

ABBREVIATIONS			DUCTWORK SYMBOLS		LINE DESIGNATIONS		APPLICABLE CODES & STANDARDS	
AC	AIR CONDITIONING UNIT	HPS	HEAT PUMP RETURN	SYMBOL	DESCRIPTION	CHWS	CHILLED WATER SUPPLY	THE FOLLOWING CODES AND STANDARDS APPLY TO THIS PROJECT:
ACR	AIR CURTAIN	HRU	HEAT RECOVERY UNIT			CHWR	CHILLED WATER RETURN	
AD	ACCESS DOOR	HUM	HUMIDITY OR HUMIDIFIER		SUPPLY/OUTSIDE AIR DUCT	CWS	CONDENSER WATER SUPPLY	1. INTERNATIONAL BUILDING CODE (IBC) 2021, NJ EDITION. 2. NJAC REHABILITATION SUB-CODE 523-6 3. INTERNATIONAL MECHANICAL CODE (IMC) 2021. 4. INTERNATIONAL FUEL GAS CODE (IFGC) 2021. 5. NATIONAL STANDARD PLUMBING CODE (NSPC) 2021 6. NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) 2020
AF	ABOVE FLOOR	HV	HEATING & VENTILATING UNIT		RETURN/EXHAUST AIR DUCT	CWR	CONDENSER WATER RETURN	
AHU	AIR HANDLING UNIT	HW	HOT WATER		45° ENTRY TAKEOFF, RECTANGULAR TO RECTANGULAR	HWS	HOT WATER SUPPLY	GENERAL PROJECT NOTES
AL	ACOUSTICAL LINING	HWR	HOT WATER RETURN		90° TAKEOFF, RECTANGULAR TO ROUND, STRAIGHT	HMR	HOT WATER RETURN	
AMD	AIR MEASURING DEVICE	HWS	HOT WATER SUPPLY		90° TAKEOFF, RECTANGULAR TO ROUND, BELLMOUTH W/ MANUAL VOLUME DAMPER	HPS	HEAT PUMP SUPPLY	THE FOLLOWING NOTES APPLY TO ALL "M" MECHANICAL DRAWINGS:
AP	ACCESS PANEL	HX	HEAT EXCHANGER		INTERLOCK	HPR	HEAT PUMP RETURN	
AS	AIR SEPARATOR	HZ	HERTZ		INCH	GS	GLYCOL SUPPLY	1. ALL WORK SHALL FOLLOW THE REFERENCED APPLICABLE CODES AS ADOPTED AND MODIFIED BY THE STATE OF NEW JERSEY. 2. ALL WORK CONTAINED WITHIN THE MECHANICAL DRAWINGS AND SPECIFICATIONS IS THE RESPONSIBILITY OF THE SINGLE PRIME CONTRACTOR UNLESS OTHERWISE NOTED. 3. NOT ALL SYMBOLS, ABBREVIATIONS AND LINE DESIGNATIONS ARE NECESSARILY USED ON THIS PROJECT. 4. ALL HVAC EQUIPMENT, DUCTWORK, PIPING, SUPPORTS AND ACCESSORY LOCATIONS AND ROUTING SHALL BE COORDINATED WITH ALL OTHER TRADES AND FIELD VERIFIED PRIOR TO INSTALLATION TO PROVIDE REQUIRED CLEARANCES FOR ALL OTHER SYSTEMS. 5. SUPPLY, RETURN AND EXHAUST AIR OPENING LOCATIONS AND SIZES FOR ROOF MOUNTED MECHANICAL EQUIPMENT ARE SHOWN FOR DUCTWORK ROUTING ONLY. THE MECHANICAL CONTRACTOR SHALL VERIFY THE ACTUAL SIZES OF DUCT CONNECTIONS AND THE REQUIRED ROOF OPENING SIZES FOR THE ROOF MOUNTED EQUIPMENT AND COORDINATE THE FINAL LOCATION OF ROOF PENETRATIONS WITH THE GENERAL CONTRACTOR. 6. THE CONTRACTOR PROVIDING MECHANICAL TRADE WORK SHALL INSTALL ALL ROOF MOUNTED MECHANICAL EQUIPMENT CURBS AND FLASHING AND COORDINATE WITH THE CONTRACTOR PROVIDING MECHANICAL TRADE WORK SHALL ALSO INSTALL ALL NECESSARY ROOF CURB COUNTER-FLASHING TO ACHIEVE A WATERTIGHT ROOFING SEAL. 7. DUCTWORK MAINS AND BRANCHES ARE SHOWN DIAGRAMMATICALLY AND FOR DESIGN CLARITY AND AT THE ROOM LEVEL ROUTING AND ARRANGEMENT IS SHOWN TO MINIMIZE NOISE CARRYOVER FROM MECHANICAL EQUIPMENT AND ADJOINING SPACES. CONTRACTOR MAY PROPOSE RETROFITTING, OFFSETS, RISERS AND DROPS AS NECESSARY TO CLEAR INSTALLED TRUSSES, JOISTS AND OTHER INTERFERENCES. FINAL DUCTWORK LAYOUT WILL BE APPROVED IN REQUIRED DUCTWORK SHOP DRAWING SUBMITTAL REVIEW PRIOR TO INSTALLATION. DEVIATIONS FROM APPROVED DUCTWORK SHOP DRAWING TO SUIT FIELD CONDITIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. 8. ALL PIPING/DUCTWORK/CONTROLS PENETRATING FIRE RATED PARTITIONS, WALLS AND CEILINGS SHALL BE SEALED ON BOTH SIDES USING AN APPROVED, UL LISTED FIRE SEALANT TO MATCH EXISTING WALL FIRE RATING. WHERE A PIPE/DUCT/CONTROL CONDUIT HAS BEEN REMOVED THAT PREVIOUSLY PENETRATED A FIRE RATED PARTITION, WALL OR CEILING, THE CONTRACTOR SHALL PATCH AND SEAL THE PENETRATION ON BOTH SIDES USING AN APPROVED, UL LISTED FIRE SEALANT TO MATCH EXISTING WALL FIRE RATING. ALL FIRESTOP SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH ASTM E814. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. 9. CONTRACTOR SHALL RE-APPLY FIREPROOFING IN TYPE AND THICKNESS TO MATCH EXISTING IN ANY AREAS WHERE EXISTING FIREPROOFING IS DAMAGED DUE TO DEMOLITION OR NEW WORK ACTIVITIES. REFER TO ARCHITECTURAL SPECIFICATIONS FOR ADDITIONAL INFORMATION. 10. CONTRACTOR SHALL COORDINATE THE REPLACEMENT OF MECHANICAL EQUIPMENT WITH THE FACILITIES STAFF AND THE OWNER IN ADDITION TO ALL OTHER WORK BEING COMPLETED UNDER SEPARATE CONTRACTS. ALL ITEMS BEING REMOVED AS PART OF THE UPGRADES SHALL BE REMOVED FROM THE PREMISES AND DISPOSED OF IN ACCORDANCE WITH LOCAL REGULATIONS. 11. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR IN REGARDS TO THE DISCONNECT AND RECONNECT OF ALL EQUIPMENT BEING REMOVED AND/OR REPLACED IN-KIND AS INDICATED ON THE CONTRACT DOCUMENTS. 12. MECHANICAL CONTRACTOR SHALL FURNISH LOOSE MOTOR STARTERS AND DISCONNECT SWITCHES FOR INSTALLATION AND WIRING BY THE ELECTRICAL CONTRACTOR. 13. ELECTRICAL COORDINATION: CONTRACTOR PROVIDING MECHANICAL TRADE WORK SHALL COORDINATE VOLTAGES FOR EACH PIECE OF EQUIPMENT BEFORE PURCHASING EQUIPMENT WITH CONTRACTOR PROVIDING ELECTRICAL TRADE WORK. 14. HVAC TESTING & BALANCING (AIR & WATER) IS A PART OF THIS CONTRACT. CONTRACTOR SHALL SUBMIT SIGNED AND SEALED TEST & BALANCE REPORTS. REFER TO PROJECT BOOK SPECIFICATIONS FOR DETAILS. 15. CONTRACTOR SHALL PROVIDE FLEXIBLE CONNECTIONS AT ALL DUCT CONNECTIONS TO EQUIPMENT. IF DUCT CONNECTION TO EQUIPMENT CANNOT BE MADE WITHOUT A HARD CONNECTION (E.G. MIXING BOX/FILTER RACK ASSEMBLY), CONTRACTOR SHALL PROVIDE FLEX CONNECTIONS FOR ALL DUCT CONNECTING WITH A HARD CONNECTION TO EQUIPMENT. 16. ALL EXISTING WALLS, CEILINGS, ROOF, FLOORS AND OTHER FINISHED SURFACES DAMAGED OR MODIFIED SHALL BE REPAIRED TO MATCH ADJACENT UNDISTURBED AREA. PATCH AND REPAIR SHALL MATCH EXISTING ADJACENT SURFACES AS TO THICKNESS, TEXTURE, MATERIALS AND COLOR. ALL ABANDONED OPENINGS SHALL BE PATCHED AND REPAIRED TO MATCH ADJACENT UNDISTURBED AREA AND ARCHITECTURE. ALL ROOF PENETRATIONS SHALL BE PERFORMED SUCH THAT WARRANTY IS MAINTAINED. 17. CONTRACTOR SHALL REMOVE, STORE AND RE-INSTALL ALL CEILING TILES AS REQUIRED TO ACCESS ABOVE CEILING AREAS TO ROUTE NEW PIPING OR INSTALL EQUIPMENT. CONTRACTOR SHALL SUPPLY MATCHING CEILING TILES FOR ANY BROKEN TILES THAT OCCUR DURING THE CONSTRUCTION. 18. CONTRACTOR SHALL MODIFY SPRINKLER PIPING SYSTEMS AS REQUIRED TO ALLOW NEW EQUIPMENT INSTALLATION AND DUCTWORK MODIFICATIONS. WORK SHALL BE PERFORMED BY A CERTIFIED SPRINKLER CONTRACTOR. 19. ALL NECESSARY STAGING AND MATERIAL STORAGE AREAS SHALL BE AS DIRECTED AND APPROVED BY THE OWNER. 20. ALL SYSTEMS THAT NEED TO BE DRAINED SHALL BE COORDINATED WITH THE OWNER. 21. ALL WORK SHALL BE PERFORMED TO NOT INTERFERE WITH THE NORMAL OPERATION OF THE FACILITIES. COORDINATE ANY NECESSARY SHUTDOWNS WITH THE FACILITY. MINIMIZE SHUTDOWNS TO LIMIT IMPACT OF INTERRUPTION OF COOLING, HEATING, DHW AND ELECTRICAL SERVICE TO THE FACILITY. 22. ALL MEANS OF EGRESS MUST BE KEPT FREE AND CLEAR OF ALL MATERIAL. 23. VERIFY ALL CONDITIONS, ELEVATIONS AND MEASUREMENTS SHOWN ON CONTRACT DRAWINGS. ALL DIMENSIONS AND ELEVATIONS FOR NEW AND EXISTING EQUIPMENT ARE APPROXIMATE AND ARE ONLY FOR REFERENCE. SUBMIT SHOP DRAWINGS SHOWING ALL DIMENSIONS AND ELEVATIONS VERIFIED IN THE FIELD. 24. CONTRACTOR SHALL TEMPORARILY RELOCATE ALL PIPING, ELECTRICAL, CONDUITS, LIGHTING, CONTROLS, ETC., TO ACCOMMODATE WORK UNDER THIS CONTRACT. RESTORE TO INITIAL OPERATING CONDITION AND FUNCTION UPON COMPLETION OF WORK. EXISTING PIPING IN WORK AREA SMALLER THAN 2" AND CONDUITS SMALLER THAN 1" ARE NOT EXPLICITLY SHOWN. CONDUCT FIELD SURVEY AS REQUIRED TO DETERMINE EXISTING CONDITIONS. 25. PROVIDE VALVED DRAINS ON ALL WATER PIPING SYSTEM LOW POINTS AND AS REQUIRED ON NEW EQUIPMENT. PROVIDE AIR VENTS AT PIPING SYSTEM HIGH POINTS AS REQUIRED FOR RELEASING AIR DURING STARTUP. 26. NO PIPING SMALLER THAN 3/4" EXCEPT AS NOTED. 27. PROVIDE WIRING AND RACEWAYS RELATED TO CONTROL OF MECHANICAL EQUIPMENT. RACEWAYS TO BE MINIMUM 3/4" RIGID CONDUIT. 28. CONTRACTOR SHALL REFER TO SPECIFICATIONS FOR MATERIAL, PIPE SIZE & MATERIAL TYPE BY SYSTEM. FOR SYSTEMS REQUIRING DISSIMILAR METALS CONTRACTOR SHALL PROVIDE GALVANIC CORROSION AND CATHODIC PROTECTION (DELECTRIC UNION, DIELECTRIC FITTING, ETC.) IN ACCORDANCE WITH THE SPECIFICATIONS. 29. CONTRACTOR IS RESPONSIBLE FOR CONDUCTING WALK-THROUGH OF SITE PRIOR TO SUBMITTING BID TO BE FAMILIAR WITH SITE CONDITIONS AND REQUIREMENTS. 30. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED CALCULATIONS (SIGNED AND SEALED BY AN ENGINEER LICENSED IN THE STATE OF NEW JERSEY) AND INSTALLATION INFORMATION TO SHOW COMPLIANCE WITH SEISMIC AND WIND FORCES IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE 2021, NJ EDITION. INFORMATION SHALL BE MADE AVAILABLE TO ENGINEER FOR REVIEW AND ALSO, MADE AVAILABLE UPON REQUEST FOR SUBMISSION TO CODE ENFORCEMENT. PROVIDE ALL SUPPORT SYSTEMS, SUPPLEMENTAL STEELS, ANCHORS, PIPE HANGERS AND ENGINEERING DOCUMENTATION NECESSARY TO PROVIDE A COMPLETE CODE COMPLIANT SYSTEM.
ATC	AUTOMATIC TEMPERATURE CONTROL	ID	INSIDE DIAMETER		45° CONICAL LATERAL, ROUND TO ROUND	FOV	FUEL OIL VENT	SCOPE OF WORK INFORMATION
B	BOILER	I/L	INTERLOCK		END OF DUCT (CAPPED)	G	GLYCOL RETURN	
BAS	BUILDING AUTOMATION SYSTEM	IN	INCH		SIDEWALL AIR TERMINAL W/O (ARROWS DENOTE THROW DIRECTION)	FOV	FUEL OIL VENT	PROJECT SCOPE OF WORK:
BBD	BOILER BLOWDOWN	IN/WG	INCHES WATER GAUGE		LINEAR DIFFUSER	FOV	FUEL OIL VENT	
BD	BACKDRAFT DAMPER	KW	KILOWATT		FIRE DAMPER - VERTICAL POSITION	FOV	FUEL OIL VENT	1. ALL WORK CONTAINED WITHIN THE DRAWINGS AND SPECIFICATIONS IS THE RESPONSIBILITY OF THE SINGLE PRIME CONTRACTOR, UNLESS OTHERWISE NOTED. REFER TO INDIVIDUAL DRAWING SHEETS AND SPECIFICATIONS FOR SPECIFIC REQUIREMENTS. 2. REFER TO PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS OF THE PROJECT. 3. REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR SPECIFIC MECHANICAL REQUIREMENTS AND COORDINATION. 4. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR SPECIFIC ARCHITECTURAL REQUIREMENTS AND COORDINATION. 5. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR SPECIFIC ELECTRICAL REQUIREMENTS AND COORDINATION.
BF	BOILER FEED UNIT	LAT	LEAVING AIR TEMPERATURE		FIRE DAMPER - HORIZONTAL POSITION	FOV	FUEL OIL VENT	
BFP	BACK FLOW PREVENTER	LB	POUNDS PER HOUR		FLEXIBLE CONNECTION	FOV	FUEL OIL VENT	GENERAL PROJECT NOTES
BFW	BOILER FEEDWATER	LB/HR	POUNDS PER HOUR		MANUAL VOLUME DAMPER	FOV	FUEL OIL VENT	
BFWP	BOILER FEEDWATER PUMP	LD	LINEAR DIFFUSER		MOTOR OPERATED DAMPER	FOV	FUEL OIL VENT	THE FOLLOWING NOTES APPLY TO ALL "M" MECHANICAL DRAWINGS:
BHP	BRAKE HORSEPOWER	LF	LINEAR FEET		SMOKE DETECTOR (DUCT-MOUNTED)	FOV	FUEL OIL VENT	
BI	BACKWARD INCLINE	LH	LATENT HEAT		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	1. ALL WORK SHALL FOLLOW THE REFERENCED APPLICABLE CODES AS ADOPTED AND MODIFIED BY THE STATE OF NEW JERSEY. 2. ALL WORK CONTAINED WITHIN THE MECHANICAL DRAWINGS AND SPECIFICATIONS IS THE RESPONSIBILITY OF THE SINGLE PRIME CONTRACTOR UNLESS OTHERWISE NOTED. 3. NOT ALL SYMBOLS, ABBREVIATIONS AND LINE DESIGNATIONS ARE NECESSARILY USED ON THIS PROJECT. 4. ALL HVAC EQUIPMENT, DUCTWORK, PIPING, SUPPORTS AND ACCESSORY LOCATIONS AND ROUTING SHALL BE COORDINATED WITH ALL OTHER TRADES AND FIELD VERIFIED PRIOR TO INSTALLATION TO PROVIDE REQUIRED CLEARANCES FOR ALL OTHER SYSTEMS. 5. SUPPLY, RETURN AND EXHAUST AIR OPENING LOCATIONS AND SIZES FOR ROOF MOUNTED MECHANICAL EQUIPMENT ARE SHOWN FOR DUCTWORK ROUTING ONLY. 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VERIFY ALL CONDITIONS, ELEVATIONS AND MEASUREMENTS SHOWN ON CONTRACT DRAWINGS. ALL DIMENSIONS AND ELEVATIONS FOR NEW AND EXISTING EQUIPMENT ARE APPROXIMATE AND ARE ONLY FOR REFERENCE. SUBMIT SHOP DRAWINGS SHOWING ALL DIMENSIONS AND ELEVATIONS VERIFIED IN THE FIELD. 24. CONTRACTOR SHALL TEMPORARILY RELOCATE ALL PIPING, ELECTRICAL, CONDUITS, LIGHTING, CONTROLS, ETC., TO ACCOMMODATE WORK UNDER THIS CONTRACT. RESTORE TO INITIAL OPERATING CONDITION AND FUNCTION UPON COMPLETION OF WORK. EXISTING PIPING IN WORK AREA SMALLER THAN 2" AND CONDUITS SMALLER THAN 1" ARE NOT EXPLICITLY SHOWN. CONDUCT FIELD SURVEY AS REQUIRED TO DETERMINE EXISTING CONDITIONS. 25. PROVIDE VALVED DRAINS ON ALL WATER PIPING SYSTEM LOW POINTS AND AS REQUIRED ON NEW EQUIPMENT. PROVIDE AIR VENTS AT PIPING SYSTEM HIGH POINTS AS REQUIRED FOR RELEASING AIR DURING STARTUP. 26. NO PIPING SMALLER THAN 3/4" EXCEPT AS NOTED. 27. PROVIDE WIRING AND RACEWAYS RELATED TO CONTROL OF MECHANICAL EQUIPMENT. 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PROVIDE ALL SUPPORT SYSTEMS, SUPPLEMENTAL STEELS, ANCHORS, PIPE HANGERS AND ENGINEERING DOCUMENTATION NECESSARY TO PROVIDE A COMPLETE CODE COMPLIANT SYSTEM.
BO	BACKDRAFT DAMPER	LPS	LOW PRESSURE STEAM		RETURN AIR DESIGNATION	FOV	FUEL OIL VENT	
BOF	BOILER FEED UNIT	LR	LINEAR RETURN		SUPPLY AIR DESIGNATION	FOV	FUEL OIL VENT	GENERAL PROJECT NOTES
BOS	BOTTOM OF STEEL	LRA	LOCKED ROTOR AMPS		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	
