

PROTOTYPE MEP GUIDELINES:

A) MECHANICAL:

- 1) HVAC UNITS: A CENTRAL CONSTANT VOLUME AIR CONDITIONING SYSTEM SIZED AT APPROXIMATELY 190 FT PER TON SHALL BE PROVIDED FOR THE SALON AREA OF THE FACILITY. A CENTRAL VARIABLE AIR VOLUME (VAV) AIR CONDITIONING SYSTEM SIZED AT APPROXIMATELY 240 FT PER TON SHALL BE PROVIDED FOR THE CLASSROOM AREA OF THE FACILITY. THE APPROXIMATE VALUES SHALL BE ADJUSTED AS REQUIRED WITH SUPPLY AND RETURN AIR DUCT MOUNTED SMOKE DETECTORS, INTER
- 2) CLASSROOM SYSTEM SHALL UTILIZE LAY-IN TYPE 24" X 24" CEILING SUPPLY DIFFUSERS, AND THE SALON SYSTEM SHALL UTILIZE REGISTERS EXTERNALLY MOUNTED ON EXPOSED SPIRAL ROUND DUCTWORK, TYPICAL.
- 3) VAV TERMINAL UNITS: VAV TERMINAL UNITS WITH ELECTRIC HEATING COILS SHALL BE EQUIPPED WITH INTEGRAL DISCONNECT AND FLOW SAFETY SWITCHES. ELECTRIC HEATING COILS SHALL HAVE A MINIMUM OF TWO STAGES OF OPERATION. VAV TERMINAL CONTROLS SHALL BE DDC TYPE WITH ALL NECESSARY RELAYS AND 120 TO 12V CONTROL TRANSFORMERS.
 - a) FAN POWERED VAV TERMINALS: FAN POWERED VAV TERMINALS SHALL BE CONSIDERED FOR PERIMETER AND INTERIOR HEATING WITH INDEPENDENT CONTROL LOGIC AS REQUIRED BY SPECIFIC SITE CONDITIONS.
- 4) OUTDOOR AIR VENTILATION: IT IS RECOMMENDED THAT A DEMAND CONTROLLED VENTILATION UTILIZING CO2 SENSORS BE PROVIDED FOR THE CLASSROOM SYSTEM. IN GENERAL, VENTILATION SHALL BE PROVIDED AT 15 CFM PER PERSON, ASSUMING 50 STUDENTS PER 1,000 FT OR CLASSROOM AREA. THE SALON AREA SHALL BE VENTILATED AT A RATE OF 25 CFM PER PERSON, ASSUMING 25 OCCUPANTS PER 1,000 FT OF SALON AREA.
- 5) CONTROL SYSTEMS: A LOCAL DIRECT DIGITAL CONTROL (DDC) SYSTEM SHALL BE PROVIDED FOR THE CLASSROOM AIR CONDITIONING SYSTEM TO INCORPORATE AND COORDINATE ALL AIR SYSTEM FUNCTIONS AND VAV TERMINAL FUNCTIONS AT A LOCAL PANEL IN A UTILITY OR MECHANICAL ROOM. THE PANEL SHALL HAVE A DIGITAL TOUCHPAD TYPE USER INTERFACE FOR VIEWING ALARMS AND SETTING SPACE SHALL SET-POINTS AND OCCUPANCY SCHEDULES. THE CONSTANT VOLUME SALON AIR SYSTEM SHALL OPERATE IN CONJUNCTION WITH A SPACE MOUNTED 7 DAY PROGRAMMABLE THERMOSTAT.
- 6) EXHAUST SYSTEMS: AN EXHAUST SYSTEM SHALL BE PROVIDED FOR THE SCHOOLS RESTROOMS, STUDENT LOUNGE/PANTRY AREA, DISPENSARY AREA, AND ELECTRICAL ROOM SIZED TO EXHAUST APPROXIMATELY 1,500 CFM. A SEPARATE OVER-TEMPERATURE EXHAUST SYSTEM SHALL BE PROVIDED FOR THE LAND/NETWORK ROOM AND INTERLOCKED TO A SPACE THERMOSTAT TO EXHAUST HEAT INTO THE CEILING PLENUM DURING OFF HOURS.
- 7) SMOKE CONTROL SYSTEMS: PROVIDE SMOKE CONTROL / EVACUATION SYSTEMS AS PER THE APPLICABLE CODES AND LOCAL AUTHORITY HAVING JURISDICTION. COORDINATE WITH FIRE ALARM SYSTEMS AS NECESSARY.
- 8) CLOTHES DRYER VENTING: THE LAUNDRY ROOM SHALL BE LOCATED WITHIN 30-50 FEET OF AN EXTERIOR DISCHARGE POINT AS REQUIRED TO COMPLY WITH MAXIMUM VENT LENGTH RUNS ESTABLISHED BY THE DRYER MANUFACTURER. NO DRYER BOOSTER FANS SHALL BE PERMITTED.
- 9) A/V RACK: PROVIDE ANY NECESSARY EQUIPMENT TO PROVIDE AIR-CONDITIONING TO KEEP THE AMBIENT ROOM TEMPERATURE BELOW 80 DEG. F. AT THE MAIN A/V RACK LOCATION. COORDINATE PLACEMENT WITH A/V CONSULTANT.

