SAM HOUSTON STATE UNIVERSITY
Huntsville, Texas 77341

ADDENDUM 1 for 753-0-WHT002

Invitation for Bid:

OFFICE RENOVATION AT BOWERS STADIUM FIELD HOUSE

The following are clarifications/corrections for the above referenced Invitation for Bid.

1. The contractor is responsible for structural support and bracing for the folding partition.

2. Light fixtures shall be T-8 with electronic ballast.

3. Data lines shall be CAT5E, plenum rated.

4. Contractor shall tap into existing HVAC duct work and run flex duct supply and provide return air grill, supply and return to match existing.

5. Sprinkler system is not present in building. No fire alarm work will be needed.

6. Metal studs and track shall be 18 gauge.

7. Contractor to match existing cove base

8. Folding partition color and fabric to be chosen after award by Department.

9. New door to be solid core birch with 4” x 24” site glass, color to match existing office door.

10. Data closet is located on upper floor of field house. Contractor to allow for an approximate run of 120’ for each cable.

11. Door hardware shall be: Schlage D53 PLY 626, core provided by SHSU.

12. All material and equipment shall meet SHSU A&E Guidelines, attached, unless specifically noted.

SAM HOUSTON STATE UNIVERSITY
A/E SPECIFICATION GUIDELINES BY SECTION

These guidelines are published to permit the University to standardize on products in use throughout the campus, to reduce our parts inventory for commonly used products, and to avoid future maintenance or replacement problems.

These guidelines are to be adhered to unless the Architect can justify to the University the necessity to specify an alternate product. Any change from these guidelines must be approved in writing by the University. It's the University's intent that the guidelines be incorporated into the Architect's specification.

For the bid phase, the A-E shall furnish the Owner, Contractor, Subcontractors and Suppliers all necessary copies of approved plans, specifications, notices to bidders and proposal forms required for bidding. (The Owner will require seven (7) copies of the plans and specifications). If the plan and specification requirements exceed twenty (20) sets for the bidding phase, all additional requirements will be considered additional services.

For the construction issue, the A-E shall revise all drawings and specifications to include all changes addressed in the addenda and shall furnish the successful contractor with sufficient copies of the updated plans and specifications. (The Owner will require eight (8) complete copies of the updated plans and specifications for review and permanent files and five (5) copies of the specifications completed with executed bid proposal, contract and bonds). If the plan and specification requirements exceed twenty (20) sets for construction issue, all additional requirements will be considered additional services.

01000 GENERAL REQUIREMENTS

1. No extraneous specifications shall be included within the specification package for the convenience of the A/E or as general reference i.e. all portions of the specifications and drawings will be directly applicable to the specific project for which the A/E has been contracted.
2. At the end of the project the A/E shall provide "as-built" record drawings in hard and electronic AutoCad copy.
3. Each floor and 20,000 sqft shall have a minimum 6 ft. by 7ft. custodial closet with shelves, racks and slop sink centrally located on a main corridor. Provide a finished floor and ceiling.
4. The Preliminary Design for new building construction shall allow a space allocation to include MEP, data, telephone, and fire water pump of 7.5% of the gross square footage of the building. This allocation shall be adjusted during the design phase.
5. Each building shall have a storage room sized appropriately for the attic stock that is required to be provided for the building.
6. See Appendix "B" for applicable regulatory codes.

01300 SUBMITTALS

1. The A/E is to provide a list of required submittals plus specific instructions regarding submittals on substitutions.

2. The A/E is to require and verify that the contractor has provided a list of sub-vendors before the initial construction kick-off meeting is scheduled.
3. All vendor product data and shop drawings shall be submitted within 60 days of the contract award date.
4. SHSU shall be sent electronic copies of submittals during the submittal phase of the project and three hard copies of the submittals shall be provided with the O&M Manuals.

01631 SUBSTITUTIONS

1. Requests for substitutions must be received within 60 days of the contract award date and must document to the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume.
2. On MEP equipment it shall be required by the manufacturer to submit a substitution request no later than one week before a bid opening. The substitution request shall be accompanied with literature regarding the requested substitution manufacturer so that the Engineer may approve or reject the request prior to bid. No substitution request for MEP equipment shall be entertained after the bid.

01730 OPERATING & MAINTENANCE DATA

Provide to the owner three (3) instructional manuals: bound in commercial quality 3-ring binders with plastic covers; containing data organized with index tabs according to sequence of specification sections. Receipt is required early during the submittal process.

02000 SITE WORK

02870 SITE, STREET & MALL FURNISHINGS

Pebble finish on sidewalks where adjacent to existing pebble finish on sidewalks is the University's standard fore the campus core. Other finishes may be acceptable, but must be approved by the University. Finishes need to be slip-resistant.

02930 SHRUBS, LAWNS AND GRASSES

Plant species indigenous (native) to the Huntsville area shall be utilized in landscape design. AE to contact SHSU Grounds department to confirm appropriate species. Special considerations shall be given in designing areas with slopes which are prone to erode due to heavy Spring and early Summer prolonged heavy rainfall. Consideration shall be given to use of erosion control fabric in areas with exposed soil. Existing trees shall have a barrier constructed around the drip line of the tree for protection. Type of sod/seed used for lawns must be approved by the University. A variety of St. Augustine Palmetto is the most common in irrigated areas. New tree plantings shall have a tree ring consistent with the DBH of the tree and composed of organic mulch. All areas shall have a 3 inch minimum layer of clean top soil added. Beds shall be clean of any construction debris and clean top soil and organic matter added and tilled to minimum depth of 6 inches.

029xx IRRIGATION SYSTEMS

1. Irrigation systems shall utilize Hunter or Irritrol sprinkler heads, Toro or Hunter valves and Rainbird controllers to be compatible with existing systems and warehoused parts.

2. A tracer wire shall be buried with all underground piping and identified in the controller box. Colors to match those of the CHSS building.

3. All pipe shall be schedule 40 PVC including supply and lateral lines.

4. It is the responsibility of the contractor to repair any existing irrigation lines that are damaged during construction.

5. Depth of irrigation piping shall be 12 inches below ground.
6. Existing irrigation is to remain operable without interruption (no more than 24 hours). Contact the SHSU Project Manager if a sprinkler line is harmed during construction.

03000 CONCRETE

1. Exposed concrete floor surfaces in interior stairwells, hallways and walkways will be sealed or painted with suitable epoxy coating (specified for areas prone to moisture). Either treatment should be applied before other floor/stair tread appliances are installed
2. Concrete floor surfaces scheduled for VC tile will have a smooth level steel trowel finish. Where this finish is absent an application/coat of cement based floor leveler, like Ardex SD-P, is required to level & seal porous surfaces and insure good adhesive bonding. Floor leveler will be waterproof and compatible with adhesive and tile to be installed.
3. Garbage dumpster enclosures will allow for the direct pickup by truck. No pre-positioning by manual labor should be required.
4. The pitch of the surface the dumpster sits on should allow for water drainage and at the same time not steep enough to promote the dumpster rolling off by itself.
5. To facilitate pickup, the surface the dumpster sits on should be long enough so that both the truck and dumpster will be on the same flat surface (plane).
6. Bollards or curbs will be installed to keep any part of dumpster from contacting enclosure walls or any other permanent structure. Where gas meters are accessible to vehicular traffic, provide bollards for protection.

4000 MASONRY

1. Seal masonry surfaces per section 07180.
2. Lintels shall be galvanized per section 05000.
3. Provide fences around exterior transformers and generator with the sufficient amount of free area for proper air flow.
4. Use only SHSU Blend Acme brick or approved equal.
5. Stone banding and accents should be incorporated into the building exterior.

05000 METALS

Brick lintels shall be galvanized.

06000 WOOD AND PLASTICS

06402 INTERIOR ARCHITECTURAL WOODWORK

1. Except for laboratory science equipment the use of "built-in" cabinetry and shelving must be approved in advance by the owner.
2. “Shop made” cabinets are preferred. Cabinets, etc., shall be MDF or plywood as particle board is not acceptable. Drawers shall be supplied with steel rails and plastic rollers or molded plastic drawer side and bottom with plastic rollers.
3. Book shelves shall be “shop made” unless specifically approved by the owner and the walls are constructed to accept the additional loading of wall hung shelving and the sealed engineering calculations have been reviewed and accepted by the Owner.

