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1. GENERAL PROVISIONS:

1.1. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.

1.2. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.

1.3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION OVER THE SITE.

1.4. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.

1.5. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.

1.6. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.

1.7. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
2. OPERATION AND MAINTENANCE MANUALS:

2.1. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.

2.2. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.

2.3. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE BOUND IN A 3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC.
3. MANUFACTURERS:

3.1. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.
4. TESTING, BALANCING, AND CLEANING:

4.1. ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR COVERED WITH INSULATION.

4.2. SEWER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 15 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS.

4.3. DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 80 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.

4.4. BEFORE DOMESTIC WATER PIPING IS PLACED IN SERVICE, ALL DOMESTIC WATER DISTRIBUTION SYSTEMS, INCLUDING THOSE FOR COLD WATER AND HOT WATER SYSTEMS, SHALL BE FLUSHED, STERILIZED AND CHLORINATED IN ACCORDANCE WITH HEALTH DEPARTMENT REGULATIONS. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED OF ALL DIRT AND FOREIGN MATTER, THEN FILLED WITH WATER TREATED WITH 50 PPM OF CHLORINE. DURING THE FILLING PROCESS, VALVES AND FAUCETS SHALL BE OPENED SEVERAL TIMES TO ASSURE TREATMENT OF THE ENTIRE SYSTEM. THE TREATED WATER SHALL BE LEFT IN THE SYSTEM FOR 24 HOURS AFTER WHICH TIME THE SYSTEM SHALL BE FLUSHED; IF THE RESIDUAL CHLORINE IS NOT LESS THAN 10 PPM, THE FLUSHING SHALL BE REPEATED. AFTER STERILIZATION, SAMPLES OF WATER IN THE SYSTEM SHALL BE APPROVED BY THE BOARD OF HEALTH.
5. PIPING:

5.1. DOMESTIC COLD AND HOT WATER (ABOVEGROUND).

5.1.1. TYPE L HARD DRAWN COPPER TUBING, ASTM B-88.

5.1.2. WROUGHT BRONZE SOLDERED FITTINGS.

5.1.2.1. GATE VALVE: JOMAR T/S-301 OR EQUAL. NSF 61-8, ANSI B16.20.1, ANSI B16.18.

5.1.2.2. GLOBE VALVE: CRANE #7 OR EQUAL.

5.1.2.3. BALL VALVE: JOMAR T/S-100C OR EQUAL. COMPACT LEAD FREE FORGED BRASS BALL VALVE. UL842, CSA 3371-12 & 3371-92, FM, NSF 61, CALIFORNIA CODE AB1983-ANNEX G APPROVED.

5.1.2.4. BALL VALVE: JOMAR T-100NE OR EQUAL. UL842, FM, CSA, NSF 61-8, MSS SP-110.

5.1.3. PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F876 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE IN ACCORDANCE WITH TR-403.

5.1.3.1. PEX MECHANICAL, CRIMP/INSERT FITTINGS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE, INCREASE PEX PIPING SIZE AS REQUIRED TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER.
- 5.2. SANITARY SEWER, AND VENTS (UNDERGROUND, INTERIOR TO BUILDING).

5.2.1. POLYVINYLCHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT (WHERE APPROVED BY LOCAL CODES).

5.2.2. SERVICE WEIGHT, BELL-AND-SPIGOT, COATED CAST IRON, ASTM A-74.

5.2.3. ACRYLONITRILE-BUTADIENE-STYRENE (ABS) SEWER PIPE, ASTM D 2751-83a SDR 23.5, SOLVENT-CEMENTED JOINTS.

5.2.4. "NO-HUB" CAST IRON, NEOPRENE GASKETS, STAINLESS STEEL CLAMPS.
- 5.3. SANITARY SEWER, AND VENTS (ABOVEGROUND).

5.3.1. SERVICE WEIGHT, BELL-AND-SPIGOT, COATED CAST IRON, ASTM A-74.

5.3.2. DWV, WROUGHT COPPER, ANSI B-16-29.

5.3.3. GALVANIZED STEEL PIPE, WITH MALLEABLE IRON, THREADED FITTINGS, DRAINAGE PATTERN FOR SEWERS.

5.3.4. "NO-HUB" CAST IRON, NEOPRENE GASKETS, STAINLESS STEEL CLAMPS.

5.3.5. POLYVINYLCHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT (WHERE APPROVED BY LOCAL CODES). (NOT FOR USE IN A RETURN AIR PLENUM)
- 5.4. CONDENSATE DRAINS & INDIRECT WASTE (ABOVEGROUND).

5.4.1. DWV, WROUGHT COPPER, ANSI B-16-29.
- 5.5. PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ELCEN. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-SP-69.
- 5.6. SLEEVES.

5.6.1. PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE INSULATION.

5.6.2. INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.

5.6.3. ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.

5.6.4. PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN EXISTING ROOF WARRANTY. ALL PLUMBING VENT TERMINALS SHALL TERMINATE A MINIMUM OF 12" ABOVE ROOF OR EQUAL TO HEIGHT OF PARAPET, WHICHEVER IS GREATER.
- 5.7. PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPE ENTERING FINISHED AREAS.

6. INSULATION:

6.1. ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPED RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA.

6.2. PIPE INSULATION - ABOVE GRADE:

6.2.1. THE PIPING INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 Btu per in/hr"sq ft/F" OR LESS.

6.2.2. FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER, ASJ JACKET, FACTORY APPLIED PRESSURE SEALING LONGITUDE LAP JOINT, NO STAPLES, ZESTON PREMOLDED PVC FITTING COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

6.2.3. FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLT OR PRESILT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMSTRONG AP ARMAFLEX OR ARMAFLEX 2000.

6.2.4. FOR NON CIRCULATING SYSTEMS, THE FIRST 8 FEET OF INLET AND OUTLET PIPING BETWEEN THE TANK AND THE HEAT TRAP (INCLUDING THE HEAT TRAP) MUST BE INSULATED.

6.2.5. INSULATION SCHEDULE.

6.2.5.1. DOMESTIC COLD WATER 1/2"

6.2.5.2. DOMESTIC HOT WATER 1-1/2"

7. PLUMBING:

7.1. PROVIDE AN APPROVED WATER HAMMER ARRESTOR FOR EACH PLUMBING FIXTURE SUPPLY AS REQUIRED BY FIXTURE MANUFACTURER.

7.2. ALL EXPOSED PIPE SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.

7.3. PROVIDE CLEANOUTS AT EACH CHANGE OF DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS.

7.4. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS.

7.5. CLEANOUTS:

7.5.1. VINYL TILE FLOOR: JR SMITH #4140, OR EQUAL.

7.5.2. UNFINISHED FLOOR: JR SMITH #4020, OR EQUAL.

7.6. PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS TO MATCH THE PIPE SYSTEM IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED). PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION TANKS.

7.7. ALL SEWER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.

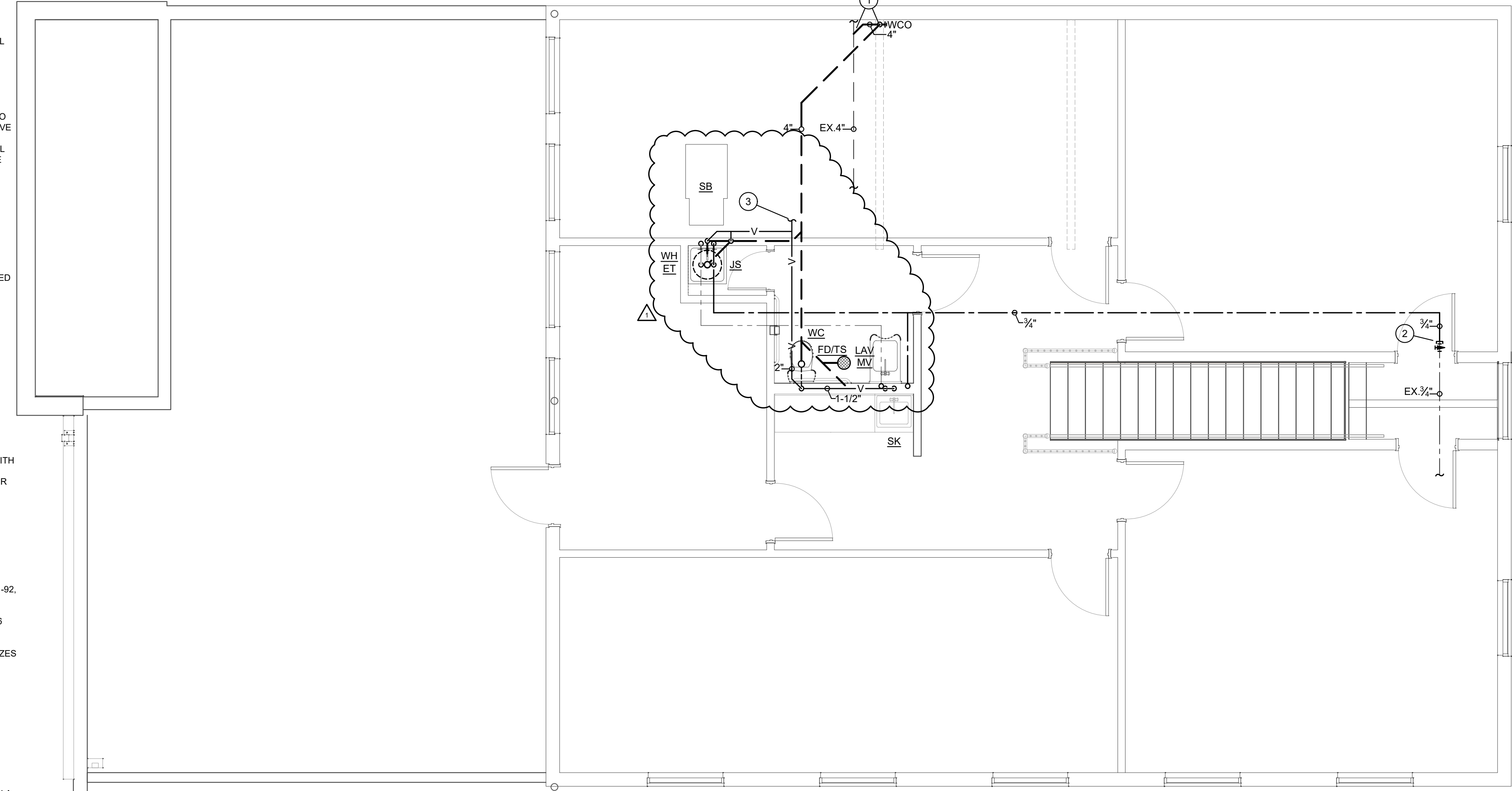
7.7.1. INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.

