCT TO BE SAME SIZE AS DIFFUSER NECK.

ROOF TOP AIR CONDITIONING UNIT SCHEDULE

TAG	SA CFM	OA CFM	ESP IN./WG	SA FAN HP	TOTAL SENS. MBH	DX-COOLING COIL		HEATING		SEER/EER	ELEC CHAR V/9/HZ	BASIS OF DESIGN	NOTES	
						ENT F °/MBH	LAT F °/MBH	INPUT MBH	OUTPUT MBH					
RTU-1 (1'x4)	1600	310	0.5	1.0	48.5	39.4	60/87	57/25	80	48	13/—	208/1/60	TRANS YHC-48	① ② ③ ④

- ① ESP INCLUDES DUCTWORK & GRILLES ONLY.
- ② 7" PLEATED FILTERS
- ③ 120V SERVICE CABLET PROVIDED & INSTALLED BY ELECTRICAL
- ④ DISCONNECT SWITCH FURNISHED & INSTALLED BY ELECTRICAL
- ⑤ PROVIDE 1/4" STANDARD HOOK DOWN CURB

EXHAUST FAN SCHEDULE

TAG	SERVICE	TYPE	CFM	ESP IN./WG	HP	DRIVE	RPM	SONES	ELEC CHAR V/9/HZ	BASIS OF DESIGN GREENHEX U.N.O.	NOTES
EF-1 (1'x4)	WOMEN/MEN RESTROOM	CEILING	75	0.125	1/20	DIRECT	900	1.4	120/1/60	SP-AB0	① ② ③ ④

- ① DISCONNECT SWITCH
- ② BACKDRAFT DAMPERS
- ③ 4" TORQUE EXHAUST FAN WITH TOILET LIGHTS SO THAT FAN WILL RUN WHEN LIGHTS ARE TURNED ON.
- ④ PROVIDE SOLID STATE SPEED CONTROLLER FOR BALANCING

DIFFUSER, GRILLE & REGISTER SCHEDULE

TAG	SERVICE	TYPE	CFM	NECK SIZE	THROW	PATTERN	WG	PD IN./WG	BASIS OF DESIGN	NOTES
①	SUPPLY	CEILING LEVHEDD-1424H	SEE PLANS	SEE PLANS	8'	4 RAY	35	E1	TRUS THS-AA	① ②
②	SUPPLY	CEILING LEVHEDD-1201L	SEE PLANS	SEE PLANS	8'	4 RAY	35	E1	TRUS THS-AA	① ② ③
③	RETURN/EXHAUST	CEILING LEVHEDD-1201L	SEE PLANS	SEE PLANS	---	---	35	E1	TRUS THS-AA	①
④	RETURN	LEVHEDD-1201L	SEE PLANS	SEE PLANS	---	---	35	E1	TRUS THS-AA	① ②

- ① HEAVY DUTY OPPOSITE BLADE DAMPER OPERABLE FROM FACE OF DIFFUSER.
- ② PROVIDE MOUNTING FRAME FOR EACH AIR DISTRIBUTION DEVICE TO MATCH THE SPECIFIC CEILING/WALL REQUIREMENT
- ③ SQUARE REFLECTOR, 3/4" SPACING, 45° DEFLECTION, OPPOSITE BLADE DAMPER.
- ④ SINGLE BLADE, 0° DEFLECTION.
- ⑤ ALUMINUM 1/2" BLADE SPACING, 30° DEFLECTION

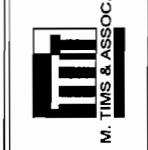
SEQUENCE OF OPERATION

- ALL AC UNITS SHALL BE CONTROLLED WITH A PROGRAMMABLE, AUTO CHANGEOVER THERMOSTAT WITH SUBBASE (ONE PER UNIT).
- EXHAUST FANS SHALL BE INTERLOCKED WITH THE BATHROOM LIGHT SWITCH.

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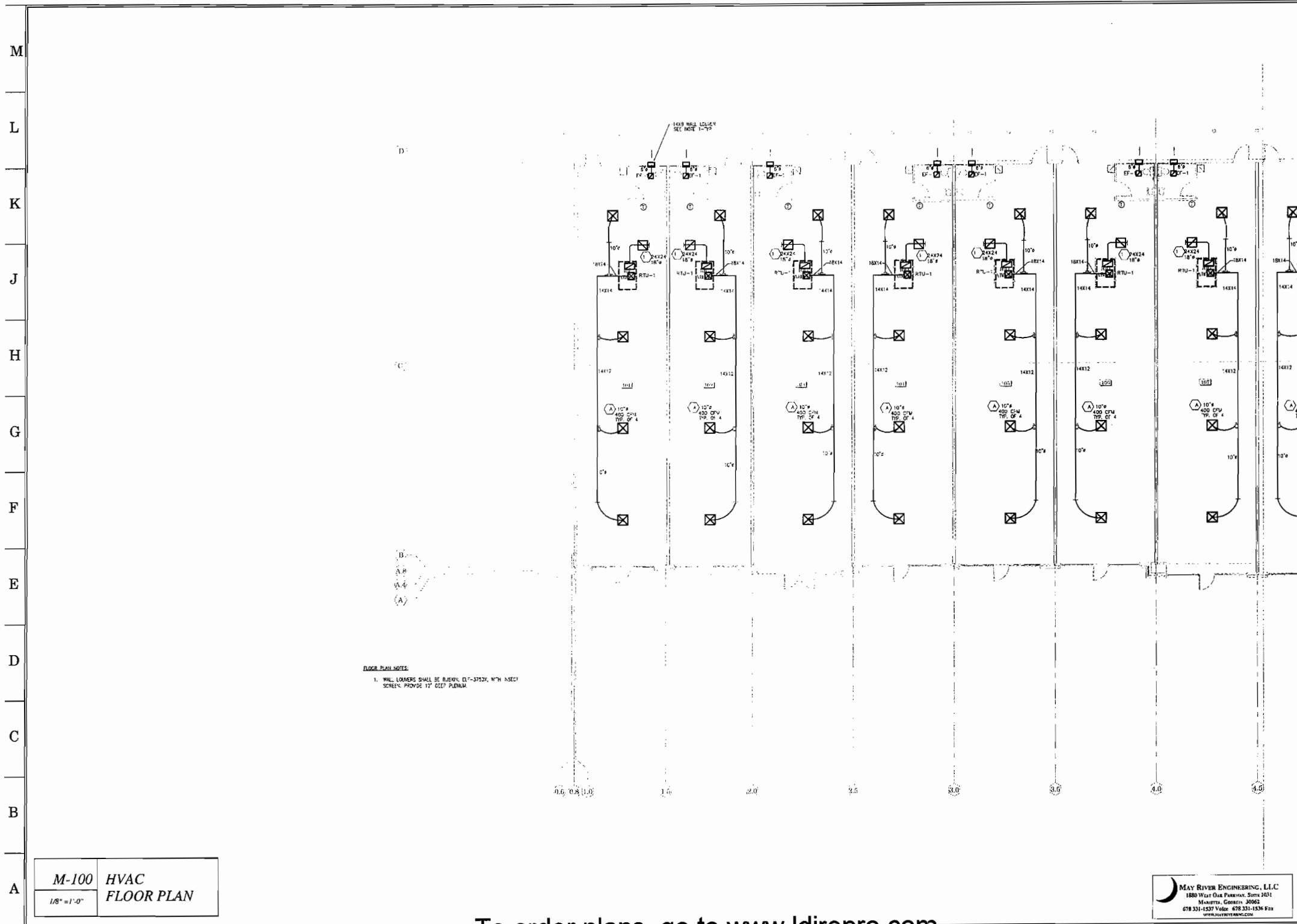
PROJECT NAME
The Shops at Crossroads
Partners Two Investment Corp.
3264 Maclacklin Road
Norcross, Georgia 30092

