EXISTING CONDITION NOTES

STOP AND READ

THE CONTRACTOR AND SUB CONTRACTOR **SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED**. WHEN DEMOLITION IS REQUIRED. THESE VERIFICATIONS SHALL INCLUDE BUT NOT LIMITED TO: DIMENSIONS BOTH HORIZONTAL AND VERTICAL, ELECTRICAL SERVICE/PANELS LOCATION AND VOLTS/PHASE, LOCATION/QTY. OF ROOF MOUNTED HVAC EQUIPMENT, CONFIRM THAT INTERIOR HVAC HUNG UNITS HAVE PROPER SUPPORT CONNECTIONS FOR EXISTING STRUCTURE, FIRE SPRINKLER MAIN RUNS, TOILET ROOM DIMENSIONS, DOOR SWING FOR DOORS TO REMAINED ETC. IF NOT VERIFIED AND DISCOVERED AT A LATER TIME, THE CONTRACTOR SHALL REIMBURSE THE ARCHITECT FOR THE REDESIGN FEE. THIS DOES NOT INCLUDE HIDDEN WORK I.E. PITCH OF SANITARY LINES, ACTUAL CONDITIONS OF EXISTING HVAC EQUIPMENT, STRUCTURAL COLUMNS/BEARING WALLS OR CONDITIONS OF GREASE INTERCEPTORS AND ETC.

SCOPE OF WORK

REUSE EXISTING SIX 10.0 TON & ONE 5.0 TON GAS HEAT ROOF TOP UNITS. PROVIDE ONE NEW 5.0 TON GAS HEAT ROOF TOP UNIT. PROVIDE NEW DUCTWORK AND NECESSARY ACCESSORIES AS SHOWN IN PLAN.

PROVIDE TWO NEW BATHROOM EXHAUST FANS AND TWO NEW EXHAUST FANS AS PER SCHEDULE.

COORDINATE WITH GC ANY ADDITIONAL REFRIGERATION WORK REQUIRED AND PLUMBING CONTRACTOR PROVIDING CONDENSATE LINES FOR MECHANICAL EQUIPMENT.

GENERAL NOTES

A. CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE COMPLETE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET.

B. CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS AND SCHEDULES. IF DIFFERENT NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING, OR PROCEEDING WITH WORK.

C. DRAWINGS/DETAILS ARE TO BE CONSIDERED DIAGRAMMATIC, NOT NECESSARILY SHOWING IN DETAIL OR TO SCALE ALL MINOR ITEMS. UNLESS SPECIFIC DIMENSIONS ARE SHOWN, THE STRUCTURAL, ARCHITECTURAL AND SITE CONDITIONS SHALL GOVERN EXACT LOCATIONS. CONTRACTOR SHALL FOLLOW DRAWINGS IN LAYING OUT WORK, AND CHECK/COORDINATE DRAWINGS OF ALL TRADES.

D. COORDINATE WITH THE WORK OF OTHERS SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PROVIDE DUCT RISES AND DRIPS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.

E. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

F. ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.

G. USE OF COMBUSTIBLE MATERIALS IS NOT ALLOWED IN THE RETURN AIR PLENUM. MATERIALS USED IN THE PLENUM SHALL HAVE FLAME SPREAD RATING NOT TO EXCEED 25, AND SMOKE DEVELOPED RATING NOT TO EXCEED 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84. ALL EXPOSED WIRING IN THE PLENUM SHALL BE PLENUM RATED.

H. G.C.TO VERIFY LOCATION OF PERMISSIBLE NEW STRUCTURAL ROOF PENETRATIONS AND ADAPT THE REQUIRED DUCTS ACCORDINGLY. THE OPENINGS MUST BE LOCATED USING A REBAR LOCATOR, TRYING TO LEAVE A TRANSVERSE BAR WITHIN 4" FROM THE OPENING. LOCATE OPENINGS AT MID-DISTANCE BETWEEN THE STEMS OF THE DOUBLE TEE AND LONGITUDINAL REINFORCEMENT SHALL NEVER BE CUT. CALL THE ARCHITECT'S OFFICE IN CASE OF UNEXPECTED DIFFICULTIES.

I. ALL EXPOSED DUCTS WILL BE SPIRAL GALVANIZED AND READY FOR PAINTING. ALL DUCTS OVER CEILINGS SHALL HAVE EXTERNAL INSULATION AND ALL EXPOSED DUCTS SHALL BE INTERNALLY INSULATED.

J. G.C. SHALL COORDINATE WITH LANDLORD APPROVED ROOFING CONTRACTOR TO FLASH AND SEAL ALL ROOF PENETRATIONS TO MAINTAIN ROOFING WARRANTY.

K. CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 90 DAYS AFTER THE DATE OF ACCEPTANCE AND PROVIDE COPY TO LL.

L. OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER.

MECHANICAL PLAN NOTES

A. REUSE EXISTING SIX 10.0 TON & ONE 5.0 TON GAS HEAT ROOF TOP UNITS. PROVIDE ONE NEW 5.0 TON GAS HEAT ROOF TOP UNIT. PROVIDE NEW DUCTWORK AND NECESSARY ACCESSORIES FOR COMPLETE HVAC SYSTEMS. PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AIR DUCT CONNECTIONS. TRANSITION TO DUCT SIZES SHOWN. PROVIDE DUCTWORK AND AIR DISTRIBUTION DEVICES AS INDICATED ON THE PLAN. REFER TO ROOF TOP UNIT SCHEDULE FOR ADDITIONAL REQUIREMENTS.

B. ALL DUCTS SHALL BE MINIMUM 26 GAUGE SHEET METAL WITH EXTERNAL DUCT WRAP INSULATION FOR CONCEALED DUCTS AND ALL EXPOSED DUCTS WITH INTERNAL INSULATION. ALL DUCTS TO BE MANUFACTURED AND INSTALLED ACCORDING TO ASHRAE AND SMACNA METAL DUCT CONSTRUCTION STANDARD, LATEST EDITION. ALL MATERIALS WILL CONFORM TO NFPA 90A.

C. REUSE EXISTING THERMOSTATS & HUMIDISTAT.THERMOSTATS & HUMIDISTAT SHALL BE 7-DAY PROGRAMMABLE TYPE. MOUNT THERMOSTAT 48" A.F.F. COORDINATE LOCATION OF THERMOSTAT.IF EXISTING THERMOSTAT & HUMIDISTAT DAMAGED OR NOT IN CONDITION TO REUSE IT THAN REPLACE IT WITH SIMILAR KIND.

D. ALL INTERIOR AIR DUCTS WITH INSULATION SHALL HAVE A MINIMUM OF THICKNESS OF 1.5", R-6 INSULATION. EXTERIOR AIR DUCTS TO HAVE R-8 INSULATION ACCORDING TO 2018 VIRGINIA ENERGY CONSERVATION CODE (2018 IECC).

E. ALL SEAMS, JOINTS, ETC WILL BE SEALED TO MAKE AIR DUCT AIRTIGHT. PRESSURE SENSITIVE MATERIALS AND OTHERS APPROVED BY LATEST SMACNA. SEALING MATERIALS WILL BE USED.

F. ALL EXISTING RTU'S & NEW RTU CONDENSATE DRAINS WILL BE PVC FULL DIAMETER OF OUTLET AND WILL TERMINATE IN THE APPROVED PLACE OF DISPOSAL IN AN APPROVED MANNER WITH REQUIRED SLOPE.

G. TESTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH 2018 VIRGINIA ENERGY CONSERVATION CODE (2018 IECC), SECTION C408.2.2. BALANCING PROCEDURES SHALL BE IN ACCORDANCE WITH THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (N.E.B.B.), THE ASSOCIATED AIR BALANCE COUNCIL (A.A.B.C) NATIONAL STANDARDS OR EQUIVALENT PROCEDURES.

H. HANGER ATTACHMENTS TO THE STEEL STRUCTURE WILL BE RATED POWDER ACTUATED FASTENERS, "C" CLAMPS, WELDED STUDS, CLAMP HANGERS, JOIST CLAMPS OR OTHER METHODS RECOMMENDED BY SMACNA'S "METAL AND FLEXIBLE STANDARDS", CHAPTER 4, AND WILL HAVE A MINIMUM SAFETY MARGIN OF 4:1. SUSPENDED FROM TOP CHORD OF JOISTS, NOTHING FROM DECK OR CROSS BRACING.

I. ALL HVAC CONTROLS AND CONTROL WIRING SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.

J. PROVIDE FIRE/SMOKE +SMOKE COMBINATION DAMPERS WHEREVER REQUIRED.COORDINATE WITH ARCHITECTURAL DRAWINGS FOR SMOKE/FIRE RATING OF THE WALLS/SLABS/ROOF.COORDINATE ELECTRICAL POWER REQUIREMENT FOR DAMPER ACTUATORS WITH ELECTRICAL CONTRACTOR.

K. COORDINATE ALL ROOF PENETRATIONS, CURB/ROOF RAIL LOCATIONS, ROOF EQUIPMENT WEIGHTS & DIMENSIONS WITH STRUCTURAL AND ROOFING CONTRACTOR.

L. PROVIDE WEATHER-PROOF COATING FOR ALL DUCTWORK RUNNING ON THE ROOF.

M. MAINTAIN MIN. 10 FT. DISTANCE BETWEEN ALL EXHAUST AIR SOURCES AND OUTSIDE AIR INTAKE SOURCES ON THE ROOF.

N. FOR SYSTEM OVER 2,000 CFM CHECK FOR DUCT MOUNTED AIR SMOKE DETECTORS AND THAT MEET THE REQUIREMENTS OF U.L. 268A, INTERLOCKED TO SHUTDOWN A/C UNIT UPON DETECTION OF SMOKE. IF NECESSARY PROVIDE SMOKE DETECTOR WITH AN ANNUNCIATOR, ALARM AND POWER L.E.D.'S FOR VISIBLE AND AUDIBLE ALARM SIGNAL, AND VISIBLE TROUBLE SIGNAL. MOUNT ANNUNCIATOR ON ROOM SIDE OF CEILING.

O. CONSTRUCTION "AS BUILT" DRAWING AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE AND PROVIDE COPY TO LL

P. OPERATION MANUAL AND MAINTENANCE MANUAL SHALL BE PROVIDED TO THE BUILDING OWNER.

AIR BALANCE

UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR(CFM)
RTU-1(E)	SEE PLAN	4000	1480	2520	0
RTU-2(E)	SEE PLAN	4000	1480	2520	0
RTU-3(E)	SEE PLAN	4000	800 (Δ2)	3200 (Δ2)	0
RTU-4(E)	SEE PLAN	4000	1480	2520	0
RTU-5(E)	SEE PLAN	4000	1480	2520	0
RTU-6(E)	SEE PLAN	4000	1480	2520	0
RTU-7(E)	SEE PLAN	2000	910 (Δ2)	1090 (Δ2)	0
RTU-8(N)	SEE PLAN	2000	910 (Δ2)	1090 (Δ2)	0
EF-1(N)	SEE PLAN	0	0	0	490
EF-2(N)	SEE PLAN	0	0	0	350
EF-3(N)	SEE PLAN	0	0	0	300
EF-4(N)	SEE PLAN	0	0	0	70
TOTAL		28000	10020 (Δ2)	18360 (Δ2)	1210
BUILDING PRESSURE:			8810 (Δ2)	POSITIVE	

NOTES:
1. THE EXCESS PRESSURE INSIDE THE BUILDING SHALL BE RELIEVED THROUGH THE GRAVITY VENTS.
2. CONTRACTOR TO ADJUST MOTORIZED DAMPER ON FRESH AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

FAIRFAX COUNTY BUILDING PLAN REVIEW

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2018 VIRGINIA CONSTRUCTION CODE (2018 IBC) AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
2. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2018 VIRGINIA MECHANICAL CODE (2018 IMC) - 401
3. AS PER C408.2.5 OF 2018 VIRGINIA ENERGY CONSERVATION CODE(2018 IECC). CONSTRUCTION DOCUMENT SHALL REQUIRED THAT WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE RECORD DRAWING OF THE ACTUAL INSTALLATION BE PROVIDED TO THE BUILDING OR DESIGN REPRESENTATIVE OF THE BUILDING OWNER.
4. A FINAL REPORT OF TEST PROCEDURES AND RESULTS IDENTIFIED AS "FINAL COMMISSIONING REPORT"SHALL BE DELIVERED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT. THE REPORT SHALL BE ORGANIZED WITH MECHANICAL SYSTEM AND SERVICE HOT WATER SYSTEM FINDINGS IN SEPARATE SECTIONS TO ALLOW INDEPENDENT REVIEW.
5. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
6. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE 2018 VIRGINIA MECHANICAL CODE (2018 IMC):
   A. VENTILATION SYSTEM BALANCING- 2018 VIRGINIA MECHANICAL CODE (2018 IMC) 403.3
7. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   A. STANDARD OF HEATING- 2018 VIRGINIA MECHANICAL CODE (2018 IMC) 309.1
   B. DUCT CONSTRUCTION AND INSTALLATION- 2018 VIRGINIA MECHANICAL CODE (2018 IMC) 603
   C. AIR INTAKES, EXHAUSTS AND RELIEF - 2018 VIRGINIA MECHANICAL CODE (2018 IMC) 401.5
   D. AIR FILTER- 2018 VIRGINIA MECHANICAL CODE (2018 IMC) 605
   E. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROL FOR AIR DISTRIBUTION SYSTEM 2018 VIRGINIA MECHANICAL CODE (2018 IMC) 606
   F. GAS AND FIRE EQUIPMENT- 2018 VIRGINIA FUEL GAS CODE (2018 IFGC)
8. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON 68 DEG. FAHRENHEIT.
9. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2018 VIRGINIA MECHANICAL CODE (2018 IMC) 403.3
10. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
11. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
12. SMOKE DETECTOR SHALL MEET UL268A.
13. MECHANICAL SYSTEM SHALL BE COMMISSIONED PER 2018 VIRGINIA ENERGY CONSERVATION CODE (2018 IECC) C408.2.2, 408.2.1, C408.2.5. FINAL COMMISSIONING SHALL BE DUE WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OR OCCUPANCY.
14. A COMMISSIONING PLAN SHALL BE DEVELOPED BY A LICENSED DESIGN PROFESSIONAL, MECHANICAL ENGINEER OR APPROVED AGENCY.
15. PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULT SHALL BE COMPLETED AND CERTIFIED BY THE LICENSED DESIGN PROFESSIONAL, ELECTRICAL ENGINEER, MECHANICAL ENGINEER OR APPROVED AGENCY AND PROVIDED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT AS PER 2018 VIRGINIA ENERGY CONSERVATION CODE (2018 IECC) C408.2.4.
16. A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH SECTION 2018 VIRGINIA ENERGY CONSERVATION CODE (IECC 2018) C408.2.5.1.
17. VENTILATION SYSTEMS SHALL BE BALANCED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW RATE AS SHOWN IN VENTILATION REQUIREMENT TABLE. THIS SYSTEM SHALL BE BALANCED BY APPROVED METHOD. CONTRACTOR SHALL SUBMIT THE AIR BALANCE REPORT TO THE RESPECTIVE BUILDING DEPARTMENT PRIOR TO FINAL INSPECTION.

THERMOSTATIC CONTROLS

C403.4.1 THERMOSTATIC CONTROLS (MANDATORY)
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:

THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ± 45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).
THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

C403.4.1.2 DEADBAND (MANDATORY)
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
EXCEPTIONS:
THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.

C403.4.1.3 SETPOINT OVERLAP RESTRICTION (MANDATORY)
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION C403.4.1.2.

C403.4.2 OFF-HOUR CONTROLS (MANDATORY)
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.
EXCEPTIONS:
ZONES THAT WILL BE OPERATED CONTINUOUSLY.
ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A MANUAL SHUTOFF SWITCH LOCATED WITH READY ACCESS.

C403.4.2.1 THERMOSTATIC SETBACK (MANDATORY)
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN (MANDATORY)
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

C403.4.2.3 AUTOMATIC START (MANDATORY)
AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

MECHANICAL SYMBOLS

- EXHAUST FAN
- SUPPLY OR OUTSIDE AIR DUCT
- RETURN OR EXHAUST AIR DUCT
- INSULATED RIGID DUCTWORK
- DUCT TRANSITION
- MANUAL VOLUME DAMPER
- FLEXIBLE DUCTWORK
- ROOF MOUNTED EXHAUST FAN OUTLET
- SMOKE DETECTOR
- MOTORIZED DAMPER
- VOLUME DAMPER
- SUPPLY DIFFUSER REFER TO DIFFUSER SCHEDULE FOR SPECIFICATIONS
- CO2 SENSOR
- EXHAUST FAN WITH LIGHT
- OPPOSED BLADE DAMPER
- PROGRAMMABLE THERMOSTAT
- REMOTE SENSOR
- TEMPERATURE SENSOR
- Ø ROUND DUCT DIAMETER
- CFM CUBIC FEET/ MINUTE
- S/A SUPPLY AIR
- R/A RETURN AIR
- SG SUPPLY GRILLE
- CD CONDENSATE PIPING
- BD BACK DRAFT DAMPER
- GC GENERAL CONTRACTOR
- POINT OF NEW CONNECTION
- RETURN DIFFUSER REFER TO DIFFUSER SCHEDULE FOR SPECIFICATIONS
- DUCT SILENCER/ SOUND ATTENUATOR

NOTE: THIS PROJECT MAY NOT USE EVERY SYMBOL OR DEVICE APPEARING ON THIS LEGEND.

ROOF TOP UNIT SCHEDULE

UNIT TAG	RTU-1,2,4,5 & 6(E)	RTU-3(E)	RTU-7(E)	RTU-8(N)
QUANTITY	5	1	1	1
UNIT HEAT	GAS HEAT	GAS HEAT	GAS HEAT	GAS HEAT
MANUFACTURER	CARRIER	CARRIER	CARRIER	CARRIER
MODEL	48FCEM12 (V.I.F.)	48FCEM12 (V.I.F.)	48FCEA06 (V.I.F.)	48FCEA06
STATUS	EXISTING	EXISTING	EXISTING	NEW
MOUNTING	ROOF	ROOF	ROOF	ROOF
NOMINAL CPACITY	10.0 TON	10.0 TON	5.0 TON	5.0 TON
TOTAL COOLING CAPACITY (MBH)	S.A.E.	S.A.E.	S.A.E.	59.3
SENSIBLE COOLING CAPACITY (MBH)	S.A.E.	S.A.E.	S.A.E.	44.7
HEATING MBH (INPUT)	224.0 (V.I.F.)	224.0 (V.I.F.)	110.0 (V.I.F.)	110.0
HEATING MBH (OUTPUT)	181.0 (V.I.F.)	181.0 (V.I.F.)	88.0 (V.I.F.)	88.0
SEER / EER	S.A.E. / S.A.E.	S.A.E. / S.A.E.	S.A.E. / S.A.E.	14.0/11.0
THERMAL EFF. (%)	S.A.E.	S.A.E.	S.A.E.	80.0
SUPPLY AIR CFM	4000	4000	2000	2000
OUTDOOR AIR CFM	1480	800 (Δ2)	910 (Δ2)	910 (Δ2)
ESP (IN W.C.)	S.A.E.	S.A.E.	S.A.E.	1.0
VOLT/PH/HZ	208-230/3/60 (V.I.F.)	208-230/3/60 (V.I.F.)	208-230/3/60 (V.I.F.)	208-230/3/60
MCA (A)	49.0 (V.I.F.)	49.0 (V.I.F.)	33.0 (V.I.F.)	33.0
MCOP (A)	60.0 (V.I.F.)	60.0 (V.I.F.)	45.0 (V.I.F.)	45.0
WEIGHT (LBS)	S.A.E.	S.A.E.	S.A.E.	700

NOTES FOR EXISTING RTUS
1. EXISTING RTU WITH ALL ACCESSORIES TO REMAIN SAME AND TO BE REUSED.
2. S.A.E : SAME AS EXISTING.
3. V.I.F : VERIFY IN FIELD.
4. CONTRACTOR TO FIELD VERIFY IF RTU ARE WORKING AT THEIR 100% RATED CAPACITIES/LOADS. INFORM TO DESIGN ENGINEER IF ANY DISCREPANCIES ARE FOUND IN PERFORMANCE PRIOR TO CONSTRUCTION.
5. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION OF UNIT ON SITE.
6. IF REQUIRED, PROVIDE NEW THERMOSTAT AND TEMPERATURE SENSOR COMPATIBLE WITH EXISTING RTU. CO-ORDINATE FINAL LOCATION/REQUIREMENT OF T-SENSOR WITH ARCHITECT/OWNER.
7. CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPERS ON EXISTING RTU TO MATCH VALUES MENTIONED IN ABOVE TABLE.
8. REPLACE FILTERS, IF REQUIRED.
9. CONTRACTOR TO FIELD VERIFY IF THE EXISTING RTUs ARE PROVIDED WITH MODULATING OA DAMPER. IF NOT, PROVIDE DUCT MOUNTED CO2 SENSORS AND MODULATING DAMPER FOR DEMAND CONTROL VENTILATION.