7.7.2. INSTALL 3" AND LARGER PIPE AT 1/8" PER FOOT FALL.

7.8. ALL SEWER PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.

7.8.1. INSTALL 4" AND SMALLER PIPE AT A MINIMUM OF 2% SLOPE.

7.8.2. INSTALL 6" AND LARGER PIPE AT A MINIMUM OF 1% SLOPE.



PLUMBING FIXTURE SCHEDULE (OR EQUAL)									
MARK	FIXTURE	MANUFACTURER	MODEL	DESCRIPTION	WASTE	VENT	DCW	DHW	
WC	ADA WATER CLOSET (TANK-TYPE)	TOTO	CST744S SC534	"DRAKE CLOSE COUPLE TOILET"; 1.6 GALLON FLUSH, 18-1/2" HIGH ELONGATED BOWL, FLOOR MOUNTED, FLOOR OUTLET, TANK TYPE, VITREOUS CHINA, SIPHON-JET ACTION, OPEN FRONT SEAT WITH CHECK HINGE AND LESS COVER, CHROME PLATED ANGLE STOP AND RISER, HANDLE ON WIDE SIDE OF FIXTURE.	4"	2"	1/2"	N/A	
LAV	ADA LAVATORY (WALL-HUNG)	AMERICAN STANDARD	0355.012 2175.205.002	"LUCERNE", 20"x 18", VITREOUS CHINA, FRONT OVERFLOW, FAUCET WITH SINGLE METAL LEVER FAUCET, OFFSET GRID ELBOW DRAIN AND 1-1/4" TAILPIECE, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT (MOUNTED PARALLEL WITH WALL), CHROME PLATED ANGLE STOPS AND RISERS, FLOOR MOUNTED CONCEALED ARM LAVATORY SUPPORT. PROVIDE PROWRAP SEAMLESS MOLDED CLOSED CELL VINYL INSULATION OVER EXPOSED DRAIN, WATER SUPPLIES, AND VALVES.	1-1/4"	1-1/4"	1/2"	1/2"	
SK	SINK (I-COMP)	ELKAY	LRAD202255 4175.500.002	16"x16"x5-3/8" DEEP BOWL, SELF-RIMMING STAINLESS STEEL SINK WITH SATIN FINISH AND SOUND DAMPENING UNDERCOATING, SWING SPOUT FAUCET, AERATOR, WING HANDLES, #LK-35 BASKET STRAINER WITH 1-1/2" TAILPIECE, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, CHROME PLATED ANGLE STOPS AND RISERS. IN-SINK-ERATOR #BADGER 5 DISPOSAL, 1/2 HP, 120 VOLT.	2"	1-1/2"	1/2"	1/2"	
SB	SHAMPOO BOWL	SEE SHEET A1 FOR MODEL INFORMATION	SEE SHEET A1	SHAMPOO BOWL, FURNISHED BY OWNER. SINK PROVIDED COMPLETE WITH FAUCET. PROVIDE JR SMITH #8750 HAIR TRAP WITH CLEANOUT. CHROME PLATED ANGLE STOPS AND RISERS.	2"	1-1/2"	1/2"	1/2"	
MV	THERMOSTATIC MIXING VALVE	WATTS	LFUSG-B	THERMOSTATIC CONTROLLED MIXING VALVE, LEAD FREE BRONZE BODY, TAMPER-RESISTANT LOCKING NUT, INTEGRAL CHECK VALVES ON HOT AND COLD INLETS. (SET TO 110°F). ASSE 1070 LISTED.	N/A	N/A	1/2"	1/2"	
FD	FLOOR DRAIN	SIOUX CHIEF	842	PVC FLOOR DRAIN BODY WITH BOTTOM OUTLET, ADJUSTABLE TOP, CAST BRASS STRAINER.	3"	2"	N/A	N/A	
TS	TRAP SEAL	SURE SEAL	-	INLINE FLOOR DRAIN TRAP SEALER, HDPE BODY, SILICONE DIAPHRAGM, EPDM RUBBER SEALING GASKET, FLOOR RATING ASSE-1072 AF-GW, SIZE TO MATCH DRAIN.	N/A	N/A	N/A	N/A	
WH	WATER HEATER	AO SMITH	DEL-50	50 GALLON STORAGE, 208 VOLT, 1 PHASE, 6000 WATT ELEMENT, ASME TEMPERATURE AND PRESSURE RELIEF VALVE.	N/A	N/A	3/4"	3/4"	
ET	EXPANSION TANK	AMTROL	ST-5	MOLDED COMPOSITE MOP BASIN, 2" DRAIN, 24"x24" BASIN, WALL FAUCET, VACUUM BREAKER, INTEGRAL STOPS, WALL BRACE & PAIL HOOK, #M05-001 WALL BRACKET WITH 30" HOSE, #M05-003 MOP HANGER.	N/A	N/A	3/4"	N/A	
JS	JANITOR SINK	ZURN	Z1996-24 Z843M1-RC		2"	2"	1/2"	1/2"	

PLUMBING KEY NOTES	
1	4" SANITARY SEWER DOWN IN FIRST FLOOR WALL. PROVIDE CLEAN-OUT AT BASE OF RISER. CONNECT 4" SANITARY SEWER TO EXISTING SANITARY SEWER PIPING. VERIFY LOCATION, ELEVATION, AND DIRECTION OF FLOW PRIOR TO INSTALLATION OF ANY PIPING.
2	CONNECT 3/4" CW TO EXISTING VALVED CW STUB FOR TENANT. VERIFY EXACT LOCATION (BELOW FLOOR).
3	CONNECT 2" VENT TO EXISTING VENT PIPING. VERIFY EXACT LOCATION.

PLUMBING SYMBOLS AND LEGEND		
ABBR.	LINETYPE	DESCRIPTION
SS	---	SANITARY SEWER PIPING BELOW FLOOR
	=====	SANITARY SEWER PIPING ABOVE FLOOR
V	---v---	SANITARY VENT PIPING ABOVE FLOOR
	----v----	SANITARY VENT PIPING BELOW FLOOR
VTR	⊙	VENT THRU ROOF
CW	---	DOMESTIC COLD WATER PIPING
HW	----	DOMESTIC HOT WATER PIPING
-	---o---	PIPE ELBOW DOWN
-	---o---	PIPE ELBOW UP
-	---o---	PIPE TEE UP
-	---o---	PIPE TEE DOWN
-	--- ---	PIPE UNION
-	--- ---	SHUT-OFF VALVE
-	⊙	POINT OF CONTINUATION (RISER DIAGRAMS ONLY)
FD	⊙	FLOOR DRAIN
FCO	⊙	FLOOR CLEAN-OUT
WCO	⊙	WALL CLEAN-OUT
P.C.		PLUMBING CONTRACTOR
G.C.		GENERAL CONTRACTOR
CTE	⊙	CONNECT TO EXISTING

