DIVISION 16 - ELECTRICAL SPECIFICATIONS

1. GENERAL

1.1 RELATED DOCUMENTS:

A. REQUIREMENTS OF THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, AND SPECIAL CONDITIONS APPLY TO THIS SECTION.
B. ARCHITECTURAL, STRUCTURAL, MECHANICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS.

1.2 WORK INCLUDED:

A. ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN.
B. PERMITS AND INSPECTIONS REQUIRED FOR WORK.
C. TEMPORARY ELECTRIC FOR SITE DURING CONSTRUCTION AS REQUIRED.

1.3 JOB CONDITIONS:

A. COORDINATE WITH BUILDING CONSTRUCTION AND WITH OTHER TRADES.
B. IN CASE OF CONFLICT BETWEEN SPECIFICATIONS AND DRAWINGS, CONSULT ARCHITECT IMMEDIATELY FOR DETERMINATION OF PROCEDURE METHOD.

1.4 CONFORMANCE TO REGULATIONS:

A. WORK SHALL CONFORM WITH 2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE, NFPA, LOCAL ORDINANCES AND THE RULES AND REGULATIONS OF THE UTILITIES.

1.5 QUALITY ASSURANCE:

A. MEET OR EXCEED RECOMMENDATIONS OF: IEEE, IES, NEMA AND UL.
B. NOTIFY ARCHITECT IMMEDIATELY OF CONFLICTS AND DEFICIENCIES. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN RESOLVED.

1.6 MATERIALS AND EQUIPMENT:

A. PROVIDE NEW MATERIALS AND EQUIPMENT UNLESS OTHERWISE NOTED.
B. FURNISH (INCLUDING FREIGHT AND UNLOADING) AND INSTALL UNLESS OTHERWISE NOTED.
C. EQUIPMENT PROVIDED FOR THIS PROJECT SHALL BE NEW UNLESS NOTED OTHERWISE.

1.7 UTILITIES AND CONNECTIONS:

A. OWNER WILL PAY ANY UTILITY SERVICE FEES DIRECTLY TO THE RESPECTIVE UTILITY COMPANIES.
B. PROVIDE ALL EQUIPMENT, MATERIALS, AND LABOR REQUIRED BUT NOT PROVIDED OR FURNISHED BY THE UTILITY COMPANIES TO BRING SERVICES INTO THE BUILDING.

1.8 SUBMITTALS:

A. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR EQUIPMENT IN ACCORDANCE WITH THE ARCHITECT'S REQUIREMENTS.
B. UPON COMPLETION OF THE INSTALLATION, AND PRIOR TO ACCEPTANCE BY THE OWNER, CONTRACTOR SHALL FURNISH AS-BUILT DOCUMENTATION AND O&M MANUALS IN ACCORDANCE WITH THE ARCHITECT'S REQUIREMENTS.

1.9 PROJECT CLOSEOUT:

A. REPAIR DAMAGED AND DEFECTIVE EQUIPMENT AND MATERIALS. REPLACE ITEMS THAT CANNOT BE PROPERLY REPAIRED.
B. CLEAN EXPOSED AND SEMI-EXPOSED SURFACES OF EQUIPMENT AND MATERIALS.
C. TOUCH-UP SHOP-APPLIED FINISHES TO RESTORE DAMAGED AND SOILED AREAS.
D. INSTRUCT OWNER'S REPRESENTATIVE IN OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS UTILIZING THE OPERATION AND MAINTENANCE MANUAL.
   i. INSTRUCTION PERIOD SHALL OCCUR AFTER SUBSTANTIAL COMPLETION OF ELECTRICAL SYSTEMS AND PRIOR TO COMPLETION OF THE PROJECT. COORDINATE WITH THE ARCHITECT AND THE OWNER.

2. PRODUCTS

2.1 RACEWAYS & FITTINGS:

A. CONDUIT SIZES SHALL BE AS REQUIRED BY THE CODE (UNLESS INDICATED OR SPECIFIED OTHERWISE) FOR THE NUMBER AND SIZE OF WIRE INDICATED. MINIMUM SIZE CONDUIT SHALL BE 1/2 INCH ELECTRICAL TRADE SIZE. FLEXIBLE METAL CONDUIT USED FOR LIGHTING FIXTURE WHIPS MAY BE 3/8" WHERE ALLOWED BY THE CODE.
B. USE ELECTRIC METALLIC TUBING EXCEPT AS FOLLOWS: USE RIGID NONMETALLIC CONDUIT IN OR UNDER ON GRADE CONCRETE SLABS. USE FLEXIBLE METAL CONDUIT FOR MOTOR AND EQUIPMENT CONNECTIONS IN DRY LOCATIONS. USE LIQUIDTIGHT FLEXIBLE METAL CONDUIT IN WET OR DAMP LOCATIONS.

2.2 WIRE AND CABLE:

A. CONDUCTORS SHALL BE COPPER, MINIMUM SIZE NO. 12 AWG. OTHER WIRE SIZES SHALL BE AS NOTED OR AS REQUIRED FOR THE CIRCUIT SIZE. CONDUCTOR INSULATION SHALL BE THHN/THWN.
B. BRANCH CIRCUIT WIRING WHERE CONCEALED IN WALLS AND ABOVE CEILINGS MAY BE TYPE MC (METAL CLAD) CABLE WHERE ALLOWED BY THE CODE.
C. WIRING FOR ISOLATED GROUND CIRCUITRY SHALL INCLUDE EQUIPMENT GROUNDING AND ISOLATED GROUNDING CONDUCTORS.

2.3 BOXES:

A. GALVANIZED SHEET STEEL TYPE. SINGLE DEVICE BOX SHALL BE "NON-GANGABLE" TYPE AND FOR MULTIPLE DEVICES "GANGABLE" TYPE SHALL BE USED. BOXES FOR EXPOSED WORK SHALL BE 4" SQUARE TYPE. BOXES FOR EXPOSED WORK IN WET LOCATIONS SHALL BE DIE CAST TYPE WITH THREADED HUBS. SECTIONAL BOXES SHALL NOT BE USED IN MASONRY OR CONCRETE. SIZED FOR NUMBER OF CONDUCTORS, FITTINGS AND DEVICES AS REQUIRED BY THE CODE.

2.4 WIRING DEVICES:

A. 20 AMPERE SPECIFICATION GRADE.
B. COVERPLATES SHALL BE AS FOLLOWS; INTERIOR RECESSED - SMOOTH UNBREAKABLE NYLON; SURFACE - 4" SQUARE RAISED COVER, GALVANIZED; WEATHERPROOF - DIE CAST ALUMINUM, GFCI TYPE, WATERTIGHT WHILE IN USE TYPE, USE EXTERNAL OPERATING TYPE FOR WEATHERPROOF SWITCHES.
C. DEVICE AND PLATE COLOR SHALL BE AS SELECTED BY ARCHITECT.
D. GFCI DEVICES SHALL BE SELF TESTING TYPE.

2.5 DISCONNECT SWITCHES:

A. SAME MANUFACTURER AS THE PANELBOARDS, NEMA 1 FOR INDOOR USE, NEMA 3R FOR OUTDOOR USE.
B. DISCONNECT SWITCHES SHALL BE FUSED OR NON-FUSED AS INDICATED AND BE VISIBLE BLADE TYPE WITH EXTERNAL OPERATING HANDLE AND COVER INTERLOCK AND PAD LOCKING PROVISIONS.

2.6 GROUNDING:

A. CONNECTIONS TO BUILDING STEEL, GROUND RODS AND PIPING SYSTEMS SHALL BE MADE WITH BRONZE OR BRASS BOLTED TYPE FITTINGS DESIGNED FOR THE USE.
B. GROUNDING ELECTRODE CONDUCTOR SHALL BE SIZE AS INDICATED ON THE DRAWINGS AND AS DESCRIBED IN ARTICLE 250-H OF THE NATIONAL ELECTRICAL CODE.

2.7 PANELBOARDS:

A. PANELBOARDS SHALL BE AS SCHEDULED OR BY: CUTLER HAMMER, GENERAL ELECTRIC OR SIEMENS. PANELS TO HAVE MINIMUM 20" WIDE CABINETS AND COPPER BUS BARS.
B. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC, MOLDED CASE, BOLT-ON TYPE. MULTI-POLE SHALL BE COMMON TRIP TYPE, BREAKERS FOR HVAC EQUIPMENT SHALL BE "HACR" RATED WHERE REQUIRED.
C. PANELS SHALL HAVE LOCKABLE DOORS, LOCKS SHALL BE KEYED ALIKE.
D. PANELS SHALL BE FULLY RATED OR HAVE A UL LISTED SERIES CONNECTED RATING OF A MINIMUM 65,000 AIC. OBTAIN AND SUBMIT FAULT CURRENT VERIFICATION LETTER FROM THE POWER CO. TO THE LOCAL AUTHORITY HAVING JURISDICTION IF REQUIRED.

2.8 ELECTRIC SERVICE:

A. SERVICE SHALL BE 120/208 VOLT, 3 PHASE, 4 WIRE.

2.9 LAMPS:

A. NUMBER, SIZE AND TYPE OF LAMPS SHALL BE AS SPECIFIED ON THE DRAWINGS.

2.10 BALLASTS & ACCESSORIES:

A. LED DRIVERS SHALL BE ELECTRONIC TYPE WITH EQUAL TO OR LESS THAN 10% THD AND A 3 YEAR WARRANTY. VOLTAGE TO MATCH SYSTEM VOLTAGE.
B. ACCESSORIES SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING FOR A COMPLETE LIGHTING FIXTURE INSTALLATION: PLASTER FRAMES, TEE BAR HANGERS, FIXTURE STUDS AND HOLD DOWN CLIPS FOR SUSPENDED CEILINGS.

2.11 LIGHTING FIXTURES:

A. LIGHTING FIXTURES SHALL BE AS SPECIFIED ON THE DRAWINGS.
B. PHOTOCELLS: SWIVEL MOUNT, 1800 WATT, TORK SERIES 2020 OR EQUAL.
C. CONTACTOR: MECHANICALLY HELD, ELECTRICALLY OPERATED, NUMBER OF POLES AS REQUIRED.

2.12 EMPTY CONDUIT SYSTEMS:

A. PROVIDE FOR USE BY THE OWNER'S CABLING CONTRACTOR. CONDUIT SYSTEM SHALL BE AS DESCRIBED ON THE DRAWINGS FOR DATA, TELEPHONE, TELEVISION, SOUND SECURITY ETC.

3. EXECUTION

3.1 RACEWAYS & FITTINGS:

A. INSTALL CONDUITS CONCEALED IN WALLS, CEILINGS OR FLOORS UNLESS INDICATED OR SPECIFIED OTHERWISE. CONDUITS MAY BE INSTALLED EXPOSED IN UNFINISHED AREAS (IE: EQUIPMENT ROOMS). INSTALL EXPOSED CONDUITS IN RUNS PARALLEL OR PERPENDICULAR TO WALLS STRUCTURAL MEMBERS, OR INTERSECTIONS OF VERTICAL PLANES OR CEILINGS. EXPOSED AND CONCEALED CONDUITS SHALL PASS THROUGH WALLS, FLOORS OR CEILINGS AT RIGHT ANGLES. UNDERGROUND CONDUITS SHALL HAVE BURY DEPTH AS REQUIRED BY THE CODE.
B. INSURE THAT CONDUITS ARE IN ALIGNMENT BETWEEN BENDS, ELBOWS AND TERMINATIONS; THAT BENDS ARE FREE OF CRIMPS, THAT JOINTS AND TERMINATIONS ARE TIGHT AND SECURE; THAT INTERIORS ARE SMOOTH AND FREE OF BURRS AND FOREIGN OBJECTS; AND THAT INTERIORS ARE FULL SIZE ENTIRE LENGTH. DURING CONSTRUCTION, CLOSE ENDS OF CONDUITS WITH METAL OR PLASTIC CAPS INTENDED FOR THE PURPOSE.
C. FIELD BENDING OF CONDUITS AND TUBING SHALL BE MADE WITH HAND OR POWERED EQUIPMENT APPROVED FOR THE PURPOSE. USE OF TORCHES TO BEND NONMETALLIC CONDUIT IS NOT APPROVED. RADIUS OF BENDS SHALL BE AS PER THE CODE FOR TYPE OF CONDUIT AND TUBING USED. CONDUITS PASSING THROUGH A FIRE RATED WALL OR FLOOR SHALL NOT LESSEN THE RATING OF THE STRUCTURE THROUGH WHICH THEY PASS. FINAL INSTALLATION OF CONDUITS PENETRATING WATERPROOF CONSTRUCTION SHALL BE COMPLETELY WATERTIGHT.
D. SLEEVE CONDUITS PASSING THROUGH CONCRETE FLOOR SLABS AND CONCRETE, MASONRY, TILE AND GYPSUM WALLS.
E. CONDUIT SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE AT INTERVALS REQUIRED BY THE CODE. USE STANDARD CONDUIT HANGERS, ONE HOLE SNAP STRAPS, THINWALL CONDUIT CLAMPS, MALLEABLE IRON PIPE STRAPS, STRUT CHANNEL BEAM CLAMPS, U-BOLTS AND ALL-THREAD RODS. DO NOT USE WIRE TIES, STAB-ON CLIPS OR PERFORATED STRAP IRON.
F. PAINT ANY EXPOSED CONDUITS TO MATCH THEIR SURROUNDINGS.

3.2 WIRE AND CABLE:

A. SPLICE CONDUCTORS NO. 10 AND SMALLER WITH STEEL SPRING WIRE CONNECTOR WITH THERMOPLASTIC SHELL. SPLICE CONDUCTORS NO.8 AND LARGER WITH MECHANICAL TYPE, TAP CONNECTORS WITH INSULATED COVERS OR SPLIT BOLTS TAPED TO CONDUCTOR INSULATION VALUE.
B. INSTALL CONDUCTORS IN RACEWAYS. CONDUCTORS SHALL BE CONTINUOUS FROM POINT OF ORIGIN TO PANEL OR EQUIPMENT TERMINATION WITHOUT RUNNING SPLICES IN INTERMEDIATE BOXES. CONDUCTORS OF DIFFERENT VOLTAGES SHALL NOT BE PULLED INTO SAME RACEWAY.
C. CABLE SHALL BE SUPPORTED DIRECTLY FROM THE BUILDING STRUCTURE WITH STAPLES OR ONE-HOLE STRAPS AT INTERVALS REQUIRED BY THE CODE. BORED HOLES SHALL NOT EXCEED 1" DIAMETER AND SHALL BE A MINIMUM OF 2'-0" FROM STRUCTURAL BEARING POINTS. NOTCHING OF STRUCTURAL MEMBERS IS PROHIBITED. PROVIDE GUARD STRIPS AT LEAST AS HIGH AS CABLE WHERE RUN ACROSS TOP OF STRUCTURE IN ACCESSIBLE ATTIC SPACES.
D. DO NOT RUN ANY WIRE OR CABLE IN PLUMBING WALLS UNTIL PIPING SYSTEMS HAVE BEEN COMPLETED. PLUMBING SHALL PRESIDE IN THESE WALLS.
E. DO NOT SHARE NEUTRAL CONDUCTORS FOR 120 VOLT CIRCUITS.
F. COLOR CODE CONDUCTORS TO INDUSTRY STANDARDS.

3.3 BOXES:

A. SECURE BOXES TO STRUCTURE BY MEANS OF SCREWS, BOLTS, ROD HANGERS OR OTHER APPROVED MEANS. RACEWAYS ENTERING OR LEAVING BOX SHALL NOT BE USED AS SUPPORT. BOXES SHALL BE LEVEL AND PLUMB. BOXES FOR FLUSH EQUIPMENT SHALL BE PLACED TO WITHIN 1/4" OF THE FINISHED SURFACE. PROVIDE EXTENSIONS OR PLASTER RINGS AS REQUIRED. JUNCTION AND PULL BOXES SHALL BE INSTALLED READILY ACCESSIBLE, UNOBSTRUCTED BY PIPING, DUCTS OR OTHER EQUIPMENT.
B. BOXES SHALL BE MOUNTED AT HEIGHT INDICATED ON THE DRAWINGS OR DIRECTLY ADJACENT TO PIECE OF EQUIPMENT SERVED. SEAL SPARE OR UNUSED OPENINGS IN BOXES WITH APPROVED FITTINGS. FOR BOXES INSTALLED IN WET LOCATIONS PROVIDE CLEAR SILICONE CAULK BETWEEN BOX AND SURROUNDING SURFACE TO PREVENT WATER ENTRY.
C. BOXES IN RATED CONSTRUCTION SHALL BE SUITABLE FOR THE USE AND INSTALLED IN ACCORDANCE WITH THE CODE.

3.4 WIRING DEVICES:

A. INSTALL DEVICES APPROXIMATELY AT THE LOCATIONS INDICATED ON THE DRAWINGS. DETERMINE EXACT LOCATION BY CONDITIONS OF CONSTRUCTION. COORDINATE LOCATIONS TO AVOID CONFLICT WITH OTHER EQUIPMENT BEING INSTALLED. INSTALL DEVICES STRAIGHT AND SOLID TO BOX. MOUNTING HEIGHTS OF WALL OUTLETS SHALL BE AS INDICATED ON THE DRAWINGS AND SHALL BE MEASURED FROM THE FINISHED FLOOR TO THE CENTER OF THE OUTLET. WHERE DEVICES ARE SHOWN GROUPED TOGETHER, PROVIDE A SINGLE, MULTIPLE GANG PLATE.
B. COORDINATE PLACEMENT IN AND AROUND KNEE SPACES, LAVATORIES AND OTHER EQUIPMENT TO AVOID CONFLICTS WITH MIRRORS AND OTHER APPURTENANCES. REFER TO ARCHITECTURAL DRAWINGS. SWITCHES SHALL BE LOCATED TO STRIKE SIDE OF THE DOOR, VERIFY FINAL DOOR SWINGS.
C. WHERE GFCI OUTLETS ARE USED TO PROVIDE FEED-THRU PROTECTION FOR DOWNSTREAM OUTLETS ON SAME CIRCUIT, DO NOT FEED-THRU WIRE ACROSS PARTITIONS, USE A SEPARATE DEVICE.
D. VERIFY THE NEMA CONFIGURATIONS OF ALL OUTLETS WITH OWNER.

3.5 DISCONNECT SWITCHES:

A. MOUNT SWITCHES ON WALL OR AT ASSOCIATED PIECE OF EQUIPMENT. WALL MOUNTED SWITCHES SHALL BE 48 INCHES ABOVE FINISHED FLOOR. PROVIDE ENGRAVED PLASTIC LAMINATE NAMEPLATE FOR EACH DISCONNECT SWITCH LOCATED ON FRONT OUTSIDE COVER. NAMEPLATE SHALL INDICATE ITEM SERVED.
B. SWITCHES SCHEDULED ARE FOR DESIGN BASED EQUIPMENT. REVIEW OTHER TRADES' SUBMITTALS TO DETERMINE IF SUBSTITUTIONS HAVE BEEN MADE. PROVIDE SWITCH TO MATCH EQUIPMENT SUPPLIED.

3.6 GROUNDING:

A. CONDUIT SYSTEM SHALL BE USED FOR GROUNDING WHERE ALLOWED BY THE NATIONAL ELECTRICAL CODE. PULL GROUND CONDUCTORS IN RIGID NONMETALLIC CONDUIT; IN FLEXIBLE METAL CONDUIT AND IN LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
B. FOR BONDING OF SERVICE EQUIPMENT PROVIDE BONDING BUSHINGS AND JUMPERS WHERE REQUIRED. WELDING OF CONDUIT AND FITTINGS WILL NOT BE CONSIDERED ACCEPTABLE FOR THE PURPOSE OF BONDING.