DRAWING TITLE
HVAC SCHEDULES, LEGEND & DETAILS
PROJECT NUMBER
MTA-07-005-01

REVISION	DATE



DRAWN BY: VM
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DATE:

SHEET NUMBER
M-001



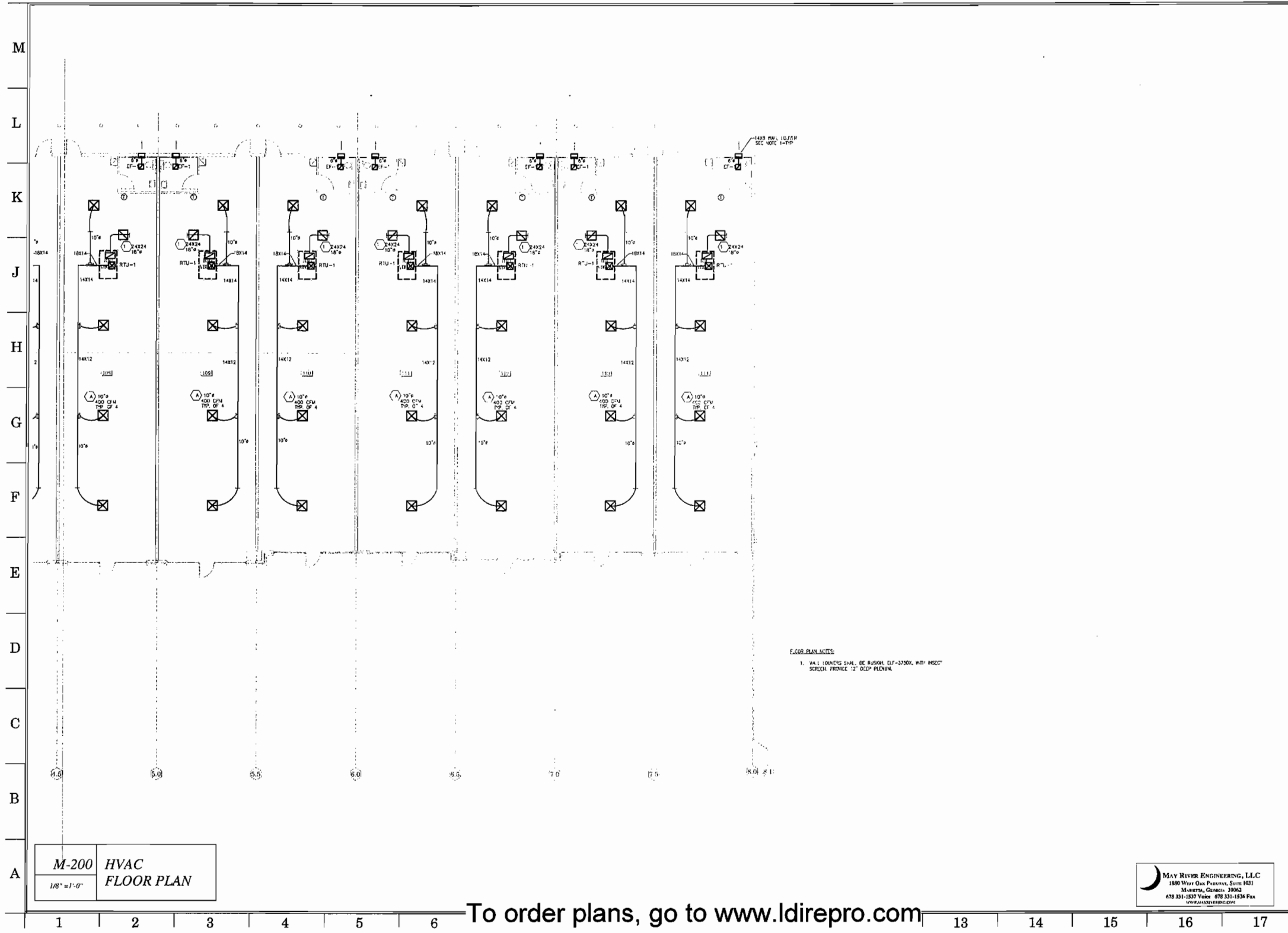
M-100 HVAC FLOOR PLAN
1/8" = 1'-0"

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PROJECT NAME The Shops at Crossroads Pulte Home Investment Corp. 3264 Melrose Bridge Road Norcross, Georgia 30092	
DRAWING TITLE HVAC FLOOR PLAN	PROJECT NUMBER MTA-07-005-01
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M-200 HVAC FLOOR PLAN
1/8" = 1'-0"

FLOOR PLAN NOTES
1. ALL DOORS SHALL BE RUSOM, DJ-3700X, WITH INSET SCREEN FRAME 12" OCP PLDWN.