INCLUDED SYSTEM OPTIONS FOR RTU-8(N)
A. PROVIDE FULL PERIMETER 14" HIGH ROOF CURB.
B. PROVIDE 2" MERV-8 FILTERS.
C. PROVIDE HINGED PANELS FOR FILTER ACCESS, FAN MOTOR ACCESS, COMPRESSOR ACCESS AND CONTROL COMPARTMENT ACCESS.
D. CONTRACTOR TO PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT FOR RTU WITH HUMIDITY CONTROL.
E. PROVIDE HAIL GUARD - FLD.
F. PROVIDE NON FUSED DISCONNECT SWITCH.
G. PROVIDE WITH TUBE & FIN COIL SYSTEM.
H. PROVIDE WITH DRAIN PAN OVERFLOW SWITCH.
I. PROVIDE WITH STANDARD CAP AND PHASE MONITOR SYSTEM.
J. PROVIDE MULTISTAGE AIR VOLUME.
K. PROVIDE WITH GFCI FLD WIRED.
L. PROVIDE DRIVE TO MATCH THE STATIC PRESSURE MENTIONED IN SCHEDULE.
N. PROVIDE LOW LEAK ENTHALPY ECONOMIZER WITH FDD AND BAROMETRIC RELIEF.
M. PROVIDE RETURN AIR SMOKE DETECTOR.
J. UNIT TO BE PROVIDED WITH LOW AMBIENT OPERATION CAPABILITIES.
K. PROVIDE HOT GAS BYPASS SYSTEM, THEN CAPACITY OF HOT GAS BYPASS SHALL BE LIMITED TO 50% OF TOTAL UNIT CAPACITY.
L. PROVIDE DUCT MOUNTED CO2 SENSORS AND MODULATING OUTSIDE AIR DAMPER WITH DEMAND CONTROL VENTILATION SETUP.

RTU NOTES-
1. INSTALL AS PER MANUFACTURERS SPECIFICATIONS AND MAINTAIN ALL SERVICE CLEARANCES.
2. PROVIDE CONDENSATE DRAIN 'P' TRAP MINIMUM 3" DEEP OR TWICE THE TOTAL STATIC PRESSURE WHICHEVER IS GREATER.
3. COMPRESSOR SHALL HAVE A MINIMUM 5 YEAR WARRANTY ALL OTHER EQUIPMENT SHALL HAVE , MINIMUM 1 YEAR WARRANTY.
4. RTUS ARE BASED ON AHRI STANDARD CONDITIONS OF 80°F DB, 67°F WB INDOOR ENTERING AIR TEMPERATURE AND 95°F DB ENTERING AIR FOR OUTDOOR UNIT.
5. MUST MEET THE EER'S MINIMUM EFFICIENCY CODE REQUIREMENTS.

OCCUPANCY CALCULATION

LOBBY	476 SQ. FT.	50 PEOPLE
PARTY ROOMS	2183 SQ. FT.	146 PEOPLE
EXERCISE AREA	9000 SQ. FT.	180 PEOPLE
STANDING AREA	1040 SQ. FT.	208 PEOPLE
BREAK ROOM	522 SQ. FT.	5 PEOPLE
LACTATION ROOM	83 SQ. FT.	1 PEOPLE
	TOTAL	590 PEOPLE

REFER TO THE OCCUPANT LOAD CALCULATIONS ON SHEET CS-1 FOR ARCHITECTURAL OCCUPANCY CALCULATION.

VENTILATION REQUIREMENTS PER 2018 IMC TABLE 403.3.1.1

EXHAUST AIR CALCULATIONS

MEN'S RESTROOM	70 CFM PER FIXTURE X NO. OF FIXTURE(#5) =	350	CFM
WOMEN'S RESTROOM	70 CFM PER FIXTURE X NO. OF FIXTURE(#7) =	490	CFM
ELECTRICAL ROOM	86 SQ. FT. @10ACH.	287	CFM
JANITOR CLOSET		70	CFM
EXHAUST AIR REQUIRED		1197	CFM
EXHAUST AIR PROVIDED		1210	CFM

FAN SCHEDULE (Δ1)

DESIGNATION	EF-1(N)	EF-2(N)	EF-3N)	EF-4(N)
STATUS	NEW	NEW	NEW	NEW
QUANTITY	1	1	1	1
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK	GREENHECK
MODEL	CSP-A700	CSP-A390	CSP-A390	SP-A90
CFM	490 CFM AT 0.7" W.G. ESP	350 CFM AT 0.4" W.G. ESP	300 CFM AT 0.6" W.G. ESP	70 CFM AT 0.3" W.G. ESP
FLA (AMPS)	3.3	1.42	1.42	0.19
ACCESSORIES	BDD	BDD	BDD	BDD
WEIGHT (LBS)	35	25	25	20
VOLT/PH/HZ	115/1/60	115/1/60	115/1/60	115/1/60

NOTES :
1. PROVIDE DISCONNECT SWITCH.
2. PROVIDE BACK DRAFT DAMPER.
3. INTERCONNECT EF-1(N), EF-2(N) & EF-4(N) WITH RTU-3(E).
4. INTERCONNECT EF-3(N) WITH T-STAT AND SET CUT ON TEMPERATURE TO 80°F.

DIFFUSER SCHEDULE

MANUFACTURER	TITUS	TITUS	TITUS	TITUS	TITUS
DESIGNATION	A	C	R	R1	E
USE	SUPPLY	SUPPLY	RETURN	RETURN	EXHAUST
MODEL	TDC-AA	300FS	TDC-AA	56FL	56FL
MOUNTING	SAT CEILING/HARD CEILING	DUCT	SAT CEILING	WALL	SAT CEILING/HARD CEILING
LOCATION	AS SHOWN	AS SHOWN	AS SHOWN	AS SHOWN	AS SHOWN
FACE SIZE	24"X24"	AS SHOWN	24"X24"	AS SHOWN	12"X12"
NECK SIZE	REFER TABLE A	-	-	-	-
FRAME TYPE	LAY-IN / FLANGED	FLANGED	LAY-IN	FLANGED	LAY-IN / FLANGED
ACCESSORIES	VOLUME DAMPER	VOLUME DAMPER	VOLUME DAMPER	-	VOLUME DAMPER

NOTES :
1. MAX. NC LEVEL 30 OR LESS.
2. PROVIDE SQUARE TO ROUND NECK ADAPTOR.
3. CO-ORDINATE WITH ARCHITECT FOR FINAL MOUNTING, FRAME TYPE,PAINT AND FINISH.
4. PROVIDE 4-WAY AIR THROW PATTERN UNLESS NOTED OR INDICATED.
5. PROVIDE INSULATED BACKS ON ALL DIFFUSERS.

NECK SIZE TABLE - A

NECK SIZE DIA	CFM RANGE
Ø6"	0-100
Ø8"	101-200
Ø10"	201-400
Ø12"	401-600

GRAVITY VENT SCHEDULE

MARK	QUANTITY	MANUFACTURER	MODEL	SIZE	THROAT AREA	CFM	T.P.D (IN. WC)	VELOCITY (FPM)
GV-1(N)	4	GREENHECK	GRSR-24	24" DIA	3.00 SQ. FT.	2000	0.045"	617

NOTES:
A. PROVIDE WITH BR-10 BAROMETRIC RELIEF DAMPER, DAMPER TRAY PROTECT FROM PAINT OVERSPRAY PER MANUFACTURER INSTALLATION INSTRUCTIONS.
B. VENT SHALL BE PROVIDED WITH PROTECTIVE COATING
C. CONTRACTOR TO CALIBRATE THE DAMPER, SO AS TO OPEN WHEN EXCESS PRESSURE IS CREATED INSIDE THE BUILDING
D. T.P.D : TOTAL PRESSURE DROP
E. PROVIDE FLASHING FLANGE FOR MOUNTING AS PER MANUFACTURER RECOMMENDATIONS.
F. COORDINATE FINAL FINISH WITH ARCHITECT / OWNER.
G. MAX ALLOWABLE PRESSURE DROP IS 0.1" W.C.

VENTILATION REQUIREMENTS PER 2018 IMC TABLE 403.3.1.1 (Δ1)

FOR RTU-3(E)

ROOM NAME	AREA (SQ.FT.) (Az)	NUMBER OF PEOPLE/1000 SQ.FT AS PER IMC 2018	NUMBER OF PEOPLE AS PER IMC 2018	FINAL PEOPLE NO. (Pz)	MIN OUTSIDE AIR AS PER IMC 2018 CFM/PEOPLE (Rp)	MIN OUTSIDE AIR AS PER IMC 2018 CFM/SQ.FT (Ra)	Rp x Pz	Ra x Az	REQ. OSA (Voz)	PRIMARY AIRFLOW (Vpz)	PRIMARY OUTDOOR AIR FRACTION (Zp)	SYSTEM VENTILATION EFFICIENCY (Ev) AS PER IMC 2018 TABLE 403.3.1.1.2.3.2	OCCUPANT DIVERSITY (D)	Vou = D x Σall zones Rp x Pz + Σall zones Ra x Az	OUTDOOR AIR INTAKE FLOW RATE (Vot)	ZONE AIR DISTRIBUTION EFFECTIVE-NESS (Ez)	OUTDOOR AIR INTAKE FLOW RATE (Voz)	PROVIDED OUTDOOR AIR FLOW RATE
PARTY ROOM 3	400	50	20	28	5	0.06	140	24	164	900	0.18	0.90	1.00	639	639	0.8	798	800
PARTY ROOM 4	400	50	20	28	5	0.06	140	24	164	900	0.18							
PARTY ROOM 5	400	50	20	28	5	0.06	140	24	164	900	0.18							
JANITOR CLOSET	57	0	0	0	0	0.12	0	7	7	90	0.07							
PARTY STORAGE	86	0	0	0	0	0.12	0	10	10	90	0.11							
LACTATION ROOM	83	5	1	1	5	0.06	5	5	10	100	0.10							
BREAK ROOM	522	5	3	5	5	0.06	25	31	56	720	0.07							
TOTAL	1948	-	64	90	-	-	450	125	575	3700	MAX : 0.18	-	-	-	-	-	-	-

VENTILATION REQUIREMENTS PER 2018 IMC TABLE 403.3.1.1

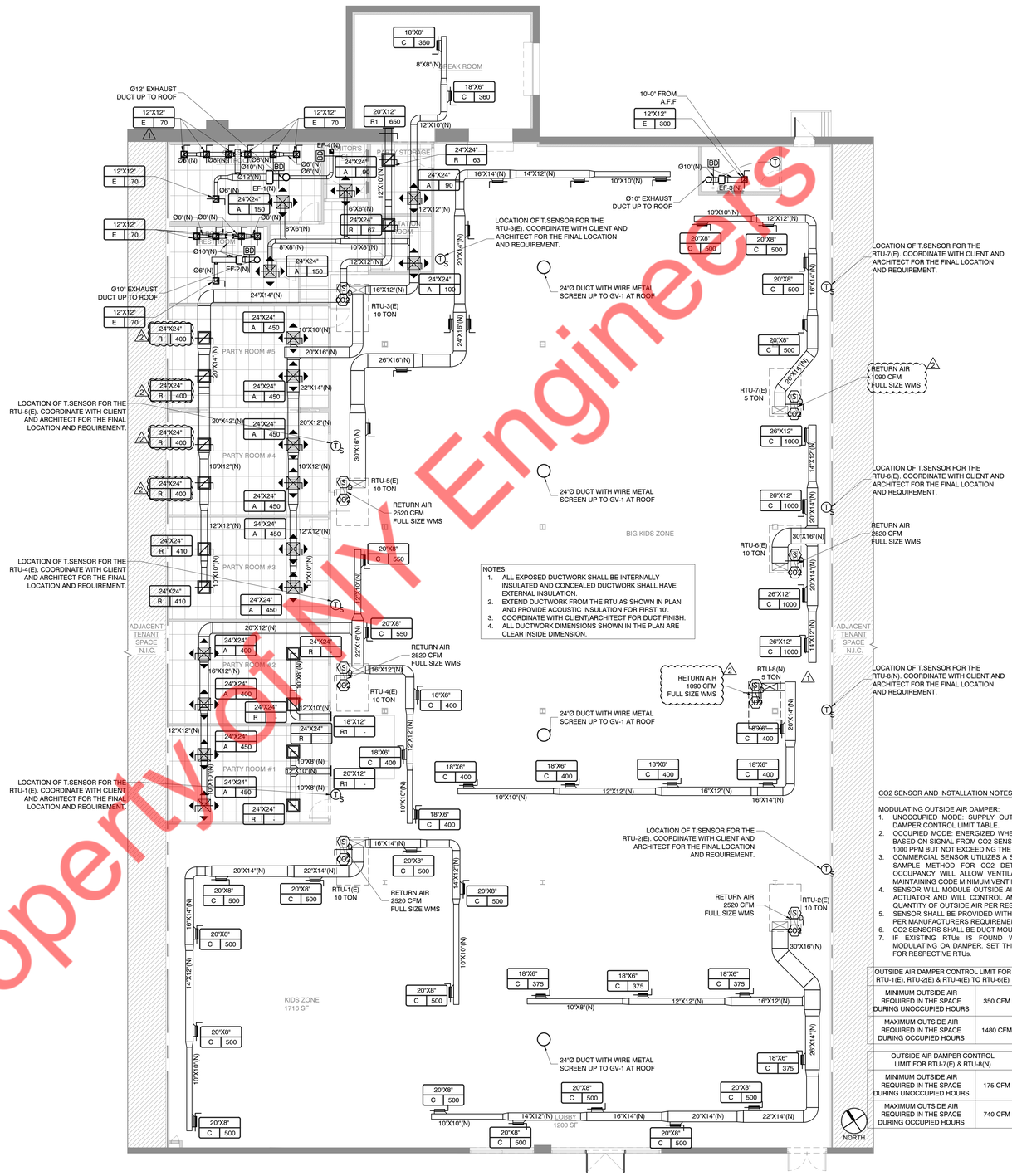
FOR RTU-4(E)

ROOM NAME	AREA (SQ.FT.) (Az)	NUMBER OF PEOPLE/1000 SQ.FT AS PER IMC 2018	NUMBER OF PEOPLE AS PER IMC 2018	FINAL PEOPLE NO. (Pz)	MIN OUTSIDE AIR AS PER IMC 2018 CFM/PEOPLE (Rp)	MIN OUTSIDE AIR AS PER IMC 2018 CFM/SQ.FT (Ra)	Rp x Pz	Ra x Az	REQ. OSA (Voz)	PRIMARY AIRFLOW (Vpz)	PRIMARY OUTDOOR AIR FRACTION (Zp)	SYSTEM VENTILATION EFFICIENCY (Ev) AS PER IMC 2018 TABLE 403.3.1.1.2.3.2	OCCUPANT DIVERSITY (D)	Vou = D x Σall zones Rp x Pz + Σall zones Ra x Az	OUTDOOR AIR INTAKE FLOW RATE (Vot)	ZONE AIR DISTRIBUTION EFFECTIVE-NESS (Ez)	OUTDOOR AIR INTAKE FLOW RATE (Voz)	PROVIDED OUTDOOR AIR FLOW RATE
PARTY ROOM 1	500	50	25	34	5	0.06	170	30	200	900	0.22	0.90	1.00	1041	1041	0.8	1301	1480
PARTY ROOM 2	400	50	20	28	5	0.06	140	24	164	800	0.20							
EXERCISE AREA 1	960	50	48	20	20	0.18	400	173	573	2300	0.25							
TOTAL	1860	-	93	82	-	-	710	227	937	4000	MAX : 0.25	-	-	-	-	-	-	-

VENTILATION REQUIREMENTS PER 2018 IMC TABLE 403.3.1.1 (Δ2)

FOR RTU-1(E),2(E),5(E),6(E),7(E),8(N)

ROOM NAME	AREA (SQ.FT.) (Az)	NUMBER OF PEOPLE/ 1000 SQ.FT AS PER IMC 2018	NUMBER OF PEOPLE AS PER IMC 2018	FINAL PEOPLE NO. (Pz)	MIN OUTSIDE AIR AS PER IMC 2018 CFM/PEOPLE (Rp)	MIN OUTSIDE AIR AS PER IMC 2018 CFM/SQ.FT (Ra)	Rp x Pz	Ra x Az	BREATHING ZONE OUTDOOR AIRFLOW (Vbz)	ZONE AIR DISTRIBUTION EFFECTIVENESS (Ez)	OUTDOOR AIR INTAKE FLOW RATE (Voz)	PROVIDED OUTDOOR AIR FLOW RATE
LOBBY	476	10	5	50	5	0.06	250	29	279	0.80	7740	7740
EXERCISE AREA 2	8040	50	402	160	20	0.18	3200	1447	4647			
HALLWAY	2566	0	0	0	0	0.06	0	154	154			
STANDING AREA	1040	150	0	208	5	0.06	1040	62	1102			
ELECTRICAL ROOM	86	0	0	0	0	0.12	0	10	10			
TOTAL	12208	-	407	418	-	-	4390	1702	6192	-	-	-



CO2 SENSOR AND INSTALLATION NOTES - DEMAND CONTROL VENTILATION FOR ALL RTU

MODULATING OUTSIDE AIR DAMPER:

1. UNOCCUPIED MODE: SUPPLY OUTSIDE AIR AS PROVIDED IN THE OUTSIDE AIR DAMPER CONTROL LIMIT TABLE.
2. OCCUPIED MODE: ENERGIZED WHEN FAN IS RUNNING, DAMPER SHALL MODULATE BASED ON SIGNAL FROM CO2 SENSORS TO MAINTAIN LEVEL BETWEEN 600 PPM AND 1000 PPM BUT NOT EXCEEDING THE TOTAL DESIGN AIR FLOW RATE
3. COMMERCIAL SENSOR UTILIZES A SIGNAL BEAM ABSORPTION INFRARED DIFFUSION SAMPLE METHOD FOR CO2 DETECTION. USING CO2 AS AN INDICATOR OF OCCUPANCY WILL ALLOW VENTILATION BASED ON ACTUAL OCCUPANCY WHILE MAINTAINING CODE MINIMUM VENTILATION.
4. SENSOR WILL MODULE OUTSIDE AIR QUANTITIES THROUGH ECONOMIZER DAMPER ACTUATOR AND WILL CONTROL AMOUNT BETWEEN OCCUPIED AND UNOCCUPIED QUANTITY OF OUTSIDE AIR PER RESPECTIVE RTUS.
5. SENSOR SHALL BE PROVIDED WITH ROOFTOP AIR CONDITIONING UNIT AND INSTALL PER MANUFACTURERS REQUIREMENTS.
6. CO2 SENSORS SHALL BE DUCT MOUNTED IN THE RTU.
7. IF EXISTING RTUs IS FOUND WITHOUT CO2 SENSOR ,PROVIDE NEW AND MODULATING OA DAMPER. SET THE DAMPER SETTING AS PER THE TABLE BELOW FOR RESPECTIVE RTUs.