BPD	BYPASS AIR DAMPER	LVR	LOUVER		SUPPLY AIR DESIGNATION	FOV	FUEL OIL VENT	THE FOLLOWING NOTES APPLY TO ALL "M" MECHANICAL DRAWINGS:
BTU	BRITISH THERMAL UNIT	LWT	LEAVING WATER TEMPERATURE		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	
BTUH	BRITISH THERMAL UNIT PER HOUR	MAU	MAKEUP AIR UNIT		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	1. ALL WORK SHALL FOLLOW THE REFERENCED APPLICABLE CODES AS ADOPTED AND MODIFIED BY THE STATE OF NEW JERSEY. 2. ALL WORK CONTAINED WITHIN THE MECHANICAL DRAWINGS AND SPECIFICATIONS IS THE RESPONSIBILITY OF THE SINGLE PRIME CONTRACTOR UNLESS OTHERWISE NOTED. 3. NOT ALL SYMBOLS, ABBREVIATIONS AND LINE DESIGNATIONS ARE NECESSARILY USED ON THIS PROJECT. 4. ALL HVAC EQUIPMENT, DUCTWORK, PIPING, SUPPORTS AND ACCESSORY LOCATIONS AND ROUTING SHALL BE COORDINATED WITH ALL OTHER TRADES AND FIELD VERIFIED PRIOR TO INSTALLATION TO PROVIDE REQUIRED CLEARANCES FOR ALL OTHER SYSTEMS. 5. SUPPLY, RETURN AND EXHAUST AIR OPENING LOCATIONS AND SIZES FOR ROOF MOUNTED MECHANICAL EQUIPMENT ARE SHOWN FOR DUCTWORK ROUTING ONLY. 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CONTRACTOR SHALL COORDINATE THE REPLACEMENT OF MECHANICAL EQUIPMENT WITH THE FACILITIES STAFF AND THE OWNER IN ADDITION TO ALL OTHER WORK BEING COMPLETED UNDER SEPARATE CONTRACTS. ALL ITEMS BEING REMOVED AS PART OF THE UPGRADES SHALL BE REMOVED FROM THE PREMISES AND DISPOSED OF IN ACCORDANCE WITH LOCAL REGULATIONS. 11. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR IN REGARDS TO THE DISCONNECT AND RECONNECT OF ALL EQUIPMENT BEING REMOVED AND/OR REPLACED IN-KIND AS INDICATED ON THE CONTRACT DOCUMENTS. 12. MECHANICAL CONTRACTOR SHALL FURNISH LOOSE MOTOR STARTERS AND DISCONNECT SWITCHES FOR INSTALLATION AND WIRING BY THE ELECTRICAL CONTRACTOR. 13. ELECTRICAL COORDINATION: CONTRACTOR PROVIDING MECHANICAL TRADE WORK SHALL COORDINATE VOLTAGES FOR EACH PIECE OF EQUIPMENT BEFORE PURCHASING EQUIPMENT WITH CONTRACTOR PROVIDING ELECTRICAL TRADE WORK. 14. HVAC TESTING & BALANCING (AIR & WATER) IS A PART OF THIS CONTRACT. CONTRACTOR SHALL SUBMIT SIGNED AND SEALED TEST & BALANCE REPORTS. REFER TO PROJECT BOOK SPECIFICATIONS FOR DETAILS. 15. CONTRACTOR SHALL PROVIDE FLEXIBLE CONNECTIONS AT ALL DUCT CONNECTIONS TO EQUIPMENT. IF DUCT CONNECTION TO EQUIPMENT CANNOT BE MADE WITHOUT A HARD CONNECTION (E.G. MIXING BOX/FILTER RACK ASSEMBLY), CONTRACTOR SHALL PROVIDE FLEX CONNECTIONS FOR ALL DUCT CONNECTING WITH A HARD CONNECTION TO EQUIPMENT. 16. ALL EXISTING WALLS, CEILINGS, ROOF, FLOORS AND OTHER FINISHED SURFACES DAMAGED OR MODIFIED SHALL BE REPAIRED TO MATCH ADJACENT UNDISTURBED AREA. PATCH AND REPAIR SHALL MATCH EXISTING ADJACENT SURFACES AS TO THICKNESS, TEXTURE, MATERIALS AND COLOR. ALL ABANDONED OPENINGS SHALL BE PATCHED AND REPAIRED TO MATCH ADJACENT UNDISTURBED AREA AND ARCHITECTURE. ALL ROOF PENETRATIONS SHALL BE PERFORMED SUCH THAT WARRANTY IS MAINTAINED. 17. CONTRACTOR SHALL REMOVE, STORE AND RE-INSTALL ALL CEILING TILES AS REQUIRED TO ACCESS ABOVE CEILING AREAS TO ROUTE NEW PIPING OR INSTALL EQUIPMENT. CONTRACTOR SHALL SUPPLY MATCHING CEILING TILES FOR ANY BROKEN TILES THAT OCCUR DURING THE CONSTRUCTION. 18. CONTRACTOR SHALL MODIFY SPRINKLER PIPING SYSTEMS AS REQUIRED TO ALLOW NEW EQUIPMENT INSTALLATION AND DUCTWORK MODIFICATIONS. WORK SHALL BE PERFORMED BY A CERTIFIED SPRINKLER CONTRACTOR. 19. ALL NECESSARY STAGING AND MATERIAL STORAGE AREAS SHALL BE AS DIRECTED AND APPROVED BY THE OWNER. 20. ALL SYSTEMS THAT NEED TO BE DRAINED SHALL BE COORDINATED WITH THE OWNER. 21. ALL WORK SHALL BE PERFORMED TO NOT INTERFERE WITH THE NORMAL OPERATION OF THE FACILITIES. COORDINATE ANY NECESSARY SHUTDOWNS WITH THE FACILITY. MINIMIZE SHUTDOWNS TO LIMIT IMPACT OF INTERRUPTION OF COOLING, HEATING, DHW AND ELECTRICAL SERVICE TO THE FACILITY. 22. ALL MEANS OF EGRESS MUST BE KEPT FREE AND CLEAR OF ALL MATERIAL. 23. VERIFY ALL CONDITIONS, ELEVATIONS AND MEASUREMENTS SHOWN ON CONTRACT DRAWINGS. ALL DIMENSIONS AND ELEVATIONS FOR NEW AND EXISTING EQUIPMENT ARE APPROXIMATE AND ARE ONLY FOR REFERENCE. SUBMIT SHOP DRAWINGS SHOWING ALL DIMENSIONS AND ELEVATIONS VERIFIED IN THE FIELD. 24. CONTRACTOR SHALL TEMPORARILY RELOCATE ALL PIPING, ELECTRICAL, CONDUITS, LIGHTING, CONTROLS, ETC., TO ACCOMMODATE WORK UNDER THIS CONTRACT. RESTORE TO INITIAL OPERATING CONDITION AND FUNCTION UPON COMPLETION OF WORK. EXISTING PIPING IN WORK AREA SMALLER THAN 2" AND CONDUITS SMALLER THAN 1" ARE NOT EXPLICITLY SHOWN. CONDUCT FIELD SURVEY AS REQUIRED TO DETERMINE EXISTING CONDITIONS. 25. PROVIDE VALVED DRAINS ON ALL WATER PIPING SYSTEM LOW POINTS AND AS REQUIRED ON NEW EQUIPMENT. PROVIDE AIR VENTS AT PIPING SYSTEM HIGH POINTS AS REQUIRED FOR RELEASING AIR DURING STARTUP. 26. NO PIPING SMALLER THAN 3/4" EXCEPT AS NOTED. 27. PROVIDE WIRING AND RACEWAYS RELATED TO CONTROL OF MECHANICAL EQUIPMENT. RACEWAYS TO BE MINIMUM 3/4" RIGID CONDUIT. 28. CONTRACTOR SHALL REFER TO SPECIFICATIONS FOR MATERIAL, PIPE SIZE & MATERIAL TYPE BY SYSTEM. FOR SYSTEMS REQUIRING DISSIMILAR METALS CONTRACTOR SHALL PROVIDE GALVANIC CORROSION AND CATHODIC PROTECTION (DELECTRIC UNION, DIELECTRIC FITTING, ETC.) IN ACCORDANCE WITH THE SPECIFICATIONS. 29. CONTRACTOR IS RESPONSIBLE FOR CONDUCTING WALK-THROUGH OF SITE PRIOR TO SUBMITTING BID TO BE FAMILIAR WITH SITE CONDITIONS AND REQUIREMENTS. 30. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED CALCULATIONS (SIGNED AND SEALED BY AN ENGINEER LICENSED IN THE STATE OF NEW JERSEY) AND INSTALLATION INFORMATION TO SHOW COMPLIANCE WITH SEISMIC AND WIND FORCES IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE 2021, NJ EDITION. INFORMATION SHALL BE MADE AVAILABLE TO ENGINEER FOR REVIEW AND ALSO, MADE AVAILABLE UPON REQUEST FOR SUBMISSION TO CODE ENFORCEMENT. PROVIDE ALL SUPPORT SYSTEMS, SUPPLEMENTAL STEELS, ANCHORS, PIPE HANGERS AND ENGINEERING DOCUMENTATION NECESSARY TO PROVIDE A COMPLETE CODE COMPLIANT SYSTEM.
BU	BUTTERFLY VALVE	MB	MIXING BOX		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	
CL	CENTER LINE	MBH	1000 BTU PER HOUR		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	GENERAL PROJECT NOTES
CO	CEILING DIFFUSER	MOD	MOTOR OPERATED DAMPER		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	
CO	CHEMICAL FEED UNIT	MPR	MEDIUM PRESSURE STEAM RETURN		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	THE FOLLOWING NOTES APPLY TO ALL "M" MECHANICAL DRAWINGS:
CF	CUBIC FEET PER HOUR	MPS	MEDIUM PRESSURE STEAM SUPPLY		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	
CFM	CUBIC FEET PER MINUTE	MU	MAKE UP WATER		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	1. ALL WORK SHALL FOLLOW THE REFERENCED APPLICABLE CODES AS ADOPTED AND MODIFIED BY THE STATE OF NEW JERSEY. 2. ALL WORK CONTAINED WITHIN THE MECHANICAL DRAWINGS AND SPECIFICATIONS IS THE RESPONSIBILITY OF THE SINGLE PRIME CONTRACTOR UNLESS OTHERWISE NOTED. 3. NOT ALL SYMBOLS, ABBREVIATIONS AND LINE DESIGNATIONS ARE NECESSARILY USED ON THIS PROJECT. 4. ALL HVAC EQUIPMENT, DUCTWORK, PIPING, SUPPORTS AND ACCESSORY LOCATIONS AND ROUTING SHALL BE COORDINATED WITH ALL OTHER TRADES AND FIELD VERIFIED PRIOR TO INSTALLATION TO PROVIDE REQUIRED CLEARANCES FOR ALL OTHER SYSTEMS. 5. SUPPLY, RETURN AND EXHAUST AIR OPENING LOCATIONS AND SIZES FOR ROOF MOUNTED MECHANICAL EQUIPMENT ARE SHOWN FOR DUCTWORK ROUTING ONLY. THE MECHANICAL CONTRACTOR SHALL VERIFY THE ACTUAL SIZES OF DUCT CONNECTIONS AND THE REQUIRED ROOF OPENING SIZES FOR THE ROOF MOUNTED EQUIPMENT AND COORDINATE THE FINAL LOCATION OF ROOF PENETRATIONS WITH THE GENERAL CONTRACTOR. 6. THE CONTRACTOR PROVIDING MECHANICAL TRADE WORK SHALL INSTALL ALL ROOF MOUNTED MECHANICAL EQUIPMENT CURBS AND FLASHING AND COORDINATE WITH THE CONTRACTOR PROVIDING MECHANICAL TRADE WORK SHALL ALSO INSTALL ALL NECESSARY ROOF CURB COUNTER-FLASHING TO ACHIEVE A WATERTIGHT ROOFING SEAL. 7. DUCTWORK MAINS AND BRANCHES ARE SHOWN DIAGRAMMATICALLY AND FOR DESIGN CLARITY AND AT THE ROOM LEVEL ROUTING AND ARRANGEMENT IS SHOWN TO MINIMIZE NOISE CARRYOVER FROM MECHANICAL EQUIPMENT AND ADJOINING SPACES. CONTRACTOR MAY PROPOSE RETROFITTING, OFFSETS, RISERS AND DROPS AS NECESSARY TO CLEAR INSTALLED TRUSSES, JOISTS AND OTHER INTERFERENCES. FINAL DUCTWORK LAYOUT WILL BE APPROVED IN REQUIRED DUCTWORK SHOP DRAWING SUBMITTAL REVIEW PRIOR TO INSTALLATION. DEVIATIONS FROM APPROVED DUCTWORK SHOP DRAWING TO SUIT FIELD CONDITIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. 8. ALL PIPING/DUCTWORK/CONTROLS PENETRATING FIRE RATED PARTITIONS, WALLS AND CEILINGS SHALL BE SEALED ON BOTH SIDES USING AN APPROVED, UL LISTED FIRE SEALANT TO MATCH EXISTING WALL FIRE RATING. WHERE A PIPE/DUCT/CONTROL CONDUIT HAS BEEN REMOVED THAT PREVIOUSLY PENETRATED A FIRE RATED PARTITION, WALL OR CEILING, THE CONTRACTOR SHALL PATCH AND SEAL THE PENETRATION ON BOTH SIDES USING AN APPROVED, UL LISTED FIRE SEALANT TO MATCH EXISTING WALL FIRE RATING. ALL FIRESTOP SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH ASTM E814. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. 9. CONTRACTOR SHALL RE-APPLY FIREPROOFING IN TYPE AND THICKNESS TO MATCH EXISTING IN ANY AREAS WHERE EXISTING FIREPROOFING IS DAMAGED DUE TO DEMOLITION OR NEW WORK ACTIVITIES. REFER TO ARCHITECTURAL SPECIFICATIONS FOR ADDITIONAL INFORMATION. 10. CONTRACTOR SHALL COORDINATE THE REPLACEMENT OF MECHANICAL EQUIPMENT WITH THE FACILITIES STAFF AND THE OWNER IN ADDITION TO ALL OTHER WORK BEING COMPLETED UNDER SEPARATE CONTRACTS. ALL ITEMS BEING REMOVED AS PART OF THE UPGRADES SHALL BE REMOVED FROM THE PREMISES AND DISPOSED OF IN ACCORDANCE WITH LOCAL REGULATIONS. 11. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR IN REGARDS TO THE DISCONNECT AND RECONNECT OF ALL EQUIPMENT BEING REMOVED AND/OR REPLACED IN-KIND AS INDICATED ON THE CONTRACT DOCUMENTS. 12. MECHANICAL CONTRACTOR SHALL FURNISH LOOSE MOTOR STARTERS AND DISCONNECT SWITCHES FOR INSTALLATION AND WIRING BY THE ELECTRICAL CONTRACTOR. 13. ELECTRICAL COORDINATION: CONTRACTOR PROVIDING MECHANICAL TRADE WORK SHALL COORDINATE VOLTAGES FOR EACH PIECE OF EQUIPMENT BEFORE PURCHASING EQUIPMENT WITH CONTRACTOR PROVIDING ELECTRICAL TRADE WORK. 14. HVAC TESTING & BALANCING (AIR & WATER) IS A PART OF THIS CONTRACT. 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VERIFY ALL CONDITIONS, ELEVATIONS AND MEASUREMENTS SHOWN ON CONTRACT DRAWINGS. ALL DIMENSIONS AND ELEVATIONS FOR NEW AND EXISTING EQUIPMENT ARE APPROXIMATE AND ARE ONLY FOR REFERENCE. SUBMIT SHOP DRAWINGS SHOWING ALL DIMENSIONS AND ELEVATIONS VERIFIED IN THE FIELD. 24. CONTRACTOR SHALL TEMPORARILY RELOCATE ALL PIPING, ELECTRICAL, CONDUITS, LIGHTING, CONTROLS, ETC., TO ACCOMMODATE WORK UNDER THIS CONTRACT. RESTORE TO INITIAL OPERATING CONDITION AND FUNCTION UPON COMPLETION OF WORK. EXISTING PIPING IN WORK AREA SMALLER THAN 2" AND CONDUITS SMALLER THAN 1" ARE NOT EXPLICITLY SHOWN. CONDUCT FIELD SURVEY AS REQUIRED TO DETERMINE EXISTING CONDITIONS. 25. PROVIDE VALVED DRAINS ON ALL WATER PIPING SYSTEM LOW POINTS AND AS REQUIRED ON NEW EQUIPMENT. PROVIDE AIR VENTS AT PIPING SYSTEM HIGH POINTS AS REQUIRED FOR RELEASING AIR DURING STARTUP. 26. NO PIPING SMALLER THAN 3/4" EXCEPT AS NOTED. 27. PROVIDE WIRING AND RACEWAYS RELATED TO CONTROL OF MECHANICAL EQUIPMENT. 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PROVIDE ALL SUPPORT SYSTEMS, SUPPLEMENTAL STEELS, ANCHORS, PIPE HANGERS AND ENGINEERING DOCUMENTATION NECESSARY TO PROVIDE A COMPLETE CODE COMPLIANT SYSTEM.
CH	CHILLER	NC	NORMALLY CLOSED		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	
CHWR	CHILLED WATER RETURN	NG	NATURAL GAS		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	GENERAL PROJECT NOTES
CHWS	CHILLED WATER SUPPLY	NO	NORMALLY OPEN		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	
CI	CAST IRON	NTS	NOT TO SCALE		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	THE FOLLOWING NOTES APPLY TO ALL "M" MECHANICAL DRAWINGS:
CP	CLEAN IN PLACE	OA	OUTSIDE AIR		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	
COMP	COMPRESSOR	OAD	OUTSIDE AIR DAMPER		EXHAUST AIR DESIGNATION	FOV	FUEL OIL VENT	1. ALL WORK SHALL FOLLOW THE REFERENCED APPLICABLE CODES AS ADOPTED AND MODIFIED BY THE STATE OF NEW JERSEY. 2. ALL WORK CONTAINED WITHIN THE MECHANICAL DRAWINGS AND SPECIFICATIONS IS THE RESPONSIBILITY OF THE SINGLE PRIME CONTRACTOR UNLESS OTHERWISE NOTED. 3. NOT ALL SYMBOLS, ABBREVIATIONS AND LINE DESIGNATIONS ARE NECESSARILY USED ON THIS PROJECT. 4. ALL HVAC EQUIPMENT, DUCTWORK, PIPING, SUPPORTS AND ACCESSORY LOCATIONS AND ROUTING SHALL BE COORDINATED WITH ALL OTHER TRADES AND FIELD VERIFIED PRIOR TO INSTALLATION TO PROVIDE REQUIRED CLEARANCES FOR ALL OTHER SYSTEMS. 5. SUPPLY, RETURN AND EXHAUST AIR OPENING LOCATIONS AND SIZES FOR ROOF MOUNTED MECHANICAL EQUIPMENT ARE SHOWN FOR DUCTWORK ROUTING ONLY. THE MECHANICAL CONTRACTOR SHALL VERIFY THE ACTUAL SIZES OF DUCT CONNECTIONS AND THE REQUIRED ROOF