- PLUMBING GENERAL NOTES

1. INSTALL ALL PIPE, ETC. AS HIGH AS POSSIBLE.

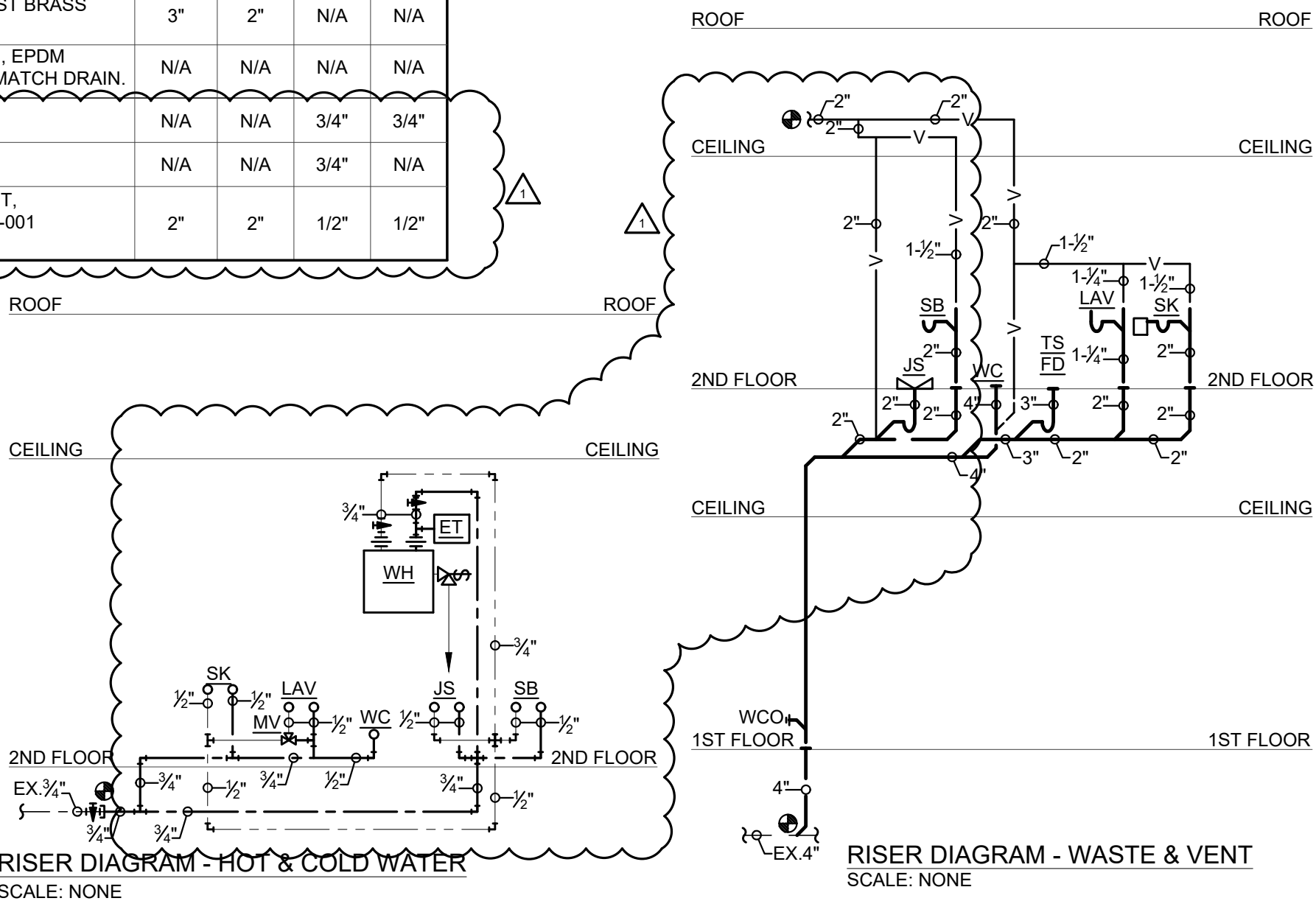
2. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.

3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES.

4. REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR REQUIREMENTS FOR SUPPORTING PIPING, EQUIPMENT, ETC. FROM THE STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED TO PROPERLY SUPPORT SYSTEMS FROM THE STRUCTURE.

5. NO PIPING SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.

6. ALL MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.



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COMMENTS/REVISIONS		PERMIT		DESCRIPTION		PLUMBING FLOOR PLAN	
DATE	BY	DATE	BY	DATE	BY	SHEET	TITLE
02.10.20		01.27.20					