OUTSIDE AIR DAMPER CONTROL LIMIT FOR RTU-1(E), RTU-2(E) & RTU-4(E) TO RTU-6(E)	
MINIMUM OUTSIDE AIR REQUIRED IN THE SPACE DURING UNOCCUPIED HOURS	350 CFM
MAXIMUM OUTSIDE AIR REQUIRED IN THE SPACE DURING OCCUPIED HOURS	1480 CFM

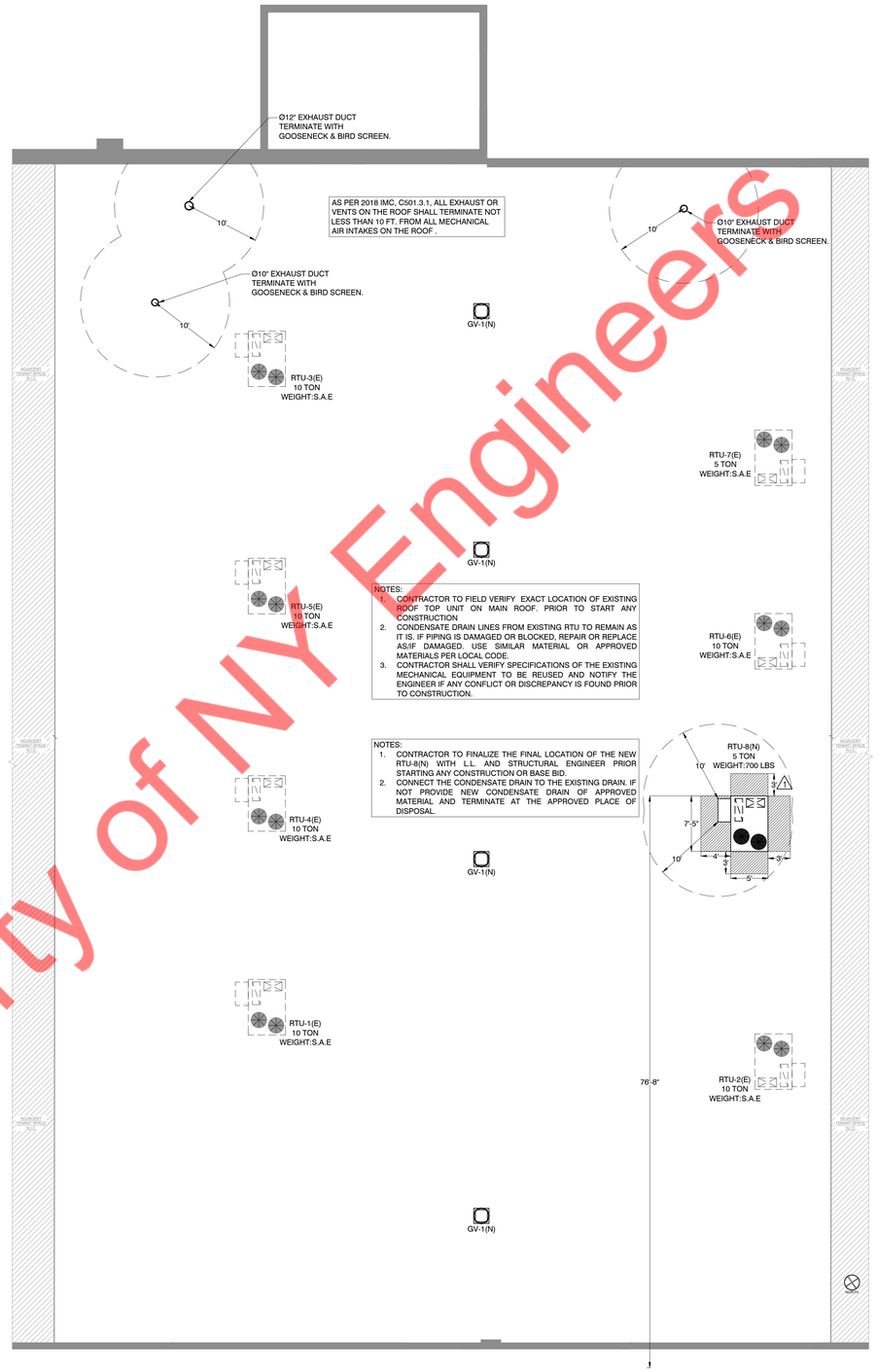
OUTSIDE AIR DAMPER CONTROL LIMIT FOR RTU-3(E)	
MINIMUM OUTSIDE AIR REQUIRED IN THE SPACE DURING UNOCCUPIED HOURS	150 CFM
MAXIMUM OUTSIDE AIR REQUIRED IN THE SPACE DURING OCCUPIED HOURS	760 CFM

OUTSIDE AIR DAMPER CONTROL LIMIT FOR RTU-7(E) & RTU-8(N)	
MINIMUM OUTSIDE AIR REQUIRED IN THE SPACE DURING UNOCCUPIED HOURS	175 CFM
MAXIMUM OUTSIDE AIR REQUIRED IN THE SPACE DURING OCCUPIED HOURS	740 CFM

HVAC FLOOR PLAN

SCALE 1/8" = 1'-0"

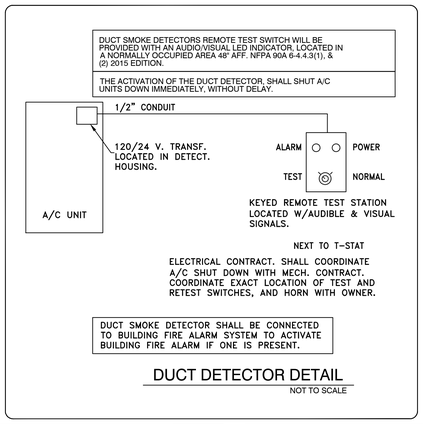
1



HVAC ROOF PLAN

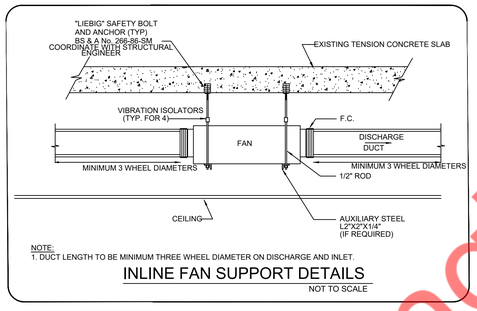
SCALE 1/8" = 1'-0"

1



DUCT DETECTOR DETAIL

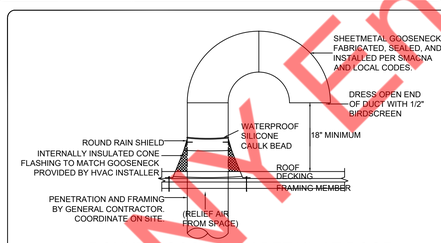
NOT TO SCALE



NOTE:
1. DUCT LENGTH TO BE MINIMUM THREE WHEEL DIAMETER ON DISCHARGE AND INLET.

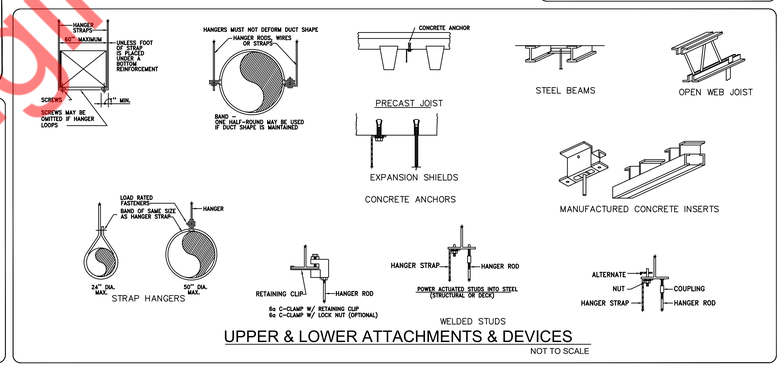
INLINE FAN SUPPORT DETAILS

NOT TO SCALE



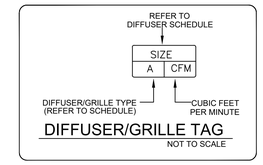
ROUND GOOSENECK DETAIL AT ROOF

NOT TO SCALE



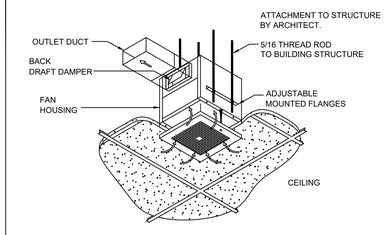
UPPER & LOWER ATTACHMENTS & DEVICES

NOT TO SCALE



DIFFUSER/GRILLE TAG

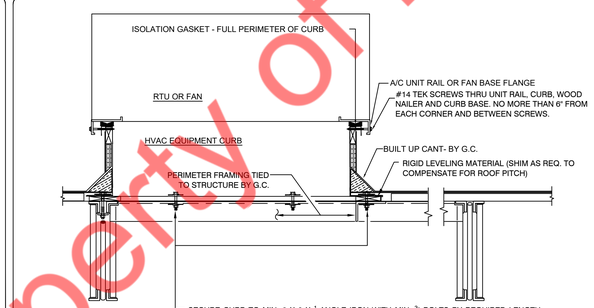
NOT TO SCALE



RIGHT ANGLE DISCHARGE

CEILING EXHAUST FAN DETAIL

NOT TO SCALE



SECURE CURB TO MIN. 3 X 3 X ¼ ANGLE IRON WITH MIN. ⅜" BOLTS BY REQUIRED LENGTH WITH FENDER WASHERS, LOCK WASHERS & NUTS @ EA. SIDE OF FAN CURBS & 4 PER LONG SIDE OF ROOF TOP CURBS & 2 AT EA. SHORT END EQUALLY SPACED - START FROM CORNER A MIN. OF 6". ON ROOF TOP A/C CURBS. GENERAL CONTRACTOR SHALL PROVIDE STRUCTURAL PERIMETER FRAMING FOR EDGE SUPPORT OF CURB AS ILLUSTRATED IN THIS DETAIL FOR HURRICANE FASTENING

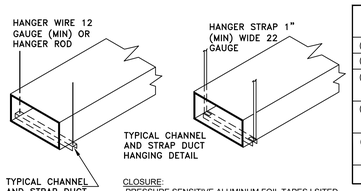
ACCEPTABLE FOR 170 MPH ZONE

VERIFY ON SITE WITH GENERAL CONTRACTOR

RTU INSTALLATION DETAIL

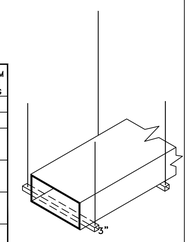
NOT TO SCALE

CHANNEL SELECTION		
DUCT WIDTH MIN.	CHANNEL GUAGE MIN.	CHANNEL PROFILE
LESS THAN 18"	22 3"x 2"	
LESS THAN 30"	18 3"x 2"	



CLOSURE:
-PRESSURE SENSITIVE ALUMINUM FOIL TAPES LSITED UNDER UL 181A, PART I (P)
- HEAT ACTIVATED ALUMINUM FOIL/SCRIM TAPES LISTED UNDER UL 181A, PART II (H)
- MASTIC AND GLASS FABRIC TAPE CLOSURE SYSTEMS LISTED UNDER UL 181A, PART III (M)

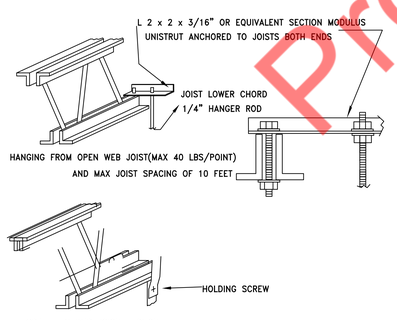
DUCT SIZE,IN.	MAXIMUM HANGER SPACING
① WIDTH 48" OR GREATER	4'-0"
② LESS THEN 48"W X 12"H	6'-0"
③ WIDTH BETWEEN 24" & 48" & HEIGHT OVER 24"	6'-0"
④ WIDTH BETWEEN 24" & 48" & HEIGHT BETWEEN 12" & 24"	8'-0"
⑤ WIDTH LESS THAN 24" & HEIGHT GREATER THAN 12"	8'-0"
DUCT REINFORCING PER SMACNA REQUIRED	



HANGER SPACING AND EXTENSION 3" WIDE CHANNELS

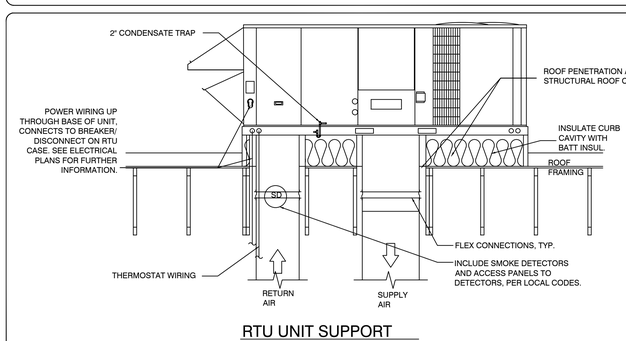
DUCT SUPPORTS

NOT TO SCALE



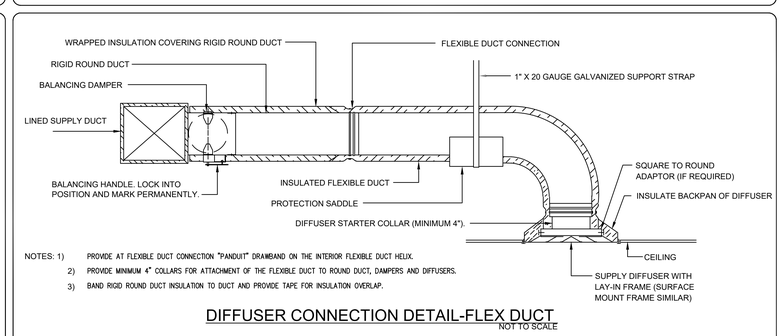
DUCT MOUNTING DETAIL

NOT TO SCALE



RTU UNIT SUPPORT

NOT TO SCALE



NOTES: 1) PROVIDE AT FLEXIBLE DUCT CONNECTION "PANDUIT" DRAWBAND ON THE INTERIOR FLEXIBLE DUCT HELIX.
2) PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF THE FLEXIBLE DUCT TO ROUND DUCT, DAMPERS AND DIFFUSERS.
3) BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.

DIFFUSER CONNECTION DETAIL-FLEX DUCT

NOT TO SCALE

System Checksums

By Trial

RTU-1 TO 8 — **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 95 / 75 / 102

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	21,726	13,221	34,947	4
Glass Solar	39,699	0	39,699	5
Glass/Door Cond	4,269	0	4,269	1
Wall Cond	17,153	931	18,085	2
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	82,847	14,153	96,999	12
Internal Loads				
Lights	45,041	11,260	56,301	7
People	283,500	0	283,500	34
Misc	45,695	0	45,695	5
Sub Total ==>	374,236	11,260	385,496	46
Ceiling Load	4,153	-4,153	0	0
Ventilation Load	0	0	365,075	44
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-9,544	-9,544	-1
Sup. Fan Heat			0	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	461,235	11,716	838,026	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	24,013	7
Glass Solar	48,298	14
Glass/Door Cond	-1,028	0
Wall Cond	17,064	5
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	88,348	26
Internal Loads		
Lights	45,041	13
People	152,000	45
Misc	50,592	15
Sub Total ==>	247,633	73
Ceiling Load	2,158	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	338,138	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 14

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	-19,033	-29,653	3.79
Glass Solar	0	0	0.00
Glass/Door Cond	-19,365	-19,365	2.48
Wall Cond	-23,582	-25,364	3.25
Partition/Door	0	0	0.00
Floor	-7,574	-7,574	0.97
Adjacent Floor	0	0	0
Infiltration	-93,247	-93,247	11.93
Sub Total ==>	-162,800	-175,203	22.42
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-2,880	0	0.00
Ventilation Load	0	-624,344	79.88
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		17,937	-2.29
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-165,680	-781,610	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.9	81.3
Ra Plenum	77.1	70.6
Return	75.9	70.6
Ret/OA	87.4	36.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.0	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	15,905	15,905
Terminal	15,905	15,905
Main Fan	15,905	15,905
Sec Fan	0	0
Nom Vent	9,640	9,640
AHU Vent	9,640	9,640
Infil	0	1,440
MinStop/Rh	0	0
Return	15,905	17,344
Exhaust	9,640	11,080
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	60.6	60.6
cfm/ft²	0.96	0.96
cfm/ton	227.74	
ft²/ton	236.21	
Btu/hr·ft²	50.80	-55.40
No. People	590	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	69.8	838.0	552.0	15,905	87.3	70.9	87.7	55.9	54.9	62.9
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	69.8	838.0								

AREAS

	Gross Total ft²	Glass ft²	Glass (%)
Floor	16,496		
Part	0		
Int Door	0		
ExFlr	241		
Roof	16,096	0	0
Wall	4,601	396	9
Ext Door	227	227	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-913.9	15,905	36.5	81.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	15,905	36.2	55.9
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-913.9			

ELECTRICAL PLAN NOTES

PANELBOARDS:

SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PANELBOARD PRODUCTS OF THE FOLLOWING (FOR EACH TYPE AND RATING OF PANELBOARD AND ENCLOSURE): SQUARE D COMPANY.

PANELS SHALL BE DEAD FRONT, SAFETY TYPE, FURNISHED WITH BRANCH CIRCUIT PROTECTING DEVICES, EQUIPMENT GROUNDING BOX, MAIN BUS AND CABLE LUGS FACTORY ASSEMBLED, WITH ALL COMPONENTS IN PLACE, READY FOR INSTALLATION. CABINET SIZES ARE BASED UPON A 20" WIDE BY 6" DEEP PANEL UNLESS OTHERWISE NOTED PANELBOARDS SHALL BE EQUIPPED WITH FLUSH TYPE LOCK AND CATCH. ALL LOCKS SHALL BE KEYED ALIKE, AND TWO KEYS ARE TO BE SUPPLIED WITH EACH LOCK. PANELBOARDS SHALL BEAR UL LABELS FOR THEIR SPECIFIC APPLICATIONS. PANELBOARDS SHALL BE SUITABLE FOR SERVICE VOLTAGE WITH NUMBER 0F BRANCH CIRCUITS 0F CAPACITY SCHEDULED UNLESS OTHERWISE INDICATED, PANELBOARDS AND SECTIONS THEREOF, IF ANY, SHALL HAVE MAIN LUGS ONLY OF CAPACITY EQUAL TO OR GREATER THAN THE RATING OR SETTING OF THE OVER THE CURRENT PROTECTIVE DEVICE NEXT BACK ON THE LINE ALL CIRCUIT BREAKER PANELBOARD BUS ASSEMBLIES SHALL BE OF THE DISTRIBUTED (SEQUENCE) BUSSING TYPE THROUGHOUT, SO THAT ANY 2 ADJACENT SINGLE POLE BREAKERS AND/OR SPACES SHALL BE REPLACEABLE BY A 2 POLE INTERNAL COMMON TRIP BREAKER, AND ANY 3 ADJACENT SINGLE POLE BREAKERS AND OR SPACES SHALL BE REPLACEABLE BY A 3 POLE INTERNAL COMMON TRIP BREAKER, 15 AMP THROUGH 70 AMP INCLUSIVE, WITHOUT DISTURBING ANY OTHER BREAKER.ALL PANELBOARDS SHALL BE UL LISTED AND LABELED FOR USE AS SERVICE ENTRANCE EQUIPMENT WHERE BEING USED AS SUCH.

DISTRIBUTION PANELS SHALL BE SQUARE D I-LINE.

208Y/120V LIGHTING AND APPLIANCE PANELBOARDS SHALL BE EQUAL TO SQUARE D NQOD WITH BOLT-ON BRANCH BREAKERS.

ALL BUSSING SHALL BE COPPER CURRENT CARRYING CONTACT SURFACES SHALL BE SILVER OR TIN PLATED MAIN BUSES AND CONNECTORS SHALL BE HARD DRAWN COPPER OF 98% CONDUCTIVITY, WITH CURRENT CARRYING CAPACITY TO MAINTAIN ESTABLISHED RISE TESTS AS DEFINED IN UL STANDARD UL 67.

ALL BRANCH CIRCUIT BREAKERS SHALL BE FULL AMBIENT COMPENSATED THERMAL MAGNETIC M0LDED CASE WITH QUICK-MAKE AND QUICK-BREAK ACTION AND POSITIVE HANDLE TRIP INDICATI0N, BOTH ON MANUAL AND ON AUTOMATIC OPERATION BREAKERS SHALL BE OF THE 0VER-THE-CENTER T0GGLE OPERATING TYPE WITH THE HANDLE GOING TO A POSITION BETWEEN "ON" AND "OFF" TO INDICATE AUTOMATIC TRIPPING.

