

MECHANICAL EQUIPMENT SCHEDULE

ITEM	DESCRPTION	QUANTITY	REMARKS
Mechanical System – Air Side			
Air Handling Unit	Indoor air handling units complete with economizer section, filters, hydronic heating & cooling coils, high efficiency motor, supply fan with variable frequency drive, dampers and controls. (10,000 CFM Each)	4	Two units in Library Area (AHU-1&2). One unit in NE Wing (AHU-3). One Unit in SW Wing (AHU-4).
Air Handling Unit	Indoor air handling units complete with economizer section, filters, hydronic heating & cooling coils, high efficiency motor, supply fan with variable frequency drive, dampers and controls. (6,000 CFM Each)	1	One Unit in SE Wing (AHU-5).
Reheat VAV Box	Titus DESV – Single duct, pressure independent VAV terminal complete with hydronic reheat coil and controls	37	18 boxes serving Library Area air handling units. 8 boxes serving NE Wing air handling unit. 10 boxes serving SW Wing air handling unit. 5 boxes serving SE Wing air handling unit.
Exhaust Fan	Inline exhaust fan for economizer cycle relief (8,000 CFM).	4	Two fans serving Library Area air handling units. One fan serving NE Wing air handling unit. One fan serving SW Wing air handling unit.
Exhaust Fan	Inline exhaust fan for economizer cycle relief (4,800 CFM).	1	One fan serving SE Wing air handling unit.
Exhaust Fan	Inline exhaust fan for toilet areas.	5	
Supply Diffuser	Titus – MCD Modular adjustable ceiling diffuser	Unknown	24x24 Module
Return Grille	Titus – PAR Perforated types ceiling grille	Unknown	24x24 Module
Louvers	Ruskin – ELF375DX	Unknown	24x24 Module

ITEM	DESCRPTION	QUANTITY	REMARKS
Mechanical System – Water Side			
Chiller	Air cooled chiller, 75 Ton nominal capacity.	2	
Pump	Primary chilled water pump, base-mounted end-suction type, 2 HP.	2	
Pump	Secondary chilled water pump, base-mounted end-suction type, variable frequency drive, 7.5 HP.	2	
Chilled water system accessories	Expansion tank, chemical pot feeder, controls, etc.	1	
Mechanical System – Computer Labs			
Split System	5-Ton nominal split DX unit complete with ducted indoor fan coil unit and outdoor condensing unit.	1	Library Computer Lab 117
Split System	5-Ton nominal split DX unit complete with ducted indoor fan coil unit and outdoor condensing unit.	2	Computer Labs 127 & 176

MECHANICAL OUTLINE SPECIFICATION

GENERAL PROVISIONS:

- A. All materials shall be new, full weight, standard in all aspects and in first class condition. To whatever extent possible, materials and equipment of a specific type or specification section shall be of a single manufacture.
- B. Codes and Regulations: Work shall comply with the local authority governing ordinances, Santa Mateo County and applicable Codes of the State of California.
- C. Comply with the Following Codes, Latest Edition:
 - 1. California Building Code.
 - 2. California Mechanical Code.
 - 3. California Plumbing Code.
 - 4. California Fire Code.
 - 5. California Energy Commission.
 - 6. Occupational Safety and Health Administration (OSHA).
 - 7. State Fire Marshal and Local Fire Marshal.
 - 8. Local Building Mechanical and Fire Codes.
 - 9. Division 4: The State Architectural, Structural, and Safety Division.
- D. Pressure Vessels and Relief Valves: Shall be selected, built and installed per the State of California Boiler and Unfired Pressure Vessels Inspection Law.

PIPE AND FITTINGS:

- A. Screwed Cast Iron Fittings (Except Drainage Pattern Type): 125 pounds minimum w.o.g.; per ANSI B16.4.
- B. Butt-Welding Fittings: Steel per ASTM A106; dimensions per ANSI B16.9; pipe schedule numbering and weight designations per ANSI B36.10.
- C. Copper tubing shall be hard-drawn type L, in general, for domestic hot and cold water piping, condensate drainage piping, air vent and relief valve discharge and drain piping, and industrial cold water piping. Type K for Hot Water Heating supply/return piping systems and underground domestic hot and cold water, per ASTM B88.
 - 1. Copper fittings shall be solder pattern; seamless wrought copper alloy per ANSI B16.22 or cast copper alloy per ANSI B16.18.
 - 2. Solder: 96 percent tin - 4 percent silver, except where silver-brazing is required; Allstate No. 430 or Harris "Stay-Bright"; 430 degrees F melting temperature.

- D. Rain water leaders: Leaders – hubless cast iron pipe and fittings above grade and bell & spigot service weight below grade.
- E. Fire Sprinkler Piping: Schedule 40 black steel pipe inside building and cast iron gasketed pipe to 5'-0" outside building.

REFRIGERATION PIPING:

- A. Pipe and Fittings: ACR, Type L Copper tubing and fittings; all joints brazed with solder having a melting temperature 1100-degrees F minimum.
- B. Insulation: Armstrong "Armaflex" closed cell elastomeric pipe insulation; 3/4" nominal thickness; apply on refrigerant flow and suction lines; joints and seams sealed with Armstrong 520 adhesive; outdoor piping insulation sealed with Armstrong Armaflex Finish.

GAS PIPING:

- A. Conform to ANSI B31.8, and Standards and Regulations of the State Utilities commission.
- B. Piping shall be Schedule 40 steel, with malleable iron fittings for inside of building and schedule 40 galvanized with galvanized fitting for outside of building. Teflon tape pipe joint compound shall be used as sealant on all pipe threads. Underground piping shall have extruded polyethylene sheath, as made by Amstead "Plexco"; yellow color, to Federal Specification L-C-530; fittings and couplings sealed using heat-cured sheath shrunk in place, Raychem "Thermofit" sleeves. Valves shall be UL listed and approved for use with natural gas.
- C. Alternate Underground piping: Shall be Chevron Plexco or equivalent, medium density polyethylene resin to ASTM D1248, Type II, Class B, Category 5, Grade P24.

VALVES:

All valves shall be installed at an accessible location. Valves with welded, brazed or solder joints are not acceptable.

- A. 2 inches and Smaller Sizes, Where Threaded Steel Pipe is Specified: Ball valves; Jenkins Figure 900-T, Conbraco "Apollo" Series 70-100, Watts Series B-6000, Milwaukee Model BA-100, Powell Figure 4210T or equal; brass or bronze body; brass, chrome-plated brass or chrome-plated bronze ball; teflon seats and gaskets; blowout-proof brass or bronze stem; 400 psi w.o.g. minimum rating; threaded ends; two-piece body assembly; lever handle with adjustable memory-stop; adjustable threaded stem packing gland or packing nut.
- B. 2 Inches and Smaller Sizes, Where Copper Tubing Is Used: Ball valves; Watts, Conbraco, Nibco, Powell or equal with brass or bronze body; brass, bronze, chrome-plated brass or chrome-plated bronze ball; teflon seats and gaskets; blowout-proof bronze or brass stem; 400 psi w.o.g. minimum rating; screwed ends with pipe nipples and screwed unions; three-piece body assembly; lever handle with adjustable memory stop; adjustable threaded stem packing gland or packing nut.

- C. 2-1/2 Inch and Larger Sizes: Butterfly valves; Keystone Figure 239, Victaulic Series 300 in 2-1/2 inches to 12 inches and Victaulic Series 709 on 14 inches and larger, Center Line Series A, Powell Series 1000, Nibco Series 2000 or equal of Norris mfr. or equal; 175 psi minimum w.p. for all valve sizes provided; ethylene propylene rubber liner, molded with steel or plastic fiber composition reinforcing ring integral to the liner or molded integral with valve body; cast iron or ductile iron body; aluminum bronze disc; 300 or 400 Series stainless steel stem; stem seals suitable for 250 degrees F service; neck length on all valves to be suitable for 1-1/2 inch insulation on piping; stem ends slotted or marked to give positive indication of valve position; tapped lug type valve body with cap screws for dead-end service; valve neck tagged with embossed metal tags to indicate valve figure number, disc and seat materials and pressure rating of valve. Valve operator types as follows.
- D. Globe Valves: ASTM B62 bronze body; 150 psi w.o.g., threaded ends, composition disc; Crane No. 7 or equal by Powell, Nibco-Scott, Jenkins, Milwaukee, Stockham or equal.
- E. Check Valves, General:
 - 1. 1-1/2 Inch and Smaller: Y-pattern body design swing check valve, ASTM B62 bronze body, 125 psi w.o.g., threaded ends, bronze or brass disk. Crane No. 37 or equal of mfr. listed for globe valve.
 - 2. 2 Inch and Larger: Y-pattern body design swing check valve; ASTM B61 bronze body, cap, disc and hinge; ANSI Class 150 pressure-temperature ratings, flanged ends; Crane No. 4033, Victaulic Style 712 or equal of mfr. listed for globe valves.
- F. Check Valves, Non-Slam Type: ASTM A126, Class B cast iron body, ANSI Class 125 pressure-temperature rating, center guided, bronze trim with soft rubber seat suitable for temperatures up to 250 degrees F. Combination Pump Valve Co. No. 10D-R Series or Mueller Steam Specialty Co. No. 101M-AP modified for soft rubber seats.
- G. Gate Valves: For condensate service only. Gate valves shall comply with the following Standards: Cast Iron, MSS Sp-70, bronze MSS Sp-80, Steel ANSI B16.34.
- H. Pipeline strainers shall be Y-type, full-line size of connecting piping, 125 psi working pressure, and type 304 stainless steel screens.
- I. Valves in Ground: Shall be installed in concrete valve boxes, Christy, Brooks, Jensen or equal.
- J. Control valves will be provided by the Controls Contractor.

CHILLED AND HOT WATER PIPING:

- A. Piping and Fittings: Schedule 40 steel pipe with screwed cast iron or beaded malleable iron fittings or Type L copper with cast brass or wrought copper fittings on pipe 3 inch and smaller; Schedule 40 steel pipe with seamless butt-welding pattern fittings on pipe 4 inch and larger. Piping fittings on roof may also be 300 psi malleable iron grooved-end fittings of Victaulic or Grinnell mfr with EPDM gaskets suitable for water temperatures up to 230 degrees F.
- B. Manual Air Vents, Bronze Body, Non Ferrovis internal part.
- C. Check Valves at Pump Discharges: Non-slam check valves. Valves shall be full line size.
- D. Bypass Filters: Pipeline type, bolted cover with quick opening latches, 150 psi w.p.; construction per ASME Standards; Consler Model CPL with Type 5 polyester, 20 micron filter media over Type 304 stainless steel support frame or Dollinger Model LL-142 with Type 169 media; wall bracket or floor mounted. Provide valve and pressure gage on inlet and outlet of filter. Filter flow rate and media area shall be as shown. Provide valved drain and vent and one complete replacement insert for each filter.
- E. Temperature and Pressure Test Station: Peterson Engineering Company, 1/4 inch or 1/2 inch MPT "Pete's Plug" with solid brass fitting cap. Use Nordel valve core for water, and neoprene valve core for air. Use 1/8 inch diameter test probes at all locations as indicated on the drawings and as specified. Furnish two 25-125 degree F and two 50-300 degree F test thermometers with 1-3/4 inch diameter dial and 1/8 inch diameter probe gauge adapters, and two pressure gauges as specified above.
- F. Pressure Regulating Valve Assembly: Shutoff valve, check valve, strainer; Fisher Series 95H regulator, 3/4 inch size, 25-75 psi.

EXPANSION COMPENSATION:

- A. Flexible piping connections including those used for expansion compensation and seismic protection shall be braided metallic style Metraflex or equal.

CLEAN-UP:

- A. Flushing of Piping Systems: Flush water piping with water, before placing in service. Sterilize domestic water piping.
- B. Blowing Out of Natural Gas Piping: Before making final connection, blow out with compressed air.

ANCHOR BOLTS:

- A. Anchorage of tanks, and mechanical equipment and associated piping, and ductwork shall comply with the Latest Uniform Building Code, Latest Uniform Mechanical Code, and all local amendments to these codes.

1. Anchorage of duct seismic bracing shall conform to the California Mechanical Code and shall follow the SMACNA "Guidelines For Seismic Restraints of Mechanical Systems and Plumbing Piping Systems", published by the Sheet Metal and Air Conditioning Contractors National Association, Inc. and the Plumbing and Piping Industry Council of Los Angeles, (PPIC-LA).

VIBRATION CONTROL

- A. Vibration Control: Fiberglass pads and shapes, neoprene pads, vibration isolation springs, pad-type isolators, plate-type isolators, double-plate-type isolators, threaded double-plate-type isolators, all-directional anchors, neoprene mountings, free standing spring isolators, housed spring isolators, vertically-restrained spring isolators, earthquake-resistant spring isolators, seismic snubbers, thrust restraints, equipment rails, fabricated equipment bases, inertia base frames, roof-curb isolators, isolation hangers, riser isolators, flexible pipe connectors suitable for use.

PIPE HANGERS:

- A. In general, use hanger rods with pipe rings; concealed locations under 6 inch diameter piping, use hanger straps with pipe rings.
- B. Bolting:
 1. General: Provide bored, drilled or reamed holes for all bolting to miscellaneous structural metals, frames or for mounts or supports. Flame cut, punched or hand sawn holes will not be accepted.
- C. Anchor Bolts:
 1. General: Install anchor bolts for all mechanical equipment, piping and ductwork as required. Tightly fit and clamp base-supported equipment anchor bolts at all equipment support points. Provide locknuts where equipment, piping, and ductwork is hung.
 2. All equipment attachments and anchorages to the structure shall be calculated and designed by the project's structural engineer.

