

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, INTERLOCKED TO THE FIRE ALARM SYSTEM AS NECESSARY.
- 2) HVAC DISTRIBUTION SYSTEM: PROVIDE AN EXTERNALLY INSULATED SUPPLY DUCT SYSTEM FOR EACH UNIT, WITH VAV TERMINALS AND REHEAT AS REQUIRED ON THE CLASSROOM SYSTEM. THE CLASSROOM SYSTEM MAY UTILIZE A PLENUM RETURN, WHEREAS THE SALON SYSTEM SHOULD BE A DUCTED RETURN TYPE. THE 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.

o) 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.

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 RECEPTABLES 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 RECEPTABLES 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.

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 THE SALON AREA SHOULD BE UPRIGHT EXPOSED TYPE WHILE THE DISPENSARY AND SMOKE SHOP SHOULD BE UNDER-CEILING GRID APPROPRIATE FOR LOW AND TAMPER SWITCH NOTIFICATION SH ALL BE FED 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 deb

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.

ZONE I DISTRIBUTED SOUND
(Reception, Phase One,
Phase Two, Shampoo Area)

Full-bodied sound and distributed video will be installed in this multi-room area via a combination DVD/VCR/and DMX music receiver (by others). Music will be processed by a 600w 6:1 Surround Receiver/Amplifier and distributed to six (6) Wall-mount two-way dispersion 150W and eight (8) 5" Co-Axial 120 watt ceiling speakers, and two (2) sub woofers, creating and electrifying audio environment. Volume control for each open area is provided by individual controls (Reception, Phase I, II, and Shampoo area controls are located in the equipment rack). Video will be distributed throughout the area to client-provided displays. A separate AV room will be provided to house equipment rack(s) with multimedia source and distribution equipment serving this group (as well as Zone II).

Qty.	Description
1	Middle Atlantic ERK2720 27 space (52" High) Equipment Rack with locking rear door.
1	Middle Atlantic PFD-27 Smkd Plexiglass Locking Front Door
1	Middle Atlantic KO-AWFP2 Ventilation Fan Panel
1	Middle Atlantic U-2 Clamping Rack Shelf
9	Middle Atlantic VTF-1 Vent Panels
1	Furman RR15 Rack Rider Power Distribution w/lights
2	Middle Atlantic RSH Custom Mounts (AVR485 & V5500)
1	Denon AVR1506 7:1 770W Surround Processor/Receiver
1	Samsung DVD-V5500 DVD/CD/MP3/S-VCR Combination
1	Extron DA 12V/6V Dual EQ (60-694-01) Dual 6 or 12 Output Video Distribution Amplifier
Phase I, II, Reception, Shampoo:	
6	TOA H-3 Two-way 140 degree Wall-mnt Speaker (150W)
8	TOA F2352C 5" Co-Axial 120W Ceiling Speaker
2	JBL SB-2 w/ MTC-SB-2W Sub Woofer
1	Crown 602B Sub-Woofer Amplifier
1	Lowell LVC-RMP w/5ea 100W volume controls
ALL Cables, Connectors, Hardware Design, Installation, Calibration, Testing	

ZONE II DISTRIBUTED SOUND
(Designated Areas other than Zone I)

Multimedia equipment serving this group will be included in the system equipment rack(s). Each designated room will have two speakers and an individual volume control for distributed sound. The student lounge/cafeteria volume will be controlled by a volume control mounted in the equipment room.

Qty.	Description
1	TOA A-724 240W 6/2 Input w/EQ Modular Mixer/Amplifier
1	TOA P-924MK2 240W Modular Power Amplifier
2	TOA MB-25B Rack Mount (MB25 & MB35)
Dean's, Financial Aid, Admissions & Instructors / Learning Leaders Offices, Conference , Mannequin Classroom:	
2	TOA F2352C 5" Co-Axial 30/120W Ceiling Speaker
1	Atlas AT100ADW White Decora 100W 70V Volume Control
Student Lounge:	
2	TOA H-3 Two-way 140 degree Wall-mnt Speaker (150W)
ALL Cables, Connectors, Hardware Design, Installation, Calibration, Testing	

TYPICAL CORE CLASSROOM (w/ white board)

A wall-mounted 42" plasma/LCD display (w/ stereo speakers) and a combination DVD/CD/VCR/Tuner provide the display and audio environment in each classroom. School-wide distributed music is fed to four 5" co-axial ceiling speakers with a wall-mounted volume control. Client-provided custom cabinetry will secure the DVD/CD/VCR.

Qty.	Description
1	LG DU-42 PX12XC 42" XGA Plasma Display w/Speakers
1	LG PWM200 Wall Mount for 42" Plasma
1	Samsung DVD-V5500 DVD/CD/MP3/S-VCR Combination
1	Atlas AT100ADW White Decora 100W 70V Volume Control
4	TOA F-2352C 5" co-Axial 30/120W Ceiling Speaker
ALL	Cables, Connectors, Hardware (incl Kramer PN2101C) Design, Installation, Calibration, Testing

TYPICAL GENERAL CLASSROOM
(w/ white board and projector)

This is the school's showroom for presentation technology in the classroom. A ceiling-mounted XGA (2700 Ansi lumen, 700:1, .99" panels minimum) LCD projector will display computer and video images on to a 6' x 8' motorized screen. Six two-way 150w surface-mounted and two ceiling-mounted 200w woofers will be driven by a 600 watt receiver/amplifier surround sound processor. Two UHF wireless feedback-proof headset microphones systems will be provided. Six (6) two-way ceiling speakers with discrete music volume control will provided school-wide distributed music. A lockable equipment rack will house processing equipment. Wall-mounted controls will be installed for the screen, projector operation, source selections and audio level adjustment. Source equipment will include rack-mounted combination DVD/CD/VCR/Tuner, computer and auxiliary video interface with audio. Equipment details below represent MINIMUM requirements. Substitute brands and/or models must be equal or better.