ALL CIRCUIT BREAKERS SHALL BE FULL SIZE "TANDEM" OR "SPLIT" BREAKERS SHALL NOT BE PERMITTED ALL MULTI-POLE BREAKERS SHALL HAVE INTERNAL COMMON TRIP WITH ALL LOAD SIDE BOX LUGS 0F ONE BREAKER IN THE SAME GUTTER ALL CIRCUIT BREAKERS SHALL HAVE SEALED CASES TO PREVENT TAMPERING ALL 15 AND 20 AMPERE BRANCH CIRCUIT BREAKERS SHALL BE UL LISTED AS SWD (SWITCHING DUTY). ALL 15-70 AMPERE BRANCH CIRCUIT BREAKERS SHALL BE HACR TYPE ALL GFI CIRCUIT BREAKERS SHALL BE UL CLASS A WITH MAXIMUM THRESHOLD OF 5 MA ALL BRANCH CIRCUIT BREAKERS SERVING ALL BALLASTED (FLUORESCENT/HID) LIGHTING LOADS SHALL BE HID RATED. PROVIDE 20 (+/-) NON-PADLOCK TYPE BREAKER LOCK-ON DEVICES AND INSTALL ON BRANCH BREAKERS AS DIRECTED IN FIELD (NIGHT LIGHTS, COMPUTERS, SECURITY, ETC.). PROVIDE DETAILED TYPEWRITTEN SCHEDULES FOR ALL PANELBOARDS CIRCUIT BREAKERS SHALL BE FURNISHED AS SCHEDULED ON THE DRAWINGS OR AS OTHERWISE REQUIRED BASED ON FIELD DETERMINATIONS.

PROVIDE ALL ELECTRICAL DISTRIBUTION RELATED EQUIPMENT WITH APPROPRIATELY BRACED BUSSING AND PROPERLY RATED BREAKERS, FUSES, ETC. FOR THE AVAILABLE FAULT CURRENTS.

IN EXISTING BUILDINGS WHERE FAULT CURRENT VALUES ARE NOT INDICATED ON DRAWINGS, COORDINATE WITH EXISTING "UPSTREAM" DISTRIBUTION EQUIPMENT PROVIDE EQUIPMENT AIC RATINGS TO MEET OR EXCEED SAME. FILL OUT PANELBOARD'S CIRCUIT DIRECTORY CARD UPON COMPLETION OF INSTALLATION WORK DIRECTORIES SHALL BE NEATLY TYPEWRITTEN ALL PANELBOARD DIRECTORIES SHALL INCLUDE THE ACTUAL ROOM NAMES/NUMBERS THAT ARE SELECTED FOR INTERIOR SIGNAGE/DESIGNATION.

EXISTING CONDITIONS NOTES

STOP AND READ

THE CONTRACTOR AND SULP/B-CONTRACTORS **SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED.**

THIS SHALL HOLD TRUE FOR FIRST GENERATION AND 2ND GENERATION SPACES. WHEN DEMOLITION IS REQUIRED, THAT WILL BE PERMITTED

TO EXPOSE CONDITIONS. THESE VERIFICATIONS SHALL INCLUDE BUT NOT LIMITED TO: DIMENSIONS BOTH HORIZONTALLY AND VERTICAL,

ELECTRICAL SERVICE /PANELS LOCATION AND VOLTS/PHASE, LOCATION/QTY OF ROOF MOUNTED HVAC EQUIPMENT, CONFIRM THAT INTERIOR HVAC HUNG UNITS HAVE PROPER SUPPORT CONNECTIONS FOR EXISTING STRUCTURE, FIRE SPRINKLER MAIN RUNS, TOILET ROOM DIMENSIONS, DOOR SWING FOR DOORS TO REMAIN AND ETC. IF NOT VERIFIED AND DISCOVERED AT A LATER TIME, THE CONTRACTOR SHALL

REIMBURSE THE ARCHITECT FOR THE REDESIGN FEE. THIS DOES NOT INCLUDE HIDDEN WORK I.E. PITCH OF SANITARY LINES, ACTUAL

CONDITIONS OF EXISTING HVAC EQUIPMENT, STRUCTURAL COLUMNS/BEARING WALLS OR CONDITIONS OF GREASE INTERCEPTORS AND ETC.

GENERAL LIGHTING NOTES

A. UPPER CASE LETTER NEXT TO LIGHT FIXTURE DENOTES FIXTURE TYPE AND LOWER CASE LETTER DENOTES SWITCHING SCHEME.

B. ALL EMERGENCY FIXTURES SHALL BE CONNECTED TO AN UNSWITCHED HOT CONDUCTOR. SO THAT THEY ARE ENERGIZED ALL THE TIME.

SCOPE OF WORK

1. REUSE THE EXISTING (1) 600A, 277/480V, 3-PHASE, 4-WIRE ELECTRICAL SERVICE OF TENANT'S SPACE.
2. REUSE EXISTING (1) 600A, 277/480V, 3-PHASE ELECTRICAL METER , CT CABINET AND DISCONNECT SWITCH OF TENANT'S SPACE.
3. REUSE EXISTING (1) 600A, 277/480V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "MDPB" OF TENANT'S SPACE .
4. REUSE (1) 150KVA, 3-PHASE TRANSFORMER WITH PRIMARY 277/480V AND SECONDARY 120/208V OF TENANT'S SPACE.
5. REUSE EXISTING (1) 500A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "M" OF TENANT'S SPACE.
6. PROVIDE NEW (1) 75 KVA 3-PHASE TRANSFORMER WITH PRIMARY 277/480V AND SECONDARY 120/208V OF TENANT'S SPACE.
7. PROVIDE NEW (1) 200A(MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A" OF TENANT'S SPACE .
8. ALL NECESSARY EQUIPMENT AND ALL WIRING AND LIGHTING AS SHOWN ON PLANS INCLUDING FOR NEW INDOOR GAMES AREA EQUIPMENT. COORDINATE WITH GC FOR ANY LOW VOLTAGE WORK NECESSARY.

ELECTRICAL NOTES

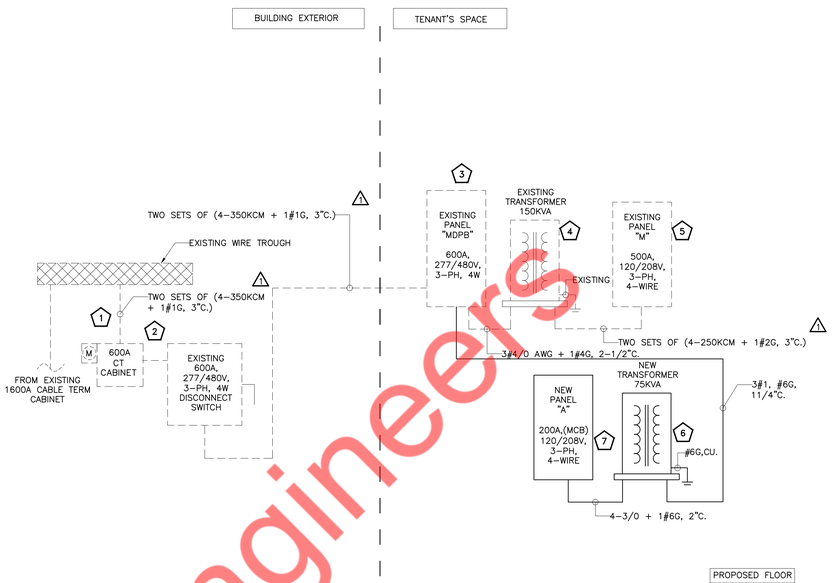
1. ELECTRICAL CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THIS SET.
2. CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS AND SCHEDULES. IF DIFFERENT, NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING, OR PROCEEDING WITH WORK.
3. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL NEW ELECTRICAL WORK INDICATED. CONSTRUCTION SHALL BE IN ACCORDANCE WITH DRAWINGS AND APPLICABLE SPECIFICATIONS. IF A PROBLEM IS ENCOUNTERED IN COMPLYING WITH THIS REQUIREMENT, CONTRACTOR SHALL NOTIFY THE OWNER OR HIS REPRESENTATIVE AS SOON AS POSSIBLE AFTER DISCOVERY OF THE PROBLEM AND SHALL NOT PROCEED WITH THAT PORTION OF THE WORK UNTIL OWNER HAS DIRECTED CORRECTIVE ACTION TO BE TAKEN.
4. ELECTRICAL CONTRACTOR SHALL VISIT JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATIONS INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. EXISTING CONDITIONS OF ELECTRICAL EQUIPMENT, LIGHT FIXTURES, ETC.. THAT ARE PART OF THE FINAL SYSTEM SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO SUBMITTING HIS BID.
5. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2017 EDITION OF THE NATIONAL ELECTRIC CODE AND ALL CODES AND ORDINANCES OF THE AUTHORITY HAVING JURISDICTION.
6. DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATION FOR ALL EQUIPMENT. CONFIRM WITH OWNER'S REPRESENTATIVE.
7. ALL ELECTRICAL NOT BEING REUSED MUST BE REMOVED IN ITS ENTIRETY.
8. ALL CONDUIT IN OR UNDERGROUND OR IN CONCRETE MUST BE RIGID GALVANIZED STEEL.
9. CIRCUIT BREAKERS AND PANELS TO BE BOLT ON TYPE
10. ALL EQUIPMENT SHALL BE APPROVED BY UL OR OTHER NATIONALLY RECOGNIZED TESTING COMPANY.
11. ALL RECEPTACLES SHALL BE GROUNDED AS REQUIRED BY NEC 250.146
12. SUBMIT SERVICE ENTRANCE EQUIPMENT FOR SEPARATE APPROVAL.
13. ALL LOW VOLTAGE MUST BE IN CONDUIT TO ABOVE THE DROP CEILING. BRIDAL RINGS OR "J" HOOKS REQUIRED.
14. SEPARATE PERMITS ARE REQUIRED FOR ALL LOW VOLTAGE SUCH AS TELEPHONE, DATA, THERMOSTAT, MUSIC, ALARMS ETC.
15. SEPARATE PERMIT REQUIRED FOR SIGNAGE.
16. PRIOR TO ANY CONSTRUCTION WORK BEGINNING AN ON-SITE MEETING WITH GENERAL CONTRACTORS IS REQUIRED
17. ELECTRICIAN MUST BE ON SITE FOR ALL INSPECTIONS.
18. MINIMUM WIRE SIZE SHALL BE #12 A.W.G. EXCLUDING CONTROL WIRING. ALL CONDUCTORS SHALL BE COPPER AND UNLESS OTHERWISE NOTED THHN INSULATION.
19. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, PLASTIC AND CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS, AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.
20. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
21. ELECTRICAL SYSTEM SHALL BE COMPLETE AND EFFECTIVELY GROUNDED AS REQUIRED BY THE N.E.C. OR LOCAL CODES.
22. ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS' LABELS WHERE APPLICABLE.
23. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER/ARCHITECT.
24. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
25. ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE THAT CERTIFICATE OF OCCUPANCY IS ISSUED. WARRANTY SHALL BE PROVIDED IN WRITING. PROVIDE COPY TO LL.
26. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY.
27. ALL REQUIRED INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
28. CONTRACTOR SHALL PAY FOR ALL PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT.
29. THE ELECTRICAL INSTALLATION SHALL MEET ALL STANDARD REQUIREMENTS OF POWER AND TELEPHONE COMPANIES.
30. CONTRACTOR SHALL COORDINATE WITH MECHANICAL DRAWINGS AND PROVIDE ALL NECESSARY CONTROL WIRING.
31. ALL CIRCUIT BREAKERS FEEDING MECHANICAL EQUIPMENT SHALL BE HACR TYPE CIRCUIT BREAKERS.
32. PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES, DEVICES, ETC. FOR ALL OUTLETS AS INDICATED.
33. MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SUCH AS APPEAR ON THE UL LIST OF APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF N.E.C. NEMA, AND IECE.
34. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR CUT SHEETS OF LIGHTING FIXTURES, SWITCHES, AND OTHER ELECTRICAL ITEMS FOR APPROVAL BY ENGINEER/ARCHITECT.
35. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, PATCHING AND FIRED CAULKING REQUIRED OF HIS WORK.
36. ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS W/TYPE WRITTEN DIRECTORIES.
37. ALL ELECTRICAL OUTLETS SHALL BE AT 18" A.F.F. UNLESS NOTED OTHERWISE, AND VERTICALLY MOUNTED.
38. ALL LIGHT SWITCHES TO BE AT 48" A.F.F.
39. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL ELECTRICAL WIRING FOR HVAC SYSTEM INCLUDING CONTROLS, THERMOSTATS, POWER, ETC. SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
40. BREAKER AND PANELS – ALL CURRENT CARRYING BUSSES SHALL BE COPPER. ALL GROUND BUS BARS SHALL BE COPPER. PANEL BOARD ENCLOSURES SHALL BE FURNISHED WITHOUT PRE-PUNCHED CONCENTRIC HOLES. A.I.C. RATINGS SHALL BE AS INDICATED ON PANEL BOARD SCHEDULES.
41. DISCONNECT SWITCHES SHALL BE H.P. RATED, GENERAL DUTY. QUICK-MAKE, QUICK-BREAK ENCLOSURES AS REQUIRED BY EXPOSURE.
42. MOTOR STARTERS SHALL BE MANUAL OR MAGNETIC, WITH OVERLOAD RELAYS IN EACH HOT LEG.
43. THE TERM "PROVIDE" USED IN THE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS INDICATES THE CONTRACT SHALL FURNISH AND INSTALL.
44. CONTRACTOR SHALL CONFIRM WITH ANY AND ALL REQUIREMENTS SUCH AS: LUG SIZE RESTRICTIONS, CONDUIT ENTRY, TRANSFORMER SIZE, SCHEDULED DOWN TIME FOR OWNERS CONFIRMATION, ETC. ANY CONFLICTS SHALL BE BROUGHT TO ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK.
45. VOLTAGE DROP FOR ALL BRANCH CONDUCTORS SHALL NOT EXCEED 3%. WHERE VOLTAGE DROP EXCEEDS 3%, CONTRACTOR SHALL INCREASE SIZE OF CONDUCTORS.
46. CONTRACTOR SHALL PROVIDE GFI TYPE BREAKER FOR ALL EXTERIOR 120V CIRCUITS OR GFI PROTECTION – FOR THE WHOLE CIRCUIT.
47. GAS PIPING SHALL BE BONDED.
48. ALL OUTDOOR EQUIPMENT SHALL BE WEATHERPROOF.
49. CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE. PROVIDE A COPY TO LL.
50. OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER.
51. ABSOLUTELY NO FLEXIBLE CONDUIT IS PERMITTED IN DEMISING WALLS. FLEXIBLE CONDUIT IS PERMITTED FOR SHORT FINAL CONNECTIONS ONLY (6'-0" OR LESS).
52. EXPOSED CONDUIT SHALL BE INSTALLED IN STRAIGHT LINES, PARALLEL OR IN RIGHT ANGLES TO THE BUILDING STRUCTURE. DO NOT LOOP EXCESS FLEXIBLE CONDUIT IN CEILING SPACE OR WALL CAVITY. NO CONDUIT TO BE SUPPORTED FROM THE ROOF DECK.
53. CABLE TYPES AC AND NM CABLES ARE NOT ACCEPTABLE. TYPE MC CABLE, ELECTRIC METALLIC TUBING (EMT) AND RIGID GALVANIZED CONDUIT ARE PERMITTED.
54. ALL EQUIPMENT, DEVICES AND FIXTURES SHALL BE GROUNDED IN COMPLIANCE WITH NEC AND UL REQUIREMENTS.
55. ALL NEW PANELS TO BE UL LABELED WITH BOLT-ON TYPE CIRCUIT BREAKERS.
56. 7-DAY 24-HOUR TIME CLOCK IS REQUIRED TO CONTROL STOREFRONT ENTRY LIGHTS, SHOW WINDOW LIGHTS, SHOW WINDOW RECEPTACLES AND STOREFRONT SIGNAGE. ILLUMINATED STOREFRONT SIGNS MUST REMAIN LIT DURING ALL MALL BUSINESS HOURS.
57. TENANT IS REQUIRED TO MAKE A FIELD SURVEY OF THE EXISTING ELECTRICAL SERVICE TO ENSURE THAT THE TOTAL CONNECTED LOAD DOES NOT EXCEED THE ELECTRIC SERVICE. ANY/ALL MODIFICATIONS OR UPGRADES NEEDED ARE SUBJECT TO LANDLORD'S PRIOR APPROVAL AND WILL BE COMPLETED BY TENANT/TENANT'S GC AT TENANT'S SOLE EXPENSE.
58. ALL ELECTRICAL PANELS TO BE MOUNTED ON PLYWOOD BACKER BOARD.
59. PANEL PHASE LOADS TO BE BALANCED WITHIN 10%.
60. ELECTRICAL PANELS MAY NOT BE RECESSED IN DEMISING PARTITIONS. SURFACE MOUNT OR FULL FUR OUT WALL TO ACHIEVE FLUSH FINAL APPEARANCE.
61. COORDINATE ALL CONCRETE TRENCHING/CORING TO ENSURE THAT ANY UNDER SLAB UTILITIES, ETC. ARE NOT DAMAGED DURING FLOOR CUT. ANY DAMAGE TO BE REPAIRED AT TENANT'S EXPENSE. PRIOR APPROVAL AND COORDINATION WITH PROPERTY MANAGEMENT IS REQUIRED FOR ALL CONCRETE CUTTING.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	EXHAUST FAN
J	JUNCTION BOX
	BATTERY BACK UP EXIT LIGHT
	BATTERY BACK UP EMERGENCY LIGHT
$	WALL SWITCH (SINGLE, DOUBLE,)
$3	WALL SWITCH (3 WAY, 4 WAY)
$T	WALL SWITCH (TIMER)
$D	DIMMER WALL SWITCH
$OS	OCCUPANCY SENSOR WALL SWITCH
A	SIMPLEX RECEPTACLE, +18" AFF OR AS NOTED / SUFFIX DENOTES FOLLOWING: A - NEMA 5-15R B - NEMA 6-15R C - NEMA 14-30R D - NEMA 14-50R E - NEMA L6-30R
	DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE, 46" TO AFF AT KITCHEN, BATHS AND TOPS
	HALF SWITCHED DUPLEX RECEPTACLE
	230 VOLT RECEPTACLE
	QUADRUPLEX RECEPTACLE
	FLOOR MOUNTED, FLUSH DUPLEX RECEPTACLE
	FLOOR MOUNTED, FLUSH QUAD. RECEPTACLE
	FLOOR MOUNTED, FLUSH 230 VOLT RECEPTACLE
USB	DUPLEX RECEPTACLE WITH DUPLEX USB PORTS
CR	CEILING MOUNTED DUPLEX RECEPTACLE
	ELECTRICAL PANEL
	DISCONNECT SWITCH
TV	TELEVISION OUTLET
T	TELEPHONE OUTLET
	TELEPHONE/DATA OUTLET
D	DATA OUTLET
	FLOOR MTD. FLUSH TELEPHONE/DATA OUTLET
RJ45	QUAD. DATA OUTLET RJ45
	NON FUSED DISCONNECT SWITCH AMPERAGE,A ND NUMBER OF POLES AS NOTED
A	30A/240V NON FUSED DISCONNECT SWITCH
B	60A/240V NON FUSED DISCONNECT SWITCH

ABBREVIATIONS:

ABOVE FINISH FLOOR= A.F.F.	BELOW COUNTER= BC
COUNTER TOP LEVEL= C	PUSH BUTTON= PB
GROUND FAULT INTERRUPTER= GFCI	UNDER CABINET= UC
VERIFY PRIOR TO INSTALL= VH	VAPOR PROOF= VP
WEATHER PROOF= WP	WATER HEATER= WH
RECIRCULATION PUMP= RCP	EXHAUST FAN= EF
BATHROOM EXHAUST FAN= BEF	ROOF TOP UNIT= RTU
UTHORITY HAVING JURISDICTION= AHJ	ELECTRICAL CONTRACTOR= EC



ELECTRICAL RISER KEYED NOTES:

1. EXISTING 600A, 277/480V, 3–PHASE, 4–WIRE INCOMING ELECTRICAL SERVICE TO THE TENANT'S SPACE SHALL REMAIN. E.C. SHALL COORDINATE WITH THE BASE BUILDING/LANDLORD/OWNER FOR EXACT POWER DISTRIBUTION. REPORT TO ENGINEER ON RECORD FOR ANY DISCREPANCIES.
2. EXISTING 600A, 277/480V, 3–PHASE, 4–WIRE ELECTRICAL METER AND CT CABINET FOR THE TENANT'S SPACE SHALL REMAIN. E.C. SHALL COORDINATE WITH BASE BUILDING/LANDLORD/OWNER FOR THE EXACT LOCATION OF THE EXISTING METER AND EXACT POWER DISTRIBUTION IN THE FIELD. E.C. SHALL VERIFY THE OPERABLE CONDITION OF EXISTING METER AND CT CABINET, REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
3. EXISTING 600A, 277/480V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "MDPB" IN ELECTRICAL ROOM TO REMAIN. E.C. TO FIELD VERIFY THE EXACT SIZE, LOCATION & OPERABLE CONDITION OF THE PANEL, REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
4. EXISTING 150KVA, 3–PHASE TRANSFORMER WITH PRIMARY 277/480V AND SECONDARY 120/208V. E.C. TO FIELD VERIFY THE EXACT RATING, SIZE, LOCATION & OPERABLE CONDITION OF THE TRANSFORMER, REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
5. EXISTING 500A, 120/208V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "M" TO REMAIN. E.C. TO FIELD VERIFY THE EXACT SIZE, LOCATION & OPERABLE CONDITION OF THE PANEL, REPLACE IF INOPERABLE. BASE BID ACCORDINGLY.
6. NEW 75KVA, 3–PHASE TRANSFORMER WITH PRIMARY 277/480V AND SECONDARY 120/208V. E.C. TO COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
7. NEW 200A(MCB), 120/208V, 3–PHASE, 4–WIRE ELECTRICAL PANEL "A". E.C. TO COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.