07000 THERMAL AND MOISTURE PROTECTION

07100 WATERPROOFING

Below grade exterior walls shall have special protection including waterproofing, damp proofing, French drains and drainage matting, Enkadrain system. All exterior below grade surfaces shall be waterproofed, concrete, block, and etc. This includes any concrete, or other masonry retaining
walls, steps and privacy screens/fences/walls.

07160 DAMP PROOFING

Provide damp proofing behind all masonry.

07180 WATER REPELLENTS

Shall be clear, waterborne, non-flammable penetrating sealer, V.O.C. content no more than .19lbs/gal as manufactured by Aegis Coating Technologies or equal.

07270 FIRESTOPPING

Clearly indicate on the drawings and specify the provision of firestopping consisting of smoke, flame and water seals that are Underwriter's Laboratories listed, produced and installed per the manufacturer's instructions for resisting the spread of fire.

07272 PENETRATION SEALS

Penetrations shall be avoided below grade if at all possible.
All piping penetrations through exterior walls shall be sleeved completely through the wall.

07540 BUILD UP ROOFING SYSTEMS FOR NEW BUILDINGS

The roof shall be an asphalt build-up system with insulation, roof membrane, and bitumen from a supplier who will guarantee the system. The finished roof shall have a minimum 1/4 inch per 1 foot slope. The manufacturer and applicator shall have not less than five (5) years of current experience in the manufacture and application of the materials. Warranty shall be ten (10) years labor and material. Single ply roofing must be approved by the University prior to selection.

07600 FLASHING AND SHEET METAL

1. Expansion joints shall be provided between sections.
2. 26 gauge galvanized - ASTM A 525-78 per SMACNA guidelines.

07610 METAL ROOFING

Sloping roofs of seamless copper are preferred.

07900 JOINT SEALANT

1. Horizontal joints in concrete slabs shall use Tremco Horizontal Sealant System.
2. Exterior sealant for perimeter caulking shall be Tremco Mono.
3. Interior caulking shall be a paintable single component polyurethane caulk such as Tremco Vulkem 921 or Sherwin Williams 1550a or acrylic latex.
4. Back up material shall be that as specified by the sealant manufacturer.

08000 DOORS AND WINDOWS

1. Doors: Avoid single doors over 7 ' high and 4' wide. Avoid use of pocket doors and folding doors. Provide 1 ¾" thick doors on all new construction, bored for 2 ¾" backset for lock hardware.
2. Windows: Fixed glass is preferable over movable sash. Give window washing and replacement consideration in proposing type of fenestration. Avoid use of externally applied window films. Low "E" glass with internal coating is acceptable.
3. All stained or natural finish wooden doors require a minimum of 1 sealer coat and 2 finish coats of semi-gloss polyurethane coating.
4. All double doors shall be provided with a *painted* steel mull with "Everest" keyed removable access.
5. Provide vision panels (4"x 24") or sidelights on all public doors.

08111 STANDARD STEEL DOORS AND FRAMES

1. Doors: Provide 1/8" clear around steel doors for future layers of paint. Exterior doors shall be 18 gauge, 1-3/4" thick with polyurethane cores. Interior doors shall be 1 3/4", solid core with laminate finish.
2. Frames: Exterior 14 gauge with thermal barrier; Interior, 16 gauge; CQ class 1 steel, knock down type, shop welded prior to delivery to job site. Miters shall have hairline joint when assembled and all exposed welding shall be ground smooth.
3. Finish: doors and frames shall be wipe coated galvanized for interior and full galvanizing for exterior. Give phosphate treatment to galvanized surfaces. Apply one coat of primer suitable for epoxy coatings. Apply appropriate caulking at all joints including joint at the floor. Exterior doors shall have adjustable threshold with appropriate weather stripping.

08305 ACCESS DOORS

1. Access doors shall be provided to ball type isolation valves in each restroom or room with multiple fixtures, laboratories, etc.
2. Access doors shall be provided in each restroom for access to a cleanout above the flood rim of the highest fixture.

08410 ALUMINUM ENTRANCES AND STOREFRONTS

1. Anodized finish with "snap-on" glazing beads.
2. All exterior glass and aluminum doors to be heavy duty wide style (to accommodate 99 Series panic hardware) with thermal barriers.
3. All double doors shall be provided with a stainless steel mull with "Everest" keyed removable access.

08610 WOOD WINDOWS

1. Due to the climatic conditions in Huntsville, wood windows are not acceptable.

08710 DOOR HARDWARE

This section for Finish Hardware is a detailed document that represents exactly what the University requires and is provided for the A/E to insert into the project specifications. The A/E is to use this specification only. All other Finish Hardware specifications are not acceptable. Refer to Appendix "A" for detailed Finish Hardware information.

08800 GLAZING

1. All exterior glass above the first floor shall be interior glazed unless otherwise approved by the University.
2. No glazing compounds shall have asbestos containing materials.

3. Glazing to be high performance - insulated, Low E.
4. Mullion and spandrel color to be approved by the University before being specified.

09000 FINISHES

Vinyl wall coverings are not desirable.

Use of 4" standard, 6" where appropriate rubber cove base is required. Use with preformed inside corners.

09250 GYPSUM DRYWALL

1. A 5/8 inch sheet rock is re quired.
2. A 5/8 inch green board is required behind all surfaces which will be in contact with water.
3. Texture on walls shall be achieved with roller only without additives other than drywall compound.
4. No drywall mud or textures shall have asbestos containing materials.
5. Wet sanding shall be specified for renovation work in occupied buildings. If occupants are completely moved out of the building for the duration of the renovation, wet sanding will not be required.
6. Use of "J" mold at finished edges of drywall at metal stringers for stairs is required.
7. Control joints will be installed at all top corners of interior doors and windows.

09300 TILE

A non-slip surface is required. All tile shall be of standard color, shape and design and readily available as "off the shelf".

09400 TERRAZZO

A non-slip surface is required. A non integral base is to be used.

09510 ACOUSTICAL PANEL CEILING SYSTEMS

1. Concealed spline ceilings are not acceptable.
2. Use 2' x 2' lay-in ceiling tiles such as Armstrong #770 or equal. Select tiles appropriate for building function. Limit number of tiles. Use standard 15/16" T bar grid.

09650 RESILIENT FLOORING

All flooring material shall be certified by the manufacturer to be free of asbestos. Resilient flooring shall be 1/8" thick, 12" x 12" vinyl composition tile as manufactured by a commercial quality manufacturer . Latex adhesives shall be utilized as recommended by the tile manufacturer. Manufacturer shall certify that all provided materials contain no "ACM material" including tile and mastic. Strip factory sealer off before new finish is applied.

09680 CARPET

Carpet shall be 100% Dupont type 6,6 Antron nylon with permanent stain resistance backed by a lifetime warranty. Fabric is to have no less than 75% solution dyed nylon (no more than 25% yarn dyed nylon), loop construction, and a backing system that prevents migration of liquids per British Spill test. Adhesive system per manufacturer's requirements and low VOC. Surface flammability passes CPSC FF 1-70 (ASTM D-2859), flooring radiant panel – Class I (ASTM E-648), electrostatic Propensity – 3.0 KV or lower (AATCC 134). Seams shall have manufacturer's approved seam sealer applied to entire length of all seams. Carpet will have a minimum 20 year non-prorated limited warranty against excessive surface wear and static, delamination, edge ravel, zippering and backing resiliency loss.

09900 PAINTING

1. All interior paint for walls of drywall construction must be semi-gloss water based (except restrooms)

2. Do not use multi-color enamels.
3. Use epoxy paint on all concrete block interior walls and restrooms.
4. Finish paint walls in mechanical or electrical rooms.
5. Woodwork shall be primed and painted using oil base paint.
6. Interior and exterior metal fixtures, doors and jambs, handrails, stairwell metal, and any metal frames shall be primed and painted using epoxy paints.
7. All new construction that is painted shall require a minimum of 1 primer coat and 2 finish coats. Manufacturers coating thickness requirements to meet warranties are a minimum.