- GENERAL NOTES, SYMBOL LIST AND DETAILS ARE APPLICABLE TO ALL HVAC DRAWINGS LABELED "M".
- THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS AND LABOR TO PROVIDE COMPLETE AND WORKING MECHANICAL SYSTEMS WHENEVER SPECIFIED OR IMPLIED.
- THE ENTIRE MECHANICAL INSTALLATION SHALL CONFORM TO THE LOCAL CODE, STATE LAWS, AGA, BOCA, IMFPA, NFPA, ASHRAE, ASME AND ALL OTHER APPLICABLE CODES. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, INSPECTIONS AND APPROVALS AS REQUIRED.
- DO NOT SCALE THE DRAWINGS FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
- THE CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES TO PREVENT INTERFERENCE BETWEEN PLUMBING, STRUCTURES, PIPING, LIGHTING FIXTURES, EXISTING SYSTEMS AND UTILITIES, ETC.
- ALL MATERIALS USED IN CONSTRUCTION SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS, A SMOKE DEVELOPMENT RATING OF 50 OR LESS, AND A FUEL CONTRIBUTED RATING OF 75 OR LESS. ALL MATERIALS SHALL BE "SELF-EXTINGUISHING."
- ALL PIPING, CONDUIT AND CUT PENETRATIONS OF "RATED BUILDING CONSTRUCTION" SHALL BE SLEEVED AND SEALED WITH A UL APPROVED FIRE BARRIER SYSTEM.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS.
- CONTRACTOR SHALL LABEL ALL NEW HVAC EQUIPMENT, PIPING AND VALVES (INDOORS AND OUTDOORS) IN A PERMANENT MANNER. HVAC PIPING SHALL BE LABELED WITH SELF-ADHESIVE PIPE MARKERS ENOUGH TO MARKING SERVICES INC. (MSI) SERIES MS-900 OR EQUIVALENT. COLOR CODES WILL BE: GREEN FOR LITERATURE SIZE, LENGTH OF COLOR FIELD, AND VIEWS; AND COLORS OF IDENTIFICATION. IDENTIFICATION OF FLOW SHALL BE IDENTIFIED WITH MS-900 FLOW DIRECTIONAL ARROW TAPE. VALVES SHALL BE IDENTIFIED WITH BRASS VALVE TAGS, ATTACHED WITH SOLID BRASS CHAINS AND "ST" HOOKS. WAIVES AND DISCREPANCY CORRECTIONS MUST BE PROVIDED IN OPERATION AND MAINTENANCE MANUAL. MECHANICAL EQUIPMENT SHALL BE LABELED WITH ENGRAVED PLASTIC TAGS WITH MOUNTING HOLES AND STAINLESS STEEL SCROLLS. ALL LABELING SHALL HAVE HIGH CONTRAST BETWEEN LETTER AND BACKGROUND COLORS AND SHALL BE LOCATED FOR EASY VISIBILITY.
- ALL HVAC EQUIPMENT AND APPPLANCES INSTALLED SHALL BEAR THE LABEL OF AN APPROVED AGENCY.
- THE ENTIRE HVAC INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THE 2021 INTERNATIONAL MECHANICAL CODE AND ANY SUPPLEMENTS, INCLUDING THE NEW JERSEY UNIFORM CONSTRUCTION CODE - 2021 AND ITS SUPPLEMENTS.
- PROVIDE VIBRATION ISOLATION MOUNTINGS FOR ALL MOTOR OPERATED EQUIPMENT.
- ALL EXTERIOR WALL OPENINGS SHALL BE SLEEVED, CAULKED AND SEALED WITH A HIGH QUALITY SEALANT TO PREVENT INFILTRATION OF MOISTURE AND OUTSIDE AIR.
- PROVIDE BALANCING OF ALL AIR SYSTEMS PER ABC OR NEBB STANDARDS. SUBMIT TEST DATA AND DEMONSTRATE IN FIELD AS REQUIRED BY THE SCOPE OF WORK.
- SUBMIT 3/8" SCALE Piping & SHEET METAL SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION AND INSTALLATION. COORDINATE WITH ALL TRADES.
- SUBMIT FOR REVIEW, DUPLICATE SPECIFICATION SHEETS OF ALL EQUIPMENT SUPPLIED OR INSTALLED, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - 16.1. SPLIT SYSTEM AIR-CONDITIONING WALL SUPPORTS.
 - 16.2. RETROFITTING PIPE, HANDGERS, PIPE CLAMP SYSTEMS, WALL SLEEVES.
 - 16.3. CONDENSATE PIPE, HANDGERS, PIPE SUPPORT SYSTEMS, WALL SLEEVES.
 - 16.4. MECHANICAL INSULATION FOR REFRIGERANT AND CONDENSATE PIPE SYSTEMS.
 - 16.5. SPLIT SYSTEM HEAT PUMP CONTROL WIRING.
 - 16.6. CONDENSATE PUMP.