ELECTRICAL RISER SYMBOLS

- NEW
- EXISTING ITEM/FEEDER TO REMAIN
- EXISTING ITEM/FEEDER TO BE DISCONNECTED & REMOVED

FEEDER SIZE SCHEDULE:–

AMPS	FEEDER SIZE
600A	TWO SETS OF (4–350KCM + 1#1G, 3"C.)
500A	TWO SETS OF (4–250KCM + 1#2G, 2½"C.)
200A	4–3/0 + 1#6G, 2"C.

* E.C. TO VERIFY THE RATING, SIZE AND OPERABLE CONDITION OF EXISTING ELECTRICAL FEEDER/CONNECTION IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND BEFORE COMMENCING ANY WORK.

ELECTRICAL GENERAL NOTES:

A. ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSES ONLY. E.C. SHALL VERIFY EXACT POWER DISTRIBUTION IN FIELD AND INFORM ENGINEER ON RECORD FOR ANY DISCREPANCY.

B. E.C. SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.

C. ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.

D. E.C. TO VERIFY OPERABLE CONDITIONS OF EXISTING DEVICES IN FIELD. REPLACE/RECTIFY IF FOUND IN OPERABLE. BASE BID ACCORDINGLY.

ELECTRICAL RISER | SCALE N.T.S. | 1

LIGHTING FIXTURE SCHEDULE

	TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	VOLT	WATTAGE	MOUNTING
	A1	2X4 LED	LITHONIA	2BLT4-40L-ADSMT-EZ1LP850-NLTAIR2	120	32	RECESSED
	B1	LOW BAY FIXTURE	LITHONIA	JEBL-12L-50K-80CRI-WH	120	95	PENDANT
OS	-	OCCUPANCY SENSOR	LEVITON	OSC20-M0W	120	-	CEILING
$OS	OS	OCCUPANCY WALL SWITCH	LEVITON	-	120	-	WALL
	EM	EMERGENCY LED LIGHT WITH BATTERY BACKUP	TBD	TBD	120	2.4	WALL
	EX-1	EXIT SIGN WITH EMERGENCY LED LIGHT	TBD	TBD	120	2.8	WALL
	EX	EXIT SIGN	TBD	TBD	120	2.6	WALL
	EX-2	DIRECTIONAL EXIT SIGN	TBD	TBD	120	3	CEILING/WALL
	(E)	EXISTING LIGHTING TO BE TO REMAIN	-	-	-	-	-

GENERAL NOTES:

1. REFER TO SHEET A-2 - REFLECTED CEILING PLAN IN ARCHITECTURAL DRAWINGS FOR MORE INFORMATION ON COLORS AND TRIMS REQUIRED
2. E.C. SHALL RECEIVE APPROVAL FROM ARCHITECTURE FOR LIGHTING FIXTURE SELECTION BEFORE PURCHASE AND INSTALLATION.

ELECTRICAL LIGHTING PLAN GENERAL NOTES:

1. COORDINATE FINAL LOCATION OF ALL LIGHTS AND SWITCHES WITH THE TENANT PRIOR TO ROUGH-IN.
2. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR GRID COORDINATION AND EXACT LOCATION OF LIGHT FIXTURES.
3. COORDINATE MOUNTING HEIGHT OF EXIT SIGNS/BATTERY PACKS WITH PLAY EQUIPMENT.
4. PROVIDE PERMANENT LABEL ON LIGHT SWITCH TO IDENTIFY AREA BEING SERVED.

ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:

(A) ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OWNER/SIGN VENDOR FOR THE EXACT LOCATION & CONNECTION REQUIREMENTS FOR BUILDING SIGNAGE. BASE BID ACCORDINGLY.

(B) MOUNT AS HIGH AS POSSIBLE TO AVOID PLAY EQUIPMENT, MOUNT AT BOTTOM OF DUCT WORK. E.C SHALL COORDINATE WITH ARCHITECT/OWNER FOR EXACT MOUNTING HEIGHT.

(C) CONNECT ALL EMERGENCY EGRESS FIXTURE, NIGHT LIGHT AND EXIT SIGNS TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS AS PER STATE AND LOCAL CODES.

(D) EXISTING LIGHT FIXTURE IN THIS AREA DENOTED BY (E) SHALL REMAIN THE EXISTING HOUSE PANEL. E.C. SHALL VERIFY THE EXACT CONTROLS AND OPERABLE CONDITION OF THE FEEDER IN FIELD AND REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

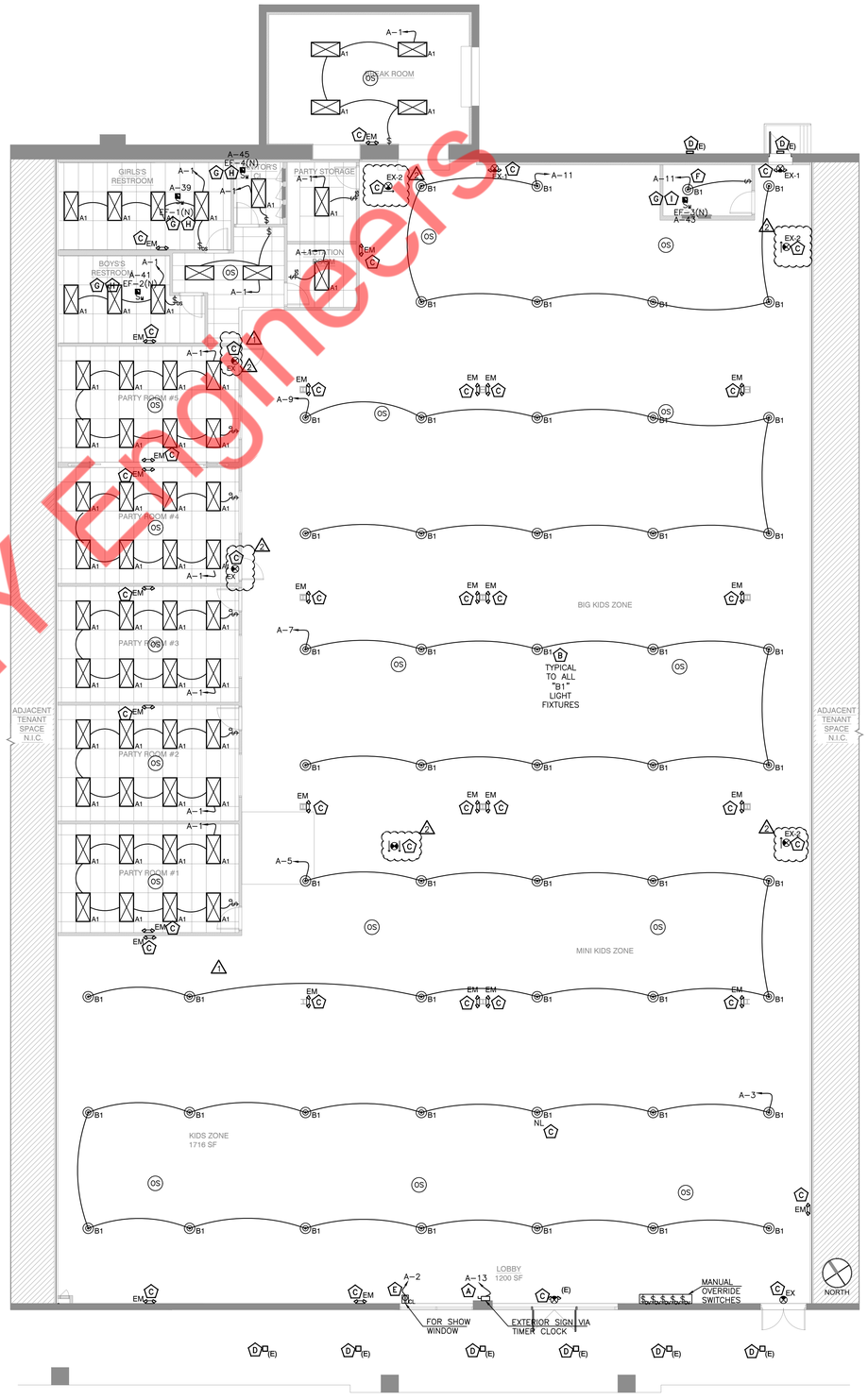
(E) PROVIDE SHOW WINDOW RECEPTACLE AS PER NEC 210.62. VERIFY EXACT LOCATION WITH ARCHITECT.

(F) LIGHTING NEAR ELECTRICAL PANELS SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIED AS PER NEC 110.26(D).

(G) E.C SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT LOCATION & REQUIREMENTS FOR MECHANICAL EQUIPMENT. BASE BID ACCORDINGLY.

(H) INTERCONNECT EXHAUST FAN EF-1(N), EF-2(N), EF-4(N) WITH RTU-3(E). E.C TO COORDINATE WITH MECHANICAL CONTRACTOR.

(I) INTERCONNECT EXHAUST FAN EF-3(N) WITH T-STAT. E.C TO COORDINATE WITH MECHANICAL CONTRACTOR.



LIGHTING PLAN

SCALE 1/8" = 1'-0"

1

ELECTRICAL POWER PLAN KEYED WORK NOTES:

(A) EXISTING 600A, 277/480V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "MDPB" TO REMAIN. E.C SHALL FIELD VERIFY EXACT SIZE, LOCATION AND OPERABLE CONDITION OF THE PANEL. REPLACE IF FOUND INOPERABLE. E.C SHALL COORDINATE LOCATION WITH ARCHITECT/OWNER.

(B) EXISTING 150KVA, 3-PHASE TRANSFORMER WITH PRIMARY 277/480V AND SECONDARY 120/208V TO REMAIN. E.C SHALL FIELD VERIFY EXACT SIZE, LOCATION AND OPERABLE CONDITION OF THE TRANSFORMER. REPLACE IF FOUND INOPERABLE. E.C SHALL COORDINATE LOCATION WITH ARCHITECT/ OWNER.

(C) EXISTING 500A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "M" TO REMAIN. E.C SHALL FIELD VERIFY EXACT SIZE, LOCATION AND OPERABLE CONDITION OF THE PANEL. REPLACE IF FOUND INOPERABLE. E.C SHALL COORDINATE LOCATION WITH ARCHITECT/ OWNER.

(D) NEW 75KVA, 3-PHASE TRANSFORMER WITH PRIMARY 277/480V AND SECONDARY 120/208V. E.C. TO COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.

(E) NEW 200A(MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A". E.C. SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.

(F) JUNCTION BOX FOR HAND DRYER. E.C SHALL COORDINATE MOUNTING HEIGHT AND LOCATION WITH ARCHITECT PRIOR TO ROUGH IN.

(G) ELECTRICAL SUPPLY PROVISION FOR WATER HEATER WH-1 & RCP-1. E.C SHALL COORDINATE WITH PLUMBING CONTRACTOR FOR THE EXACT POWER REQUIREMENT PRIOR TO COMMENCING ANY WORK. BASE BID ACCORDINGLY.

(H) AIR SWITCH BANK FOR INDOOR PLAYGROUND AREA EQUIPMENTS. E.C SHALL COORDINATE EXACT LOCATION, MOUNTING HEIGHT OF AIR SWITCH BANK AND OTHER DETAILS WITH EQUIPMENT VENDOR/ARCHITECT/OWNER.

(I) ELECTRICAL CONTRACTOR TO REFER INDOOR PLAYGROUND AREA EQUIPMENT DRAWINGS FOR EXACT LOCATION AND INFORMATION ABOUT REQUIREMENT OF ELECTRICAL DROPS/ FLOOR RECEPTACLES. ELECTRICAL CONTRACTOR TO COORDINATE WITH INDOOR PLAY GROUND EQUIPMENT VENDOR/ARCHITECT/OWNER.

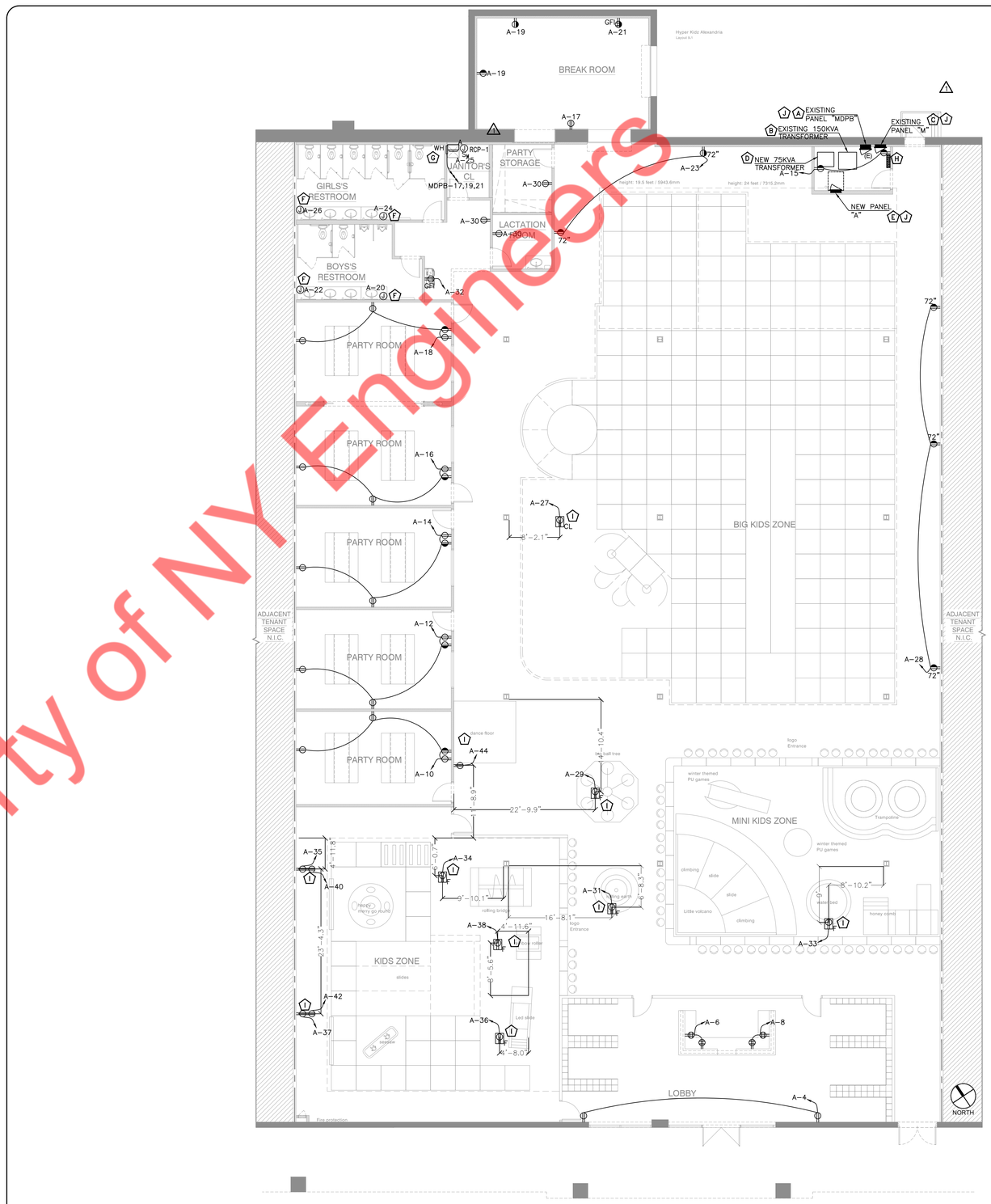
(J) ELECTRICAL CONTRACTOR SHALL VERIFY THE INSTALLATION OF ELECTRICAL PANELS IN COMPLIANCE WITH N.E.C. ARTICLE 110.26(A) AND (B). E.C. SHALL FIELD VERIFY THAT THE PANELS ARE UNOBSTRUCTED AND THE AREA WHERE THE PANELS ARE PLACED SHALL NOT BE USED AS A STORAGE SPACE.

INDOOR PLAYGROUND EQUIPMENT ELECTRICAL PLAN NOTES:

1. EACH EQUIPMENT HAS TO HAVE AN INDEPENDENT AIR SWITCH.
2. ONE LEAKAGE PROTECTOR SHOULD BE INSTALLED BEFORE AIR SWITCH.
3. PVC SILICONE FIBERGLASS SLEEVING IS REQUIRED FOR ALL WIRE.
4. WIRING WORK SHOULD BE FINISHED BY LOCAL PROFESSIONAL ELECTRICIANS.
5. FROM ELECTRICAL DROPS TO EQUIPMENT ABOUT 2 METERS OF EXTRA WIRE SHOULD BE LEFT AT EACH DROPS/ FLOOR RECEPTACLE, TO BE CONNECTED TO EACH EQUIPMENT, WHICH WILL BE FINISHED BY LEFUNLAND TECHNICIANS. E.C TO COORDINATE WITH VENDOR FOR EXACT REQUIREMENT.
6. FROM ELECTRICAL DROPS TO AIR SWITCHES IN THE ELECTRICAL ROOM : AS PER THE LOCAL CODES, ELECTRICAL CONTRACTOR SHALL PROVIDE WIRES IN THE TRUNKING IN THE CONCRETE FLOOR OR IN THE WALL.

ELECTRICAL POWER PLAN GENERAL NOTES:

1. ALL RECEPTACLES SHALL BE TAMPER RESISTANT PER NEC SECTION 406.12.
2. ALL NEW RECEPTACLES, SWITCHES AND SENSORS TO BE WHITE. ALL NEW PLATE COVERS TO BE WHITE. ELECTRICAL CONTRACTOR SHALL VERIFY QUANTITY AND SCOPE. COORDINATE WITH ARCHITECT FOR FINISHES AND FINAL COLOR SELECTION.
3. ARRANGE LOAD TO MAINTAIN A BALANCE BETWEEN PHASES OF 10% OR LESS.
4. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECT, MECHANICAL, PLUMBING, PLAY AREA EQUIPMENT MANUFACTURERS AND OTHER VENDORS FOR EXACT EQUIPMENT LOCATION AND INSTALLATION REQUIREMENTS.