PROJECT NO: 0907016
MODEL FILE:
DRAWN BY: CTG
CHK'D BY: CTG

MECHANICAL SPECIFICATIONS

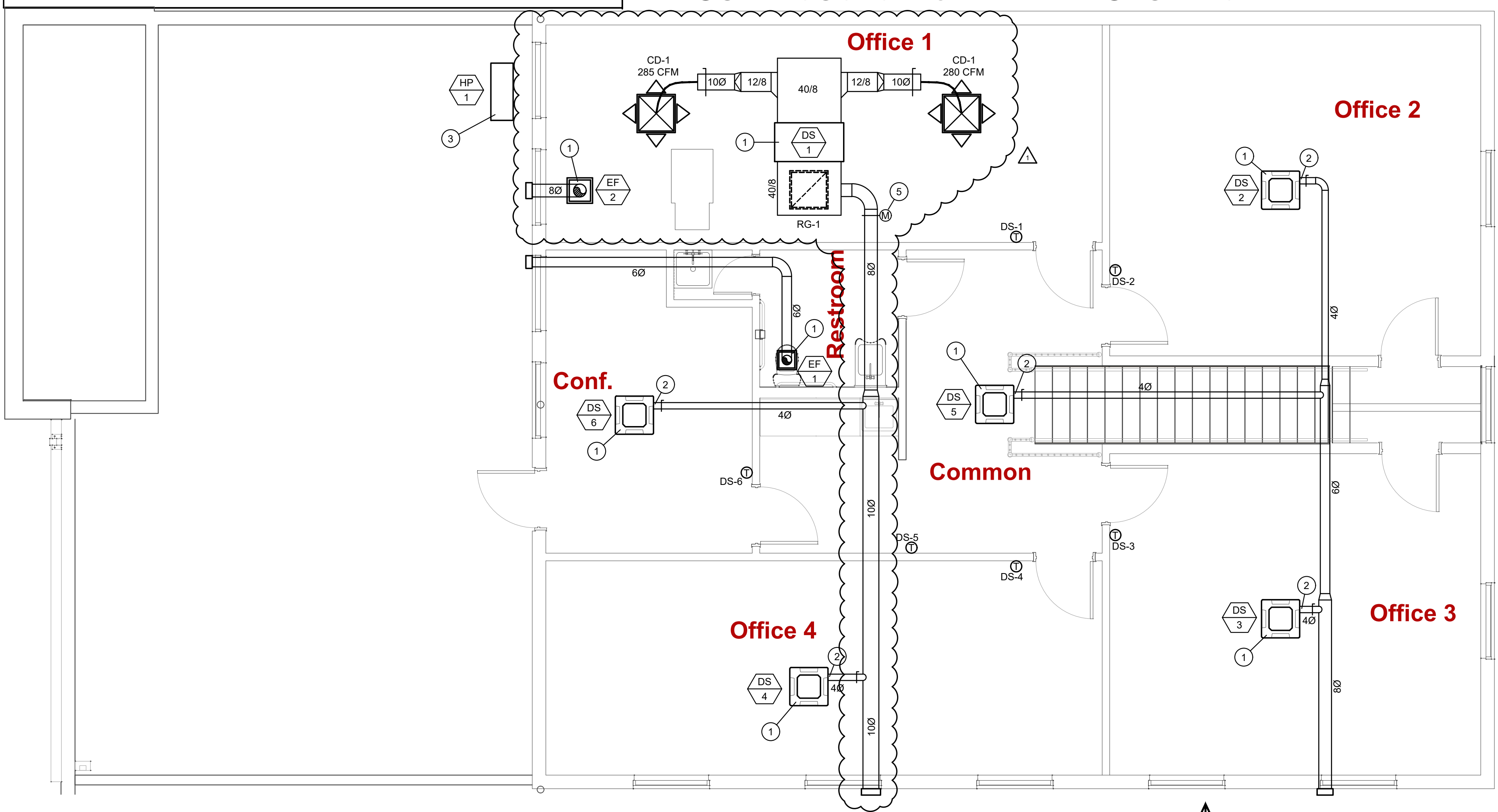
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- MOTORS:
 - 4.1. PROVIDE THERMAL OVERLOAD PROTECTION FOR EACH MOTOR PROVIDED BY THIS WORK.
- TESTING, BALANCING, AND CLEANING:
 - 5.1. ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR COVERED WITH INSULATION.
 - 5.2. DUCTWORK AND PIPING SHALL BE BALANCED BY QUALIFIED BALANCING PERSONNEL WHO HAVE PREVIOUS EXPERIENCE WITH BALANCING PROCEDURES.
- INSULATION AND DUCT LINING:
 - 6.1. ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A MAXIMUM FLAME SPREAD RATING OF 25, A MAXIMUM FUEL CONTRIBUTION RATING OF 50, AND A MAXIMUM SMOKE DEVELOPED RATING OF 50, IN ACCORDANCE WITH NFPA.
 - 6.2. DUCTWORK, ACOUSTICAL INSULATION:
 - 6.2.1. DUCT LINING: 2 LB/CF, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER SMACNA STANDARDS.
 - 6.2.1.1. DUCT LINING SCHEDULE:
 - 6.2.1.1.1. RETURN AIR DUCT: 1/2" THROUGHOUT THE FIRST 10 FEET OF DUCT.
 - 6.2.2. DUCTWORK, THERMAL INSULATION:
 - 6.2.2.1. DUCT COVERING: 3/4 LB/CF, FIBERGLASS BLANKET WITH FACTORY APPLIED VAPOR BARRIER AND FACING, THICKNESS AS SCHEDULED, INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 - 6.2.2.1.1. DUCT COVERING SCHEDULE: MINIMUM R-6
 - 6.2.2.1.1.1. OUTDOOR AIR DUCT 2"
- DUCTWORK:
 - 7.1. ALL DUCTWORK, UNLESS OTHERWISE INDICATED, SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL COMPLYING WITH ASTM A 527, LOCKFORMING QUALITY, WITH G 60 ZINC COATING IN ACCORDANCE WITH ASTM A 525; AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.
 - 7.2. DUCTWORK, METAL GAUGES, REINFORCING, ETC. SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION FOR A 2 INCH WATER GAUGE STATIC PRESSURE.
 - 7.3. ALL FITTINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION.
 - 7.4. SEAL ALL CONCEALED DUCTWORK JOINTS WITH NON-HARDENING, NON-MIGRATING MASTIC SEALANT, AS RECOMMENDED FOR SEALING SEAMS AND JOINTS IN DUCTWORK. OIL BASE CAULKING AND GLAZING COMPOUNDS SHALL NOT BE ACCEPTABLE. DUCTS SHALL BE SEALED TO THE CLASS LEVEL LISTED BELOW.
 - 7.4.1. 1) UNCONDITIONED SPACES:
 - 7.4.1.1. SUPPLY \leq 2" W.C. - CLASS B
 - 7.4.1.2. SUPPLY $>$ 2" W.C. - CLASS A
 - 7.4.1.3. EXHAUST - CLASS C
 - 7.4.1.4. RETURN - CLASS B
 - 7.4.2. 2) CONDITIONED SPACES (PLENUM)
 - 7.4.2.1. SUPPLY \leq 2" W.C. - CLASS C
 - 7.4.2.1. SUPPLY $>$ 2" W.C. - CLASS B
 - 7.4.2.2. EXHAUST - CLASS B
 - 7.4.2.3. RETURN - CLASS C
- FLEXIBLE DUCT:
 - 8.1. ATCO #696 (R-6), OR EQUAL.
 - 8.2. FACTORY APPLIED INSULATION AND VAPOR BARRIER, 1-1/2" THICK.
 - 8.3. MAXIMUM LENGTH OF 6'-0".
- EXHAUST FANS:
 - 9.1. CENTRIFUGAL CEILING EXHAUSTERS SHALL BE ELECTRICALLY POWERED CENTRIFUGAL TYPE FAN SUITABLE FOR MOUNTING IN THE CEILING WITH A PERFORATED OFF-WHITE METAL GRILLE WITH A THUMBSCREW ATTACHMENT FOR EASY ACCESS TO FAN HOUSING. UNIT SHALL CONSIST OF A GALVANIZED STEEL HOUSING LINED WITH ACOUSTICAL INSULATION AND SHALL INCLUDE AN INTEGRAL BACKDRAFT DAMPER ON FAN DISCHARGE. MOTOR SHALL BE A PERMANENT SPLIT-CAPACITOR TYPE MOTOR, PERMANENTLY LUBRICATED, WITH THERMAL OVERLOAD PROTECTION. PROVIDE DISCONNECT SWITCH OR OTHER MEANS OF DISCONNECT AT MOTOR IN FAN HOUSING.
- CONTROL WIRING:
 - 10.1. ELECTRICAL WIRING AND WIRING CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE TEMPERATURE CONTROL SYSTEM, SHALL BE PROVIDED BY THIS CONTRACTOR, UNLESS SPECIFICALLY SHOWN ON THE ELECTRICAL DRAWINGS OR SPECIFICATIONS.
 - 10.2. INSTALL CONTROL WIRING, WITHOUT SPLICES BETWEEN TERMINAL POINTS, COLOR CODED. INSTALL IN NEAT WORKMANLIKE MANNER, SECURELY FASTENED. INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND THE ELECTRICAL SPECIFICATIONS.
 - 10.2.1. INSTALL CIRCUITS OVER 25 VOLT WITH COLOR CODED NUMBER 12 WIRE.
 - 10.2.2. INSTALL CIRCUITS UNDER 25 VOLT WITH COLOR CODED NUMBER 18 WIRE WITH 0.031 INCH HIGH TEMPERATURE 105°F PLASTIC INSULATION ON EACH CONDUCTOR AND PLASTIC SHEATH OVER ALL.
 - 10.2.3. INSTALL ELECTROARY CIRCUITS WITH COLOR CODED NUMBER 22 WIRE WITH 0.023 INCH POLYETHYLENE INSULATION ON EACH CONDUCTOR WITH PLASTIC JACKETED COPPER SHIELD OVER ALL.
 - 10.2.4. INSTALL LOW VOLTAGE CIRCUITS, LOCATED IN CONCRETE SLABS AND MASONRY WALLS, OR EXPOSED IN OCCUPIED AREAS, IN ELECTRIC CONDUIT.
 - 10.2.5. ALL WIRING IN AREAS USED AS AIR PLENUMS SHALL BE IN ELECTRIC CONDUIT EXCEPT THAT LOW VOLTAGE WIRING MAY BE TEFLON COATED, ALUMINUM SHEATHED CABLE OR OTHER WIRE SPECIFICALLY APPROVED FOR INSTALLATION IN AIR PLENUMS, WHERE ACCEPTABLE BY LOCAL CODES.
 - 10.2.6. ALL WIRING IN AREAS NOT USED FOR AIR MOVEMENT SHALL BE IN ELECTRIC METALLIC TUBING EXCEPT LOW VOLTAGE WIRING MAY BE IN APPROVED SIGNAL CABLE WHERE ACCEPTED BY LOCAL CODES.

MECHANICAL GENERAL NOTES

- COORDINATE WITH ALL PROJECT CONTRACTORS AND VERIFY EXISTING CONDITIONS FOR PROPER INSTALLATION OF SYSTEMS AS INTENDED.
- INSTALL SYSTEMS AS REQUIRED TO PROVIDE MANUFACTURER-RECOMMENDED CLEARANCES.
- FLEXIBLE CONNECTIONS SHALL BE PROVIDED BETWEEN DUCTWORK AND MOTORIZED EQUIPMENT.
- NO DUCT SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
- ALL MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A MAXIMUM FLAME SPREAD INDEX OF 25 AND A MAXIMUM SMOKE-DEVELOPED INDEX OF 50, WHEN TESTED IN ACCORDANCE WITH ASTM E 84.

MECHANICAL KEY NOTES

- SUSPEND UNIT FROM STRUCTURE PER MANUFACTURER RECOMMENDATIONS.
- CONNECT 4"Ø OUTDOOR AIR DUCT TO OUTDOOR AIR CONNECTION ON CEILING CASSETTE WITH MANUAL BALANCING DAMPER. BALANCE TO CFM INDICATED IN VENTILATION SCHEDULE.
- PROVIDE AND INSTALL REFRIGERANT PIPING FOR HEAT PUMP AS REQUIRED BY MANUFACTURER. REFRIGERANT PIPING INTO WALL 18" ABOVE ROOF AND UP INSIDE WALL TO ABOVE CEILING. SEAL WALL PENETRATION WEATERTIGHT. ROUTE PIPE FROM HEAT PUMP TO CEILING CASSETTES. CONNECT REFRIGERANT PIPING TO HEAT PUMP & CEILING CASSETTES AS REQUIRED BY THE MANUFACTURER.
- INTERLOCK VENTILATION AIR MOTORIZED DAMPER TO OPEN WHEN EF-2 ENERGIZES (WITH LIGHTING CIRCUIT).



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

DUCTLESS HEAT PUMP SPLIT SYSTEM SCHEDULE - OUTDOOR UNITS

MARK	MANUFACTURER	MODEL	TONS	EFFICIENCY RATING SEER/COP	COOLING DATA			HEATING DATA (HP)		ELECTRICAL DATA			ACCESSORIES AND INSTALLATION NOTES
					TOTAL BTU/H	AMBIENT	EVAP. EAT	BTU/H		VOLTAGE	M.C.A.	M.O.C.P.	
HP 1	DAIKIN	RMXS48LVJU	4	16.0 / 3.88	48,000	95°F	80°F/67°F	54,000		208/1Ø	27	30	1,2,3,4,5

1. TIME DELAY ON COMPRESSOR RE-START.
2. HAIL GUARDS.
3. ALL UNIT BREAKER SIZES SHALL BE COORDINATED WITH ELECTRICAL CONTRACTOR.
4. PROVIDE BP UNITS, REFINET JOINTS, AND REFRIGERANT PIPING LOOPS AS REQUIRED FOR A COMPLETE SYSTEM. REFRIGERANT PIPING SHALL BE SIZED PER MANUFACTURER RECOMMENDATIONS.