1. PROVIDE REMOVAL, RELOCATION, REROUTING AND RECONNECTING OF EXISTING MECHANICAL FACILITIES, AS SHOWN OR AS REQUIRED BY CONTRACT DOCUMENTS, TO ACCOMPLISH ALTERATION, RESTORATION AND TO ACCOMMODATE NEW CONSTRUCTION.
2. VERIFY THE LOCATION OF ALL RELATED EXISTING EQUIPMENT, PIPING AND OTHER MECHANICAL FACILITIES. PROVIDE FOR THE REMOVAL, RELOCATION, REROUTING AND RECONNECTING OF ALL SUCH EQUIPMENT BECAUSE OF LOCATION METHOD CHANGES. SERVICES EMPLOYED TO OBTAIN THE OWNER'S PERMISSION FOR TO COMMENCING ANY WORK.
3. WHERE EXISTING EQUIPMENT MUST REMAIN IN SERVICE DURING CONSTRUCTION, PROVIDE REROUTING AND RECONNECTING OF MECHANICAL SERVICES AS REQUIRED TO MAINTAIN CONTINUOUS SERVICE. MAINTAIN SYSTEM CONTINUED OPERATION OF PIPING OR DUCTWORK CIRCUITS, WHETHER SPLIT, EXTENDED, RELOCATED OR NEWLY CONSTRUCTED.
4. ALL THREADED PIPING SHALL BE DISCONNECTED AT THE LOCATION INDICATED ON THE DEMOLITION DRAWINGS. ALL OPENINGS OF REMAINING VALVES, PIPING, FITTINGS AND FLANGES SHALL BE CLOSURE BY ALL WELD PLUGS OR PIPE CAPS AS REQUIRED TO PREVENT DEBRIS FROM ENTERING THE EXISTING SYSTEMS.
5. ALL PIPE HANGERS, SUPPORTS, AND/OR ANCHORS SHALL BE REMOVED ALONG WITH ALL PIPING SHOWN TO BE REMOVED.
6. INSULATION SHALL BE REMOVED FROM ALL PIPING, FITTINGS, VALVES AND EQUIPMENT DESIGNATED FOR DEMOLITION. COMPLY WITH ALL SAFETY PRECAUTIONS RELATED TO INSULATION REMOVAL.