FLOOR POWER PLAN | SCALE 1/8" = 1'-0" | 1

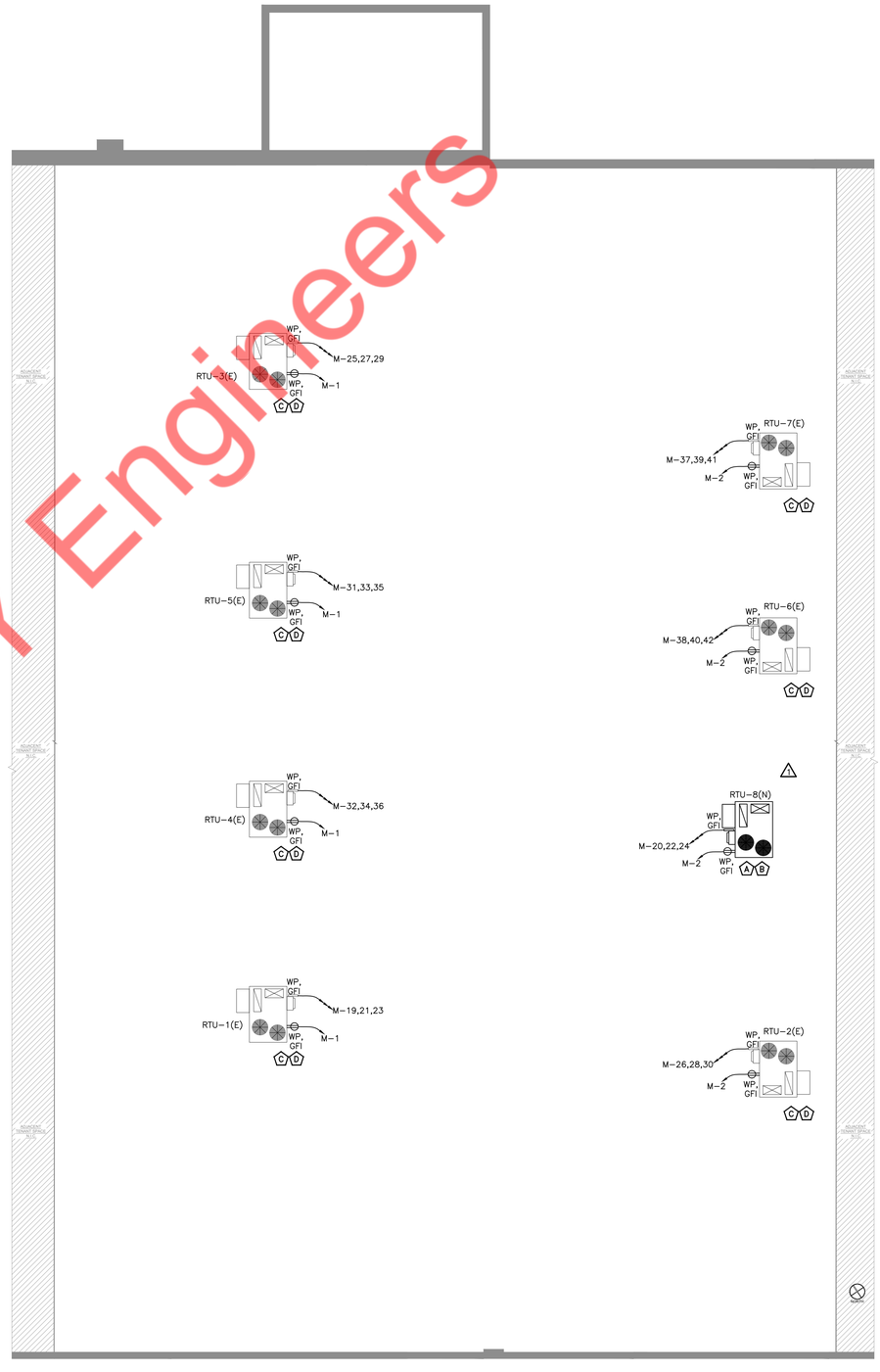
ELECTRICAL ROOF POWER PLAN KEYED WORK NOTES:

A. ELECTRICAL CONTRACTOR SHALL COORDINATE FOR EXACT LOCATION OF MECHANICAL EQUIPMENTS WITH MECHANICAL DRAWINGS.

B. ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN AND PROVIDE AS REQUIRED. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.

C. EXISTING MECHANICAL UNIT RTU-1(E) TO RTU-7(E) (7 UNITS) SHALL REMAIN AND SHALL BE CIRCUITED TO THE EXISTING ELECTRICAL PANEL "M". PROVIDE NEW BRANCH BREAKER AND FEEDER TO NEW RTU(RTU-8(N)) UNIT AS SHOWN IN THE DRAWING . E.C TO COORDINATE WITH MECHANICAL CONTRACTOR FOR ANY REQUIREMENT BASED ON THE FIELD CONDITION. BASE BID ACCORDINGLY.

D. EXISTING ROOF OUTLETS SHALL REMAIN AS IT IS AND SHALL BE CONNECTED TO THE EXISTING PANEL "M". PROVIDE BRANCH BREAKER AND FEEDER AS SHOWN IN THE DRAWING. E.C SHALL VERIFY OPERABLE CONDITION OF THE EXISTING OUTLET AND PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.



ROOF POWER PLAN

SCALE 1/8" = 1'-0"

1

PANEL SCHEDULE:

PANEL:	MDPB (E)	MOUNTING:	RECESSED
480Y/277 VOLTS, 3 PHASE, 4 WIRE		LOCATION:	ELECTRICAL ROOM
NOTE:"NOTE: L:LIGHTING, R: RECEPTACLES, K:KITCHEN/EQUIPMENTS, C: REFRIGERATION, H: HVAC, M: MOTOR, O:OTHER/MISCILLANEOUS "			
MAIN CB 600A MLO: NA BUS: EXISTING MIN,		FED FROM:	EXISTING DISCONNECT SWITCH

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1		SPARE				0.00								2
3	20-3P	SPARE					0.00					SPARE	20-3P	4
5		SPARE						0.00						6
7		SPARE				0.00								8
9	20-3P	SPARE					0.00					SPARE	20-3P	10
11		SPARE						0.00						12
13	20	SPARE				0.00						SPARE	20	14
15	20	SPARE					0.00					SPACE		16
17			O	4.00				4.00				SPACE		18
19	20-3P	WATER HEATER(WH-1)	O	4.00	3#12, #12G, 3/4"C	4.00						SPACE		20
21			O	4.00			4.00					SPACE		22
23		SPACE						0.00				SPACE		24
25		SPACE				0.00						SPACE		26
27		SPACE					0.00					SPACE		28
29		SPACE						0.00				SPACE		30
31		SPACE				0.00						SPACE		32
33		SPACE					0.00					SPACE		34
35		SPACE						0.00				SPACE		36
37			O	10.34		53.95				43.61	O			38
39	125-3P	NEW 75 KVA TRANSFORMER	O	10.34	4#1, #6G, 11/4"C.		53.95		EXISTING	43.61	O	EXISTING 150KVA TRANSFORMER	225-3P	40
41			O	10.34				53.95		43.61	O			42
TOTAL CONNECTED LOAD (KVA)						57.95	57.95	57.95						

LOAD CLASSIFICATION		CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
TOTLA LIGHTING	L	0.00	125%	0.00
TOTAL RECEPTACLE	R	0.00	100%	0.00
TOTAL HVAC	H	0.00	100%	0.00
TOTAL MOTOR	M	0.00	100%	0.00
TOTAL KITCHEN/EQUIPMENTS	E	0.00	65%	0.00
TOTAL OTHER/MISCILLANEOUS	O	173.86	100%	173.86

PANEL TOTAL LOAD		
TOTAL CONNECTED LOAD	173.86	KVA
TOTAL DEMAND LOAD	173.86	KVA
TOTAL CONNECTED CURRENT	209.37	AMP
TOTAL DEMAND CURRENT	209.37	AMP
SYSTEM VOLTAGE	277/480 Wye	

PANEL:	M(E)	MOUNTING:	RECESSED
208Y/120 VOLTS, 3 PHASE, 4 WIRE		LOCATION:	ELECTRICAL ROOM
NOTE:"NOTE: L:LIGHTING, R: RECEPTACLES, K:KITCHEN/EQUIPMENTS, C: REFRIGERATION, H: HVAC, M: MOTOR, O:OTHER/MISCILLANEOUS, *: GFCI BREAKER "			
MAIN CB 500A MLO: NA BUS: EXISTING MIN,		FED FROM:	EXISTING 150KVA TRANSFORMER

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	RECEPTACLE -RTU	R	0.72	2#12, #12G, 3/4"C	1.44				0.72	R	RECEPTACLE -RTU	20	2
3	20	SPARE					0.00					SPARE	20	4
5	20	SPARE						0.00				SPARE	20	6
7	20	SPARE				0.00						SPARE	20	8
9	20	SPARE					0.00					SPARE	20	10
11	20	SPARE						0.00				SPARE	20	12
13	20	SPARE				0.00						SPARE	20	14
15	20	SPARE					0.00					SPARE	20	16
17	20	SPARE						0.00				SPARE	20	18
19			H	5.87		9.83				3.96	H			20
21	60-3P	RTU-1(E)	H	5.87	EXISTING		9.83		3#8, #10G, 3/4"C.	3.96	H	RTU-8(N)	45-3P	22
23			H	5.87				9.83		3.96	H			24
25			H	5.87		11.74				5.87	H			26
27	60-3P	RTU-3(E)	H	5.87	EXISTING		11.74		EXISTING	5.87	H	RTU-2(E)	60-3P	28
29			H	5.87				11.74		5.87	H			30
31			H	5.87		11.74				5.87	H			32
33	60-3P	RTU-5(E)	H	5.87	EXISTING		11.74		EXISTING	5.87	H	RTU-4(E)	60-3P	34
35			H	5.87				11.74		5.87	H			36
37			H	3.95		9.82				5.87	H			38
39	45-3P	RTU-7(E)	H	3.95	EXISTING		9.82		EXISTING	5.87	H	RTU-6(E)	60-3P	40
41			H	3.95				9.82		5.87	H			42
TOTAL CONNECTED LOAD (KVA)						44.57	43.13	43.13						

LOAD CLASSIFICATION		CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
TOTLA LIGHTING	L	0.00	125%	0.00
TOTAL RECEPTACLE	R	1.44	100%	1.44
TOTAL HVAC	H	129.40	100%	129.40
TOTAL MOTOR	M	0.00	100%	0.00
TOTAL KITCHEN/EQUIPMENTS	E	0.00	65%	0.00
TOTAL OTHER/MISCILLANEOUS	O	0.00	100%	0.00

PANEL TOTAL LOAD		
TOTAL CONNECTED LOAD	130.84	KVA
TOTAL DEMAND LOAD	130.84	KVA
TOTAL CONNECTED CURRENT	363.59	AMP
TOTAL DEMAND CURRENT	363.59	AMP
SYSTEM VOLTAGE	120/208Wye	

PANEL:	A(N)	MOUNTING:	RECESSED
208Y/120 VOLTS, 3 PHASE, 4 WIRE		LOCATION:	ELECTRICAL ROOM
NOTE:"NOTE: L:LIGHTING, R: RECEPTACLES, K:KITCHEN/EQUIPMENTS, C: REFRIGERATION, H: HVAC, M: MOTOR, O:OTHER/MISCILLANEOUS, *: GFCI BREAKER "			
MAIN CB 200A MLO: NA BUS: 225A MIN,		FED FROM:	NEW 75 KVA TRANSFORMER

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA) A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	LIGHTING - 1,2,3,4,5, BOYES REST ROOM, GIRLS REST ROOM,JANITOR, LACTATION ROOM, PARTY STORAGE, BREAK ROOM	L	1.79	2#12, #12G, 3/4"C	2.99			2#12, #12G, 3/4"C	1.20	R	RECEPTACLE - SHOW EINDOW	20	2
3	20	LIGHTING - LOBBY, KIDS ZONE,	L	1.33	2#12, #12G, 3/4"C		1.69		2#12, #12G, 3/4"C	0.36	R	RECEPTACLE - LOBBY	20	4
5	20	LIGHTING - MINI KIDS ZONE	L	1.05	2#12, #12G, 3/4"C			1.77	2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - LOBBY	20	6
7	20	LIGHTING - BIG KIDS ZONE	L	0.95	2#12, #12G, 3/4"C	1.67			2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - LOBBY	20	8
9	20	LIGHTING - BIG KIDS ZONE	L	0.95	2#12, #12G, 3/4"C		1.67		2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - PARTY ROOM	20	10
11	20	LIGHTING - ROPE CLIMBING AREA, ELECTRICAL ROOM	L	0.70	2#12, #12G, 3/4"C			1.42	2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - PARTY ROOM	20	12
13	20	EXTERIOR SIGN	L	1.00	2#12, #12G, 3/4"C	1.72			2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - PARTY ROOM	20	14
15	20	RECEPTACLE - ELECTRICAL ROOM	R	0.36	2#12, #12G, 3/4"C		1.08		2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - PARTY ROOM	20	16
17	20	RECEPTACLE - BREAK ROOM	R	0.18	2#12, #12G, 3/4"C			0.90	2#12, #12G, 3/4"C	0.72	R	RECEPTACLE - PARTY ROOM	20	18
19	20	RECEPTACLE - BREAK ROOM	R	0.36	2#12, #12G, 3/4"C	2.16			2#12, #12G, 3/4"C	1.80	R	HAND DRYER BOYS REST ROOM	20*	20
21	20	RECEPTACLE - BREAK ROOM	R	0.72	2#12, #12G, 3/4"C		2.52		2#12, #12G, 3/4"C	1.80	R	HAND DRYER BOYS REST ROOM	20*	22
23	20	RECEPTACLE - BIG KIDS PLAY AREA	R	0.36	2#12, #12G, 3/4"C			2.16	2#12, #12G, 3/4"C	1.80	R	HAND DRYER GIRLS REST ROOM	20*	24
25	20	RCP-1	O	0.85	2#12, #12G, 3/4"C	2.65			2#12, #12G, 3/4"C	1.80	R	HAND DRYER GIRLS REST ROOM	20*	26
27	20	PROJECTION	E	1.00	2#12, #12G, 3/4"C		1.54		2#12, #12G, 3/4"C	0.54	R	RECEPTACLE - BIG KIDS PLAY AREA	20	28
29	20	BIG BALL TREE	E	0.30	2#12, #12G, 3/4"C			0.84	2#12, #12G, 3/4"C	0.54	R	RECEPTACLE - LACTION ROOM,PARTY STORAGE	20	30
31	20	ROLLING EARTH	E	0.35	2#12, #12G, 3/4"C	1.05			2#12, #12G, 3/4"C	0.70	E	DRINKING FOUNTAIN	20	32
33	20	ROUND WATER BED	E	0.10	2#12, #12G, 3/4"C		0.20		2#12, #12G, 3/4"C	0.10	E	ROLLING BRIDGE	20	34
35	20	HAPPY MERRY GO ROUND	E	0.10	2#12, #12G, 3/4"C			0.20	2#12, #12G, 3/4"C	0.10	E	LED SLIDE	20	36
37	20	SEESAW	E	0.48	2#12, #12G, 3/4"C	0.58			2#12, #12G, 3/4"C	0.10	E	RAINBOW ROLLER	20	38
39	20	EF-1(N)	M	0.38	2#12, #12G, 3/4"C		0.78		2#12, #12G, 3/4"C	0.40	E	SENSORY ITEM	20	40
41	20	EF-2(N)	M	0.16	2#12, #12G, 3/4"C			0.56	2#12, #12G, 3/4"C	0.40	E	SENSORY ITEM	20	42
43	20	EF-3(N)	M	0.16	2#12, #12G, 3/4"C	0.46			2#12, #12G, 3/4"C	0.30	E	DANCE FLOOR	20	44
45	20	EF-4(N)	M	0.02	2#12, #12G, 3/4"C		0.02					SPARE	20	46
47	20	SPARE						0.00				SPARE	20	48
49	20	SPARE				0.00						SPARE	20	50
51	20	SPARE					0.00					SPARE	20	52
53	20	SPARE						0.00				SPARE	20	54
55	20	SPARE				0.00						SPARE	20	56
57	20	SPARE					0.00					SPARE	20	58
59	20	SPARE						0.00				SPARE	20	60
61	20	SPARE				0.00						SPARE	20	62
63	20	SPARE					0.00					SPARE	20	64
65	20	SPARE						0.00				SPARE	20	66
67	20	SPARE				0.00						SPARE	20	68
69	20	SPARE					0.00					SPARE	20	70
71	20	SPARE						0.00				SPARE	20	72
TOTAL CONNECTED LOAD (KVA)						13.29	9.50	7.85						

LOAD CLASSIFICATION		CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
TOTLA LIGHTING	L	7.77	125%	9.71
TOTAL RECEPTACLE	R	16.86	100%	16.86
TOTAL HVAC	H	0.00	100%	0.00
TOTAL MOTOR	M	0.73	100%	0.73
TOTAL KITCHEN/EQUIPMENTS	E	4.43	65%	2.88
TOTAL OTHER/MISCILLANEOUS	O	0.85	100%	0.85

PANEL TOTAL LOAD		
TOTAL CONNECTED LOAD	30.63	KVA
TOTAL DEMAND LOAD	31.03	KVA
TOTAL CONNECTED CURRENT	85.13	AMP
TOTAL DEMAND CURRENT	86.22	AMP
SYSTEM VOLTAGE	120/208Wye	

EQUIPMENT SCHEDULE:

DESCRIPTION	VOLTAGE	PHASE	AMPS	kW
PROJECTION	110	1	0.91	1.00
BIG BALL TREE	110	1	2.7273	0.30
ROLLING EARTH	110	1	3.18	0.35
ROUND WATER BED	110	1	0.91	0.10
HAPPY MERRY GO ROUND	110	1	0.91	0.10
SEESAW	110	1	4.36	0.48
ROLLING BRIDGE	110	1	0.91	0.10
LED SLIDE	110	1	0.91	0.10
RAINBOW ROLLER	110	1	0.91	0.10
SENSORY ITEM	110	1	0.91	0.40
DANCE FLOOR	110	1	0.91	0.30

PANEL GENERAL NOTES:

1. ALL CIRCUITING IS SHOWN FOR PANEL "MDPB", "M", "A(N)", FOR REFERENCE PURPOSE ONLY. E.C. SHALL VERIFY CIRCUITING OF THE EXISTING DEVICES ON FIELD AND INFORM ENGINEER FOR DISCREPANCIES.
2. ELECTRICAL CONTRACTOR TO VERIFY THE EXACT PANEL SIZES AND INCOMING FEEDER SIZE.
3. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT CIRCUIT NUMBER & BREAKER SIZE OF EXISTING DEVICES IN FIELD.
4. E.C. SHALL PROVIDE NEW CIRCUIT BREAKERS IN PLACE OF EXISTING CIRCUIT BREAKERS WHEREVER NECESSARY TO BE IN LINE WITH THE PANEL SCHEDULE. ALSO CHECK COMPATIBILITY OF NEWLY ADDED BREAKERS WITH EXISTING PANEL BEFORE PURCHASE
5. E.C. SHALL VERIFY THE EXISTING EQUIPMENT LOAD & RATINGS IN FIELD AND ACCORDINGLY CONSIDER THE ELECTRICAL LOAD IN PANEL BOARD SCHEDULE.

PANEL KEYED NOTES:

A. E.C TO PROVIDE (1) 20/3P BREAKER IN PLACE OF (3) SPACES.
B. E.C TO PROVIDE (1) 125/3P BREAKER IN PLACE OF (3) SPACES.
C. E.C TO PROVIDE (1) 45/3P BREAKER IN PLACE OF (3) 20/1P BREAKERS.

* INDICATED GFCI CIRCUIT BREAKERS

EXISTING CONTIDITONS NOTES

STOP AND READ

THE CONTRACTOR AND SUB-CONTRACTORS **SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED**. THIS SHALL HOLD TRUE FOR FIRST GENERATION AND 2ND GENERATION SPACES. WHEN DEMOLITION IS REQUIRED, THAT WILL BE PERMITTED TO EXPOSE CONDITIONS. THESE VERIFICATIONS SHALL INCLUDE BUT NOT LIMITED TO: DIMENSIONS BOTH HORIZONTALLY AND VERTICAL, ELECTRICAL SERVICE /PANELS LOCATION AND VOLTS/PHASE, LOCATION/QTY OF ROOF MOUNTED HVAC EQUIPMENT, CONFIRM THAT INTERIOR HVAC HUNG UNITS HAVE PROPER SUPPORT CONNECTIONS FOR EXISTING STRUCTURE, FIRE SPRINKLER MAIN RUNS, TOILET ROOM DIMENSIONS, DOOR SWING FOR DOORS TO REMAIN AND ETC. IF NOT VERIFIED AND DISCOVERED AT A LATER TIME, THE CONTRACTOR SHALL REIMBURSE THE ARCHITECT FOR THE REDESIGN FEE. THIS DOES NOT INCLUDE HIDDEN WORK I.E. PITCH OF SANITARY LINES, ACTUAL CONDITIONS OF EXISTING HVAC EQUIPMENT, STRUCTURAL COLUMNS/BEARING WALLS OR CONDITIONS OF GREASE INTERCEPTORS AND ETC.

SCOPE OF WORK

PROVIDE PLUMBING FOR A NEW INDOOR PLAYGROUND INCLUDING ALL NEW WATER GAS & SANITARY LINES AND CONNECT TO EXISTING UTILITIES. EXISTING GAS PIPING WITH METER AND ASSOCIATED ACCESSORIES TO REMAIN AS IT IS. PROVIDE NEW ELECTRIC STORAGE WATER HEATER.