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PROJECT NAME
The Shops at Crossroads
Partners Two Investment Corp.
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Norcross, Georgia 30092

DRAWING TITLE
HVAC FLOOR PLAN
PROJECT NUMBER
MTA-07-005-01

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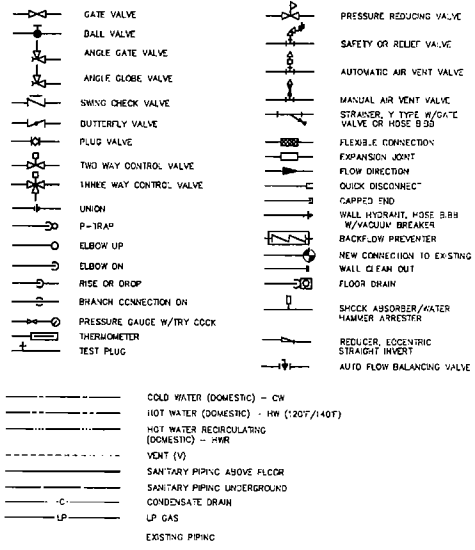
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PLUMBING LEGEND



GENERAL NOTES

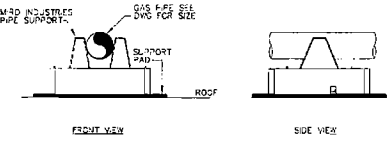
1. ALL PLUMBING WORK SHALL COMPLY WITH THE 2006 INTERNATIONAL PLUMBING CODE & GEORGIA AMENDMENTS.
2. ALL PLUMBING WORK SHALL BE COORDINATED AND VERIFIED FOR ANY INTERFERENCE WITH ALL DISCIPLINES, BEFORE FABRICATION AND INSTALLATION.
3. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAKE FINAL CONNECTIONS TO ALL FIXTURES DESIGNATED ON THE ARCHITECTURAL AND PLUMBING DRAWINGS.
4. ANY FIXTURES DAMAGED DUE TO THE CONTRACTOR'S NEGLIGENCE WILL BE REPLACED BY THE CONTRACTOR AT HIS OWN QUALITY COST.
5. ALL ABOVE GROUND HORIZONTAL PIPING LOCATED IN AREAS PROVIDED WITH SUSPENDED CEILING SHALL BE INSTALLED ABOVE SUCH CEILING UNLESS OTHERWISE NOTED.
6. PLUMBING SUPPORTS AND HANGERS SHALL BE COORDINATED WITH THE STRUCTURE. ALL SLEEVES REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE APPROVED BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALLATION. EXACT LOCATION OF CORES THROUGH BEAMS SHALL BE COORDINATED W/ STRUCTURAL ENGINEER PRIOR TO CORING BEAMS.
7. ALL PLUMBING FIXTURES AND EQUIPMENT CONNECTED TO THE SANITARY SYSTEM SHALL BE PROVIDED WITH TRAPS AND CLEANOUTS.
8. CONTRACTOR SHALL TRAP PRIME ALL FLOOR DRAINS AS REQUIRED PER CODE.
9. PROVIDE AND INSTALL WATER HAMMER ARRESTORS PER MANUFACTURER'S INSTRUCTIONS AND PER STANDARD 201.
10. CONTRACTOR SHALL PROVIDE SHUT-OFF VALVES FOR EACH PIECE OF EQUIPMENT, FIXTURE AND TOILET SHUT-OFF ROOF.
11. ALL EXPOSURE DRING SHALL BE RUN TIGHT TO STRUCTURE AND PERPENDICULAR/PARALLEL TO BALDING BEAMS AND STRUCTURE.
12. CONTRACTOR SHALL COORDINATE ALL UNDERGROUND SANITARY PIPING W/ EXISTING FOOTING/FOUNDATION.
13. CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY ACCESS PANELS IN ALL NON-ACCESSIBLE CEILING AND AT WALLS AS REQUIRED FOR VALVES, CLEANOUTS, WATER HAMMER ARRESTORS ETC. PANELS, SIZED AS REQUIRED FOR ADEQUATE ACCESS. SHALL BE NO SMALLER THAN 24"X24" COORDINATE STEEL, COLOR AND FINISH OF EACH WITH THE ARCHITECT.

PLUMBING FIXTURE CONNECTION SCHEDULE

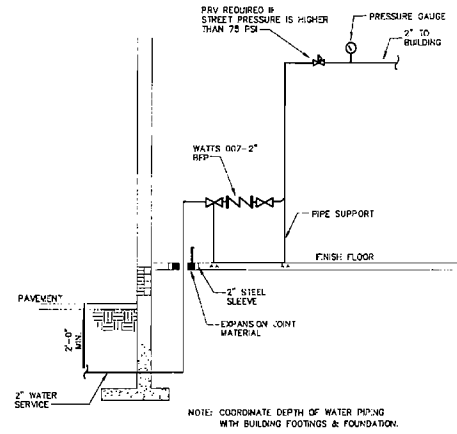
SYMBOL	DESCRIPTION	MIN. CONNECTION SIZE				MTG. HT. FLOOR TO RIM	REMARKS
		WASTE	VENT	OV	TW		
WC-1	WATER CLOSET	4"	2"	1/2"	---	17"	FLOOR MOUNTED - TANK TYPE
LAV-1	LAVATORY	1-1/2"	1-1/2"	1/2"	---	---	WALL MOUNTED
DF-1	DRINKING FOUNTAIN	1-1/2"	1-1/2"	1/2"	---	---	SPLIT TYPE - ADA
FD-1	FLOOR DRAIN	3"	2"	---	---	---	ROUND TYPE - TRAP PRIMER