3.7 PANELBOARDS:

A. NEATLY PRINT CIRCUIT DESIGNATIONS ON DIRECTORY CARD. NOTATIONS SHALL INDICATE THE NATURE AND LOCATION OF LOADS SERVED.
B. PROVIDE ENGRAVED LAMINATE NAMEPLATE FOR EACH PANELBOARD LOCATED ON OUTSIDE OF DOOR. NAMEPLATE SHALL INCLUDE PANELBOARD DESIGNATION ON THE DRAWINGS, SERVICE VOLTAGE, PHASE AND AMPERAGE.
C. BREAKERS SCHEDULED ARE FOR DESIGN BASED EQUIPMENT. REVIEW OTHER TRADES' SUBMITTALS TO DETERMINE IF SUBSTITUTIONS HAVE BEEN MADE. PROVIDE BREAKERS TO MATCH EQUIPMENT SUPPLIED.

3.8 ELECTRIC SERVICE:

A. PROVIDE LABOR AND MATERIALS NOT FURNISHED BY THE POWER COMPANY. DO WORK REGARDING THE ELECTRICAL SERVICE AND ITS EQUIPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE POWER COMPANY. IF THE CONTRACT DOCUMENTS INDICATE WORK THAT IS TO EXCEED THESE REQUIREMENTS, FOLLOW THE CONTRACT DOCUMENTS.
B. LABEL EQUIPMENT FOR THE ELECTRIC SERVICE IN ACCORDANCE WITH THE APPROPRIATE SECTION OF THIS DIVISION. MAIN SWITCHES OR BREAKERS ARE TO BE IDENTIFIED AS SUCH IN ADDITION TO IDENTIFYING THE ITEM FED.
C. NOTIFY THE POWER COMPANY OF THE TIMING REQUIREMENTS FOR THE PROJECT AND ARRANGE FOR METERING EQUIPMENT, CONNECTIONS AND SERVICE.

3.9 LAMPS:

A. PERMANENT LAMPS SHALL NOT BE USED AS TEMPORARY LIGHTING DURING CONSTRUCTION. IF FIXTURES ARE TO BE USED, TEMPORARY LAMPS SHALL BE PROVIDED AND PERMANENT LAMPS SHALL NOT BE INSTALLED UNTIL TIME OF OWNER'S ACCEPTANCE OF BUILDING.

3.10 LIGHTING FIXTURES:

A. INSTALLATION OF FIXTURES SHALL BE IN A NEAT, WORKMANLIKE MANNER. PROVIDE STRAPS, SUPPORTS, HANGERS AND OTHER MATERIALS REQUIRED FOR PROPER INSTALLATION.
B. SURFACE MOUNTED FIXTURES SHALL NOT HAVE GAPS BETWEEN THE FIXTURE AND ATTACHING SURFACE UNLESS MOUNTING IS DESIGNED TO HOLD FIXTURE OFF CEILING, OR EXCEPT WHERE REQUIRED BY THE CODE REGULATION. CONTINUOUS ROWS OF FIXTURES SHALL BE INSTALLED SO AS TO PROVIDE PERFECT ALIGNMENT.
C. SUPPORT SURFACE MOUNTED FIXTURES DIRECTLY FROM THE BUILDING STRUCTURE AND NOT FROM THE CEILING GRID SYSTEM. USE ALL-THREAD RODS, BEAM CLAMPS, PIPE CLAMPS AND PIPE OR PERFORATED STEEL CHANNEL FOR SUPPORT. WIRE TIES AND STAB-ON CLIPS WILL NOT BE ACCEPTED. THE SUPPORT ASSEMBLY SHALL BE CAPABLE OF SUPPORTING 150 POUNDS IN ADDITION TO THE FIXTURE WEIGHT INDEFINITELY.
D. RECESSED FIXTURES SHALL NOT HAVE GAPS BETWEEN THE FIXTURE TRIM AND ADJACENT SURFACE. WHERE LIGHT LEAKS OCCUR, SUITABLE GASKETS SHALL BE INSTALLED.
E. RECESSED LIGHTING FIXTURES INSTALLED IN MODULAR OR INTEGRATED CEILINGS SHALL BE OF THE PROPER TYPE FOR THE TYPE OF CEILING BEING INSTALLED. VERIFY TYPE OF CEILING CONSTRUCTION PRIOR TO ORDERING OF FIXTURES. ADDITIONAL CEILING TIES SHALL BE INSTALLED AT EACH CORNER OF THE LIGHTING FIXTURE TO REINFORCE THE CEILING SYSTEM.
F. CONNECT EXIT AND EMERGENCY LIGHTING FIXTURES TO BRANCH CIRCUIT SERVING NORMAL LIGHTING IN AREA AHEAD OF LOCAL SWITCHING OR TO NIGHT LIGHTING CIRCUIT AS SHOWN.
G. MOUNT CONTACTORS ADJACENT TO PANELBOARD. PHOTOCELLS SHALL BE LOCATED IN AN ACCESSIBLE LOCATION EITHER BELOW SOFFIT OR ABOVE ROOF LINE FACING NORTH. DO NOT ATTACH PHOTOCELLS ON FACE OF BUILDING.

3.11 EMPTY CONDUIT SYSTEMS:

A. LEAVE CONDUITS WITH PULL CORDS, AT COMPLETION OF THE PROJECT, PROVIDE BLANK COVERPLATES FOR ANY OUTLET BOXES NOT UTILIZED AND LEFT SPARE BY THE OWNER'S CABLING CONTRACTOR
B. PAINT ALL SIDES AND EDGES OF EQUIPMENT SPACE WITH 2 COATS OF GRAY ENAMEL PAINT PRIOR TO INSTALLATION.

END OF DIVISION 16

SEAL

ISSUED FOR PERMIT
3-10-17

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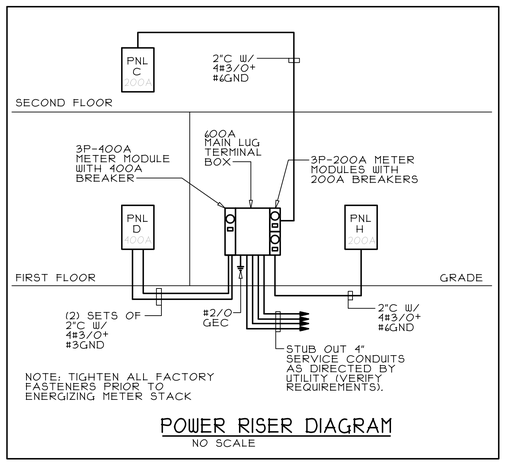
ELECTRICAL SPECIFICATIONS

PROJECT NO.: 17021

DATE	*SHEET NO.*
3-10-17	E0.1

SYMBOLS LIST

- A-1 — OUTLET FOR CEILING OR WALL MOUNTED FLUORESCENT LIGHTING FIXTURE WITH CIRCUIT NUMBER
- A-1 — OUTLET FOR CEILING OR WALL MOUNTED INCANDESCENT, COMPACT FLUORESCENT OR HID LIGHTING FIXTURE WITH CIRCUIT NUMBER
- A-1 — OUTLET FOR CEILING OR WALL MOUNTED EXIT LIGHTING FIXTURE WITH BATTERY BACKUP WITH CIRCUIT NUMBER
- A-1 — OUTLET FOR CEILING OR WALL MOUNTED EMERGENCY EGRESS LIGHTING FIXTURE WITH BATTERY BACKUP WITH CIRCUIT NUMBER
- A-1 — OUTLET FOR CEILING OR WALL MOUNTED EMERGENCY EGRESS FLUORESCENT LIGHTING FIXTURE WITH BATTERY BACKUP WITH CIRCUIT NUMBER
- A-1 — OUTLET FOR CEILING OR WALL MOUNTED COMBINATION EXIT/EMERGENCY EGRESS LIGHTING FIXTURE WITH BATTERY BACKUP WITH CIRCUIT NUMBER
- 1 — LIGHTING FIXTURE TYPE SEE SCHEDULE
- S — SINGLE POLE WALL SWITCH AT 48" AFF TO TOP OF BOX
- S3 — THREE-WAY WALL SWITCH AT 48" AFF TO TOP OF BOX
- S4 — FOUR-WAY WALL SWITCH AT 48" AFF TO TOP OF BOX
- SD — DIMMER SWITCH AT 48" AFF TO TOP OF BOX
- Ssc — WALL SPEED CONTROLLER SWITCH FOR EXHAUST FAN AT 48" AFF TO TOP OF BOX. VERIFY LOCATION WITH OWNER PRIOR TO ROUGH-IN.
- A-1 — GENERAL PURPOSE DUPLEX RECEPTACLE AT 18" AFF TO BOTTOM OF BOX, WITH CIRCUIT NUMBER
- A-1 — GENERAL PURPOSE DUPLEX RECEPTACLE AT 48" AFF TO TOP OF BOX, WITH CIRCUIT NUMBER
- GFCI A-1 — GROUND FAULT CIRCUIT INTERRUPTER AT 18" AFF TO BOTTOM OF BOX, WITH CIRCUIT NUMBER, UNLESS NOTED
- GFCI A-1 — GROUND FAULT CIRCUIT INTERRUPTER AT 48" AFF TO TOP OF BOX, WITH CIRCUIT NUMBER, UNLESS NOTED
- A-1 IG — HOSPITAL GRADE ISOLATED GROUND DUPLEX RECEPTACLE AT 18" AFF TO BOTTOM OF BOX WITH CIRCUIT NUMBER WITH ORANGE DEVICE
- A-1 IG — HOSPITAL GRADE ISOLATED GROUND DUPLEX RECEPTACLE AT 48" AFF TO BOTTOM OF BOX WITH CIRCUIT NUMBER WITH ORANGE DEVICE
- A-1 — GENERAL PURPOSE QUADRAPLEX RECEPTACLE AT 18" AFF TO BOTTOM OF BOX, WITH CIRCUIT NUMBER
- A-1 — 3 WIRE, 250 VOLT DEVICE AT 48" AFF TO TOP OF BOX, WITH CIRCUIT NUMBER
- MW A-1 — OUTLET FOR MICROWAVE, HEIGHT TO SUIT APPLIANCE SERVED, WITH CIRCUIT NUMBER
- EWC A-1 — GFI OUTLET FOR ELECTRIC WATER COOLER COORDINATE LOCATION WITH PLUMBING ROUGH-IN DRAWINGS, WITH CIRCUIT NUMBER
- REF. A-1 — OUTLET FOR REFRIGERATOR HEIGHT TO SUIT APPLIANCE SERVED WITH CIRCUIT NUMBER
- J — JUNCTION BOX AT 18" AFF TO BOTTOM OF BOX OR AT ASSOCIATED PIECE OF EQUIPMENT
- OUTLET FOR LOW VOLTAGE CABLE (DATA, TELEPHONE OR TELEVISION) AT 18" AFF TO BOTTOM OF BOX WITH A 3/4" EC STUBBED INTO ACCESSIBLE CEILING SPACE
- OUTLET FOR LOW VOLTAGE CABLE (DATA, TELEPHONE OR TELEVISION) AT 48" AFF TO TOP OF BOX WITH A 3/4" EC STUBBED INTO ACCESSIBLE CEILING SPACE
- SD — SMOKE DETECTOR
- EF — EXHAUST FAN (120V-1PH) FURNISHED AND INSTALLED BY DIVISION 15 WIRED UNDER THIS DIVISION
- A-1 PC — PHOTOCELL, LOCATE IN ACCESSIBLE LOCATION AND SHIELD FROM SURROUNDING LIGHT SOURCES, WITH CIRCUIT NUMBER
- PANELBOARD
- 20 — EQUIPMENT CONNECTION DESIGNATION SEE SCHEDULE
- SWITCH LEG WIRING, 2 #12 - CROSS MARKS INDICATE NUMBER OF CONDUCTORS IF MORE THAN TWO
- SWITCH LEG WIRING, 2 #12 - WITH ADDITIONAL CAT5e CONTROL WIRING AS REQUIRED FOR FIXTURE SUPPLIED
- AFF — ABOVE FINISHED FLOOR
- C/EC — CONDUIT/EMPTY CONDUIT
- FSS/NFSS — FUSIBLE/NON-FUSIBLE SAFETY SWITCH
- NL — NIGHT LIGHT (UNSWITCHED)
- WP — WEATHERPROOF
- J-BOX — JUNCTION BOX



POWER RISER DIAGRAM

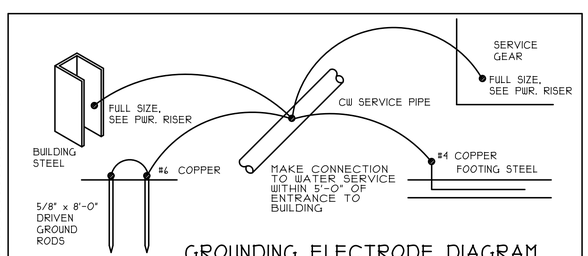
NO SCALE

LIGHTING FIXTURE CONTROLS SYMBOLS LIST

- ⊙ — SENSOR SWITCH CMR-PDT-10 PASSIVE INFRARED DUAL TECHNOLOGY MICROPHONIC LINE VOLTAGE CEILING MOUNT SENSOR
- Soc — SENSOR SWITCH WSD-PDT-SA PASSIVE INFRARED DUAL TECHNOLOGY MICROPHONIC LINE VOLTAGE WALL MOUNT SENSOR AT 48" AFF. MANUAL ON/AUTO OFF
- AFF — ABOVE FINISHED FLOOR

LIST NOTES

1. ALL SENSOR SWITCH COMPONENTS AND WIRING SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
2. ADJUST SENSITIVITY, OVERRIDE SWITCHES (WHERE APPLICABLE) AND TIME DELAYS TO THE SATISFACTION OF THE OWNER.



GROUNDING ELECTRODE DIAGRAM

NO SCALE

NOTE:

THIS DIAGRAM IS SCHEMATIC IN NATURE AND IS NOT INTENDED TO BE THE ONLY ACCEPTABLE ROUTING METHOD FOR THE GROUNDING ELECTRODE SYSTEM. ALL ITEMS SHOWN (WHERE AVAILABLE) SHALL BE BONDED TOGETHER

SEAL

REVISIONS	
DATE	REMARKS
6-06-17	OWNER CHANGES

ISSUED FOR PERMIT 3-10-17

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WARRENTON VIRGINIA

ELEC. LEGEND, RISER & DIAGRAMS

PROJECT NO.: 17021

DATE	SHEET NO.
3-10-17	E0.2

PANEL C

VOLTS: 120/208 | PHASE: 3 | WIRES: 4 | MOUNTING: SURFACE
AMPS: 200A | MAIN: LUGS ONLY

BRKR P	BRKR A	DESCRIPTION	CIRCUIT AMPS	CIRCUIT DEMAND	CIRCUIT NO.	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	CIRCUIT NO.	CIRCUIT DEMAND	CIRCUIT AMPS	DESCRIPTION	BRKR A	BRKR P
1	20	REC. AT PANEL	1.5	100%	1	7.0			2	125%	4.4	LIGHTS	20	1
1	20	SPARE	0.0	100%	3		35.0		4	100%	35.0	ROOF TOP UNIT 2	50	3
1	20	SPARE	0.0	100%	5			35.0	6	100%	35.0	--	--	-
1	20	SPARE	0.0	100%	7	35.0			8	100%	35.0	--	--	-
1	20	SPARE	0.0	100%	9		2.0		10	100%	2.0	SMOKE DETECTOR	20	1
1	20	SPARE	0.0	100%	11			0.0	12	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	13	0.0			14	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	15		0.0		16	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	17			0.0	18	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	19	0.0			20	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	21		0.0		22	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	23			0.0	24	100%	0.0	SPARE	20	1
1	--	PROVISIONAL	0.0	100%	25	0.0			26	100%	0.0	PROVISIONAL	--	1
1	--	PROVISIONAL	0.0	100%	27		0.0		28	100%	0.0	PROVISIONAL	--	1
1	--	PROVISIONAL	0.0	100%	29			0.0	30	100%	0.0	PROVISIONAL	--	1
1	--	PROVISIONAL	0.0	100%	31	0.0			32	100%	0.0	PROVISIONAL	--	1
1	--	PROVISIONAL	0.0	100%	33		0.0		34	100%	0.0	PROVISIONAL	--	1
1	--	PROVISIONAL	0.0	100%	35			0.0	36	100%	0.0	PROVISIONAL	--	1
1	--	PROVISIONAL	0.0	100%	37	0.0			38	100%	0.0	PROVISIONAL	--	1
1	--	PROVISIONAL	0.0	100%	39		0.0		40	100%	0.0	PROVISIONAL	--	1
1	--	PROVISIONAL	0.0	100%	41			0.0	42	100%	0.0	PROVISIONAL	--	1
						42.0	37.0	35.0						

EATON PRL1A OR EQUAL
SEE SPEC. NOTES

EQUIPMENT CONNECTION SCHEDULE

ITEM	DESCRIPTION	VOLTS	PH	FLA	WIRE	GND	MOCP	DISCONNECT	PNL.&CKT.	REMARKS
P1	WATER HEATER	208	3	25.0	3#8	#10	35A	3P-60A-NFSS	D-30	
H1	ROOF TOP UNIT #1	208	3	50.0	3#6	#10	60A	3P-60A-NFSS, NEMA 3R	D-48	
H2	ROOF TOP UNIT #2	208	3	35.0	3#8	#10	50A	3P-60A-NFSS, NEMA 3R	C-4	
X1	X-RAY	208	1	65.0	2#3	#3	100A	2P-100A-FSS W/100A FUSES	D-81	

SCHEDULE NOTES

-- WIRE CIRCUITS TO 'HACR' TYPE BREAKERS.
-- VERIFY FINAL CONNECTIONS, ELECTRICAL CHARACTERISTICS, ETC. WITH FINAL EQUIPMENT SELECTIONS. CONTRACTOR IS RESPONSIBLE FOR CORRECTNESS OF ALL BREAKERS, WIRES, ETC.