10000 SPECIALTIES

10155 toilet compartments

1. Plastic on toilet partitions must be resistant to Uric acid.
2. If urinal screens are installed they should be tall enough (above 6') to facilitate a cross brace at the top to tie all urinal screens together (or a single urinal screen to a wall or another partition).
3. Utilize vandal resistant Bobrick Sierra Series.

10200 LOUVERS AND VENTS

Insect screens shall be provided.

10260 WALL AND CORNER GUARDS

Acrylic style is preferred over PVC.

3" in corner preferred

The style with hidden metal retainers and coordinated/matching colors is preferred.

10410 DIRECTORIES AND BULLETIN BOARDS

Shall be provided with changeable graphics.

Provide a directory at the lobby.

10420 LETTERS AND PLAQUES

A/E shall coordinate style with purchase by the University and installation by the Contractor.

10426 SIGNAGE AND GRAPHICS

1. Shall be per ADA standards.
2. TDCJ shall provide signage materials through a University purchase with payment from an allowance established and documented in the bid documents by the A/E.

10522 FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

Shall be recessed and comply with Life Safety Code.

10670 STORAGE SHELVING

14" deep and tall shelves not exceeding 72" in height shall be provided in the custodial closest for paper and cleaner storage. Shelving should not interfere with any other equipment in the closet including electrical , plumbing, and a/c equipment.

10750 TELEPHONE SPECIALTIES

Telephone Specialties shall be cleared with the SHSU Telco system and the Physical Plant electrical department. Also See Section 16700.

10800 TOILET AND SERVICE ROOM ACCESSORIES

1. Soap dispenser shall be Bobrick B-4112 Contura Series, stainless steel satin finish soap dispenser mounted over the sink or drainage surface. Surface mount the soap dispenser on the counter.
2. Paper towel dispenser shall be Bobrick B-43944 Contura Series, surface mount, 22 gauge, satin finish, welded construction.
3. Sanitary napkin disposal unit shall be Bobrick B-4354 Contura Series for dual access type, Bobrick B-4353 Contura Series single access type, surface mount, stainless steel with satin finish.
4. Toilet Tissue dispenser shall be Bobrick B2888 Contura Series, stainless steel with satin finish.
5. Sanitary napkin vending machine shall be Bobrick b 435009-25, Contura Series, stainless steel with satin finish.
6. Provide one hand drier at each restroom.

11000 EQUIPMENT

1. The Contractor is to provide all fixed furniture and equipment that are anchored to the building or are fixed to the extent that they have utility lines attached to them.
2. A/E shall include notes in appropriate sections advising subcontractors of specific manufacturer's requirements.

12000 FURNISHINGS

12505 BLINDS, SHADES AND SHUTTERS

One (1) inch horizontal style is the standard.

12530 DRAPERY AND CURTAIN HARDWARE

12550 BULLETIN BOARDS

Shall be provided on every floor and outside of each office or classroom. The construction of the boards shall be plywood backed with cellulose hardboard and cloth cover attached via glue. The bulletin boards will be attached with reusable metal anchors so as to facilitate removal and/or replacement.

12710 AUDITORIUM AND THEATER SEATING

1. Use 3" stud anchor for anchored seats. Where floor rises stepwise, use riser mounted seating.
2. Use single tablet arm, tubular stainless, no book rack, fiberglass back and bottom classroom seats from KI seating. Do not use swing or swivel chassis.
3. Use KI auditorium seating only. Wiring for lighting on seats to be approved by SHSU physical plant Electrical Dept.

14000 CONVEYING SYSTEMS

1. Proprietary diagnostic equipment and special tools required for elevator maintenance shall be specified and provided as part of the elevator. An electronic readout panel shall be provided to monitor the equipment function and operation.
2. A minimum of 8 hours of formal maintenance training for two technicians and two complete sets of maintenance manuals shall be provided with the elevator.
3. All conveying systems must meet all Federal, State, and local codes.

4. At least one elevator per building shall extend to the mechanical penthouse.

15000 MECHANICAL

1. Piping shall be tagged with color coded tags as follows with direction arrows every 10 feet and at equipment and every wall:

• Chilled water supply and return	dark blue
• Condenser water supply and return	dull green
• Building heating supply and return	yellow
• Natural gas	orange
• Domestic water	white with green markings
• Domestic hot water	white with yellow marks
• Fire water	red
• Drain lines	black

2. All equipment shall have a finish which will resist corrosion and decay. A finished coat must be applied to all primed surfaces. Coordinate color selection of equipment with the University.
3. Mechanical room floors shall be finished with Sherwin Williams Epoxy Paint B-60V70 & B62-62W101. Floors shall be slanted to drains and walls shall be 1.5 inches above elevation of the floor or a lab type sprayed molding wrapped up 4 inches above floor elevation and a 1 inch plus door threshold provided.

15060 PIPES AND PIPE FITTINGS

1. Use Sil-Fos on refrigerant piping and underground copper piping. Use lead free solder on all other copper pipe services.
2. Colored primers shall be used and be visible at all PVC joints.

15100 VALVES, STRAINERS, AND VENTS

1. Full Port Ball valves are preferred through 3 inch on water and hydronic systems.
2. Low and high point vents shall be provided and shall include ball valves.
3. Building isolation shall be provided by OS&Y valves
4. Horizontal and vertical isolation by zones shall be considered.
5. Control valves and actuators shall be manufactured by National Environmental Products Ltd. Ft. Lauderdale, Florida.
6. Taco pumps on domestic hot water return lines

15140 PUMPS

1. Inline pumps mounted at a convenient elevation are preferred.
2. Paco suction diffusers shall be installed on pumps with inlets between 2.5 and 10 inches.
3. All pumps on closed systems shall have mechanical seals.
4. Condenser water pumps shall have mechanical seals.
5. Pump insulation shall not be fiberglass.

15170 MOTORS

Motor shall be selected on the bases of life cycle costing with efficiency specified as being per the appropriate table of NEMA MG 1-1993, Revision 1 or the latest revision of same. The efficiency of motors in services such as cooling tower or condenser fans, air handling units, exhaust fans, circulating pumps, and compressors shall be selected from Table 12-11 in the referenced MG 1.

15250 THERMAL INSULATION

1. Use attached spec in the appendix and edit as required for project.

15410 PLUMBING PIPING AND PIPE FITTINGS
1. See sections 15000, 15060, 07272, 08305
2. Gas piping shall be black iron to the equipment with condensate legs. Piping with flexible connectors to equipment is unacceptable.
3. Unions shall be provided to allow removal of valves, strainers, regulators, etc.
4. Asbestos containing materials shall not be utilized for flanged gaskets.
5. Pipe sizes 1 ¼", 2 ½" and 3 ½" shall **not** be used.

15412 SOIL, WASTE AND SANITARY DRAINAGE SYSTEM
1. Under slab piping shall be heavy weight cast iron.
2. Above slab piping shall be cast iron or PVC.
3. Clean outs with access door installed in wall above flood rim of commodes.
4. Bathroom floor traps shall include automatic trap primers.

15414 DOMESTIC WATER SYSTEM
1. Underground piping shall be schedule 40 PVC and sleeved with 2" larger piping that goes under any sidewalk, driveway, etc. Tracer wire shall be buried with all underground piping.
2. Under slab piping shall be type "K?" copper and have no sweat joints.
3. Above ground piping shall be type "K?" or "K?" hard drawn with lead free solder.
4. No water lines or bibs in exterior walls.
5. Ball isolation valves shall be installed on cold, hot, hot water return on each restroom or room with multiple fixtures, laboratories, etc. Access doors shall be provided at each valve location.
6. Water meters installed on main water feed on new and renovations buildings.

15424 GAS-FIRED DOMESTIC WATER HEATERS
1. Electronic ignition, power dampers, condensing with 90% plus efficiency shall be provided. Preferred suppliers are State, A.O. Smith, or Rheem.
2. Multiple units sized at 199,000 BTUs are preferred.