WATER HEATER SCHEDULE

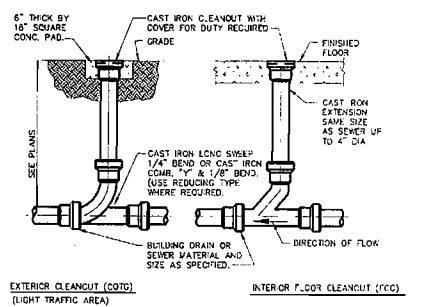
EQUIPMENT NUMBER	TYPE	STORAGE CAP. GALS.	RECOVERY GPH	GAS INPUT (MBH)	KW	VOLTAGE	LOCATION	MANUF. & MOD. #	REMARKS
WH-1	ELECTRIC	TANKLESS	1/2 GPM @ 60° RISE	---	4.1	208/1PH	SEE PLANS	EMAX SP4208	1



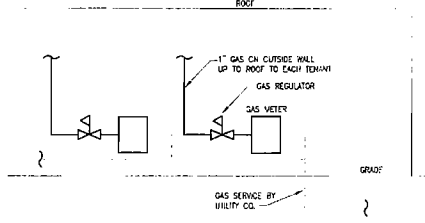
3 GAS PIPING ON ROOF DETAIL
N.T.S.



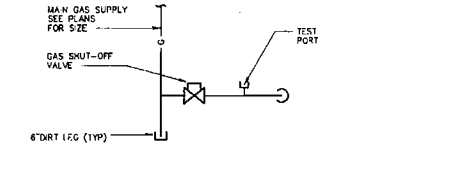
1 DOMESTIC WATER SERVICE DETAIL
N.T.S.



5 CLEANOUT DETAILS
N.T.S.



4 GAS METER BANK DETAIL
N.T.S.



2 TYPICAL GAS CONNECTION DETAIL
N.T.S.

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PROJECT NAME
The Shops at Crossroads
Partners Two Investment Corp.
3284 Medlock Bridge Road
Norcross, Georgia 30092

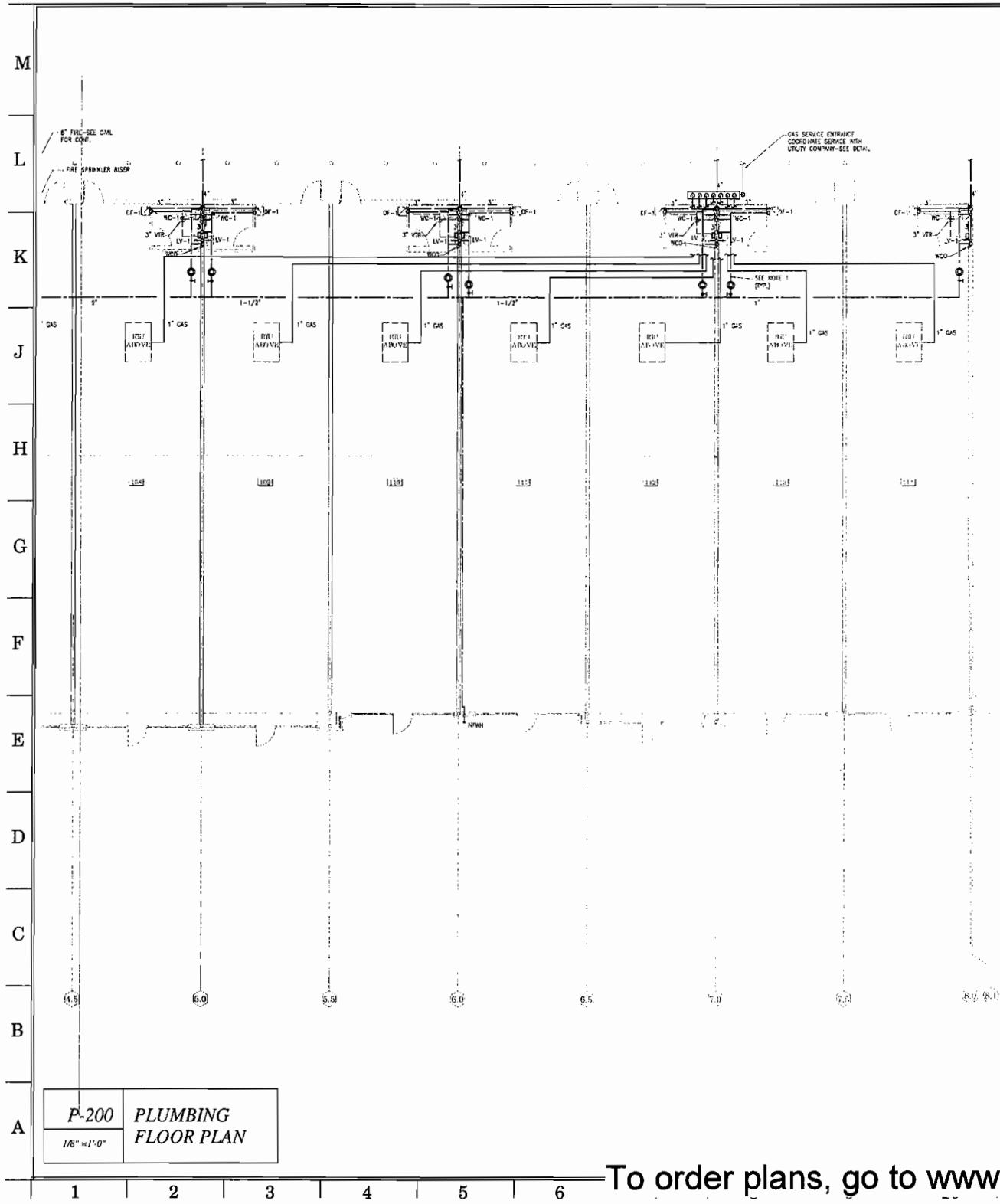
DRAWING TITLE
PLUMBING GENERAL NOTES,
LEGEND, SCHEDULES &
DETAILS
PROJECT NUMBER
MTA-07-005-01