A. SEE MINI-SPLIT WIRING DIAGRAM SHEET E0.2. PAINT ANY EXPOSED CONDUITS TO MATCH SURROUNDINGS.

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER/CATALOG NO.	LAMPS NO.	LAMPS TYPE	MOUNTING	REMARKS
1	LITHONIA 2ALL4-30L-EZ-LP840	3000 LUMEN LED ARRAY		RECESSED	
1B	LITHONIA 2ALL2-20L-EZ-LP840	2000 LUMEN LED ARRAY		RECESSED	
2	LITHONIA 2ALL4-48L-EZ-LP840	4800 LUMEN LED ARRAY		RECESSED	
2B	LITHONIA 2ALL2-40L-EZ-LP840	4000 LUMEN LED ARRAY		RECESSED	
3	LITHONIA HSTLED24-G-120-LED40-1DIM-NIO-GW	8000 LUMEN LED ARRAY		RECESSED	
4	LITHONIA ZL1N-L48-3000LM-L/LENS-MVOLT-40K-80CRI-WH	3000 LUMEN LED ARRAY		SURFACE	COORDINATE MOUNTING WITH STRUCTURAL MEMBERS
5	LITHONIA WL4-20L-EZ1-LP840-NES7	2000 LUMEN LED ARRAY		WALL ABOVE DOOR	WITH INTEGRAL OCCUPANCY SENSOR
5E	LITHONIA WL4-40L-EZ1-LP840-NES7-EL14L	4000 LUMEN LED ARRAY		WALL AT 7'-8" AFF	WITH BATTERY BACKUP AND INTEGRAL OCCUPANCY SENSOR
6	LITHONIA LDN6-40/20-L06-AR-LSS-MVOLT-EZ-WL	2000 LUMEN LED ARRAY		RECESSED	WET LOCATION RATED
7	LITHONIA LDN6-40/20-LW6-AR-LSS-MVOLT-EZ10	2000 LUMEN LED ARRAY		RECESSED	WALL WASHER TRIM
8	LITHONIA OLLWU-LED-40K-MVOLT-*	2900 LUMEN LED ARRAY		WALL - SEE ARCH. ELEVATIONS	FINISH SELECTED BY ARCHITECT
9	LITHONIA WSR-LED-1-10A700/40-SR2-MVOLT-*	2000 LUMEN LED ARRAY		7'-8" ABOVE 2ND FLOOR	FINISH SELECTED BY ARCHITECT
E1	LITHONIA LHQM-LED-R	FURNISHED WITH FIXTURE		WALL ABOVE DOOR	
E2	LITHONIA LQM-S-W-3-R-120/277-ELN	FURNISHED WITH FIXTURE		SURFACE	
E3	LITHONIA ELM6-LED-W-LP03VS	FURNISHED WITH FIXTURE		WALL AT 7'-8" AFF	

SCHEDULE NOTES

-- EQUIVALENT FIXTURES ACCEPTED BY ALTERNATE MANUFACTURERS: PHILIPS, COOPER.

PANEL H

NEMA 3R PANEL

VOLTS: 120/208 | PHASE: 3 | WIRES: 4 | MOUNTING: SURFACE
AMPS: 200A | MAIN: LUGS ONLY

BRKR P	BRKR A	DESCRIPTION	CIRCUIT AMPS	CIRCUIT DEMAND	CIRCUIT NO.	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	CIRCUIT NO.	CIRCUIT DEMAND	CIRCUIT AMPS	DESCRIPTION	BRKR A	BRKR P
1	20	RECS. EXT/VEST.	3.0	100%	1	9.0			2	125%	4.8	STAIRWAY LIGHTS	20	1
1	20	WATER FOUNTAIN	5.0	125%	3		9.3		4	100%	3.0	ELEV. MR LTS/REC.	20	1
1	20	RECS. ROOF	4.5	100%	5			6.0	6	100%	1.5	ELEV. MR EXH. FAN	20	1
1	20	SPARE	0.0	100%	7	9.5			8	100%	9.5	MINI SPLIT UNIT	15	2
1	20	MONUMENT SIGN (*)	10.0	125%	9		22.0		10	100%	9.5	----	--	-
1	20	MONUMENT SIGN (*)	10.0	125%	11			14.9	12	125%	1.9	BUILDING LIGHTS (*)	20	1
1	20	SIGN (*)	10.0	125%	13	14.3			14	125%	1.4	SITE LIGHTS (*)	20	1
1	20	SIGN (*)	10.0	125%	15		12.5		16	100%	0.0	SPARE	20	1
1	20	SIGN (*)	5.0	125%	17			9.3	18	100%	3.0	ELEV. SUMP PUMP	20	1
1	20	SIGN (*)	5.0	125%	19	18.8			20	100%	12.5	ELEC. WALL HEATER	20	1
1	20	SIGN (*)	5.0	125%	21		6.3		22	100%	0.0	SPARE	20	1
1	20	SIGN (*)	5.0	125%	23			6.3	24	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	25	62.1			26	100%	62.1	FUTURE ELEVATOR	100	3
1	20	SPARE	0.0	100%	27		62.1		28	100%	62.1	--	--	-
1	20	SPARE	0.0	100%	29			62.1	30	100%	62.1	--	--	-
						113.6	112.1	98.5						

(*) - WIRE CIRCUIT THROUGH A PHOTOCELL FOR CONTROL. ADJUST SENSITIVITY TO OWNER'S SATISFACTION.
EATON PRL1A OR EQUAL, NEMA 3R
SEE SPEC. NOTES

PANEL D

VOLTS: 120/208 | PHASE: 3 | WIRES: 4 | MOUNTING: FLUSH
AMPS: 400A | MAIN: LUGS ONLY

BRKR P	BRKR A	DESCRIPTION	CIRCUIT AMPS	CIRCUIT DEMAND	CIRCUIT NO.	PHASE LOAD A	PHASE LOAD B	PHASE LOAD C	CIRCUIT NO.	CIRCUIT DEMAND	CIRCUIT AMPS	DESCRIPTION	BRKR A	BRKR P
1	20	RECS. BREAK ROOM	4.5	100%	1	14.5			2	100%	10.0	AUTOCLAVE	20	1
1	20	MICROWAVE	10.0	100%	3		22.0		4	100%	12.0	FREEZER	20	1
1	20	REF. BREAK RM	8.0	100%	5			16.0	6	100%	8.0	REC. STORAGE	20	1
1	20	RECS. HALL AREA	6.0	100%	7	16.0			8	100%	10.0	AUTOCLAVE	20	1
1	20	RECS. QUARANTINE	4.5	100%	9		16.4		10	125%	9.5	LIGHTS	20	1
1	20	RECS. TREAT. CNTR	6.0	100%	11			15.1	12	125%	7.3	LIGHTS	20	1
1	20	RECS. TREAT. CNTR	6.0	100%	13	14.0			14	100%	8.0	EWC	20	1
1	20	RECS. TREAT. CNTR	6.0	100%	15		10.0		16	100%	4.0	SECURITY SYSTEM	20	1
1	20	RECS. KENNEL	3.0	100%	17			11.0	18	100%	8.0	REF. PHARM.	20	1
1	20	RECS. PHARM.	4.5	100%	19	17.0			20	100%	12.5	ELEC. WALL HTR W.	20	1
1	20	REC. TELE BOARD	1.5	100%	21		14.0		22	100%	12.5	ELEC. WALL HTR M.	20	1
1	20	SPARE	0.0	100%	23			5.0	24	100%	5.0	EXAM TABLE	20	1
1	20	SPARE	0.0	100%	25	5.0			26	100%	5.0	EXAM TABLE	20	1
1	20	OVERHEAD LIGHT	3.0	100%	27		8.0		28	100%	5.0	EXAM TABLE	20	1
1	20	RECS. EXAM ROOM	4.5	100%	29			35.8	30	125%	25.0	ELEC. WATER HEATER	35	3
1	20	RECS. EXAM ROOM	6.0	100%	31	37.3			32	125%	25.0	----	--	-
1	20	RECS. CAT EXAM RM.	4.5	100%	33		35.8		34	125%	25.0	----	--	-
1	20	RECS. CAT EXAM RM.	4.5	100%	35			7.5	36	100%	3.0	RECS. WALL UNITS	20	1
1	20	RECS. SURGERY	7.5	100%	37	9.5			38	100%	2.0	RECIRC. PUMP	20	1
1	20	RECS. EXAM ROOM	6.0	100%	39		7.0		40	100%	1.0	SMOKE DETECTOR	20	1
1	20	RECS. EXAM ROOM	4.5	100%	41			85.5	42	100%	81.0	ERU	110	3
1	20	RECS. EXAM ROOM	6.0	100%	43	87.0			44	100%	81.0	----	--	-
1	20	RECS. EXAM ROOM	4.5	100%	45		85.5		46	100%	81.0	----	--	-
1	20	RECS. VEST/WAITING	9.0	100%	47			59.0	48	100%	50.0	ROOF TOP UNIT 1	60	3
1	20	RECS. RECEPTION	6.0	100%	49	56.0			50	100%	50.0	--	--	-
1	20	RECS. RECEPTION	4.5	100%	51		54.5		52	100%	50.0	--	--	-
1	20	RECS. MENS/WOMENS	8.0	100%	53			14.5	54	125%	5.2	EXHAUST FANS	20	1
2	30	STACK WASHER/DRYER	24.0	100%	55	24.0			56	100%	0.0	SPARE	20	1
-	--	----	24.0	100%	57		24.0		58	100%	0.0	SPARE	20	1
1	20	MEDICAL GAS PUMP	3.0	100%	59			3.0	60	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	61	0.0			62	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	63		0.0		64	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	65			0.0	66	100%	0.0	SPARE	20	1
1	20	SPARE	0.0	100%	67	0.0			68	100%	0.0	SPARE	20	1
1	20	RECS. X-RAY	4.5	100%	69		4.5		70	100%	0.0	SPARE	20	1
1	20	RECS. X-RAY	4.5	100%	71			4.5	72	100%	0.0	PROVISIONAL	--	1
1	20	X-RAY PROC.	10.0	100%	73	10.0			74	100%	0.0	PROVISIONAL	--	1
1	20	RECS. X-RAY	3.0	100%	75		3.0		76	100%	0.0	PROVISIONAL	--	1
1	20	SPARE	0.0	100%	77			0.0	78	100%	0.0	PROVISIONAL	--	1
1	20	SPARE	0.0	100%	79	0.0			80	100%	0.0	PROVISIONAL	--	1
2	100	X-RAY	65.0	100%	81		65.0		82	100%	0.0	PROVISIONAL	--	1
-	--	--	65.0	100%	83			65.0	84	100%	0.0	PROVISIONAL	--	1
						290.3	349.6	321.9						

EATON PRL1A OR EQUAL
SEE SPEC. NOTES

600A SERVICE LOAD SUMMARY

	LOAD (KW)
PANEL H	38.90
PANEL C	13.68
PANEL D	114.89
FUT. RECEPTACLES (2,727sqft x 3W/sqft):	8.20
FUT. WATER HEATERS (AT 125%)	5.70
FUT. LIGHTS (2,727sqft X 3.5W/sqft)	9.55
FUTURE MISC.	5.00
TOTAL	195.93

TOTAL AT 208V 3PHASE = 544 AMPS

SEAL

REVISIONS	
DATE	REMARKS
6-06-17	OWNER CHANGES

ISSUED FOR PERMIT
3-10-17

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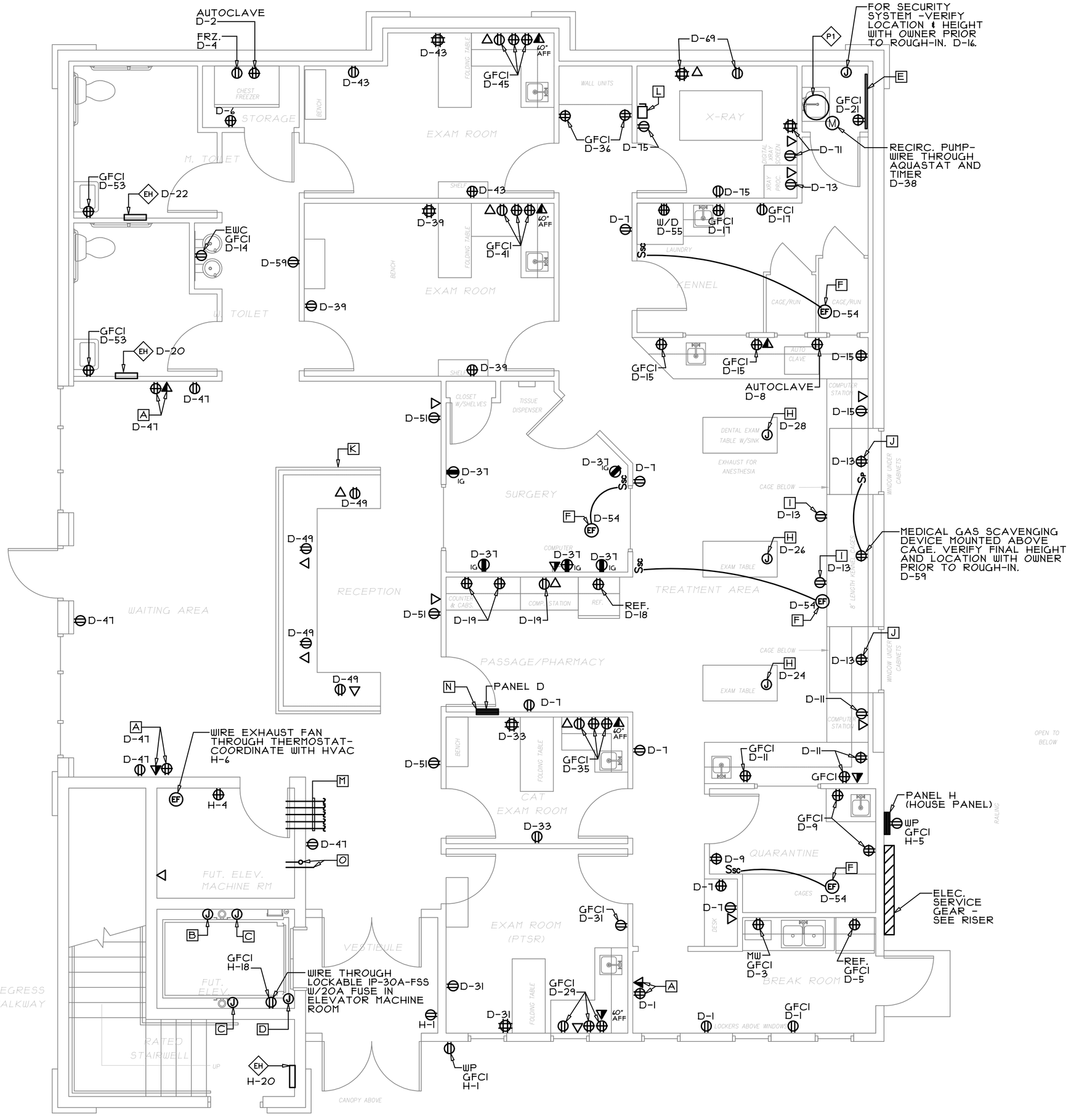
WARRENTON *VIRGINIA*

ELECTRICAL SCHEDULES

PROJECT NO.: 17021

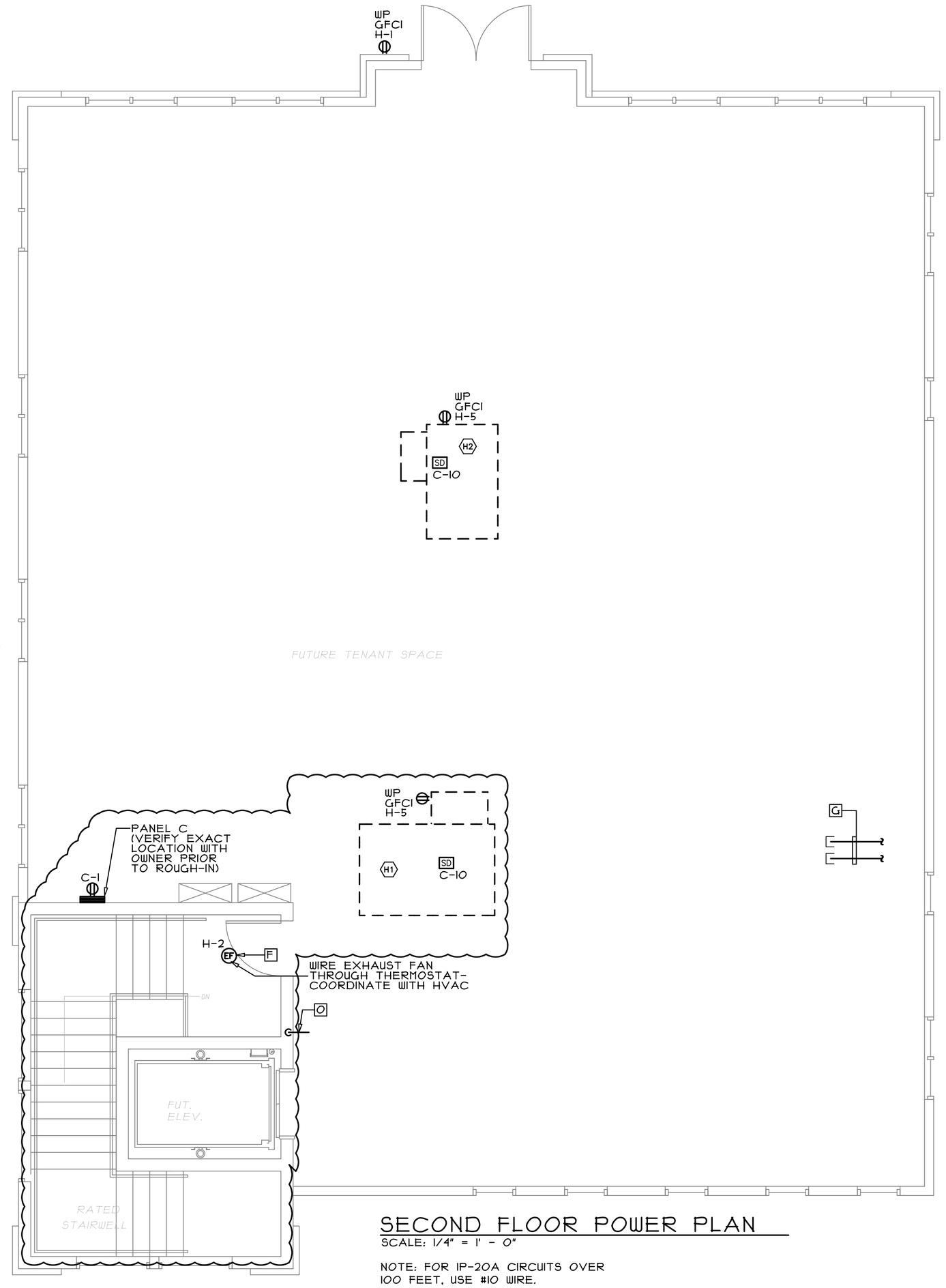
DATE	SHEET NO.
3-10-17	E0.3



FIRST FLOOR POWER PLAN

SCALE: 1/4" = 1' - 0"

NOTE: FOR IP-20A CIRCUITS OVER 100 FEET, USE #10 WIRE.



SECOND FLOOR POWER PLAN

SCALE: 1/4" = 1' - 0"

NOTE: FOR IP-20A CIRCUITS OVER 100 FEET, USE #10 WIRE.

ELEC. HEATER SPECS.

-- HEATERS SHALL BE PROVIDED & INSTALLED BY ELECTRICAL CONTRACTOR.

EH — ELECTRICAL WALL HEATER (EWH) SHALL BE 120V-1PH-1500 WATTS, WITH BUILT-IN THERMOSTAT & DISCONNECT SWITCH. QMARK MODEL CWH-1000 SERIES. ALTERNATE MANUFACTURERES SHALL BE BERKO AND MARKEL.

