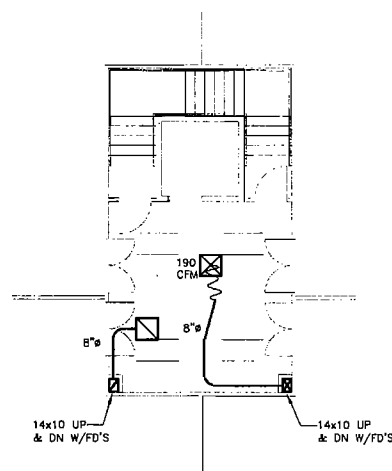
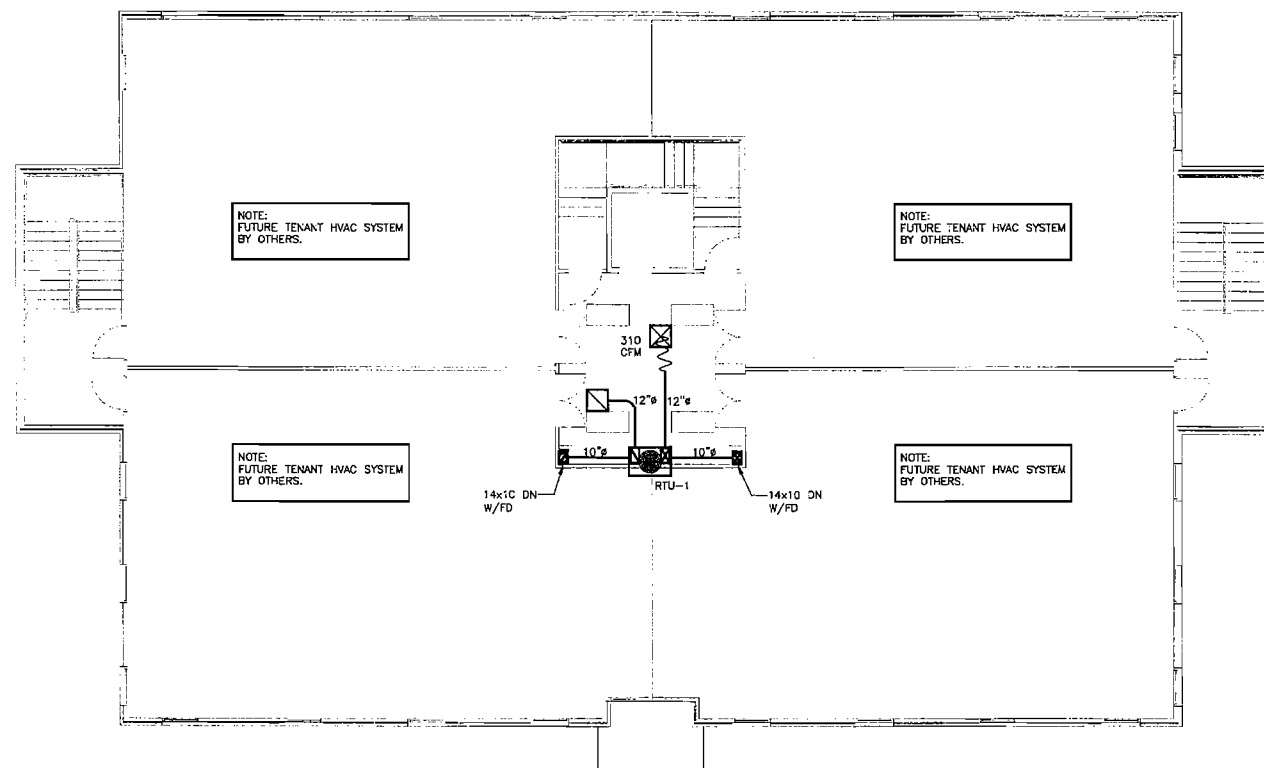


NOTE: MECHANICAL SUBCONTRACTOR SHALL SUBMIT AFFIDAVITS FOR EACH BUILDING PERMIT TO THE BUILDING PERMITS SECTION AT LEAST (2) BUSINESS DAYS BEFORE REQUESTING INSPECTIONS. (OBTAIN AFFIDAVIT FROM BUILDING PERMIT SECTION.)

1 FIRST FLOOR PLAN - HVAC
P-1 SCALE: 1/8" = 1' - 0"



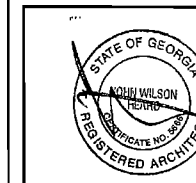
2 SECOND FLOOR PLAN - HVAC
P-1 SCALE: 1/8" = 1' - 0"



2 THRID FLOOR PLAN - HVAC
P-1 SCALE: 1/8" = 1' - 0"

NO.	DATE	BY	CHKD	DESCRIPTION
1	09/15/04	BRW	JWH	ADDED OWNERS' CO. REVIEW COMMENTS

JArchitects, Inc.
John Heard Architects, Inc.
1480 EXPENSE DRIVE LAWRENCEVILLE GEORGIA 30045 770.946.5655

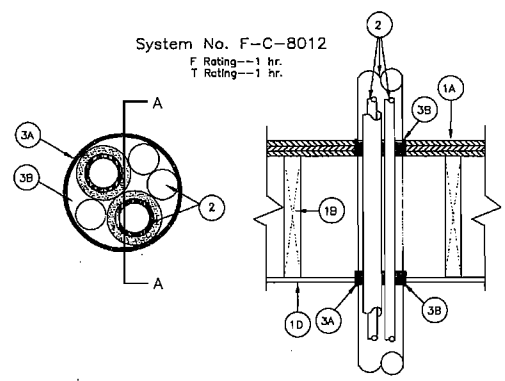


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LAWRENCEVILLE, GEORGIA 30045

DATE	DRAWN	CHECKED
09.25.06	BRW	JWH
SCALE	AS SHOWN	
SHEET TITLE		
FIRST, SECOND & THIRD FLOOR PLANS HVAC		

PROJECT NUMBER	06029
DRAWING NUMBER	M-1 of 2

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SECTION A-A

1. Floor-Ceiling Assembly--The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, as summarized below:

A. Flooring System--Lumber or plywood subfloor with finish floor lumber, plywood or floor topping mixture as specified in the individual Floor-Ceiling Design. Max diam of floor opening is 4-1/2 in.

B. Joists--Nom 10 in. deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with steel firestop.

C. Wallboard, Gypsum--Nom 4 ft wide by 5/8 in. thick as specified in the individual Floor-Ceiling Design. Wallboard nailed to wood joists. Max diam of ceiling opening is 4-1/2 in.

1. Chose Wall (Optional, not shown)--The through penetrants (Item 2) may be routed through a 1 hr fire-rated single, double or staggered wood stud/gypsum wallboard chose wall constructed of the material and in the manner specified in the individual L500 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs--Nom 2 by 6 in. or double nom 2 by 4 in. lumber studs.

B. Sole Plate--Nom 2 by 6 in. or parallel 2 by 4 in. lumber plates, tightly butted.

C. Top Plaste--The double top plate shall consist of two nom. 2 by 6 in. or two sets of parallel 2 by 4 in. lumber plates, tightly butted. Max. diam. of opening is 4-1/2 in.

D. Wallboard, Gypsum--Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.

2. Through Penetrants--Pipes, conduits, tubing or cables to be bundled within the opening such that the aggregate cross-sectional area of penetrants in opening to be min 42 percent to max 54 percent of the cross-sectional area of the opening in floor-ceiling. A min 1/4 in. annular space shall be maintained around uninsulated metallic pipes. The space between penetrants and periphery of opening shall be min 1/4 in. Penetrants to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:

A. Metallic Pipes--The following types and sizes of metallic pipes, conduits or tubing may be used:

A1. Steel Pipe--Nom 3/4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.

A2. Conduit--Nom 3/4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.

A3. Copper Tubing--Nom 3/4 in. diam (or smaller) Type L (or heavier) copper tubing.

A4. Copper Pipe--Nom 3/4 in. diam (or smaller) Regular (or heavier) copper pipe.

All pipes, conduits or tubing larger than nom 1/2 in. diam shall be provided with pipe covering (Item 2D).