COORDINATE WITH GC AND MECH CONTRACTOR FOR ANY REQUIRED CONDENSING WATER LINES.

PLUMBING NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE LOCAL CODES, RULES AND ORDINANCES.
2. PLUMBING CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THIS SET. CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS AND SCHEDULES. IF DIFFERENT NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING OR PRECEDING WITH WORK.
3. ALL EQUIPMENT WHICH IS TO REMAIN MUST BE REFURBISHED TO A LIKE NEW CONDITION.
4. PLUMBING CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS.
5. ALL MATERIALS SHALL BE NEW.
6. ALL WORK SHALL BE PERFORMED BY A LICENSED PLUMBING CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE. ALL EXCAVATION AND BACKFILL AS REQUIRED FOR THIS PHASE OF CONSTRUCTION SHALL BE A PART OF THIS CONTRACT.
7. REQUIRED INSURANCE SHALL BE PROVIDED BY THE PLUMBING CONTRACTOR FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
8. PLUMBING CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, INSPECTION AND TESTS. PLUMBING CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT. PLUMBING CONTRACTOR MUST BE PRESENT FOR ALL INSPECTIONS OF HIS WORK BY REGULATORY AUTHORITIES.
9. DRAWINGS ARE DIAGRAMMATIC. DO NOT SCALE FOR THE EXACT LOCATION OF FIXTURES, PIPING, EQUIPMENT, ETC.
10. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION. REPORT ANY DISCREPANCY TO ENGINEER/ARCHITECT PRIOR TO BEGINNING CONSTRUCTION.
11. VERIFY LOCATION, SIZE, DIRECTION OF FLOW AND INVERTS OF ALL EXISTING UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION. ADVISE ENGINEER OF ANY DISCREPANCIES.
12. EXPOSED WATER PIPING SHALL BE TYPE "L" COPPER FOR 2" AND UNDER. WATER PIPING IN WALLS AND UNDERGROUND MAY BE "PEX" TYPE PIPING THAT MEETS ANSI/NSF STANDARD 61.
13. SOIL, WASTE AND VENT PIPING SHALL BE PVC BUT MAY NOT RUN THRU RATED ASSEMBLIES OR IN PLENUMS.
14. ALL FIXTURES MUST BE PROVIDED WITH READILY ACCESSIBLE STOPS AND APPROPRIATELY MARKED ACCESS PANELS. COORDINATE LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION.
15. FURNISH AND INSTALL APPROVED AIR CHAMBERS AT EACH PLUMBING FIXTURE GROUP AS PER CODE AND WITH GOOD ENGINEERING PRACTICE.
16. DIELECTRIC COUPLINGS ARE REQUIRED BETWEEN ALL DISSIMILAR METAL IN PIPING AND EQUIPMENT CONNECTIONS; EXCEPT AT WATER HEATER AS PER CODE.
17. ISOLATE COPPER PIPE FROM HANGER OR SUPPORTS WITH ISOLATOR PAD.
18. ALL FIRE RATED FLOOR AND WALL PENETRATIONS SHALL BE PROPERLY PROTECTED FROM FIRE, SMOKE AND WATER PENETRATION BY FILLING VOIDS BETWEEN PIPE AND WALL/FLOOR SLEEVES WITH FIRE RATED FOAM, TO ACHIEVE THE SAME RATING AS WALLS OR FLOORS AS PART OF THE PLUMBER'S WORK.
19. PLUMBING CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF CERTIFICATE OF OCCUPANCY. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE WITHIN 72 HOURS OF NOTIFICATION AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED.
20. STUD OR MINI/MAXI AIR ADMITTANCE VALVES MAY NOT BE USED AS AN ALTERNATE TO VENT PIPING THRU ROOF.
21. PROVIDE CHROME PLATED COMBINATION COVER PLATE AND CLEAN OUT PLUG OR ACCESS PANEL FOR ALL CLEANOUTS.
22. NO COMBUSTIBLE MATERIAL TO BE USED IN MECHANICAL ROOMS OR IN CEILING SPACES WHERE USED AS RETURN AIR PLENUMS.
23. NO WATER, SANITARY OR DRAINAGE PIPING PERMITTED IN ELECTRICAL OR ELEVATOR EQUIPMENT ROOMS.
24. WATER PIPING INSULATION SHALL BE 1" THICK ARMAFLEX INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR ALL HOT WATER PIPING. WHERE DOMESTIC WATER TEMPERATURES CAN CAUSE SWEATING, ALL COLD WATER PIPING SHALL BE INSULATED WITH 1/2" THICK ARMAFLEX INSULATION.
25. CONDENSATE DRAIN LINES TO BE RUN UNDER SLAB IN PVC SCH40 PIPE AND STUBBED OUT OF WALL TO UNIT. TIE-IN OF A/C TO BE BY OTHERS. PVC PIPING WITH 1/2" THICK ARMAFLEX INSULATION MAY BE USED IN LOCATIONS WHERE ALLOWED BY LOCAL CODES. SEE PLUMBING DRAWINGS FOR SIZE AND LOCATION OF PIPING. PVC WILL BE MIN. SCHEDULE 40 FOR SIZE AND LOCATION OF PIPING. PVC WILL BE MIN. SCHEDULE 40.
26. PROVIDE ANGLE STOPS ON ALL WATER SERVICE LINES TO FIXTURES FOR INDIVIDUAL SHUT-OFF.
27. NO JOINTS UNDERGROUND FOR COPPER.
28. PLUMBING FIXTURES SHALL COMPLY WITH 2018 VIRGINIA PLUMBING CODE.
29. WATER HAMMER ARRESTORS AS PER 2018 VIRGINIA PLUMBING CODE.
30. PLUMBING CONTRACTOR SHALL REVIEW ALL BID DOCUMENTATION.
31. PLUMBING CONTRACTOR SHALL REVIEW WALL FINISHES @ LOCATION REQUIRING BARRIER-FREE COMPLIANCE (EXAMPLE: CENTER LINE TO TOILET).
32. CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE. PROVIDE COPY TO LL.
33. OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER. PROVIDE A COPY TO LL.

FIXTURE BRANCH SCHEDULES

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
LAVATORY (N)	1/2"	1/2"	2"	1-1/2"
WATER CLOSET (N)	1/2"	-	4"	2"
DROP IN SINK (N)	1/2"	1/2"	4"	1-1/2"
URINAL (N)	3/4"	-	3"	2"
FLOOR DRAIN (N)	-	-	3"	2"

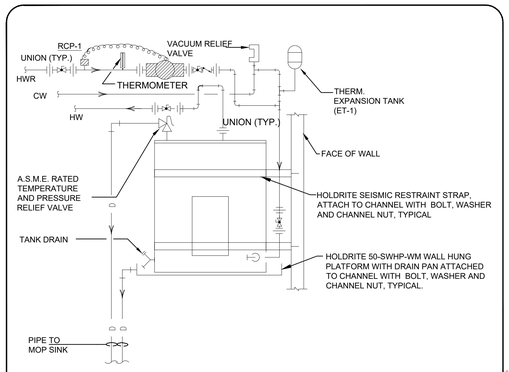
PLUMBING LEGEND

SAN	SANITARY SEWER PIPING (ABOVE GROUND)
EX.SAN	EXISTING SANITARY SEWER PIPING
EX.V	EXISTING VENT PIPING
SAN	SANITARY SEWER PIPING (UNDERGROUND)
V	VENT PIPING
	DOMESTIC COLD WATER PIPING
EX. CW	EXISTING DOMESTIC COLD WATER PIPING
	HOT WATER PIPING
	HOT WATER RETURN PIPING
G	GAS PIPING
EX.G	EXISTING GAS PIPING
	PIPE RISE
	PIPE DROP
	CAPPED END OF PIPE
FCO	FLOOR CLEAN OUT
	P-TRAP
WCO	WALL CLEAN OUT
EX.	EXISTING
S.O.V.	SHUT-OFF VALVE
CW	DOMESTIC COLD WATER
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
	BALANCING VALVE
	ISOLATION VALVE
	GAS COCK
	GAS PRESSURE REGULATOR
	POINT OF CONNECTION
FD	FLOOR DRAIN
	THERMOSTATIC MIXING VALVE

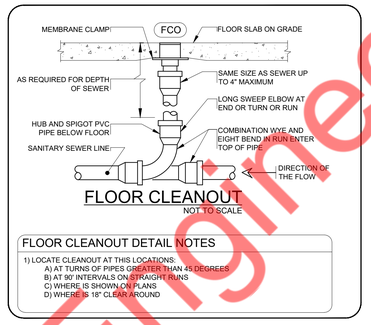
PLUMBING FIXTURE SCHEDULE

Item No.	Qty.	Description	MANUFACTURER	MODEL	WATER Hot	WATER Cold	WASTE Direct	Usage	Spec
A	8	LAVATORY	AMERICAN STANDARD	OVALYN 0495.300			2"		
B	2	URINAL	KOHLER	K - 4915		3/4"	2"		
C	8	WATER CLOSET	AMERICAN STANDARD	CADET 3 FLOWISE RIGHT HEIGHT ELONGATED TOILET		3/4"	4"	1.28	GPF
I	8	LAVATORY FAUCET*	KOHLER	K-R22797-4D	1/2"	1/2"		1.2	GPM
M	1	DRINKING FOUNTAIN	-	-		1/2"	2"		
N	1	MOP SINK	-	-	1/2"	1/2"	3"		
O	1	DROP IN SINK	-	-	1/2"	1/2"	3"		

*LAVATORY FAUCET MAXIMUM HOT WATER TEMPERATURE MUST BE REGULATED TO NOT EXCEED 110°F BY A DEVICE COMPLYING WITH ASSE 1070. FINAL MANUFACTURER AND MODEL NUMBER SHOULD BE CONSIDERED AS PER THE ARCHITECTURAL PLUMBING FIXTURE SCHEDULE.



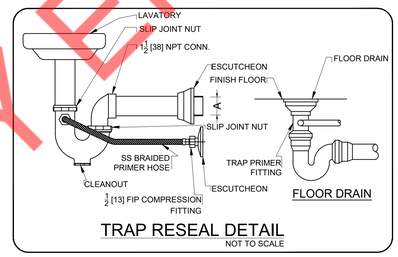
ELECTRIC WATER HEATER (WH-1)
NOT TO SCALE



FLOOR CLEANOUT
NOT TO SCALE

FLOOR CLEANOUT DETAIL NOTES

1) LOCATE CLEANOUT AT THIS LOCATIONS:
   A) AT TURNS OF PIPES GREATER THAN 45 DEGREES
   B) AT 90' INTERVALS ON STRAIGHT RUNS
   C) WHERE IS SHOWN ON PLANS
   D) WHERE IS 18" CLEAR AROUND



TRAP RESEAL DETAIL
NOT TO SCALE

ENERGY CONSERVATION NOTES

1. AS PER 2018 VIRGINIA ENERGY CONSERVATION CODE (IECC 2018) C404.4, PIPING FROM A WATER HEATER TO THE TERMINATION OF HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE C403.2.10 OF MINIMUM PIPE INSULATION THICKNESS.

MINIMUM PIPE INSULATION THICKNESS						
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)			
	CONDUCTIVITY BTU· IN / (H· FT2· °F)	MEAN RATING TEMPERATURE, °F	<1	1 TO <1½	1½ TO <4	4 TO <8	≥8
141-200	0.25-0.29	125	1.5	1.5	2	2	2
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0

2. HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2018 VIRGINIA ENERGY CONSERVATION (IECC 2018) C404.5.1. THE MAXIMUM ALLOWABLE PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE.

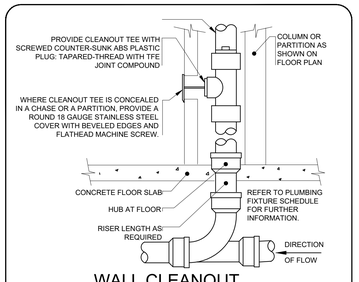
NOMINAL PIPE SIZE (INCHES)	MIXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
⅜"	3'	50'
½"	2'	43'
¾"	0.5'	21'
1"	0.5'	13'
1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

3. AS PER 2018 VIRGINIA ENERGY CONSERVATION CODE (IECC 2018) C404.6.1, AUTOMATIC CONTROLS SHALL BE INSTALLED THAT LIMITS THE OPERATION OF A RE-CIRCULATING PUMP AND THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE.

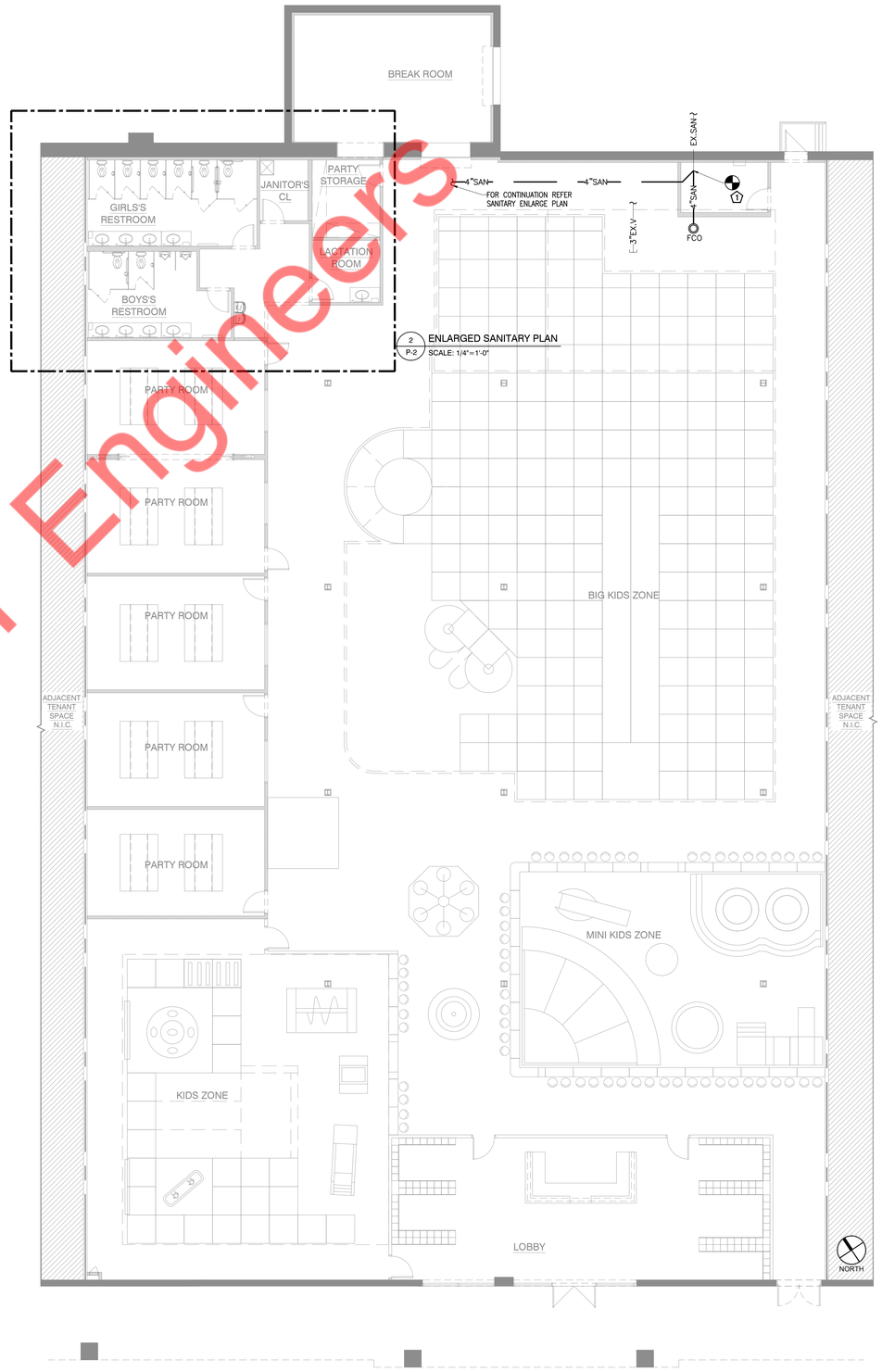
4. AS PER 2018 VIRGINIA ENERGY CONSERVATION CODE (IECC 2018) C404.7, PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:

A. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.

B. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).



WALL CLEANOUT
NOT TO SCALE

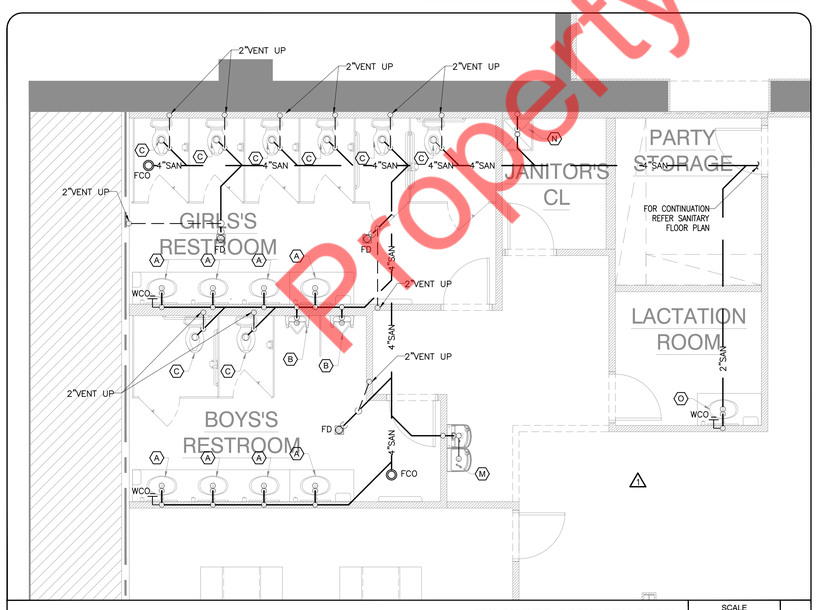


GENERAL NOTES

1. UNLESS OTHERWISE NOTED, SLOPE OF DRAINAGE SYSTEM TO BE 1/16" PER FOOT OF RUN FOR PIPE 8" AND OVER, 1/8" PER FOOT FOR PIPE 3" TO 6" AND 1/4" PER FOOT FOR PIPE 2-1/2" AND SMALLER.
2. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
3. ALL MATERIAL INDICATED AND IMPLIED ON THESE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED.
4. PROVIDE ACCESS PANELS FOR CLEANOUTS AS REQUIRED.
5. REFER SANITARY RISER DIAGRAM (SHEET P-5) FOR ALL PIPE SIZES.
6. AS PER VIRGINIA PLUMBING CODE, ALL VENTS SHALL RISE VERTICALLY (AT LEAST 45 DEGREES) TO A POINT AT LEAST 6" ABOVE THE FIXTURE FLOOD LEVEL RIM OF THE HIGHEST FIXTURE BEFORE OFF-SETTING HORIZONTALLY.