DRAWING NOTES

- A — FOR WALL MOUNTED TELEVISION. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH OWNER PRIOR TO ROUGH-IN. COORDINATE WITH MOUNTING HARDWARE.
- B — J-BOX 18" ABOVE PIT FLOOR WITH 1/2" EC STUBBED INTO FUTURE ELEVATOR MACHINE ROOM ACCESSIBLE CEILING SPACE. LABEL BOX & CONDUIT AND LEAVE WITH PULL STRING. ROUTE CONDUITS IN SHAFT AS TO NOT INTERFERE WITH THE OPERATION OR INSTALLATION OF THE FUTURE ELEVATOR.
- C — J-BOX ON WALL IN PIT FOR FUTURE PIT LIGHT WITH 1/2" EC STUBBED INTO FUTURE ELEVATOR MACHINE ROOM ACCESSIBLE CEILING SPACE. LABEL BOX & CONDUIT AND LEAVE WITH PULL STRING. ROUTE CONDUITS IN SHAFT AS TO NOT INTERFERE WITH THE OPERATION OR INSTALLATION OF THE FUTURE ELEVATOR.
- D — J-BOX ON WALL IN PIT FOR FUTURE LIGHT SWITCH WITH 1/2" EC STUBBED INTO FUTURE ELEVATOR MACHINE ROOM ACCESSIBLE CEILING SPACE. LABEL BOX & CONDUIT AND LEAVE WITH PULL STRING. ROUTE CONDUITS IN SHAFT AS TO NOT INTERFERE WITH THE OPERATION OR INSTALLATION OF THE FUTURE ELEVATOR.
- E — 3'X4'X3/4" FRT PLYWOOD BACKBOARD FOR COMMUNICATIONS SPACE WITH (2) 1" CONDUITS TO BUILDING INTERFACE (VERIFY REQUIREMENTS WITH UTILITIES).
- F — WIRE FAN THROUGH SPEED CONTROLLER PROVIDED BY HVAC. COORDINATE WITH HVAC. LABEL SPEED CONTROLLER SWITH "EXHAUST FAN". VERIFY LOCATION OF SWITCH WITH OWNER PRIOR TO ROUGH-IN.
- G — (2) 1" CONDUITS STUBBED OUT IN ACCESSIBLE SECOND FLOOR CEILING SPACE AND ROUTED TO BUILDING COMMUNICATIONS INTERFACE LOCATION. VERIFY REQUIREMENTS WITH OWNER & UTILITIES. LABEL CONDUITS AND LEAVE WITH PULL STRINGS.
- H — IN FLOOR FOR EXAM TABLE. VERIFY EXACT LOCATION. & POINT OF CONNECTION WITH OWNER PRIOR TO ROUGH-IN. ROUTE CONDUIT IN FLOOR TO NEAREST INTERIOR WALL AND TO PANEL.
- I — MOUNT OUTLET HORIZONTALLY IN MILLWORK ABOVE KENNELS. FIELD VERIFY REQUIREMENTS.
- J — LOCATE OUTLET ABOVE COUNTER & BELOW WINDOW AS REQUIRED. FIELD VERIFY REQUIREMENTS.
- K — ROUTE CONDUITS FOR RECEPTION DESK IN FLOOR TO NEAREST WALL AND UP.
- L — CONCEAL ALL CONDUITS FOR X-RAY EQUIPMENT. INSTALL IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. VERIFY ALL REQUIREMENTS, ELECTRICAL CHARACTERISTICS, ETC. WITH OWNER PRIOR TO BID. PROVIDE & INSTALL ALL ACCESSORIES, BOXES, ETC. AS REQUIRED.
- M — (4) 1/2" EC AND (1) 1.25" EC FROM PANEL H STUBBED INTO FUTURE ELEVATOR MACHINE ROOM ACCESSIBLE CEILING SPACE FOR FUTURE USE. LABEL CONDUITS AND LEAVE WITH PULL STRING.
- N — STUB (3) 3/4" EC INTO ACCESSIBLE CEILING SPACE FROM PANEL FOR FUTURE USE.
- O — ROUTE 1/2" EC'S FROM ACCESSIBLE CEILING SPACE OF FUTURE ELEVATOR MACHINE ROOM TO STUB INTO ACCESSIBLE CEILING SPACE OF 1ST AND 2ND FLOOR FOR FUTURE.

SEAL

REVISIONS	
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6-06-17	OWNER CHANGES

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CHURCH ROAD ANIMAL HOSPITAL
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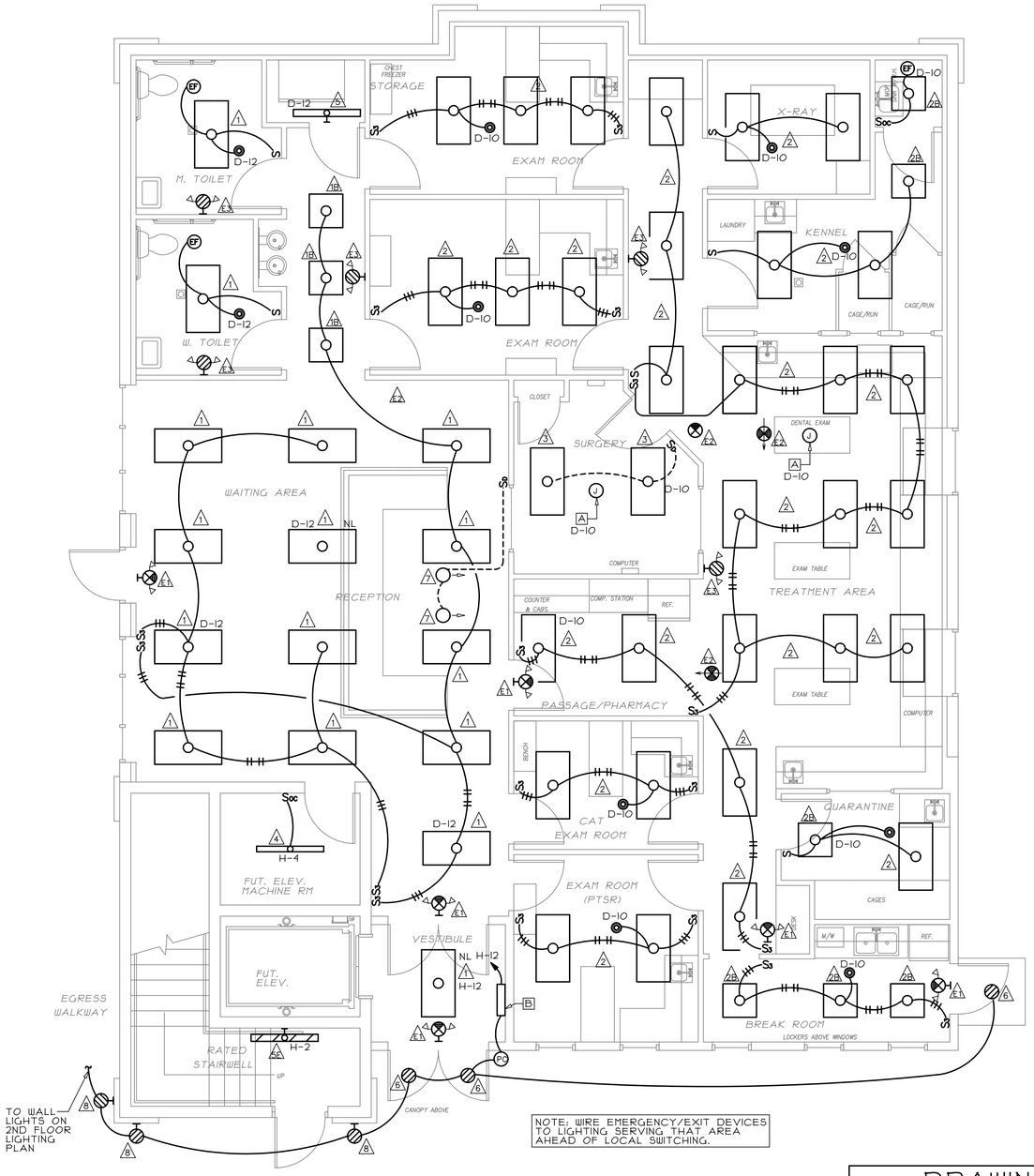
WARRENTON VIRGINIA

POWER PLANS

PROJECT NO.: 17021

DATE	SHEET NO.
3-10-17	E1.1

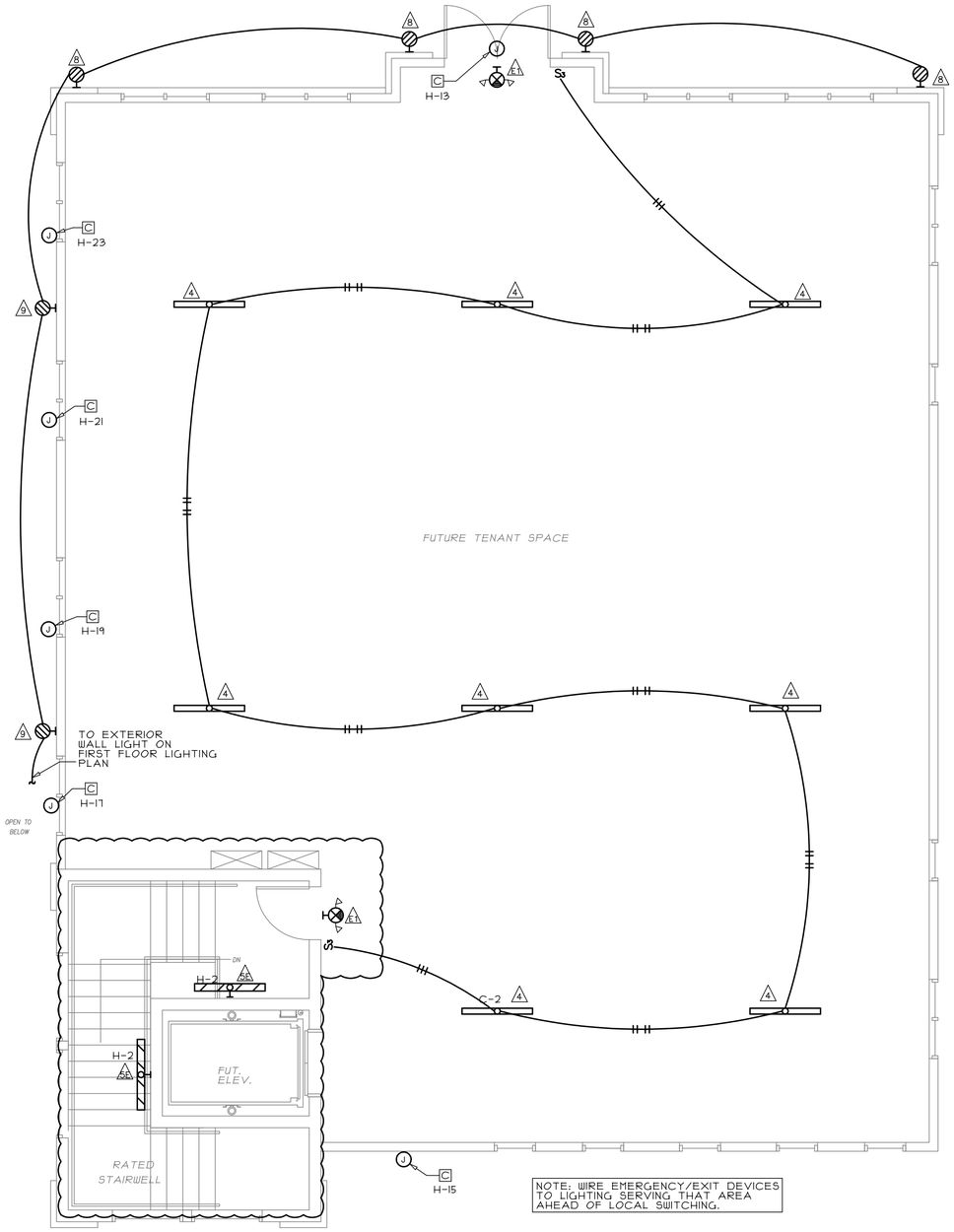


NOTE: WIRE EMERGENCY/EXIT DEVICES TO LIGHTING SERVING THAT AREA AHEAD OF LOCAL SWITCHING.

FIRST FLOOR LIGHTING PLAN

SCALE: 1/4" = 1' - 0"

NOTE: FOR 1P-20A CIRCUITS OVER 100 FEET, USE #10 WIRE.



NOTE: WIRE EMERGENCY/EXIT DEVICES TO LIGHTING SERVING THAT AREA AHEAD OF LOCAL SWITCHING.

SECOND FLOOR LIGHTING PLAN

SCALE: 1/4" = 1' - 0"

NOTE: FOR 1P-20A CIRCUITS OVER 100 FEET, USE #10 WIRE.

DRAWING NOTES

- [A] J-BOX IN CEILING FOR PULL DOWN LIGHT. VERIFY EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN.
- [B] EMERGENCY POWER ZONE INVERTER. LITHONIA EAC-155M-315-120/277-SM. WALL MOUNTED ABOVE ACCESSIBLE CEILING. VERIFY LOCATION WITH OWNER.
- [C] FOR SIGN. VERIFY EXACT LOCATION & POINT OF CONNECTION WITH OWNER PRIOR TO ROUGH-IN.

SEAL

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WARRENTON VIRGINIA

LIGHTING PLANS

PROJECT NO.: 17021

DATE	SHEET NO.
3-10-17	E2.1

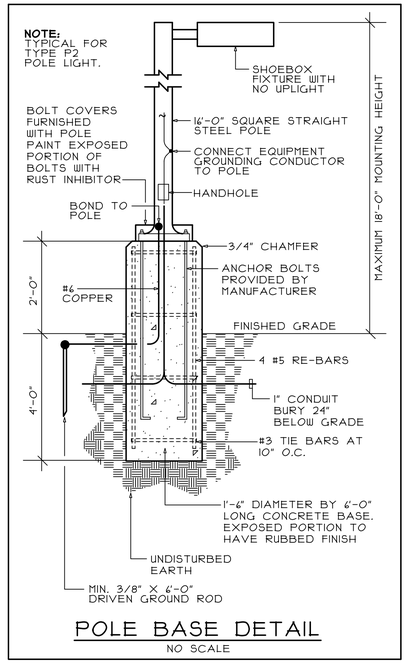
SIGHT LIGHTING SCHEDULE

TYPE	MANUFACTURER/CATALOG NO.	LAMPS NO.	LAMPS TYPE	MOUNTING	REMARKS
P1	BARN LIGHT ELECTRIC SKY CHIEF, PMS-*-PMDBS12-*-LED/2000-4000K-120V	2000 LUMEN LED	ARRAY	POST AT 12'-0" ABOVE GRADE	NOTE A
P2	LITHONIA DSX0-LED-20C-530-40K-T2S-120-SPA-HS-*	4200 LUMEN LED	ARRAY	POLE - SEE DETAIL	VERIFY FINISH WITH ARCHITECT

SCHEDULE NOTES

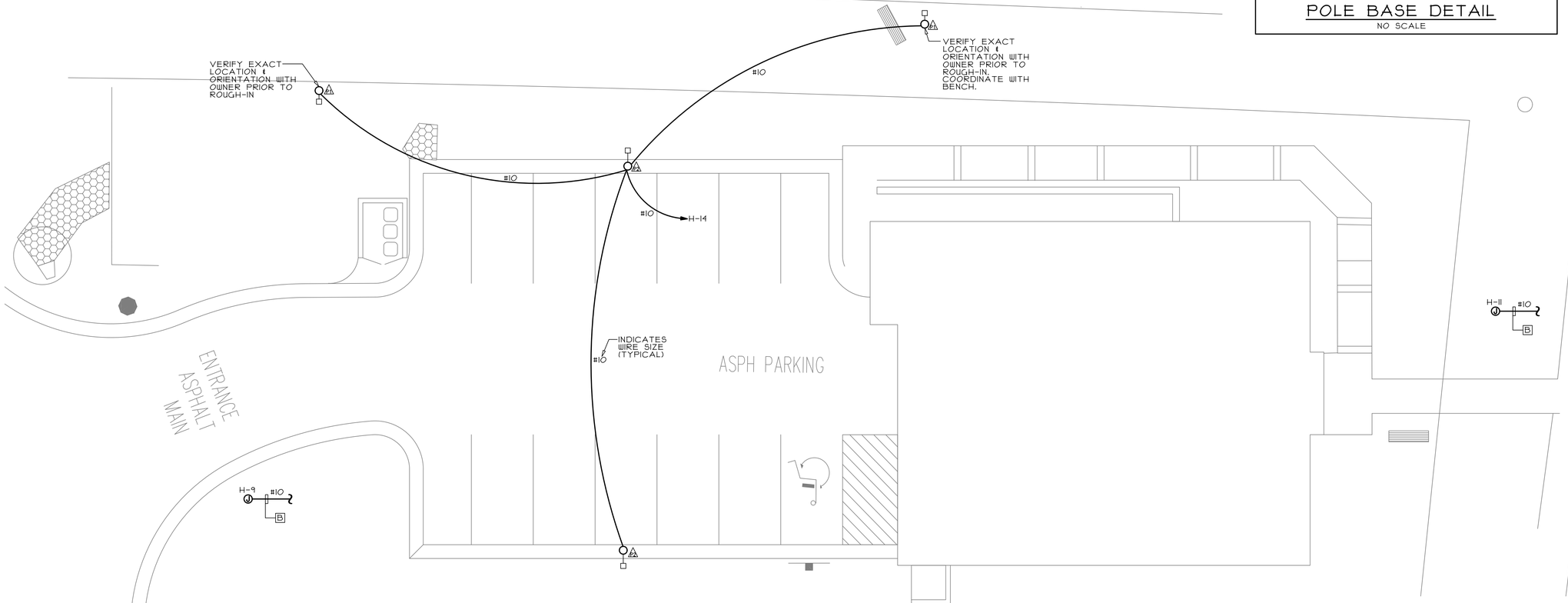
-- EQUIVALENT FIXTURES ACCEPTED BY ALTERNATE MANUFACTURERS: PHILIPS, COOPER.

A. VERIFY SHADE AND POST TYPE & COLOR OPTIONS WITH OWNER/ARCHITECT PRIOR TO BID.



POLE BASE DETAIL

NO SCALE



SITE ELECTRICAL PLAN

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

DRAWING NOTES

A. CIRCUIT FOR WATER FOUNTAIN. VERIFY EXACT LOCATION WITH OWNER PRIOR TO ROUGH-IN. WIRE THROUGH CONTROLLER AND ROUTE IN 1" CONDUIT FROM HOUSE PANEL TO POINTS OF CONNECTION.

B. CIRCUIT FOR MONUMENT SIGN. VERIFY LOCATION WITH OWNER PRIOR TO BID. ROUTE IN 1" CONDUIT FROM HOUSE PANEL.

SEAL

ISSUED FOR PERMIT
3-10-17

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CHURCH ROAD ANIMAL HOSPITAL
CHURCH ROAD
WARRENTON VIRGINIA

SITE LIGHTING PLAN, POLE DIAGRAM AND SITE LIGHTING SCHEDULE

PROJECT NO.: 17021

DATE	SHEET NO.
3-10-17	E3.1

HVAC SPECIFICATIONS

1. GENERAL

1.1 DESCRIPTION OF WORK:

A. ALL FIXTURES, EQUIPMENT, ACCESSORIES, MATERIALS, AND LABOR REQUIRED TO PROVIDE COMPLETE, COORDINATED, AND FULLY FUNCTIONAL HVAC SYSTEMS GENERALLY AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
1. HEATING SYSTEM
2. COOLING SYSTEM
3. VENTILATION SYSTEM
4. EXHAUST SYSTEMS
5. DRYER VENT SYSTEMS

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THE CIVIL, ARCHITECTURAL, STRUCTURAL, PLUMBING AND ELECTRICAL DRAWINGS AND SPECIFICATIONS SHALL APPLY TO AND BE CONSIDERED A PART OF THE HVAC WORK IN–SO–FAR AS THEY APPLY TO THE HVAC WORK AND ARE REQUIRED FOR COORDINATION.

1.3 JOB CONDITIONS:

A. DUE TO THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED TO PROVIDE A COMPLETE INSTALLATION OF THE WORK DESCRIBED AND INDICATED.