MECHANICAL SYMBOLS AND LEGEND

ABBR.	SYMBOL	DESCRIPTION
-		CEILING CASSETTE DUCTLESS SPLIT SYSTEM
EF		EXHAUST FAN (CEILING MOUNT)
		THERMOSTAT (48" AFF)
		DUCTWORK (NEW)
18/12		SIZE OF RECTANGULAR DUCTWORK (WIDTH/HEIGHT, INCHES)
14Ø		SIZE OF ROUND DUCTWORK (DIAMETER, INCHES)
		FLEX DUCTWORK
SA		SUPPLY AIR (POSITIVE PRESSURE)
RA		RETURN AIR (NEGATIVE PRESSURE)
EA		EXHAUST AIR (POSITIVE OR NEGATIVE PRESSURE)
MBD		MANUAL BALANCING DAMPER
		MECHANICAL EQUIPMENT (AS SCHEDULED)
M.C.		MECHANICAL CONTRACTOR

HEAT PUMP SPLIT SYSTEM SCHEDULE - INDOOR UNITS

MARK	MANUFACTURER	MODEL	kBtu/h	EFFICIENCY RATING SEER/COP	COOLING DATA			HEATING DATA (HP)		ACCESSORIES AND INSTALLATION NOTES
					TOTAL BTU/H	AMBIENT	EVAP. EAT	BTU/H		
DS 1	DAIKIN	CDXS24LVJU	24	18.8 / 3.9	24000	95°F	80°F/67°F	21,000		1,2,3
DS 2	DAIKIN	FFQ09Q2VJU	9	18.8 / 3.9	9000	95°F	80°F/67°F	7,875		1,2,3
DS 3	DAIKIN	FFQ12Q2VJU	12	18.8 / 3.9	12000	95°F	80°F/67°F	7,875		1,2,3
DS 4	DAIKIN	FFQ12Q2VJU	12	18.8 / 3.9	12000	95°F	80°F/67°F	7,875		1,2,3
DS 5	DAIKIN	FFQ09Q2VJU	9	18.8 / 3.9	9000	95°F	80°F/67°F	7,875		1,2,3
DS 6	DAIKIN	FFQ09Q2VJU	9	18.8 / 3.9	9000	95°F	80°F/67°F	7,875		1,2,3

1. FED FROM HP-1. PROVIDE REFRIGERANT PIPE SIZE AND ROUTING PER MANUFACTURER.
2. PROVIDE WALL-MOUNTED 7-DAY PROGRAMMABLE THERMOSTAT.
3. PROVIDE CONDENSATE PIPING FROM EACH UNIT TO DAYLIGHT.

EXHAUST FAN SCHEDULE

MARK	MANUFACTURER	MODEL	AIRFLOW (CFM)	E.S.P. (" W.C.)	RPM (MAX)	ELECTRICAL DATA			CONTROL METHOD	ACCESSORIES AND INSTALLATION NOTES
						VOLTAGE	WATTS	HP		
EF 1	COOK	GC-146	70	0.25	800	120/1Ø	30	-	LIGHTING CIRCUIT	1,2,3,4
EF 2	COOK	GC-186	200	0.25	1100	120/1Ø	82	-	LIGHTING CIRCUIT	1,2,3,4

1. UNIT-MOUNTED VARIABLE SPEED CONTROLLER.
2. BACKDRAFT DAMPER.
3. BIRD SCREEN.
4. WALL CAP FOR DISCHARGE.

VENTILATION AIR CALCULATIONS (2018 IMC)

UNIT	OCCUPANCY CLASSIFICATION	AREA (SQ.FT.)	OCCUPANCY DENSITY (PEOPLE/100 SQ. FT.)	ACTUAL OCCUPANCY (PEOPLE)	DENSITY-BASED OCCUPANCY (PEOPLE)	PEOPLE-BASED VENTILATION (CFM/PERSON)	AREA-BASED VENTILATION (CFM/SQ.FT.)	REQUIRED OUTDOOR AIR (CFM)	UNIT TOTAL OUTDOOR AIR (CFM)
DS 1	SALON	332	25	2	8	20	0.12	100	200
DS 2	OFFICE	337	5	1	2	5	0.06	32	35
DS 3	OFFICE	327	5	1	2	5	0.06	31	35
DS 4	OFFICE	327	5	1	2	5	0.06	31	35
DS 5	CONFERENCE	172	50	4	9	5	0.06	38	40
DS 6	OFFICE	59	5	-	1	5	0.06	11	30
	CORRIDOR	212	0	0	0	0	0.06	16	

GRILL, REGISTER, & DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	FACE SIZE (INCHES)	NECK SIZE (INCHES)	FINISH	NOTES
CD-1	TITUS	TMS/3	24x24	10Ø	WHITE	-
RG-1	TITUS	PAR/3	24x24	22x22	WHITE	-

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02.10.20	COMMENTS/REVISIONS	PERMIT	DESCRIPTION	MARK	DATE	SHEET	TITLE
							MECHANICAL FLOOR PLAN

PROJECT NO: 0907016
MODEL FILE:
DRAWN BY: CTG
CHK'D BY: CTG

M1.0

⊗	ELECTRICAL KEY NOTES
1	PROVIDE ELECTRICAL CONNECTIONS FROM HEAT PUMP TO INDOOR UNITS PER MANUFACTURER REQUIREMENTS.

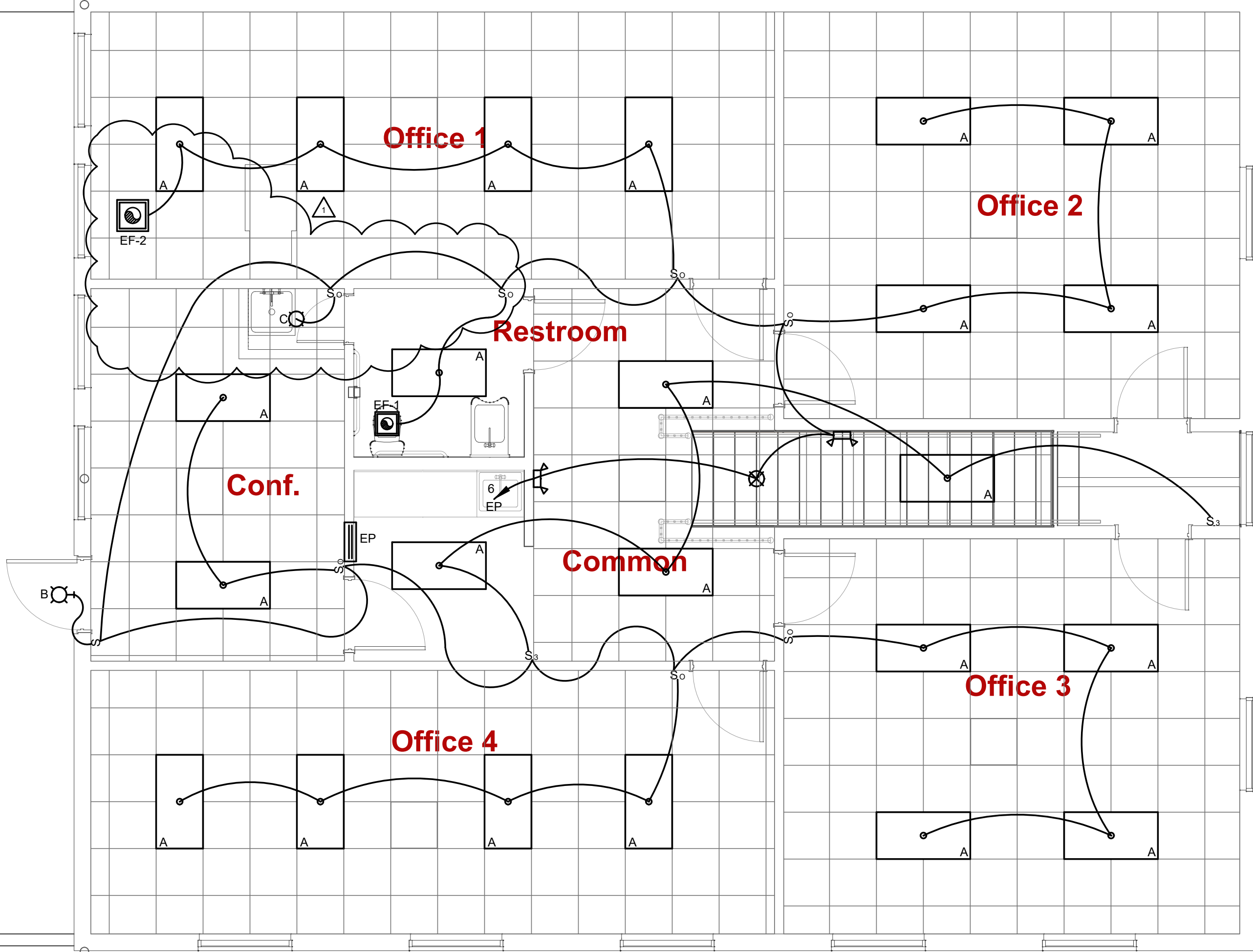
- ELECTRICAL GENERAL NOTES**
- COORDINATE WITH ALL PROJECT CONTRACTORS AND VERIFY EXISTING CONDITIONS FOR PROPER INSTALLATION OF SYSTEMS AS INTENDED.
 - ELECTRICAL CONTRACTOR SHALL PROPERLY BALANCE ALL BRANCH CIRCUITS BETWEEN THE PHASES OF THE SYSTEM REGARDLESS OF CIRCUITING INDICATED.
 - ALL EXPOSED RACEWAYS SHALL BE IN EMT CONDUIT, MC CABLE IS NOT PERMITTED IN EXPOSED AREAS.
 - ELECTRICAL CONTRACTOR SHALL REMOVE ALL EXISTING ELECTRICAL EQUIPMENT, FIXTURES, SYSTEMS, CONDUIT AND WIRE, ETC. NOT BEING REUSED. REFER TO 'REMODELING WORK' PARAGRAPH OF SPECIFICATIONS.
 - ELECTRICAL CONTRACTOR TO COORDINATE MANUFACTURER ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT BEING FURNISHED WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
 - ALL ELECTRICAL DEVICES ARE EXISTING AND TO REMAIN UNLESS NOTED OTHERWISE OR CONFLICT WITH NEW CONSTRUCTION. MAINTAIN PROPER OPERATION OF ALL EXISTING ELECTRICAL.
 - ALL MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
 - EACH BRANCH CIRCUIT SHALL HAVE A DEDICATED NEUTRAL PER NEC 200.4.
 - ALL BRANCH CIRCUITS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF 3% VOLTAGE DROP. ALL FEEDERS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF 2% VOLTAGE DROP. ELECTRICAL CONTRACTOR SHALL VERIFY WIRING INDICATED IS SUFFICIENT AND INCREASE CONDUCTOR SIZE AS REQUIRED BASED OFF ACTUAL INSTALLED LENGTH OF CONDUCTORS.