B. Nonmetallic Pipes--A max of one nonmetallic pipe or conduit may be used. A min 1/4 in. space shall be maintained between un-insulated metallic pipes and nonmetallic pipes or conduits. The following types and sizes of nonmetallic pipes or conduits may be used:

B1. Polyvinyl Chloride (PVC) Pipe--Nom 1-1/4 in. diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (Process or supply) or vented (drain, waste or vent) piping system.

B2. Chlorinated Polyvinyl Chloride (CPVC) Pipe--Nom 1-1/4 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

B3. Rigid Nonmetallic Conduits--Nom 1-1/4 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70).

C. Cables--Max 7/C No. 12 AWG multiconductor power and control cables; XLPE or PVC insulation with XLPE or PVC jacket.

D. Pipe Covering--The following types and sizes of pipe coverings may be used with the metallic pipes:

D1. Tube Insulation--Plastics--Nom 1/2 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. See Plastics+ (QMF22) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-SVA may be used.

D2. Pipe Covering--Nom 1/2 in. thick hollow cylindrical heavy density (min 3.5pcf) glass fiber units jacketed on the outside with an oil service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing top tape. Transverse joints secured with metal fasteners or with but tape supplied with the product. See Pipe and Equipment Covering--Materials (BRQJ) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

3. Firestop System--The details of the firestop system shall be as follows:

A. Fill, Void or Cavity Material--Wrap Strip--Nom 1/4 in. thick intumescent material supplied in 2 in. wide strips. One wrap strip tightly wrapped around perimeter of penetrants (flat side exposed) and held in position using two steel wire ties. Wrap strip recessed into opening such that 3/4 to 1 in. extends below the bottom surface of the gypsum wallboard ceiling or top plate when optional chose wall is used.

Minnesota Mining & Mfg. Co.--FS-195+

B. Fill, Void or Cavity Material--Caulk or Putty--Min 3/4 in. thickness of caulk or putty applied to completely fill annular space inside of wrap strip and between penetrants, flush with the bottom surface of ceiling and extending downward. Min 5/8 in. thickness of caulk or putty applied within annular space between wrap strip and periphery of opening flush with bottom surface of ceiling or top plate. Min 1/2 in. crown of caulk or putty applied around the perimeter of the wrap strip at its interface with the gypsum wallboard ceiling or top plate. Min 3/4 in. thickness of caulk or putty applied to completely fill annular space, flush with top surface of floor.

Minnesota Mining & Mfg. Co.--CP 23WB+ Caulk, MPS-2+Putty.

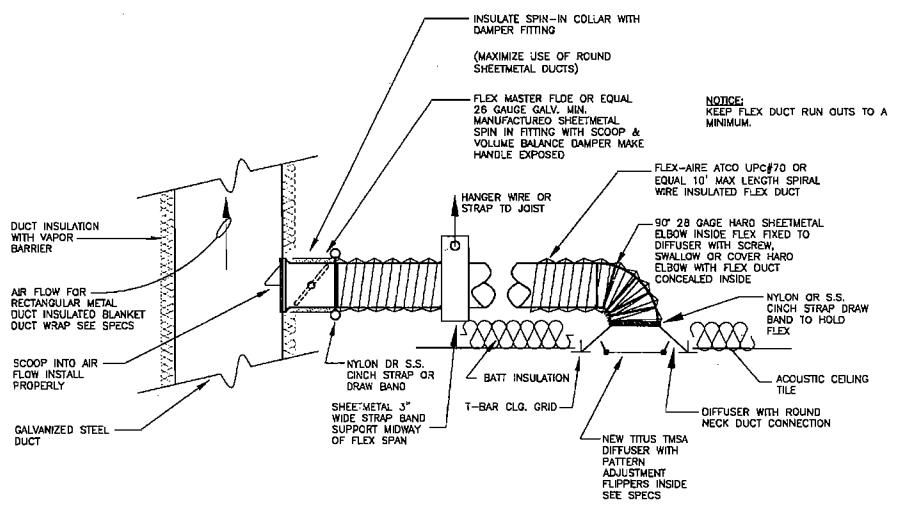
*Bearing the UL Classification Marking

**Bearing the UL Listing Mark

1 HVAC SPECIFICATION

WARNING NOTE TO SUB-CONTRACTOR:
UN-AUTHORIZED CHANGES TO PLANS WITHOUT PERMISSION OF OWNER OR ENGINEER MAY BE REASON FOR DISAPPROVAL OF THE UN-AUTHORIZED LIBERTY TAKEN.

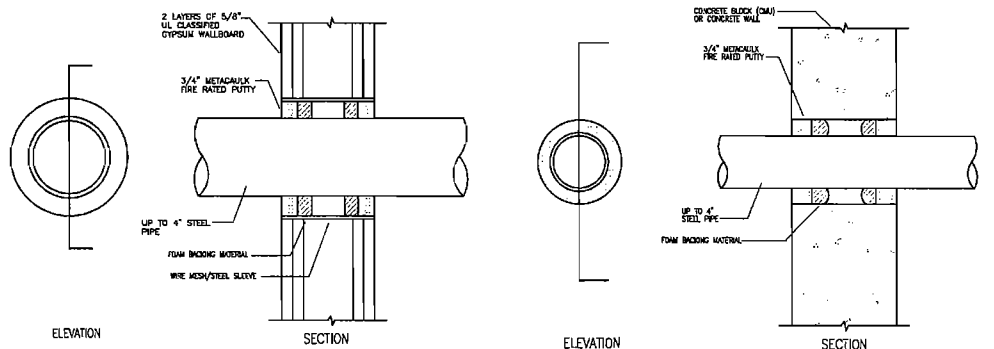
1. GENERAL:
Provide labor, materials and equipment required for a complete system as outlined in these specifications and as shown on the drawings. Work herein shall comply with all applicable laws, 2000 Standard Mechanical Code (International Mechanical code) w/200a & 2004 Georgia Amendments (SMC), and ordinances and to the regulations of the local utility companies.
2. MATERIALS AND EQUIPMENT:
All references as to manufacturers shall be interpreted as establishing a standard of quality and shall not be construed as limited competition.
3. AIR CONDITIONING EQUIPMENT:
All HVAC units shall be by Carrier guide spec manufacturer or equal and shall have capacities as listed on drawings. Coordinate all air conditioning with Engineer.
4. SHEET METAL:
A. Furnish and install all sheet metal ductworks, exhaust ducts, plenums, apparatus casings, and all accessories thereto as indicated on the drawings and as may be required for complete systems. All duct sizes shown are air passage (inside clear) dimensions and allowances shall be made for internal insulation where applicable. All duct work shall be constructed and installed in conformance with SMACNA low velocity duct construction standards manual, be able to defend workmanship.
B. Duct tightness seal & tape all duct work joints, seams, connections before insulation. Follow SMACNA standard recommendations for sealing duct joints for air tightness.
5. INSULATION: (Where required)
A. Insulate all ducts in concealed locations unless indicated otherwise, with 2 inch thick glass-fiber blanket type insulation with factory applied flame-retardant foil reinforced kraft facing equal to fiberglass FRK-25. Seal all joints with duct tape or other method approved by manufacturer. Secure insulation with 18 gage tie wires applied spirally every 18" inches. Liner shall be fiberglass 2 lb. density, 1 inch thick. See general notes on floor plan.
6. VIBRATION ISOLATION:
Unless otherwise shown on the plans, all mechanical equipment shall be provided with vibration isolating mountings to prevent unacceptable noise and vibrations during normal modes of operation.
7. FILTERS: (A/C UNITS)
Filters shall be of the size and arrangement normally furnished with units and shall be washable type, easily accessible.
8. FANS: (Required by Code)
Furnish and install fans as shown on drawings. Fans shall be dynamically balanced, free from objectionable noise and vibration during normal operation.
9. GRILLES, REGISTERS, AND DIFFUSERS:
Furnish and install grilles, registers and diffusers as shown on the drawings. All devices to have dampers for balancing purposes. Any changes in sizes and openings thru walls, etc. Due to substitution shall be coordinated with other trades and made at no additional cost to the owner(s). Use Titus TMSA diffusers with pattern adjustment. Flappers inside see specs.
10. TEMPERATURE CONTROLS:
Provide programmable T-stat. Provide mark timer for exhaust fans & vent fans wall mounted. Provide wall heater with built-in thermostat Barks #UCJ508 or Chromalox #HVT 120v for winter fixture freeze protection. Submit data for engineer approval. See alt. for gas heaters.
11. ELECTRICAL WORK:
The mechanical contractor shall provide all starters, contactors, relays, controls, and accessories as necessary to provide a complete system. The electrical contractor shall furnish all disconnect switches, conduit and power wiring for all equipment furnished herein. All work shall be done in accordance with the requirements listed under the electrical section of the specifications and NEC requirements. The mechanical contractor shall provide wiring diagrams and shall be responsible for the proper operation of the complete system and shall supervise the wiring of his equipment.
12. TESTING, ADJUSTING, AND BALANCING:
The mechanical contractor shall perform TAB as required to prove satisfactory operation of all equipment to engineer & owner.
13. CATALOG CUTS AND SHOP DRAWINGS:
Six copies of the shop written or printed submittals will be submitted for review. Do not order equipment until catalog data and submittals have been approved and stamped by engineer or owner before ordering.
14. GUARANTEE:
All equipment shall be started, tested, balanced and placed in satisfactory operating condition by the contractor to satisfy Architect/Engineer and owner.
15. REFRIG PIPE SHOP DRAWINGS:
Supplier of matched equipment to submit shop drawing of refig. pipe kit, to also include sight glass & filter dryer.