B. PROVIDE FITTINGS, OFFSETS, TRANSITIONS, CONTROL TRANSFORMERS AND ACCESSORIES REQUIRED TO MEET CONDITIONS OF THE PROJECT.

C. PROVIDE SERVICE ACCESS FOR EQUIPMENT, CONTROL COMPONENTS, VALVES, FILTERS AND SPECIALTIES.

D. PROVIDE ACCESS PANELS FOR VALVES, ACCESS DOORS, ETC. CONCEALED BEHIND FINISHED SURFACES.

E. MODIFY DUCT DIMENSIONS AS REQUIRED BY BUILDING STRUCTURE OR OTHER WORK AT NO ADDITIONAL COSTS TO THE OWNER. MAINTAIN EQUIVALENT FREE AREA SIZES.

1.4 CONFORMANCE TO REGULATIONS:

A. WORK SHALL CONFORM WITH VIRGINIA UNIFORM STATEWIDE BUILDING CODE, NFPA, AND LOCAL ORDINANCES.

B. COMPLY WITH LANDLORD'S TENANT REQUIREMENTS FOR INSTALLATION OF WORK.

1.5 QUALITY ASSURANCE:

A. COMPLY WITH MANUFACTURER'S REQUIREMENTS AND NOTES AND DETAILS SHOWN HEREIN FOR INSTALLATION OF EQUIPMENT.

B. COMPLY WITH RECOMMENDATIONS OF SMACNA AND ASHRAE.

1.6 MATERIALS AND EQUIPMENT:

A. EQUIPMENT PROVIDED FOR THIS PROJECT SHALL BE EQUIVALENT TO PRODUCTS SPECIFIED.

B. CONTRACTOR SHALL GUARANTEE EQUIVALENCE AND IS RESPONSIBLE FOR MODIFICATIONS REQUIRED AND COORDINATION WITH OTHER TRADES TO FIT SUBSTITUTED PRODUCT INTO THE PROJECT.

C. MATERIALS AND EQUIPMENT OF THE SAME TYPE AND USE SHALL BE FROM A SINGLE MANUFACTURER.

D. PROTECT STORED MATERIALS AND EQUIPMENT FROM WEATHER.

E. IF HVAC EQUIPMENT IS OPERATED DURING CONSTRUCTION, PROVIDE TEMPORARY FILTERS TO PROTECT AIR HANDLING EQUIPMENT.

1.7 SUBMITTALS:

A. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR EQUIPMENT SPECIFIED HEREIN AND ON THE DRAWINGS. SHOP DRAWINGS AND PRODUCT DATA SHALL BE IDENTIFIED PER INDICATIONS ON DRAWINGS, SHALL BE MARKED TO INDICATED SPECIFIC ITEM BE PROPOSED, AND SHALL BE ORGANIZED IN AN ORDERLY MANNER. SUBMIT IN .PDF FORMAT VIA EMAIL.

B. SUBMIT OPERATING AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT INSTALLED IN THIS PROJECT. INCLUDE COPIES OF SPECIFIC EQUIPMENT WARRANTIES IN MANUAL.

C. UPON COMPLETION OF THE INSTALLATION, AND PRIOR TO ACCEPTANCE BY THE OWNER, CONTRACTOR SHALL FURNISH TWO COPIES OF AS–BUILT DOCUMENTATION. ALL CHANGES TO THE BIDDING DOCUMENTS SHALL BE NEATLY AND CLEARLY IDENTIFIED ON THE AS–BUILT DOCUMENTATION.

1.8 PROJECT CLOSEOUT:

A. REPLACE OR REPAIR DAMAGED EQUIPMENT AND CLEAN ALL EXPOSED SURFACES.

B. TOUCH–UP SHOP APPLIED FINISHES TO RESTORE DAMAGED OR SOILED AREAS.

C. INSTRUCT OWNER'S REPRESENTATIVE IN OPERATION AND MAINTENANCE OF EQUIPMENT UTILIZING OPERATION AND MAINTENANCE MANUAL.

D. REPLACE FILTERS IN AIR HANDLING EQUIPMENT AT TIME OF PROJECT TURNOVER TO OWNER.

E. VACUUM INTERIORS OF DUCTWORK AND EQUIPMENT WHICH BECOMES DIRTY, PRIOR TO PROJECT TURNOVER TO OWNER. CLEAN ANY DIRTY EQUIPMENT COILS.

2. PRODUCTS

2.1 PIPING SYSTEMS:

A. CONDENSATE DRAIN – SCH. 40 PVC WITH SOLVENT WELD FITTINGS

B. REFRIGERANT – TYPE C&C OR ARC COPPER, SILVER SOLDER FITTINGS.

2.2 HVAC EQUIPMENT:

A. REFER TO SCHEDULE SHEETS AND EQUIPMENT LIST FOR MANUFACTURERS AND MODEL NUMBERS.

B. ALTERNATE MANUFACTURER'S ARE: LENNOX, YORK, DAIKIN, TITUS, CARRIER, TRANE, COOK, CARNES, TWIN CITY, ACME, METALAIRE

C. PROVIDE MINIMUM MERV 8 RETURN AIR FILTERS FOR AIR HANDLING EQUIPMENT.

2.3 AIR DISTRIBUTION:

A. METAL DUCTWORK: SHOP FABRICATED AS FOLLOWS.
1. MATERIALS: GALVANIZED STEEL SHEET, ASTM A 527–85.
2. CONSTRUCTION: PER SMACNA HVAC DUCT CONSTRUCTION STANDARDS FOR LOW PRESSURE SYSTEM UP TO 2" W.C. CONSTRUCTION.
3. JOINT SEALANT: UL LISTED FOSTER MASTIC, HARDCAST FTA–20, KINGCO 18–136.
4. SUPPLY AIR BRANCH DUCTS RUN IN CONCEALED AREAS MAY BE PRE–INSULATED, UL CLASS 1, FLEXIBLE DUCT – LIMIT LENGTH TO TEN FEET – USE RIGID DUCT FOR REMAINDER OF RUNOUT.
5. DRYER VENT SHALL BE RIGID GALVANIZED STEEL WITH LONG RADIUS ELBOWS AND NO SCREWS PROTRUDING INTO VENT. USE RIVETS AT JOINT AND FITTING CONNECTIONS. USE FLEXIBLE METAL VENT AT CONNECTION TO DRYER. MINIMUM THICKNESS OF VENT TO BE 26 GAUGE. FIRESTOP VENT PENETRATIONS THRU FIRE RATED CONSTRUCTION PER ULC–AJ7063.
6. BRICK VENT SHALL BE EXTRUDED ALUMINUM, CHANNEL FRAME WITH BIRDSCREEN, SIZE PER DRAWINGS – ACME SERIES BEX OR EQUAL.

B. DAMPERS – AS MANUF. BY RUSKIN, CESCO, ARROW, CREATIVE METALS, PREFCO
1. VOLUME DAMPERS SHALL BE GALVANIZED STEEL, 16 GAUGE, BLADE HEIGHT SHALL NOT EXCEED 12". DAMPER LINKAGE AND LOCKING QUADRANT SHALL BE OUTSIDE OF AIRSTREAM.
2. FIRE DAMPERS SHALL BE UL LISTED TYPE 'B' WITH BLADE POCKET OUTSIDE OF AIRSTREAM, DYNAMIC TYPE WITH 212F RATED LINK, POTTORF OR EQUAL. DAMPERS IN CEILING TO BE RADIATION TYPE WITH THERMAL BLANKET. SECURE DAMPER TO STRUCTURE SO IN CASE OF DUCT COLLAPSE, DAMPER WILL REMAIN INTACT IN FIRERATED ASSEMBLY. PROVIDE INSTALLATION INSTRUCTIONS ON SITE FOR INSPECTORS.

C. ACCESS DOORS –
1. FACTORY BUILT WITH SASH LOCKS, BUTT HINGE, GASKET, 24 GA. DOOR AND 22 GA. FRAME.
2. ACCESS DOOR IN INSULATED DUCT SHALL BE DOUBLE CONSTRUCTION, WITH INSULATION ENCASED.
3. MINIMUM SIZE TO BE 75% SIZE OF DUCT IN WHICH INSTALLED, OR 10" X 10".
4. CESCO MODEL HAD–10, LOUVERS AND DAMPERS, KEES, INC. OR AIR BALANCE.

2.4 CONTROLS:

A. PROVIDE ALL RELAYS, TRANSFORMERS, CONTROL WIRING, TERMINAL BLOCKS, ETC. FOR A COMPLETE SYSTEM.
1. COMPONENT MANUFACTURER'S AND MODEL NUMBERS AS SPECIFIED ON DRAWINGS.

B. THE WARRANTY PERIOD SHALL COMMENCE AFTER 60 DAYS OF BENEFICIAL USE, MEASURED FROM THE DATE OF ACCEPTANCE FROM THE OWNER.

3. EXECUTION

3.1 PIPING SYSTEMS:

A. VERIFY INVERT ELEVATIONS PRIOR TO EXCAVATION.

B. BACKFILL BURIED PIPE IN TRENCHES WITH DIRT FREE OF ROCK, STONE OR DEBRIS.

C. VERIFY EXACT LOCATION OF EQUIPMENT PRIOR TO ROUGH–IN.

D. COORDINATE ROUTING OF WORK WITH OTHER TRADES AND INSTALL TO ALLOW MAXIMUM HEADROOM CLEARANCES, SERVICE ACCESS AND MAINTAIN PROPER PITCH OF SLOPING LINES.

E. INSULATE PIPING SYSTEMS AS FOLLOWS:
1. REFRIGERANT – CLOSED CELLULAR RUBBER TO CODE REQUIRED THICKNESS.
2. HORIZONTAL CONDENSATE DRAIN – 1/2" THICK FIBERGLASS WITH ASJ.
3. SEAL VAPOR BARRIERS. SECURE WITH ADHESIVE AND SEAL JOINTS WITH SEALANT.
4. PROVIDE GALVANIZED STEEL SADDLE AT HANGERS SURROUNDING INSULATED PIPE.
5. DO NOT COMPRESS INSULATION EXCEPT IN AREAS OF STRUCTURAL INTERFERENCE.
6. INSTALL PRE–FITTED PLASTIC ELBOWS OR APPLY CANVAS JACKET IN THREE LAYERS AT ELBOWS.
7. INSULATE FITTINGS, VALVES AND EQUIPMENT BODIES.
8. PROVIDE 2 COATS OF GREY WEATHERPROOF FINISH ON EXTERIOR REFRIGERANT PIPING.

F. PROVIDE SLEEVES FOR PIPING PENETRATING WALLS. INSULATION SHALL BE CONTINUOUS THROUGH SLEEVES.

G. FIRESTOP PIPING PASSING THROUGH FIRE RATED WALLS OR CEILINGS.

H. PATCH FINISHED AREAS DISTURBED BY WORK TO MATCH SURROUNDING AREAS.

I. WELDING SHALL BE DONE BY CERTIFIED WELDERS FOR THE APPROPRIATE SYSTEM BEING WELDED.

J. MAKE CONNECTIONS OF DISSIMILAR METALLIC PIPING WITH DIELECTRIC UNIONS.

K. DO NOT USE PLASTIC PIPING IN RETURN AIR PLENUM SPACES.

L. PROVIDE SHUT OFF VALVES AT EQUIPMENT CONNECTIONS.

M. HANGERS SUPPORTING COPPER PIPING SHALL BE COPPER PLATED OR PLASTIC COVERED. HANGERS SUPPORTING INSULATED PIPING SHALL BE SIZED TO SURROUND INSULATION AND STEEL SADDLE.

N. CLEAN AND FLUSH PIPING THEN TEST PIPING SYSTEMS AS FOLLOWS:
1. REFRIGERANT PIPING – TO 100 PSIG W/ COMPRESSED AIR FOR FOUR HOURS AND TEST FITTINGS WITH FREON AND HALIDE LEAK DETECTOR.
2. CONDENSATE DRAIN PIPING – W/ 10 FT. WATER COLUMN OR 5 PSI COMPRESSED AIR FOR 12 HOURS.
3. TESTS SHALL SHOW NO SUBSTANTIAL LOSS IN PRESSURE.
4. PIPING RUN IN CONCEALED AREAS SHALL BE LEAK TESTED PRIOR TO BEING CONCEALED.
5. SUBMIT WRITTEN REPORT OF TEST RESULTS.

3.2 HVAC EQUIPMENT:

A. PROVIDE PERMANENT TAG ON EQUIPMENT INDICATING EXPIRATION DATE OF WARRANTIES. LOCATE TAG IN A READILY VISIBLE LOCATION.

B. PROVIDE FACTORY AUTHORIZED START–UP OF EQUIPMENT AND SUBMIT TEST REPORTS. (INCLUDE IN O&M MANUAL). COMPLY WITH MANUFACTURER REQUIREMENTS AND NOTES STATED ON THE CONSTRUCTION DOCUMENTS FOR INSTALLATION OF EQUIPMENT. BALANCE THE OUTSIDE AIR CFM TO QUANTITIES LISTED.

C. ROOFTOP UNITS:
1. INSTALL ROOF CURB ON ROOF WITH TOP LEVEL – VERIFY FLASHING REQUIREMENTS.
2. INSTALL VIBRATION ISOLATION RAIL ON ROOF CURB. INSTALL RTU ON RAIL.
3. CONNECT DUCTWORK TO UNITS WITH FLEXIBLE DUCT CONNECTORS.
4. PROVIDE 1" CONDENSATE DRAINS FROM COOLING COIL AND DISCHARGE TO ROOF.
5. INSTALL OUTSIDE AIR HOODS, ECONOMIZERS, DAMPERS, ETC., WHERE SPECIFIED. CONNECT CONTROL WIRING.
6. COMB BENT FINS AND REPAIR DEFECTS IN EQUIPMENT FINISH AND PANELS.
7. PROVIDE 4" THICK SOUND ABSORBING FILL IN BASE OF ROOF CURB. ON TOP OF FILL MATERIAL PROVIDE TWO LAYERS GYPBOARD SHEETROCK – SEAL SEAMS AND JOINTS.

D. OMIT.

E. FANS:
1. SUPPORT EXHAUST FANS FROM STRUCTURE WITH METAL STRAPPING. CONNECT DUCTWORK WITH FLEXIBLE DUCT CONNECTIONS.
2. ASSURE PROPER BACKDRAFT DAMPER OPERATION.

3.3 AIR DISTRIBUTION:

A. DUCTWORK:
1. SEAL JOINTS IN DUCTWORK WITH COATING OF HARDCAST SEALANT OR UL LISTED FSK DUCT TAPE.
2. INSTALL INTERNAL ENDS OF SLIP JOINTS IN DIRECTION OF AIRFLOWS.
3. MAXIMUM ANGLE OF OFFSETS AND TRANSITIONS SHALL NOT EXCEED 30 DEGREES.
4. ADEQUATELY SUPPORT DUCT AS PER CODE REQUIREMENTS –ELIMINATE SAGGING AND COMPRESSION OF DUCT.
5. TRANSITION DUCTS TO FIT EQUIPMENT. PROVIDE FLEXIBLE FLAME RETARDANT DUCT CONNECTIONS TO RTU AND ERU.
6. PROVIDE 1/2" THICK ACOUSTICAL SOUNDLINING IN RETURN AIR TRUNK DUCT WITHIN TWENTY FEET OF RTUS. SECURE LINER TO DUCTS WITH ADHESIVE AT 70% COVERAGE AND WITH MECHANICAL FASTENERS AT 18" CENTERS, AND WITHIN 6" OF BUTT JOINTS AND EDGES OF DUCT. COAT ALL EXPOSED 'ROUGH' LINER WITH MASTIC. ENLARGE DUCT TO ACCOMMODATE THE LINER – SIZES ON THE PLANS ARE INSIDE FREE AREA DIMENSIONS.
7. USE LONG RADIUS RIGID DUCT FITTINGS AT ELBOWS IN FLEXIBLE DUCT FLEXIBLE DUCT EXCEEDING 60 DEGREE ANGLE. ELBOWS IN FLEXIBLE DUCT LESS THAN 60 DEGREE ANGLE SHALL BE LONG SWEEP TYPE.

B. INSULATE DUCT SYSTEMS PER CODE OR AS FOLLOWS, WHICHEVER IS MORE STRINGENT:
1. WITHIN BUILDING STRUCTURE AND INSIDE OF BUILDING INSULATION ENVELOPE (SUPPLY AND RETURN AIR DUCTS): ONE LB./CU.FT. DENSITY, 2" THICK FIBERGLASS, WITH FSK JACKET; OR WITH 3/8" THICK FOIL FACED AIR CELL INSULATION, REFLECTIX OR EQUAL.
2. EXHAUST AIR DUCTS: DO NOT INSULATE.
3. SECURE INSULATION TO DUCTS W/ ADHESIVE AT 60% COVERAGE AND SECURE WITH MECHANICAL FASTENERS AND WASHERS AT 18" CENTERS – SEAL VAPOR BARRIER.
4. OMIT

C. DAMPERS: ACTUATORS AND PUSH–RODS SHALL BE ACCESSIBLE.
1. ACTUATORS AND PUSH–RODS SHALL BE ACCESSIBLE.
2. PROVIDE COMBINATION DAMPER/EXTRACTOR/SPIN–IN FOR ROUND DUCT CONNECTIONS TO TRUNK DUCTS. PROVIDE 45 DEGREE BEVEL INLET WITH BALANCE DAMPER FOR RECTANGULAR DUCT CONNECTIONS TO TRUNK DUCT. DAMPER ADJUSTMENT TO BE LOCATED ON BOTTOM SIDE OF DUCT.

D. ACCESS DOORS – PROVIDE IN DUCT FOR ACCESS TO COILS, FILTERS, FIRE & MOTORIZED DAMPERS, AND ALL OTHER EQUIPMENT NOT OTHERWISE ACCESSIBLE. INSTALL TO ALLOW SERVICE ACCESS. PROVIDE LABEL ON ACCESS DOOR INDICATING DEVICE SERVED.

E. BALANCE AIR DISTRIBUTION TO WITHIN 10% OF DESIGN AND SUBMIT REPORT.
1. REPORT SHALL IDENTIFY ZONES, DESIGN AIRFLOWS AND FINAL AIRFLOWS (SUPPLY, EXHAUST, RETURN AIR AND OUTSIDE AIR). SUPPLY AND RETURN STATIC PRESSURES, ENTERING AND LEAVING AIR TEMPERATURES.
2. INCLUDE EXHAUST FAN SYSTEMS, AND HVAC EQUIPMENT.
3. COMPLY WITH NEBB AND AABC REQUIREMENTS.

3.4 CONTROLS:

A. SEAL PROBE PENETRATIONS FOR DUCT MOUNTED SENSORS.

B. PROVIDE JUNCTION BOX HOUSING FOR CONTROL WIRING INTERLOCK TO COMPONENTS.

C. ROUTE CONDUCTORS NEATLY AND PARALLEL OR PERPENDICULAR TO BUILDING CONSTRUCTION. WIRING AND CONDUCTORS IN FINISHED SPACES TO BE RUN CONCEALED.