15440 PLUMBING FIXTURES
Fixtures shall be American Standard or Kohler.

15445 PLUMBING FITTINGS AND TRIM
1. Faucets shall be American Standard's Heritage Series Kohler, or Moen.
2. Flush valves shall be Sloan or an alternative manufacturer must provide a stock of equal quantity to that currently available in the warehouse.
3. Infrared battery type Sloan flush valves and American Standard, Kohler, or Moen infrared low voltage lavatory faucets shall be provided.
4. No Bradley faucets
5. No self metering faucets

15455 WATER COOLERS AND DRINKING FOUNTAINS
Shall be Elkay or Halsey Taylor wall mounted per ADA.

15500 HEATING, VENTILATING AND AIR CONDITIONING
All systems shall be designed and specified per the latest edition of ASHRAE and the State of Texas Energy Conservation Design Standard for New State Buildings. No roof top units shall be used. If units are to be located on the roof, they shall be enclosed in a mechanical penthouse.

15555 BOILERS AND WATER HEATERS

1. Units shall be 85% or greater non-condensing, packaged, gas-fired, copper finned water tube complete with all controls and trim.
2. No asbestos containing materials shall be included with the materials or equipment supplied.

15600 CHILLER MANUFACTURERS

Trane, York and Carrier shall be considered as alternates.

15705 CIRCULATING WATER SYSTEMS

Provide water treatment equipment in the form of a 5 gallon chemical bypass feeder complete with isolation and drain valves unless the system is large enough to require a completely automated feed system. After the initial cleanup the University will provide chemicals for treatment during normal operation.

15770 PACKAGE AIR CONDITIONING UNIT

15834 AIR HANDLING UNITS

1. Hydronic units on the central plants must be designed for 42 degree entering temperature with a differential of not less than 12 degrees with two way control valves and actuators manufactured by National Environmental Products Ltd. Ft. Lauderdale, Florida.
2. Filter racks must accommodate bag type filters with a minimum efficiency of 30% on the pre filters and 65% on final filters.
3. All outside air shall be conditioned by one unit which shall be equipped with an automatic roll type prefilter in addition to minimum 65% efficiency bag type filters.
4. Clearances around the AHU shall allow ample room for maintenance and removal of the largest component internal to the AHU. Coil pull shall be noted on the drawings.

15845 AIR TERMINALS

1. If the system is DX provide a single zone DX unit for spaces with like loads. For DX units with zone or loading complications specify smart diffusers such as Therma-Fuser by Acutherm and if constant air volume is a concern supply a single VAV box with standalone Andover controls mounted closely to the AHU.
2. For chilled water systems the University's standard is a fan powered VAV mixing box with electric or heating water heat strips to trim the zone with local Andover box and room controls. Morning warm up and heating for temperature extremes is to be provided by a hot water coil in AHU. Fan powered boxes shall be provided to be reverse acting for morning warm-up heating from the AHU.

15851 REFRIGERANT PIPING FITTINGS, VALVES AND ACCESSORIES

15860 AIR COOLED CONDENSING UNITS

Multiple scroll compressors are required unless unavailable in the unit size chosen. Suction line accumulators and liquid line sight glasses are required. Spin fins are unacceptable. Extended 5 year compressor warranty shall be specified. York, Trane and Carrier are acceptable manufacturers.

15890 DUCTWORK

1. Design shall be per SMACNA guidelines.

2. Duct shall be externally insulated metal duct except internal insulation is acceptable for sound control within 12 feet of air handlers. The external insulation shall be clipped in place with all seams and laps sealed with a manufacturer recommended product as tape alone is not acceptable.
3. Flexible 12 inch maximum diameter duct runs of 4 to 10 acceptable with double straps at connections on both ends. Accoustical flex similar to Flexmaster type 8M shall be used.
4. Access panels shall be provided to: inspect and clean hot water coils if any; inspect and maintain fire damper if any.
5. Flexible vibration isolators shall contain no asbestos materials

15950 TEMPERATURE CONTROL SYSTEMS

The controls shall be Andover or manufacturer compatible with the communication network, the front end and field module programming of the present Andover Infinity system. Thermostats shall be PreCon ST-S3E-XA-XM mounted at an elevation of 48 inches to comply with ADA.

15990 TEST AND ADJUSTING

Projects of 30 tons or greater shall include provisions for test and balance by a third party selected by the owner. Payment of this service shall be provided by an allowance established by the Architect and the MEP engineer and included as a line item in the contractor's bid.

16000 ELECTRICAL

1. Neutrals on either lighting or power shall not be shared. Oversized neutrals shall be provided for all circuits with a potential to power equipment or computers which achieve their required power by chopping the sine wave.
2. Electric watt-hour meters with pulse output and demand shall be provided on new buildings, renovation, or in buildings where it is not currently metered.
2. Light switches to be specified as grade 20 amp quiet toggle style. Despard switches shall not be used.
3. Wall outlets to be standard 20 AMP grounded duplex. Despard outlets shall not be used.
4. Ground fault interrupts to be used according to latest NEC.

16110 ELECTRICAL RACEWAYS, CONDUITS AND TRENCHES

1. Underground conduit to be schedule 40 PVC encased in red concrete with 90 degree sweeps with termination and risers to be rigid galvanized steel or schedule 80 PVC or where applicable according to latest NEC.
2. Only EMT shall be used in all walls with minimum 1/2" for three #12s for switch legs.
3. MC or BX cable or associated products are not acceptable.
4. All home run conduits to be at least 1 inch ID.
5. Tracer wire shall be buried with all underground piping.

16120 WIRES AND CABLES

1. All underground primary wiring to have a minimum of 15 KV insulation.
2. Wire shall be stranded in all sizes.
3. All conductors shall be only copper.
4. All underground wire shall be buried in specified conduit and incased in red concrete, unless otherwise specified by SHSU.
5 All secondary wiring 600 volts or less shall have a minimum of 600 volt insulation and be stranded wire sized to meet or exceed NEC code for the load to be connected.

16155 MOTOR STARTERS

1. All motor starters shall be installed to meet or exceed NEC guide lines for the motor it is to serve.
2. Control wiring if applicable shall not be daisy chained to the starter via a single circuit running from starter to each safety devise or system component but shall be wired from an adjacent terminal strip to the starter and from the terminal strip to each safety devise or component of the system. A circuit diagram shall be included on the door of the terminal strip housing. Single phase, and 0verload protection shall be provided for all 3 phase motors.

16300 FUSES

All fuses indicated as U.L. Class RK-5 must give instantaneous indication to an open fuse via an indication window.

16400 DISTRIBUTION / MOTOR CONTROL EQUIPMENT AND ACCESSORIES

Protection from single phasing and overload shall be provided on all three phase equipment.

16426 PANEL BOARDS AND BRANCH CIRCUITS

General Electric panels and breakers are preferred. Federal Pacific is not used.
bolt-in breakers are preferred.

16440 ENCLOSED SAFETY SWITCHES

Breakers are preferred over fuses except as required by the latest NEC guidelines.

16450 GROUNDING

Per NEC latest edition. Grounding systems should take into consideration harmonic distortion and transient voltages as a criteria.

16460 TRANSFORMERS

1. Copper coils and terminals are required.
2. The high voltage step down transformer shall be dead front, oil filled and supplied for 13.2 and 4.16 K Volts service if the current building supply is 4.16 K Volts. The University is upgrading to 13.2 KV. Dual voltage transformers may be required by SHSU.
3. Dry type high voltage transformers are not preferred but if required by the circumstances must use cast coil technology.
4. dry type secondary voltage transformers shall be installed with a proper grounding system per NEC requirements and SHSU physical plant specs.

16485 CONTRACTORS, RELAYS, PHOTOCELLS, AND TIME SWITCHES

Time clocks on exterior lighting is required. Use photo cells only if specified by SHSU Physical Plant Electric Dept. Time clocks to have battery backup.

16500 LIGHTING

Four lamp prismatic fixtures 2x4 lay-ins with T-8 technology are preferred. Fixtures with “U” tubes will not be considered. Incandescent lighting will not be accepted – except in specific instances approved by the University. Light fixtures need to be easily accessed for re-lamping.

16501 LAMPS

Incandescent lamps will not be considered, especially in exit signs.
Fluorescent lamps or where required metal halide lamps are preferred.

16520 EXTERIOR LUMINARIES

Exterior lighting shall be metal halide with a photocell, or time clock controlled circuit and shall comply with state requirements of HB 916.