B) ELECTRICAL:

- 1) ELECTRICAL SERVICE: AN ELECTRICAL SERVICE WITH A MAIN CIRCUIT BREAKER PANEL, 120/208 OR 227/480V, 3 PHASE, 4 WIRE, SOLID NEUTRAL AND GROUND BUS CAPABLE OF DELIVERING 27 WATTS/FT IS RECOMMENDED. THIS WILL ALLOW 25% SPARE CAPACITY FOR ANY FUTURE EXPANSION. THE PREFERRED VOLTAGE IS 277/480V (BASED ON LOCAL AVAILABILITY) WITH TRANSFORMERS AND BRANCH PANELS AS REQUIRED FOR SEPARATION OF LIGHTING, RECEPTACLE AND HVAC LOADS. THE TOTAL LOADS FOR THE REFERENCE SPACE WERE 50.3KVA (3.1 WATTS/FT) FOR LIGHTING, 83.9KVA (5.2 WATTS/FT) FOR RECEPTACLES AND MISCELLANEOUS EQUIPMENT, 53.4KVA (3.3 WATTS/FT) WORKSTATION DRYERS AND TOOLS, WORKSTATION DRYERS AND TOOLS. THESE VALUES ARE BASED ON GAS FIRED HEATING BEING PROVIDED AT THE MAIN HVAC UNITS.
- 2) WORKSTATIONS: EACH WORKSTATION UNIT IN THE SALON AREA WILL REQUIRE (4) 20A, 120V DEDICATED CIRCUITS WITH FLUSH, RECESSED FLOOR MOUNTED QUAD RECEPTACLE. THE APPROXIMATE ELECTRICAL LOAD WILL BE 1KW PER SEAT, WITH A DIVERSITY FACTOR BASED ON THE NUMBER OF STUDENTS SIMULTANEOUSLY USING ELECTRIC BLOW DRYER, CURLING IRONS, OR OTHER STYLING TOOLS.
- 3) BRANCH PANEL: EACH CORE CLASSROOM / MANNEQUIN CLASSROOM SHALL BE EQUIPPED WITH A DEDICATED BRANCH PANEL IN THE ROOM SERVING DEDICATED RECEPTACLES AT EACH WORKSTATION FOR STYLING TOOLS. PROVIDE DUPLEX RECEPTACLE WITH (1) 20A, 120V DEDICATED CIRCUIT. THE LOAD ON EACH PANEL WILL BE APPROXIMATELY 18KVA.
- 4) LIGHTING: LIGHTING INSIDE THE SALON SPACE WILL BE TWELVE FOOT LONG, LINE VOLTAGE TRACK LIGHTING AND 175W METAL HALIDE HI BAY LIGHT FIXTURES, TYPICAL. AVERAGE DESIGN LIGHTING LEVELS FOR THIS LAYOUT ARE APPROXIMATELY 90 FOOT CANDLES. LIGHTING CONTRACTORS INSIDE THE ELECTRICAL CLOSET SHALL BE PROVIDED FOR LIGHTING CONTROL. LIGHTING INSIDE CLASSROOMS AND OFFICES SHALL BE 2"x2" RECESSED INDIRECT FIXTURES WITH MOTION SENSOR SWITCHES, UNLESS OTHERWISE NOTED. STOREFRONT SIGN LIGHTING SHALL BE CONTROLLED VIA A TIME-CLOCK FROM A DEDICATED 20A 120V CIRCUIT. NIGHT LIGHTS, EMERGENCY EGRESS LIGHTING AND EXIT SIGNS SHALL BE BATTERY BACKUP AND FED FROM A DEDICATED EMERGENCY LIGHTING CIRCUIT.
- 5) FIRE ALARM SYSTEM: THE ENTIRE SPACE SHALL BE PROTECTED BY A DEDICATED FIRE ALARM SYSTEM WITH DIGITAL ALARM COMMUNICATIONS TRANSMITTER (DACT) AND A REMOTE ANNUNCIATOR PANEL AT THE STORE FRONT. ALL INITIATING AND NOTIFICATION DEVICES SHALL BE INSTALLED PER NFPA AND LOCAL CODE REQUIREMENTS. ANY REMOTE TROUBLE AND SUPERVISORY SIGNALS SHALL BE COORDINATED WITH THE BUILDING LANDLORD.
- 6) A/V RACK: A DEDICATED 60A, 220V CIRCUIT IS REQUIRED AT THE MAIN RACK LOCATION PROVIDED VIA FLEX CONDUIT DIRECTLY INTO THE RACK. THIS WILL BE CONNECTED TO THE RACK EQUIPMENT BY THE ELECTRICIAN AT TIME OF A/V INSTALL. COORDINATE PLACEMENT WITH A/V CONSULTANT.
- 7) T.V. LOCATIONS: PROVIDE A DOUBLE-GANG, QUAD RECEPTACLE OUTLET AT EACH T.V. LOCATION. COORDINATE PLACEMENT WITH A/V CONSULTANT.
- 8) PROJECTOR LOCATION: PROVIDE A SINGLE-GANG, DOUBLE-RECEPTACLE VIA FLEX CONDUIT WITH A 10' WHIP ABOVE CEILING APPROXIMATELY 15' FROM GLASS WALL. COORDINATE PLACEMENT WITH A/V CONSULTANT.