D. SEQUENCE OF CONTROL
1. ON A CALL FOR COOLING – BLOWER AND COOL COMPRESSOR SHALL BE ENABLED. FOR UNITS WITH OA ECONOMIZERS, IF OA CONDITIONS ARE SUITABLE, OA DAMPER TO MODULATE OPEN FOR FIRST STAGE COOL. OTHERWISE DAMPER TO POSITION AS DESCRIBED HEREIN. MIXED AIR LOW LIMIT SET AT 55F (ADJUSTABLE) TO LIMIT OA MOTORIZED DAMPER POSITION. MOTORIZED DAMPER OPERATION.
2. ON A CALL FOR HEAT – BLOWER AND GAS HEAT SHALL BE ENABLED AND STAGED.
3. OA TO BE INTRODUCED IN SPACES WHEN BLOWER RUNS. FOR UNITS WITH MOTORIZED OA DAMPER ONLY, THERMOSTAT TO OPEN DAMPER IN OCCUPIED MODES TO MINIMUM SETPOINT, OTHERWISE OA DAMPER TO CLOSE.
4. SMOKE DETECTOR TO DISABLE APPLICABLE UNITS AND ACTIVATE ALARMS IN CASE OF ABNORMAL SMOKE CONDITION.
5. BLOWER TO RUN CONTINUOUSLY IN OCCUPIED MODES AND CYCLE WITH THE THERMOSTAT IN UNOCCUPIED MODES.
6. OMIT
7. PROGRAM THERMOSTATS PER OWNER'S SCHEDULING.
8. FLOAT SWITCH IN DRAIN PAN TO DISABLE HVAC UNIT IN CASE OF WATER IN PAN.
9. FOR UNIT WITH REMOTE TEMPERATURE SENSORS, SENSORS TO AVERAGE TOGETHER TO CONTROL THE RTU IN EITHER THE HEAT OR COOL MODE.

SEAL

REVISIONS	
DATE	REMARKS
6–06–17	OWNER CHANGES

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WARRENTON *VIRGINIA*
HVAC SPECIFICATIONS

PROJECT NO.: 17021

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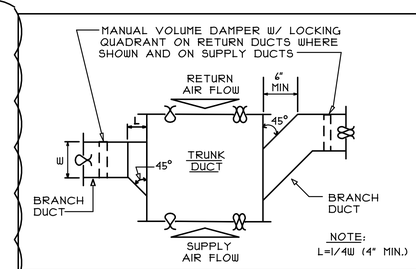
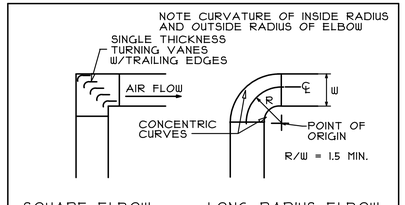
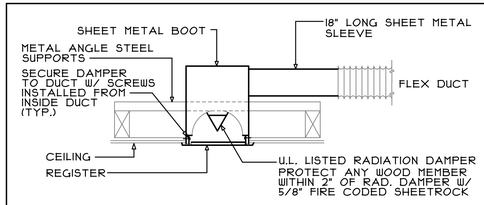


BRANCH/TRUNK DUCT CONNECTION DETAIL



DUCTWORK ELBOW DETAILS



RADIATION DAMPER DETAIL
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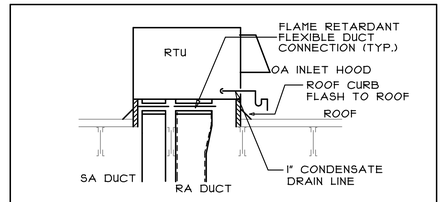
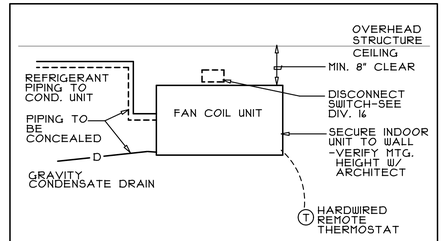
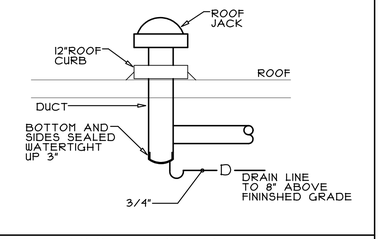


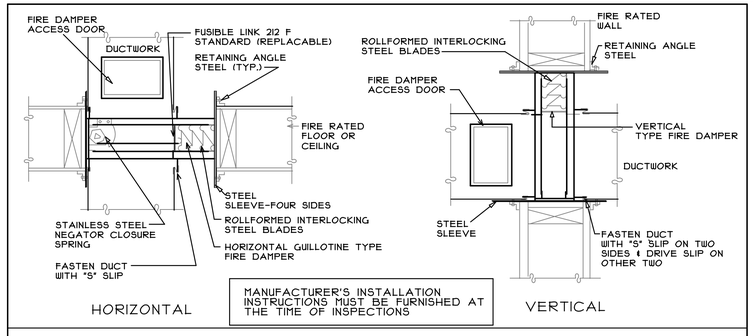
RTU DIAGRAM
NOT TO SCALE



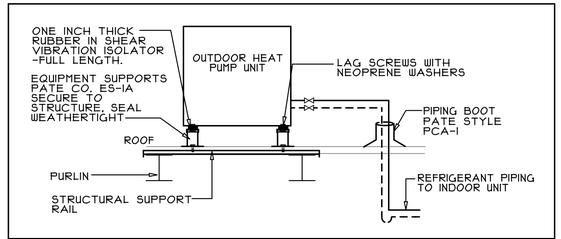
FCU DIAGRAM



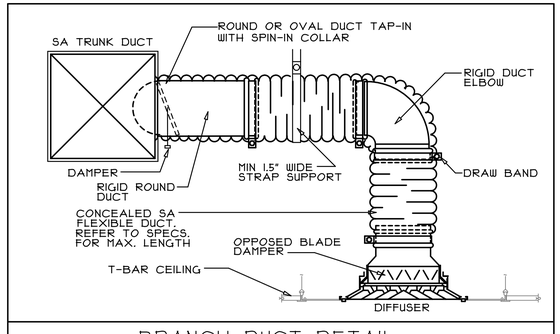
ROOF JACK DETAIL



FIRE DAMPER DETAILS
NOT TO SCALE



OUTDOOR HP UNIT ON ROOF DIAGRAM



BRANCH DUCT DETAIL
NOT TO SCALE

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CHURCH ROAD ANIMAL HOSPITAL
CHURCH ROAD
WARRENTON *VIRGINIA*

HVAC DIAGRAMS

PROJECT NO.: 17021

DATE	*SHEET NO.*
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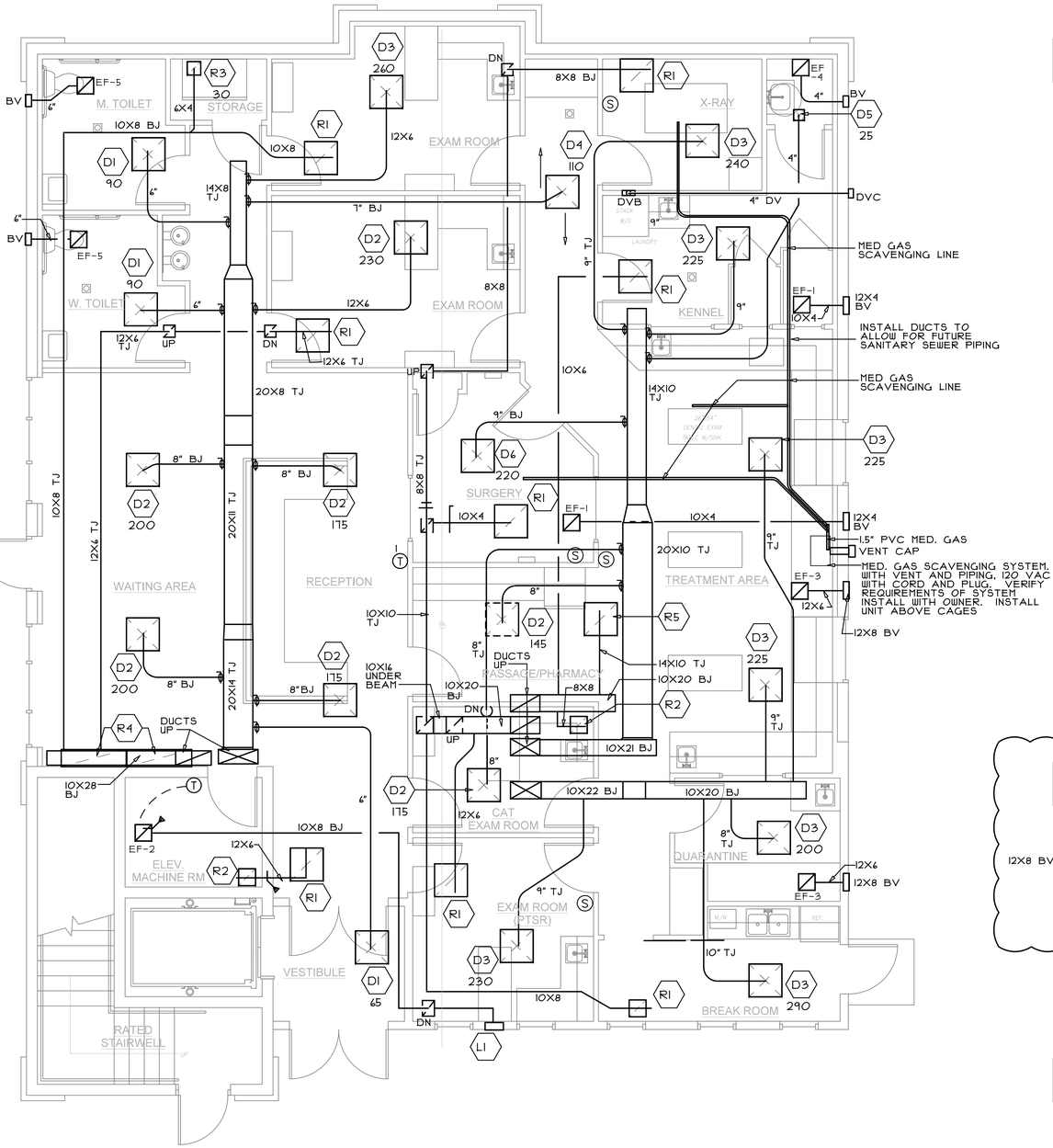
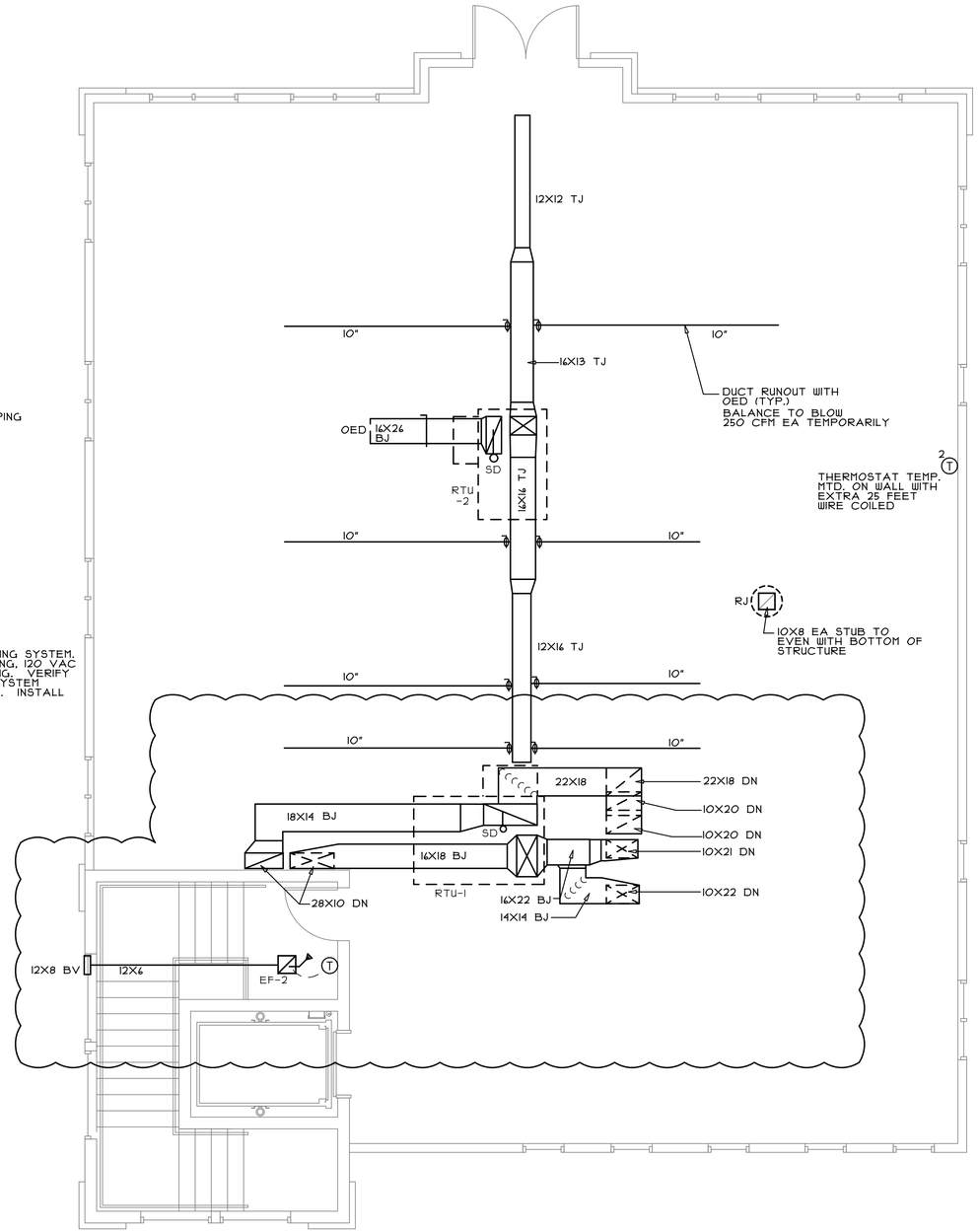


FIRST FLOOR HVAC PLAN
SCALE: 1/4" = 1' - 0"



SECOND FLOOR HVAC PLAN
SCALE: 1/4" = 1' - 0"

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CHURCH ROAD ANIMAL HOSPITAL
CHURCH ROAD
WARRENTON *VIRGINIA*

HVAC PLANS

PROJECT NO.: 17021

DATE	*SHEET NO.*
3-10-17	M1.0

PLUMBING SPECIFICATIONS

1. GENERAL

1.1 DESCRIPTION OF WORK:

A. ALL FIXTURES, EQUIPMENT, ACCESSORIES, MATERIALS, AND LABOR REQUIRED TO PROVIDE COMPLETE, COORDINATED, AND FULLY FUNCTIONAL PLUMBING SYSTEMS GENERALLY AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
1. SANITARY SEWER
2. DOMESTIC WATER
3. NATURAL GAS
4. OXYGEN

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THE CIVIL, ARCHITECTURAL, STRUCTURAL, HVAC, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS SHALL APPLY TO AND BE CONSIDERED A PART OF THE PLUMBING WORK IN-SO-FAR AS THEY APPLY TO THE PLUMBING WORK AND ARE REQUIRED FOR COORDINATION.

1.3 JOB CONDITIONS:

A. DUE TO THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED TO PROVIDE A COMPLETE INSTALLATION OF THE WORK DESCRIBED AND INDICATED.

B. PROVIDE FITTINGS, OFFSETS, TRANSITIONS, AND ACCESSORIES REQUIRED TO MEET CONDITIONS OF THE PROJECT.

C. PROVIDE SERVICE ACCESS FOR EQUIPMENT, CONTROL COMPONENTS, VALVES, AND SPECIALTIES.

D. PROVIDE ACCESS PANELS FOR VALVES, ACCESS DOORS, ETC. CONCEALED BEHIND FINISHED SURFACES.

1.4 CONFORMANCE TO REGULATIONS:

A. WORK SHALL CONFORM WITH VIRGINIA UNIFORM STATEWIDE BUILDING CODE, NFPA, AND LOCAL ORDINANCES.

1.5 QUALITY ASSURANCE:

A. COMPLY WITH MANUFACTURER'S REQUIREMENTS AND NOTES AND DETAILS SHOWN HEREIN FOR INSTALLATION OF EQUIPMENT.

1.6 MATERIALS AND EQUIPMENT:

A. EQUIPMENT PROVIDED FOR THIS PROJECT SHALL BE EQUIVALENT TO PRODUCTS SPECIFIED.

B. CONTRACTOR SHALL GUARANTEE EQUIVALENCE AND IS RESPONSIBLE FOR MODIFICATIONS REQUIRED AND COORDINATION WITH OTHER TRADES TO FIT SUBSTITUTED PRODUCT INTO THE PROJECT.

C. MATERIALS AND EQUIPMENT OF THE SAME TYPE AND USE SHALL BE FROM A SINGLE MANUFACTURER.

D. PROTECT STORED MATERIALS AND EQUIPMENT FROM WEATHER.

1.7 UTILITIES AND CONNECTIONS:

A. OWNER WILL PAY FOR ALL WATER, GAS AND SEWER UTILITY CONNECTION FEES.

B. COORDINATE CONNECTIONS WITH SITE UTILITY DRAWINGS. WORK TO LOCATIONS AND INVERTS INDICATED ON SITE DRAWINGS. PROVIDE TRANSITIONS IN SIZE AND MATERIAL AT POINT OF CONNECTION.

1.8 SUBMITTALS:

A. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR FIXTURES AND EQUIPMENT SPECIFIED HEREIN AND ON THE DRAWINGS. SHOP DRAWINGS AND PRODUCT DATA SHALL BE IDENTIFIED PER INDICATIONS ON DRAWINGS, SHALL BE MARKED TO INDICATED SPECIFIC ITEM BE PROPOSED, AND SHALL BE ORGANIZED IN AN ORDERLY MANNER. SUBMIT SHOP DRAWINGS ELECTRONICALLY IN PDF FORMAT.

B. SUBMIT OPERATING AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT INSTALLED IN THIS PROJECT. INCLUDE COPIES OF SPECIFIC EQUIPMENT WARRANTIES IN MANUAL.

C. UPON COMPLETION OF THE INSTALLATION, AND PRIOR TO ACCEPTANCE BY THE OWNER, CONTRACTOR SHALL FURNISH TWO COPIES OF AS-BUILT DOCUMENTATION. ALL CHANGES TO THE BIDDING DOCUMENTS SHALL BE NEATLY AND CLEARLY IDENTIFIED ON THE AS-BUILT DOCUMENTATION.

1.9 PROJECT CLOSEOUT:

A. REPLACE OR REPAIR DAMAGED EQUIPMENT AND CLEAN ALL EXPOSED SURFACES.

B. TOUCH-UP SHOP APPLIED FINISHES TO RESTORE DAMAGED OR SOILED AREAS.

C. INSTRUCT OWNER'S REPRESENTATIVE IN OPERATION AND MAINTENANCE OF EQUIPMENT UTILIZING OPERATION AND MAINTENANCE MANUAL.

2. PRODUCTS

2.1 PIPING SYSTEMS:

A. DOMESTIC WATER PIPING – DOMESTIC TYPE L COPPER W/ NO LEAD SOLDER JOINTS, PEX OR CPVC. UNDERSLAB WATER – TYPE K SOFT COPPER OR PEX WITH NO JOINTS.