REVISION	DATE

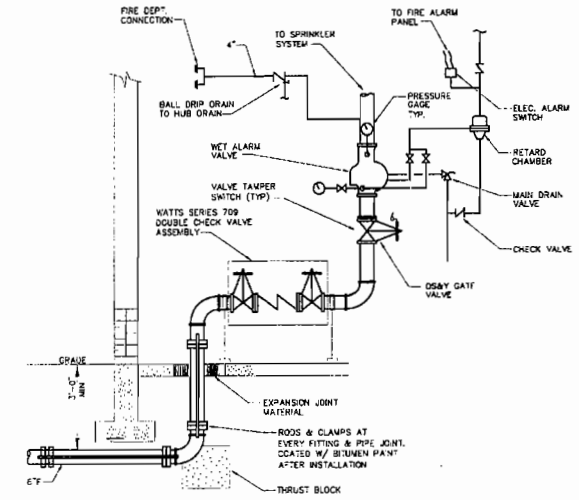
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P-200 PLUMBING FLOOR PLAN
1/8" = 1'-0"



1 FIRE SPRINKLER RISER DETAIL
N.T.S.

FIRE PROTECTION NOTES

1. FIRE PROTECTION SYSTEM(S) SHALL BE INSTALLED IN ACCORDANCE WITH CONTRACT DOCUMENTS, NFPA 13 STANDARDS, INSURANCE UNDERWRITERS, STATE FIRE MARSHAL AND CODE AUTHORITY HAVING JURISDICTION.
2. AUTOMATIC SPRINKLER SYSTEMS SHALL BE PROVIDED FOR ALL AREAS OF THE BUILDING.
3. 1/2" SHOP DRAWINGS, WITH HYDRAULIC CALCULATIONS, SHALL BE SUBMITTED BY A FIRE PROTECTION ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA. SHOP DRAWINGS SHALL BE APPROVED PRIOR TO STARTING WORK.
4. SPRINKLER SHALL BE MIN. 2'-0" FROM WALLS, NO EXCEPTIONS.
5. CONTRACTOR SHALL USE CAUTION DURING EXCAVATION OPERATIONS NOT TO DAMAGE OR INTERRUPT THE OPERATION OF EXISTING UTILITIES.
6. ALL EXPOSED PIPING AND HANGERS ARE TO BE PRIMED AND PAINTED, COLOR TO BE SELECTED BY OWNER/ENGINEER.
7. IN AREAS WITH CEILING, PIPING SHALL RUN ABOVE CEILING COORDINATE WITH HVAC DUCTS AND LIGHTS. CONTRACTOR IS RESPONSIBLE FOR CORDING CLEARANCE AND SIZE PIPES TO FIT.
8. COORDINATE FLOW & TAMPER SWITCH LOCATIONS WITH THE FIRE ALARM CONTRACTOR.
9. UNDERGROUND FIRE PIPING SHALL BE 3'-0" (MIN) BELOW GRADE TO TOP OF PIPE. COORDINATE ROUTING WITH EXISTING UTILITIES.
10. ALL PENETRATIONS SHALL BE SMOOTHED AND SANDED TO ELIMINATE SHARP EDGES, AND CAULKED AND PAINTED TO MATCH EXISTING.



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DRAWING TITLE
PLUMBING FLOOR PLAN
PROJECT NUMBER
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MECHANICAL GENERAL

SUBMITTALS
A. The Contractor shall submit for review by the Architect data of materials and equipment to be incorporated in the work.

OPERATION AND MAINTENANCE INSTRUCTIONS
A. The Contractor shall provide five Operation and Maintenance Manuals. The manuals shall be compiled in hard back, three ring notebooks. O&M manuals shall have permanent labels on front and back.

ELECTRICAL WORK
A. Equipment with motor speed controls, starters, system controls, pilot lights, push-buttons, etc., shall be furnished complete as a part of the motor apparatus which it operates. All components shall be in conformance with the requirements of the National Electrical Code and Division 16. All motor starters shall be provided with an H.O.A. switch and control transformer. All starters and disconnect switches shall be furnished under Division 15.

PERFORMANCE TESTING AND BALANCING OF AIR SYSTEMS

QUALITY ASSURANCE
A. Qualification of the Agency:
1. The testing and balancing agent shall be a member of AABC or NEBB and shall have successfully tested, adjusted and balanced systems of comparable size and type.
2. The agency shall be AABC or NEBB certified.

SCOPE OF WORK
A. The contractor shall obtain the services of an independent testing and balancing company to perform air balance on the HVAC equipment.
B. Balance of system within 5% of data shown on plans.

REPORT
A. The report of performance testing and balancing shall be submitted on forms required by AABC or NEBB.

