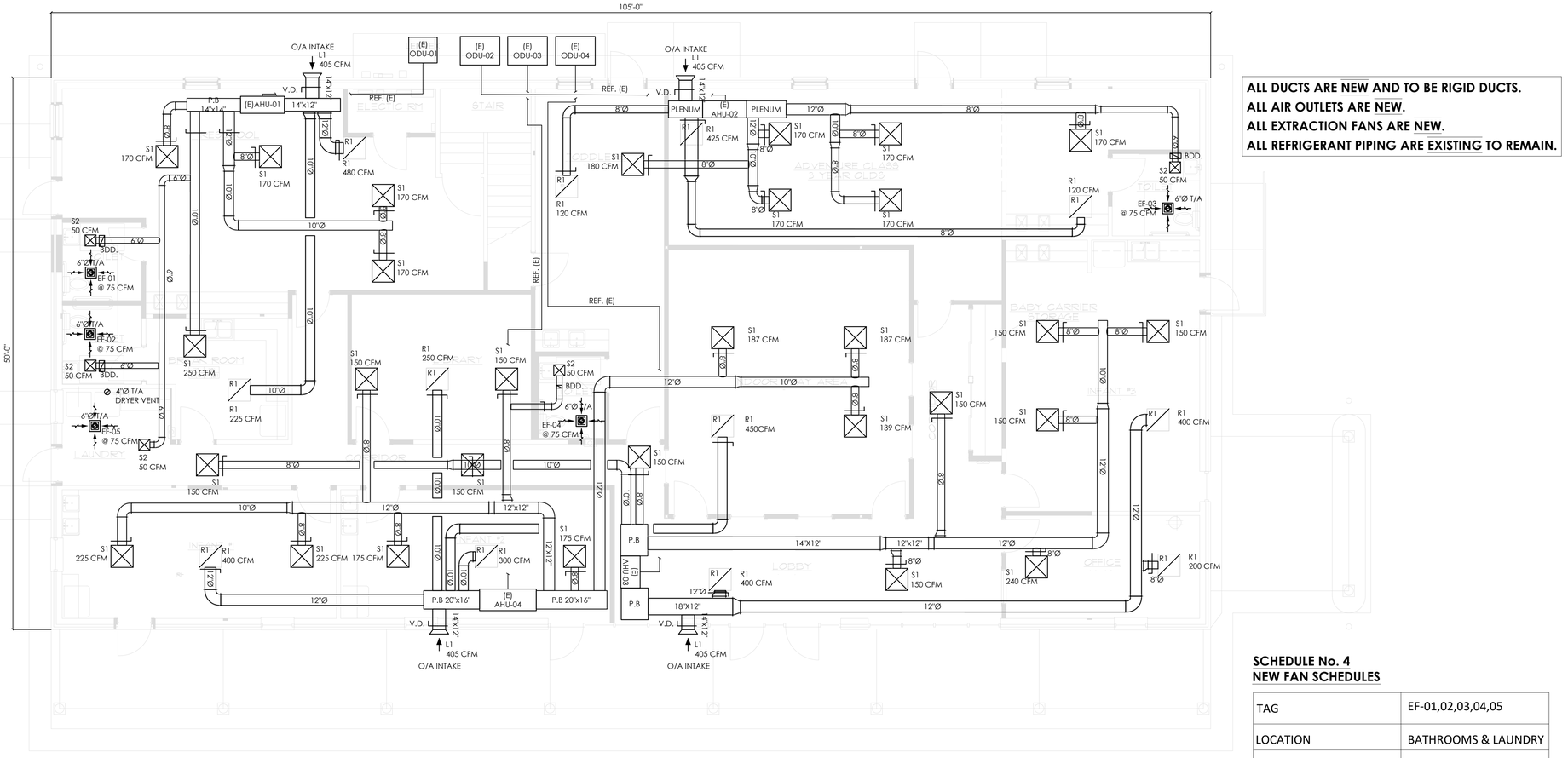
GDI ENGINEERING

GDI ENGINEERING
INNOVATING SOLUTIONS

DearOnes Daycare

Education

Cleburne, Texas



ALL DUCTS ARE NEW AND TO BE RIGID DUCTS.
ALL AIR OUTLETS ARE NEW.
ALL EXTRACTION FANS ARE NEW.
ALL REFRIGERANT PIPING ARE EXISTING TO REMAIN.

GENERAL NOTES:

1. MECHANICAL CONTRACTOR TO COORDINATE ROUTING AND LOCATION OF MECHANICAL COMPONENTS AND EQUIPMENT WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS PRIOR TO PERFORMING WORK.
2. CONTRACTOR TO CUT AND PATCH AS REQUIRED TO PERFORM THE WORK.
3. ACCESS DOORS ARE REQUIRED FOR ANY COMPONENT REQUIRING ACCESS ABOVE HARD LID CEILINGS. COORDINATE SIZE, LOCATION AND FINISH WITH ARCHITECT PRIOR TO PERFORMING WORK.
4. REFER TO THE DIAGRAMS THAT APPLY TO THIS SHEET WHICH PROVIDE GENERAL GUIDANCE FOR INSTALLATION THOUGH NOT ALL COMPONENTS AND ACCESSORIES MAY BE SHOWN.
5. PRIOR TO INSTALLATION, CONFIRM SPECIFIC LOCATION FOR ALL THERMOSTATS / SENSORS WITH ARCHITECT. MOUNT AT 48" A.F.F. OR IN ACCORDANCE WITH ADA REQUIREMENTS. PROVIDE LOCKING COVERS.
6. COORDINATE AND CONFIRM BORDER, FRAME, FINISH, AND LOCATION WITH ARCHITECT PRIOR TO ORDERING.
7. ANY PENETRATIONS THROUGH WALL STUDS, FLOOR JOISTS, OR ROOF TO BE IN ACCORDANCE WITH THE LATEST ADOPTED BUILDING CODE.
8. DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.
9. CONTRACTOR TO CONFIRM ADEQUATE RETURN AIR PATH BACK TO MAIN AIR HANDLING UNIT.