LIGHT FIXTURE SCHEDULE

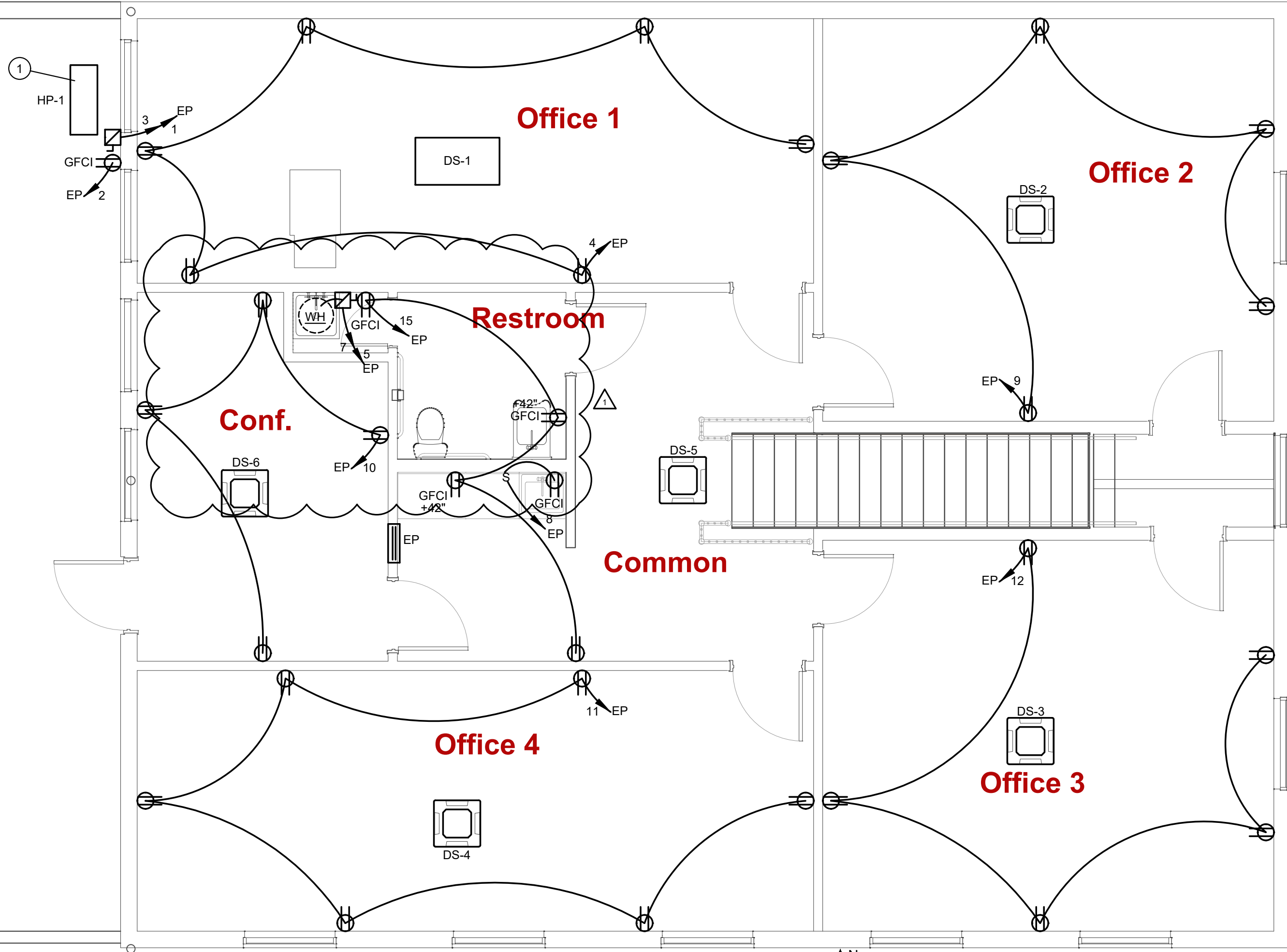
MARK	MANUFACTURER & CATALOG NUMBER	VOLTS WATTS	LAMPS	DESCRIPTION
A	LITHONIA 2AVL4-40LSE-ADP-GZ10-LP840	120 / 47	INCLUDED	LED DIRECT/INDIRECT TROFFER, 4000K, 4000 LUMENS, DIMMABLE TO 10%, ACRYLIC LENS
B	DLC 51-262	120 / 55	INCLUDED	LED WALL PACK, 5000K, 7,100 LUMENS, HEAVY DUTY POLYCARBONATE HOUSING AND LENS
C	H.E. WILLIAMS #LDN6-35/30-L06AR-LSS-120-EZ10	120 / 35	INCLUDED	6" RECESSED LED CAN DOWNLIGHT, 3500K, 3,000 MAX LUMENS, DIMMING, CLEAR SEMI-SPECULAR FINISH (STANDARD).
⚡	LITHONIA ELMLT-W-LP06VS-LTP	120 / 1	INCLUDED	EMERGENCY LIGHT WITH TWIN ADJUSTABLE LED HEADS AND LITHIUM IRON PHOSPHATE BATTERY, MOUNT AT 7'-6"±, TO CLEAR OBSTACLES. (PROVIDES 1 FC AVG. ON 54" CENTER FIXTURE SPACING), WHITE FINISH
⊗	DUAL-LITE EVC-U-R-W-D4-0	120 / 1	INCLUDED	EXIT LIGHT WITH LED LAMPS, RED LETTERS ON WHITE BACKGROUND, UNIVERSAL MOUNT, BATTERY BACKUP

ELECTRICAL SYMBOLS AND LEGEND

SYMBOL	DESCRIPTION
+48"	NON-STANDARD MOUNTING HEIGHT FOR INDICATED DEVICE (DISTANCE IS FINISH FLOOR TO CENTERLINE)
⊗	ELECTRICAL PLAN NOTE
LP 2	HOME RUN TO PANEL AND CIRCUIT NUMBERS INDICATED. ROUTE CONCEALED IN CONDUIT.
—	#12 WIRE IN CONDUIT (REFER TO PANEL SCHEDULE AND SPECIFICATIONS)
—	GROUNDING CONDUCTOR (#12 WIRE U.N.O.)
EXIT	EXIT LIGHT (DIRECTIONAL ARROWS AS INDICATED)
A •	LED FIXTURE, REFER TO LIGHT FIXTURE SCHEDULE
⊕	DUPLEX RECEPTACLE (BOTTOM OF BOX AT 16" AFF UNLESS NOTED OTHERWISE)
—	PANEL BOARD (TOP OF BOX 72" AFF, IF NEW)
S	SINGLE POLE WALL SWITCH (TOP OF BOX 48" AFF)
S ₃	THREE WAY WALL SWITCH (TOP OF BOX 48" AFF)
S ₀	INFRARED OCCUPANCY SENSOR (WATT STOPPER #PW-100) (TOP OF BOX 48" AFF)
E.C.	ELECTRICAL CONTRACTOR



↑N ELECTRICAL FLOOR PLAN - LIGHTING
SCALE: 1/4" = 1'-0"



↑N ELECTRICAL FLOOR PLAN - POWER
SCALE: 1/4" = 1'-0"