C) PLUMBING:

- 1) DOMESTIC WATER: A MAIN WATER SERVICE SIZED AT APPROXIMATELY 2" SHALL BE PROVIDED, WITH BRANCH PIPING TO ALL SALON, LAUNDRY AND RESTROOM PLUMBING FIXTURES AS NECESSARY. PROVIDE ALL NECESSARY METERS AND BACKFLOW PREVENTION ASSEMBLIES TO SATISFY LOCAL CODES.
- 2) SANITARY AND VENT: A SANITARY MAIN OF APPROXIMATELY 4" DIAMETER AND A MAIN SYSTEM VENT PIP OF APPROXIMATELY 3" DIAMETER SHOULD BE PROVIDED. THESE SIZES MAY BE REDUCED IF THE SITE HAS MULTIPLE SANITARY AND/OR VENT CONNECTIONS AVAILABLE. COORDINATE WITH EXISTING UNDER-SLAB CONDITIONS AND REUSE AND CONNECT TO EXISTING UTILITIES AS APPLICABLE.
- 3) WATER HEATERS: A QUANTITY OF (2) 100 GALLONS DOMESTIC WATER HEATERS SHOULD BE PROVIDED WITH A TOTAL SYSTEM STORAGE CAPACITY OF 200 GALLONS, AND A TOTAL RECOVERY OF 210 GALLONS PER HOUR AT 100F TEMPERATURE RISE. WATER HEATERS SHALL BE GAS OR ELECTRIC TYPE DEPENDING ON SITE CONDITIONS AND UTILITY AVAILABILITY. IN GENERAL, A HOT WATER CIRCULATION SYSTEM SHOULD BE PROVIDED AS REQUIRED BY THE MAXIMUM LENGTH OF HOT WATER PIPING THIS SYSTEM SHOULD BE COMPLETE WITH INLINE PUMP AND THERMOSTATIC MIXING VALVE.