SPECIAL NOTES:

THIS IS A RENOVATION PROJECT:
1- HVAC UNITS ARE TO BE REUSED & RE-DUCTED AS REQUIRED.
REUSE WHAT YOU CAN

SCHEDULE No. 1
EXISTING HEAT PUMP INDOOR UNIT

TAG	(E) AHU-01	(E) AHU-02	(E) AHU-03	(E) AHU-04
MANUFACTURER	LENNOX	RHEEM	RHEEM	TRANE
INDOOR MODEL	CBA25UH-030-230-01	RBHB-21J15MHEA	RBHB-24J20MLEA	TWE048P13FB0
POWER SUPPLY	208-230/1/60	208-240/1/60	208-240/1/60	200-230/1/60
MCA (A)	15	7.0	8.0	4.2
COOLING / HEATING CAPACITY (BTU/H)	30,000	36,000	48,000	48,000
ELECTRIC HEATER (kW)	-	14.4	19.2	-
AIR FLOW RATE (CFM)	1080	1080	1440	1600

SCHEDULE No. 2
EXISTING HEAT PUMP OUTDOOR UNIT

TAG	(E) ODU-01	(E) ODU-02	(E) ODU-03	(E) ODU-04
SERVING	OUTDOOR	OUTDOOR	OUTDOOR	OUTDOOR
MANUFACTURER	LENNOX	RHEEM	RHEEM	TRANE
INDOOR MODEL	ML14XP-030-230A01	RPMB-036JAZ	RPMB-048JAZ	M4HP4048B1000AA
POWER SUPPLY	230/1/60	208-230/1/60	208-230/1/60	208-230/1/60
MCA (A)	17.0	24.0	25.0	24.6
MOP (A)	25.0	40.0	40.0	40
NOMINAL CAPACITY (BTU/H) COOLING/ HEATING	30,000	36,000	48,000	48,000

SCHEDULE No. 3
AIR OUTLETS

TAG	DESCRIPTION	MANUFACTURER	MODEL	MOUNTING
S1	SUPPLY DIFFUSER	TITUS	24in. x 24in.	Duct Mounted
S2	SUPPLY DIFFUSER	TITUS	12in. x 12in.	Duct Mounted
R1	RETURN DIFFUSER	TITUS	24in. x 24in.	Duct Mounted

NOTES:

1. COORDINATE FINISH, COLOR, BORDER AND EXACT LOCATION WITH OWNER PRIOR TO ORDERING.
2. PROVIDE OPPOSED BLADE DAMPER ACCESSIBLE THROUGH DIFFUSER FACE FOR GYP BD. CEILING INSTALLATIONS.
3. PROVIDE DUCT TRANSITIONS AS REQUIRED.
4. RETURNS R1 ARE PROVIDED WITH PROPER FILTERS.

SCHEDULE No. 4
NEW FAN SCHEDULES

TAG	EF-01,02,03,04,05
LOCATION	BATHROOMS & LAUNDRY
SELECTED FLOW (CFM)	75
ESP (IN. H2O)	0.25"
ELECTRICAL (V / PH / HZ)	120 / 1 / 60
POWER / Amps	25 W
MOTOR SPEED (RPS)	MULTI SPEED
FAN TYPE	CEILING FANS
MANUFACTURER	PANASONIC
MODEL	WHISPER FV-0511VKS2

NOTES:

1. PROVIDE UL LISTING.
2. PROVIDE ENERGY STAR COMPLIANCE.
3. INTERLOCK WITH WALL SWITCH.
4. PROVIDE MOTOR WITH THERMAL OVERLOADS.

SCHEDULE No. 5
OUTDOOR AIR LOUVER

TAG	QTY	MODEL	WIDTH x HEIGHT (in)	AIRFLOW	FLOW AREA	FREE AREA	FREE AREA VELOCITY	PD
L1	4	ELF211D	24x24	405 cfm	1.2 ft²	30%	339 fpm	0.01 w.g

NOTES:

1. COORDINATE WITH THE ARCHITECT THE FINISH, COLOR, BORDER AND EXACT LOCATION PRIOR TO ORDERING.
2. FURNISH LOUVER WITH ACTUATED DAMPER AND BACK-DRAFT DAMPERS FOR BALANCING OUTDOOR AIR.

M1.01

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Air System Sizing Summary for ODU-01

Project Name: NEW
Prepared by: TLO
11/19/2022
10:01AM

Air System Information

Air System Name	ODU-01	Number of zones	1
Equipment Class	SPLT AHU	Floor Area	881.0 ft²
Air System Type	SZCAV	Location	Dallas, Texas

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	2.5	Tons	Load occurs at	Jul 1600	
Total coil load	30.2	MBH	OA DB / WB	99.4 / 73.8	°F
Sensible coil load	25.5	MBH	Entering DB / WB	86.6 / 80.3	°F
Coil CFM at Jul 1600	941	CFM	Leaving DB / WB	60.9 / 59.3	°F
Max block CFM	941	CFM	Coil ADP	58.9	°F
Sum of peak zone CFM	941	CFM	Bypass Factor	0.100	
Sensible heat ratio	0.844		Resulting RH	53	%
CFM/Ton	373.1		Design supply temp	58.0	°F
ft²/Ton	350.0		Zone T-stat Check	1 of 1	OK
BTU/(hr·ft²)	34.3		Max zone temperature deviation	0.0	°F
Water flow @ 10.0 °F rise	N/A				

Central Heating Coil Sizing Data

Max coil load	32.2	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	941	CFM	BTU/(hr·ft²)	36.6	
Max coil CFM	941	CFM	Ent. DB / Lvg DB	46.1 / 78.5	°F
Water flow @ 20.0 °F drop	N/A				

Supply Fan Sizing Data

Actual max CFM	941	CFM	Fan motor BHP	0.00	BHP
Standard CFM	920	CFM	Fan motor kW	0.00	kW
Actual max CFM/ft²	1.07	CFM/ft²	Fan static	0.00	in wg

Outdoor Ventilation Air Data

Design airflow CFM	421	CFM	CFM/person	26.28	CFM/person
CFM/ft²	0.48	CFM/ft²			

Zone Sizing Summary for ODU-01

Project Name: NEW
Prepared by: TLO
11/19/2022
10:01AM

Air System Information

Air System Name	ODU-01	Number of zones	1
Equipment Class	SPLT AHU	Floor Area	881.0 ft²
Air System Type	SZCAV	Location	Dallas, Texas

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	941	941	1.07	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	16.0	Jul 1800	9.0	881.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
PRESCHOOL	1	10.9	Jul 1800	605	5.9	599.0	1.01
TOILET 1	1	0.6	Jul 2000	50	0.7	51.0	0.98
TOILET 2	1	0.7	Jul 2000	50	0.9	52.0	0.96
TOILET 3	1	0.4	Jul 1800	50	0.1	51.0	0.98
BREAK ROOM	1	3.3	Jul 1800	185	1.4	128.0	1.45

Air System Sizing Summary for ODU-02

Project Name: NEW
Prepared by: TLO
11/19/2022
10:01AM

Air System Information

Air System Name	ODU-02	Number of zones	1
Equipment Class	SPLT AHU	Floor Area	885.0 ft²
Air System Type	SZCAV	Location	Dallas, Texas