SEISMIC:

- A. Provide seismic restraints for piping, ducts, mechanical equipment and accessories. Restraints include clamps, rods, channels, struts, anchor bolts, nuts, flexible connectors, offsets as required by the California Code of Regulations. In addition the "Guidelines For Seismic Restraints of Mechanical Systems and Plumbing Piping Systems", latest edition, published by Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) and the Plumbing and Piping Industry Council of Los Angeles (PPIC-LA); and approved by the ORS as approved anchorage No. R-0010 shall apply.
- B. All equipment attachments and anchorages to the structure shall be calculated and designed by the project's structural engineer.

IDENTIFICATION:

- A. Providing color identification banding tape and flow directional arrows on exposed piping provided under the contract, per ANSI A13.1 "Scheme for Identification of Piping Systems".
 - 1. Tape: Self sticking pressure sensitive marker tape, W. H. Brady "Perma-Code", Seton "Opti-Code" or Westline "Tel-A-Pipe" tape or equal. Name of system printed on colored tape, 1-1/8 inch wide for lines up through 3 inches outside diameter (including insulation), 2 inch wide minimum for larger diameter. Tape materials shall be suitable for the environmental conditions and service intended by the installation.
 - 2. Flow Directional Arrows: In general 6 inch minimum length; same background color and main color as the bands.

INSULATION:

- A. The following piping systems shall be insulated:
 - 1. Domestic Hot Water System
 - 2. Chilled Water and Heating Water System
 - 3. Roof drain bowls and horizontal leaders.
 - 4. Refrigerant piping [see refrigerant piping section for details].
- B. Insulation thickness and R-Value shall be comply with California Title-24. Unless specified otherwise, facings, coatings, PVC covers and other accessories shall have a fire hazard rating not to exceed 25 for Flame Spread and 50 for Fuel Contributed and Smoke Developed; ratings determined by UL 723, NFPA 255 or ASTM E-84. UL label or listing, or satisfactory test results from the approved testing laboratory shall be available to indicate that fire hazard ratings for materials do not exceed the above amounts.
 - 1. Pipe insulation shall be Owens-Corning "Heavy Density", Manville "Microlok 650", CertainTeed "Snap-On ASJ", Knauf ASJ Pipe Insulation or equal; 4 pounds per cubic foot minimum density; maximum "K" value at 75 degrees F of 0.23 Btu-inch/hr-sq. ft-degree F.
 - a. Install aluminum metal jackets and fitting covers over insulation jackets for insulated piping located outdoors, in air distribution plenums and in supply air ducts and plenums.
 - 2. Ductwork Insulation:
 - a. Exposed Surfaces:
 - (1) Semi-rigid or rigid glass fiber insulation with factory-applied jacket; Manville Type 814, Owens-Corning Type 703, Knauf "Insulation Board", 3.0 pounds per cubic foot minimum density or equal;

- maximum "K" value at 75 degrees F of 0.23 Btu-inch/hr-sq. ft-degree F; 1-1/2 inch minimum thickness in general, 2 inch minimum thickness for ductwork located exterior to building.
- (2) Insulation, Circular or Oval Ducts 10 Inch Diameter and Above: Provide Owens-Corning "Pipe Wrap Insulation", CertainTeed "Snap-Wrap", Knauf "Flex-Wrap" or equal; maximum "K" value at 75 degrees F of 0.27 Btu-inch/hr-sq. ft-degree F; 1-1/2 inch minimum thickness in general, 2 inch minimum thickness for ductwork located exterior to building; with factory applied all service jacket, white kraft paper and aluminum foil laminate, integral vapor barrier.
 - (3) Jacket: Factory-applied; Johns-Manville Type AP, Owens-Corning Type ASJ, Sisalkraft "Pyrokure" No. 662 or equal.
 - (4) Lined ductwork: See air distribution section C.5
- b. Concealed Surfaces:
- (1) Flexible glass fiber blanket insulation; Manville "Micro-Lite", Owens-Corning "Commercial Grade Duct Wrap", Knauf "Duct Wrap" or equal; 1 pound per cubic foot minimum density; maximum "K" value at 75 degrees F of 0.27 Btu-inch/hr-sq. ft-degree F; 1-1/2 inch minimum installed thickness.

EXHAUST FANS:

- A. Acceptable manufacturers: Loren Cook, Greenheck, Penn Ventilator or equal.
- B. Centrifugal In line Fans: Centrifugal fan with B.I. aluminum wheel and hub dynamically and statically balanced. Unit shall have galvanized steel, straight sided housing, 1" thick fiberglass insulation, removable access panels, V-belt drive with adjustable motor sheave and backdraft damper. Provide flexible connection on inlet and discharge. Fan sone level measured in accordance with AMCA Standards.
- C. Centrifugal Roof/Wall Fans: AMCA certified and UL listed; fan housing shall be constructed of heavy gage aluminum mounted on a rigid support structure. The shroud shall have a rolled bead. The fan wheel shall be of the aluminum backward curved, centrifugal type. Wheels shall be dynamically and statically balanced. Motors and centrifugal wheels shall be mounted on vibration isolators. Motors shall be isolated from the exhaust airstream. A disconnect switch shall be factory installed and wired from the fan motor to the disconnect junction box.

AIR HANDLING UNITS:

- A. Indoor mounted factory assembled and tested central station air handling unit complete with economizer section, filters, hydronic heating & cooling coils, high efficiency motor, supply fan with variable frequency drive, dampers and controls. Unit shall be assembled for horizontal draw-thru application. Unit(s) shall be certified in accordance with ARI Standards 430 for unit and 410 for coils. Unit shall be sound tested per AMCA Standard 300 and data shall be included in submittals.
- B. Chassis: Galvanized steel, with flanged edges. All joints and seams shall be air-tight/water-tight construction.

- C. Insulation: Coated, glass fiber insulation, 1 inch thick minimum and having a minimum density of 3 pcf, complying with ASTM C 1071 and attached with adhesive complying with ASTM C 916. The interior surface of the unit casing shall be lined such that there are no exposed fibers in the air stream.
- D. Drain Pans: Galvanized steel, with connection for drain. Drain pan shall be insulated with polystyrene or polyurethane insulation. Drain pan shall be formed to slope from all directions to drain connection.
- E. Cabinet: Galvanized steel, with removable panels. Side panels shall be fastened to unit with cam fasteners and hinge. Unit access panels shall be configured for side access.
- F. Coils: Seamless copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch and with manual air vent. Coils shall be rated for a minimum working pressure of 300 psig and a maximum entering water temperature of 275 deg F.
- G. Fan: centrifugal, with forward-curved, double-width wheels and fan scrolls made of galvanized steel or thermoplastic material; directly connected to or V-belt driven from motor.
- H. Filters: provide side-access filter housing for replaceable filter media.
- I. Motors for Belt-Drive Units: Open drip-proof with hinged mount and adjustable motor pulley. Motors shall be of high efficiency type.
- J. Wiring Terminations: Match conductor materials and sizes of connecting power circuit. Connect motor to chassis wiring with plug connection. Controls: Shall be self contained and unit mounted in a steel cabinet.

VAV BOXES:

- A. Shut off type variable air volume control unit. Open end, 24 gauge minimum galvanized steel factory furnished casing. Casing interior acoustically and thermally lined with UL listed glass fiber insulation meeting NFPA 90A requirements and the sound requirements of this specification. Seal all exposed insulation edges. Damper to seal 100% shut off. No more than 2% leakage through damper at 0.5" S.P.
- C. Hydronic Heating Coil: One or two rows water copper coil with aluminum fins. Seamless copper tube, expanded into fin collar for permanent bond. Female sweat connections. Provide upstream access door for inspection of heating coil.
- D. Magnetic contactors or mercury contactors, with one contactor per stage of heat.
- E. VAV box shall have an Independent, electronic, pressure independent controller with maximum and minimum settings, factory preset, and field adjustable. Controller, flow sensor, control transformer and damper actuator factory provided. Flow sensor shall

be either hot wire anemometer or multi point flow sensor with transducer. Furnish room thermostat with concealed adjustment for field installation.

- F. Controls shall be provided by the temperature control contractor.

AIR DISTRIBUTION:

- A. The Contractor shall coordinate trim of diffusers and grilles to fit ceiling finish and type in each building area where diffusers and grilles are to be installed.
- B. Registers, Grilles and Diffusers
1. Acceptable manufacturers: Titus, Tuttle Bailey, Penn Ventilator or equal.
 2. Supply and Exhaust Grilles:
 - a. Supply Grilles: Individually adjustable vertical (front) and horizontal (rear) blades; 3/4 inch wide blades, on 3/4 inch spacing; Titus 300 RL or equivalent by Price or Anemostat, 20 gage steel frames and airfoil shaped, solid aluminum extruded blades.
 - b. Exhaust Grilles: 20 gage steel frame and 20 gage steel blades, with fixed horizontal blades turned at a 45 degree angle, spacing at 3/4 inch; Titus 50F or equivalent by Price or Anemostat. Reinforcing bars on 8 inch centers behind blades. Direction of blades: Where located at the base, downward; near the ceiling, upward; in the ceiling, toward the nearest wall.
 3. Ceiling Diffusers:
 - a. Heavy gauge, stamped steel, ceiling diffuser. The diffuser core shall consist of fixed louver directional modules, which can be repositioned in the field without tools for 1, 2, 3, or 4-way throw. Titus MSD or equivalent by Price or Anemostat.
 4. All Registers and Diffusers shall be provided with opposed blade volume damper.
- C. Ductwork:
1. Ductwork Construction Standards: Comply with recommended Duct Construction and Bracing Details per the SMACNA HVAC Duct Construction Standards, latest edition, for 2 inch pressure classification; except that sheetmetal thickness shall not be less than 26 gage.
 - a. Joint Tape For All Ductwork: Hardcast mfr.; Type DT mineral impregnated woven fiber tape with Type FTA-20 adhesive for indoor locations and Type RTA-50 adhesive for outdoor locations; 4 inch minimum width; UL approved. Apply joint tape to all transverse and longitudinal ductwork seams and joints. Outdoor locations shall have 2 coats of adhesive over joint tape.

2. Existing ductwork, coils and other components in the air distribution systems to be reused shall be cleaned.
 3. Flexible Ducts: Thermaflex Type G-KM; listed by UL under UL Standard 181 as Class 1 flexible air duct and complying with NFPA Standards 90A and 90B. Shall have thermal conductance of 0.23 BTU/hr./sq. ft./degree F at 75 degrees F; surface burning characteristics of 25 maximum flame spread and 50 maximum smoke developed; 0.1 per vapor transmission rating; 6 inch w.c. positive operating pressure; and 1 inch w.c. negative operating pressure.
 4. Install Acoustic Lining per "Installation Standards For Rectangular Ducts Using Flexible Liner", SMACNA HVAC Duct Construction Standards, 1985.
- D. Thermostats and temperature sensors shall be provided with locking covers.

FIRE DAMPERS AND SMOKE –FIRE DAMPERS:

- A. Fire damper construction and installation shall comply with requirements of the Uniform Building Code and to NFPA 90A. All fire damper assemblies shall be UL listed and have a UL label for use in a dynamic system.
 1. Smoke-fire damper assemblies shall be UL labeled and shall meet all UL and NFPA requirements for primary fire dampers and shall be UL classified and shall meet NFPA requirements for smoke control dampers.
- B. Manufacturer: Ruskin, American Warming and Ventilating or Pottorff or equal; factory-fabricated.
- C. Type: Metal curtain folding blade, all parts steel; spring-closing, where placed horizontally.

AIR COOLED CHILLER:

- A. General: Factory assembled, single-piece or factory-matched duplex chassis, air-cooled liquid chiller. Contained within the unit cabinet shall be all factory wiring, piping, controls, refrigerant charge (R-410A), and special features required prior to field start-up.
- B. Unit Cabinet: Frame shall be of heavy-gage, painted galvanized steel. Cabinet shall be galvanized steel casing with a baked enamel powder or pre-painted finish. Cabinet shall be capable of withstanding 500-hour salt spray test in accordance with the ASTM (U.S.A.) B-117 standard.
- C. Fans: Condenser fans shall be direct-driven, airfoil cross-section, reinforced polymer construction, shrouded-axial type, and shall be statically and dynamically balanced with inherent corrosion resistance. Air shall be discharged vertically upward. Fans shall be protected by coated steel wire safety guards.
- D. Compressor/Compressor Assembly: Fully hermetic scroll type compressors. Direct drive, 3500 rpm (60 Hz), protected by motor temperature sensors, suction gas cooled

motor. External vibration isolation rubber-in-shear. Each compressor shall be equipped with crankcase heaters to minimize oil dilution.

- E. Cooler: Shell-and-tube type, direct expansion. Tubes shall be internally enhanced seamless copper type rolled into tube sheets. Shell shall be insulated with 3/4-in. (19-mm) PVC foam (closed-cell) with a maximum K factor of 0.28. Design shall incorporate a minimum of 2 independent direct-expansion refrigerant circuits. Cooler shall be tested and stamped in accordance with ASME Code for a refrigerant working side pressure of 445 psig. Cooler shall have a maximum fluid-side pressure of 300 psig.
- F. Condenser: Coil shall be air-cooled with integral subcooler, and shall be constructed of aluminum fins mechanically bonded to seamless copper tubes. Tubes shall be cleaned, dehydrated, and sealed. Assembled condenser coils shall be leak tested and pressure tested at 656 psig.
- G. Refrigeration Components: Refrigerant circuit components shall include filter drier, moisture indicating sight glass, electronic expansion device, discharge service valve and liquid line service valves, and complete operating charge of both refrigerant R-410A and compressor oil.
- H. Operating Characteristics: 1. Unit shall be capable of starting and running at outdoor ambient temperatures from 32 F to 125 F (0° to 52 C). 2. Unit shall be capable of starting up with 95 F entering fluid temperature to the cooler.
- I. Electrical Requirements: Unit/module primary electrical power supply shall enter the unit at a single location. Primary electrical power supply shall be rated to operate up to 125 F ambient temperature. Unit shall operate on 3-phase power at the voltage shown in the equipment schedule. Control points shall be accessed through terminal block. Unit shall be shipped with factory control and power wiring installed. Unit shall be provided with factory installed reduced voltage starters.
- J. Chilled Water Circuit: Chilled water circuit shall be rated for 300 psig. Units with optional pump package are rated for 150 psig working pressure. Proof of flow switch shall be factory installed and wired.
- K. Accessories:
 - 1. Coil Covers and Security Grilles: Unit shall be supplied with field-installed coil covers and PVC-coated grilles to protect the condenser coil and internal chiller components from physical damage.
 - 2. BACnet Translator Control: Unit shall be supplied with field-installed interface between the chiller and a BACnet Local Area Network (LAN, i.e., MS/TP EIA-485).
 - 3. Compressor Suction Service Valve: Standard refrigerant discharge isolation and liquid valves enable service personnel to store the refrigerant charge in the cooler or condenser during servicing. This factory-installed option allows for further isolation of the compressor from the cooler vessel.
 - 4. Suction Line Insulation: Provide tubular closed-cell insulation for suction line.