MECHANICAL SYSTEMS INSULATION

FIBERGLASS PIPE INSULATION
A. One piece fibreglass pipe insulation with factory applied aluminum foil and white Kraft paper flame retardant vapor barrier jacket.
1. Provide self-sealing longitudinal jacket laps and butt joints.
2. Average thermal conductivity: 0.23 BTU-in. per square foot per degree F per hour at 75 degrees F mean temperature.
3. Acceptable Products:
Schluter Micro-Lok 450 AF-1
Owens Corning Fiberglass 5000 Snap-On ASUSSL
Knauf ASI-SSL Pipe Insulation
4. Insulation thickness for cold piping lines shall be as follows: 1" thickness for piping up to 1-1/4", 1-1/2" thickness for piping from 1-1/2" to 3".
5. Insulation thickness for hot pipe lines shall be as follows: 1" thickness for piping up to 1", 1-1/2" thickness for piping from 1" to 3".
FIBERGLASS BLANKET INSULATION FOR DUCTWORK
A. Blanket type fibreglass insulation with average thermal conductivity not exceeding 0.29 BTU-in. per square foot per degree F per hour at mean temperature of 75 degrees F.
1. Minimum density 1.5 lb/cu. ft., 2" thick minimum.
2. Acceptable Products:
Schluter Micro-Lok FSK faced wrap 1 lb/cu. ft.
Owens Corning Fibreglass faced duct wrap commercial grade.
Certainwrapped Blanketed Ductwrap
Knauf Duct Wrap

FIBERGLASS LINER FOR DUCTWORK
A. Fibrous glass type, ASTM C1071, with air surface coated with acrylic coating treated with EPA registered antimicrobial agent proven to resist microbial growth as determined by ASTM G21 and G22.
1. Average thermal conductivity not to exceed 0.27 BTU-in. per sq. ft. per degree F per hour at 75 degrees F mean temperature.
2. Minimum density 1.5 lb/cu. ft., one inch thick minimum.
3. Acceptable Products:
Schluter Fiberglass Liner
Covoxi Auroflex Type 150
Certainwrapped Ultraflex #150

FIBERGLASS PIPE INSULATION
A. Apply insulation to the following:
1. All above ground domestic cold water, hot water and hot water recirculating lines.
2. Above ground waste piping receiving waste from electric water coolers and condensate from air conditioning units. Extend insulation from trap to outside of electric water coolers and from floor or funnel drain to connection at waste stack.
3. All above ground horizontal roof drain and storm piping.
4. All riser supply and return air ductwork up to 18 inches diameter inside building and above roof.
B. Do not insulate the following:
1. Chrome plated piping in plumbing fixtures.
2. Butt at joints of pipe insulations together and secure jacket laps. Seal butt joints with joints strips furnished with insulation.

FIBERGLASS BLANKET INSULATION FOR DUCTWORK
A. Insulate the following:
1. All galvanized steel supply air, return air and outside air ductwork, which is not located in mechanical rooms or internally lined.

AIR DISTRIBUTION SYSTEM

DUCTWORK
A. General:
1. Ductwork shall be constructed of lock forming quality galvanized steel, shown per ASTM A657 except:

System or Zone	Pressure Class
Supply air ductwork from air conditioning units to air distribution devices.	- 2
Return air ductwork.	-
Exhaust air ductwork.	-

2. Except where indicated otherwise, thereon or on the drawings, duct construction shall conform to the recommendations of the SMACNA HVAC Duct Construction Manual for pressure classes specified herein before.
3. Round ductwork shall be spiral lock seam, double wall construction, except as follows:
a. Concentric round duct up to 12" in diameter in pressure classes 2" and lower shall be longitudinal seam construction.
Round ductwork shall be:
United McGill Sheet Metal Corporation
Micro Manufacturing Company
Sermco Manufacturing Company

Flexible Ductwork
1. Installed flexible duct shall be Class 1 air duct in accordance with UL 181 and shall comply with NFPA 90A and 90B. Insulated flexible duct shall be: Wramon Type WGL, Flexmaster Type 9, Tremflex Type G-MA, Flex air Type VFS.

SPRINKLER DUCTS
1. Sprinkler ducts shall be galvanized steel for use with rectangular or square steel sheet metal ductwork.

D. MANUAL DAMPERS AND DAMPER HARDWARE
1. Sprinkler duct dampers shall be constructed of not less than 20-gauge galvanized steel sheet.

FLEXIBLE DUCT CONNECTIONS
A. Flexible duct connections shall be non-combustible glass fabric double coating with maximum 30 or per square yard minimum as manufactured by Vent-Fabrics, Young Rogaland.

FIRE DAMPERS
A. Fire dampers shall be the holding device for the link type conforming to UL 555 and labeled for installation in fire rated walls and floors.

ROOFTOP UNITS WITH GAS HEAT
A. Units shall be factory not tested to verify the operation of all fans, compressors, heat exchangers and unit related controls. Units shall be furnished with a factory wired unit power box which includes motor starters, NEMA 3R disconnect, terminal block, on/off switch, control transformers and control power. All power and control wiring within the unit shall be furnished factory wired and terminate into a single point electrical connection.
B. Units shall be manufactured by: Trane, AAO, York, Carrier, Lennox, or approved equal.
C. Unit Casing:
1. Cabinet: Galvanized steel, phosphatized and finished with an air-dry paint coating with fully galvanized removable access panels and/or access doors with locking door handle type and piano hinges. Structural members shall be 14 gauge with recess doors and removable panels of minimum 16 gauge. Provide 1 inch thick coated fiberglass insulation. Access doors shall provide access to filters, leaving section, exhaust air fan section, supply air fan section, evaporator coil section and unit control section.
D. Air Filters shall be four integral within unit and be accessible by hinged access panels. Filters shall be two inch thick glass fiber disposable media mounted in a galvanized steel frame.
E. Supply fan shall be forward curved, mounted on common shaft with lead pitch screw drive assembly. Furnish statically and dynamically balanced fans. Fan shall be equipped from unit with spring isolators. Motor shall be open drip proof. Motor shall have a standard 1/2" and minimum service factor of 1.15. All drive components shall be accessible to facilitate periodic maintenance checks and for operator safety. Provide adjustable checkers for fans.
F. Heating Section shall be completely assembled and factory installed and include gas heating system integral to unit and wired for single point electrical connection. UL approved specification for outdoor applications and for use downstream of refrigerant cooling coils. Heating section shall be factory tested prior to shipment.
G. Evaporator Section:
1. Provide seamless copper tubes mechanically bonded to heavy duty aluminum fins.
2. Provide a thermostatic expansion valve for each refrigerant circuit. Factory pressure and leak test at 500 psig pressure.
3. Provide factory installed integral condensate drain connection and sloped condensate pan of galvanized steel construction.
H. Condenser Section:
1. Provide seamless copper tube mechanically bonded to aluminum fins. Factory pressure test condenser section to 450 psig.
2. Provide sub-cooling circuit(s) with liquid accumulator(s).
3. Provide vertical discharge fins with steel blades, and (statically and dynamically) balanced. Motors shall be permanently lubricated, with built-in current and thermal overload protection in a weather tight casing.