1. PROVIDE COMPLETELY TESTED, BALANCED AND CERTIFIED AIR SYSTEMS AS DEFINED BY THESE SPECIFICATIONS.
2. ALL INSTRUMENTS AND EQUIPMENT REQUIRED FOR TESTING AND BALANCING SHALL BE PROVIDED BY THIS CONTRACTOR.
3. THE TESTING AND BALANCING CONTRACTOR SHALL BE CERTIFIED BY THE ASSOCIATED AIR BALANCE COUNCIL (AABC) AND/OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).
4. THE WORK SHALL BE PERFORMED BY REGULAR EMPLOYEES OF THE TESTING AND BALANCING CONTRACTOR SPECIFICALLY TRAINED IN THE TOTAL BALANCING OF AIR AND WATER SYSTEMS. THE WORK SHALL BE CONTINUOUSLY CONDUCTED UNDER THE DIRECT SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER.
5. PERFORM THE WORK, USING METHODS AND TEST FORMS PUBLISHED BY AABC NATIONAL STANDARDS FOR FIELD MEASUREMENTS AND INSTRUMENTATION, LATEST EDITION, OR EQUIVALENT.
6. DO NOT START TESTING AND BALANCING UNTIL EACH SYSTEM HAS BEEN CERTIFIED BY THE INSTALLING CONTRACTOR TO BE COMPLETE AND HAS BEEN TESTED AND REVIEWED.
7. THE OWNER'S REPRESENTATIVE SHALL, AT HIS DISCRETION, WITNESS FINAL BALANCING OF ALL SYSTEMS. THE TESTING AND BALANCING CONTRACTOR SHALL PROVIDE MINIMUM OF 10 WORKING DAYS PRIOR NOTICE TO THE OWNER'S REPRESENTATIVE FOR EACH SYSTEM TO BE WORKED.
8. BALANCING SHALL ACQUIRE PUMP DESIGN AIR FLOW RATES AND A TOLERANCE OF $\pm 5\%$ - AND OBTAIN SYSTEM ACTUAL OPERATING STATIC PRESSURE/HEAD AND PLOT THE SYSTEM CURVE ON THE CERTIFIED PUMP CURVE.
9. VERIFY THAT ALL THERMOSTATS AND THE DEVICES THEY CONTROL (SUCH AS VALVES AND DAMPERS) OPERATE AS THEY ARE INTENDED.