5. Minimum Load Control: Unit shall be equipped with factory installed, microprocessor-controlled, minimum load control that shall permit unit operation down to a minimum of 15% capacity.
6. Energy Management Control Module: A factory or field-installed module shall provide the following energy management capabilities: 4 to 20 mA signals for leaving fluid temperature reset, cooling set point reset or demand limit control; 2-step demand limit control (from 15% to 100%) activated by a remote contact closure; and discrete input for "Ice Done" indication for ice storage system interface.
7. Motormaster® Head Pressure Control: a. Unit shall be capable of starting and running at outdoor ambient temperatures down to -20 F with the addition of antifreeze in the cooler circuit, wind baffles, and factory-installed solid-state Motormaster control with condenser coil temperature sensor.
8. Chilled water flow switch, factory mounted and wired.
9. Suction and discharge pressure gages.

CHILLED WATER PUMPS:

- A. Base-mounted, centrifugal, flexible-coupled, end-suction, single-stage, bronze-fitted, back-pull-out, radially split case design; rated for 175-psig minimum working pressure and a continuous water temperature of 225 deg F.
- B. Casing: Cast iron, with flanged piping connections, drain plug at low point of volute, threaded gage tappings at inlet and outlet connections, and integral feet or other means on volute to support weight of casing and attached piping. Casing shall allow removal and replacement of impeller without disconnecting piping.
- B. Impeller: ASTM B 584, cast bronze, statically and dynamically balanced, closed, overhung, single suction, keyed to shaft, and secured by locking cap screw.
- C. Wear Rings: Replaceable, bronze casing ring.
- D. Shaft and Sleeve: Stainless steel shaft with bronze sleeve.
- E. Seals: Mechanical, with carbon-steel rotating ring, stainless-steel spring, ceramic seat, and flexible bellows and gasket.
- F. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment; with flange and sleeve section that can be disassembled and removed without removing pump or motor.
- G. Coupling Guard: Steel, removable, and attached to mounting frame.
- H. Mounting Frame: Welded-steel frame and cross members, factory fabricated from ASTM A 36/A 36M channels and angles. Fabricate for mounting pump casing, coupling guard, and motor. Field-drill motor-mounting holes for field-installed motors.

- I. Motor: Secured to mounting frame, with adjustable alignment.

VARIABLE FREQUENCY DRIVES:

- A. Variable frequency drives (VFD) shall be provided for fans as indicated.
- B. Each variable frequency drive shall provide variable speed operation of motors specified for the use with a variable frequency inverter and necessary hardware as required to provide the functions outlined herein.
- C. The variable frequency drive shall be ASEA Brown Boveri (ABB) or approved substitution and shall have either UL or ETL listing.
- D. VFD shall include disconnect. VFD and disconnect shall be installed in a single cabinet and fully factory wired. NEMA 1 for indoors and NEMA 3R for outdoors. Provide ventilation fan for outdoor units or properly ventilate from the AC unit where installed.
- E. The manufacturer shall provide a factory trained field service engineer for start-up coordination with HVAC control.
- F. Warranty: Provide a 2-year on-site parts and labor warranty.
- G. Submittals Required:
 1. Shop Drawings: Manufacturer's literature describing the product. Elementary and terminal-to-terminal wiring diagrams showing connections for standard and optional devices.
 2. Operating, recommended spare parts, and maintenance manuals.
 3. Manufacturer's start-up check list.
- H. Drives shall be capable of continuous operation at a reduced speed of at least 10% of full speed without damage or adverse effects on its components or the motor.
- I. Electrical Characteristics:
 1. Input Power: 480V (+5%, -10%), 3-phase, 60 Hz.
 2. The output shall be 7.6V per Hz and adjustable. Frequency accuracy shall be within +1%.
 3. Ambient temperature: 0-40 C.
 4. Humidity to 90%. (Non-condensing.)
- J. The variable frequency drive shall be suitable for operation of the motors under the conditions specified. The variable frequency drive shall not require modification or readjustment to accommodate any replacement NEMA Design B motor. Refer to drawings for horsepower ratings.

K. The variable frequency drive shall be designed for circuit simplicity, high reliability, and high efficiency. Efficiency shall not be less than 95% at rated output voltage, current, and frequency. The power circuit shall consist of an AC to DC power converter, a DC power filter and a variable voltage input DC to AC power inverter. The inverter shall be a transistor type inverter. SCR drives will not be acceptable.

L. Construction:

1. The variable frequency drive shall be furnished in a free-standing or wall-mounted NEMA 1 enclosure where installed indoors. Those installed outdoors shall be NEMA 3R complete with disconnect switch, filters, and cooling fan.
2. The following operator devices shall be door mounted:
 - a. Power "ON" light.
 - b. Drive "FAULT" light.
 - c. % speed indicator. (Hertz readout is not acceptable.)
 - d. Manual/OFF/Automatic: Three-position selector switch.
 - e. Speed potentiometer for operation in manual mode.

M. Features and Accessories:

1. The drive shall not produce line noise on the input electrical system. Drive shall be provided with RLC filter or line filter chokes as necessary to limit harmonic distortion to 3% or less and a notch depth of 10% or less, per IEEE Standard 519.
2. Linear acceleration and deceleration shall be separately adjustable from 2.5 to 60 seconds. Coordinate setting with Control Contractor.
3. Drive shall have automatic restart after a line voltage loss. The drive shall attempt five (5) automatic restarts after a trip or fault before having to be reset.
4. An anti-regeneration circuit shall be included which matches the deceleration rate of the drive to that of the motor to prevent the high bus voltage shutdown common to high inertia loads such as fans.
5. The drive shall allow for direct interface to the BMS so that all drive functions can be accessed and reset from the BMS.

N. Operation:

1. Adjustable frequency drive shall be designed so that it can be operated in an open circuit mode, disconnected from the motor for start-up adjustments and troubleshooting.
2. Automatic operation shall be from a 4 to 20 mA or 0 to 10 VDC signal.

3. Manual operation shall be by a door-mounted potentiometer and selector switch.

O. Overload Protection:

1. Drive shall include an instantaneous over-current trip and shall be capable of 110% current for one minute.
2. Current limit protection shall be adjustable from 50% to 110%.
3. Phase unbalance and output motor overload protection shall be provided. The drive shall not be phase sequence sensitive.

P. Reliability Features: The drive shall incorporate the following reliability features:

1. Pretested components with power components to be 100% tested under dynamic conditions.
2. Assembled printed circuit boards shall be computer tested and adjusted.
3. Assembled printed circuit boards shall be temperature cycled for a minimum of 40 hours.

Q. Maintainability Features:

1. All components shall be easily accessible from the front of the drive enclosure.
2. Modular construction.
3. Printer circuit boards shall be plug connected.
4. Low voltage logic and 115V control circuits shall be electrically isolated from the power circuits.
5. All control adjustments on the variable frequency drive shall be made without the necessity of an extender board from a plug-in, front adjustable printed circuit board which shall allow replacement of any logic board so system integrity is maintained.
6. Drive status indicators shall be integral to each drive, providing indication of:
 - a. External fault.
 - b. Low AC line voltage.
 - c. High AC line voltage.
 - d. Overload.
 - e. Phase loss.

f. Overcurrent or short circuit.

R. Provide in the drive start/stop control circuit terminal connections to insert a dry contact from HVAC control to initiate the start/stop on automatic mode.

S. Identification:

1. Provide screwed-on (no adhesive) engraved, bakelite nameplate identification on outside of each unit showing equipment served in minimum 1/4" high letters.
2. Provide OSHA code clearance label field-applied.

ENERGY MANAGEMENT SYSTEM (DIRECT DIGITAL CONTROL):

- A. Furnish a totally native BACnet-based system, based on a distributed control system in accordance with this specification. The operator's, all building controllers, application controllers, and all input/output devices shall communicate using the protocols and network standards as defined by ANSI/ASHRAE Standard 135–2001, BACnet. In other words, all workstations and controllers, including unitary controllers, shall be native BACnet devices. No gateways shall be used for communication to controllers installed under this section. Gateways may be used for communication to existing systems or to systems installed under other sections. LonWorks devices or LonTalk networks are not allowed.
- B. Provide all necessary BACnet-compliant hardware and software to meet the system's functional specifications. All controller devices except the BACnet operator workstation must be BTL tested and listed by an official BACnet Testing Laboratory and have the BTL mark issued. The BACnet Testing Laboratories (BTL), which is part of the BACnet Manufacturers Association (BMA), offers a product testing and listing program for products that have BACnet capability. The BTL's authorized test laboratories will test the BACnet functionality of a product to a set of requirements developed by the BTL that are based on ASHRAE Standard 135.1P. Products that meet all the BTL's requirements are eligible to receive a BTL listing.
- C. Prepare individual hardware layouts, interconnection drawings, and software configuration from project design data. Drawings must include a communications riser diagram.
- D. Implement the detailed design for all analog and binary objects, system databases, graphic displays, logs, and management reports based on control descriptions, logic drawings, configuration data, and bid documents.
- E. Design, provide, and install all equipment cabinets, panels, data communication network cables needed, and all associated hardware.
- F. Provide and install all interconnecting cables between supplied cabinets, application controllers, and input/output devices.
- G. Provide complete manufacturer's specifications for all items that are supplied. Include vendor name of every item supplied.
- H. Provide new sensors, and install only new electronic actuators on dampers and valves. No used components shall be used as any part or piece of installed system unless otherwise noted in specification drawings.
- I. Building controllers shall include complete energy management software, including scheduling building control strategies with optimum start and logging routines. All energy management software and firmware shall be resident in field hardware and shall not be dependent on the operator's terminal. Operator's terminal software is to be used for access to field-based energy management functions only. Provide zone-by-zone direct digital logic control of space temperature, scheduling, runtime accumulation, equipment alarm reporting, and override timers for after-hours usage.

TESTING:

- A. Hydrostatic Tests: Perform hydrostatic tests required by Codes and Ordinances. Test pressures, per the Codes and Ordinances or 150 percent of system working pressure. Give sufficient notice to the Architect to permit witnessing of tests.

TESTING AND BALANCING:

- A. All hydronic and air balancing shall be done by a testing and balancing organization certified by the Associated Air Balance Council (AABC) or certification by the National Environmental Balancing Bureau (NEBB),

ELECTRICAL SYSTEMS DESCRIPTION

Service:

The electrical service for the Library Building 6 is derived from pad mounted 750KVA transformer that is fed from the campus power distribution system. This existing service also supply the Health Occupation Center, the TV Studio, the Child Development Center and the Interim Relocatable Classroom.

The existing main switchboard (1600A MCB, 3PH, 4W, 208/120 V) is fed from the pad mounted transformer and distribute to panelboards for lighting, receptacles, HVAC loads and other miscellaneous loads. The existing 1600A main circuit breaker shall be replaced with 2000A. The incoming service feed shall be sized for 2000A capacity. The existing main switchboard is located in the east side main electrical room of the Library.

All existing panelboards shall be replaced. New panelboards will be located inside the electrical room and other strategic areas to be close to the loads that they serve.

Telecommunication service conduit is existing and shall be reuse.

Power:

In the Offices, Study Room & smaller rooms, provide two duplex receptacles
In utility rooms, storage rooms, restroom and other support area, provide duplex receptacles for maintenance use.
In kitchenette, provide (6) dedicated duplex receptacles.

In Open areas, provide receptacle in perimeter wall every 12'.
In counter top, provide receptacle every 4'.

In Computer Lab, provide (1) duplex receptacle and (1) data outlet per workstations.

In Lab Area, CMAP, DRC, TRIO, & EOPS, provide 2 channel wiremold along the entire perimeter wall for power and communication.

In Boardroom & Classroom, provide power & data connection for the audio/visual equipment (projector, tv, etc.)

All receptacles shall be located strategically.
Provide code required ground fault protection of receptacles. All conductors shall be copper. Voltage drop shall not exceed 3%. Provide separate neutral conductor with each phase wire for the computer circuits.

Lighting:

All existing light fixtures will be replaced. The new lighting fixtures will be of energy efficient type of a fluorescent or HID source. All lighting fixtures shall be controlled with automatic shut-off per Title 24 requirement.

New wall-mounted exterior lights shall be provided and shall be control by a lighting control panel with astronomical features.

All new interior lights fixtures will be controlled by occupancy sensors and/or through a stand-alone controller with low voltage relay system timer and local line voltage control for multi-level illumination.

Fluorescent direct/indirect lighting fixtures with T5 lamps will be utilized in the Board room. Specialty pendant fixtures shall be provided in the Library main lobby. Recessed mounted fluorescent fixture with parabolic lens will be used in all Office areas, Labs and small individual rooms. Flush mounted fluorescent fixture with prismatic lens will be used in all support areas. Provide fluorescent wraparound fixtures in Restrooms. Fluorescent strip lights with wire guard or wraparound fixtures will be used in Stack area and utility areas. Wall and post mounted metal halide fixtures will be use for exterior lighting.

Provide emergency egress lighting and exit signs with emergency battery pack and exiting pathways per code requirement in all area.