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MARK	DATE	DESCRIPTION	ELECTRICAL FLOOR PLAN
SHEET	TITLE		

PROJECT NO: 0907016
MODEL FILE:
DRAWN BY: CTG
CHK'D BY: CTG

E1.0

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DATE	COMMENTS/REVISIONS
02.10.20	PERMIT
01.27.20	DESCRIPTION
MARK SHEET	TITLE
	ELECTRICAL DETAILS

PROJECT NO: 0907016
MODEL FILE:
DRAWN BY: CTG
CHK'D BY: CTG

E2.0

ELECTRICAL SPECIFICATIONS

- GENERAL PROVISIONS:
 - PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEMS OUTLINED.
 - OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
 - ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE NATIONAL ELECTRIC CODE (NEC), AND ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
 - ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.
 - DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, CONDUIT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
 - PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.
 - CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
 - CONTRACTOR SHALL PROVIDE ACCESS PANELS WHERE NECESSARY FOR CONCEALED ELECTRICAL COMPONENTS.
- OPERATION AND MAINTENANCE MANUALS:
 - DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
 - ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.
 - ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE BOUND IN A 3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC.
- MANUFACTURERS:
 - MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.
- TESTING, AND BALANCING:
 - ALL CIRCUITS SHALL BE TESTED FOR CONTINUITY, SHORTS, AND GROUNDS BEFORE CONNECTING TO THE PROPER PHASE AS DESIGNED TO BALANCE THE LOADING BETWEEN PHASES.
 - POWER AND LIGHTING PANELS SHALL BE PROPERLY PHASED TO DISTRIBUTE THE LOAD AND SHALL BE CONNECTED AND ADJUSTED TO OPERATE AS SPECIFIED.
 - ALL MOTORS AND SIMILAR EQUIPMENT SHALL BE CHECKED FOR PROPER PHASE ROTATION AND OPERATION.
- RACEWAYS:
 - CONDUIT INSIDE THE BUILDING SHALL BE METALLIC TUBING (EMT), BEARING THE UL LABEL, WITH COMPRESSION TYPE FITTINGS OR SCREW SET FITTINGS.
 - CONDUIT EXPOSED TO THE WEATHER, INSTALLED UNDERGROUND, IN CONCRETE, OR USED FOR SERVICE ENTRANCE SHALL BE STANDARD RIGID CONDUIT (GALVANIZED) WITH THREADED FITTINGS.
 - UNDERGROUND CONDUIT MAY BE POLYVINYL CHLORIDE WITH A DEFLECTION TEMPERATURE, UNDER LOAD AT 264 PSI, OF 78 DEGREES C, AND A TENSILE STRENGTH OF 5,200 PSI. JOINTS SHALL BE FLUSH SOLVENT WELDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE EQUAL TO CARLON POWER AND COMMUNICATIONS DUCT TYPE DB (DIRECT BURIAL). CONDUIT AND FITTINGS SHALL BE PRODUCED BY THE SAME MANUFACTURER.
 - FLEXIBLE METAL CONDUIT SHALL ONLY BE USED FOR CONNECTIONS TO MOTORS, TRANSFORMERS, AND LIGHT FIXTURES. MAXIMUM LENGTH SHALL BE 6'-0".
- CONDUCTORS:
 - WIRES SHALL BE CONTINUOUS WITHOUT SPLICES OR TAPS IN CONDUIT RUNS. ALL SPLICES SHALL BE MADE IN JUNCTION, PULL, OR OUTLET BOXES. ALL WIRE SHALL BE INSTALLED IN CONDUIT, WIREWAYS, OR OTHER PROTECTIVE COVER SANCTIONED BY CODES.
 - CONDUCTORS FOR LIGHTING AND POWER SHALL BE COPPER, MINIMUM NO. 12 A.W.G., 600 VOLT.
 - NO. 10 GAUGE AND SMALLER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY LOCATIONS), SOLID CONDUCTOR, UNLESS OTHERWISE INDICATED.
 - NO. 8 GAUGE AND LARGER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY LOCATIONS), STRANDED, UNLESS OTHERWISE INDICATED.
 - SERVICE ENTRANCE AND PANEL FEEDER CONDUCTORS, NO. 3 GAUGE AND LARGER SHALL BE TYPE XHHW-2 (WET LOCATIONS) OR THHN (DRY LOCATIONS), STRANDED COPPER, UNLESS OTHERWISE INDICATED.
- ALUMINUM SERVICE WIRE:
 - ALUMINUM SERVICE WIRE MAY BE USED FOR SERVICE ENTRANCE CONDUCTORS AND PANEL FEEDERS ONLY. ALL OTHER WIRING SHALL BE COPPER CONDUCTORS AS HEREINBEFORE SPECIFIED.
 - ALUMINUM CONDUCTORS SHALL BE TYPE XHHW-2, ALCAN, "STABILOY" TYPE ALLOY CONDUCTORS UTILIZING "AA-8030" ALUMINUM ALLOY. CONDUCTORS SHALL BE UL LISTED.
 - ALL ALUMINUM CONDUCTORS SHALL BE TERMINATED IN CONNECTIONS OR LUGS WHICH ARE DUAL RATED (AL7CU OR AL8CU) AND ARE LISTED BY UL FOR USE WITH ALUMINUM OR COPPER CONDUCTORS AND SHALL BE SIZED TO ACCEPT ALUMINUM CONDUCTORS OF THE AMPACITY SPECIFIED.
- MC CABLE:
 - MC CABLE SHALL CONSIST OF INTERLOCK ARMORED CABLE MADE OF THREE OR FOUR TYPE THHN SOLID (#8 AWG AND LARGER MAY BE STRANDED) COPPER CONDUCTORS RATED 90°C FOR DRY LOCATIONS, WITH NYLON OR EQUIVALENT UL LISTED JACKET, PER UL STANDARD 83 THE THREE CONDUCTORS SHALL BE TWISTED TOGETHER WITH THE COPPER GROUNDING CONDUCTOR, SUITABLE FILLERS, AND WRAPPED IN BINDER TAPE. THE ASSEMBLY SHALL BE ARMORED WITH SPIRALLY WRAPPED INTERLOCKED ARMOR OF ALUMINUM OR GALVANIZED STEEL.
 - CABLES SHALL BE TESTED IN ACCORDANCE WITH UL STANDARD 1569 FOR TYPE MC CABLE AND RATED AT 600 VOLTS, 90°C FOR DRY LOCATIONS AND 75°C FOR WET LOCATIONS.
- WIRING DEVICES:
 - WALL SWITCHES SHALL BE SPECIFICATION GRADE, QUIET TYPE, FLUSH TOGGLE SWITCH, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES.
 - SINGLE POLE: HUBBELL #CS1221-X, OR EQUAL.
 - THREE WAY: HUBBELL #CS1223-X, OR EQUAL.
 - RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX, GROUNDING, THREE-WIRE TYPE, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES. HUBBELL #CRS352-X, OR EQUAL.
 - GROUND FAULT INTERRUPTER RECEPTACLES (GFI) SHALL BE HUBBELL #GF20-XL. DEVICE COVER PLATES SHALL BE AS HEREINBEFORE SPECIFIED.
 - ISOLATED GROUND RECEPTACLES (IG) SHALL BE HUBBELL #CRS352IG, ORANGE COLOR. DEVICE COVER PLATES SHALL BE AS HEREINBEFORE SPECIFIED.
 - VERIFY DEVICES AND DEVICE COVERPLATES COLOR WITH ARCHITECT.
- BOXES:
 - HOT DIPPED GALVANIZED STEEL BOXES. PROVIDE TYPE TO SUIT CONDITIONS FOR INSTALLATION.
 - ALL BOXES SHALL BE FLUSH MOUNTED, UNLESS INDICATED OTHERWISE.
- PANELBOARDS:
 - FURNISH AND INSTALL CIRCUIT BREAKER PANELBOARDS AS SHOWN ON THE DRAWINGS. PANELBOARDS SHALL BE LISTED BY UL AND SO LABELED, AND SHALL BE FULLY RATED FOR THE VOLTAGE AND CURRENT CAPACITY INDICATED ON THE PANEL SCHEDULE. PANELBOARDS SHALL BE EQUAL TO GENERAL ELECTRIC TYPE AQ WITH BOLT IN TYPE BREAKERS. PANELBOARD LUGS SHALL BE RATED AT 75°C.
 - CIRCUIT BREAKER INTERRUPTING CAPACITIES SHALL MEET OR EXCEED THE AVAILABLE RMS SYMMETRICAL FAULT CURRENTS INDICATED AND AS REQUIRED TO MEET OR EXCEED THE AVAILABLE FAULT CURRENT FROM LOCAL UTILITY.
 - CIRCUIT BREAKERS SHALL MEET APPLICABLE PORTIONS OF UL STANDARD 489 AND NEMA 4B-1. CIRCUIT BREAKERS SHALL BE BOLT-ON, GROUP MOUNTED, AMBIENT MAGNETIC, WITH COMMON TRIP, UL RATED TO CARRY 80% OF NAMEPLATE RATING CONTINUOUSLY IN FREE AIR AT 40°C. CIRCUIT BREAKERS SHALL BE TRIP INDICATING AND FULLY INTERCHANGEABLE WITHOUT DISTURBING ADJACENT UNITS. WIRE TERMINALS SHALL BE RATED 75°C. THE OPERATING MECHANISM SHALL BE TRIP-FREE SO THAT CONTACTS CANNOT BE HELD CLOSED AGAINST ANY ABNORMAL OVERCURRENT OR SHORT CIRCUIT CONDITION.
 - BREAKERS SHALL MEET APPLICABLE NEMA AND/OR UL SPECIFICATIONS.
 - PANELBOARD BOXES SHALL BE GALVANIZED SHEET STEEL WITH AMPLE WIRING GUTTER SPACE IN ACCORDANCE WITH NEC. FRONTS SHALL BE OF SHEET STEEL PAINTED LIGHT GREY OVER A SUITABLE RUST INHIBITOR PRIMER. PANELBOARDS SHALL BE EQUIPPED WITH ONE PIECE DOOR, CYLINDER TUMBLER TYPE LOCK, DIRECTORY CARD-HOLDER AND QUARTER-TURN ADJUSTABLE TRIM CLAMPS.
 - PANELBOARD INTERIORS SHALL CONSIST OF REINFORCED GALVANIZED SHEET STEEL FRAMES WITH ALUMINUM BUS BARS AND CIRCUIT BREAKERS, PROPERLY SUPPORTED TO PREVENT VIBRATIONS AND BREAKAGE IN HANDLING. BUS BARS SHALL BE SEQUENCE PHASED. PANELBOARD SHALL HAVE A FULL SIZED SOLID ALUMINUM NEUTRAL AND GROUND BUS.
 - BUS BAR BRACING SHALL BE UL LISTED AS INDICATED ON DRAWINGS. ADDITIONAL BRACING SHALL BE PROVIDED AS REQUIRED TO MEET OR EXCEED INDICATED AVAILABLE FAULT CURRENTS.
 - DIRECTORY CARDS SHALL BE COMPLETELY FILLED IN BY TYPEWRITER, LISTING CIRCUIT NUMBERS AND LOAD SERVED, INCLUDING EXISTING CIRCUITS. CIRCUIT BREAKERS SHALL BE IDENTIFIED BY CIRCUIT NUMBER LABELS AS HEREINBEFORE SPECIFIED.
- DISCONNECTS:
 - DISCONNECTS SHALL BE EXTERNALLY OPERATED, QUICK-MAKE, QUICK-BREAK, SAFETY, WITH PROVISIONS FOR PAD LOCKING. FUSED AND NON-FUSED DISCONNECT SWITCHES SHALL BE PROVIDED AS INDICATED.
 - INDOOR SWITCHES SHALL BE NEMA 1 AND OUTDOOR SWITCHES SHALL BE NEMA 3R, UNLESS INDICATED OTHERWISE.
- FUSES:
 - FUSES PROTECTING CIRCUIT BREAKER PANELS SHALL BE CURRENT LIMITING UL CLASS RK-1 FUSES WITH 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE SILVER OR RATINGS ABOVE 60 AMPERES.
 - ALL OTHER FUSES SHALL BE UL CLASS RK-5, DUAL-ELEMENT WITH A MINIMUM TIME-DELAY OF 10 SECONDS AT 500% RATING. FUSES SHALL HAVE CURRENT-LIMITING SHORT-CIRCUIT LINKS AND 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE COPPER.
- LIGHT FIXTURES:
 - WHERE LIGHT FIXTURES ARE MOUNTED IN A LAY-IN CEILING, PROVIDE A MINIMUM OF 2 SUPPORT WIRES ATTACHED DIRECTLY BETWEEN EACH LIGHT FIXTURE AND THE BUILDING STRUCTURE. SUPPORT WIRES SHALL BE A MINIMUM OF 12 GAUGE GALVANIZED STEEL WIRE, SOFT ANNEALED.
 - FIXTURES ARE REQUIRED AT ALL LIGHTING OUTLETS SHOWN ON THE DRAWINGS. APPROVED LIGHTING FIXTURE WIRE IS REQUIRED IN ALL FIXTURES AND FIXTURE RACEWAYS. WEATHERPROOF WIRING IS REQUIRED FOR EXTERIOR FIXTURES. ALL PARTS OF FIXTURES AND WIRING SHALL BE IN ACCORDANCE WITH NEC REQUIREMENTS.
 - ALL FIXTURES SHALL CARRY UL AND ETL LABELS. ALL FLUORESCENT FIXTURE BALLASTS SHALL BE HIGH FREQUENCY ELECTRONIC BALLASTS WITH A "TOTAL HARMONIC DISTORTION" OF LESS THAN 20%, REGARDLESS OF THE NUMBER OF LAMPS CONNECTED TO EACH BALLAST AND SHALL HAVE CBM LABEL. ALL FLUORESCENT FIXTURES INSTALLED SHALL INCORPORATE BALLAST PROTECTION. ALL FLUORESCENT BALLASTS SHALL HAVE AN AUDIBLE NOISE RATING OF "CLASS A" OR BETTER. ALL FLUORESCENT BALLASTS SHALL HAVE A STANDARD BALLAST FACTOR UNLESS SPECIFIED OTHERWISE.
 - ALL FLUORESCENT LAMPS SHALL BE 3500 K COLOR TEMPERATURE WITH A MINIMUM COLOR RENDERING INDEX (CRI) OF 82 OR AS INDICATED ON LIGHT FIXTURE SCHEDULE.
- SLEEVES:
 - PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK.
 - INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN CONDUIT AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.
 - ROOF: PROSET OR EQUAL MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WEATHERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.
- GROUNDING:
 - GROUND ALL ELECTRICAL APPARATUS IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) 250, AND ANY LOCAL REQUIREMENTS. INSURE CONTINUOUS BOND WHERE FLEXIBLE CONDUIT IS USED. PROVIDE BONDING JUMPER INSIDE ALL FLEXIBLE CONDUIT.
 - BOND METAL PIPING SYSTEMS IN COMPLIANCE WITH NEC 250.4(A)(4).