1. PROVIDE PIPE, VALVES, FITTINGS AND OTHER MATERIALS AND EQUIPMENT AS SPECIFIED AND SHOW FOR AIR CONDITIONING CONDENSATE DRAIN SYSTEMS.
2. APPROVED MANUFACTURERS: COPPER - NIBCO, APOLLO, WATTS OR EQUIVALENT. PLASTIC - NIBCO, WATTS, HAYWARD OR APPROVED EQUIVALENT.
3. PIPE: 2 INCHES AND SMALLER - COPPER TUBING; SEAMLESS TYPE L, ASTM 888 SOLDERED ENDS OR SCHEDULE 40 PVC PIPE, PENUMA RATED WITH SOLDER-WELDED JOINTS.
4. FITTINGS: 2 INCHES AND SMALLER, WROUGHT COPPER, PRESSURE FITTINGS, SOLDER TYPE, ASTM B1622, ASTM 2475 FOR COPPER PIPING OR PVC, SCH 40 WITH SOCKET-TYPE FITTINGS, ASTM D 868 WITH PENUMA RATING.
5. SHUTOFF VALVES: 2 INCHES AND SMALLER - COPPER: 40 WOG / 150 PSW, BRONZE BALL VALVES ONE PIECE OR TWO PIECE SERVICEABLE IN LINE / FULL PORT, BRONZE TRIM, CHROME PLATED BRASS BALL, BLOW-OUT PROOF STEM, PIPE SEALS, SOLDERED OR THREADED ENDS FOR COPPER PIPING; 50 PSW, PLASTIC BALL VALVES ONE PIECE, FULL PORT, PVC BALL, PIPE SEAL, SOCKET WELDED OR THREADED ENDS FOR PVC PIPING.
6. CHECK VALVES: 2 INCHES AND SMALLER - COPPER: 40 WOG / 200 PSW BRONZE SWING CHECK VALVES WITH REGURINIZABLE BRONZE DISC, SCREW-IN CAP, SOLDERED ENDS FOR COPPER PIPING; 50 PSW, PVC SWING CHECK WITH SOCKET WELDED ENDS FOR PVC PIPING.

1. PROVIDE PIPE INSULATION, JACKETS AND INSULATION ACCESSORIES FOR MECHANICAL PIPING SYSTEMS
2. SUBMIT MANUFACTURER'S PRODUCT DATA SHEETS FOR REVIEW. SUBMIT SAMPLES OF PRODUCTS, LABELED AND IDENTIFIED, IF REQUESTED.
3. INSULATING MATERIALS AND ACCESSORIES SHALL HAVE A COMPOSITE FIRE AND SMOKE RATING AS TESTED UNDER ASTM E 84, NFPA 255 AND UL 723 PROCEDURES NOT TO EXCEED FLAME SPREAD - 25, SMOKE DEVELOPED - 50 (UNLESS NOTED OTHERWISE) AND FUEL CONTRIBUTED - 50.
4. ELASTOMERIC INSULATION
 - 4.1. INSULATION MATERIAL SHALL BE FLEXIBLE, CELLULAR ELASTOMERIC, MOLDED, OZONE RESISTANT, 8 PCF DENSITY, AND SHALL COMPLY WITH ASTM G534, THERMAL CONDUCTIVITY "K" (STJUN/HR/FT2 F) SHALL BE 0.28 AT 75 F, ASTM C177 OR C518, MINIMUM SERVICE TEMPERATURE SHALL BE -40 F, MAXIMUM SERVICE TEMPERATURE SHALL BE 220 F
 - 4.2. MAXIMUM MOISTURE ABSORPTION SHALL BE 1.0 PERCENT BY VOLUME, ASTM D1056. MOISTURE VAPOR TRANSMISSION SHALL BE 0.20 PERM INCHES, ASTM E96.
 - 4.3. MAXIMUM LINEAR DILATION SHALL BE .25 PER CENT ASTM E84, MAXIMUM SHOCK DEVELOPED SHALL BE 50 (3/4" AND BELOW) AND 100 (1" AND ABOVE) PER ASTM E84. FOR ALL EXTERIOR PIPING AND FOR PIPING EXPOSED TO ULTRAVIOLET RADIATION, PROVIDE A PROTECTIVE INSULATION COATING, RUBATEX 34/40, EQUAL, APPLY WITH WATERPROOFING VAPOR BARRIER ADHESIVE.
 - 4.4. ELASTOMERIC INSULATION SHALL BE RUBATEX R-180-FS OR EQUIVALENT.
5. JACKETS
 - 5.1. FIBERGLASS INSULATION ALL SERVICE JACKET - AP-47 BY JOHNS-MANVILLE CORPORATION, SUPPLIED INTEGRAL WITH MICRO-LOK INSULATION, JACKET SHALL INCLUDE JOINTED VAPOR-PROOF ALUMINUM FOIL-40/674T AND 1.5 INCH MIN. LONGITUDINAL VAPOR-PROOF PRESSURE SENSITIVE CLOSURE SLAP WITH RELEASE PAPER.
 - 5.2. FIBERGLASS INSULATION METAL JACKET STEELNESS STEEL, 0.010 INCH THICK HAVING 2 LOCK JOINT LONGITUDINAL SLAP, LINED WITH FACTORY-LAMINATED MOISTURE BARRIER, INCLUDE 0.016 INCH STEEL X 2 INCH MIN. PREFORMED ALUMINUM SPRING. SHAPS CONTAINING PERMANENT PLASTIC SEALING COMPOUND AND 0.015 INCH THICK X 0.5 INCH MIN. STEEL BARS. STEEL BARS.
6. ACCESSORIES
 - 6.1. PRE-MOLDED FITTINGS - POLY-UNIM. CHLORIDE (PVC), 20 LBS THICK FOR INDOOR USE, 30 LBS THICK FOR OUTDOOR USE, CONFORMING TO FS 1-L-0-533C. PROVIDE 2-LAYER PRE-CUT INSULATION INTERLIES MATCHED TO PIPE, INSULATION, VAPOR BARRIER, MASTIC ADHESIVES AND TAPES. PVC COVERS SHALL BE TESTED BY JOHNS-MANVILLE.

INSULATION FOR MECHANICAL PIPING SYSTEMS CONT'D

DESCRIPTION	COND DRAIN	REFRIG PIPE (RL&RS)
FLUID TEMPERATURE RANGE (°F)	35-75	35-150
INSULATION TYPE	FIBERGLASS OR ELASTOMER	ELASTOMER
INSULATION THICKNESS FOR INDOOR PIPE LOCATIONS	COND DRAIN	RL&RS
2" OR LESS	3/4"	1"
4" OR LESS	3/4"	1"
INSULATION THICKNESS FOR OUTDOOR PIPE LOCATIONS	COND DRAIN	RL&RS
2" OR LESS	N/A	2"
4" OR LESS	N/A	2"

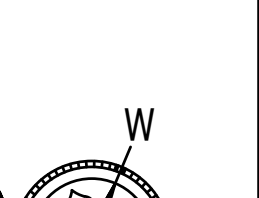
1. REFER TO SECTIONS ABOVE FOR JACKETING AND/OR FINISH REQUIREMENTS FOR OUTDOOR PIPING.

