

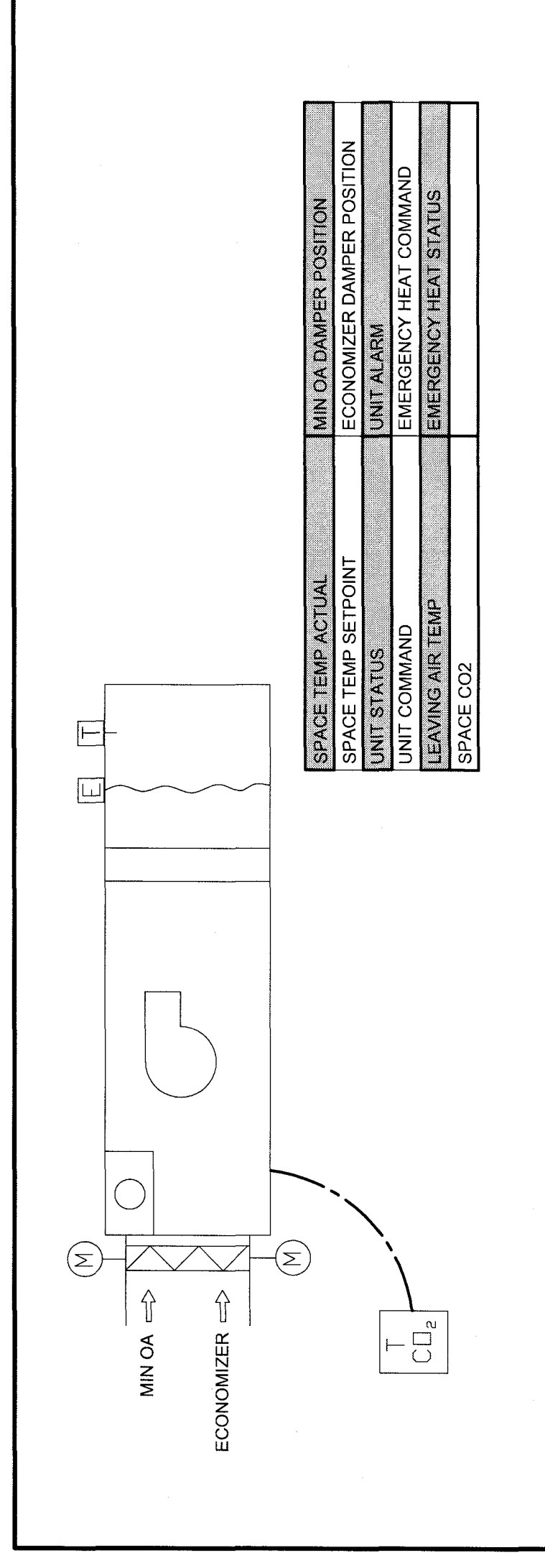
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PAPPAW ELEMENTARY-HIGH SCHOOL
GUARANTEED ENERGY SAVINGS CONTRACT
MORGAN COUNTY, WV
MECHANICAL DETAILS, SCHEDULES, AND CONTROLS

REVISIONS	
A. BIDDING	
DATE	3/13/2017
DRAWN BY	CRK
CHECKED BY	CRK
PROJECT	XZMW17
SET NO.	□

M1.0
PAN FAN



1. AIR HANDLING UNIT CONTROL

- 1.1 Occupied mode
- 1.2 Min OA damper shall open to min position when mode goes to occupied. The min OA damper shall remain in min position until CO₂ rises above setpoint, when min OA damper goes to max position. Min OA damper shall remain in max position until CO₂ levels drop to 30 (ADJ) ppm below setpoint.
- 1.3 Fan shall run continuously in occupied mode. Heat pump shall run in cooling mode whenever space temperature is 2°F above cooling setpoint until space temperature is 1°F below cooling setpoint. Provide a minimum 3" setpoint deadband. Heat pump shall run in heating mode whenever space temperature is 1°F above heating setpoint until space temperature drops to 4°F below setpoint for a period of 5 minutes (ADJ) the emergency heat shall be initiated and run until the space temperature rises to within 1°F of heating setpoint.
- 1.4 When outside air temperature is between 65°F and 50°F the economizer damper shall open. All other times the economizer damper shall remain closed.
- 1.5 In unoccupied mode the fan shall cycle with cooling or heating commands. The cooling setpoints shall be 80°F (ADJ) and the heating setpoint shall be 55°F (ADJ). Min OA damper shall remain closed.
- 1.6 If status does not equal command an alarm shall be sent to the FMS.