PANEL: EP		VOLTS: 120/208V			PH: 3Ø		WIRE: 4W		LOCATION: BACK OF HOUSE			MOUNTING: FLUSH				
BUS: 125A		MAIN: 100 MCB			IC: 22,000		RMS SYM AMPS						FEEDER: SEE RISER DIAGRAM			
CKT	DESCRIPTION	AMPS	POLE	WIRE	ØA	ØB	ØC	ØA	ØB	ØC	WIRE	POLE	AMPS	DESCRIPTION	CKT NO	
1	HP-1	30	2	10	2,808			180			12	1	20	RECEPTACLE (OUTSIDE)	2	
3						2,808			1,080		12	1	20	RECEPTACLES (OFFICE 1)	4	
5	WATER HEATER	30	2	10			3,000			1,256	12	1	20	LIGHTS	6	
7					3,000			380			12	1	20	RECEPTACLE (DISPOSER)	8	
9	RECEPTACLES (OFFICE 2)	20	1	12		900			720		12	1	20	RECEPTACLES (CONFERENCE)	10	
11	RECEPTACLES (OFFICE 4)	20	1	12			1,080			900	12	1	20	RECEPTACLES (OFFICE 3)	12	
13	SPARE	20	1	12								1	20	SPARE	14	
15	RECEPTACLES (COMMONS)	20	1	12		720						1	20	SPARE	16	
17	SPACE	20	1	12								1	20	SPARE	18	
19	SPACE	20	1	12							12	1	20	SPACE	20	
21	SPACE	20	1	12							12	1	20	SPACE	22	
23	SPACE	20	1	12							12	1	20	SPACE	24	
25	SPACE	20	1	12							12	1	20	SPACE	26	
27	SPACE	20	1	12							12	1	20	SPACE	28	
29	SPACE	20	1	12							12	1	20	SPACE	30	

NOTES:

5,808	4,428	4,080	560	1,800	2,156
6,368		6,228		6,236	

TOTAL CONNECTED LOAD:

18,832 VA

NEC DEMAND LOAD:

21,879 VA

DEMAND AMPS @ 208 VOLT/3Ø:

60.73 A

PANEL EP ELECTRICAL LOAD CALCULATIONS				
LOAD TYPE	CONNECTED	FACTOR	DEMAND	CODE REF
LIGHTING	1,256	1.25	1,570	215.3
RECEPTACLES (1ST 10K)	5,960	1.00	5,960	220.44
ADD'L RECEPTACLES	-	0.50	-	220.44
HEATING	-	0.00	-	220.60
COOLING	5,616	1.00	5,616	220.60
LARGEST LOAD	4,930	0.25	1,233	220.5
WATER HEATER	6,000	1.25	7,500	422.13
SIGNAGE	-	1.25	-	215.3
KITCHEN EQUIP	-	1.00	-	220.56
MISC	-	1.00	-	215.3
SHOW WINDOWS	-	200 W/FT	-	
TOTAL VA	18,832		21,879	
AMPS @ 208 VOLT	3Ø =		60.73	AMPS