16535 EMERGENCY LIGHTING

1. Emergency power shall be provided by a standby generator set or use of battery power units for halls and stairways.
2. Exit lightening shall be via light emitting diodes (LED) or light absorbing reflective type signs.

16625 STANDBY GENERATOR SETS

The engine-driven generator system complete for outdoor installation shall include automatic transfer switches and associated fuel system. Fuel system shall be natural gas unless unavailable to the building in which case diesel with a block heater system is acceptable.

16xxx HAND DRIERS

Hand dryers in appropriate numbers shall be installed in each rest room unless otherwise specified by SHSU Physical Plant dept.

16700 COMMUNICATIONS (TELEPHONE AND DATA) – USE ATTACHED SPECIFICATION IN THE APPENDIX. EDIT AS NECISSARY FOR THE PROJECT.

End of A/E Guidelines

Appendix A – Specifications

SECTION 08710

FINISH HARDWARE

Part 1 -GENERAL

1.1 SUMMARY

A. Section Includes:
1. Door Hardware, including electric hardware.
2. Storefront and entrance door hardware.
3. Gate Hardware.
4. Card Access control system.
5. Hold-open closers with fire-alarm interface.
6. Wall or floor-mounted electromagnetic hold-open devices.
7. Power supplies for electric hardware.
8. Low energy door operators plus sensors and actuators.
9. Remote button release hardware.
10. Padlocks.
11. Cylinders for doors fabricated with locking hardware.
12. Wiring and riser diagrams for electric hardware.
13. Key cabinets.

B. Related Sections:

1. Section 06200 - Finish Carpentry: Finish Hardware Installation.
2. Section 07900 - Joint Sealers – exterior thresholds.
3. Section 08100 - Metal Doors and Frames.
4. Section 08200 - Wood and Plastic Doors.
5. Section 08300 - Special Doors.
6. Section 08400 - Entrances and Storefronts.
7. Section 08900 - Glazed Curtain Walls.
8. Section 10650 - Operable Partitions.
9. Section 16722 - Fire/Life-Safety System.
10. Section 16724 - Security Access Systems.

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Signs, except where scheduled.
4. Toilet accessories, including grab bars.
5. Installation.
6. Rough hardware.
7. Folding partitions, except cylinders where detailed.
8. Sliding aluminum doors, except cylinders where detailed.
9. Access doors and panels, except cylinders where detailed.
10. Corner Guards.

1.2 REFERENCES:

Use date of standard in effect as of Bid date.
American National Standards Institute – ANSI 156.18 – Materials and Finishes.
ICC/ANSI A117.1 - 1998 – Specifications for making buildings and facilities usable by physically handicapped people.
ADA – Americans with Disabilities Act of 1990
BHMA – Builders Hardware Manufacturers Association
DHI – Door and Hardware Institute
NFPA – National Fire Protection Association

1. NFPA 80 – Fire Doors and Windows
2. NFPA 101 – Life Safety Code
3. NFPA 105 – Smoke and Draft Control Door Assemblies
4. NFPA 252 – Fire Tests of Door Assemblies

UL – Underwriters Laboratories

1. UL10B – Fire Tests of Door Assemblies as amended to incorporate positive pressure testing.
2. UL 305 – Panic Hardware

WHI – Warnock Hersey Incorporated
Local applicable codes

SDI – Steel Door Institute
AWI – Architectural Woodwork Institute
NAAMM – National Association of Architectural Metal Manufacturers

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1.3 SUBMITTALS & SUBSTITUTIONS

A. SUBMITTALS: Submit six copies of schedule per Division 1. Organize vertically formatted schedule into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Type, style, function, size, quantity and finish of hardware items. Use BHMA Finish codes per ANSI A156.18.
2. Name, part number and manufacturer of each item.
3. Fastenings and other pertinent information.
4. Location of hardware set coordinated with floor plans and door schedule.
5. Explanation of abbreviations, symbols, and codes contained in schedule.
6. Mounting locations for hardware.
7. Door and frame sizes, materials and degrees of swing.
8. List of manufacturers used and their nearest representative with address and phone number.
9. Catalog cuts.
10. Manufacturer's technical data and installation instructions for electronic hardware.
11. Date of jobsite visit.

B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.

C. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.

1. Items listed with no substitute manufacturers have been requested by Owner to meet existing standard.

D. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring/riser diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.4 QUALITY ASSURANCE:

A. Qualifications:

1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course Work for project hardware consultation to Owner, Architect and Contractor.

(1) Responsible for detailing, scheduling and ordering of finish hardware.

B. Hardware: New, free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.

C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

D. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C / UBC Standard 7-2 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required intumescent seals. Furnish openings complete.

1. Note: scheduled resilient seals may exceed selected door manufacturer's requirements.
2. See 2.6.E for added information regarding resilient and intumescent seals.

E. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.

1. Where scheduled item is now obsolete, bid and furnish manufacturer's updated item at no additional cost to the project.

F. Pre-Installation Meetings: Initiate and conduct with supplier, installer and related trades, coordinate materials and techniques, and sequence complex hardware items and systems installation. Include manufacturers' representatives of locks, panic hardware and door closers in the meetings. Convene at least one week prior to commencement of related work.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Delivery: coordinate delivery to appropriate locations (shop or field).

1. Permanent keys and cores: secured delivery direct to Owner's representative.

B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.

C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

1.6 PROJECT CONDITIONS:

A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical as the same operation and quality as type specified, subject to Architect's approval.

1.7 SEQUENCING AND COORDINATION:

A. Coordinate with concrete.

B. Reinforce walls for wall-mounted hardware, including wall stops and stainless steel guard rails.

C. Coordinate finish floor materials and floor-mounted hardware.

D. Conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.

E. Furnish manufacturer templates to door and frame fabricators.

1. Ensure proper reinforcement in metal doors and frames to support machine screws for panic hardware and door closers.

F. Use hardware consultant to check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.

1. Confirm that wood door manufacturers furnish necessary UBC Standard 7-2 compliant seal packages.

1.8 WARRANTY:

A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' warranties:

1.	Locksets:	Seven years.
2.	Exit Devices:	Three years mechanical, one year electrical.
3.	Closers:	Ten years mechanical, two years electrical.
4.	Hinges:	Two years.
5.	Other Hardware:	Two years.

1.9 COMMISSIONING:

A. Conduct these tests three weeks prior to request for certificate of substantial completion

B. Test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.

C. Test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.

D. Test hardware interfaced with fire/life-safety system for proper operation and release.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.

ITEM:	MANUFACTURER:	ACCEPTABLE SUB:
Hinges	(IVE) Ives	Hager, McKinney
Continuous Hinges	(HAG) Hager	Pemko, Zero, Select
Pivots	(IVE) Ives	Rixson
Key System	(SCH) Schlage	Owner's Standard
Locks	(SCH) Schlage	Owner's Standard
Exit Devices	(VON) Von Duprin	Owner's Standard
Closers	(LCN) LCN	Owner's Standard
Auto Flush Bolts	(IVE) Ives	DCI
Coordinators	(IVE) Ives	Hager
Silencers	(IVE) Ives	Hager, Rockwood
Push & Pull Plates	(IVE) Ives	Hager, Rockwood
Kickplates	(IVE) Ives	Hager, Rockwood
Stops & Holders –	(IVE) Ives	Hager, Rockwood
Overhead Stops	(GLY) Glynn-Johnson	None available
Thresholds	(PEM) Pemko	Zero, Reese
Seals & Bottoms	(PEM) Pemko	Zero, Reese
Key Cabinets	(LUN) Lund	TelKee
Aluminum Door Locks	(ADA) Adams Rite	None

2.2 HINGING METHODS:

A. Note: drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.

B. Conventional Hinges: Stainless steel pins and concealed ball bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.

1. Three hinges per leaf to 7 foot, 6 inch height. Add one for each additional 30 inches in height, or any fraction thereof.
2. Extra heavy weight hinges on doors over 3 foot, 5 inches in width.
3. Extra-heavy weight hinges on doors with panic hardware or fire exit devices.
4. Outswinging exterior doors: Stainless steel with non-removable (NRP) pins.
5. Stainless steel material at doors subject to corrosive atmospheric conditions.