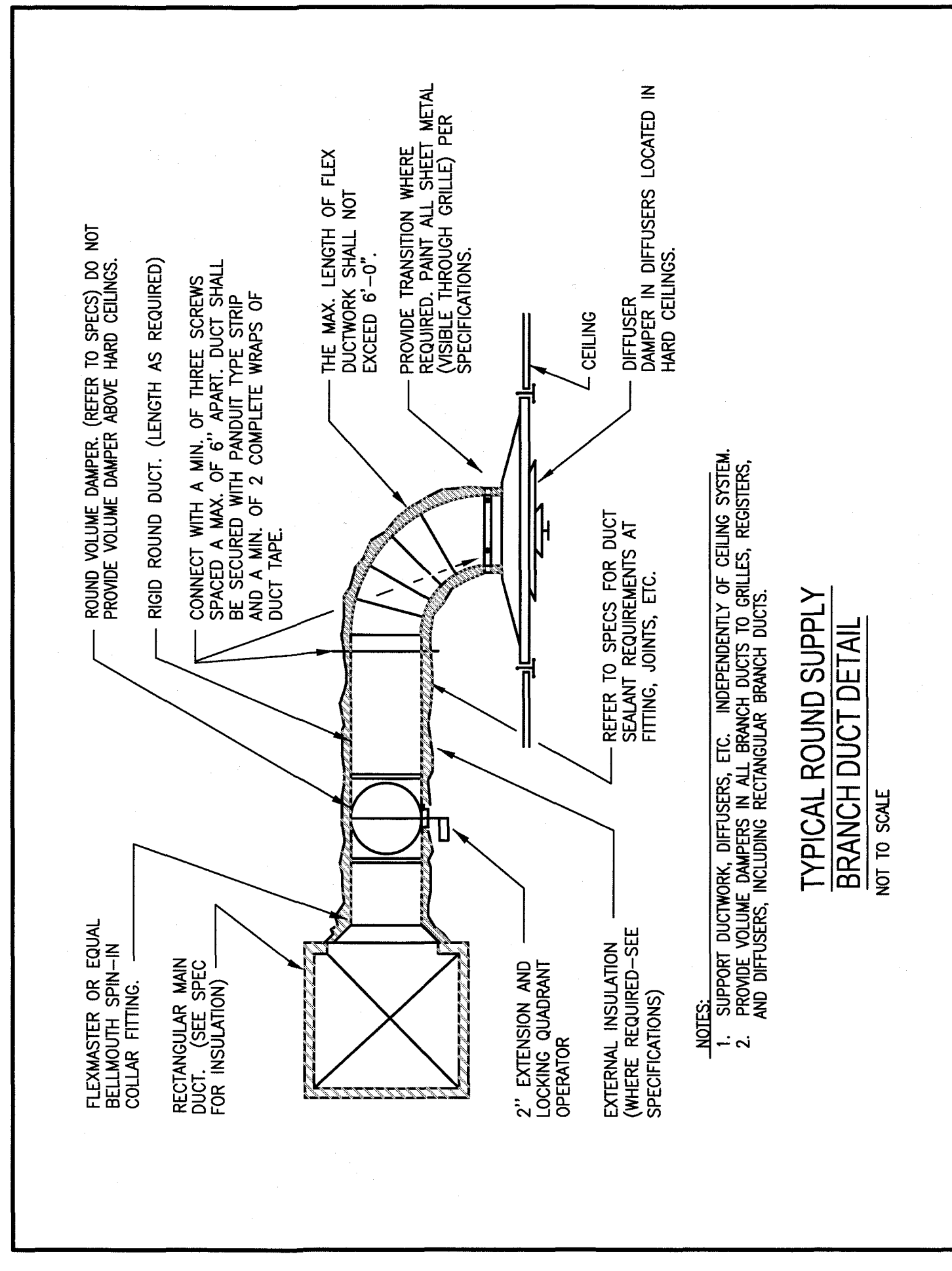
AIR HANDLING UNIT SCHEDULE	
SYMBOL	ADJ-1
AREA SERVED	PAN FAN ELEM/HIGH CAFETERIA
TYPE OF SYSTEM	MIXED AIR
UNIT # & MODEL	DAMPER S0102012
CONFIGURATION	SEE DRAWINGS
WEIGHT	1250 LBS.
SUPPLY FAN	
DESIGN CFM/PM	3000/995
MAX. AIR FLOW	3000 CFM
SP. EFF.	0.77/0.57
ACTUATORS (FRONT/REAR/CE)	51/10A
BRP/ADLS/PHASE/AZ	0.18/4.04/0/160
DRIVE/STARTER	BLU/VFD
COOLING SECTION	
TYPE	DX
TOTAL COOLING CAP. (MBH)	118.01
COIL BYPASS FACTOR	0.972
TOTAL CFM	3000
LAT - SUMMER (DB/AB)	58.77/54.57
LEER	12.3
HEATING SECTION	
TYPE	ELECTRIC
TOTAL CFM	3000
MAX. AIR PRESSURE (DRP)	0.5
TOTAL HEATING CAP. (MBH)	91.7
EFFICIENCY/TEST METHOD	30%/ASHRAE 92-79
RESISTANCE (CL/DMT)	0.09"/1.0"/0.16"
LAT - WINTER (DB)	59.77
ELECTRIC HEATING CAPACITY (KW)	33
COIL	3.8
ELECTRICAL	
UNIT VOLTAGE	480 V /3 PH
WVA/WVP	75/80
DISPOSABLE PRIMARY FILTER	
MANUFACTURER	AMF
MODEL/TYPE	90-30/3/ALATED (MERY 7)
EFFICIENCY/TEST METHOD	30%/ASHRAE 92-79
RESISTANCE (CL/DMT)	0.09"/1.0"/0.16"
CFM/VELOCITY	3000/120
SIZE (W" x H" x D")	AS REQUIRED