2 TYP. FLEX DUCT AT DIFFUSER DETAIL
NOT TO SCALE

3 HVAC EQUIPMENT SCHEDULE

RTU-1 ROOFTOP UNIT (HEAT PUMP) SEER 12.0 MIN. 2.5 TON WITH ELECTRIC HEAT NOMINAL 10 KW, 1000 CFM @0.5" SP MCA = 41.3, MOCP FUSE OR HACR C.B. = 45, 208V-3Ø CARRIER MODEL 50J5030

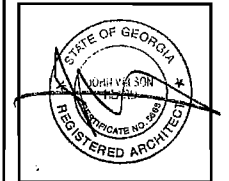


NOTE: SYSTEMS SHALL COMPLY WITH 3M-UL SYSTEM #W-2029 WITH 3M FIRESTOP SYSTEM CP23WB+MPS-2+ WHERE CONDUIT IS USED AS A SLEEVE FOR ROUTING LOW VOLTAGE CABLES THROUGH A RAISED WALL. LOCATE CONDUCTORS IN CENTER OF SLEEVE AND FILL OPENING WITH FIRE RATED PUTTY AT END OF SLEEVE.

4 WALL PENETRATIONS DETAIL
NOT TO SCALE

REVISIONS NO.	DATE	BY	CHKD	DESCRIPTION

J Architects, Inc.
John Heard Architects, Inc.
1450 BUDENVA TOWER Lawrenceville, Georgia 30046 • 770.845.5555



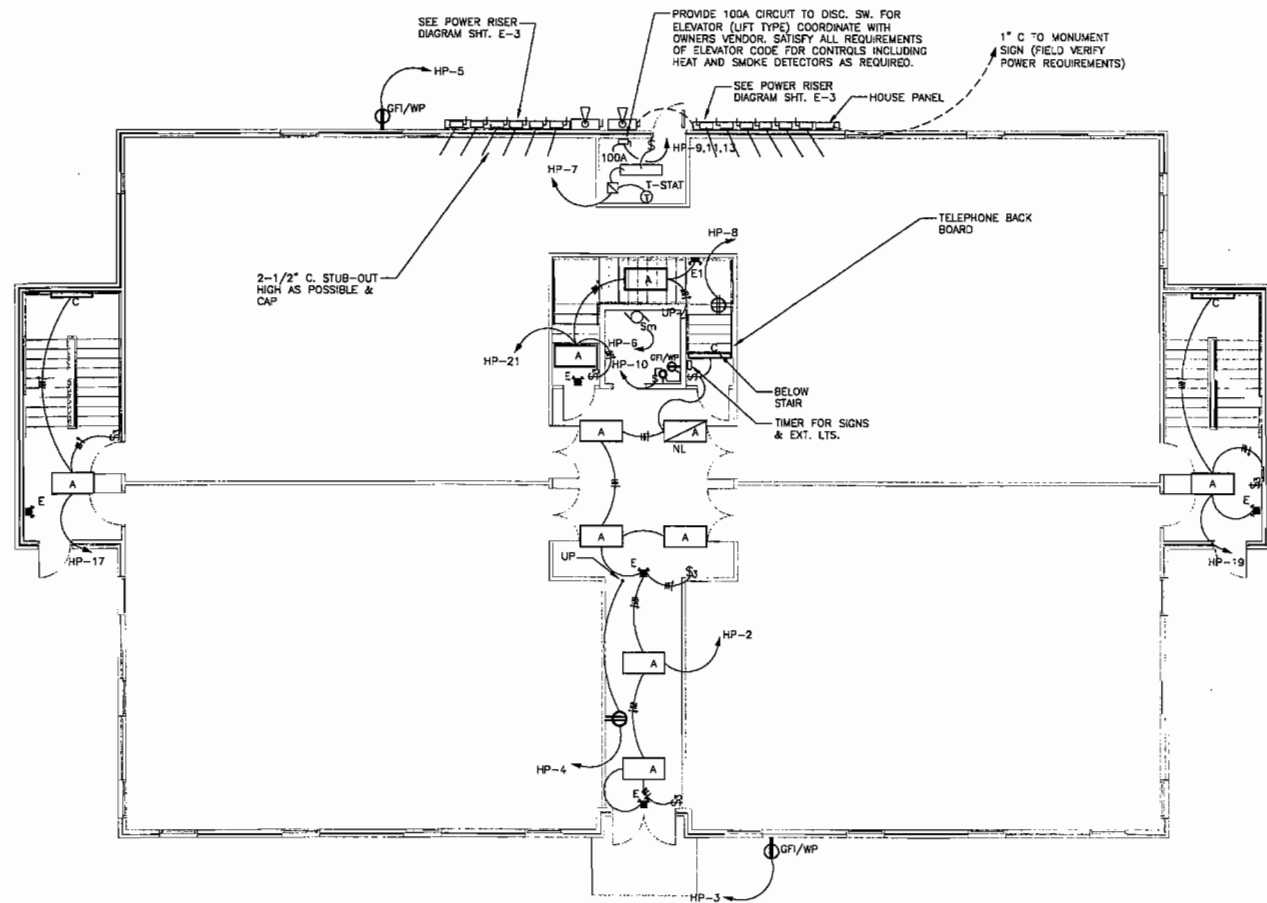
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LAWRENCEVILLE, GEORGIA 30045

DATE	DRAWN	ORDERED
09.25.06	BRW	JWH
SCALE AS SHOWN		
SHEET TITLE		
DETAILS, SCHEDULES & HVAC SPECS.		