6. Provide shims and shimming instructions for proper door adjustment.
7. All hinges shall be stainless steel material.

C. Continuous Hinges:

1. Geared-type aluminum at exteriors.

   a. Heavy-duty, extra-bearing units for doors over 3 foot, 5 inches in width.
   b. Heavy-duty, extra-bearing units for doors with panic hardware or fire exit devices.
   c. Use wide-throw units where needed for maximum degree of swing, advise architect if commonly available hinges are insufficient.

D. Pivots: high-strength forged bronze or stainless steel, tilt-on precision bearing and bearing pin.

1. Bottom and intermediate pivots: adjustability of minus 1/16 inch, plus 1/8 inch.

2.3 LOCKSETS, LATCHSETS, DEADBOLTS:

A. Extra Heavy Duty Cylindrical Locks and Latches: as scheduled.

1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
2. Locking Spindle: stainless steel, interlocking design.
3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel, or stainless steel.
4. Backset: 2-3/4" typically, more or less as needed to accommodate frame, door or other hardware.
5. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2” clearance from lever mid-point to door face.
6. Electric operation: Manufacturer-installed continuous duty solenoid.
7. Strikes: 16 gage curved steel, bronze or brass with 1” deep box construction, lips of sufficient length to clear trim and protect clothing.
8. Deadbolt: B660 JD
9. Padlocks: Kryptonite PL1001J and PL4001J.
10. Lock Series and Design: Schlage ND series, “Rhodes” design.
11. Certifications:

    a. ANSI A156.2, 1994, Series 4000, Grade 1.
    b. UL listed for A label and lesser class single doors up to 4ft x 8ft.

12. Accepted substitutions: Schlage – No substitution.

2.4 EXIT DEVICES / PANIC HARDWARE

A. General features:

1. Independent lab-tested 1,000,000 cycles.
2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
3. 0.75-inch throw deadlocking latchbolts.
4. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
5. No exposed screws to show through glass doors.
6. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
7. Releasable in normal operation with 15-lb. maximum operating force, and with 32 lb. maximum pressure under 250-lb. load to the door.
8. Flush end cap design as opposed to typical "bottle-cap" design end cap.
9. 33 series devices are not acceptable.

B. Specific features:

1. Non-Fire Rated Devices: hex key dogging.
2. Lever Trim: Breakaway type, forged brass or bronze escutcheon min .130" thickness, compression spring drive, match lockset lever design.
3. Vertical rod devices are not acceptable.
4. Exterior doors: All exterior doors with panic hardware shall have XP99 series devices.
5. Fire-Labeled Devices: UL label indicating "Fire Exit Hardware".
6. Inpact recessed devices: 1-1/4inch projection when push-pad is depressed. Sloped metal end caps to deflect carts, etc. No pinch points to catch skin between touchbar and door.
7. Delayed Egress Devices: Function achieved within single exit device component, including latch, delayed locking device, request-to-exit switch, nuisance alarm, remote alarm, key switch, indicator lamp, relay, internal horn, door position input, external inhibit input plus fire alarm input. NFPA 101 "Special Locking Arrangement" compliant.
8. Electrically Operated Devices: Single manufacturer source for electric latch retraction devices, electrically controlled trim, power transfers, power supplies, monitoring switches and controls.
9. Removable Mullions: Removable with single turn of building key. Securely reinstalled without need for key. Furnish storage brackets for securely stowing the mullion away from the door when removed.
10. Device Trim: all devices with trim shall be 996L
11. Accepted substitutions: Von Duprin no substitution

2.5 CLOSERS

A. Surface Closers: [4041]

1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
2. ISO 2000 certified. Units stamped with date-of-manufacture code.
3. Independent lab-tested 10,000,000 cycles.
4. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
6. Opening pressure: Exterior doors 8.5 lb., interior doors 5 lb., labeled fire doors 15 lb.
7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
8. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
9. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.

10. Exterior doors do not require seasonal adjustments in temperatures from 120 degrees F to –30 degrees F, furnish data on request.
11. Non-flaming fluid, will not fuel door or floor covering fires.
12. Pressure Relief Valves (PRV): unsafe, not permitted.
13. All closers shall be provided with sex nuts and bolts standard.
14. Overhead concealed and floor closers are not acceptable unless no other option exists.
15. Accepted substitutions: LCN no substitution.

A. Low-Energy Door Operators: Comply with ANSI/BHMA 156.19 Electric power-open, hydraulically checked spring power closing. Modular construction. Finished metal cover. Field-adjustable opening force, opening speed, time-open, closing and latching speeds. Door reopens and timing cycle restores if system reactuated during closing cycle. Breakaway clutch protection from forced closing. Door, frame, motor and drive train protected by attenuated initiation of opening cycle.

1. Self-contained low-voltage power supply, terminal strip and sequencing for incorporation of electric hardware with system operation.
2. LCN Senior Swing no substitution.

2.6 OTHER HARDWARE

A. Automatic Flush Bolts: Low operating force design, “LBR” type where scheduled.

B. Overhead Stops: Stainless steel (100 series). Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

C. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

D. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide wall type. If neither can be used, provide overhead type.
2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.

E. Seals: Finished to match adjacent frame color. Resilient seal material: polypropylene, nylon brush, or solid high-grade neoprene. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material’s thickness and durability. Proposed substitutions: submit for

approval.

1. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
2. Non-corroding fasteners at in-swinging exterior doors.
3. Sound control openings: Use components tested as a system using nationally accepted standards by independent laboratories. Ensure that the door leafs have the necessary sealed-in-place STC ratings. Adhesive mounted components not acceptable. Fasten applied seals over bead of sealant.
4. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.
5. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C / UBC Standard 7-2. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required. Adhesive-applied intumescent strips are not acceptable, use concealed-in-door-edge type or kerfed-in-frame type.

F Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.

G. Thresholds: As scheduled and per details. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.

1. Exteriors: Seal perimeter to exclude water and vermin. Use butyl-rubber or polyisobutylene sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
2. Fire-rated openings, 90min or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.
3. Fire-rated openings, 3hour duration: Thresholds, where scheduled, to extend full jamb depth.

3. Acoustic openings: Set units in full bed of Division-7-compliant butyl-rubber or polyisobutylene sealant, leave no air space between threshold and substrate.
4. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.

H. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

J. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.

K. Wall- & Floor-mounted electromagnetic door holders: LCN's SEM series or approved equivalent. Incorporate into U.L.-listed fire&life-safety system, doors release to allow closure and latching when door's zone is in alarm state. Use minimum projection required to allow door to open as widely as allowed by wall conditions and projection of door hardware.

2.7 FINISH:

A. Generally BHMA 626 Satin Chromium.

1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.

B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

2.8C KEYING REQUIREMENTS:

A. Key System: Schlage Everest D utility-patented keyway, interchangeable core. Utility patent protection to extend at least until 2014. Key blanks available only from factory-direct sources, not available from after-market key blank manufacturers. For estimate use factory GMK charge. Initiate and conduct meetings(s) with Owner and I-R Security & Safety Consultants representatives to determine system keyway(s), keybow styles, structure and degree of geographic exclusivity. Furnish Owner's written approval of the system. Supplier to contact University lock shop at (936) – 294-3812 to determine the appropriate keyway

1. Existing factory registered master key system.
2. Construction keying: furnish temporary keyed-alike cores. Remove at substantial completion and install permanent cylinders/cores in Owner's presence. Demonstrate that construction key no longer operates.
3. Furnish 10 construction keys.
4. Furnish 2 construction control keys.
5. All keyblanks are to be 35-015.
6. All keyblanks are to be uncut and stamped "Do not duplicate"
7. All keyblanks are to be unembossed.
8. All cylinders are to be provided with three uncut keyblanks.
9. Furnish 20 uncombinated cores in addition to the cores required for the project.

A. Key Cylinders: furnish utility patented, 6-pin solid brass construction.

B. Cylinder cores: furnish keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.

C. Permanent keys: use secured shipment direct from point of origination to Owner.

D. Bitting List: use secured shipment direct from point of origination to Owner upon completion.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

A. Experienced craftsperson with a resume of successful projects. Can readily differentiate between number 2 and number 3 phillips-drive screws and screwdrivers. Can readily differentiate between #10-24 machine screws and drywall screws, and can explain correct usages of these items.