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	2.5	Tons	Load occurs at	Jul 1700	
Total coil load	29.7	MBH	OA DB / WB	98.0 / 73.5	°F
Sensible coil load	24.3	MBH	Entering DB / WB	85.1 / 80.5	°F
Coil CFM at Jul 1700	896	CFM	Leaving DB / WB	59.5 / 58.6	°F
Max block CFM	896	CFM	Coil ADP	58.2	°F
Sum of peak zone CFM	896	CFM	Bypass Factor	0.100	
Sensible heat ratio	0.817		Resulting RH	55	%
CFM/Ton	357.7		Design supply temp	58.0	°F
ft²/Ton	357.5		Zone T-stat Check	1 of 1	OK
BTU/(hr·ft²)	33.6		Max zone temperature deviation	0.0	°F
Water flow @ 10.0 °F rise	N/A				

Central Heating Coil Sizing Data

Max coil load	29.8	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	896	CFM	BTU/(hr·ft²)	33.7	
Max coil CFM	896	CFM	Ent. DB / Lvg DB	47.9 / 79.4	°F
Water flow @ 20.0 °F drop	N/A				

Supply Fan Sizing Data

Actual max CFM	896	CFM	Fan motor BHP	0.00	BHP
Standard CFM	876	CFM	Fan motor kW	0.00	kW
Actual max CFM/ft²	1.01	CFM/ft²	Fan static	0.00	in wg

Outdoor Ventilation Air Data

Design airflow CFM	368	CFM	CFM/person	19.35	CFM/person
CFM/ft²	0.42	CFM/ft²			

Zone Sizing Summary for ODU-02

Project Name: NEW
Prepared by: TLO
11/19/2022
10:02AM

Air System Information

Air System Name	ODU-02	Number of zones	1
Equipment Class	SPLT AHU	Floor Area	885.0 ft²
Air System Type	SZCAV	Location	Dallas, Texas

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	896	896	1.01	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	15.9	Jul 1800	9.6	885.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
ADVENTURE CLASS	1	12.6	Jul 1800	701	7.3	642.0	1.09
LIBRARY	1	2.6	Jul 1800	145	1.5	184.0	0.79
TOILET 4	1	0.8	Aug 1900	50	0.8	59.0	0.85

Air System Sizing Summary for ODU-03

Project Name: NEW
Prepared by: TLO
11/19/2022
10:02AM

Air System Information

Air System Name	ODU-03	Number of zones	1
Equipment Class	SPLT AHU	Floor Area	1454.0 ft²
Air System Type	SZCAV	Location	Dallas, Texas

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	2.7	Tons	Load occurs at	Jul 1800	
Total coil load	32.6	MBH	OA DB / WB	95.7 / 72.8	°F
Sensible coil load	28.0	MBH	Entering DB / WB	80.0 / 66.1	°F
Coil CFM at Jul 1800	1272	CFM	Leaving DB / WB	59.2 / 57.9	°F
Max block CFM	1272	CFM	Coil ADP	56.9	°F
Sum of peak zone CFM	1272	CFM	Bypass Factor	0.100	
Sensible heat ratio	0.875		Resulting RH	53	%
CFM/Ton	464.8		Design supply temp	58.0	°F
ft²/Ton	544.5		Zone T-stat Check	1 of 1	OK
BTU/(hr·ft²)	22.0		Max zone temperature deviation	0.0	°F
Water flow @ 10.0 °F rise	N/A				

Central Heating Coil Sizing Data

Max coil load	28.9	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	1272	CFM	BTU/(hr·ft²)	19.9	
Max coil CFM	1272	CFM	Ent. DB / Lvg DB	59.0 / 80.5	°F
Water flow @ 20.0 °F drop	N/A				

Supply Fan Sizing Data

Actual max CFM	1272	CFM	Fan motor BHP	0.00	BHP
Standard CFM	1245	CFM	Fan motor kW	0.00	kW
Actual max CFM/ft²	0.87	CFM/ft²	Fan static	0.00	in wg

Outdoor Ventilation Air Data

Design airflow CFM	253	CFM	CFM/person	21.12	CFM/person
CFM/ft²	0.17	CFM/ft²			

Zone Sizing Summary for ODU-03

Project Name: NEW
Prepared by: TLO
11/19/2022
10:02AM

Air System Information

Air System Name	ODU-03	Number of zones	1
Equipment Class	SPLT AHU	Floor Area	1454.0 ft²
Air System Type	SZCAV	Location	Dallas, Texas

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	1272	1272	0.87	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	22.8	Jul 1800	14.8	1454.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
INFANT 3	1	7.3	Aug 1800	409	3.5	431.0	0.95
LOBBY	1	7.4	Jul 1800	411	4.8	621.0	0.66
OFFICE	1	3.1	Jul 1800	170	3.0	164.0	1.04
LAUNDRY	1	5.1	Jul 1800	282	3.5	238.0	1.19

Air System Sizing Summary for ODU-04

Project Name: NEW
Prepared by: TLO
11/19/2022
10:02AM

Air System Information

Air System Name	ODU-04	Number of zones	1
Equipment Class	SPLT AHU	Floor Area	1427.0 ft²
Air System Type	SZCAV	Location	Dallas, Texas

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	3.7	Tons	Load occurs at	Jul 1500	
Total coil load	44.8	MBH	OA DB / WB	100.0 / 74.0	°F
Sensible coil load	36.6	MBH	Entering DB / WB	86.8 / 69.3	°F
Coil CFM at Jul 1500	1285	CFM	Leaving DB / WB	59.9 / 58.3	°F
Max block CFM	1285	CFM	Coil ADP	56.9	°F
Sum of peak zone CFM	1285	CFM	Bypass Factor	0.100	
Sensible heat ratio	0.816		Resulting RH	56	%
CFM/Ton	348.0		Design supply temp	58.0	°F
ft²/Ton	361.9		Zone T-stat Check	1 of 1	OK
BTU/(hr·ft²)	31.4		Max zone temperature deviation	0.0	°F
Water flow @ 10.0 °F rise	N/A				

Central Heating Coil Sizing Data

Max coil load	41.4	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	1285	CFM	BTU/(hr·ft²)	29.0	
Max coil CFM	1285	CFM	Ent. DB / Lvg DB	46.1 / 78.6	°F
Water flow @ 20.0 °F drop	N/A				

Supply Fan Sizing Data

Actual max CFM	1285	CFM	Fan motor BHP	0.00	BHP
Standard CFM	1256	CFM	Fan motor kW	0.00	kW
Actual max CFM/ft²	0.90	CFM/ft²	Fan static	0.00	in wg