- 4) GAS PIPING: IF GAS IS AVAILABLE, PROVIDE GAS PIPING TO THE HVAC SYSTEMS AND WATER HEATERS AS REQUIRED. WATER HEATER TOTAL REQUIREMENTS WILL BE APPROXIMATELY 300 MBH AND THE HVAC LOAD WILL BE SIZED AT APPROXIMATELY 1,200 MBH DEPENDING ON THE SPECIFIC SITE'S HEATING LOAD. MAIN GAS SUPPLY PIPING SIZE WILL DEPEND ON EXISTING PRESSURE AND MAXIMUM LENGTH RUN. PRESSURE REGULATORS SHALL BE PROVIDED AT THE VARIOUS APPLIANCES AS REQUIRED FOR COMPLIANCE WITH THE MANUFACTURER'S MAXIMUM INLET CONDITIONS.

D) FIRE PROTECTION:

- 1) SPRINKLER SYSTEM: WHERE LOCAL CODE REQUIRES, A STANDARD WET TYPE SPRINKLER SYSTEM SHALL BE PROVIDED FOR THE ENTIRE FACILITY WITH COVERAGE COMPLIANCE TO SATISFY NFPA 13 AND ALL APPLICABLE CODES. AS THE SALON AREA WILL GENERALLY BE DESIGNED WITHOUT A CEILING, SPRINKLER HEADS IN THE SALON AREA SHOULD BE UPRIGHT EXPOSED TYPE WHILE THE CLASSROOM AREA CONCEALED TYPE FOR A LAY-IN CEILING GRID APPLICATION. FLOW AND TAMPER SWITCH NOTIFICATION SHALL BE TIED INTO THE FIRE ALARM SYSTEM AS NECESSARY.

AUDIO & VIDEO SPECIFICATIONS:

Audio / Video will be responsible for the following:

1. Provide, install, test and align equipment and related cables, and mounting hardware, to enable system to function as described.
2. Define responsibilities of other trades to prepare site for installation of system components.
3. Communicate with project manager, architect, facilities director, and/or designer to facilitate room preparation prior to installation of system.
4. Provide manufacturers' specifications for items that require custom millwork, cutouts, or wall and ceiling openings prior to installation.
5. Clean work site of packaging and installation related debris resulting
6. Provide operator orientation and training for system operation to client representative.
7. Provide owners instruction manuals for installed equipment.

School Owner will be responsible for the following:

1. Prepare site for installation with electrical service, appropriate conduit runs, and related hardware.
2. Provide all associated millwork, ceiling modification, mount location blocking, and electric service required for monitors, motorized screen, projectors, and other electronic devices.
3. Design classroom cabinetry to ensure 19" equipment mounting rails and adequate depth.
4. Maintain the installation and equipment and materials storage areas with appropriate security.
5. Provide finishing work and materials associated with ceiling, wall and floor installations.
6. Provide written documentation for all change orders related to the system being installed.

LOW VOLTAGE CABLING AND CONDUIT SPECIFICATIONS:

A/V EQUIPMENT RACK:

PROVIDE TWO (2) DOUBLE-GANG BOXES (DEEP VARIANT) AT STANDARD RECEPTACLE HEIGHT, LOCATED BEHIND A/V RACK, WITH 2" CONDUIT FEEDING TO ABOVE CEILING FOR SPEAKER WIRE TO BE INSTALLED BY A/V CONSULTANT. PROVIDE ALL NECESSARY CONDUIT AND BOXES FOR CAT-6E DISPLAY CABLE RUNS, WHICH WILL EXIT THE WALL AT STANDARD RECEPTACLE HEIGHT, LEAVING A 10'-0" SERVICE LOOP MEASURED FROM WALL TO CABLE END. EACH CABLE WILL BE TERMINATED WITH A RJ-45 CONNECTOR UTILIZING THE 568B WIRING STANDARD. ALL CABLE RUNS WILL BE HOME-RUN, NO SPLICING. INSTALLER IS RESPONSIBLE FOR TESTING AND VERIFICATION OF ALL CABLE RUNS.