Refrigeration System
1. Compressor: Semi-hermetic operation at 1750 rpm with isolated mounting, suction accumulator, centrifugal oil pump, oil filter screen, oil sight glass, crankcase heater, suction and discharge valves and electric recirculating fan.
2. Provide with thermostatic temperature control for winding to protect against excessive temperatures, high and low pressure cutouts and reset relay.
3. Provide pre-ventative coil frost protection compressor unloading based on refrigerant circuit suction temperature to prevent coil frosting.
4. Provide "Free-Recirc" refrigerant coil downstream of evaporator coil.
Dampers:
1. Provide ultra low leak dampers with a leakage rate not to exceed 3 per cent of nominal air flow. Dampers shall be provided with polyvinyl gasketing.
2. Provide dampers with motorized actuators on outdoor air and return air sections.

AUTOMATIC SPRINKLER SYSTEM

A. The Contract Documents describe the work intended, but the Contractor shall be solely responsible for taking his own measurements and making the work to fit the conditions encountered, including necessary for complete and satisfactory installation and be furnished and installed, whether or not specifically shown or specified.

Pipe and Fittings
A. Class 50 ductile iron pipe, AWWA C151, with hub and spigot cast-in joints, AWWA C111, and Class 50 or greater mechanical joint ductile iron fittings, AWWA C110, all content 1 foot per AWWA C106, for:
1. Underground fire service piping.
B. Schedule 40 black steel pipe, ASTM A135 or A193, with welded joints and standard weight but welding fittings, ASTM A234, for:
1. Above ground fire service piping (shop fabricated only) 4" and larger.
2. Sprinkler piping (shop fabricated only) 4" and larger.
C. Schedule 40 black steel pipe, ASTM A135, with coupled and bolted to rigid joints and pre-galvanized class 150 malleable iron, ASTM A191, or ductile iron, ASTM A536, fittings for:
1. Sprinkler piping 2" and larger.
D. Schedule 40 black steel pipe, ASTM A135 or A193, with covered joints and threaded class 150 malleable iron, ANSI B16.3 or class 150 cast iron, ASTM A126, fittings for:
1. Sprinkler piping 2" and smaller.
2. Miscellaneous drain and test piping.
3. Above ground fire service piping.

Sprinkler Heads
A. Sprinkler head labels shall be set for 165 degrees F unless otherwise required by NFPA 13 or accepted on the drawings.
B. Wet pipe, upright sprinkler heads for all areas without ceilings shall be closed, automatic type with glass or fusible element, spray collector, and fusible link. Sprinkler heads shall be: Automatic Sprinkler Co., Gifford Central, Star Sprinkler Co., Viking.
C. Wet pipe, concealed pendent sprinkler heads for all areas with ceilings shall be closed, automatic type with glass or fusible element, spray collector, and fusible link. Sprinkler heads shall be: Automatic Sprinkler Co., Gifford Central, Star Sprinkler Co., Viking.
D. Pendent or orifice mounted sprinkler heads shall be 24 spray orifice heads, divided equally among upright, orifice and orifice heads. Cabinet location shall be as approved by the Architect and Supervisory Submits.

Flow Switches
A. Flow switch shall be paddle type designed for wet or dry immersion in water and vertical or horizontal pipe mounting. Switch shall be normally open type with two single pole, double throw switches and pneumatic relay (adjustable 0 to 70 seconds).
B. Valve support brackets/switches shall be designed for valve mounting, vertical or horizontal. Switch shall be normally closed type capable of contacting any position on the valve full open position.

Flanges
A. Flanges in threaded pipe lines shall be 150 lb. cast iron screwed flanges conforming to ANSI B16.1.
B. Flanges in welded pipe lines shall be 150 lb. steel flanges conforming to ANSI B16.5.
C. Flanges shall have raised or flat face to mate with adjacent flanges or valve, fitting and cast iron.
D. Flange gaskets shall be 1/16" iron non-metallic ring type, ANSI B16.21.
E. Flange bolts and nuts shall conform to ASTM A307, Grade A for steel flanges and Grade B for cast iron flanges.

Unions
A. Unions shall be 150 lb. malleable iron type, screwed, Fed. Spec. WWU-53/D, Grooved end connections.
B. Grooved end unions shall be two piece minimum, ANSI B16.3 or ductile iron, ASTM A536, with gaskets and two bolt. Gaskets shall be Buna N. Couplings shall be Underwriters Laboratories' Atlas and rated for 300 psi working pressure. Couplings shall be Gustin Rezin, Vitallium, Gurnee.

Fire Department Valves
A. Fire department valve shall be 2 1/2" pressure regulating type with brass body, male hose threaded outlet, 2 1/2" x 1 1/2" brass reducer, cap and chain. Valve shall have a polished brass face and a 100 pound pressure rating. Valves shall be E-Klar-Bass, Potter-Boomer, Sierra Fire Department Connections (FDC).
B. Fire department connection shall be wall type with cast brass body, two 2 1/2 inch threaded pin lug inlets, remote fire department, chrome pin lug caps and chains and 4 inch threaded outlet. Top of body shall be labeled "AUTC SPRKRY". Fire department connection shall be Underwriters Laboratories' Atlas and FM approved. Threads to local fire department specifications. The department connection shall be E-Klar-Bass Company, Potter-Boomer, Sierra.
C. Hangers and supports shall be as per NFPA 13.