PROJECT NUMBER
06029

M-2
OF 2
DRAWING NUMBER

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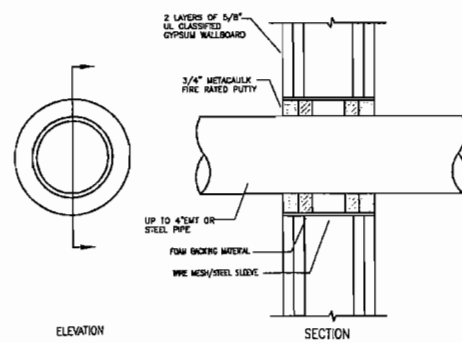
1 FIRST FLOOR PLAN - ELECTRICAL
E-1

3 LIGHTING FIXTURE SCHEDULE
E-1

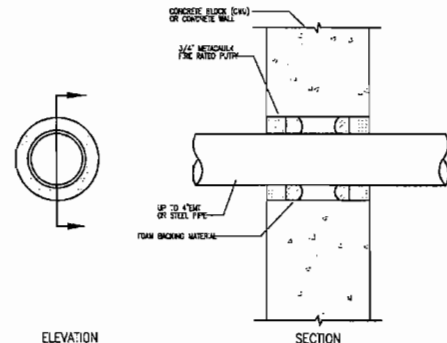
- A - 2x4 RECESSED FLUORESCENT FIXTURE LITHONIA 2GT432 A12 GEB10
- B - WALL BRACKET LITHONIA #TWAC 100M SF
- C - SURFACE MOUNTED FLUORESCENT FIXTURE LITHONIA #WP 232 ACF125
- D - SURFACE MOUNTED INCANDESCENT 2/60W FIXTURE LITHONIA #C232 GEB10RS
- E - COMBO EXIT AND EMERGENCY FIXTURE LITHONIA #LHQM SWIR N
- E1- WALL MOUNTED EMERGENCY FIXTURE LITHONIA #ELM2 N

NOTE:
ALL EXTERIOR BUILDING LIGHTING & SITE LIGHTING SHALL BE CONTAINED IN CUT-OFF TYPE LUMINAIRES AND SHALL BE DIRECTED IN TOWARD THE PROPERTY SO AS NOT TO SHINE DIRECTLY INTO ADJACENT RESIDENTIAL PROPERTIES. SUBMIT VENDOR DRAWINGS FOR ALL PROPOSED EXTERIOR LIGHT FIXTURES TO DOCUMENT COMPLIANCE.

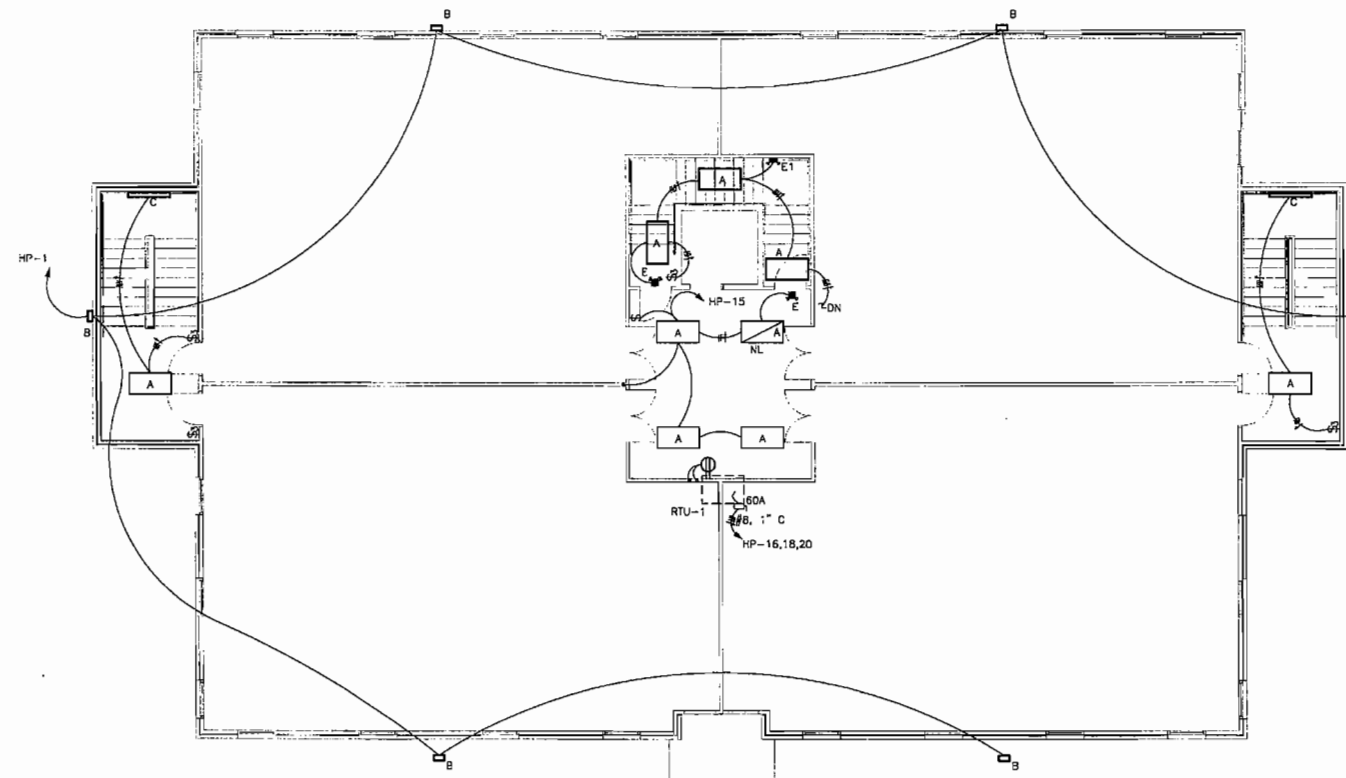
NOTE:
ELECTRICAL SUBCONTRACTOR SHALL SUBMIT AFFIDAVITS FOR EACH BUILDING PERMIT TO THE BUILDING PERMITS SECTION AT LEAST (2) BUSINESS DAYS BEFORE REQUESTING INSPECTIONS. (OBTAIN AFFIDAVIT FROM BUILDING PERMIT SECTION.)



NOTE:
SYSTEMS SHALL COMPLY WITH 3M-UL SYSTEM #W-J-2029 WITH 3M FIRESTOP SYSTEM CP25WB+MPS-2+
WHERE CONDUIT IS USED AS A SLEEVE FOR ROUTING LOW VOLTAGE CABLES THROUGH A RAISED WALL. LOCATE CONDUCTORS IN CENTER OF SLEEVE AND FILL OPENING WITH FIRE RATED PUTTY AT END OF SLEEVE.
DETAIL - GYPSUM WALLBOARD PENETRATION
NOT TO SCALE



NOTE:
SYSTEMS SHALL COMPLY WITH 3M-UL SYSTEM #W-J-2029 WITH 3M FIRESTOP SYSTEM CP25WB+MPS-2+
WHERE CONDUIT IS USED AS A SLEEVE FOR ROUTING LOW VOLTAGE CABLES THROUGH A RAISED WALL. LOCATE CONDUCTORS IN CENTER OF SLEEVE AND FILL OPENING WITH FIRE RATED PUTTY AT END OF SLEEVE.
DETAIL - CONCRETE WALL PENETRATION
NOT TO SCALE



2 SECOND & THIRD FLOOR PLAN - ELECTRICAL
E-1

REVISIONS	NO.	DATE	BY	CHKD	DESCRIPTION

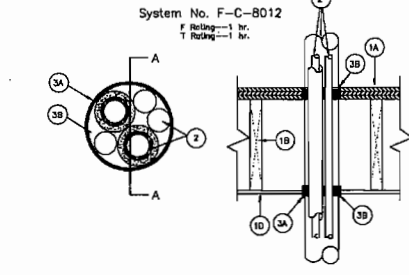
JArchitects, Inc.
John Heard Architects, Inc.
1480 BUCKLEHEAD TRAIL, LAWRENCEVILLE, GEORGIA 30045 #770.846.8585



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SHEET TITLE		
FIRST, SECOND & THIRD FLOOR PLANS ELECTRICAL		

PROJECT NUMBER	06029
DRAWING NUMBER	E-1 of 2



1. Floor-Ceiling Assembly--The 1 hr fire-rated solid or trussed lumber joist/floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, as summarized below:

A. Floor System--Lumber or plywood subfloor with finish floor lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of floor opening to be 4-1/2 in.

B. Joists--Nom 10 in. deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.

C. Wallboard Gypsum--Nom 4 ft wide by 5/8 in. thick as specified in the individual Floor-Ceiling Design. Wallboard nailed to wood joists Max diam of ceiling opening to be 4-1/2 in.

D. Chose Well(Optional, not shown)--The through penetrants (Item 2) may be routed through a 1 hr fire-rated single, double or staggered wood stud/gypsum wallboard chose well constructed of the material and in the manner specified in the individual L500 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Stud--Nom 2 by 6 in. or double nom 2 by 4 in. lumber studs.