- REMARKS:
1. UNIT SHALL BE DOUBLE WALL CONSTRUCTION.
 2. SUPPLY STAINLESS STEEL W/ CONDENSATE DRAIN PAN. ENTIRE PAN SHALL BE PROVED TO OUTLETS/EXTERNAL ECONOMIZER.
 3. SINGLE POINT CONNECTION KIT.
 4. PROVIDE 1/2" MIN. AIR MOUNTED HUMIDITY SENSOR.
 5. PROVIDE 1/2" MIN. AIR MOUNTED HUMIDITY SENSOR.
 6. PROVIDE WITH INTEGRAL DISCONNECT AND FACTORY WIRED RECEPTACLE.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

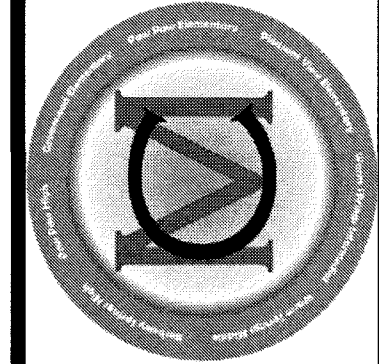
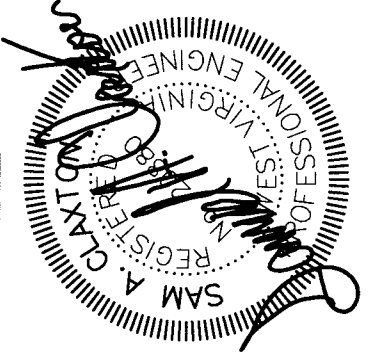
MARK	MANUF./MODEL	MATERIAL/TYPE	GRILLE SIZE	PANEL SIZE (IN" x IN")	INLET SIZE (IN")	BRANCH DUCT SIZE (IN")	CFM	F.L.	AIR PATTERN	MAX HC	REMARKS
S-1	TITUS THGA-A SERIES	ALUMINUM ADJUSTABLE SQUARE DIFFUSER	18x18	20x20	12x12	108	226-400	.05	4-WAY	25	1,2,3
R-1	TITUS 60FL	HEAVY DUTY SIDEWALL GRILLE	36x28	36x28	-	-	1500	.05	-	-	1,2

- REMARKS:
1. COLOR TO BE WHITE.
 2. PROVIDE 1/2" MIN. AIR MOUNTED HUMIDITY SENSOR.
 3. PROVIDE OPTIONAL AIR ADJUSTER FLAPS/AIR PATTERN DEFLECTORS.



- NOTES:
1. SUPPORT DUCTWORK, DIFFUSERS, ETC. INDEPENDENTLY OF CEILING SYSTEM.
 2. PROVIDE 1/2" MIN. AIR MOUNTED HUMIDITY SENSOR.
 3. PROVIDE OPTIONAL AIR ADJUSTER FLAPS/AIR PATTERN DEFLECTORS.

GENERAL NOTE:
A. REFER TO SHEET M1.0 FOR MECHANICAL LEGEND, GENERAL NOTES, ETC.
B. ALL EQUIPMENT WITH EXCEPTION OF ZONE DAMPERS, LOWER GRILLES, AND DIFFUSERS TO BE PROVIDED BY OWNER UNLESS NOTED BY CONTRACTOR.



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ENERGY SOLUTIONS
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PAWPAP ELEMENTARY-HIGH SCHOOL
GUARANTEED ENERGY SAVINGS CONTRACT
MORGAN COUNTY BOARD OF EDUCATION
MORGAN COUNTY, WV