3.2 PREPARATION:

A. Ensure that walls and frames are square and plumb before hardware installation.

B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.

1. Notify Architect of any code conflicts before ordering material.
2. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 30 inches to 44 inches above the finished floor.
3. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

C. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.

D. Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware, tag and bag, and turn over to Owner.

1. Patch and fill wood frames and doors with solid wood dutchments before cutting for new hardware. Do not reuse existing screw holes - - fill with dowel plugs and re-pilot.
2. Metal doors/frames: Weld or fasten with screws: filler pieces in existing hardware cut-outs and mortises not scheduled for re-use by new hardware. Leave surfaces smooth - - no applied patches.
3. Remove unused existing floor closers, fill empty floor closer cavities with concrete.

3.3 INSTALLATION

A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.

1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
4. Replace fasteners damaged by power-driven tools.

B. Locate floor stops no more that 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.

C. Locate overhead stops for minimum 90 degrees and maximum allowable degree of swing.

D. Drill pilot holes for fasteners in wood doors and/or frames.

E. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

3.4 ADJUSTING

A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.

1. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner's satisfaction.
2. Adjust doors to fully latch with no more than 1 pound of pressure.
3. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.

B. Inspection: Use hardware supplier. Include supplier's report with closeout documents.

C. Follow-up inspection: Installer to provide letter of agreement to Owner that approximately 6 months after substantial completion, installer will visit Project with representatives of the manufacturers of the locking devices and door closers to accomplish following:

1. Re-adjust hardware.
2. Evaluate maintenance procedures and recommend changes or additions, and instruct Owner's personnel.
3. Identify items that have deteriorated or failed.
4. Submit written report identifying problems and likely future problems.

3.5 DEMONSTRATION:

A. Demonstrate electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.

3.6 PROTECTION/CLEANING:

A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.

B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.7 SCHEDULE OF FINISH HARDWARE

A. See door schedule in drawings for hardware set assignments.

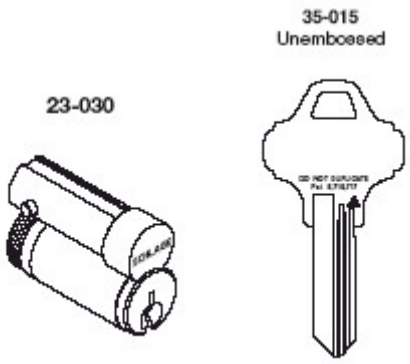
B. Manufacturers and their abbreviations used in this schedule:

ADA	Adams Rite
DOR	Dor-O-Matic
FAL	Falcon
GLY	Glynn-Johnson Hardware
HAG	Hager Hinge
HEN	Henderson
IVE	H. B. Ives
KEE	Keedex Manufacturing
LCN	LCN Closers
LOC	Locknetics
LUN	Lund
MON	Monarch
PEM	Pemko
SBH	Specialized Builders Hardware
SCH	Schlage Lock Company
TRI	Trimco Manufacturing
VON	Von Duprin
ZER	Zero International

END OF SECTION 08710

Additional information on Keys and Cores

These are the only keys and cores we will accept. The attachments are actual key blank w/ part numbers, and cores w/ part numbers.



SHSU uses only Schlage D series and Von Duprin 99 series full size format interchangeable core hardware. All hardware supplied should accept the cores specified. I.C. mortises and rim housings will need to be supplied where needed. Standard core, mortise and rim cylinders are not acceptable.

CORES AND KEYS ARE TO BE SHIPPED SEPERATELY AND AS DISCRIBED BELOW!

Keyway Everest D (keyway to be determined by project).....PLEASE CONTACT.....MIKE YARBOROUGH..SHSU PPL_MGY@SHSU.EDU (936) 294-3812
(factory will not ship 0-bitted cores)

23-030 Everest large format interchangeable cores, 1-bitted

35-015 Everest key blanks, D ( )/ (determined per project) keyway, NO LOGO, Stamped DO NOT DUPLICATE

16700 COMMUNICATIONS (TELEPHONE AND DATA)

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. This project shall comply with best practices as described by BICSI and or ANSI/EIA/TIA standards including but not limited to:
ANSI/EIA/TIA-568-2001, Commercial Building Telecommunications Cabling Standard or its most recent successor document
ANSI/EIA/TIA-570-1999, Residential and Light Commercial Building Telecommunications Wiring Standard or its most recent successor document
ANSI/EIA/TIA-569-2000, Commercial Building Telecommunications Pathways and Spaces or its most recent successor document
ANSI/EIA/TIA-606-1993, Administration Standard for the Telecommunications Infrastructure of Commercial Buildings or its most recent successor document

B. This work will be performed by a telecommunications contractor who has a Registered Communications Distribution Designer on staff, and will hereinafter be referred to as the Contractor. This contractor is to be hired by and will be responsible to, the electrical contractor.

C. The Contractor shall fully comply with the requirements of Sam Houston State University Computer Services as stated herein, and shall maintain contact with the designated representative of Sam Houston State University Computer Services, who will hereinafter be referred to as SHSU Computer Services.

D. The Contractor shall provide all the labor and scheduling coordination, as well as all materials and equipment, per SHSU Computer Services specification as stated herein, which are required to render a BICSI Standard Category 6 compliant cabling system from each telecommunications port designated on the schematic floor plans to the patch panel termination point in the telecommunications closet. When complete, each telecommunications port location will have two Category 6 plenum rated lines, unless specified otherwise. Each line will consist only of a continuous home run back to the telecommunications closet and will be terminated in a patch panel.

D. The Contractor shall be responsible for arranging the equipment, material, and apparatus into the given project restraints per specifications provided by SHSU Computer Services.

F. The Contractor, by submitting a bid on this work, certifies that he has a Registered Communications Distribution Designer on staff who will design the layout for this project, and that his cabling staff has the technical training and ability to install the cabling in a professional manner consistent with the best standards of the trade within BICSI guidelines. He further certifies that each cable system shall be tested fully using a Level II test set, to verify compliance with Category 6 standards and will be labeled consistently end to end meeting specifications

given by SHSU Computer Services. SHSU Computer Services shall be notified prior to testing, and shall have the option to have a representative present during any or all testing. The Contractor shall complete the job within the expectations of Sam Houston State University's defined timeframe, and shall fully warrant all parts and labor against test failure for a period of seven (7) years.

1.2 SUBMITTALS

A. The Contractor's proposal shall provide submittals to SHSU Computer Services for all materials and equipment to be provided and installed by the Contractor on this project, to include but not to be limited by the following list: Telephone cable, Fiber Optic cable, Category 6 cable, telecommunications outlets and components, patch panels, telephone entrance terminals, protectors, hanger devices, conduit, and equipment cabinets or racks and all rack component parts.

B. Upon completion of the work but before final payment, the Contractor shall provide the following "As-Built" in both electronic format and hard copy: Wire / Cable Routing Diagram showing locations of any new or pertinent man holes, conduits, pull boxes, chases, and the cable pathways between them; complete floor plan Diagrams depicting telecommunications closet and port locations listed by label identification; and Test Results demonstrating full compliance with Category 6 wiring standards for each cable system.

PART 2 - SCOPE OF WORK

2.1 The Contractor shall perform the following work:

A. The Contractor, utilizing his Registered Communications Distribution Designer (RCDD), shall be responsible for designing the communications distribution within the scope of the project, including any underground conduit necessary to provide telecommunications service from existing point of service availability, distributing throughout the project area, and within the structures. Considerations for any adverse conditions shall also be accommodated per instance, advising SHSU Computer Services of the necessary variances from the outlined specifications. The Contractor shall perform all work per the BICSI Cabling Installation Manual including NEC and ANSI Standards referenced therein, unless otherwise directed herein, meeting Category 6 wiring standards.

B. The Contractor shall be responsible for construction of the cable pathways and to overcome obstacles, install conduit as specified and as further need is determined by the RCDD, and to correct any building alterations made necessary by their installations. Pathways shall follow along hallways and vertical chases designated as being for telecommunications. The pathway location of all cable runs shall be from the telecommunications port to the hallway, along adjoining hallways to the telecommunications closet or location designated. Cable shall not be run over groups of offices or work areas when a pathway recommended herein is available.