B. Sole Plate--Nom 2 by 6 in. or parallel 2 by 4 in. lumber plates, tightly butted.

C. Top Plaste--The double top plate shall consist of two nom. 2 by 6 in. or two sets of parallel 2 by 4 in. lumber plates, tightly butted. Max. diam. of opening is 4-1/2 in.

D. Wallboard Gypsum--Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.

2. Through Penetrants Pipes, conduits, tubing or cables to be bundled within the opening such that the aggregate cross-sectional area of penetrants in opening to be min 42 percent to max 54 percent of the cross-sectional area of the opening in floor-ceiling. A min 1/4 in. annular space shall be maintained around uninsulated metallic pipes. The space between penetrants and periphery of opening shall be min 1/4 in. Penetrants to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:

A. Metallic Pipes--The following types and sizes of metallic pipes conduits or tubing may be used:

A1. Steel Pipe--Nom 3/4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.

A2. Conduit--Nom 3/4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.

A3. Copper Tubing--Nom 3/4 in. diam (or smaller) Type L (or heavier) copper tubing.

A4. Copper Pipe--Nom 3/4 in. diam (or smaller) Regular (or heavier) copper pipe.

All pipes, conduits or tubing larger than nom 1/2 in. diam shall be provided with pipe covering (Item 2D).

B. Nonmetallic Pipes--A max of one nonmetallic pipe or conduit may be used. A min 1/4 in. space shall be maintained between uninsulated metallic pipes and nonmetallic pipes or conduits. The following types and sizes of nonmetallic pipes or conduits may be used:

B1. Polyvinyl Chloride (PVC) Pipe--Nom 1-1/4 in. diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (Process or supply) or vented (drain, waste or vent) piping system.

B2. Chlorinated Polyvinyl Chloride (CPVC) Pipe--Nom 1-1/4 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

B3. Rigid Nonmetallic Conduit--Nom 1-1/4 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NEC, No. 70).

C. Cables--Max 7/8 No. 12 AWG multi-conductor power and control cables; XLPE or PVC insulation with XLPE or PVC jacket.

D. Pipe Covering--The following types and sizes of pipe coverings may be used with the metallic pipes:

D1. Tube Insulation--Plastics--Nom 1/2 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. See Plastics (DMF22) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 84 Flammability Classification of 94-5VA may be used.

D2. Pipe Covering--Nom 1/2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an oil service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing top laps. Transverse joints secured with metal fasteners or with but tape supplied with the product. See Pipe and Equipment Covering--Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

3. Firestop System--The details of the firestop system shall be as follows:

A. Fill, Void or Cavity Material--Wrap Strip--Nom 1/4 in. thick intumescent material supplied in 2 in. wide strips. One wrap strip lightly wrapped around perimeter of penetrants (all side exposed) and held in position using two steel wire ties. Wrap strip recessed into opening such that 3/4 to 1 in. extends below the bottom surface of the gypsum wallboard ceiling or top plate when optional chose well is used.

B. Fill, Void or Cavity Material--Caulk or Putty--Min 3/4 in. thickness of caulk or putty applied to completely fill annular space inside of wrap strip and between penetrants, flush with the bottom surface of ceiling and extending downward. Min 5/8 in. thickness of caulk or putty applied within annular space between wrap strip and periphery of opening flush with bottom surface of ceiling or top plate.

Min 1/2 in. crown of caulk or putty applied around the perimeter of the wrap strip at its interface with the gypsum wallboard ceiling or top plate. Min 3/4 in. thickness of caulk or putty applied to completely fill annular space, flush with top surface of floor.

Minnesota Mining & Mfg. Co.--CP 209B* Caulk, WPS-2* Putty.

*Bearing the UL Classification Marking

**Bearing the UL Listing Mark

2
E-2

PANEL SCHEDULE

**BRACED FOR 10,000 AIC

PANEL: PANEL HP
VOLTAGE: 120/208 VOLT, 3Ø, 4W
TYPE: SURFACE
MAIN: 200/3/MLO

AMPS TRIP	WIRE SIZE AWG	DESIGNATION	PHASE LOAD			BRANCH CIRCUIT			WIRE SIZE AWG	POLES	AMPS TRIP
			KVA	NO	NO	KVA	DESIGNATION				
20	#12	EXT. LIGHTS	1.0	1	2.0	2	1.0	12	1	20	
		RECEPTS.	1.0	3	2.0	4	1.0				
			1.0	5		2.0	5	1.0			
		ELEV. ROOM	1.0	7	2.0	8	1.0				
100	#3	ELEVATOR	9.0	9	10.0	10	1.0				
			9.0	11		11.5	2.5		#10	2	
			9.0	13	11.5	14	2.5		#10	30	
20	#12	LIGHTS	1.0	15	5.0	16	4.0			50	
			1.0	17		5.0	18	4.0			
			1.0	19	5.0	20	4.0				
			1.0	21	2.0	22	1.0			1	
		SPARE	1.0	23		2.0	1.0				
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1 ELECTRICAL SYMBOLS

- E-2**
- FLUORESCENT LIGHTING FIXTURE RECESSED IN CEILING.
 - FLUORESCENT LIGHTING FIXTURE SURFACE OR PENDANT MOUNTED ON CEILING.
 - EXIT SIGN FIXTURE, WALL MOUNTED, WITH DIRECTIONAL ARROWS AS INDICATED & EMERGENCY LIGHT HEADS.
 - SINGLE POLE SWITCH, HUBBELL #1221-GRY.
 - THREE-WAY SWITCH, HUBBELL #1223-GRY.
 - DUPLEX RECEPTACLE, 20A, 120V., 18" A.F.F. UNLESS NOTED OTHERWISE. HUBBELL #5362-GRY.
 - DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER, 20A., 120V., ABOVE CASEWORK OR LAVATORY OR, IF NO CASEWORK, 48" A.F.F. HUBBELL #GF-8200-GY.
- NOTE: NUMBER OF WIRES IN CONDUIT IS INDICATED BY SLASH MARKS.
- NO SLASH MARKS INDICATES 3 #12 AWG: PH, N, & G.
 - CONDUIT, WITH WIRING AS INDICATED, CONCEALED IN CEILING, WALL, OR FURRED SPACE.
 - CONDUIT WITH WIRING AS INDICATED, CONCEALED IN FLOOR, WALL, OR UNDERGROUND.
 - CONDUIT, WITH WIRING AS INDICATED, RUN EXPOSED.
 - BRANCH CIRCUIT HOMERUN TO PANEL OR INDICATED EQUIPMENT.
 - INDICATES GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR SAME AS CIRCUIT UNLESS NOTED OTHERWISE RUN WITH BRANCH CIRCUIT WIRING.
 - JUNCTION BOX ABOVE CEILING, INSTALL IN ACCESSIBLE LOCATION OR SURFACE MOUNT ON CEILING IN EXPOSED CONDUIT INSTALLATION.
 - MOTOR (HP/VOLTS/PHASE)
 - DISCONNECT SWITCH OR HP RATED SWITCH. SEE SPECIFICATIONS.
 - TELEPHONE EQUIPMENT BACK BOARD 3/4" THICK PLYWOOD, SIZE AS INDICATED ON DRAWINGS.
 - TELEPHONE OUTLET
 - DATA OUTLET
 - ABOVE FINISHED FLOOR.
 - UNLESS NOTED OTHERWISE

2 ELECTRICAL SPECIFICATION

E-2

PROBABLE PEAK LOAD SUMMARY

ELECTRICAL HVAC	12 x 6.5 KW EA. =	78.00 KW PEAK
LIGHTING	21,000 SF x 3.5 x 1.25 =	92.00 KW PEAK
WATER HEATER	12 @ 4.5 KW =	54.00 KW PEAK
RECEPTACLES	21,000 SF x 1 =	21.00 KW
OUTSIDE LIGHTS		3.00 KW
PROBABLE MAX		248.00 KW TOTAL