MECHANICAL PLANS

DATE: 3/13/2017
DRAWN: CRK
CHECKED: CRK
PROJECT: XZMW17

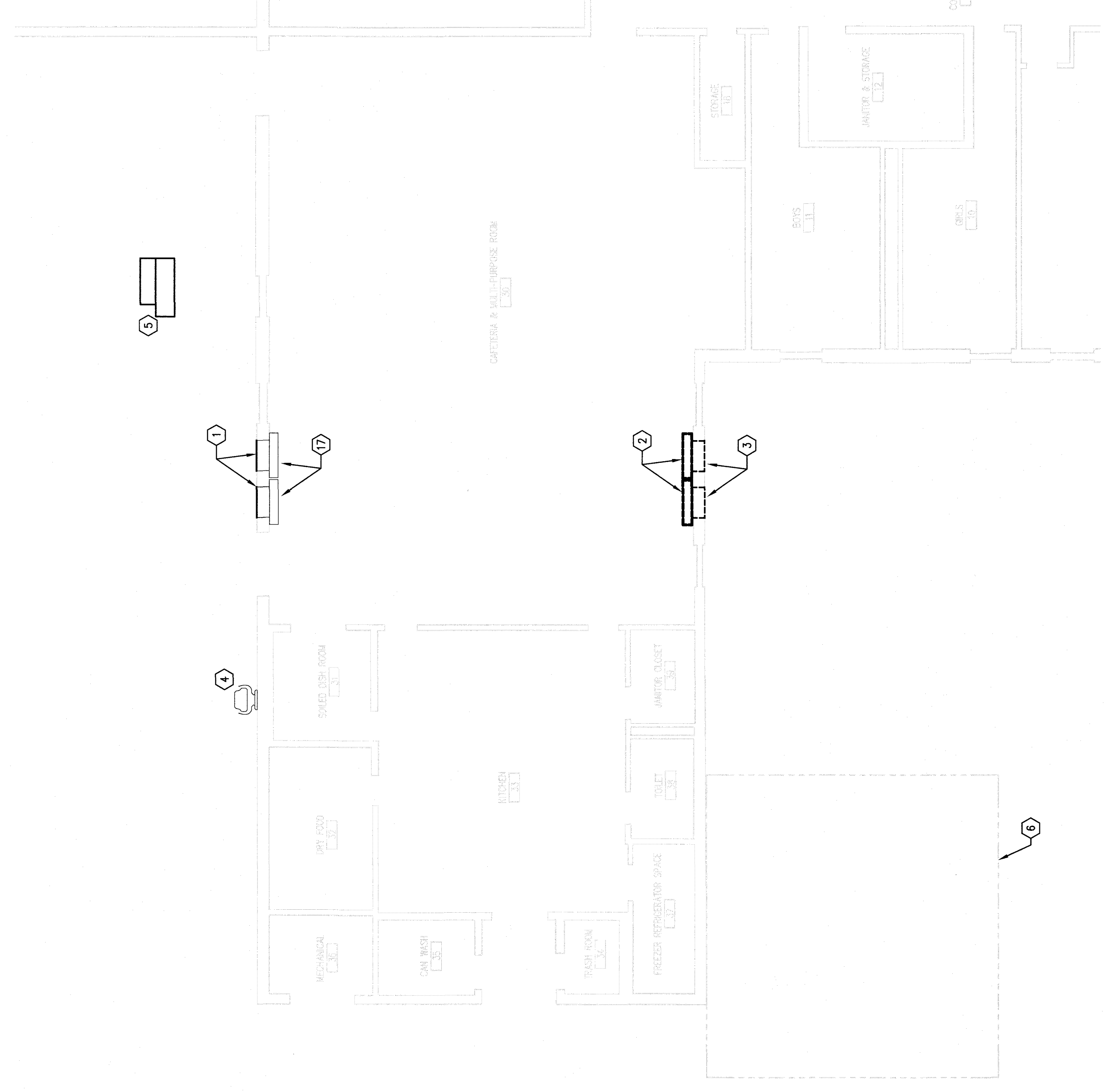
REVISIONS
A: BIDDING

SET NO.