HVAC & Plumbing Requirements:

Provide branch circuit breaker, branch feeder and disconnect switches for the HVAC & Plumbing equipment.

See Mechanical Equipment Schedule & Systems Description.

See Plumbing Equipment Schedule & Systems Description.

Fire Alarm:

The fire alarm system will be combination manual and automatic operated addressable system. The fire alarm control panel will have the capacity to support the entire building initiation and signaling circuits. The system will be provided with battery back-up. All installation shall comply with State and local code and DSA requirement. The fire alarms system shall report to the school's central monitoring system.

Fire alarm system manufacturer shall be Silent Knight per district standards.

Clocks:

The clock system will consist of the Central Control Unit, master clock and all other necessary auxiliary components to provide one (1) clock per classroom, Lab/Training room and Meeting room and at a centrally located area in the corridor.

Provide (7) clocks in the Library; (2) in Library Lobby.

Provide each clock with cabling back to main control panel located in the electrical room.

Security:

The security system will be provided by the College District. The electrical contractor will provide the raceway system infrastructure and power circuits to assist the security contractor's installation.

Telecommunication:

Provide a high bandwidth flexible Structured Cabling System consisting of fiber optic for data and coaxial cables for CATV.

Multiple strand multimode fiber optic cables will be provided from the IDF (Intermediate Distribution Frame) to each location in the building. Duplex data jack with RJ45 jacks and two (2) Cat 6 cables will be provided from each outlet to the MDF to support the quantity of computer requirement in each area.

The CATV will consist of RG-11U distribution cable from the IDF to each location. The TV outlet will be provided with "F" crimp style connector and RG-6U quad-shield cable back to the MDF location.

All data and electronics equipment will be provided by the College district.

110 termination block with 4 pair and 5 pair connecting blocks, transparent label holders, and patch panels shall be provided for cable termination.

A 12" cable tray for the server room to include all bends, turns and mounting hardware will be provided in the IDF location for cable management. J-hooks will be provided above T-bar accessible ceiling space.

Labeling will be provided to all patch panels, punch down blocks, jacks, station outlets, and user operable devices. All of the above will be clearly, logically, and permanently marked during installation. Labels must be printed black on clear background.

Electrical Equipment Schedule

Item	Qty	Description
SWITCHBOARDS & PANELBOARDS		
Main Switchboard	1	2000A MCB, 208Y/120V, 3PH, 4W
(Existing) Panel 2LA	1	100A MLO, 3PH, 4W, 208/120V
(Existing) Panel 2PA	1	225A MLO, 3PH, 4W, 208/120V
(Existing) MCCA	1	225A MLO, 3PH, 3W, 208/120V
(Relocated) Panel 2PC	1	150A MCB, 3PH, 4W, 208/120V
(Relocated) Panel 2PD	1	150A MCB, 3PH, 4W, 208/120V
Panel 2PE (2-42 ckt)	1	400A MCB, 3PH, 4W, 208/120V
Panel 2PF (42 ckt)	1	225A MCB, 3PH, 4W, 208/120V
Panel 2PG (30 ckt)	1	400A MLO, 3PH, 4W, 208/120V
LIGHTING FIXTURES		
Linear Fluorescent Direct/Indirect, dimming	6	8' - 2L cross-section
Fluorescent Downcan, dimming	10	6" - (2)CF18
Specialty Pendant	9	Library Lobby
Fluorescent 2x4 Recessed Parabolic	370	3-F32T8
Fluorescent 2x4 Recessed Prismatic	20	3-F32T8
Fluorescent Striplights	45	8' - 2L cross-section
Fluorescent Wrap-around	20	4' - 2L cross-section
HID Exterior Lighting	1 lot	Building perimeter & courtyard
DEVICES		
Switches, Occupancy Sensors, etc	1 lot	
Receptacles, Wiremold, etc.	1 lot	
Safety switches, Starters, etc.	1 lot	HVAC & Plumbing Equipment
Lighting Control Panel & Time clock	1 lot	
OTHERS		
Fire Alarm System	1 lot	
Public Address System	1 lot	
Clock System	1 lot	
Data/Telecommunication System	1 lot	
Means of Egress	1 lot	Emergency Lighting & Exit light
HVAC electrical requirement	1 lot	See HVAC equipment
Plumbing electrical requirement	1 lot	See Plumbing equipment

ELECTRICAL OUTLINE SPECIFICATION

GENERAL:

1. Applicable Codes, Guidelines, Standards and Regulation

The latest edition of approved year of the following codes or combination codes and guidelines will govern the Electrical Systems and associated support system design. The systems will be designed to meet or exceed these standards.

ADA	Americans with Disabilities Act Accessibility Guidelines
ANSI	American National Standards Institute, Inc
CAL/OSHA	California Occupational Safety Hazard Authority
CCR	Title24 California Code of Regulations Energy Commission
IEEE	Institute of Electrical and Electronics Engineers
NEC	National Electrical Code with California Amendments
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
DSA	Division of the State Architect
SFM	California State and Local Fire Marshal
UBC	Uniform Building Code with Amendments
UL	Underwriters' Laboratories, Inc.

All other local and state codes will be adhered to where applicable and available.

POWER SYSTEMS:

1. Normal power will be available from 208 volt, 3 phase, 4 wire secondary side of the pad mounted transformer.
 - a. Distribution voltages: 208Y/120 volt, 3 phase, 4 wire
2. Standby/Emergency power will not be required.

DISTRIBUTION EQUIPMENT:

1. Main Switchboard

Main switchboard will consist of main circuit breaker and group of distribution circuit breakers with time current shaping features and ground fault relays, copper bus, metering and full-length ground bus.

2. Distribution Panelboards

Distribution panelboards will be dead front, totally enclosed. Copper bussing will be provided for all distribution panelboards. Circuit breakers will be group mounted front accessible bolt-on thermal-magnetic molded case type with adjustable magnetic trip settings.

3. Lighting and Receptacle Panelboards

All Lighting and Receptacle panelboards will have 42 poles per section, except where shown to be less. Minimum interrupting capacity will be 10,000 AIC for 120/208 volts. Copper bussing will be provided in all panelboards. Main circuit breaker will be provided in panelboards. Circuit breakers will be molded case quick-make, quick-break, with thermal magnetic trip, bolt-on type. Panels will be provided with transient voltage surge suppression (TVSS) to protect electronic equipment from surge damage.

LIGHTING:

1. Lighting Fixtures

- a. Prismatic lens or troffers with 18 cell parabolic louvers fluorescent fixtures.
- b. EXIT signs will be State Fire Marshal approved LED type, located in all paths of egress.
- c. Direct/Indirect fluorescent fixtures with T5 lamps
- d. Striplights and wraparound with T8 lamps.
- e. Exterior lighting: HID
- f. Emergency Lights with rechargeable battery

2. Lamps and Ballasts

- a. For direct/ indirect light fixture - linear fluorescent shall be F54, T-5, bi-pin, rapid start, energy saving type, 35K color temperature, CRI 75.
- b. For recessed troffer light fixture - fluorescent shall be F32, T-8, bi-pin, rapid start, energy saving type, 35K color temperature, CRI 75.
- c. Electronic Ballasts shall be Class "P" rating, sound rating "A", high power factor and 10% or less total harmonic current generation.
- d. Exit lights shall be LED source with self-contained battery pack.

3. Lighting Control

All lighting will be controlled to meet or exceed the requirements of California Title 24.

a. Occupancy Sensors: Wall or Ceiling Mounted

Occupancy sensors will be of the passive infrared or combination infrared/ultrasonic type.

b. Dimmers

Dimmers will be provided in Boardroom. All corridor lighting, except life safety branch lighting, will be controlled by the lighting control panel or time clock.

c. Low Voltage Lighting Control

A programmable low voltage control system will be provided. It will consist of low voltage switching and relays and will control all lighting excluding interstitial, mechanical and janitorial spaces. The system will be software based and will provide flexible control of automatic and manual on/off, recording, and reporting functions.

RACEWAY:

1. Conduits

Conduits subjected to physical damage shall be rigid steel conduit, hot dip galvanized.

Other exposed conduits shall be zinc-coated type EMT. Underground conduit shall be PVC sch 40 or RSC.

2. Fittings

Fittings shall be water-tight compression type die cast for EMT.

3. Surface non-metallic raceway: PVC with divider forming two compartments for power and telecommunications.

4. Cable Tray

Cable trays shall be 12" wide, 9" rung space aluminum alloy ladder type with a minimum allowable working load of 40 pounds per foot on support spans of five (5) feet.

WIRES AND CABLES:

1. Conductors

Conductors shall be soft drawn copper, 98% conductivity. Minimum size wires shall be No. 12 AWG.

2. Insulation

Insulation shall be XHHW, THHN or THWN.

DEVICES AND SWITCHES:

1. Motor Starters

Motor starters shall be combination disconnect and magnetic motor starter: Heavy duty, quick make, quick break with fuse and magnetic full voltage non-reversing motor starter with one overload relay per phase, 120V operating coil, integral pilot light, two (2) sets of normally open and normally closed auxiliary contacts.

2. Disconnect Switches

Disconnect Switch shall be heavy duty with quick-make, quick-break contacts and operating handle capable of being padlocked in the OFF position.

Motor Rated Switch: Toggle switch with integral thermal overload element.

3. Receptacles

Receptacles shall be heavy duty, two-pole, three-wire, grounding type consisting of grounding screws, side and back wires. 20A, 125 VAC, 60 Hertz.

4. Toggle Switches

Toggle switches shall be quiet-type white toggle switches with rocker assembly, frame and mounting strap. 20A, 120/277 VAC, 60 Hertz.

5. Occupancy Sensors: Sensor Switch, Wall Stopper, Novitas

Dual Technology: (wall or ceiling mounted) Line voltage Passive infrared and sound technology with automatic gain control for background noise adjustment and time delay setting for typical room and open area.

FIRE ALARM SYSTEM:

Fire alarm system shall be combination manual and automatic detection addressable system with digital alarm communicator transmitter.

PUBLIC ADDRESS AND CLOCK SYSTEM:

Public address and clock system shall be integrated system with programmable time clock and scheduling.

SECURITY SYSTEM:

Security system consists of conduit system for motion sensor detection with card access control.

TELECOMMUNICATION:

1. Distribution Cables: Telephone: CAT 6, 50 pr
Data: 12 strand fiber optic cable
CATV: RG11
2. Station Cables: Telephone: CAT 6, 4 pr
Data: CAT 6, 4pr
CATV: RG6
3. Outlets: Telephone: RJ14
Data: RJ45
CATV: Type F

PLUMBING SYSTEMS DESCRIPTION

Toilet Rooms

Plumbing fixtures in existing toilet and janitor rooms will be replaced with new toilet fixtures, ADA compliant where required. Where new toilet and janitor room are added, install fixtures as follows:

1. Floor-mounted water closets:
 - a). Water closets, 1.6 gallon flush valve and an open front less cover seat will be installed.
2. Lavatories:
 - a) Wall-mounted with 4" centers faucet hole to accommodate hot and cold domestic water connections with a dual adjustable metering faucet trim set.
3. Urinals:
 - a). Wall mounted, 1.0 gallon flush valve.
4. Floor drains and hose bibs to be provided in the toilet rooms.

Piping System:

1. New domestic water piping shall be provided to all plumbing fixtures.
2. Existing underground sanitary piping will be re-routed as required to accommodate new toilets.
3. Domestic hot water system is to be provided with circulation pump to maintain the required temperature of the system.
4. Shut-off valves will be provided to each branch of water supply to each toilet room for isolation.

Electric Water Heaters:

1. New electric water heaters shall be provided for existing and new toilet areas.

PLUMBING FIXTURE SCHEDULE

ITEM	DESCRIPTION	QUANTITY	REMARKS
Water Closet (accessible)	American Standard 3043.102 cadet 17" rim height with direct-fed siphon jet action elongated bowl, vitreous China floor mounted flushes on 1.5 gallons; olsonite #95ss solid plastic with open front less cover; Sloan Royal III YB flush valve.	10	
Water Closet	American Standard 2257.103 Afwall Aquameter Vitreous China toilet, elongated, wall mounted, 1.6gal. flush; olsonite #95ss solid plastic with open front less cover; zurn a-1203 & z-1204 series Carrier System; sloan royal III flush valve.	4	
Urinal	American Standard 6541.132 Allbrook Vitreous China water saver (1.0gal. flush) siphon jet urinal; sloan royal 186-1 flush valve.	2	
Lavatory (accessible)	American Standard 0355.012 Lucerne Vitreous China lavatory wall mounted with concealed arms; Chicago #802 lever handles faucet with metal grid strainer, 17 GA "P" trap chrome plate, tubing to wall with escutcheon, speedway CR1912A stops and supplies; Zurn Z-1231 Carrier. insulate exposed hot water pipe & p-trap with "scal-gard".	12	
Service sink	Commercial Enamel 866 W/870-2, enameled cast iron service sink with wall hanger; 8341.075 service sink faucet with vacuum breaker; 47077-07 rim guard and trap with strainer.	1	
Drinking Fountain (accessible)	Haws Model 1119 "hi-lo" barrier-free wall mounted 18 ga, type 304 stainless steel, vandal-resistant bottom plate, push button activation; mounting plate 6700.4	1	
Floor Drain	Zurn zn-415p 5"dia. type "b" polished nickel bronze top, Dura-coated cast iron body with bottom outlet, trap primer connection	unknown	
Hose Bibb	Acorn Model 8121 with vacuum breaker and vandal proof lockshield with square top loose key handle, chrome finish.	8	
Water Heater	Electric, 30 gallons storage capacity, 3kW, 208-3-60 power supply.	3	
Water Heater	Electric, 50 gallons storage capacity, 6kW, 208-3-60 power supply.	1	

PLUMBING OUTLINE SPECIFICATION

GENERAL PROVISIONS:

- A. All materials shall be new, full weight, standard in all aspects and in first class condition. To whatever extent possible, materials and equipment of a specific type or specification section shall be of a single manufacturer.
- B. Codes and Regulations: Work shall comply with the local authority governing ordinances, county and applicable Codes of the State of California.
- C. Comply with the Following Codes, Latest Edition:
 - 1. California Building Code.
 - 2. California Mechanical Code.
 - 3. California Plumbing Code.
 - 4. California Fire Code.
 - 5. California Energy Commission.
 - 6. Occupational Safety and Health Administration (OSHA).
 - 7. State Fire Marshal and Local Fire Marshal.
 - 8. Local Building Mechanical and Fire Codes.
 - 9. Division 4: The State Architectural, Structural, and Safety Division.
- D. Pressure Vessels and Relief Valves: Shall be selected, built and installed per the State of California Boiler and Unfired Pressure Vessels Inspection Law.