SET UP FOR 600 AMP THREE PHASE SERVICE

3 ELECTRICAL SPECIFICATION

- E-2**
- NOTE: JOB IS DESIGNED FOR COMMERCIAL PRACTICE CONDUIT, EMT RACEWAY IN DRY, PVC UNDER SLAB, DO NOT USE NM (NON METALLIC) ROMEX ON THIS JOB. WRITTEN SUBMITTALS ARE REQUIRED.
- WARNING NOTE TO SUB-CONTRACTOR: UN-AUTHORIZED CHANGES TO PLANS WITHOUT PERMISSION OF OWNER OR ENGINEER MAY BE REASON FOR DISAPPROVAL OF THE UN-AUTHORIZED LIBERTY TAKEN. THE INTENT IS FOR CONTRACTOR TO FOLLOW THE DRAWINGS.
- GENERAL REQUIREMENTS:**
 - Guarantee and responsibility: All material and workmanship for one year from date of acceptance. Defects shall be corrected without charge including all patching, pointing, and other incidental repairs or replacement.
 - Telephone Service: Pre-wired by owner's vendor. Conduit raceways by Electrical Sub in contract.
 - Reference Standards: The installation will comply with regulations of:
 - National Electrical Code, latest edition and/or as amended by the Georgia State Electrical Code, latest edition adopted by local inspector.
 - Life Safety Code (NFPA #101)
 - Standard for Materials: All materials will be new and will conform to the applicable standards where such have been established for the particular material in question. Publications standards of the organizations listed below are applicable to materials specified herein:
 - American Society for Testing and Materials (ASTM)
 - Underwriters Laboratories, Inc. (UL)
 - National Electrical Manufacturers Association (NEMA)
 - American Standards Association (ASA)
 - National Fire Protection Association (NFPA)
 - ELECTRICAL SERVICE:**

The characteristics of the service is 120/208 volts, 3ø, 4 wire, grounded neutral.
 - CONDUCTORS:**
 - All branches conductors shall be copper unless noted or scheduled otherwise and shall meet the ASTM specifications for conductivity. Wire shall be new and free from kinks.
 - Branch circuit conductors shall be not less than No. 12 AWG copper unless noted otherwise. The insulation shall be color coded, red, blue, black, white, and green.
 - Every circuit to have green equipment ground wire, run independently.
 - RACEWAYS:**
 - Feeders installed underground or inside concrete floor slab shall be Schedule 40 P.V.C. polyvinyl chloride plastic conduit. Seal all joint with adhesive glue. Conceal all wiring inside wall cavity where practical & possible.
 - All above floor slab in dry locations raceways, both rigid steel conduit and electrical metallic tubing shall be of the best quality steel of standard dimensions, hot galvanized or sherardized.
 - Raceways shall be securely strapped to supporting structure, and properly supported.
 - Rearm ends of all conduit and tubes.
 - Residential plastic sheathed Romex practices are not permitted for commercial jobs.
 - DISCONNECTS:**

Services and motors will be provided with disconnects adjacent to the equipment and horsepower rated heavy duty, furnish dual element fuses for motors where fuses are shown on plans. Use current listing fuses or meter safety disconnect.
 - PANELBOARDS:**

Copper Bus panelboards shall be of the automatic circuit breaker type, factory assembled by the manufacturer or circuit breakers, panelboards, shall be new and the manufacturers latest standard catalog design. Panelboards shall be the product of the same manufacturer as the cabinets and shall bear the U.L. Label. Panelboards will be Square "D", General Electric, or Cutler Hammer. Typewritten directories will be provided in all panelboards. Panelboards shall have bolted breakers and copper buses only. Engineer will not approve cheap Loadcenters with aluminum buses. Engineer recommends Square "D" model NQDD or equal panelboards with lugs only copper buses.
 - TESTING AND IDENTIFICATION:**
 - All wiring and equipment installed shall be completely tested and marked and the installation will be left in perfect working order.
 - Typewritten or printed directories will be installed in all panelboards. Engraved plastic name plates (white letters on black base), shall be installed on all safety switches, panelboards, motor starters, and relays. Name plates will be fastened securely to the equipment in a location that is readily visible.
 - CATALOG CUTS AND SHOP DRAWINGS:**

Six copies of the shop drawings will be submitted for review. Do not order equipment until catalog data and submittals have been approved and stamped by Engineer and properly co-ordinated.
 - PERMITS:**

Obtain and pay for permits. Secure inspection approval and furnish written or printed copy to owner & to Engineer.

- DEVICES:**

Receptacles to be 20 amp, 125 volt specifications grade. switches to be 20 amp, 125 volt specifications grade. Acceptable manufacturers are General Electric, Bryant, Hubbell, Arrow Hart, and Sierrro. Use stainless cover plates in offices & galvanized steel in warehouse.
- BALLAST:**

Fluorescent ballast shall be Class "A" sound rating, Class "P" as manufactured by General Electric, Universal or Jefferson.
- LAMPS:**

Contractor shall be responsible for confirming all ceiling types before ordering lighting fixtures and assuring that trim matches the ceiling. Contractor shall furnish and install lamps for all fixtures. Lamps shall be General Electric, Sylvania or Westinghouse. Check schedule for types specified. Co-ordinate with owner for type lamps that he intends to stock as landlord for service.
- CONTRACTOR:**

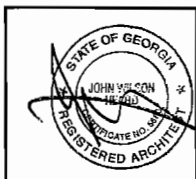
Contractor shall connect all equipment furnished by others which requires electric power to make a complete and workable system. Study the entire project blueprints before submitting a bid. Take no unauthorized liberties or assumptions without owner or engineers written consent. Coordinate with Utility Co., Mechanical contractor & hookup all owner furnished equipment for a complete operational job.
- "MC" METAL CLAD CABLE OPTION (LIMITED USE)**

Contractor may use only limited amounts of flexible metal clad "MC" cable for concealed branch circuits that are not home runs to panels. "MC" cables as manufactured by American Flexible Conduit Co. of Ben Salem, Pa. will be used as guide. Submit sample for approval. Use EMT raceways for homeruns limit (MC) cable to branch circuits and switch legs. Use special tool to cut "MC" armor. All "MC" to have dedicated and separate green equipment ground. Do not depend on armor for grounding means. Do not use sectional residential boxes or plastic boxes.
- FIRE ALARM:**

There is no fire alarm system. Building will not be sprinkled.
- HOME RUNS:**

Do not group homeruns to save conduit runs unless approved by engineer in advance.

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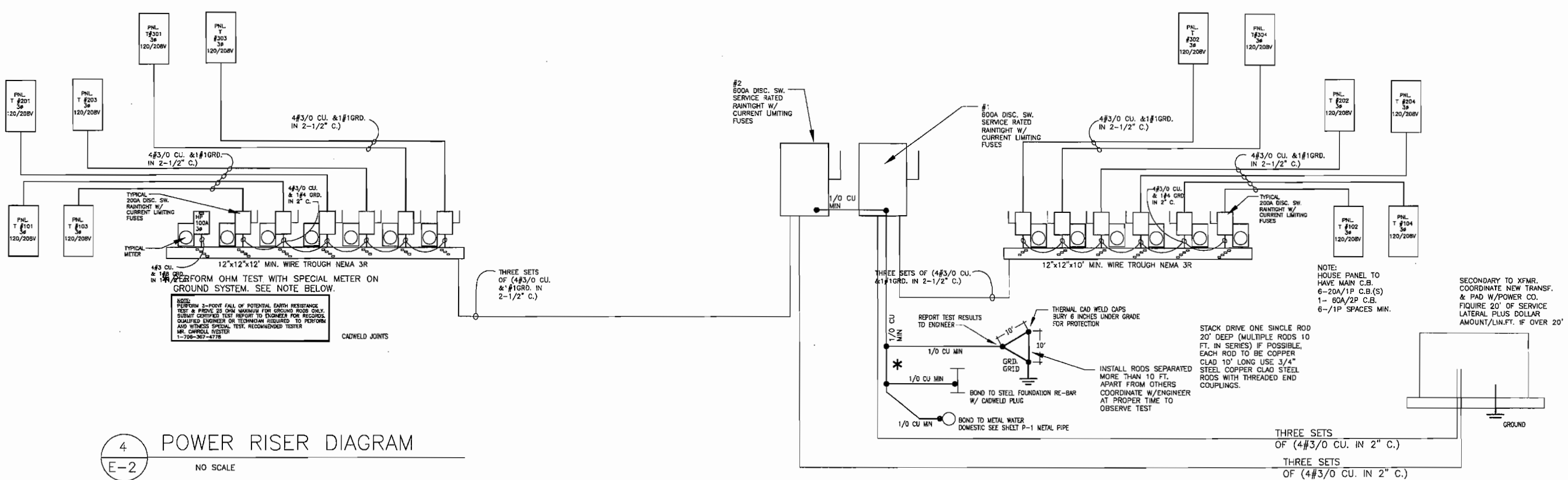
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 LAWRENCEVILLE, GEORGIA 30045