Outdoor Ventilation Air Data

Design airflow CFM	577	CFM	CFM/person	18.02	CFM/person
CFM/ft²	0.40	CFM/ft²			

Zone Sizing Summary for ODU-04

Project Name: NEW
Prepared by: TLO
11/19/2022
10:02AM

Air System Information

Air System Name	ODU-04	Number of zones	1
Equipment Class	SPLT AHU	Floor Area	1427.0 ft²
Air System Type	SZCAV	Location	Dallas, Texas

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	1285	1285	0.90	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	23.1	Jul 1800	9.2	1427.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
INFANT 1	1	6.3	Jul 1800	350	4.3	290.0	1.21
INFANT 2	1	4.3	Jul 1800	240	3.1	295.0	0.81
TODDLERS	1	4.6	Jul 1800	259	0.7	318.0	0.81
INDOOR PLAY AREA	1	7.9	Jul 1800	437	1.1	524.0	0.83

PROJECT: VARAND DAYCARE

TEXAS CODE IMC2015:
TABLE 403.3.1.1: MINIMUM VENTILATION RATES

S.N.	Space Name	AREA (FT2)	CFM/FT2.	OCC./1000 FT2	# PERS.	CFM/PERS.	TOTAL CFM
1	ADVENTURE CLASS	642	0.18	25	17	10	**286**
2	BREAK ROOM	128	0.06	5	1	5	**13**
3	INDOOR PLAY AREA	524	0.18	25	14	10	**234**
4	INFANT 1	290	0.18	25	8	10	**132**
5	INFANT 2	295	0.18	5	2	10	**73**
6	INFANT 3	431	0.18	25	11	10	**188**
7	LIBRARY	184	0.12	10	2	5	**32**
8	LAUNDRY	238	0.06		0		**14**
9	LOBBY	621	0.06		0		**37**
10	OFFICE	164	0.06	5	1	5	**15**
11	PRESCHOOL	599	0.18	25	15	10	**258**
12	TODDLERS	318	0.18	25	8	10	**137**
13	TOILET 1	51	0.00		0		**50**
14	TOILET 2	52	0.00		0		**50**
15	TOILET 3	51	0.00		0		**50**
16	TOILET 4	59	0.00		0		**50**
16	**TOTAL =**	**4,444**	**-**	**-**	**79**	**-**	**1,619**

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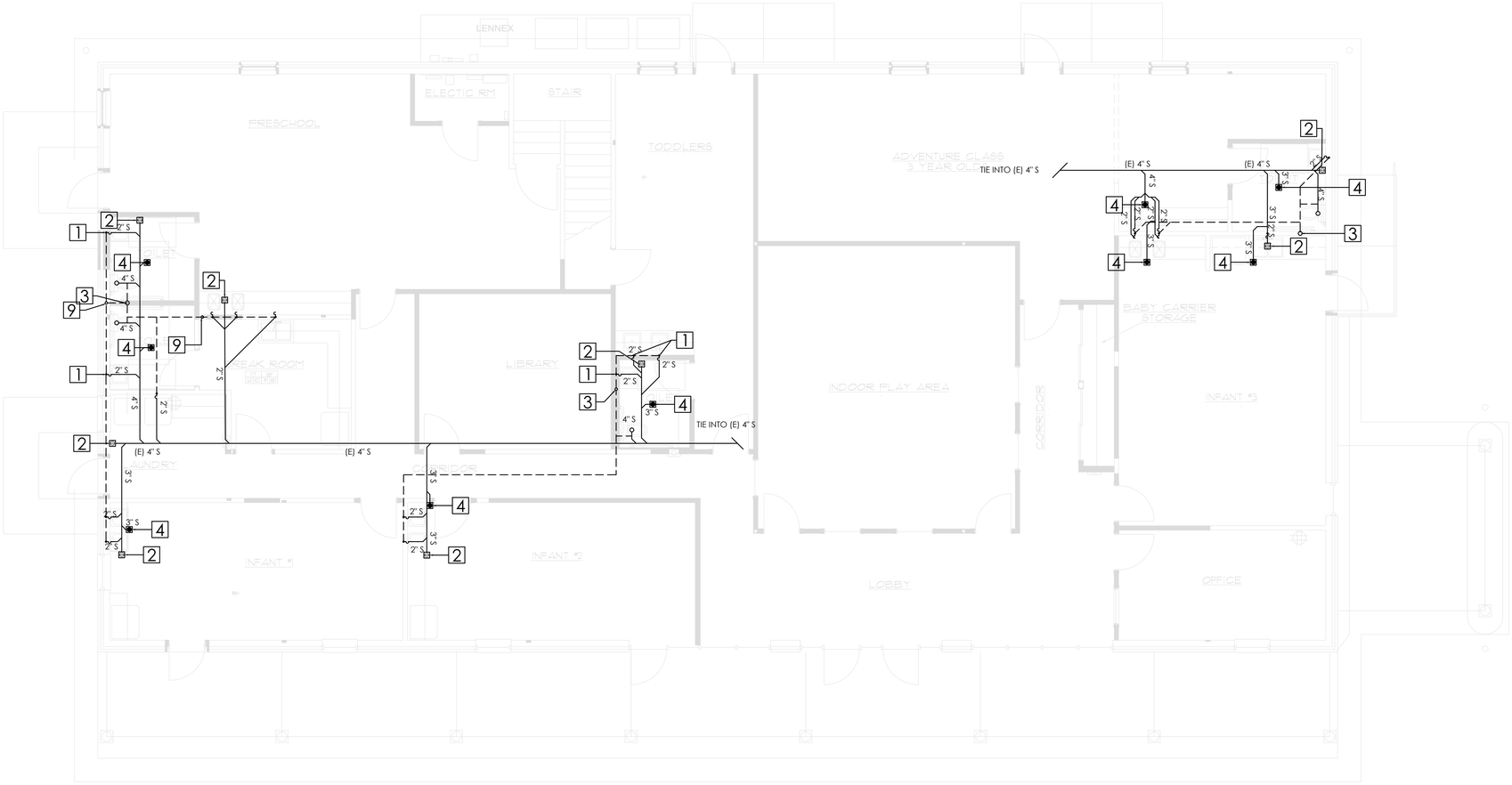

GENERAL NOTES:

1. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
5. CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
6. ALL NOTCHING, BORING, AND CUTTING OF HOLES IN WALL STUDS AND FLOOR JOISTS SHALL BE PERFORMED BASED ON THE LATEST ADOPTED AND APPROVED EDITION OF THE BUILDING CODE.
7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
10. ALL SANITARY DRAINAGE PIPING 3" AND SMALLER SHALL BE SLOPED AT $\frac{1}{4}$" PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT $\frac{1}{8}$" PER FOOT.
11. ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT $\frac{1}{8}$" PER FOOT AND PROVIDE ACCESSIBLE CLEANOUTS AT ALL CHANGES OF DIRECTION.
12. VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
13. REFER TO THE PLUMBING DIAGRAMS FOR GUIDANCE OF INSTALLATION INTENT. CONTRACTOR IS TO PROVIDE ALL COMPONENTS NECESSARY TO MEET THE DESIGN INTENT, WHETHER SHOWN IN DIAGRAM OR NOT.