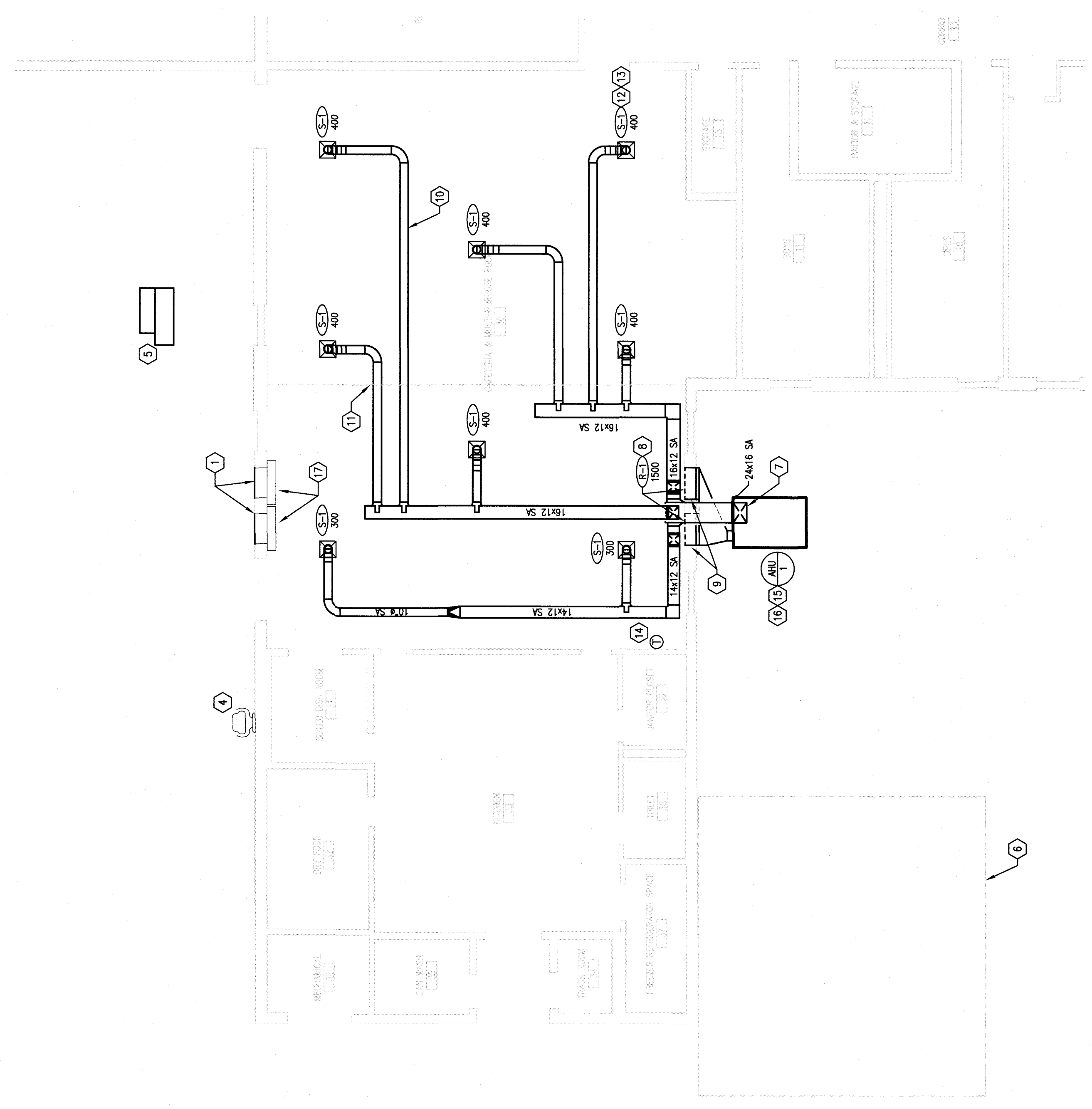
M2.0
PAW PAW

GENERAL NOTE:
A. REFER TO SHEET M1.0 FOR MECHANICAL LEGEND, GENERAL NOTES, ETC.
B. REFER TO SHEET M2.1 FOR MECHANICAL LEGEND, GENERAL NOTES, ETC.
C. REGISTERS AND DIFFUSERS TO BE PROVIDED BY DATA INSTALLER BY CONTRACTOR.

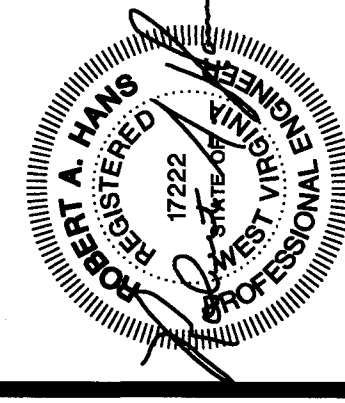
- EXCESS NOTES:**
1. PROVIDE SHEET METAL AND EXTERNAL INSULATION TO SEAL AND INSULATE EXISTING OUTSIDE AIR LOUVER. REFER TO ARCHITECTURAL PLANS FOR PATCH AND REPAIR REQUIREMENTS.
 2. REMOVE EXISTING UNIT VENTILATOR. PATCH AND REPAIR WALL AND FLOOR PER ARCHITECTURAL.
 3. REMOVE EXISTING OUTSIDE AIR LOUVER.
 4. EXISTING SIGNAL FAN TO REMAIN.
 5. EXISTING ELECTRICAL UNIT TO REMAIN.
 6. EXISTING FENCE AND COOL/FREEZER UNIT TO REMAIN.
 7. ROUTE SUPPLY AIR DUCT UP FROM AIR HANGING UNIT AND PENETRATE EXISTING EXTERIOR WALL AND ROOF THROUGH EXISTING ROOF FLASHING AND PROVIDE Airtight Seal. EXISTING DUCT INSULATION SHALL TO BE REMOVED AND RE-INSULATED BY GENERAL CONTRACTOR. REFER TO SPECIFICATIONS FOR LOGIC/AL PERFORMANCE.
 8. FILL VERT FROM AIR GULLE. SEE DRAW TO FINISHING.
 9. REMOVE EXISTING UNIT AND COORDINATE WITH EXISTING OPENING FROM PREVIOUS OUTSIDE AIR LOUVER.
 10. ROUTE BRANCH DUCTWORK BETWEEN STRUCTURAL MEMBERS. TYPICAL.
 11. COORDINATE DUCT ROUTING WITH EXISTING STRUCTURAL BEAM AT THE LOCATION. TYPICAL.
 12. COORDINATE EXISTING UNIT WITH EXISTING CEILING GRID. REFER TO ARCHITECTURAL PLANS FOR CEILING INFORMATION DETAILS. TYPICAL.
 13. COORDINATE EXACT DIFFUSER LOCATION WITH LIGHT FIXTURE LOCATIONS. TYPICAL.
 14. INSTALL NEW AIR HANGING UNIT THROUGHOUT AND CARBON DIOXIDE SENSOR. PROVIDE SURFACE MOUNTED WIRE MOUNT ON EXISTING WALL SURFACE.
 15. INSTALL NEW AIR HANGING UNIT ON CONCRETE AND PROVIDED BY OTHERS. SHALL AIR HANGING UNIT CONDENSE TO GRADE.
 16. PROVIDE TWO (2) SPIRES AND PLASMA AIR BREAK DEVICES. FIELD INSTALL AT INLET OF FAN. FURNISH SERVICE FOR REPAIRS SHALL BE FROM CONTRACTOR RESPONSIBLE.
 17. EXISTING UNIT REMOVAL TO BE DEMONSTRATED.



MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"
PLAN NORTH



MECHANICAL NEW WORK PLAN
SCALE: 1/8" = 1'-0"
PLAN NORTH



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PAW PAW ELEMENTARY SCHOOL
GUARANTEED ENERGY SAVINGS CONTRACT
MORGAN COUNTY BOARD OF EDUCATION
MORGAN COUNTY, WV
MECHANICAL PLANS

REVISIONS	
A: REDLINE	
DATE: 3/15/2017	
DRAWN BY: JES	
CHECKED BY: BSW	
PROJECT: K201017	
SET NO. 1	

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PAW PAW

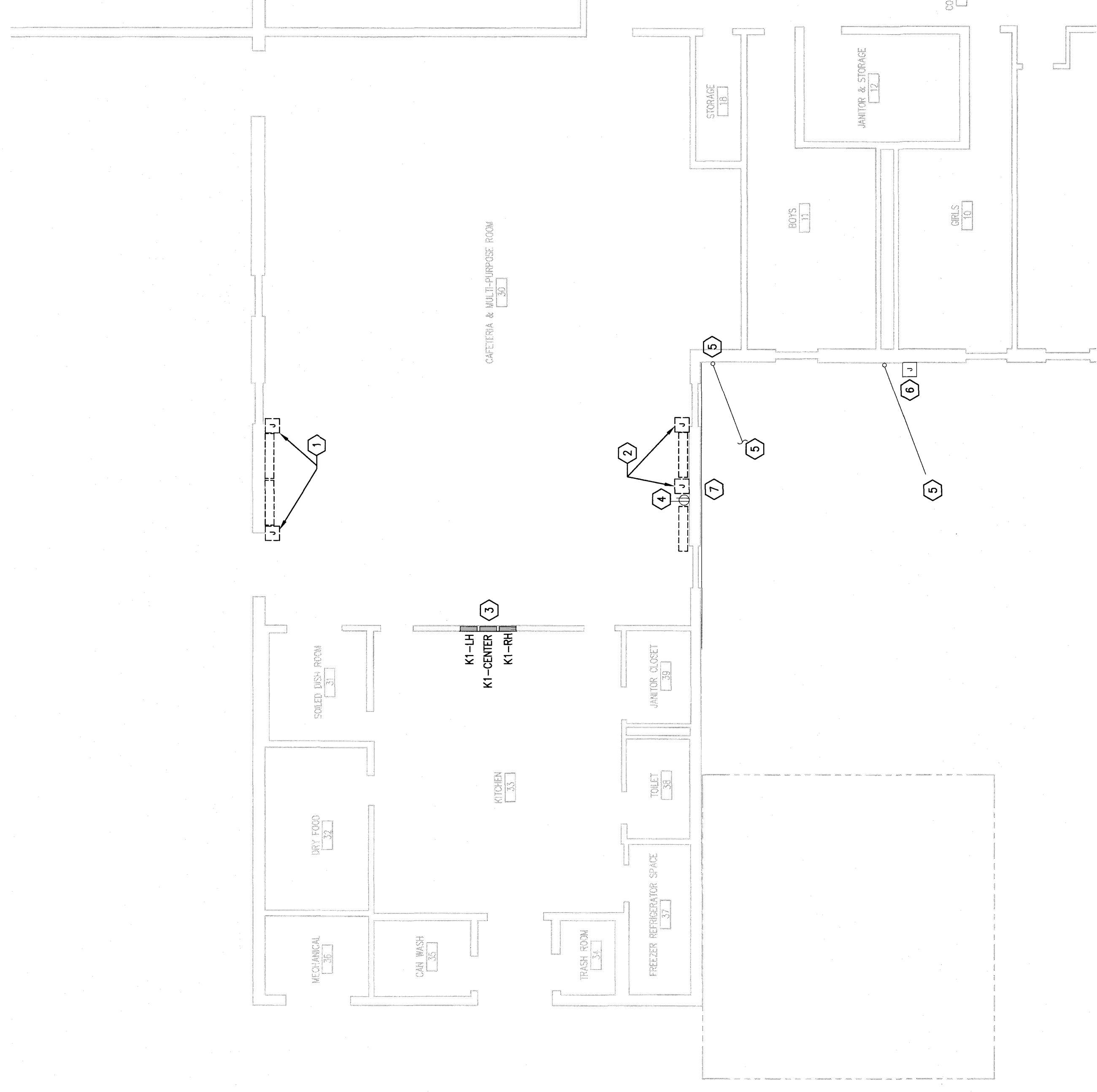
BEFORE YOU DIG
THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL CONTACT "BID BEFORE YOU DIG" PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL VERIFY LOCATIONS PRIOR TO ANY CONSTRUCTION. ANY CONTRACTOR OR SUBCONTRACTOR PERFORMING ANY TYPE OF EXCAVATION ON THIS PROJECT SHALL CALL "BID" TO OBTAIN AN AUTHORIZATION NUMBER.