DATE	DRAWN	CHECKED
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SCALE AS SHOWN		
SHEET TITLE		
ELECTRICAL SYMBOLS POWER RISER & SPECIFICATION		

PROJECT NUMBER	06029
DRAWING NUMBER	E-3 of 3

4 POWER RISER DIAGRAM

E-2 NO SCALE



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1 PLUMBING SPECIFICATIONS

P-2 LICENSED PLUMBER SHALL SUBMIT PROOF OF LICENSE IN GOOD STANDING TO ARCH. ENG. ALONG WITH EXPERIENCE RESUME TO BE APPROVED.

- SCOPE:**
This specification covers plumbing systems complete within the bldg. and as indicated beyond bldg. All systems shall be tested, balanced and made ready for full operation. All water and sewer requirements beyond five feet of the bldg. by others.
- GENERAL:**
Do not scale plans for construction measurements. All dimensions shall be established at the building site.
- ORDINANCES AND PERMITS:**
 - The work covered by this specification shall conform to all local ordinances and regulations and the plumbing code as adopted with latest amendments, by Local Inspection Department.
 - Contractor shall obtain all necessary permits and inspections required for the installation of this work and pay all charges incidental thereto.

- RECOMMENDED FIXTURES: (FUTURE)**
All numbers shown below are American Standard catalog numbers, unless shown otherwise:
F-1 Water Closet, (1.6 GPF) barrier-free wall hung w/ (carrier floor mounted) elongated shall be Crane #3217. Water closets shall be furnished complete with seat #95 and bolt caps. All furnishings shall be white in color. Furnish and installed angle supply. Rim height 17" A.F.F.
F-2 Lavatories countertop shall be #0476.028 lavatory shall be furnished complete with angle supply, P-trap and K-2000.101 single lever faucet with pop-up drain. Fixture shall be white.
F-3 Drinking fountain shall be Haws HWBF8BL bi-level, lead free complete with angle supply, P-trap.

- COORDINATION:**
Because of the small scale of the drawings it is not possible to include all offsets, fittings, and accessories which may be required. The Contractor shall carefully investigate the structural and Architectural conditions affecting his work and shall arrange such work accordingly. Contractor shall furnish and install such fittings, traps, valves, and accessories as may be required to meet such conditions without any additional cost to the Owner.
- WORKMANSHIP:**
Plumbing systems shall be installed in workmanlike manner conforming to generally accepted good practice.
- COMPACTION:**
All backfill for excavated trenches performed by the plumbing Contractor shall be tamped in 6 inch layers to a compaction density of not less than 95%. Gasoline motor driven tamps shall be used.

- SUPPLY STOPS:**
Cutoff valves underneath lavatories and water closets shall be chrome plated angle stop valves or straight stop valves with soft annealed chrome plated copper connection pipes and chrome plates escutcheon plates. Suggested manufacturers are McGuire or Brass Craft.
- FLOOR DRAINS: (FUTURE)**
Floor drains shall be plastic oddities floor drain, or better two piece body with double drainage flange. Strainer shall be an adjustable strainer Nikolay rough Super-Flo strainer. Drain shall be installed with trap primers.

- PIPING MATERIALS AND INSTALLATION:**
 - Reductions in pipe size shall be made with reducing tees, or reducing elbows, or reducing couplings. Copper tubing shall be cut square. Mitered joints for elbows and notching straight runs of piping for tees will not be permitted. All pipe shall be reamed to remove burrs and metal edges.
 - Soil, waste and vent pipe shall be Schedule 40 PVC-DWV pipe & fittings with cemented joints, conforming to ASTM D2265, with NSF 14 markings to prove compliance.
 - Domestic water piping within the building shall be (ASTM B88) Type L copper with lead free solder joints. Water service pipe under concrete slab shall be (ASTM B88) Type "K" copper. Service line shall be piped as shown on drawings with no joints below the slab. The following list are lead free solder manufacturers: Tara Corp. Industries, "Tarnet Sterling", Harris "Bridget" and Englehard "Stiborite 100." All pipes are to be insulated where above slab. Fittings shall be in accordance with ASTM B16.

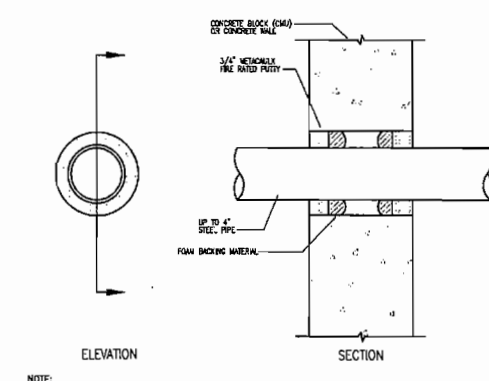
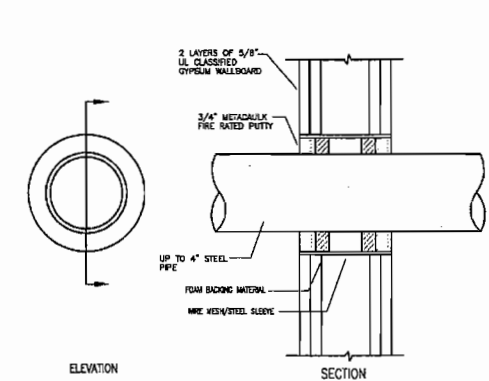
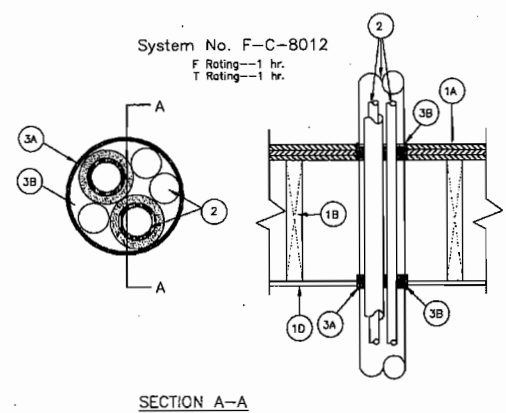
- TESTS:**
The plumbing systems and associated systems shall subject to constant inspection and final approval of the Engineer, and Authorities having jurisdiction. Perform tests as required to show code compliance, and to detect any leaks or leaky joints before covering work. Test oil gas pipes & satisfy gas code. Deliver to A & E written proof of leak proof gas piping. Test water & gas pipes with an air pressure (non-contaminated source) not less than 50 psi for 24 hrs. Test drainage system w/10" head for 24 hrs.
- TRAP PRIMERS:**
Provide trap primer and trap primer connection on all floor drains indicated by abbreviation "TP" on floor plans. Connect trap primer to cold water supply of nearest fixtures.

- PIPE INSULATION:**
All hot and cold water pipes above slab and water piping under slab shall be insulated with 1" thick Armaflex Armstrong pipe insulation. All hot ends and any necessary longitudinal joints shall be sealed with rubber based adhesive. The Contractor shall also have option of using 1" fiberglass with white jacket in lieu of Armaflex above slab. Wrap pipes with heat tape to provide protection from freezing on all pipes installed in non heated spaces of the bldg. such as attic, exterior walls, etc.
- GALVANIC CORROSION: (dis-similar metals)**
Threaded steel nipples connected to copper pipe or adapters will not be permitted. Threaded brass nipples shall be used for runouts to lavatory stop valves where threaded connections are necessary. Unions between steel and copper shall be made with dielectric type to prevent corrosion.