SANITARY SHEET NOTES:

1. WASTE DROP AND 2" VENT RISE.
2. 4" FLOOR CLEAN-OUT.
3. 3" VENT STACK TO ABOVE.
4. 3" FLOOR DRAIN.
5. 4" SOIL DROP FROM ABOVE.
6. WASTE DROP
7. SOIL DROP AND 4"VENT RISE.
8. INDIRECT WASTE
9. VENT UP IN-WALL

FROM 2018 TEXAS IPC - TABLE 709.1:
DRAINAGE FIXTURE UNIT VALUES (DFU)

FIXTURE	D.F.U	QTY.	TOTAL D.F.U
SERVICE OR MOP SINK	2.0	13	26.0
KITCHEN SINK	2.0	1	2.0
WATER CLOSET	4.0	4	16.0
LAVATORY	1.0	4	4.0
WASHING MACHINE	3.0	1	3.0
TOTAL BUILDING DFU =			**51.0**

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SCHEDULE No. 1
ELECTRICAL WATER HEATER SCHEDULE

TAG	(E)EWH-01	(N)EWH-02
LOCATION	ATTIC	ATTIC
MANUFACTURER	AOSMITH	AOSMITH
MODEL	DEL30	DEL40
TYPE	ELECTRIC	ELECTRIC
GPM (@ 72°F RISE)	3.4	3.4
APPROX. WEIGHT (lbs)	85	85
WIDTH x DEPTH (in.)	17.3" x 14.8"	17.3" x 14.8"
HEIGHT (in)	28.7"	28.7"
WATER CONNECTION SIZE	3/4"	3/4"
GAS INLET CONNECTION	3/4"	3/4"
RE-CIRCULATING PUMP	INTEGRATED	INTEGRATED

Design calculation sheet

Project no:	Date: 2022.11.20	Sheet no.: 1 of 1	Computed by: B.M
Subject: Daycare			Checked by: MJ
Hot Water Calculation			Approved by:

Application Type: School

Water Temperature

Tin	=	50	°F	=	10	°C
Tout	=	140	°F	=	60	°C
⌂T	=	90	°F	=	50	°C

Fixture	GPH		QTY.			
Basin, Public lavatory	15	x	1	=	15	gph
Service Sink	20	x	5	=	100	gph

Showers	GPH		Shower Factor		GPH		QTY.			
Showers	225	x	1	=	225	x		=	0	gph

Other	GPH	QTY.

Maximum Possible Demand	=	115	gph
Demand Factor **(Custom)**	=	0.3	gph
Maximum Probable Demand	=	34.5	gph
Maximum Probable Demand	=	0.58	gpm
	=	0.04	L/s
Heater Recovery Capacity	=	0.58	gpm
Storage Factor **(Custom)**	=	0.6	
Storage Tank Capacity	=	20.7	gal
		78.3	liters
Actual Selection		79	Liters

Heater or Coil = 500 x gpm x ⌂T / Efficiency

Capacity = 500 x 0.58 x 90 / 0.9 = 29,000 btu/hr

Design calculation sheet

Project no:	Date: 2022.11.20	Sheet no.: 1 of 1	Computed by: B.M
Subject: Daycare			Checked by: MJ
Hot Water Calculation			Approved by:

Application Type: School

Water Temperature

Tin	=	50	°F	=	10	°C
Tout	=	140	°F	=	60	°C
⌂T	=	90	°F	=	50	°C

Fixture	GPH		QTY.			
Basin, Public lavatory	15	x	3	=	45	gph
Service Sink	20	x	8	=	160	gph
Laundry, Stationary Tub	0	x	1	=	0	gph

Showers	GPH		Shower Factor		GPH		QTY.			
Showers	225	x	1	=	225	x		=	0	gph

Other	GPH	QTY.

Maximum Possible Demand	=	205	gph
Demand Factor **(Custom)**	=	0.3	gph
Maximum Probable Demand	=	61.5	gph
Maximum Probable Demand	=	1.03	gpm
	=	0.06	L/s
Heater Recovery Capacity	=	1.03	gpm
Storage Factor **(Custom)**	=	0.6	
Storage Tank Capacity	=	36.9	gal
		139.5	liters
Actual Selection		140	Liters

Heater or Coil = 500 x gpm x ⌂T / Efficiency

Capacity = 500 x 1.03 x 90 / 0.9 = 51,500 btu/hr

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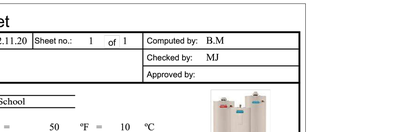

ROUGH-IN DIMENSIONS

Models	UEF	No. of Elements	Nominal Capacity	Rated Storage Volume	A		B		C		D		Shipping Weight	
					Inches	mm	Inches	mm	Inches	mm	Inches	mm	lbs.	Kg.
DEL-6	N/A	1	6	6	15-1/2	394	14-1/4	362	11	279	N/A	N/A	35	15.9
DEL-15	N/A	1	15	15	26	660	18	457	20-1/2	521	N/A	N/A	58	26.3
DEL-20	N/A	1	20	19	22-1/4	565	21-3/4	552	15-3/8	391	N/A	N/A	73	33.1
DEL-30	0.92	2	30	33	33-1/2	851	26	660	24	610	8	203	118	53.5
DEL-40**	0.92	2	40	35	37	813	23	584	24	610	8	203	118	53.5
DEL-50	0.92	2	50	48	36	914	26-1/2	673	25	635	8	203	172	78
DEN-30	0.92	2	30	37	49-3/4	1264	20-1/2	521	53-1/4	1353	8	203	118	53.5
DEN-40	0.92	2	40	45	59	1499	20-1/2	521	51-1/4	1302	8	203	125	56.7
DEN-52	0.92	2	52	55	56-1/2	1435	24	610	48-1/2	1232	8	203	145	65.8
DEN-66	N/A	2	66	60	60-3/4	1543	21-3/4	552	N/A	N/A	8	203	176	79.8
DEN-80	N/A	2	80	76	59-3/8	1508	24	610	N/A	N/A	8	203	211	95.7
DEN-120	N/A	2	120	108	62-7/16	1586	29-3/8	746	N/A	N/A	8	203	326	147.9

*No side outlet available on DEL-6 Model
**Blanket model
Note: All 66, 80 and 120 models will be manufactured with two 6.1kW elements - 12.2kW

Element Wattage (Upper/Lower)	Input kW	U.S Gallons/HR and Litres/HR at Temperature Rise Indicated											
		F°	36 F°	40 F°	54 F°	60 F°	72 F°	80 F°	90 F°	100 F°	108 F°	120 F°	126 F°
		C°	20 C°	22.2 C°	30 C°	33.3 C°	40 C°	44.4 C°	50 C°	55.5 C°	60 C°	66.6 C°	70 C°
6100/6100	12.2	GPH	138	124	92	82	69	62	55	49	46	41	39
		LPH	522	469	348	310	261	235	208	184	174	153	146

Recovery capacities at 100° F equal: for simultaneous element operation - 4.1 gal. x 2.0 KW of both elements,
For other rises multiply element KW as previously explained by 4.1 and divide by temperature rise.
Full load current for single phase = total watts.