1. PROVIDE PIPE, VALVES, FITTINGS AND OTHER MATERIALS AND EQUIPMENT AS SPECIFIED AND SHOW FOR AIR CONDITIONING REFRIGERANT PIPING SYSTEMS.
2. APPROVED MANUFACTURERS: SPORLAN, MUELLER, STREAMLINE, DANFOSS OR APPROVED EQUIVALENT.
3. LINE TEST PRESSURE FOR R-410A: LIQUID AND SUCTION LINES, 535 PSIG.
4. COPPER TUBE AND FITTINGS: DRAIN-TAMPER COPPER TUBE, ASTM B280, TYPE ACR, WROUGHT-COPPER FITTINGS; ASME B16.22.
5. SERVICE VALVES: COPPLY WITH R-410A PRESSURE RATING; FORGED-BRASS BODY WITH COPPER END, 1/2" NPT, REMOVABLE VALVE CORE, INTERNAL BALL CHECK VALVE, AND WITH SOLDER-END CONNECTIONS.
6. SOLENOID VALVES: COPPLY WITH R-780, 250 DEG F TEMPERATURE RATING AND 400-PSIG WORKING PRESSURE; FORGED BRASS, WITH POLYETYLENE/FLUORETHYLENE VALVE SEAT, 2-WAY, STRAIGHT-THROUGH PATTERN, AND SOLDER-END CONNECTIONS; MANUAL OPERATION; FITTED WITH SUITABLE NEMA 250 ENCLOSURE OR TYPE REQUIRED BY LOCATION, WITH 1/2"-NPT CONDUIT ADAPTER AND 24-V, NORMALLY CLOSED HOLDING COIL.
7. PRESSURE-REGULATING VALVES: COPPLY WITH R-770; PILOT OPERATED, FORGED BRASS OR STAINLESS-STEEL BOTTOM SPRING, PRESSURE-SCALE TAPPINGS, 24-V DC STANDARD COIL, AND WROUGHT-COPPER FITTINGS FOR SOLDER-END CONNECTIONS; SUITABLE FOR REFRIGERANT SPECIFIED.
8. THERMOSTATIC EXPANSION VALVES: COPPLY WITH R-750; BRASS BODY; WITH STAINLESS-STEEL PARTS; THERMOSTATIC-ADJUSTABLE; MODULATING TYPE; SIZE AND RANGE SELECTED BASED ON CHARGING INSTRUCTIONS; MANUFACTURED BY CAPTAIN, OR SUCCEEDING MANUFACTURER; MEET THE FOLLOWING REQUIREMENTS: SOLDER-END CONNECTIONS WITH SENSING BALL, DISTRIBUTOR HAVING SIDE CONNECTION FOR HOT-GAS BYPASS LINE, AND EXTERNAL EQUALIZER LINE.
9. HOT-GAS BYPASS VALVE: PULSATING-DAMPENER DESIGN, STAINLESS-STEEL BELLWOS AND POLYETYLENE/FLUORETHYLENE VALVE SEAT; ADJUSTABLE; SIZED FOR CAPACITY EQUAL TO LAST STEP OF COMPRESSOR UNLOADING, WITH SOLDER-END CONNECTIONS.
10. STRAIGHT- OR ANGLE-TYPE STRAINERS: 500-PSIG WORKING PRESSURE, FORGED-BRASS BODY WITH STEEL TUBING, 1/2" NPT INLET OR BRASS-REINFORCED MODEL SCREEN OF 80 TO 100 MESH IN LIQUID LINES UP TO 1-1/8" INCHES, 60 MESH IN LARGER LIQUID LINES, AND 40 MESH IN SUCTION LINES; WITH SCREWED CLEANOUT PLUG AND SOLDER-END CONNECTIONS.
11. MOISTURE/LIQUID INDICATORS: 500-PSIG MAXIMUM WORKING PRESSURE AND 200 DEG F OPERATING TEMPERATURE, ALL-BRASS BODY WITH REPLACEABLE, POLISHED, OPICAL VIEWING WINDOW WITH COLOR-CODED MOISTURE INDICATOR WITH SOLDER-END CONNECTIONS.
12. REPLACEABLE-CORE FILTER-DRIERS: 500-PSIG MAXIMUM WORKING PRESSURE; HEAVY GAUGE PROTECTED WITH CORROSION-RESISTANT-PAINTED STEEL SHELL, FLANGED RING AND SPRING, DUCTILE-IRON COVER PLATE WITH SPLIT CAP SCREWS; WROUGHT-COPPER FITTINGS FOR SOLDER-END CONNECTIONS; WITH REPLACEABLE-CORE KIT, INCLUDING GASKETS AND THE FOLLOWING:
 1. FILTER-DRIER CARTRIDGE: PLATED METAL WITH SOLID-CORE SIEVE WITH ACTIVATED ALUMINA, R-730 RATED FOR CAPACITY.
 2. PERMANENT FILTER-DRIER: 350-PSIG MAXIMUM OPERATING PRESSURE AND 225 DEG F MAXIMUM OPERATING TEMPERATURE; STEEL SHELL AND WROUGHT-COPPER FITTINGS FOR SOLDER-END CONNECTIONS; MODEL-FELT CORE SURROUNDED BY DESICCANT.
 3. MUFFLERS: 500-PSIG OPERATING PRESSURE, WELDED-STEEL CONSTRUCTION WITH FUSIBLE PLUG, SIZED FOR REFRIGERATION CAPACITY.

[illegible]

REVISIONS:

This architectural floor plan shows the layout of the first floor. It features a long central corridor with multiple rooms on either side. A large rectangular area, likely a courtyard or open space, is located on the left side of the plan. The right side of the plan shows a more complex arrangement of rooms, including what appears to be a staircase and several smaller, irregularly shaped spaces. The drawing is a black and white line art representation.



John A. Marchalava P. E.
 Now Jersey P. E. No. 24GEO499250

Professional Engineer
 John A. Marchalava P. E.

LRHSD REFERENDUM EXTERIOR BUILDING RESTORATION

93 WILLOW GROVE RD
SHAMONG, NEW JERSEY

MECHANICAL SPECIFICATIONS

DRAWN BY:	BTR	SCALE:	AS NOTED	DWG SIZE:	42x30
CHECKED BY:	BTR	DRAWING NO.		REVISION	
DATE:	09/10/2026				
PROJECT NO.:	8C22002.31				
		MO.1		1	

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- DEMOLITION KEYED NOTES

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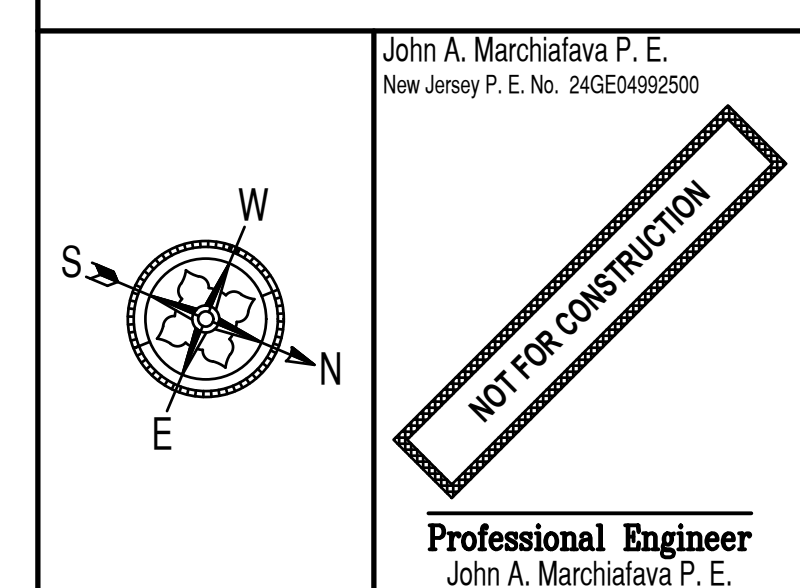
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[illegible]REVISIONS:

The first floor plan shows a large rectangular building with a central corridor. On the left side, there is a large rectangular area, possibly a parking lot or a large room. The right side of the building features a series of rooms, including a large room at the top right, a smaller room below it, and a series of rooms along the bottom right. The plan is detailed with walls, doors, and furniture.



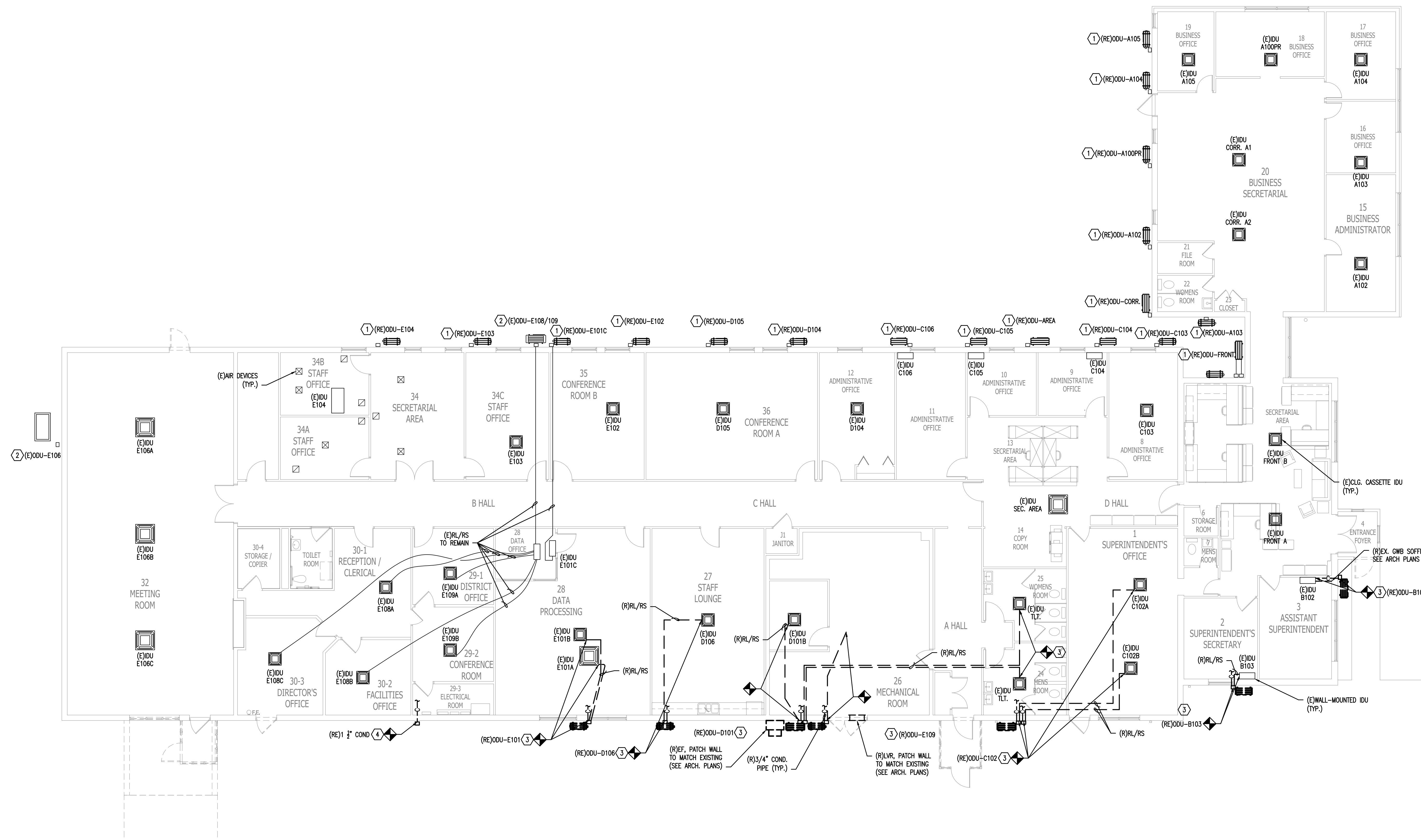
LRHSD REFERENDUM EXTERIOR BUILDING RESTORATION