NATURAL GAS PIPING SYSTEM
A. Provide a complete gas system including a piping from the gas meter/water meter to all equipment requiring gas as indicated on plans.
B. Piping shall be schedule 40 black steel, ASTM A53 with extra heavy malleable iron bonded screwed or welded pattern fittings.
C. All piping located outdoors and above grade shall be cleaned free of rust and painted with one coat of zinc rich primer and finish coat of aluminum base paint.
D. Apply 2 coats of asphaltum base paint to piping buried underground.
E. Each piece of equipment shall be provided with lubricated plug valve with a handle, union and drip leg at each equipment connection.

SANITARY, WASTE AND VENT AND STORM DRAINAGE SYSTEMS

PIPE AND FITTINGS
A. Schedule 40 PVC DWV pipe and fittings, ASTM D 2665 and NSF 15, with solvent welded joints, ASTM D-2584, for:
1. Underground sanitary, waste and vent piping.
2. Underground storm drainage piping.
B. Service weight cast iron soil pipe and fittings, ASTM A888 and CIPSI 301, with standard no-hub coupling joints for:
1. Aboveground sanitary, waste and vent piping.
2. Aboveground storm drainage piping.
C. Type L hard drawn copper tubing, ASTM B88, with soldered joints and wrought copper, ANSI B16.22, or cast bronze, ANSI B16.18, socket fittings for:
1. All water piping.
D. DWV copper tubing with wrought or cast fitting for:
1. Waste and vent piping 1-1/4" and 1-1/2" in size.
E. Type L soft drawn copper tubing, ASTM B88, with soldered joints and socket fittings for:
1. Trap primers.

TRAPS
A. Traps other than those furnished as a part of the plumbing fixture, shall be of the same material and size as the pipe into which they discharge, unless specified otherwise hereinafter. Where not underground, traps shall be provided with cleanout plugs on the bottom.

PLUMBING FIXTURES AND ACCESSORIES
A. Water Closets:
1. Water Closet, W.C.1, American Standard #2988 D12, white, tank type, floor mounted, vitreous china, designed for a 1 1/4 gallon per flush cycle, chrome-plated tank, side mounted chrome trip lever, ball case, fully glazed 2" ball pass trapway. Water closet shall be fixed with Chromat 299C open front seat. Water Closet shall meet ADA.
D. Lavatories:
1. Lavatory "LAV-1" American Standard 0356-421, white, vitreous china, 18"x24", wall mounted, ADA compliance. American Standard 2365-200, 8" center, metal lever handle faucet, integral fibreglass supply piping with wheel handle spout. Porcelain grid drain with tail piece with offset outlet. Insulate 1/2" supply and trap per ADA requirements.
C. Drinking Fountains:
1. Drinking Fountain "DF-1": Oasis PBACSL, split level barrier free access refrigerated water cooler. Unit top and basin shall be stainless steel. Refrigeration system shall be air-cooled with hermetic compressor, thermal overload protection and adjustable thermostat. System shall have a five-year warranty. Install fibreglass supply pipe with wheel handle stop and adjustable P-trap.
D. Floor Drain:
1. Floor Drain "FD-1" shall be J. R. Smith model 2110-A, cast iron body with adjuster's 5" round nickel bronze trap primer connection.

DOMESTIC WATER SYSTEM
A. Water Hammer Arrestors shall have a stainless steel casing, flexible mechanical bellows, pressurized inert gas chamber, and condensation stop as conforming to FDI W-201. Water Hammer Arrestors shall be: J. R. Smith, "HydroStop" Series, Jscam.
B. Electric adapters shall be provided between copper and iron pipe connections and between ferrous and nonferrous piping or equipment.
C. Unions in copper tubing shall be cast bronze, Fed. Spec. WWU-516/C, with threaded or solder joint ends to match pipe connection.
D. Box hydrants, NFPA 11, shall be 3/4" non-ferrous type with bronze casing and body, nickel bronze face, hose key and vacuum breaker. Hydrants shall be: J. R. Smith, Jscam, Wade.
E. Vacuum breakers shall be the screw on vented pool type with drain to match outlet thread - (i.e. chrome plated vacuum breaker on chrome plated hose outlet). Vacuum breakers shall be: Watts model PA, BB.
F. Backflow preventers shall be the same size as the pipe on which it is installed unless noted otherwise on the drawings. Backflow preventer, BFP, shall be the Reduced Pressure Zone type with immediate atmospheric vent. Backflow preventer shall be Watts Series R09 or R09C, LENDID.
G. All pressure reducing valves shall be adjustable, diaphragm actuated type with built-in bypass and snifter. Valves 2" and smaller shall be bronze body with screwed ends suitable for 150 psi working pressure. Valves shall be Watts-ACV.
H. Trap air vent shall be automatic type with cast bronze body, removable valve mechanism. Integral vacuum breaker, and 1/2 inch diameter socket tube ends. Trap primer shall be Precision Plumbing Products, "Prime-Rite".
I. All domestic water services and supply piping installed under this DIVISION shall be distinguished with coloring below in place of operation.

VALVES FOR PLUMBING SYSTEMS
A. Gate valves (2" in size and smaller) shall have bronze body, non-rising stem, solid wedge and sector ends for 200 pound W.O.G. Valves shall be Crane No. 17015, Hammond B847.
B. Check valves (2" in size and smaller) shall be horizontal swing type with bronze body, composition disc and sector ends for 200 pound W.O.G. Valves shall be Crane No. 17015, Hammond B812.
C. Hose end drain valves shall be 3/4" in size with bronze body, non-rising stem, solid wedge, threaded end and hose outlet with cap and chain for 200 pound W.O.G. Valves shall be Crane No. 451.



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PROJECT NAME
The Shops at Crossroads
Partners Two Investment Corp.
3284 Midlock Ridge Road
Norcross, Georgia 30092

DRAWING TITLE	REVISION	DATE
MECHANICAL SPECIFICATIONS		
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