T.V. LOCATIONS:

PROVIDE TWO (2) CAT-6E CABLE RUNS FOR EACH T.V. LOCATION TO THE MAIN RACK. THE T.V. LOCATION WILL BE TERMINATED INTO JACKS IN A SINGLE-GANG WALL-PLATE UTILIZING 568B WIRING STANDARDS. ALSO SEE A/V EQUIPMENT RACK FOR TERMINATION REQUIREMENTS. ALL CABLE RUNS WILL BE HOME-RUNS, NO SPLICING.

PROJECTOR LOCATIONS:

PROVIDE TWO (2) CAT-6E CABLE RUNS FROM PROJECTOR LOCATION TO MAIN A/V RACK. THE PROJECTOR LOCATION WILL BE TERMINATED WITH RJ-45 CONNECTORS UTILIZING 568B WIRING STANDARDS, LEAVING A 20' SERVICE LOOP ABOVE CEILING. ALSO SEE A/V EQUIPMENT RACK FOR TERMINATION REQUIREMENTS. ALL CABLE RUNS WILL BE HOME-RUN, NO SPLICING.

CORE CLASSROOMS:

PROVIDE ONE (1) SINGLE-GANG, DOUBLE-DEPTH BOX FOR A/V INPUT WALL-PLATE AT STANDARD RECEPTACLE HEIGHT. PROVIDE ONE (1) SINGLE-GANG, DOUBLE-DEPTH BOX LOCATED BEHIND TV. CONNECT BOTH BOXES WITH 1.5" CONDUIT. COORDINATE PLACEMENT WITH A/V CONSULTANT.

GENERAL CLASSROOM:

PROVIDE THREE-GANG, DOUBLE-DEPTH BOX FOR A/V INPUT WALL-PLATE AT STANDARD RECEPTACLE HEIGHT WITH DOUBLE 1.5" CONDUIT FEEDING TO ABOVE CEILING. PROVIDE ONE (1) SINGLE-GANG, DOUBLE-DEPTH BOX AT EACH T.V. LOCATION WITH 1.5" CONDUIT FEEDING TO ABOVE-CEILING. PROVIDE ONE (1) SINGLE-GANG BOX FOR SOURCE/VOLUME CONTROL, SWITCH HEIGHT, 3/4" MINIMUM CONDUIT WITH STUB ABOVE CEILING TILE GRID, LOCATION NEAR ROOM REAR. COORDINATE PLACEMENT WITH A/V CONSULTANT.

WALL-MOUNTED SPEAKERS:

PROVIDE ONE (1) SINGLE-GANG BOX FOR EACH SPEAKER TO MOUNT ON WITH 3/4" MINIMUM CONDUIT FEEDING TO APPROPRIATE CEILING-HEIGHT LOCATION. SPEAKERS WILL BE MOUNTED AT AN APPROXIMATE HEIGHT OF THIRTEEN FEET FROM FINISHED FLOOR LEVEL (13'-0" AFF). COORDINATE PLACEMENT WITH A/V CONSULTANT.

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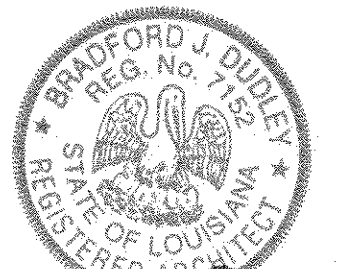
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[Signature] 12-24-2009
SIGNATURE DATE

SUBMISSION	DATE
CONCEPT PLAN	12.01.09
CONSULTANT COORDINATION	12.14.09
PERMIT ISSUE SET	12.30.09

PROJECT NO: 0921

SCALE:

MEP GUIDELINES
AV GUIDELINES

ESTABLISHED BY
ARCHITECTS OF RECORD

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A 003

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