PLUMBING PIPING:

- A. Conform to the Latest Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials, as amended by the local ordinances
- B. Domestic Water Piping:
 - 1. Below Ground Pipe And Fittings: Type K hard-drawn copper tubing; solder pattern seamless wrought copper alloy or cast copper alloy fittings.
 - a. Protective Coating For Underground Copper Pipe: Extrude polyethylene sheath, as made by Amstead "Plexco"; yellow color, to Federal Specification L-C-530; all fittings and joints sealed using heat-cured sheath shrunk in place, Raychem "Thermofit" sleeves.
 - 2. Above Ground Pipe And Fittings: Type L hard-drawn copper tubing; solder pattern seamless wrought copper alloy or cast copper alloy fittings.

C. Sanitary Piping:

1. Cast Iron Soil Pipe and Fittings: Hubless Pattern: Service weight, first quality, smooth inside and out, of standard dimension to CISPI Standard 301. Fittings, same quality as the pipe, made for drainage purposes. Tyler, AB&I, Anaheim Foundry or Universal Mfg. Co.
 - a. Couplings For Hubless Pipe and Fittings: Clamp-All mfr.; 0.024 inch thick, Type 304 stainless steel housing; Type 304 stainless steel clamps; neoprene rubber sleeve gasket.
2. Copper Tubing and Fittings: Type DWV copper tubing, nominal copper water tube sizes; Anaconda, Kennecott Chase, Mueller Brass Co., or Bridgeport mfr.
 - a. DWV pattern fittings, solder pattern, seamless wrought copper or cast bronze; mfr. same as tubing or Nibco, Imperial, or Acheson.

PLUMBING FIXTURES:

A. Sinks, Washrooms

1. Lavatory, staff: Vitreous china, wall hung lavatory with back and concealed arms, less soap depression; faucet shall be single handle faucet, lever type metal handle; control mechanism shall be of the rotating stainless steel ball type with replaceable non-metallic seats operating in stainless steel lined sockets; all exposed metal surfaces shall be chrome plated.
2. Lavatory, student: Vitreous china, wall hung lavatory with back and concealed arms, less soap depression; faucet shall be slow -closing metering type, all exposed metal surfaces shall be chrome plated.

- B. Mop Service Basin, Above-floor corner receptor; Mixing faucet 4 feet above floor, American Standard No. 8344.111 or Kohler No. K-8904; with 4-bar pattern handles or level handles, integral stops and vacuum breaker, spout with hose end outlet and 3 foot rubber hose and wall hook for hose.

C. Water Closets, Urinals and Flush Valves:

1. Closets, Floor Mounted: Vitreous china, elongated, siphon jet; top inlet, low consumption 1.6 gallons per flush: American Standard or Kohler.
 - a. Closet Seats: White, open front, elongated without cover; with self-sustaining and check feature.
2. Urinals: Wall-hung, siphon jet; vitreous china; low consumption, American Standard or Kohler.
3. Flush Valves: Exposed pattern, diaphragm type, quiet-operating screwdriver stop. Sloan "Royal.

- D. Drinking Fountain, Wall mounted: Stainless steel finish, lead free, barrier free, Hi-Lo dual height.
- E. Floor Drains: Floor mounted, for poured finished floors, nickel bronze adjustable strainer head, cast iron body.
- F. Wall Hydrants (Hose Bibbs): Wall mounted, chrome plated with vacuum breaker.

10.1 Federal Funds Detail

Per Title 5, Section 57015(b) of the California Code of Regulations, and evaluation of the Federal funds available have been made for this project.

The following funds per Title 5 will be used to reduce the total cost of this project.

1	Name of Project (Federal Application)	<u>Gavilan College</u>
		<u>Library/Media Remodel</u>
2	Date of Application	<u>N/A</u>
3	Source of Funds	<u>N/A</u>
4	Amount of Funds Available and Applied for	<u>N/A</u>
5	Date of Approval	<u>N/A</u>
6	Amount Approved	<u>N/A</u>

No Federal Funds are available for this project.

In the event additional funds are secured from the Federal government, we will notify the Chancellor's Office and reduce the amount of the project by any additional funds secured.

11.1 ANALYSIS OF FUTURE COSTS

Provide an economic analysis of additional instructional, administrative, and maintenance cost resulting from the proposed project, including personnel years. Disclose all new courses or programs to be housed in the project that may need Chancellor's Office review.

Personnel Costs

Certificated: Since the project is only modernizing the building and there will not be any increase in instructional space, there will be no increase in costs for certificated personnel.

Classified: Since the project is only modernizing the building and there will not be any increase in support space, there will be no increase in costs for classified personnel.

Depreciation, Maintenance, and Operation:

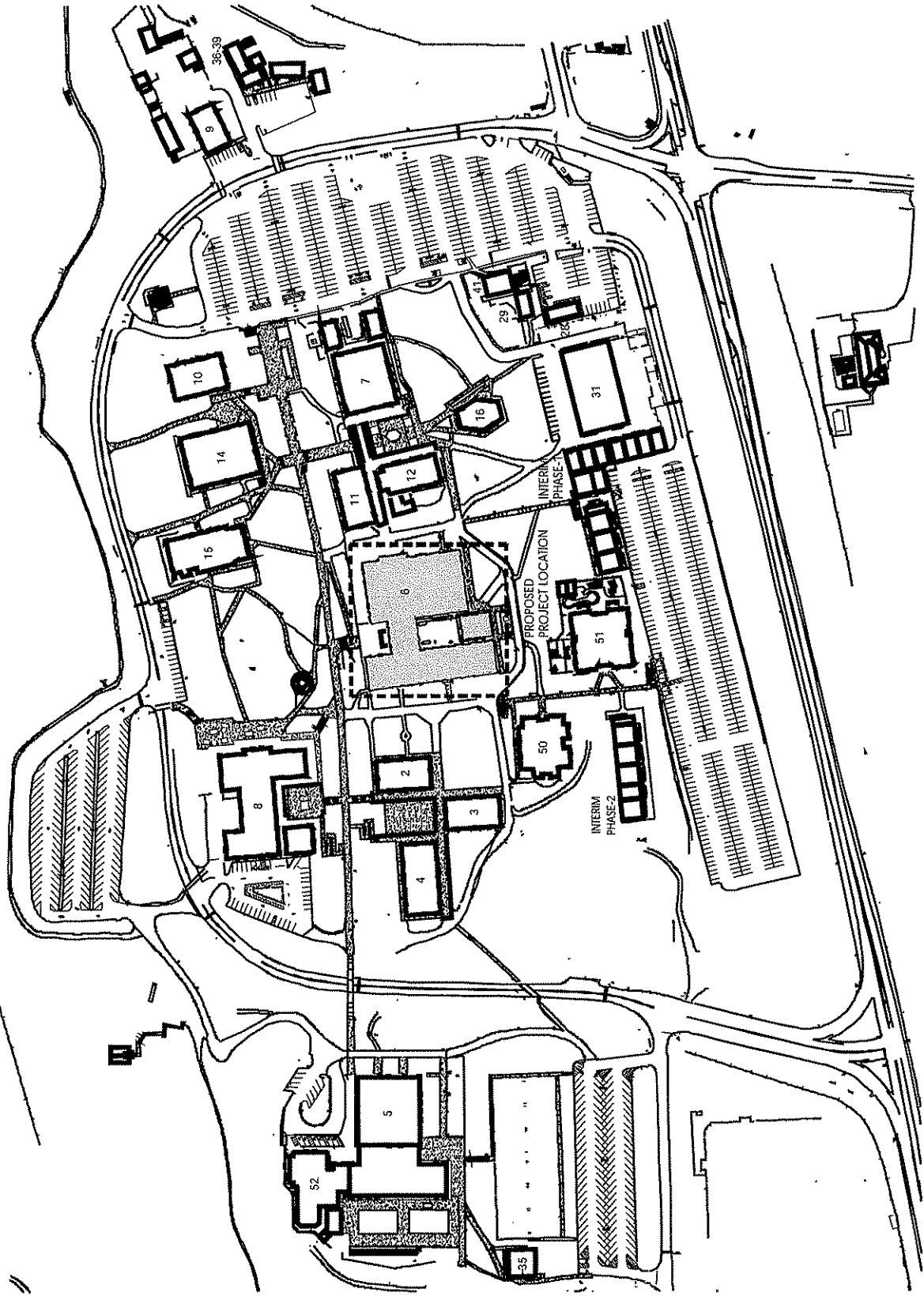
No additional Maintenance and Operations resources will be required since the outside gross square footage of the building will not change. If anything, there will be a decrease in utility costs since the facility will be constructed with modern day energy efficiencies.

Program/Course/Service Approvals: List all new programs/courses/services to be housed in this project or its secondary effects and give the date of approval. If there are not new programs/courses/services for which approval is required, please so state. This is not required for equipment-only projects.

Name of New Program/Course/Service

Date of Approval

No new programs

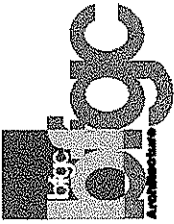


LEGEND

- EXISTING WALKWAYS
- EXISTING BUILDING TO BE MODERNIZED
- EXISTING BUILDINGS

BUILDINGS LIST

- 2 PHYSICAL SCIENCE
- 3 CHEMISTRY
- 4 LIFE SCIENCE
- 5 GYMNASIUM
- 6 LIBRARY
- 7 THEATER
- 8 STUDENT UNION
- 9 MAINTENANCE
- 10 COSMETOLOGY
- 11 HUMANITIES
- 12 ART
- 14 BUSINESS
- 15 SOCIAL SCIENCE
- 16 ART LECTURE
- 28 ADMIN SERV/HUMAN RESOURCE
- 29 HR CONFERENCE CENTER
- 31 OCCUPATIONAL BUILDING
- 35 COMMUNITY EDUCATION
- 36-39 CRIMINAL JUSTICE MODULES
- 41 BUSINESS OFFICE BUILDING
- 50 HEALTH OCCUPATIONS
- 51 CHILD DEVELOPMENT
- 52 ADAPTIVE P.E. & ACTIVITY CENTER
- INTERIM HOUSING PORTABLES PHASE
- INTERIM HOUSING PORTABLES PHASE






Library Complex Modernization

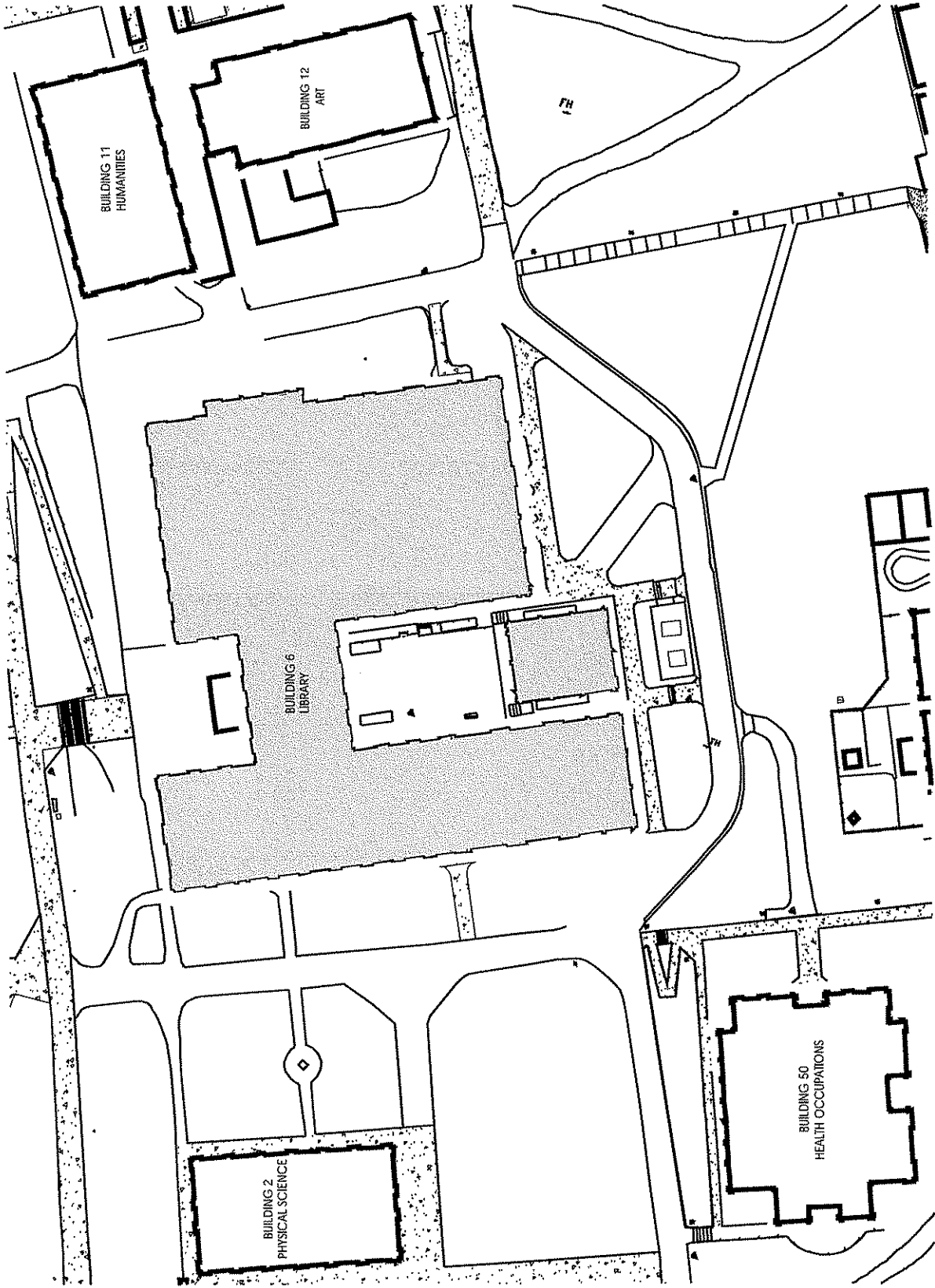
Final Project Proposal—June 1, 2007

Campus Site Plan

Gavilan College - Gavilan Joint Community College District - 5055 Santa Teresa Blvd., Gilroy, CA 95020