93 WILLOW GROVE RD
SHAMONG, NEW JERSEY

MECHANICAL DEMOLITION
FLOOR PLANS

DRAWN BY:	RML	SCALE:	AS NOTED	DWG SIZE:	42x30
CHECKED BY:	BTR	DRAWING NO.		REVISION	
DATE:	09/10/2026	MD1.1		1	
PROJECT NO.:	8C22002.31				

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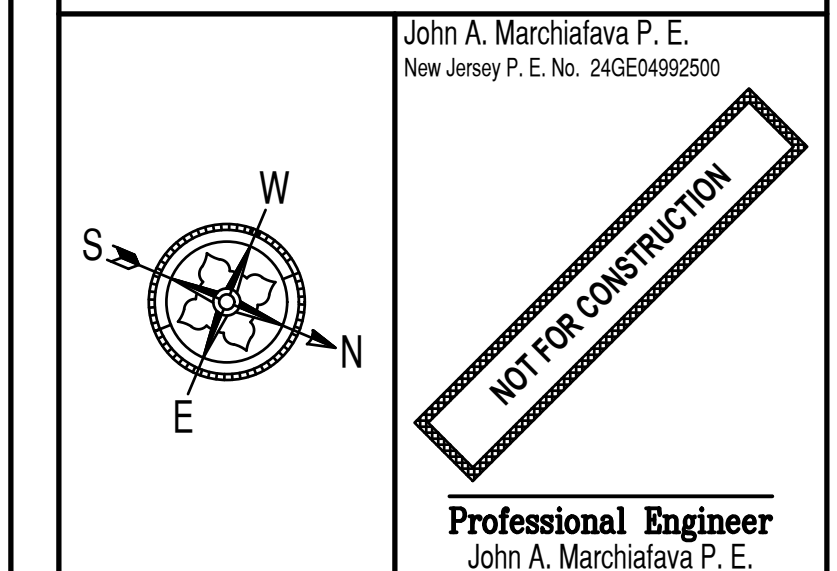
1 MECHANICAL FLOOR PLAN - DEMOLITION
MD1.1 SCALE: 1/8" = 1'-0"

GENERAL NOTES:

- NEW WORK KEYED NOTES:

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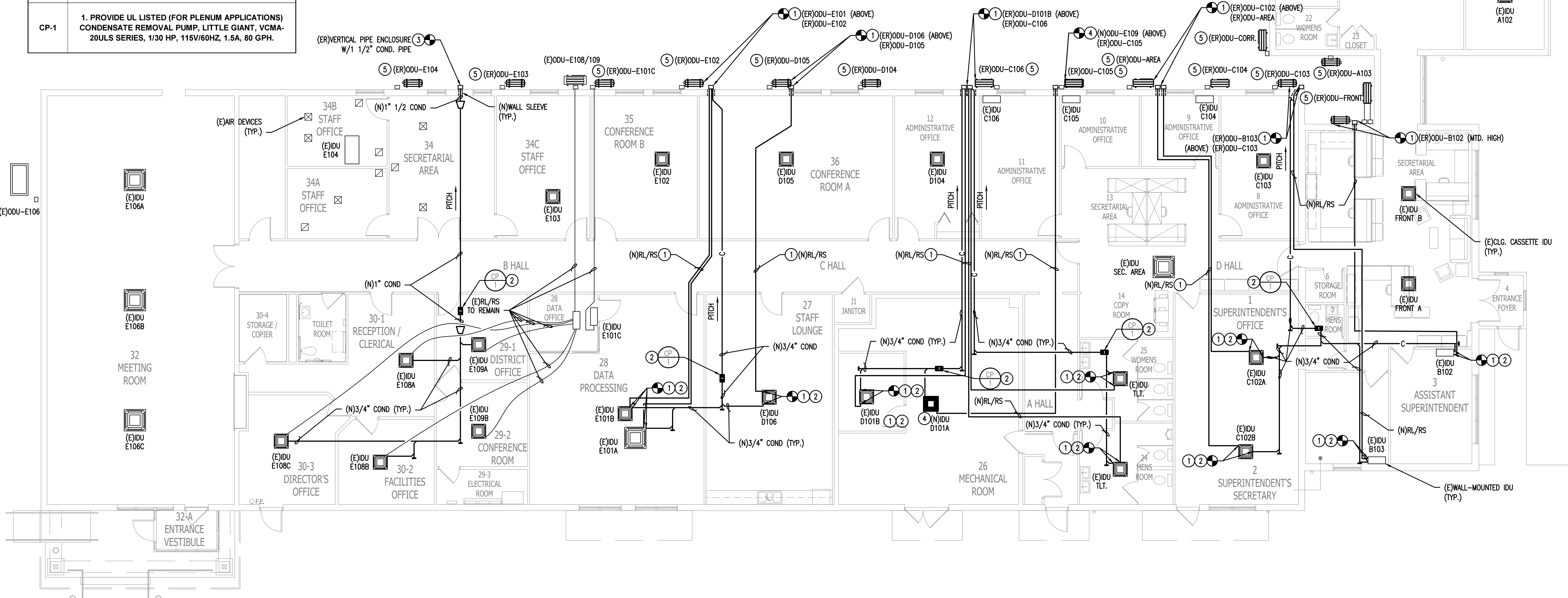
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MECHANICAL NEW WORK FLOOR PLANS

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* FED THRU OUTDOOR UNIT

CONDENSATE PUMP	
IBOL	GENERAL NOTES
P-1	1. PROVIDE UL LISTED (FOR PLENUM APPLICATIONS) CONDENSATE REMOVAL PUMP, LITTLE GIANT, VCMA-20ULS SERIES, 1/30 HP, 115V/60HZ, 1.5A, 80 GPH.



1 MECHANICAL FLOOR PLAN - NEW WORK
M1.1 SCALE: 1/8" = 1'-0"



1. SIZE CLEVIS AND ROLLER TO ADEQUATELY SUPPORT LOAD.
2. SIZE CLEVIS AND ROLLER TO FIT PIPE AND INSULATION THICKNESS.



1. SIZE CLEVIS TO ADEQUATELY SUPPORT LOAD.
2. SPRING HANGER. SEE SPECIFICATION FOR USE.



1. FOR GYP. BOARD WALLS PROVIDE MIN. 16 GAUGE GALV. STEEL SLEEVE W/ LOCK-TYPE LONGITUDINAL SEAM.
2. OMIT ALUMINUM JACKET IF PIPING IS UNINSULATED.
3. ALL EXTERIOR PIPING AND PENETRATIONS SHALL BE PAINTED WITH ONE COAT OF PRIMER SUITABLE FOR THE PAINTED SURFACE AND TWO COATS OF EXTERIOR GRADE PAINT W/ COLOR SELECTED BY OWNER.
4. ALL WALL PENETRATIONS SHALL BE FILLED TO MATCH EXISTING. FIRE RATINGS TO BE DETERMINED BY ARCHITECT.



1. PIPE ENCLOSURES (VERTICAL & HORIZONTAL) TO BE SIZED FOR RS/RL AND / OR CONDENSATE PIPE COLOR OF NEW ENCLOSURES TO BE DETERMINED BY THE ARCHITECT. FINAL ENCLOSURE SIZING SHALL BE COORDINATED IN FIELD. COORD. ENCL. SIZE WHERE SPLITTERS ARE REQUIRED. COORDINATE ENCLOSURE W/EC IN FIELD AT CONSOLE UNIT DISCONNECT SWITCH.
2. ALL WALL PENETRATIONS SHALL BE FILLED TO MATCH EXISTING. FIRE RATINGS TO BE DETERMINED BY ARCHITECT.



LRHSD REFERENDUM EXTERIOR BUILDING RESTORATION

93 WILLOW GROVE RD
SHAMONG, NEW JERSEY

MECHANICAL DETAILS

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CHECKED BY: BTR		DRAWING NO.	REVISION
DATE: 09/10/2026		M2.1	1
PROJECT NO.: 8C22002.31			

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