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ELEMENT AVAILABILITY CHART (LIGHT-DUTY COMMERCIAL ELECTRIC)

Models & Elements	Voltage	Wiring	kW Input Available									
6-Gallon Models Single-Element	120V	-	1.5	2	2.5	3						
	208V	-	1.5	2	2.5	3						
	240V	-	1.5	2	2.5	3						
	277V	-	1.5	2	2.5	3						
	480V	-		2	2.5	3						
10-Gallon through 20-Gallon Models Single-Element	120V	-	1.5	2	2.5	3						
	208V	-	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
	240V	-	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
	277V	-	1.5	2	2.5	3		4	4.5	5	-	6
	480V	-		2	2.5	3		4	4.5	5	5.5	6

6-gallon model not available above 3kW
6/10/15/20-gallon models all 4# circuit (2 wire) only
† Exceeds maximum amp draw.
** Simultaneous only in 3ph

Model	Element Wattage				
		120V	208V	240V	277V	480V
DEL-30	Min Watts	N/A	4500	4500	4500	4500
	Max Watts	N/A	6000 (*)	6000 (*)	6000	6000
DEL-40	Min Watts	N/A	4500	4500	4500	4500
	Max Watts	N/A	6000 (*)	6000 (*)	6000	6000
DEL-50	Min Watts	N/A	4000	4000	4000	4000
	Max Watts	N/A	6000 (*)	6000 (*)	6000	6000
DEN-30	Min Watts	N/A	4500	4500	4500	4500
	Max Watts	N/A	6000 (*)	6000 (*)	6000	6000
DEN-40	Min Watts	3000 (*)	3000	3000	3000	3000
	Max Watts	3000 (*)	6000 (*)	6000 (*)	6000	6000
DEN-52	Min Watts	2500	2500	2500	2500	2500
	Max Watts	3000 (*)	6000 (*)	6000 (*)	6000	6000

Additional limitations apply to 120V, 208V, and 240V - Simultaneous Operation are not available (*) for these voltages.

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RECOVERY CAPACITIES

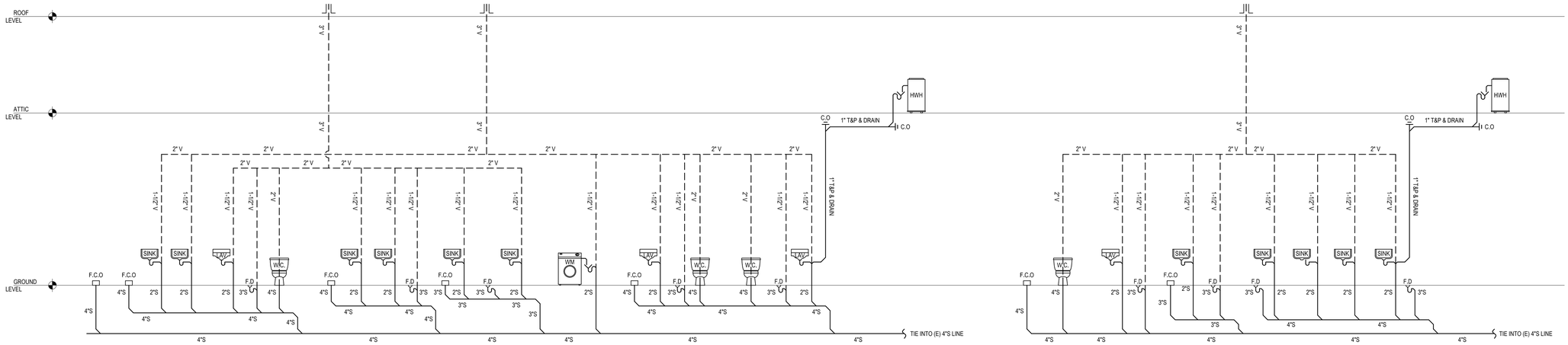
Element Wattage (Upper/ Lower)	Input	U. S. Gallons/Hr and Litres/Hr at Temperature Rise Indicated											
		F°	36	40	54	60	72	80	90	100	108	120	126
	kW	C°	20	22.2	30	33.3	40	44.4	50	55.5	60	66.6	70
Non-Simultaneous Operation													
/1500	1.5	GPH	17	15	11	10	8	8	7	6	6	5	5
		LPH	64	58	43	38	32	29	26	23	21	19	18
/2000	2	GPH	23	20	15	14	11	10	9	8	8	7	6
		LPH	85	77	57	51	43	38	34	31	28	26	24
/2500	2.5	GPH	28	25	19	17	14	13	11	10	9	8	8
		LPH	107	96	71	64	53	48	43	38	36	32	30
3000/3000	3	GPH	34	30	23	20	17	15	14	12	11	10	10
		LPH	128	115	85	77	64	58	51	46	43	38	37
4000/4000	4	GPH	45	41	30	27	23	20	18	16	15	14	13
		LPH	170	153	114	102	85	77	68	61	57	51	49
4500/4500	4.5	GPH	51	46	34	30	25	23	20	18	17	15	14
		LPH	192	173	128	115	96	86	77	69	64	58	55
5000/5000	5	GPH	56	51	38	34	28	25	23	20	19	17	16
		LPH	213	192	142	128	107	96	85	77	71	64	61
6000/6000	6	GPH	68	61	45	41	34	30	27	24	23	20	19
		LPH	256	230	170	153	128	115	102	92	85	77	73
Simulatanseous Operation													
3000/3000	6	GPH	68	61	45	41	34	30	27	24	23	20	19
		LPH	256	230	170	153	128	115	102	92	85	77	73
4000/4000	8	GPH	90	81	60	54	45	41	36	32	30	27	26
		LPH	341	307	227	205	170	153	136	123	114	102	97
4500/4500	9	GPH	101	91	68	61	51	46	41	36	34	30	29
		LPH	384	345	256	230	192	173	153	138	128	115	110
5000/5000	10	GPH	113	101	75	68	56	51	45	41	38	34	32
		LPH	426	384	284	256	213	192	170	153	142	128	122
6000/6000	12	GPH	135	122	90	81	68	61	54	49	45	41	39
		LPH	511	460	341	307	256	230	205	184	170	153	146

Recovery capacities at 100° F rise equal: for non-simultaneous element operation = 4.1 gal. x kW of one element; for simultaneous element operation = 4.1 gal. x 2.0 kW of both elements.
For other rises multiply element kW as previously explained by 4.1 and divide by temperature rise. Full load current for single phase = total watts/voltage.