LEGEND

-  EXISTING WALKWAYS
-  EXISTING BUILDING TO BE MODERNIZED
-  EXISTING BUILDINGS

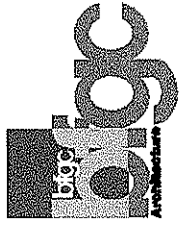


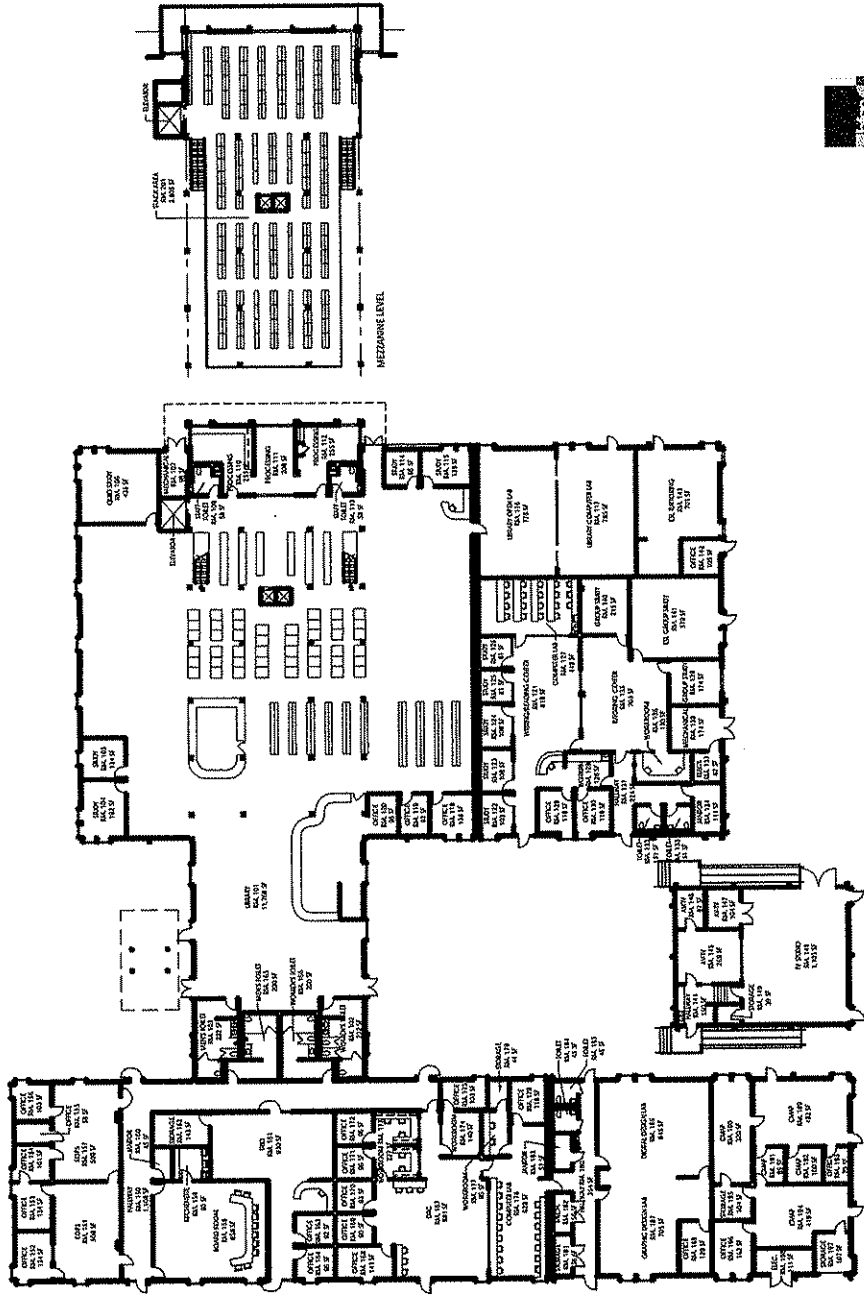
Library Complex Modernization

Final Project Proposal—June 1, 2007

Campus Plot Plan

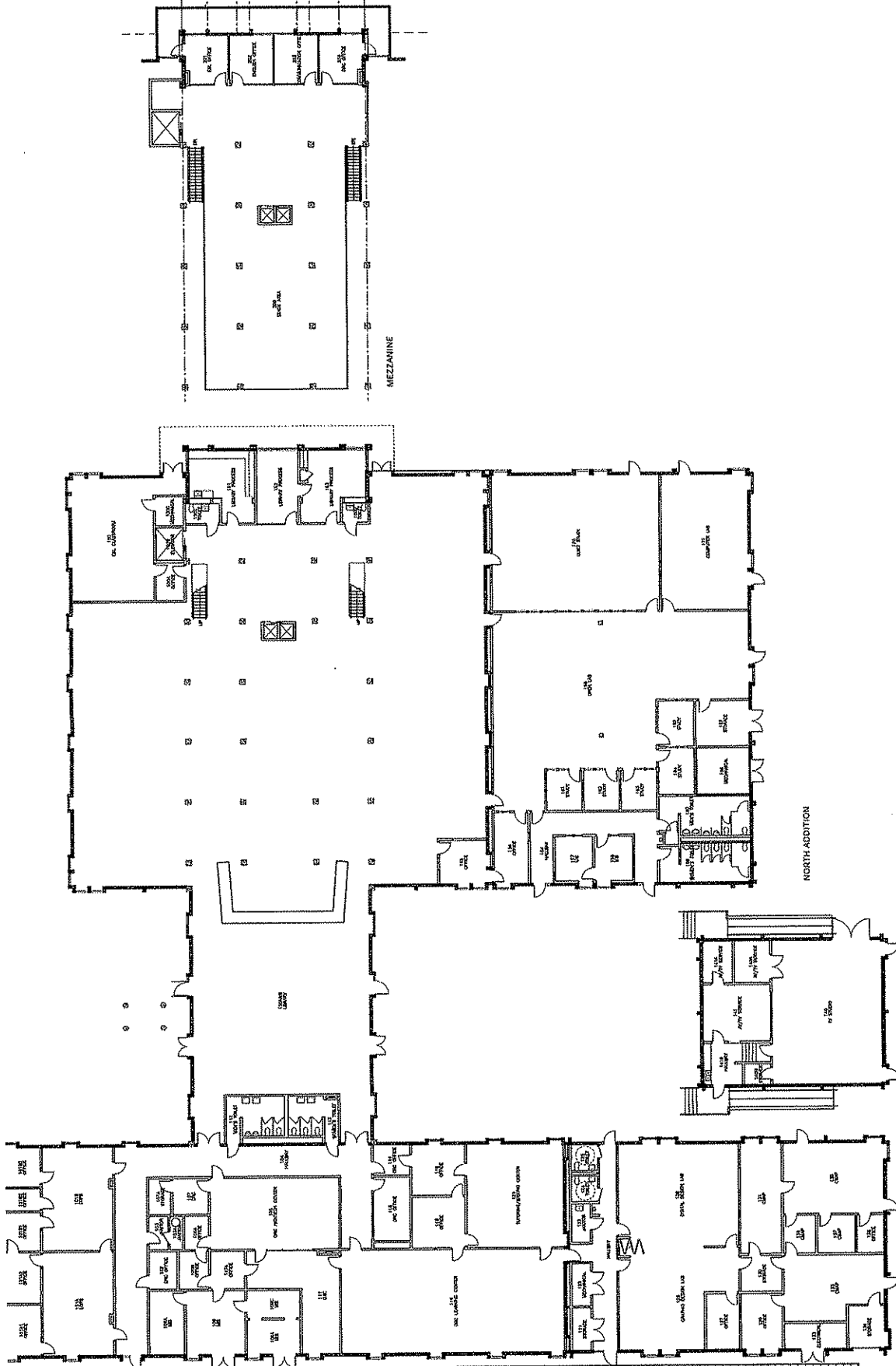
Gavilan College - Gavilan Joint Community College District - 5055 Santa Teresa Blvd., Gilroy, CA 95020





Floor Plan
 Library Complex Modernization
 Final Project Proposal - June 1, 2007

Gavilan College - Gavilan Joint Community College District - 5055 Santa Teresa Blvd., Gilroy, CA 95020



SPACE INVENTORY

NO.	ROOM NAME	LENGTH	WIDTH	AREA
101	STUDY	12.0	12.0	144.0
102	STUDY	12.0	12.0	144.0
103	STUDY	12.0	12.0	144.0
104	STUDY	12.0	12.0	144.0
105	STUDY	12.0	12.0	144.0
106	STUDY	12.0	12.0	144.0
107	STUDY	12.0	12.0	144.0
108	STUDY	12.0	12.0	144.0
109	STUDY	12.0	12.0	144.0
110	STUDY	12.0	12.0	144.0
111	STUDY	12.0	12.0	144.0
112	STUDY	12.0	12.0	144.0
113	STUDY	12.0	12.0	144.0
114	STUDY	12.0	12.0	144.0
115	STUDY	12.0	12.0	144.0
116	STUDY	12.0	12.0	144.0
117	STUDY	12.0	12.0	144.0
118	STUDY	12.0	12.0	144.0
119	STUDY	12.0	12.0	144.0
120	STUDY	12.0	12.0	144.0
121	STUDY	12.0	12.0	144.0
122	STUDY	12.0	12.0	144.0
123	STUDY	12.0	12.0	144.0
124	STUDY	12.0	12.0	144.0
125	STUDY	12.0	12.0	144.0
126	STUDY	12.0	12.0	144.0
127	STUDY	12.0	12.0	144.0
128	STUDY	12.0	12.0	144.0
129	STUDY	12.0	12.0	144.0
130	STUDY	12.0	12.0	144.0
131	STUDY	12.0	12.0	144.0
132	STUDY	12.0	12.0	144.0
133	STUDY	12.0	12.0	144.0
134	STUDY	12.0	12.0	144.0
135	STUDY	12.0	12.0	144.0
136	STUDY	12.0	12.0	144.0
137	STUDY	12.0	12.0	144.0
138	STUDY	12.0	12.0	144.0
139	STUDY	12.0	12.0	144.0
140	STUDY	12.0	12.0	144.0
141	STUDY	12.0	12.0	144.0
142	STUDY	12.0	12.0	144.0
143	STUDY	12.0	12.0	144.0
144	STUDY	12.0	12.0	144.0
145	STUDY	12.0	12.0	144.0
146	STUDY	12.0	12.0	144.0
147	STUDY	12.0	12.0	144.0
148	STUDY	12.0	12.0	144.0
149	STUDY	12.0	12.0	144.0
150	STUDY	12.0	12.0	144.0
151	STUDY	12.0	12.0	144.0
152	STUDY	12.0	12.0	144.0
153	STUDY	12.0	12.0	144.0
154	STUDY	12.0	12.0	144.0
155	STUDY	12.0	12.0	144.0
156	STUDY	12.0	12.0	144.0
157	STUDY	12.0	12.0	144.0
158	STUDY	12.0	12.0	144.0
159	STUDY	12.0	12.0	144.0
160	STUDY	12.0	12.0	144.0
161	STUDY	12.0	12.0	144.0
162	STUDY	12.0	12.0	144.0
163	STUDY	12.0	12.0	144.0
164	STUDY	12.0	12.0	144.0
165	STUDY	12.0	12.0	144.0
166	STUDY	12.0	12.0	144.0
167	STUDY	12.0	12.0	144.0
168	STUDY	12.0	12.0	144.0
169	STUDY	12.0	12.0	144.0
170	STUDY	12.0	12.0	144.0
171	STUDY	12.0	12.0	144.0
172	STUDY	12.0	12.0	144.0
173	STUDY	12.0	12.0	144.0
174	STUDY	12.0	12.0	144.0
175	STUDY	12.0	12.0	144.0
176	STUDY	12.0	12.0	144.0
177	STUDY	12.0	12.0	144.0
178	STUDY	12.0	12.0	144.0
179	STUDY	12.0	12.0	144.0
180	STUDY	12.0	12.0	144.0
181	STUDY	12.0	12.0	144.0
182	STUDY	12.0	12.0	144.0
183	STUDY	12.0	12.0	144.0
184	STUDY	12.0	12.0	144.0
185	STUDY	12.0	12.0	144.0
186	STUDY	12.0	12.0	144.0
187	STUDY	12.0	12.0	144.0
188	STUDY	12.0	12.0	144.0
189	STUDY	12.0	12.0	144.0
190	STUDY	12.0	12.0	144.0
191	STUDY	12.0	12.0	144.0
192	STUDY	12.0	12.0	144.0
193	STUDY	12.0	12.0	144.0
194	STUDY	12.0	12.0	144.0
195	STUDY	12.0	12.0	144.0
196	STUDY	12.0	12.0	144.0
197	STUDY	12.0	12.0	144.0
198	STUDY	12.0	12.0	144.0
199	STUDY	12.0	12.0	144.0
200	STUDY	12.0	12.0	144.0