GENERAL ELECTRICAL NOTES:

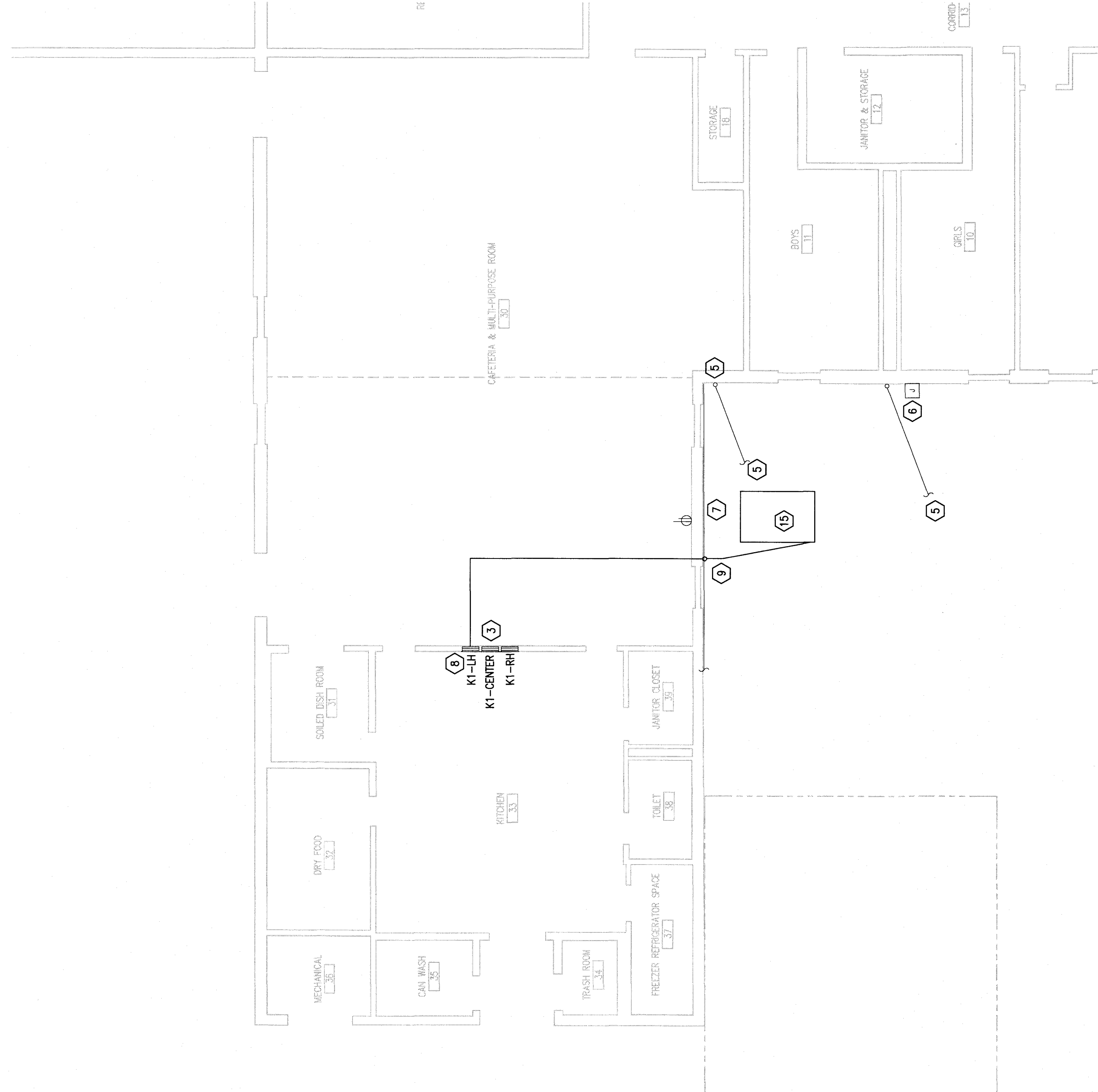
- A. THICK DOTTED LINES INDICATE ITEMS FOR REMOVAL (1.0-4). THIN SOLID LINES INDICATE EXISTING ITEMS TO REMAIN AND THICK SOLID LINES INDICATE NEW WORK.
- B. THE CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF EXISTING CIRCUITS THROUGHOUT THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL MAINTAIN THE LOCATION OF AN ELECTRICAL DEVICE (OR CIRCUIT) AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL INSURE THAT OTHER DEVICES OR CIRCUITS ARE NOT INTERFERED WITH OR DAMAGED BY THE CONSTRUCTION. IN THIS "EXCAVATION" WORKING ORDER, "LEFT-OVER" CIRCUIT BREAKERS SHALL REMAIN AND BE LABELED AS SPARES IN THEIR PANELS. PROVIDE NEW THERMISTAT WIREWORKS FOR ALL PANELS AFFECTED.
- C. LOCATIONS OF DEVICES, CONNECTIONS, ETC., INDICATED ON THIS DRAWING ARE SUBJECT TO VARIATION FROM EXISTING CONDITIONS. CERTAIN EXISTING DEVICES MAY BE UNAVAILABLE AT ALL TIMES. THE CONTRACTOR SHALL VERIFY THE LOCATION AND OPERATION OF ALL DEVICES PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL DETERMINE TO HIS SATISFACTION THAT THEY MAY COMPLETE ALL WORK REQUIRED FOR THE BID WHICH HE PROPRISES.
- D. PROVIDE BANK COVER PLATES FOR ALL BOXES THAT HAVE DEVICES (SWITCHES, RECEPTACLES, ETC.) DEMOLISHED.
- E. MAINTAIN EXISTING LIGHTING THROUGHOUT CONSTRUCTION PROCESS.
- F. ALL TAGGED NOTES MAY NOT BE USED ON THIS SHEET.
- G. WHERE SURFACE MOUNT CONDUITS/PIPES ARE DEMOLISHED AS PART OF THIS PROJECT, PATCHES/PRESERVATION AS REQUIRED.
- H. CAREFULLY REMOVE CEILING TILES AS REQUIRED FOR DEMO AND NEW WORK. REPLACE AND DAMAGED CEILING TILES WITH NEW.
- I. REFER TO BID FOR ADDITIONAL NOTES AND INFORMATION.