SPECIFICATION

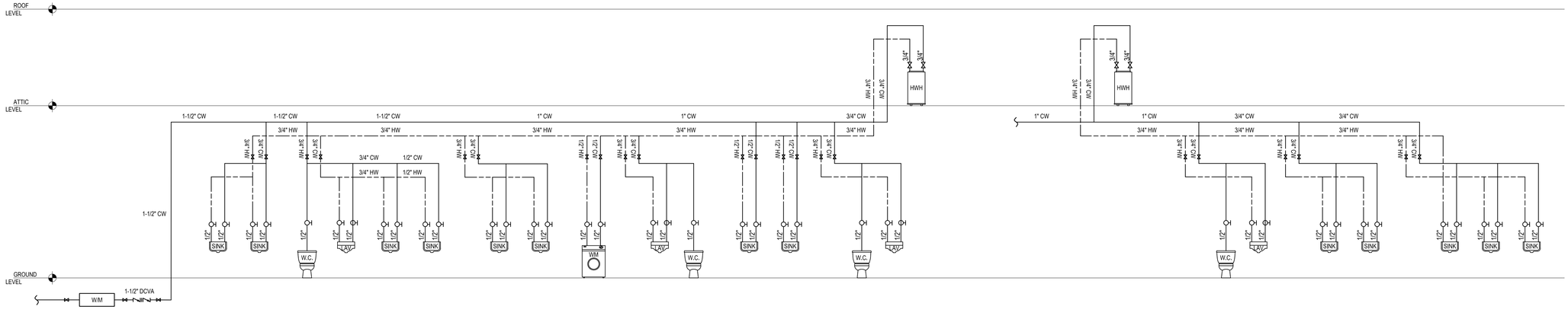
The water heater(s) shall be Dura-Power™ Model(s) No. _____, as manufactured by A. O. Smith or an approved equal. Heater(s) shall be rated at _____kW, _____ volts, _____ phase, 60 cycle AC, and listed by Underwriters' Laboratories. Models shall meet the standby loss requirements of the U.S. Department of energy and current edition of ASHRAE/IES 90.1. Tank(s) shall be _____ gallon capacity. Heater(s) shall have 150 psi working pressure and be equipped with extruded high density anode rod. All internal surfaces of the heater(s) exposed to water shall be glasslined with an alkaline borosilicate composition that has been fused-to-steel by firing at a temperature range of 1400°F to 1600°F. Electric heating elements shall be medium watt density with zinc plated copper sheath. Each element shall be controlled by an individually mounted thermostat and high temperature cutoff switch. The outer jacket shall be of backed enamel finish and shall enclose the tank with foam insulation. Electrical junction box with heavy duty terminal block shall be provided (except on 120V & 277V (no junction box on DEL-6 thru 20)). The drain valve shall be located in the front for ease of servicing. Heater tank shall have a three year limited warranty as outlined in the written warranty. Fully illustrated instruction manual to be included.

For technical information, call 800 527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.



SANITARY & DRAINAGE RISER DIAGRAM - PART 1 OF 1

SCALE: N.T.S.



WATER SUPPLY RISER DIAGRAM - PART 1 OF 1

SCALE: N.T.S.

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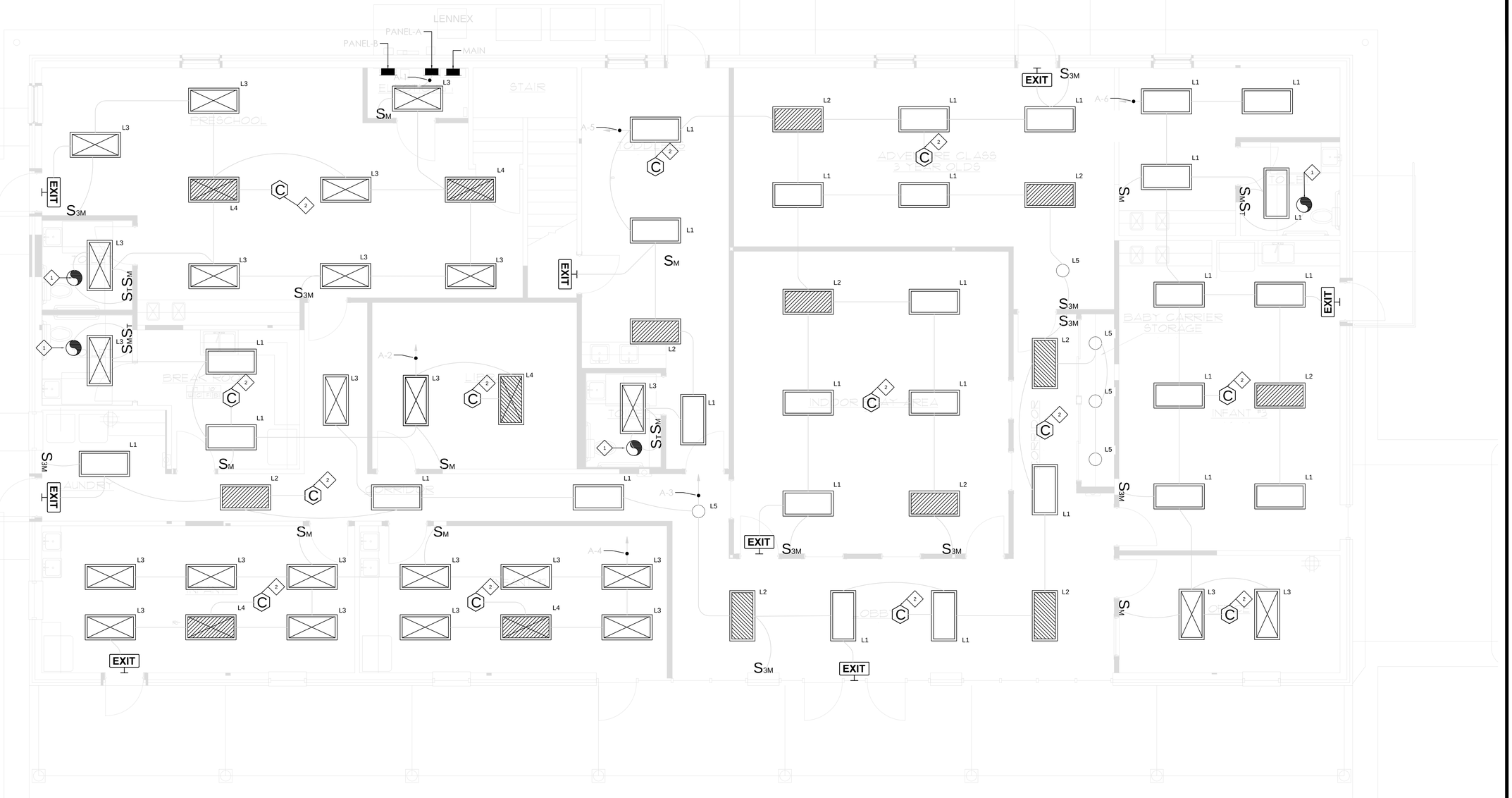