B. WATER SERVICE – DOCTILE IRON.

C. SANITARY DRAINAGE – SCHEDULE 40 PVC WITH SOLVENT WELD FITTINGS, OR NO-HUB CAST IRON PIPING.

D. VENT PIPING – SCHEDULE 40 PVC W/ SOLVENT WELD FITTINGS, OR COPPER DWV WITH 50/50 SOLDER FITTINGS.

E. GAS PIPING – SCHEDULE 40 BLACK STEEL.

F. OXYGEN PIPING – TYPE L HARD TEMPER COPPER MEDICAL GAS TUBING.

2.2 PLUMBING FIXTURES AND EQUIPMENT:

A. REFER TO FIXTURE SCHEDULE AND EQUIPMENT LIST ON DRAWINGS FOR MANUFACTURER'S AND MODEL NUMBERS.

3. EXECUTION

3.1 PIPING SYSTEMS

A. VERIFY INVERT ELEVATIONS PRIOR TO EXCAVATION.

B. BACKFILL BURIED PIPE IN TRENCHES WITH DIRT FREE OF ROCK, STONE OR DEBRIS.

C. VERIFY EXACT LOCATION OF EQUIPMENT AND FIXTURES PRIOR TO ROUGH-IN.

D. COORDINATE ROUTING OF WORK WITH OTHER TRADES AND INSTALL TO ALLOW MAXIMUM HEADROOM CLEARANCES, SERVICE ACCESS AND MAINTAIN PROPER PITCH OF SLOPING LINES.

E. INSULATE PIPING SYSTEMS AS FOLLOWS:
1. DOMESTIC WATER – 1/2" FIBERGLASS W/ ASJ UP TO 1.5"; 1" FIBERGLASS W/ ASJ OVER 1.5" PIPE SIZE. HOT WATER – 1" FIBERGLASS W/ ASJ. UNDERSLAB WATER – 1/2" THICK CLOSED CELL RUBBER.
2. SEAL VAPOR BARRIERS. SECURE WITH ADHESIVE AND SEAL JOINTS WITH SEALANT.
3. PROVIDE GALVANIZED STEEL SADDLE AT HANGERS SURROUNDING INSULATED PIPE.
4. DO NOT COMPRESS INSULATION EXCEPT IN AREAS OF STRUCTURAL INTERFERENCE.
5. INSTALL PRE-FITTED PLASTIC ELBOWS OR APPLY CANVAS JACKET IN THREE LAYERS AT ELBOWS.
6. INSULATE FITTINGS, VALVES AND EQUIPMENT BODIES.

F. PROVIDE SLEEVES FOR PIPING PENETRATING WALLS. INSULATION SHALL BE CONTINUOUS THROUGH SLEEVES.

G. FIRESTOP PIPING PASSING THROUGH FIRE RATED WALLS OR CEILINGS.

H. PATCH FINISHED AREAS DISTURBED BY WORK TO MATCH SURROUNDING AREAS.

I. WELDING SHALL BE DONE BY CERTIFIED WELDERS FOR THE APPROPRIATE SYSTEM BEING WELDED.

J. MAKE CONNECTIONS OF DISSIMILAR METALLIC PIPING WITH DIELECTRIC UNIONS.

K. PROVIDE CHROME PLATED ESCUTCHEON FOR EXPOSED PIPING PENETRATING A FINISHED SURFACE.

L. PROVIDE SHUT OFF VALVES AT EQUIPMENT CONNECTIONS. PROVIDE STOPS FOR ALL PLUMBING EQUIPMENT AND FIXTURES.

M. HANGERS SUPPORTING COPPER PIPING SHALL BE COPPER PLATED OR PLASTIC COVERED. HANGERS SUPPORTING INSULATED PIPING SHALL BE SIZED TO SURROUND INSULATION AND STEEL SADDLE.

N. PROVIDE VACUUM BREAKERS AT WALL HYDRANTS.

O. TEST PIPING SYSTEMS AS FOLLOWS:
1. PRESSURE PIPING – HYDROSTATICALLY TO 150 PSI FOR 12 HOURS.
2. SANITARY AND VENT PIPING – W/ 10 FT. WATER COLUMN OR 5 PSI COMPRESSED AIR FOR 12 HOURS.
3. TEST GAS PIPING IN ACCORDANCE WITH IFGC-2012.
4. TESTS SHALL SHOW NO SUBSTANTIAL LOSS IN PRESSURE.
5. PIPING RUN IN CONCEALED AREAS SHALL BE LEAK TESTED PRIOR TO BEING CONCEALED.

3.2 PLUMBING FIXTURES

A. PROVIDE CHROME PLATED STOPS FOR FIXTURES.

B. PROVIDE CHROME TAILPIECE AND TRAP WITH CLEANOUT FOR LAVATORIES AND SINKS.

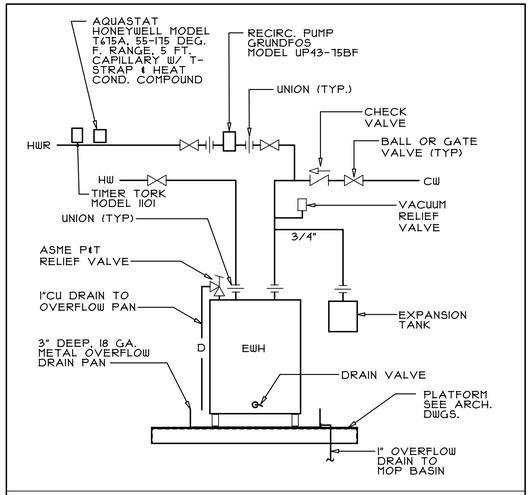
C. PROVIDE REMOVABLE CHROME PLATED BASKET STRAINER FOR SINKS.

D. CAULK BETWEEN FIXTURE AND FINISHED SURFACES WITH WHITE SILICONE CAULKING.

E. PROVIDE BOLT CAPS FOR WATER CLOSETS AND URINALS.

F. MOUNT WALL CLEANOUTS AND PLUGGED OUTLETS AT 18" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED ON DRAWINGS.

G. PROVIDE CHROME ESCUTCHEON AT PIPES PENETRATING FINISHED WALLS IN READILY VISIBLE LOCATIONS.



WATER HEATER DIAGRAM

PLUMBING FIXTURE SCHEDULE

NO.	DESCRIPTION	W	V	CW	HW	MFR. MODEL FIXTURE	MFR. MODEL FITTINGS	MFR. MODEL ACCESS.	NTS
WI	ACCESSIBLE TANK TYPE WATER CLOSET	3	1.5	1/2	--	AMER. STD. 2461.016	PROVIDE CORRECT HANDLE ORIENTATION	SEAT: CHURCH 2955SC	1
LI	ACCESSIBLE WALL HUNG LAVATORY	1.5	1.5	1/2	1/2	AMER. STD. 0355.012	MOEN 8915	W/ 0.5 GPM AERATOR	1,2,3,4
SI	ACCESSIBLE SINGLE BOWL S/S SINK	1.5	1.5	1/2	1/2	ELKAY SINK KIT LRAD1116652PDC			1,3
S2	ACCESSIBLE DOUBLE BOWL S/S SINK	1.5	1.5	1/2	1/2	ELKAY SINK KIT K233224DF			1,3
EWC	ACCESSIBLE ELEC. WATER COOLER	1.5	1.5	1/2	--	ELKAY LZSTL8WSLK			1,2
MB	MOP BASIN	3	1.5	1/2	1/2	FIAT MSB-2424 W/ 2-E-17-AA	FIAT 830-AA, 832-AA, 889C		
EWH	ELEC. WATER HEATER	--	--	3/4	3/4	AMERICAN LDCE32-40L	208V, 3PH, 9kW 40 GALLONS	EXPAN. TANK	
HB	HOSE BIBB WITH VACUUM BREAKER	--	--	3/4	--	NIBCO MDL. 662	WATTS 8A		
WH	WALL HYDRANT	--	--	3/4	--	WOODFORD B65			
SA	WATER HAMMER ARRESTOR	--	--	X	--	WADE SHOKSTOPS			7
WM	WASHING MACHINE	3	1.5	1/2	1/2		GUY GRAY WB-200		
WCO	WALL CLEANOUT	X	--	--	--	WADE 8480R			6
FCO	FLOOR CLEANOUT	X	--	--	--	WADE SERIES 6000			6
COTG	CLEANOUT TO GRADE	4	--	--	--	WADE 6000-Z-5			5
FD	FLOOR DRAIN	X	1.5	--	--	WADE 1IOXSTD6-27		W/ TRAP PRIMER	6
TV	TEMPERING VALVE	--	--	1/2	1/2	POWERS LFe480			4
RIM	REFRIGERATOR ICE MAKER BOX	--	--	3/8	--	IPS CORP 9100		W/ BACKFLOW PREVENTER	
AAV	AIR ADMITTANCE VALVE	--	1.5	--	--		STUDOR MINI-VENT		

NOTES:
1. INSTALL FIXTURES IN ACCORDANCE WITH APPLICABLE STANDARDS.
2. PROVIDE PROPER ACCESSORIES FOR WALL THICKNESS & CONSTRUCTION.
3. PROVIDE PIPE INSULATION KIT. TRUEBRO MODEL 105W OR EQUAL.
4. PROVIDE TEMPERING VALVE AT FIXTURES AS INDICATED ON PLAN OR RISERS.
5. MOUNT IN 16" ROUND CONCRETE RING FLUSH W/ PAVEMENT OR GRADE.
6. SIZE TO MATCH SEWER SERVED.
7. SIZE PER MANUFACTURER'S RECOMMENDATIONS FOR NUMBER OF FIXTURES SERVED.

LEGEND

- SOIL OR WASTE PIPING
- —W— WATER SERVICE PIPING
- VENT PIPING
- COLD WATER PIPING
- HOT WATER PIPING
- HOT WATER RECIRC. PIPING
- —O— OXYGEN PIPING
- —G— GAS PIPING
- BALL OR GATE VALVE
- CHECK VALVE
- RPZ BACKFLOW PREVENTER
- PRESSURE REDUCING VALVE
- GLOBE BALANCING VALVE
- GAS COCK
- DROP IN PIPING
- SHOCK ARRESTOR
- RISER MARK - SEE DIAGRAM

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
WCO	WALL CLEANOUT
FCO	FLOOR CLEANOUT
COTG	CLEANOUT TO GRADE
VTR	VENT THRU ROOF
WH	WALL HYDRANT
HB	HOSE BIBB W/ VACUUM BREAKER
EWH	ELECTRIC WATER HEATER
CW	COLD WATER
HW	HOT WATER
TW	TEMPERED WATER
HWR	HOT WATER RECIRC.
DN	DOWN
WC	WATER CLOSET
UR	URINAL
LAV	LAVATORY
FD	FLOOR DRAIN
DFU	DRAINAGE FIXTURE UNIT
SFU	SUPPLY FIXTURE UNIT

MEDICAL GAS SYSTEM SPECIFICATIONS

1. GENERAL:

1.1 PROVIDE MEDICAL GAS SYSTEMS (OXYGEN-MEDICAL AIR.) AS INDICATED ON THE DRAWING AND AS SPECIFIED HEREIN.

1.2 ALL WORK IS TO BE COMPLETED IN ACCORDANCE WITH THE CURRENT EDITION OF OF THE FOLLOWING CODES IN FORCE BY LAW: VIRGINIA UNIFORM STATEWIDE BUILDING CODE, IBG BUILDING CODE, IMC, IPC, NEC, ICC/ANSI, AIITI, NFPA 99, NFPA 101, THE AIA GUIDELINES FOR DESIGN AND CONSTRUCTION OF THE HOSPITAL AND HEALTH CARE FACILITIES, LOCAL BUILDING ORDINANCES, AND THE RULES AND REGULATIONS OF THE BUILDING LANDLORD INCLUDING CURRENT AMENDMENTS AND ALL REFERENCED CODES AND REGULATIONS.

2. PIPING:

2.1 PIPING SYSTEMS SHALL BE AS FOLLOWS:

OXYGEN PIPING:
TYPE L HARD TEMPER COPPER MEDICAL GAS TUBING. FITTINGS WROUGHT OR CAST COPPER, BRASS, OR BRONZE FOR SOLDER OR BRAZED CONNECTIONS. 90 DEGREE TURNS IN MAINS OR BRANCH MAINS SHALL BE SWEEP TYPE ELBOWS.

2.2 INSTALLATION AND HANDLING OF MEDICAL GAS PIPING SHALL BE PER THE REQUIREMENTS OF NFPA-99 AND THE HEALTH DEPARTMENT.

2.3 PIPING, VALVES, AND FITTINGS SHALL BE THOROUGHLY CLEANED WITH A HOT SOLUTION OF SODIUM CARBONATE OR TRI-SODIUM PHOSPHATE. MATERIALS SHALL THEN BE RINSED COMPLETELY WITH CLEAN HOT WATER.

2.4 OXYGEN JOINTS (EXCEPT THOSE AT EQUIPMENT REQUIRING SCREW CONNECTIONS) SHALL BE MADE WITH SILVER SOLDER OR SIMILAR HIGH MELTING POINT BRAZING MATERIAL. DO NOT LEAVE ANY EXCESS FLUX INSIDE COMPLETED JOINTS. THE OUTSIDE OF THE TUBE AND FITTINGS SHALL BE CLEANED BY WASHING WITH HOT WATER AFTER ASSEMBLY. SCREW JOINTS USED IN SHUT-OFF VALVES SHALL BE INSTALLED BY TINNING THE MALE THREAD WITH 95-5 SOLDER.

2.5 PROVIDE DRIP POCKETS WHERE ANY POCKETS ARE FORMED DURING INSTALLATION. DRIP POCKETS SHALL BE AN 18" LENGTH OF FULL PIPE SIZE (NOT LESS THAN 2" SIZE) WITH 3/4" BRONZE GLOBE VALVE AT BOTTOM AND NIPPLE FOR HOSE CONNECTION.

2.6 COORDINATE ROUTING OF PIPING WITH OTHER TRADES. NOTIFY OWNER'S REPRESENTATIVE IMMEDIATELY OF CONFLICTS OR DEFICIENCIES.

2.7 DO NOT RUN PIPING OVER ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS OF PANELS, SWITCHBOARDS, AND OTHER EQUIPMENT.

2.8 TEST AND FLUSH PIPING SYSTEMS IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 99 AND THE HEALTH DEPARTMENT.

2.9 LABEL ALL CONCEALED PIPING WITH PERMANENT, MAUFACTURED LABELS INDICATING PIPING SERVICE AT 12 FOOT INTERVALS AND CHANGES OF DIRECTION. PROVIDE A VALVE TAG AT EACH VALVE INDICATING SERVICE AND VALVE NUMBER. PROVIDE A CHART INDICATING VALVE NUMBER, SERVICE, AND LOCATION.

3. EQUIPMENT:

3.1 EQUIPMENT SHALL BE SUPPLIED BY OWNER'S EQUIPMENT SUPPLIER AND INSTALLED BY CONTRACTOR.

3.2 MAKE FINAL CONNECTION TO EQUIPMENT IN ACCORDANCE WITH EQUIPMENT SUPPLIER REQUIREMENTS.

4. PROJECT CLOSEOUT:

4.1 PROVIDE COMMISSIONING OF THE COMPLETED MEDICAL GAS SYSTEMS PER THE REQUIREMENTS OF NFPA 99 AND THE HEALTH DEPARTMENT.

SEAL

REVISIONS	
DATE	REMARKS
6-06-17	OWNER CHANGES

ISSUED FOR PERMIT
3-10-17

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PLUMBING SPECS, SCHEDULES AND DETAIL

PROJECT NO.: 17021

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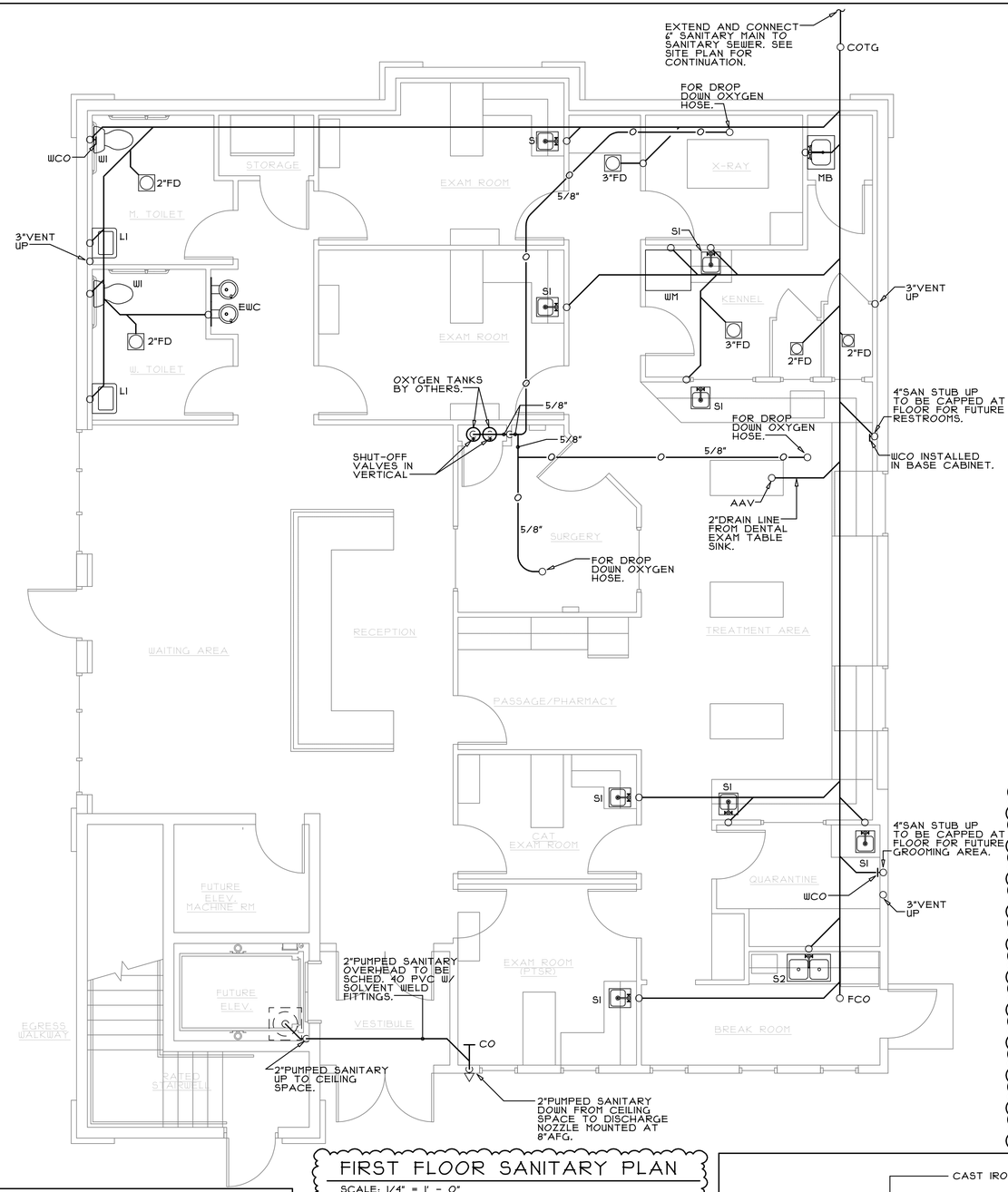
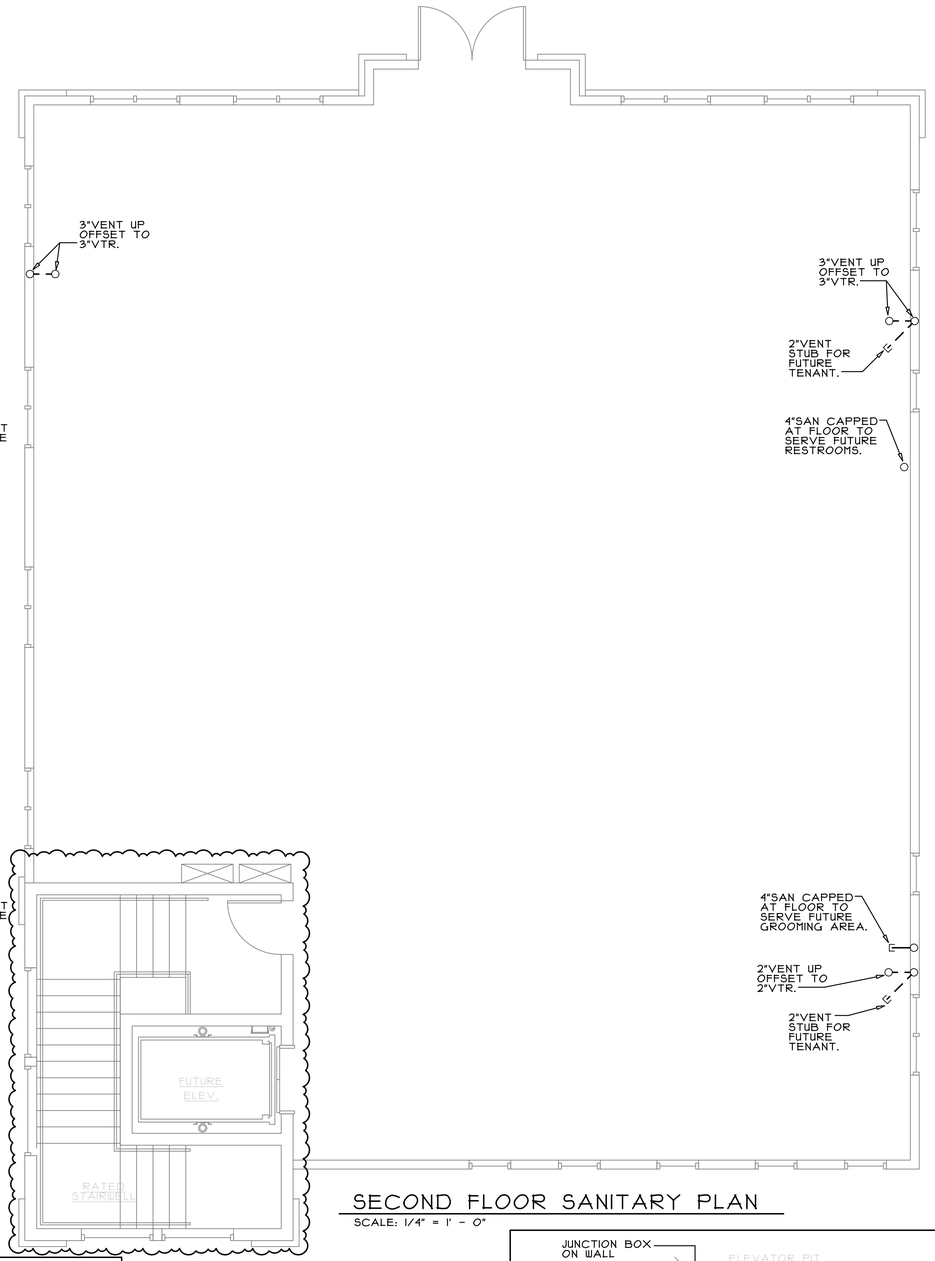
3-10-17	P0.1