TAGGED NOTES:

1. EXISTING SURFACE MOUNT JUNCTION BOX AND ELECTRICAL CONNECTION. EXISTING SURFACE MOUNT CONDUIT ON WALL SERVING UNITS FROM PANEL K1 IN KITCHEN. REMOVE ELECTRICAL PANEL K1 - LEFT WARE SIZE CIRCUITS 2,4,6.
2. EXISTING SURFACE MOUNT JUNCTION BOX AND ELECTRICAL CONNECTION. EXISTING SURFACE MOUNT CONDUIT ON WALL SERVING UNITS FROM PANEL K1 IN KITCHEN. REMOVE ELECTRICAL PANEL K1 - LEFT WARE SIZE CIRCUITS 2,4,6.
3. EXISTING PANEL K1. EXISTING PANEL IS COUNTER HUNTER 225A, 277/480V, THREE PHASE. REMOVE PANEL K1. PROVIDE NEW 100 AMP, 277/480V, THREE PHASE, 480V, 3-POLE, 4-TERMINAL, 1/2" W/2" W/2" CONDUIT EXTERIOR IN WALL TO WORK CEILING IN CATERINA.
4. EXISTING RECEPTACLE TO REMAIN.
5. APPROXIMATE LOCATION OF EXISTING UNDERGROUND CONDUIT. CONDUIT CONTAINS UNKNOWN VOLTAGE. REMOVE UNDERGROUND CONDUIT PRIOR TO ANY WORK IN THIS AREA. COORDINATE WITH MECHANICAL AND RESTROOMS.
6. EXISTING COMMUNICATIONS BOX TO REMAIN.
7. EXISTING COMMUNICATIONS UNITS ATTACHED TO BUILDING TO REMAIN. PROTECT DURING CONSTRUCTION.
8. PROVIDE 480V THREE PHASE, 80A/3P CUTLER HAMMER CHB, 14C, 4C RATED BREAKER FOR NEW OUTDOOR UNIT. LOCATE AT EXISTING 30A/3P BREAKER DEMOLISHED UNIT. PROVIDE NEW 1/2" W/2" W/2" CONDUIT. MAKE CEILING PROVIDE NEW CONDUIT AND WIRE TO EXTERIOR WALL.
9. EXTEND CONDUIT FOR HVAC UNIT DOWN WALL AND CONTINUE UNDERGROUND AT 24" TO FINAL CONNECTION POINT OF UNIT. COORDINATE WITH HVAC UNIT INSTALLER.



ELECTRICAL DEMOLITION PLAN



ELECTRICAL NEW WORK PLAN