 0' 5' 10" 20'

 May 18, 2007

 00000000

EXISTING

 Gavilan College



Building 6 - Library

14.1 - Guideline-Based Group II Equipment Cost Estimate - JCAF 33

New Construction Reconstruction* Replacement Project *

District: Gavilan Joint Community College District **Project:** Library/Media Remodel
College: Gavilan College **Date:** June 1, 2009
Prepared by: BFGC Architecture **Budget Year:** 2011-2012

Rm. Type	Description	TOP No.	Department	No. Rms	No. Sta	Room No.	ASF	Sec. ASF	Increase In Space	Equip Cost Per ASF	Gross Allowable Cost	Equip Usable In New Space Program	Total Allowable Cost	Adjusted Total Allowable Cost
110	Classroom	99	General Assignment			100		-695	-695	\$13.53	(\$9,403)		(\$9,403)	\$0
210	Class Lab	1030	Graphic Arts and Design			186	846		846	\$33.13	\$28,028		\$28,028	
210	Class Lab	1030	Graphic Arts and Design			187	705		705	\$33.13	\$23,357		\$23,357	\$61,385
210	Class Lab	4930	General Studies			127	449		449	\$196.73	\$88,332		\$88,332	
210	Class Lab	4930	General Studies			143	701		701	\$196.73	\$137,908		\$137,908	
210	Class Lab	4930	General Studies			176	628		628	\$196.73	\$123,546		\$123,546	\$349,786
310	Office	1030	Graphic Arts and Design			188	129		129	\$21.16	\$2,730		\$2,730	
310	Office	4930	General Studies			142	105		105	\$21.16	\$2,222		\$2,222	
310	Office	4930	General Studies			179	118		118	\$21.16	\$2,497		\$2,497	
310	Office	6110	Learning Center (Learning Resource Center)			129	119		119	\$24.14	\$2,873		\$2,873	
310	Office	6110	Learning Center (Learning Resource Center)			130	118		118	\$24.14	\$2,849		\$2,849	
310	Office	6120	Library			118	138		138	\$24.14	\$3,331		\$3,331	
310	Office	6120	Library			119	93		93	\$24.14	\$2,245		\$2,245	
310	Office	6120	Library			120	96		96	\$24.14	\$2,317		\$2,317	
310	Office	6120	Library			118		-176	-176	\$24.14	(\$4,249)		(\$4,249)	
310	Office	6120	Library			153		-296	-296	\$24.14	(\$7,145)		(\$7,145)	
310	Office	6120	Library			155		-152	-152	\$24.14	(\$3,669)		(\$3,669)	
310	Office	6120	Library			156		-160	-160	\$24.14	(\$3,862)		(\$3,862)	
310	Office	6120	Library			201		-132	-132	\$24.14	(\$3,186)		(\$3,186)	
310	Office	6120	Library			202		-150	-150	\$24.14	(\$3,621)		(\$3,621)	
310	Office	6120	Library			203		-141	-141	\$24.14	(\$3,404)		(\$3,404)	
310	Office	6120	Library			204		-132	-132	\$24.14	(\$3,186)		(\$3,186)	
310	Office	6130	Media Services			129		-151	-151	\$24.14	(\$3,645)		(\$3,645)	
310	Office	6130	Media Services			138		-64	-64	\$24.14	(\$1,545)		(\$1,545)	

14.1 - Guideline-Based Group II Equipment Cost Estimate - JCAF 33

New Construction Reconstruction* Replacement Project *

District: Gavilan Joint Community College District **Project:** Library/Media Remodel
College: Gavilan College **Date:** June 1, 2009
Prepared by: BFGC Architecture **Budget Year:** 2011-2012

315	Office Service	6420	Disabled Students Programs and Services (DSPS)	173	227		227	\$24.14	\$5,480	\$5,480	\$6,480
315	Office Service	6420	Disabled Students Programs and Services (DSPS)	174	140		140	\$24.14	\$3,380	\$3,380	\$3,380
315	Office Service	6430	Extended Opportunity Programs and Services (EOPS)	151	509		509	\$24.14	\$12,287	\$12,287	\$12,287
315	Office Service	6430	Extended Opportunity Programs and Services (EOPS)	157	509		509	\$24.14	\$12,287	\$12,287	\$12,287
315	Office Service	6430	Extended Opportunity Programs and Services (EOPS)	10152		-45	-45	\$24.14	(\$1,086)	(\$1,086)	(\$1,086)
315	Office Service	6499	Other Student Services	162	143		143	\$24.14	\$3,452	\$3,452	\$3,452
410	Read/Study R	4930	General Studies	141	579		579	\$31.76	\$18,389	\$18,389	\$18,389
410	Read/Study R	6110	Learning Center (Learning Resource Center)	121	818		818	\$31.76	\$25,980	\$25,980	\$25,980
410	Read/Study R	6110	Learning Center (Learning Resource Center)	122	103		103	\$31.76	\$3,271	\$3,271	\$3,271
410	Read/Study R	6110	Learning Center (Learning Resource Center)	123	108		108	\$31.76	\$3,430	\$3,430	\$3,430
410	Read/Study R	6110	Learning Center (Learning Resource Center)	124	108		108	\$31.76	\$3,430	\$3,430	\$3,430
410	Read/Study R	6110	Learning Center (Learning Resource Center)	125	81		81	\$31.76	\$2,573	\$2,573	\$2,573
410	Read/Study R	6110	Learning Center (Learning Resource Center)	126	81		81	\$31.76	\$2,573	\$2,573	\$2,573
410	Read/Study R	6110	Learning Center (Learning Resource Center)	135	703		703	\$31.76	\$22,327	\$22,327	\$22,327
410	Read/Study R	6110	Learning Center (Learning Resource Center)	139	174		174	\$31.76	\$5,526	\$5,526	\$5,526
410	Read/Study R	6110	Learning Center (Learning Resource Center)	140	215		215	\$31.76	\$6,828	\$6,828	\$6,828
410	Read/Study R	6110	Learning Center (Learning Resource Center)	116		-1,582	-1,582	\$31.76	(\$50,244)	(\$50,244)	(\$50,244)
410	Read/Study R	6120	Library	120		-717	-717	\$31.76	(\$22,772)	(\$22,772)	(\$22,772)
410	Read/Study R	6120	Library	162		-101	-101	\$31.76	(\$3,208)	(\$3,208)	(\$3,208)
410	Read/Study R	6120	Library	163		-101	-101	\$31.76	(\$3,208)	(\$3,208)	(\$3,208)
410	Read/Study R	6120	Library	164		-108	-108	\$31.76	(\$3,430)	(\$3,430)	(\$3,430)
410	Read/Study R	6120	Library	165		-107	-107	\$31.76	(\$3,398)	(\$3,398)	(\$3,398)
410	Read/Study R	6120	Library	200		-2,796	-2,796	\$31.76	(\$88,801)	(\$88,801)	(\$88,801)
410	Read/Study R	6120	Library	104	192		192	\$31.76	\$6,098	\$6,098	\$6,098
410	Read/Study R	6120	Library	105	134		134	\$31.76	\$4,256	\$4,256	\$4,256
410	Read/Study R	6120	Library	106	435		435	\$31.76	\$13,816	\$13,816	\$13,816
410	Read/Study R	6120	Library	114	95		95	\$31.76	\$3,017	\$3,017	\$3,017
410	Read/Study R	6120	Library	115	139		139	\$31.76	\$4,415	\$4,415	\$4,415
410	Read/Study R	6120	Library	116	776		776	\$31.76	\$24,646	\$24,646	\$24,646
410	Read/Study R	6420	Disabled Students Programs and Services (DSPS)	167	981		981	\$31.76	\$31,157	\$31,157	\$31,157

14.1 - Guideline-Based Group II Equipment Cost Estimate - JCAF 33

New Construction Reconstruction* Replacement Project *

District: Gavilan Joint Community College District **Project:** Library/Media Remodel
College: Gavilan College **Date:** June 1, 2009
Prepared by: BFGC Architecture **Budget Year:** 2011-2012

410	Read/Study R	6420	Disabled Students Programs and Services (DSPS)	105	-684	-584	\$31.76	(\$18,548)	(\$18,548)
410	Read/Study R	6499	Other Student Services	161	930	930	\$31.76	\$29,537	\$29,537
420	Stack	6120	Library	201	3,805	3,805	\$31.76	\$120,847	\$120,847
420	Stack	6120	Library	101	11,768	11,768	\$31.76	\$373,752	\$373,752
420	Stack	6120	Library	150B		-9,412	\$31.76	(\$298,925)	(\$298,925)
420	Stack	6430	Extended Opportunity Programs and Services (EOPS)	101A		-523	\$31.76	(\$16,610)	(\$16,610)
430	Library - Electr	6120	Library	117170	785	-1,571	\$196.73	(\$154,630)	(\$154,630)
440	Processing R	6110	Learning Center (Learning Resource Center)	128	126	126	\$196.73	\$24,788	\$24,788
440	Processing R	6110	Learning Center (Learning Resource Center)	136	130	130	\$196.73	\$25,575	\$25,575
440	Processing R	6120	Library	110	255	255	\$196.73	\$50,166	\$50,166
440	Processing R	6120	Library	111	208	208	\$196.73	\$40,920	\$40,920
440	Processing R	6120	Library	112	255	255	\$196.73	\$50,166	\$50,166
440	Processing R	6120	Library	151		-295	\$196.73	(\$58,035)	(\$58,035)
440	Processing R	6120	Library	152		-210	\$196.73	(\$41,313)	(\$41,313)
455	Study Service	6120	Library	119		-198	\$31.76	(\$6,288)	(\$6,288)
530	Audio/Visual, F	6120	Library	161		-94	\$94.96	(\$8,926)	(\$8,926)
530	Audio/Visual, F	6120	Library	168		-1,803	\$94.96	(\$171,213)	(\$171,213)
530	Audio/Visual, F	6130	Media Services	126		-651	\$94.96	(\$61,819)	(\$61,819)
530	Audio/Visual, F	6130	Media Services	128		-848	\$94.96	(\$80,526)	(\$80,526)
530	Audio/Visual, F	6130	Media Services	140		-1,019	\$94.96	(\$96,764)	(\$96,764)
530	Audio/Visual, F	6130	Media Services	171		-801	\$94.96	(\$76,063)	(\$76,063)
530	Audio/Visual, F	6130	Media Services	148	1,105	1,105	\$94.96	\$104,931	\$104,931
530	Audio/Visual, F	6130	Media Services	189	492	492	\$94.96	\$46,720	\$46,720
535	AV, Radio, TV	6130	Media Services	145	269	269	\$94.96	\$25,544	\$25,544
535	AV, Radio, TV	6130	Media Services	146	87	87	\$94.96	\$8,262	\$8,262
535	AV, Radio, TV	6130	Media Services	147	105	105	\$94.96	\$9,971	\$9,971
535	AV, Radio, TV	6130	Media Services	149	39	39	\$94.96	\$3,703	\$3,703
535	AV, Radio, TV	6130	Media Services	190	320	320	\$94.96	\$30,387	\$30,387
535	AV, Radio, TV	6130	Media Services	191	85	85	\$94.96	\$8,072	\$8,072
535	AV, Radio, TV	6130	Media Services	192	100	100	\$94.96	\$9,496	\$9,496

16.1 - Detailed Equipment List

District: Gavilan Joint Community College District

Project: Library/Media Remodel

College: Gavilan College

June 1, 2009

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed	
101	LIBRARY	Library Space						
		Multi Line Programmable Digital Phone	1	\$630	\$630		\$630	
		Scanner for Bar Code/Label Printers	7	\$630	\$4,410		\$4,410	
		PC Workstation, Staff Printer	2	\$2,100	\$4,200		\$4,200	
			2	\$788	\$1,575		\$1,575	
		U Workstation w/ Overhead Storage	1	\$4,725	\$4,725		\$4,725	
		Staff Task Chair	2	\$441	\$882		\$882	
		L Workstation w/ Overheads	1	\$3,675	\$3,675		\$3,675	
		Staff Computer	4	\$1,050	\$4,200		\$4,200	
		Shelving for Reserves, Single Faced	6	\$1,050	\$6,300		\$6,300	
		Book Trucks	10	\$420	\$4,200		\$4,200	
		Reference Desk	Staff Computer	1	\$1,050	\$1,050		\$1,050
			Staff Task Chair	1	\$441	\$441		\$441
			Multi-line programmable digital phone	1	\$630	\$630		\$630
		Reference Instruction Area	Guest Chair	2	\$368	\$735		\$735
			Student Computers	40	\$1,050	\$42,000		\$42,000
		Computer Specialist Help Desk	Student Computer Stations	40	\$630	\$25,200		\$25,200
			Staff Computer	1	\$1,050	\$1,050		\$1,050
			Staff Task Chair	1	\$441	\$441		\$441
		General Seating	PC Workstation, Staff	1	\$2,100	\$2,100		\$2,100
			Rectangular Reading Tables	12	\$1,050	\$12,600		\$12,600
			Chairs	60	\$158	\$9,450		\$9,450
		Periodical Seating				\$0		\$0
			Chairs	6	\$683	\$4,095		\$4,095
			Square Tables	3	\$368	\$1,103		\$1,103
104	STUDY ROOM	Book Theft Security System	1	\$26,250	\$26,250		\$26,250	
		PA System With Speakers	1	\$2,625	\$2,625		\$2,625	
		60" Diameter Tables	1	\$1,050	\$1,050		\$1,050	