- CATALOG CUTS AND SHOP DRAWINGS:** Six copies of the shop drawings will be submitted for review. Do not order equipment until catalog data and submittals have been approved and stamped by Engineer before installation.
- DISINFECT:**
Disinfect water piping system in accordance with Environmental Protection Div. "Rules for safe drinking water" Chapter 291-2-5 and American Water Association (AWWA) C601 "Disinfection of water main". Use chlorine HTH solution to sanitize the new piping. Provide certified test to Architect/Engineer for official written records.

- FLASHING:**
All piping and vents passing through roof shall be flashed water tight with prefab flashing compatible w/ roof construction.
- PIPE HANGERS:**
Grinnell Figure 97 plastic coated hangers, 3/8" threaded rod. Space every 6 feet, attached to structure w/ C-clamps. Submit catalog cuts for approval.

- CATALOG CUTS AND SHOP DRAWINGS:** Six copies of the shop drawings will be submitted for review. Do not order equipment until catalog data and submittals have been approved and stamped by Engineer before installation.
- DISINFECT:**
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NOTE:
SYSTEMS SHALL COMPLY WITH 3M-UL SYSTEM #M-J-2028 WITH 3M FIRESTOP SYSTEM OPENING MPS-2+
WHERE CONDUIT IS USED AS A SLEEVE FOR ROUTING LOW VOLTAGE CABLES THROUGH A RAISED WALL, LOCATE CONDUCTORS IN CENTER OF SLEEVE AND FILL OPENING WITH FIRE RATED PUTTY AT END OF SLEEVE.

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GYPSUM WALLBOARD
NOT TO SCALE

CONCRETE WALL
NOT TO SCALE

5 WALL PENETRATIONS DETAILS



4 PLUMBING SYMBOLS

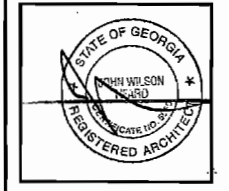
SYMBOL	DESCRIPTION	ABBREVIATION
---	SOIL OR WASTE PIPE	S & W
---	VENT PIPE	V
---	COLD WATER PIPE	CW
---	HOT WATER PIPE	HW
---	GATE VALVE	GV
---	CHECK VALVE	CV
---	BACKFLOW PREVENTER	BFP
---	FLOOR DRAIN & T.P.	FD
---	P-TRAP	
---	CLEANOUT IN PAD	
---	CLEANOUT IN FLOOR	FCO
---	CLEANOUT IN WALL	WCO
---	PRESSURE/TEMPERATURE RELIEF VALVE	PTR
---	RISE OR DROP	
---	BRANCH CONNECTION	
---	UNION	
---	WATER HAMMER ARRESTER	
---	VENT THRU ROOF	VTR
---	DRAIN WASTE AND VENT	DWV
---	HOSE BIBB	HB
---	GAS COCK	GC
---	GAS PIPE	G
---	ABOVE CEILING	A/C
---	BELOW FLOOR	B/F
---	WASTE & VENT PIPE	W & V

NOTE:
SOME OF THE ABOVE SYMBOLS ARE NOT USED AT THIS TIME.

1. Floor-Ceiling Assembly--The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the Individual L500 Series Floor-Ceiling Design in the UL Fire Resistance Directory, as summarized below:
A. Flooring System Lumber or plywood subfloor with finish floor lumber, plywood or Floor Topping Mixture* as specified in the Individual Floor-Ceiling Design. Max. diam of floor opening is 4-1/2 in.
B. Joists Nom 10 in. deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
C. Wallboard, Gypsum--Nom 4 ft wide by 5/8 in. thick as specified in the Individual Floor-Ceiling Design. Wallboard nailed to wood joists. Max. diam of ceiling opening is 4-1/2 in.
D. Chase Wall (Optional, not shown)--The through penetrants (Item 2) may be routed through a 1 hr fire-rated single, double or staggered wood stud/gypsum wallboard chase wall constructed of the material and in the manner specified in the Individual U300 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs--Nom 2 by 6 in. or double nom 2 by 4 in. lumber studs.
B. Sill Plate--Nom 2 by 6 in. or parallel 2 by 4 in. lumber plates, tightly bolted.
C. Top Plates--The double top plate shall consist of two nom. 2 by 6 in. or two sets of parallel 2 by 4 in. lumber plates, tightly bolted. Max. diam. of opening is 4-1/2 in.
D. Wallboard, Gypsum--Thickness, type, number of layers and fasteners shall be as specified in Individual Wall and Partition Design.
2. Through Penetrants Pipes, conduits, tubing or cables to be bundled within the opening such that the aggregate cross-sectional area of the penetrants in opening to be min 42 percent to max 54 percent of the cross-sectional area of the opening in floor-ceiling. A min 1/4 in. annular space shall be maintained around uninsulated metallic pipes. The space between penetrants and periphery of opening shall be min 1/4 in. Penetrants to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:
A. Metallic Pipes--The following types and sizes of metallic pipes conduits or tubing may be used:
A1. Steel Pipe--Nom 3/4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
A2. Conduit Nom 3/4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.
A3. Copper Tubing--Nom 3/4 in. diam (or smaller) Type L (or heavier) copper tubing.
A4. Copper Pipe--Nom 3/4 in. diam (or smaller) Regular (or heavier) copper pipe.
All pipes, conduits or tubing larger than nom 1/2 in. diam shall be provided with pipe covering (Item 2D).
B. Nonmetallic Pipes--A max of one nonmetallic pipe or conduit may be used. A min 1/4 in. space shall be maintained between unannulated metallic pipes and nonmetallic pipes or conduits. The following types and sizes of nonmetallic pipes or conduits may be used:
B1. Polyvinyl Chloride (PVC) Pipe--Nom 1-1/4 in. diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
B2. Chlorinated Polyvinyl Chloride (CPVC) Pipe--Nom 1-1/4 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
B3. Rigid Nonmetallic Conduits--Nom 1-1/4 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70).
C. Cables--Max 7/8 No. 12 AWG multiconductor power and control cables. XLPE or PVC insulation with XLPE or PVC jacket.
D. Pipe Covering--The following types and sizes of pipe coverings may be used with the metallic pipes:
D1. Tube Insulation--Plastics--Nom 1/2 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing.
See Plastics--(QMF22) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-DVA may be used.
D2. Pipe Covering--Nom 1/2 in. thick hollow cylindrical heavy density (min 3.5pcf) glass fiber units jacketed on the outside with an oil service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing top caps. Transverse joints secured with metal fasteners or with but tape supplied with the product.
See Pipe and Equipment Covering--Materials (BRCU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
3. Firestop System--The details of the firestop system shall be as follows:
A. Fill, Void or Cavity Materials--Wrap Strip--Nom 1/4 in. thick intumescent material supplied in 2 in. wide strips. One wrap strip tightly wrapped around perimeter of penetrants (full side exposed) and held in position using two steel wire ties. Wrap strip recessed into opening such that 3/4 to 1 in. extends below the bottom surface of the gypsum wallboard ceiling or top plate when optional chase wall is used.
Minnesota Mining & Mfg. Co.--FS-195+
B. Fill, Void or Cavity Materials--Caulk or Putty--Min 3/4 in. thickness of caulk or putty applied to completely fill annular space inside of wrap strip and between penetrants. Finish with the bottom surface of ceiling and extending downward. Min 5/8 in. thickness of caulk or putty applied within annular space between wrap strip and periphery of opening flush with bottom surface of ceiling or top plate. Min 1/2 in. crown of caulk or putty applied around the perimeter of the wrap strip at its interface with the gypsum wallboard ceiling or top plate. Min 3/4 in. thickness of caulk or putty applied to completely fill annular space, flush with top surface of floor.
Minnesota Mining & Mfg. Co.--CP 25WB+ Caulk, MPS-2+Putty.
*Bearing the UL Classification Marking
+Bearing the UL Listing Mark

REVISIONS	NO.	DATE	BY	CHKD	DESCRIPTION

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PLUMBING SYMBOLS
RISERS &
SPECIFICATION

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P-2
of 2
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