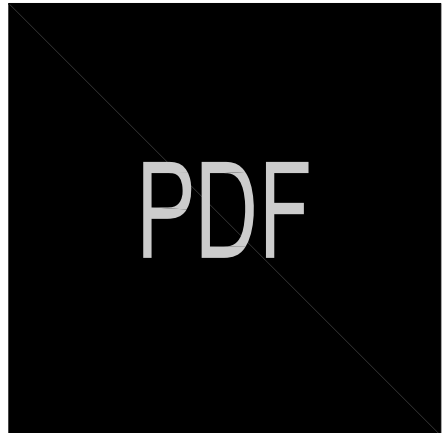
Qty.	Description
1	Eiki LC-XG110 2700 lumen, 700:1, .99" panels XGA Data/Video LCD Projector
1	Eiki 0173-4263 Ceiling Mounted Bracket
1	Chief CMA-100 Adj Col and Plate
1	Da-Lite Advantage Electrol 6' x 8' Motorized Screen #84300L w/ Low Voltage Controller
1	Crestron QM-RMC with Mystique 4-button LV wall switch
1	Denon AVR1506 7:1 770W Surround Processor/Receiver
1	Samsung DVD-V5500 DVD/CD/MP3/S-VCR Combination
1	Crown XLS 202 Dual Channel 200w/ch Woofer Amplifier
6	JBL Control 25 5.25" Two-way 150W Speaker System
2	JBL Control 19CS Ceiling Mt 8" 200w Sub Woofer
6	TOA F-2352C 5" Co-Axial 30/120W Ceiling Speaker
2	Audio Technica ATW-601A/H UHF Wireless Headset Microphone System
1	Peavey "Freq-Out" Feedback Eliminator
1	TOA M-243 2-Mic/4 Stereo Audio Mixer
1	FSR PN-2101S 2x1 S-Video Switcher
1	Middle Atlantic ERK2720 Equipment Rack w/RRF-27
1	Middle Atlantic PFD-27 Smkd Plexiglass Locking Front Door
1	Middle Atlantic U-2 Clamping Rack Shelf
1	Middle Atlantic RSH 4A4R AVR 485S Mount for Denon
1	Middle Atlantic RSH 4A3S V5500 Mount for Samsung
1	RRF27 Rear Rack Rails
1	Middle Atlantic UD-4 7" Locking Drawer
1	Middle Atlantic KO-AWFP2 Rear Door Twin Fan Kit
1	Furman RR15 Rack Rider Power Distribution w/lights
1	Altinex ISC2000-1 Computer Interface w/ Custom Rack Mnt.
1	Altinex ISV3000-1 S & C Video Interface w/Custom Rack Mnt.
1	Middle Atlantic SB2 Blank Panel
1	Atlas AT100ADI Ivory Decora 100W 70V Volume Control
ALL	Cables, Connectors, Hardware (incl Kramer PN2101C) Design, Installation, Calibration, Testing

TYPICAL CLASSROOM (OPTIONAL)
(w/ white board and projector)

A ceiling-mounted XGA LCD projector and wall-mounted Smartboard creat an interactive presentation environment. System connectivity is via a computer/audio/USB serial plate. Equipment, mounted in client-approved cabinets on 19" rails include: a combination DVD/CD/VCR/Tuner, audio mixer, and dual channel amplifier. Two surface-mounted wide angle speakers and wall-mounted volume control provide program sound.

Qty.	Description
1	Eiki LC-XB23 2000 lumen, 400:1, XGA LCD Projector
1	Eiki 0173-4294 Ceiling Mounted Bracket
1	Eiki 0173-4149 Adj Col and Plate
1	Smart Board SB 680 Pro 77" Interactive Whiteboard
1	Extron WPB104 Interface (HD 15 w/Audio and USB serial)
1	Extron VGA M-M 35' Computer Display Interface Cable
1	Extron VGA M-M 12' Computer Interface Cable w/audio
1	Samsung DVD-V5500 DVD/CD/VCR/Tuner Combo
1	USB to USB Cable 10'
1	Behringer MX882 Audio Mixer
1	Crown SLS-202B 145W/ch Dual Channel Amplifier
2	TOA H-3 Two-way Wide Dispersion 150W Speakers
2	Atlas AT100ADI Ivory Decora 100W 70V Volume Control
2	Middle Atlantic RRF 14Rack Rail (Rack by client)
3	Middle Atlantic RH2 Rear Rack Brackets
ALL	Cables, Connectors, Hardware (incl Kramer PN2101C) Design, Installation, Calibration, Testing

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SIGNATURE

DATE

SUBMISSION

DATE

FINAL CONCEPT PLAN

5.14.08

CONSULTANT COORDINATION SET

6.17.08

PERMIT ISSUE

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REVISIONS 01

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RFI 02

09.24.08

CONSTRUCTION SET

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MEP GUIDELINES
AV GUIDELINES

A003

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