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed
105	STUDY ROOM	Chairs	6	\$158	\$945		\$945
		Wall Mount DVD/LCD	1	\$1,260	\$1,260		\$1,260
		White Board 4' x 6'	1	\$462	\$462		\$462
					\$0		\$0
106	QUIET ROOM	48" Diameter Tables	1	\$840	\$840		\$840
		Chairs	4	\$158	\$630		\$630
		Wall mount DVD/LCD	1	\$1,260	\$1,260		\$1,260
		White board 4' x 6'	1	\$462	\$462		\$462
110	PROCESSING	Chairs	10	\$158	\$1,575		\$1,575
		Study Carrels (use existing)	1	\$0		\$3,500	\$0
		Rectangular Reading Tables	2	\$1,050	\$2,100		\$2,100
111	PROCESSING	24' Single Faced Shelving Against Wall	8	\$1,050	\$8,400		\$8,400
		Workstation	1	\$1,575	\$1,575		\$1,575
		Staff Task Chair	1	\$441	\$441		\$441
		Storage Cabinets & Counter	1	\$9,450	\$9,450		\$9,450
		Telephone Single Line	1	\$89	\$89		\$89
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Workstation	1	\$1,575	\$1,575		\$1,575
		Staff Task Chair	1	\$441	\$441		\$441
		72" book case	1	\$630	\$630		\$630
112	PROCESSING	Telephone Single Line	1	\$89	\$89		\$89
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Workstation	1	\$1,575	\$1,575		\$1,575
		Staff Task Chair	1	\$441	\$441		\$441
		Telephone Single Line	1	\$89	\$89		\$89
		Fax Machine (use existing)	1	\$0	\$0	\$300	\$0
114	STUDY ROOM	4 Drawer Lateral File Cabinet (existing)	1	\$0	\$0	\$500	\$0
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		48" Diameter Tables	1	\$840	\$840		\$840
		Chairs	4	\$158	\$630		\$630
		Wall mount DVD/LCD	1	\$1,260	\$1,260		\$1,260
		White Board 4' x 6'	1	\$462	\$462		\$462
115	STUDY ROOM	60" Diameter Tables	1	\$1,050	\$1,050		\$1,050
		Chairs	8	\$158	\$1,260		\$1,260
		Wall Mount DVD/LCD	1	\$1,260	\$1,260		\$1,260
		White Board 4' x 6'	1	\$462	\$462		\$462
					\$462		\$462

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed	
116	LIBRARY OPEN LAB	Student Computers	28	\$1,050	\$29,400		\$29,400	
		Student Computer Stations	28	\$630	\$17,640		\$17,640	
		Chairs	29	\$158	\$4,568		\$4,568	
		Document Visual Presenter	1	\$3,675	\$3,675		\$3,675	
		Overhead Projector	1	\$420	\$420		\$420	
		Projection Screen	1	\$525	\$525		\$525	
		Instructors Computer	1	\$1,050	\$1,050		\$1,050	
		Instructors SmartWorkstation	1	\$2,100	\$2,100		\$2,100	
		AV Interface Control System	1	\$1,260	\$1,260		\$1,260	
		LCD Projector	1	\$2,520	\$2,520		\$2,520	
		Printer	1	\$1,050	\$1,050		\$1,050	
117	LIBRARY COMPUTER LAB	Student Computers	28	\$1,050	\$29,400		\$29,400	
		Student Computer Stations	28	\$630	\$17,640		\$17,640	
		Chairs	29	\$158	\$4,568		\$4,568	
		Document Visual Presenter	1	\$3,675	\$3,675		\$3,675	
		Overhead Projector	1	\$420	\$420		\$420	
		Projection Screen	1	\$525	\$525		\$525	
		Instructors Computer	1	\$1,050	\$1,050		\$1,050	
		Instructors SmartWorkstation	1	\$2,100	\$2,100		\$2,100	
		AV Interface Control System	1	\$1,260	\$1,260		\$1,260	
		LCD Projector	1	\$2,520	\$2,520		\$2,520	
		Printer	1	\$1,050	\$1,050		\$1,050	
118	OFFICE	File Cabinet	1	\$420	\$420		\$420	
		Computer	1	\$1,050	\$1,050		\$1,050	
		Printer	1	\$420	\$420		\$420	
		Multi Line Programmable Digital Phone	1	\$630	\$630		\$630	
		Workstation	1	\$1,575	\$1,575		\$1,575	
		Bookcases 36' Ht	2	\$315	\$630		\$630	
		Staff Task Chair	1	\$441	\$441		\$441	
		Guest Chair	1	\$368	\$368		\$368	
119	OFFICE	File Cabinet	1	\$420	\$420		\$420	
		Computer	1	\$1,050	\$1,050		\$1,050	
		Printer	1	\$420	\$420		\$420	
		Telephone Single Line	1	\$89	\$89		\$89	
		Workstation	1	\$1,575	\$1,575		\$1,575	
		Bookcases 36' Ht	2	\$315	\$630		\$630	
		Staff Task Chair	1	\$441	\$441		\$441	
		Guest Chair	1	\$368	\$368		\$368	
120	OFFICE	File Cabinet	1	\$420	\$420		\$420	
		Computer	1	\$1,050	\$1,050		\$1,050	
		Printer	1	\$420	\$420		\$420	
		Telephone Single Line	1	\$89	\$89		\$89	

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed		
121	WRITING/READING CENTER	Workstation	1	\$1,575	\$1,575		\$1,575		
		Bookcases 36' Ht	2	\$315	\$630		\$630		
		Staff Task Chair	1	\$441	\$441		\$441		
		Guest Chair	1	\$368	\$368		\$368		
		48" Diameter Tables	4	\$840	\$3,360		\$3,360		
		Chairs	16	\$158	\$2,520		\$2,520		
		Telephone Single Line	1	\$89	\$89		\$89		
		Workstation	1	\$1,575	\$1,575		\$1,575		
		Bookcases 36' Ht	2	\$315	\$630		\$630		
		Staff Task Chair	1	\$441	\$441		\$441		
122	STUDY ROOM	Guest Chair	1	\$368	\$368		\$368		
		Computer	1	\$1,050	\$1,050		\$1,050		
		Printer	1	\$420	\$420		\$420		
		48" Diameter Tables	1	\$840	\$840		\$840		
		Chairs	4	\$158	\$630		\$630		
		123	STUDY ROOM	48" Diameter Tables	1	\$840	\$840		\$840
				Chairs	4	\$158	\$630		\$630
		124	STUDY ROOM	48" Diameter Tables	1	\$840	\$840		\$840
				Chairs	4	\$158	\$630		\$630
		125	STUDY ROOM	48" Diameter Tables	1	\$840	\$840		\$840
Chairs	4			\$158	\$630		\$630		
126	STUDY ROOM	48" Diameter Tables	1	\$840	\$840		\$840		
		Chairs	4	\$158	\$630		\$630		
127	COMPUTER LAB	Student Computers	19	\$1,050	\$19,950		\$19,950		
		Student Computer Stations	19	\$630	\$11,970		\$11,970		
		Chairs	19	\$158	\$2,993		\$2,993		
		Projection Screen	1	\$525	\$525		\$525		
		Printer	1	\$1,050	\$1,050		\$1,050		
		129	OFFICE	File Cabinet	1	\$420	\$420		\$420
Computer	1			\$1,050	\$1,050		\$1,050		
Printer	1			\$420	\$420		\$420		
Telephone Single Line	1			\$89	\$89		\$89		
Workstation	1			\$1,575	\$1,575		\$1,575		
Bookcases 36' Ht	2			\$315	\$630		\$630		
Staff Task Chair	1			\$441	\$441		\$441		
Guest Chair	1			\$368	\$368		\$368		
130	OFFICE			File Cabinet	1	\$420	\$420		\$420
				Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420		

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed
135	TUTORING CENTER	Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		48" Diameter Tables	4	\$840	\$3,360		\$3,360
136	WORKROOM	Chairs	16	\$263	\$4,200		\$4,200
		Storage Cabinet	1	\$420	\$420		\$420
		Workstation	1	\$2,100	\$2,100		\$2,100
139	GROUP STUDY	Chair	1	\$263	\$263		\$263
		48" Diameter Tables	1	\$840	\$840		\$840
140	GROUP STUDY	Chairs	4	\$158	\$630		\$630
		48" Diameter Tables	2	\$840	\$1,680		\$1,680
141	ESL GROUP STUDY	Chairs	8	\$158	\$1,260		\$1,260
		48" Diameter Tables	4	\$840	\$3,360		\$3,360
		Chairs	16	\$263	\$4,200		\$4,200
142	OFFICE	Storage Cabinet	1	\$420	\$420		\$420
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		48" Diameter Tables	4	\$840	\$3,360		\$3,360
143	ESL TUTORING	Chairs	16	\$263	\$4,200		\$4,200
		Storage Cabinet	1	\$420	\$420		\$420
		File Cabinet	1	\$420	\$420		\$420
152	OFFICE	Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
153	OFFICE	File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed
154	OFFICE	Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
155	OFFICE	Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
156	OFFICE	Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		Chair	10	\$420	\$4,200		\$4,200
163	OFFICE	File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
164	OFFICE	Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed
168	OFFICE	Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
169	OFFICE	Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
170	OFFICE	File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
171	OFFICE	Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
172	OFFICE	Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
172	OFFICE	Staff Task Chair	1	\$441	\$441		\$441
		File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
		File Cabinet	1	\$420	\$420		\$420

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed
173	WORKROOM	Guest Chair	1	\$368	\$368		\$368
		Workstation	2	\$1,575	\$3,150		\$3,150
		Chair	5	\$368	\$1,838		\$1,838
175	OFFICE	File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
176	COMPUTER LAB	Student Computers	16	\$1,050	\$16,800		\$16,800
		Student Computer Stations	16	\$630	\$10,080		\$10,080
		Printer	1	\$1,050	\$1,050		\$1,050
177	WORKROOM	Workstation	1	\$1,050	\$1,050		\$1,050
		Chair	2	\$210	\$420		\$420
179	OFFICE	File Cabinet	1	\$420	\$420		\$420
		Computer	1	\$1,050	\$1,050		\$1,050
		Printer	1	\$420	\$420		\$420
		Telephone Single Line	1	\$89	\$89		\$89
		Workstation	1	\$1,575	\$1,575		\$1,575
		Bookcases 36' Ht	2	\$315	\$630		\$630
		Staff Task Chair	1	\$441	\$441		\$441
		Guest Chair	1	\$368	\$368		\$368
186	DIGITAL MEDIA LAB	Student Computers	24	\$1,050	\$25,200		\$25,200
		Student Computer Stations	24	\$630	\$15,120		\$15,120
		Chairs	25	\$158	\$3,938		\$3,938
		Document Visual Presenter	1	\$3,675	\$3,675		\$3,675
		Overhead Projector	1	\$420	\$420		\$420
		Projection Screen	1	\$525	\$525		\$525
		Instructors Computer	1	\$1,050	\$1,050		\$1,050
		Instructors SmartWorkstation	1	\$2,100	\$2,100		\$2,100
		AV Interface Control System	1	\$1,260	\$1,260		\$1,260
		LCD Projector	1	\$2,520	\$2,520		\$2,520
		Printer	1	\$1,050	\$1,050		\$1,050
187	GRAPHIC DESIGN LAB	Student Computers	24	\$1,050	\$25,200		\$25,200
		Student Computer Stations	24	\$630	\$15,120		\$15,120
		Chairs	25	\$158	\$3,938		\$3,938
		Document Visual Presenter	1	\$3,675	\$3,675		\$3,675
		Overhead Projector	1	\$420	\$420		\$420
		Projection Screen	1	\$525	\$525		\$525

Rm #	Room Description	Item Description ¹	Units	Unit Cost	Total Cost	Less Existing Inventory ²	Total New Equipment Needed		
188	OFFICE	Instructors Computer	1	\$1,050	\$1,050		\$1,050		
		Instructors SmartWorkstation	1	\$2,100	\$2,100		\$2,100		
		AV Interface Control System	1	\$1,260	\$1,260		\$1,260		
		LCD Projector	1	\$2,520	\$2,520		\$2,520		
		Printer	1	\$1,050	\$1,050		\$1,050		
		File Cabinet	1	\$420	\$420		\$420		
		Computer	1	\$1,050	\$1,050		\$1,050		
		Printer	1	\$420	\$420		\$420		
		Telephone Single Line	1	\$89	\$89		\$89		
		Workstation	1	\$1,575	\$1,575		\$1,575		
193	OFFICE	Bookcases 36' Ht	2	\$315	\$630		\$630		
		Staff Task Chair	1	\$441	\$441		\$441		
		Guest Chair	1	\$368	\$368		\$368		
		File Cabinet	1	\$420	\$420		\$420		
		Computer	1	\$1,050	\$1,050		\$1,050		
		Printer	1	\$420	\$420		\$420		
		Telephone Single Line	1	\$89	\$89		\$89		
		Workstation	1	\$1,575	\$1,575		\$1,575		
		Bookcases 36' Ht	2	\$315	\$630		\$630		
		Staff Task Chair	1	\$441	\$441		\$441		
196	OFFICE	Guest Chair	1	\$368	\$368		\$368		
		File Cabinet	1	\$420	\$420		\$420		
		Computer	1	\$1,050	\$1,050		\$1,050		
		Printer	1	\$420	\$420		\$420		
		Telephone Single Line	1	\$89	\$89		\$89		
		Workstation	1	\$1,575	\$1,575		\$1,575		
		Bookcases 36' Ht	2	\$315	\$630		\$630		
		Staff Task Chair	1	\$441	\$441		\$441		
		Guest Chair	1	\$368	\$368		\$368		
			JANITORS CLOSET	Custodial Cart	1	\$1,050	\$1,050		\$1,050
Vacuum	1			\$788	\$788		\$788		
Storage Shelves	5			\$158	\$788		\$788		
Steam Cleaning Machine	1			\$3,150	\$3,150		\$3,150		
Propane Buffer	1			\$5,250	\$5,250		\$5,250		
	TELEPHONE ROOM/DATA			Network Switch	1	\$16,275	\$16,275		\$16,275
				Network Rack	1	\$2,100	\$2,100		\$2,100
				Server	5	\$3,150	\$15,750		\$15,750
				Storage shelves	10	\$158	\$1,575		\$1,575
				Phone Switch	1	\$15,750	\$15,750		\$15,750
Grand Total					\$755,150	\$4,300	\$755,150		