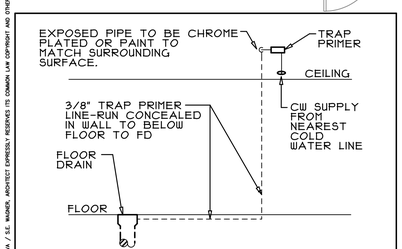
FIRST FLOOR SANITARY PLAN

SCALE: 1/4" = 1' - 0"

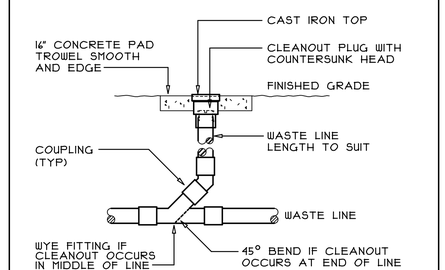


SECOND FLOOR SANITARY PLAN

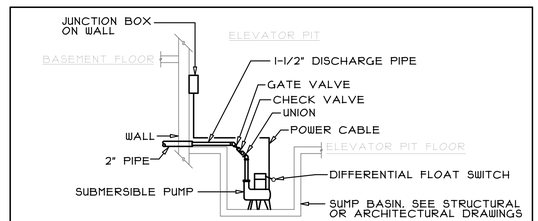
SCALE: 1/4" = 1' - 0"



FLOOR DRAIN TRAP PRIMER DIAGRAM



CLEANOUT TO GRADE DIAGRAM



SUMP PUMP:

STANCOR ELEVATOR PIT OIL-MINDER CONTROL SYSTEM WITH MODEL SE-50, 1/2 HORSEPOWER, 115 VOLT, SINGLE PHASE SUBMERSIBLE PUMP; CHECK VALVE, 115 VOLT, SINGLE PHASE CONTROL PANEL WITH AUDIBLE AND VISUAL ALARM, ALARM SILENCING BUTTON, AND CONTACT FOR REMOTE ALARM; POWER CABLE, PROBE CABLE AND HIGH LIQUID ALARM CABLE; HIGH LIQUID ALARM FLOAT WITH CLAMPING DEVICE FOR MOUNTING TO PUMP DISCHARGE PIPE.

ELEVATOR PIT SUMP PUMP DETAIL

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SANITARY PLANS AND DETAILS

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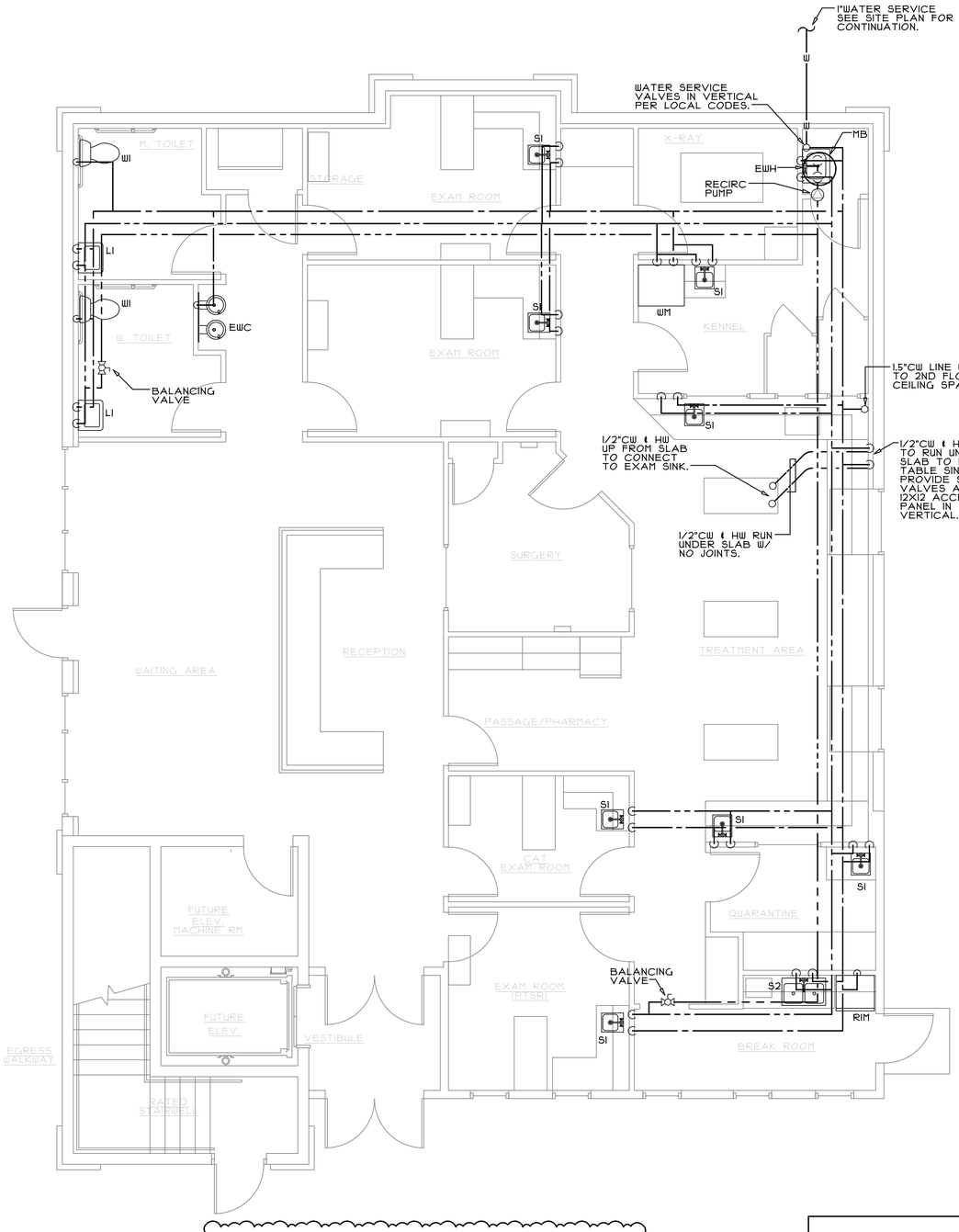
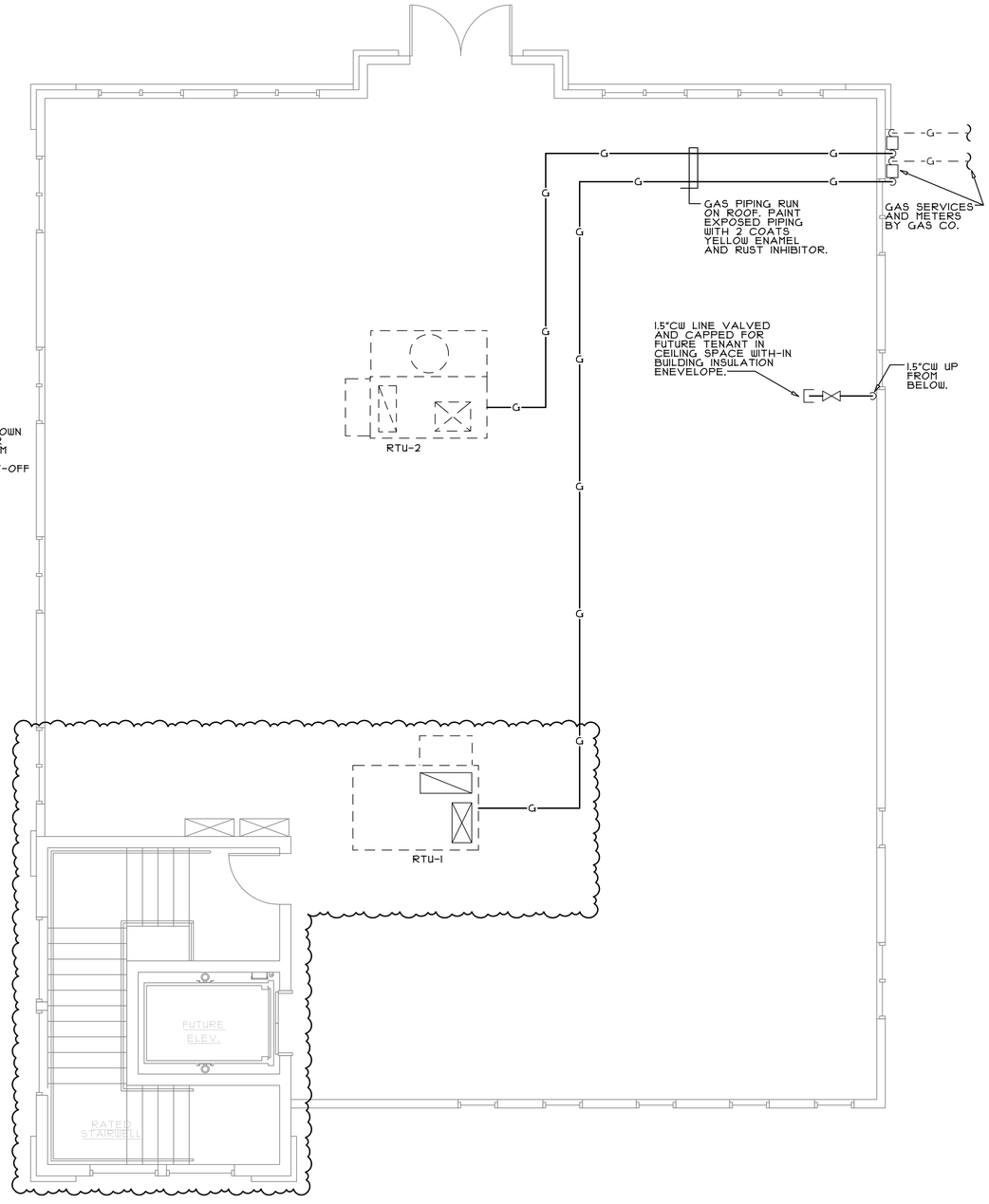


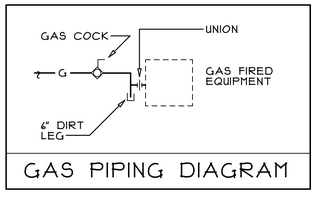
FIRST FLOOR WATER/GAS PLAN

SCALE: 1/4" = 1' - 0"



SECOND FLOOR WATER/GAS PLAN

SCALE: 1/4" = 1' - 0"



GAS PIPING DIAGRAM

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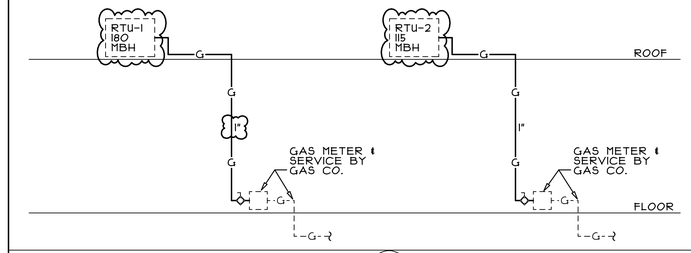
WARRENTON *VIRGINIA*

WATER/GAS PLANS AND DETAIL

PROJECT NO.: 17021

DATE 3-10-17

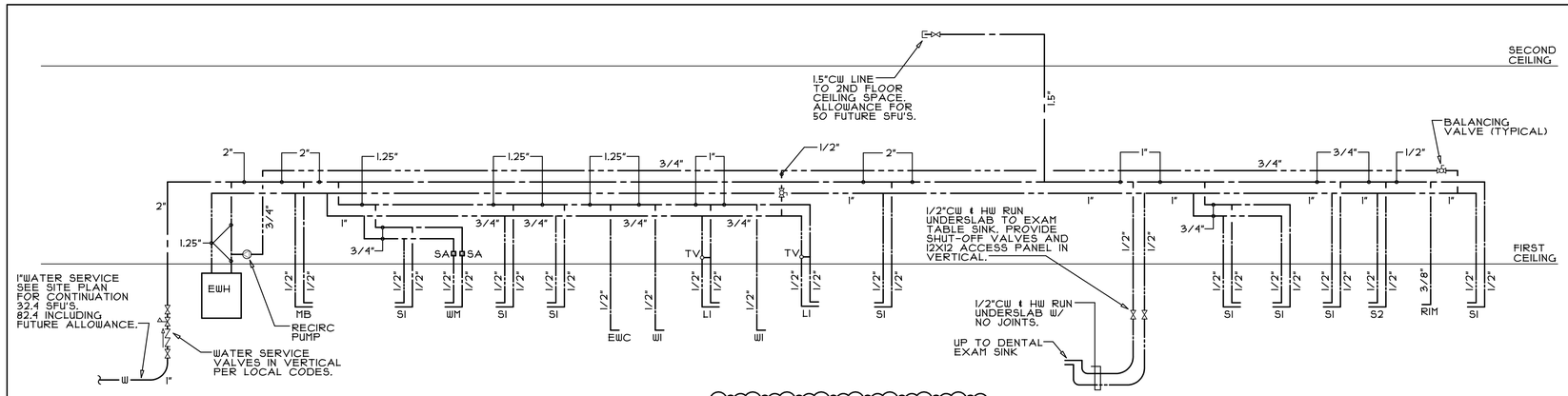
SHEET NO. P2.1



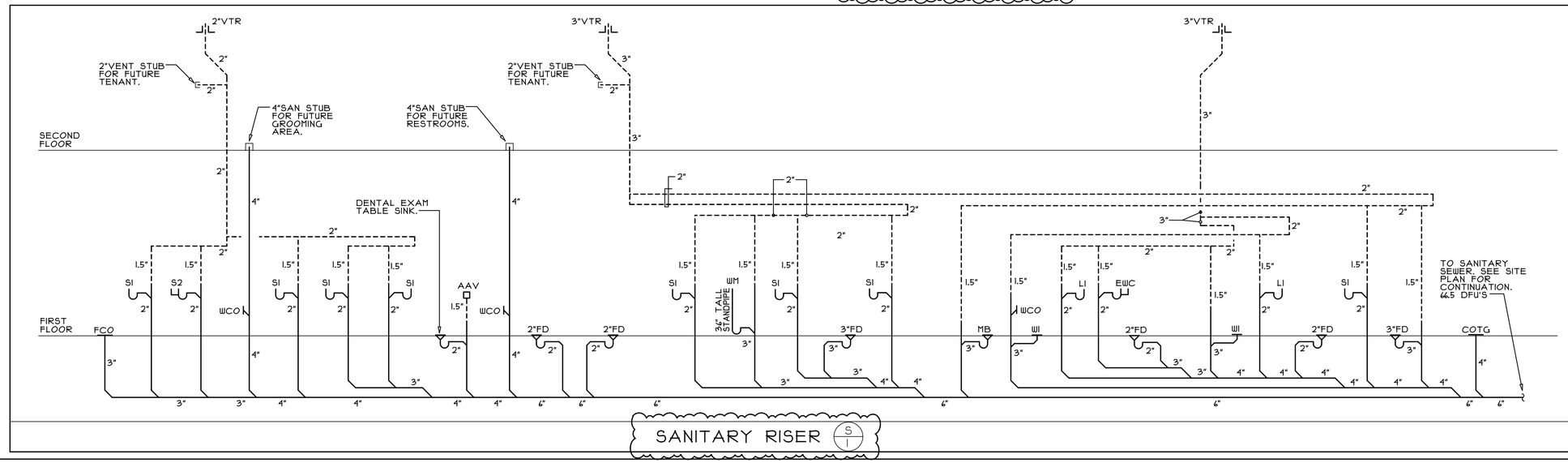
GAS RISER (G/1)

NOTES:

1. THE MAXIMUM TOTAL DEVELOPED LENGTH OF PIPE IS LESS THAN 100 FEET.
2. THE TOTAL CONNECTED GAS LOAD FOR THE BUILDING IS 295,000 BTU.
3. PIPE SIZES ARE BASED ON IFGC-2012 TABLE 402.4(2).
4. SERVICE PRESSURE AT METER IS 7 INCHES WATER COLUMN.



WATER RISER (W/1)



SANITARY RISER (S/1)

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PLUMBING RISERS

PROJECT NO.: 17021

DATE 3-10-17
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