SHEET NOTES:

1. PROVIDE HEAVY DUTY JUNCTION BOX, FLUSH IN CEILING (OR WALL) FOR EXHAUST FANS THAT TURNS ON WHEN THE TIMER SWITCH OF THIS FAN IS TURNED ON
2. FURNISH AND INSTALL SMOKE OR COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR AS REQUIRED. INTERLOCK WITH OTHER DETECTORS

SPECIAL NOTES:

THIS IS A RENOVATION PROJECT:
1-ALL OF THE LIGHT FIXTURES ON THE INTERIOR ARE TO BE REPLACED.
2- THE ELECTRICAL OUTLETS ARE A MIXTURE OF NEW AND EXISTING.
THE (E) NOTED RECEPTACLES ARE TO REMAIN
3- THE EXISTING PANEL NEEDS TO BE REUSED.

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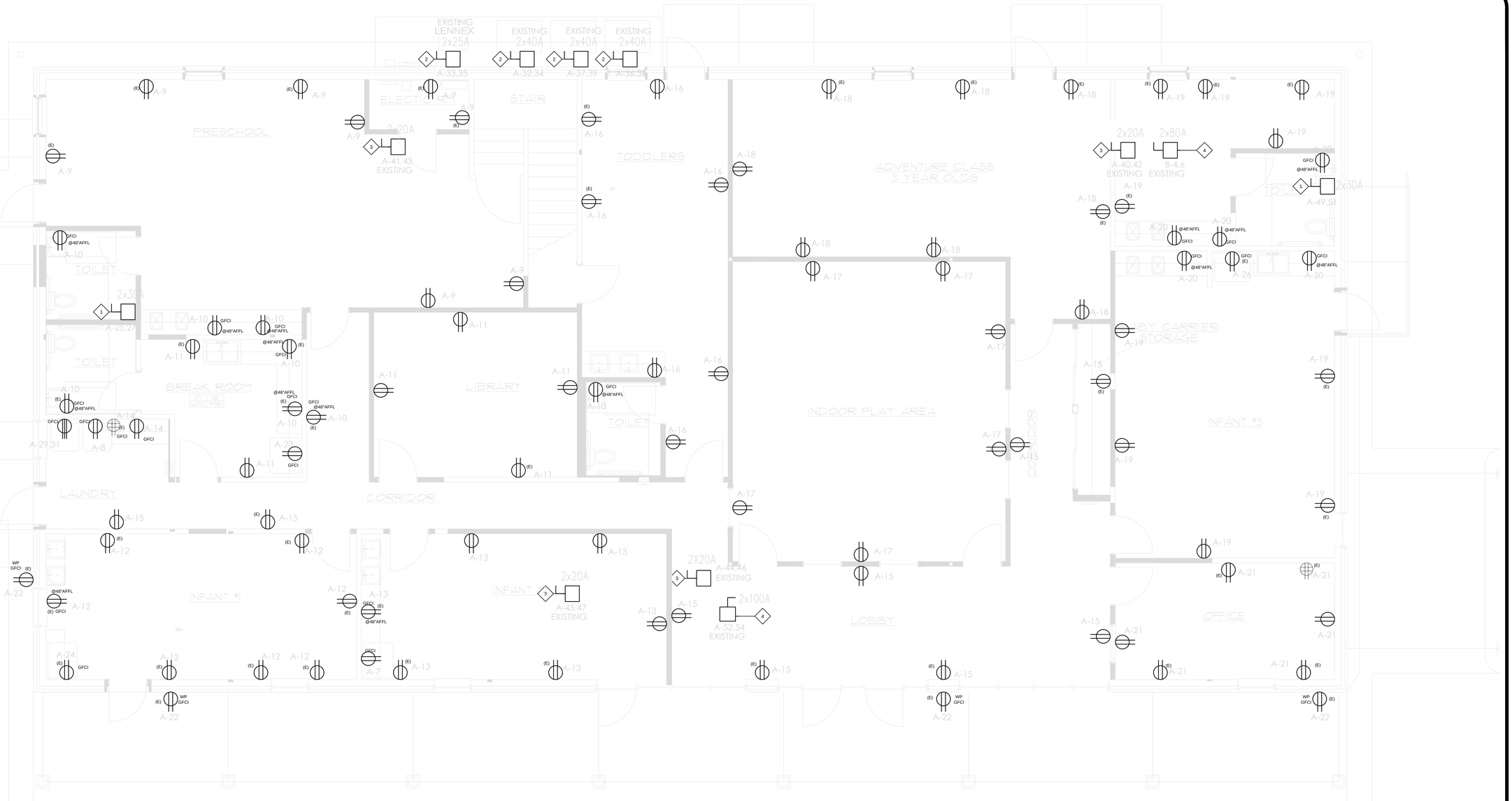

SHEET NOTES:

1 — PROVIDE NEMA 3R DISCONNECT SWITCH FOR ELECTRIC WATER HEATER

2 — PROVIDE NEMA 3R DISCONNECT SWITCH FOR HVAC OUTDOOR UNIT

3 — PROVIDE NEMA 3R DISCONNECT SWITCH FOR AHU

4 — PROVIDE NEMA 3R DISCONNECT SWITCH FOR AHU HEATING ELEMENT

SPECIAL NOTES:

THIS IS A RENOVATION PROJECT:
1-ALL OF THE LIGHT FIXTURES ON THE INTERIOR ARE TO BE REPLACED.
2- THE ELECTRICAL OUTLETS ARE A MIXTURE OF NEW AND EXISTING

SHEET NO.

E2.0

SHEET OF