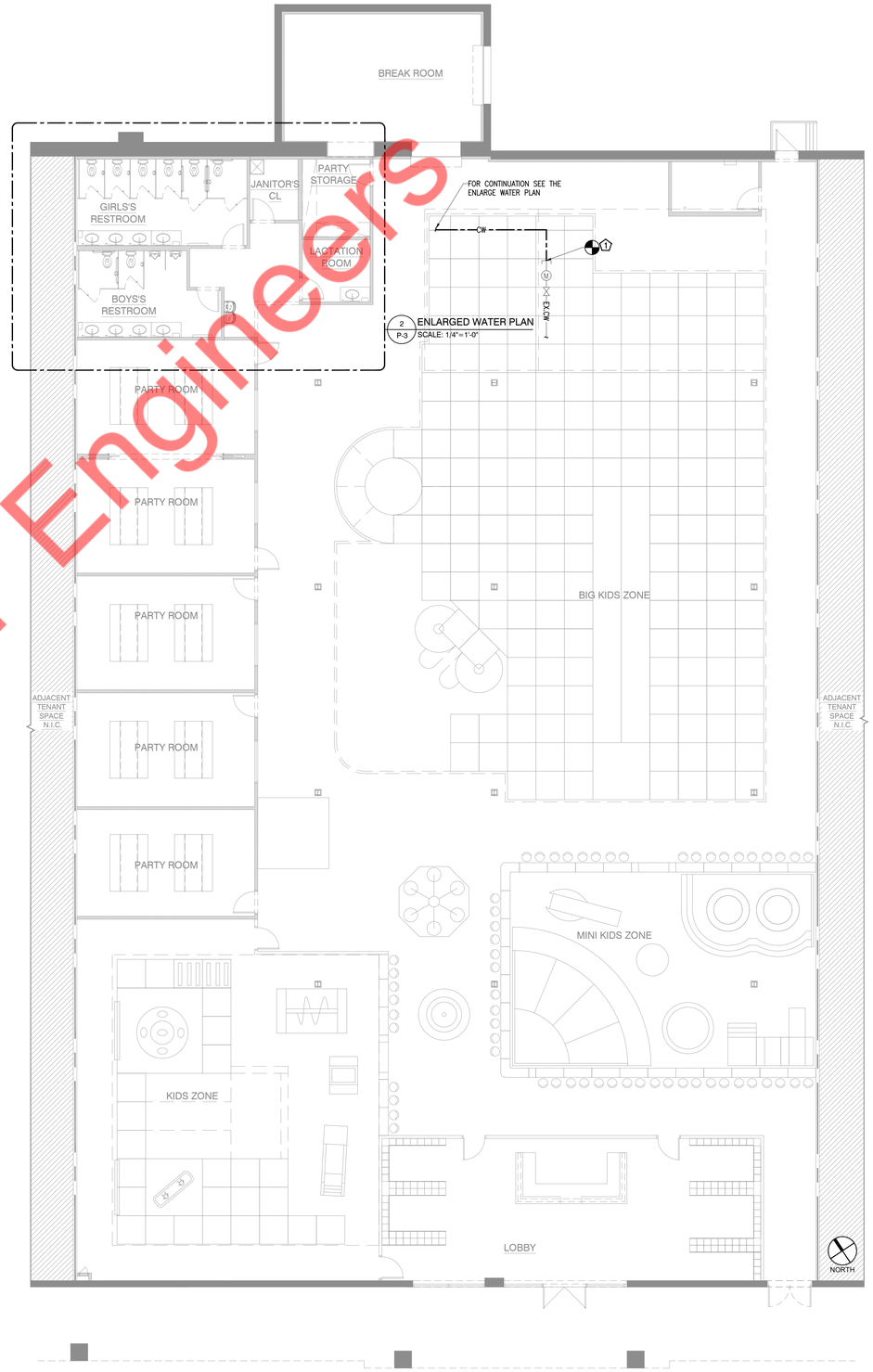
SANITARY KEY NOTES

1. CONNECT NEW 4" SANITARY WASTE PIPING TO 4" EXISTING SANITARY SEWER MAIN LINE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, ROUTING, LOCATION AND INVERT OF EXISTING SANITARY SEWER AND MAKE NECESSARY CHANGES TO THE SANITARY NETWORK AS PER SITE CONDITION.



ENLARGED SANITARY PLAN | SCALE 1/4"=1'-0" | 2

SANITARY FLOOR PLAN | SCALE 1/8" = 1'-0" | 1



WATER FLOOR PLAN | SCALE 1/8" = 1'-0" | 1

NEW STORAGE WATER HEATER SCHEDULE	
MANUFACTURER	AO SMITH
MODEL	DEL-50
EQUIPMENT TAG	WH-1
STATUS	NEW
CAPACITY	48 GALLONS
QUANTITY	1
KW	12
FLOW RATE	54 GPH*
VOLTAGE	480/3/60
AMPERAGE	14.5
WEIGHT	172 LBS

*SIMULTANEOUS OPERATION @ 90°F TEMPERATURE RISE

INSTALL NEW EXPANSION TANK (ET-1) AMTROL MODEL THERM-X-TROL ST-5. 2.0 GAL PER LOCAL CODE REQUIREMENTS

RECIRCULATION PUMP SCHEDULE	
MANUFACTURER & MODEL	GRUNDFOS UP 15-18 BS
EQUIPMENT TAG	RCP-1
STATUS	NEW
GPM	2
WATER TEMP.(°F)	140
PUMP TYPE	INLINE
MHP	85 WATTS
V/PH/HZ	115/1/60
RPM	2280
SERVICE FACTOR	1.0

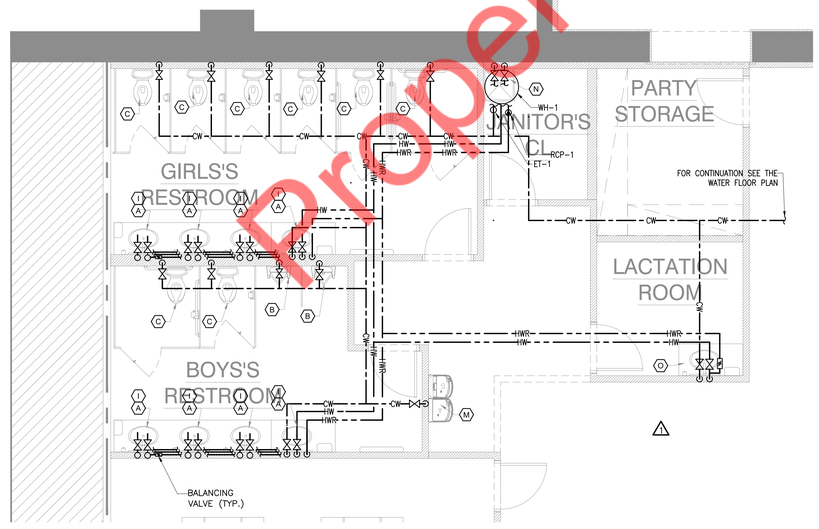
NOTE:
PROVIDE AQUA STAT WITH AUTOMATIC TIMER KIT FOR THE TEMPERATURE CONTROL OF HOT WATER SYSTEM. COORDINATE ELECTRICAL REQUIREMENTS FOR TIMER WITH ELECTRICAL CONTRACTOR.

GENERAL NOTES

1. CW/HW/HWR PIPING TO BE PROVIDED WITH INSULATION AS PER 2018 VIRGINIA ENERGY CONSERVATION CODE (IECC 2018) (REFER SHEET P-1).
2. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.
3. PROVIDE ACCESS PANELS FOR SHUT-OFF VALVES AS REQUIRED.
4. REFER WATER RISER DIAGRAM (SHEET P-5) FOR ALL PIPE SIZES.
5. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
6. ALL MATERIAL INDICATED AND IMPLIED ON THESE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED.

WATER KEY NOTES

1. CONNECT NEW 1-1/2" CW LINE TO THE EXISTING 2" COLD WATER MAIN LINE WITH EXISTING WATER METER. CONTRACTOR TO FIELD VERIFY THE SIZE AND LOCATION OF THE EXISTING WATER LINE & WATER METER AND UPGRADE IF REQUIRED.



ENLARGED WATER PLAN | SCALE 1/4"=1'-0" | 2

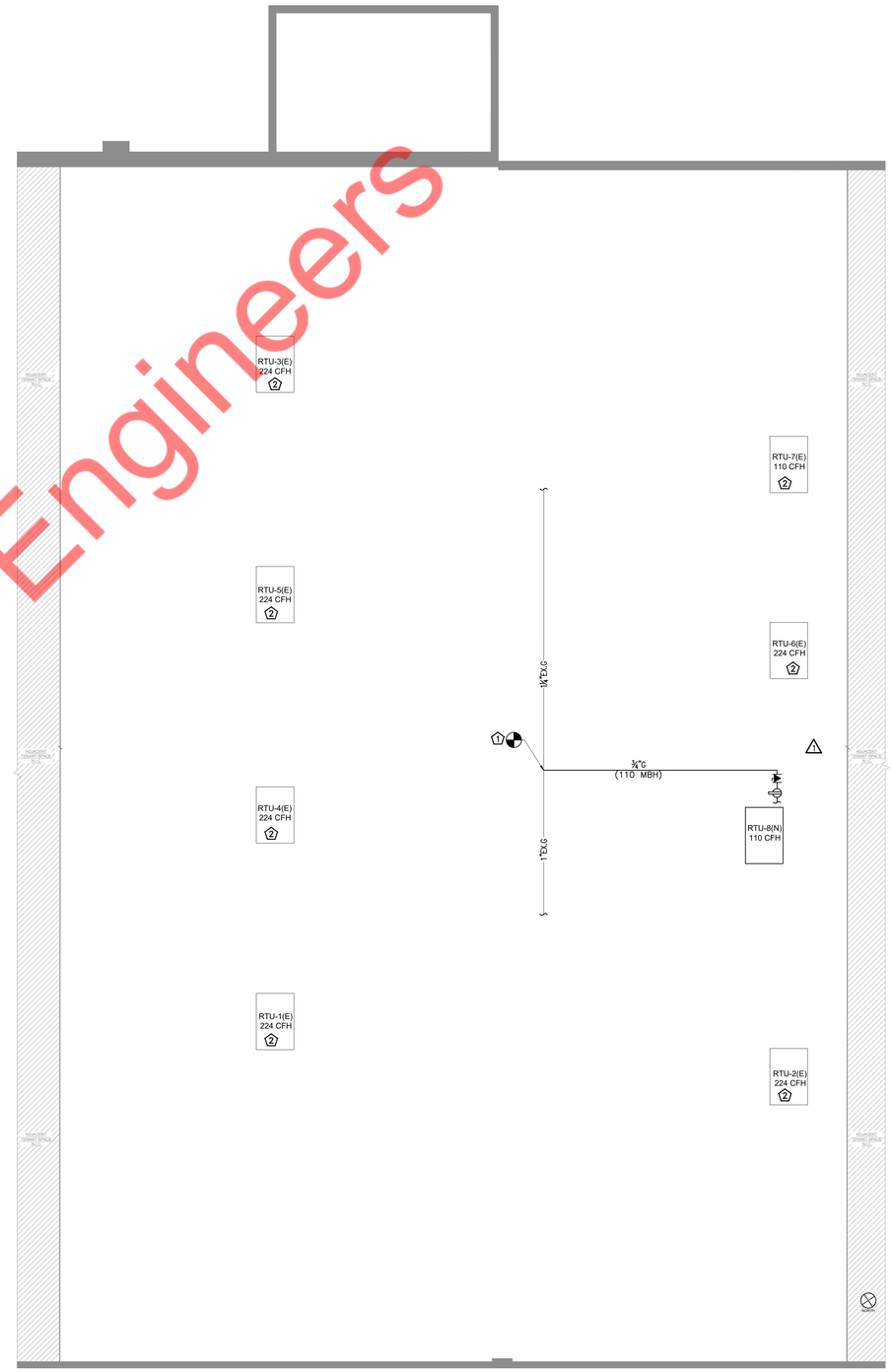
GENERAL NOTES

1. ALL EXISTING GAS PIPING NETWORK, GAS METER, ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN SAME.
2. ALL MATERIAL INDICATED AND IMPLIED ON THESE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED.
3. CONTRACTOR TO FIELD VERIFY THE PRESSURE AT THE OUTLET OF METER AND LET THE ENGINEER KNOW IF THERE IS ANY DISCREPANCY IN THE SITE CONDITIONS AND DRAWINGS BEFORE START OF THE WORK.

GAS KEY NOTES

(1) CONNECT NEW 3/4" GAS LINE TO THE 1-1/4 EXISTING GAS LINE WITH EXISTING GAS METER. CONTRACTOR TO FIELD VERIFY THE PRESSURE AVAILABLE, GAS LINE SIZE, CAPACITY OF GAS METER AND UPGRADE GAS LINE AND/OR GAS METER IF REQUIRED.

(2) EXISTING MECHANICAL EQUIPMENT (RTU) TO REMAIN WITH EXISTING GAS PIPING, CONNECTIONS, ASSOCIATED ACCESSORIES AND FITTINGS. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND REPLACE IF REQUIRED.



GAS ROOF PLAN | SCALE 1/8" = 1'-0" | 1

GAS KEY NOTES

1. CONNECT NEW 3/4" GAS LINE TO THE 1-1/4 EXISTING GAS LINE WITH EXISTING GAS METER. CONTRACTOR TO FIELD VERIFY THE PRESSURE AVAILABLE, GAS LINE SIZE, CAPACITY OF GAS METER AND UPGRADE GAS LINE AND/OR GAS METER IF REQUIRED.

NATURAL GAS PIPING SYSTEM
PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON THE DRAWINGS. PROVIDE EITHER THREADED STEEL OR MALLEABLE IRON PIPE WITH MALLEABLE FITTINGS OR WELDED STEEL. PROVIDE ALL UNIONS, SHUT-OFF VALVES AND DIRT LEGS REQUIRED BY NFPA-54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

NOTES:

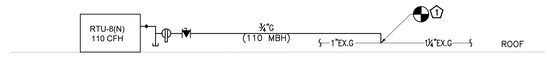
1. GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWED FITTINGS.
2. GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
3. VERIFY ALL EQUIPMENT BTU'S PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING TO 2018 VIRGINIA FUEL GAS CODE (IFGC 2018) TABLE 402.4(5).
4. VERIFY EXISTING GAS PRESSURE AT THE OUTLET OF GAS METER PRIOR TO INSTALLATION. ADJUST PIPE SIZE ACCORDING TO APPLICABLE TABLE OF 2018 VIRGINIA FUEL GAS CODE (IFGC 2018) CHAPTER 4-TABLE 402.4(5)..

GAS PIPE SIZING AS PER TABLE 402.4(5) OF 2018 VIRGINIA FUEL GAS CODE (IFGC 2018)

EQUIVALENT LENGTH OF PIPE =
9+37+90+70+32+5 = 243 + FITTINGS (+40%) = 340 FEET

GAS SCHEDULE

QTY.	DESCRIPTION	MANUFACTURER	MODEL	SIZE	BTU/HR.
1	RTU-1(E)	EXISTING TO REMAIN		E	224,000
1	RTU-2(E)	EXISTING TO REMAIN		E	224,000
1	RTU-3(E)	EXISTING TO REMAIN		E	224,000
1	RTU-4(E)	EXISTING TO REMAIN		E	224,000
1	RTU-5(E)	EXISTING TO REMAIN		E	224,000
1	RTU-6(E)	EXISTING TO REMAIN		E	224,000
1	RTU-7(E)	EXISTING TO REMAIN		E	110,000
1	RTU-8(N)	REFER TO THE MECHANICAL PLAN		3/4"	110,000
TOTAL LOAD					1,564,000



GAS RISER | SCALE N.T.S. | 3

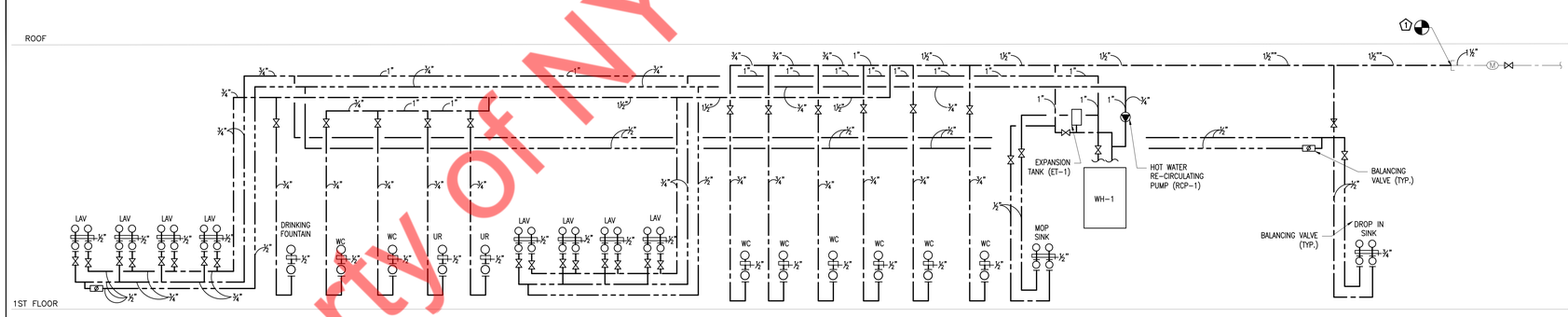
WATER KEY NOTES

1. CONNECT NEW 1-1/2" CW LINE TO THE EXISTING 2" COLD WATER MAIN LINE OF WITH EXISTING WATER METER. CONTRACTOR TO FIELD VERIFY THE SIZE AND LOCATION OF THE EXISTING WATER LINE & WATER METER AND UPGRADE IF REQUIRED.

WATER FIXTURE FACTOR VALUE

8 WATER CLOSET(TANK) @ 5	=40
2 URINAL @ 5	=10
8 LAVATORY @ 2	=16
1 DROP IN SINK @ 2	= 2
1 DRINKING FOUNTAIN @ 0.25	=0.25
1 MOP SINK @ 3	=3
TOTAL	= 69.25

*AS PER 2018 VIRGINIA PLUMBING CODE (IPC 2018), APPENDIX E TABLE E103.3(2) 1-1/2" WATER LINE IS REQUIRED.



WATER RISER | SCALE N.T.S. | 2

SANITARY KEY NOTES

1. CONNECT NEW 4" SANITARY WASTE PIPING TO 4" EXISTING SANITARY SEWER MAIN LINE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, ROUTING, LOCATION AND INVERT OF EXISTING SANITARY SEWER AND MAKE NECESSARY CHANGES TO THE SANITARY NETWORK AS PER SITE CONDITION.
2. CONNECT NEW 3" VENT LINE TO EXISTING 3" VENT LINE. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION & SIZE OF EXISTING VENT LINE AND UPGRADE IF REQUIRED. PROVIDE NEW VTR IF NOT EXISTING.

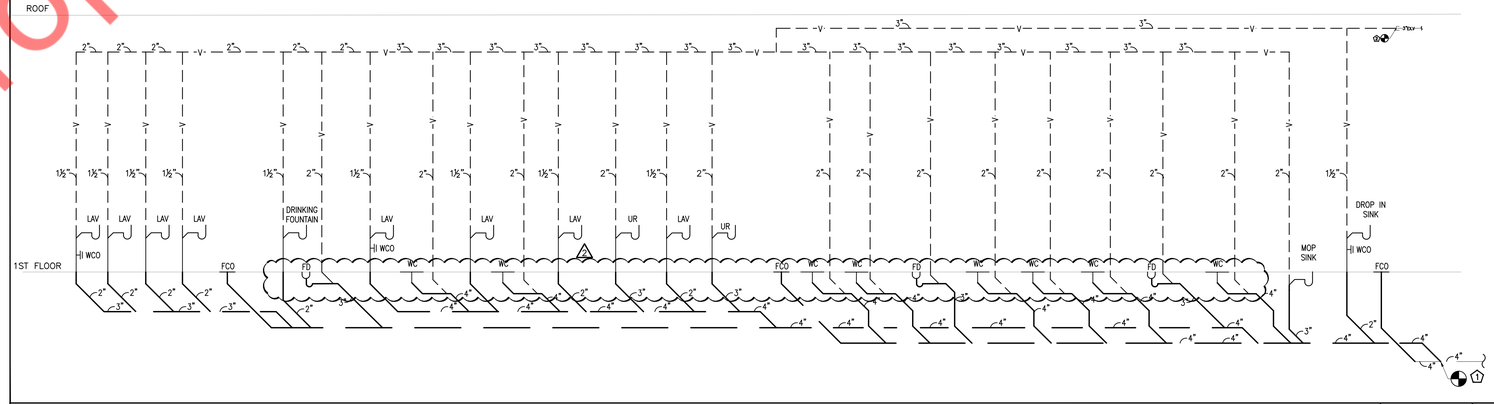
DRAINAGE FIXTURE FACTOR VALUE

8 WATER CLOSET(TANK) @ 4	=32
2 URINAL @ 4	=8
8 LAVATORY @ 1	=8
1 DROP IN SINK @ 2	=2
1 DRINKING FOUNTAIN @ 0	=0
1 MOP SINK @ 5	=5
3 FLOOR DRAIN@ 5	=15
TOTAL	= 70

*AS PER 2018 VIRGINIA PLUMBING CODE (IPC 2018), TABLE 709.1
4" SEWER LINE REQUIRED

* TABLE 709.1 OF 2018 VIRGINIA PLUMBING CODE
BUILDING DRAINS AND SEWERS

DIAMETER OF PIPE(INCHES)	MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS SLOPE PER FOOT			
	1/16 INCH	1/8 INCH	1/4 INCH	1/2 INCH
1-1/4	--	--	1	1
1-1/2	--	--	3	3
2	--	--	21	26
2-1/2	--	--	24	31
3	--	36	42	50
4	--	180	216	250



SANITARY RISER | SCALE N.T.S. | 1