C. The Contractor shall assure that the building grounding is per ANSI/TIA/EIA-607 and the National Electrical Code or shall provide grounding and bonding per these standards.

D. The Contractor shall assure the space allocated for the telecommunications closets or other designated spaces are appropriate to comply with BICSI standards, and are in agreement with specifications provided. Any concerns should be discussed with the SHSU Computer Services prior to installation.

E. All cable pathways shall be supported per BICSI standards, by hangers which shall be selected dependant on the cable and the hanger manufacturers' recommendation. The support distance shall not exceed 6 feet. Each hanger shall be suspended from systems provided by the Contractor and not from any other structures which are not intended to support cabling.

F. When crossing through a mechanical room, or other areas requiring additional protection, rigid metal conduit, EMT or metal cable tray shall be supplied to protect telecommunications cables and reduce the potential of EMI/RFI interference. Cable separation shall be maintained from possible sources of EMI/RFI per ANSI/EIA/TIA-569. All EMT conduit, metal cable trays, equipment racks or cabinets shall be grounded per BICSI Standards.

G. Where telecommunications cables cannot be concealed within the walls at a telecommunications port location, surface mounted wire mold shall be installed. The wire mold shall extend into and above the ceiling a minimum of two inches, and continue down to a surface mounted box. The surface mounted box will house the faceplate and modular jacks as well as provide mechanical protection for the terminals. The wire mold and surface mounted box colors shall match, and shall complement the existing wall color. Wire mold may be of either metal or plastic which shall be mechanically affixed to the surface. Mounting brackets will be concealed or pre-approved by SHSU Computer Services.

H. Telecommunications cable concealed within a wall shall be run from the outlet box within a minimum of ¾" metal conduit and stubbed out into the ceiling space a minimum of two inches above drop ceilings. If the finished ceiling will not provide ready access, metal conduit must provide a continuous pathway to the telecommunications closet.

I. Two 4" EMT conduits shall be installed to interconnect each of the telecommunications closets, and connect to the exterior service source, unless otherwise specified by SHSU Computer Services. Telephone tie cable and fiber optic cable shall be run together within one of the two conduits. All conduits shall be left with an intact pull string to facilitate future pulls. Pull boxes shall be placed where necessary, allowing a maximum total of two 90 degree sweeping turns between pull access locations, and any other requirements per the BICSI Cabling Installation Manual .

J. The patch panels shall be mounted in an equipment cabinet meeting specifications listed in section 3.2 (A), unless the selected space will not support such, in which case an open rack meeting specifications listed in section 3.2 (B), secured both to the wall by ladder rack, and to the floor by bolts is acceptable with SHSU Computer Services prior agreement. If there are fewer than 48 telecommunications ports to be terminated in a closet, with prior agreement by

SHSU Computer Services, a wall mounted rack or cabinet per specifications listed in section 3.2 (A), may be acceptable. The patch panel shall be sized to provide not less than 20% spare terminal ports available to accommodate future expansion of the system. Rack size shall be determined in a way so as to provide not less than 40% free space.

K. Telephone cable entering the building shall be terminated on Entrance Terminals and grounded in accordance with NEC and BICSI standards. Cross-connect panels and Telephone Tie Cables shall be installed where necessary within and between telecommunications closets, and shall be terminated into patch panels in the equipment cabinet. These panels shall be placed in a group separated from the Category 6 patch panels distributing cable to the telecommunications ports. Final placement of panels in equipment cabinets shall be pre-approved by of SHSU Computer Services.

L. The Contractor shall place identical labels at the telecommunications faceplate and the patch panel, as well as on each end of every cable for each Category 6 cable system. The labeling scheme shall be consistent with: the room number where it originates, a letter indicating which faceplate within the room, and a number indicating the port within that faceplate, i.e., 203.a2, or 110.b1. If there are multiple faceplates within the room, the alphabetical sequence shall begin at the door and will increment sequentially in a clockwise direction around the room.

For special circumstance connections, such as for wireless, camera, courtesy phone, or door access connections, these should be placed together in a common area on the patch panel. These should be labeled with WAP-closet-room, or CAM-closet-room.1 (if multi in same room, .1 to left of door then clockwise), CPH-closet-room and DOOR-closet-room, on both ends, as CPH-A-215, WAP-C-400.1. Wireless and Camera connections will be left in the accessible ceiling space with a 15' service loop, terminated with an RJ-45, labeled appropriately with cable-wrap labels. An indicator of some sort will aid in locating these lines, such as a colored marker on the ceiling. All lines will be fully tested.
Cable TV wiring will also be labeled identically on each end with cable-wrap labels.

M. Penetrations through or into firewalls shall be sleeved and/or fire stopped per the referenced codes and standards.

N. All conduits in pertinent manholes or those connecting to exterior locations, whether in use or empty, shall be sealed with waterproof sealant at each end.

O. Each Category 6 cable system shall be tested for compliance with ANSI/TIA/EIA-568-B requirements using a Fluke DSP-4--- Cable Analyzer Series with CAT6 rated modules or equivalent test set certified by its manufacturer for the test conditions and with the ability to fully test compliance with Category 6 Standards. Test set should have a current NIST traceable calibration sticker on it. The contactor shall provide to SHSU a submittal stating the type of equipment to be used for testing of both CAT6 and fiber optic cabling prior to the beginning of testing. The test results shall be provided in paper and electronic format, verifying the compliance of every cable system.

P. All fiber runs from IDF data closets to the MDF shall be home runs

Q. A Category 6 line and a red duplex single-mode fiber shall be run between the MDF patch panel/fiber tray and the Fire Alarm. The fiber shall be terminated in the data closet with LC terminations and should be terminated with ST connections on the fire panel end.

R. All punch down of Category 6 cabling shall conform to 568A punch down method. A service loop of ten feet is required in all data closets. The service loop should be bundled neatly and be run over ladder or along wall to keep it out of the work space.

S. All classrooms shall have at least one CATV drop terminated with an F connector on a wall plate located at the teaching position. The CATV headend shall be located in the MDF and all cables from the classrooms shall be home runs of RG6 cable. A 4' x 8' ¾ inch plywood board shall be provided for mounting of CATV amplifiers and taps. Final installation and activation of the CATV system shall be performed be the SHSU CATV vendor.

T. There shall be at least one wireless access point location per every 50' on each floor of a structure. The locations should be staggered so that they do not over lap the adjacent floor. The WAP location shall be located above ceiling when practical and shall consist of a CAT6 data line terminated with an RJ45 at the end of a 15 foot service loop. The loop shall be suspended above the ceiling and labeled for easy identification as well as being labeled per 2.1 M.

U. When required as part of the project, IP camera location shall consist of a CAT6 data line terminated with an RJ45 at the end of a 15 foot service loop. The loop shall be suspended above the ceiling and labeled for easy identification as well as being labeled per 2.1 M.

V. When required as part of the project, data projector locations shall consist of a ¾" piece of plywood suspended above the ceiling by all thread attached to the floor structure above. A 120Volt service outlet shall be located in close proximity as well a CAT6 data outlet box. A 1 inch conduit from the projector location to the teaching position shall be installed. Exact distance from front of the room should be determined by consulting with SHSU.

W. In areas designed for vending machines, there shall be one CAT6 data line per machine.

X. There shall be at least one courtesy phone location per floor in a structure. The location shall be 48" AFF and be terminated with a standard analog wall phone mount. The location should be generally in the area of the elevator but final placement should be decided after consulting with SHSU.

Y. All cable shall be run with basket trays within ceilings. Telco style ladders shall be used to run cable horizontally and vertically in the data closets.

PART 3 - MATERIALS

3.1 All materials shall comply with: ANSI/TIA/EIA-568-B, Commercial Building Telecommunications Cabling Standard, ANSI/EIA/TIA-569, Commercial Building Standard for Telecommunications Pathways and Spaces, ANSI/EIA/TIA-606, Administration Standard for

the Telecommunications Infrastructure of Commercial Buildings, ANSI/TIA/EIA-607, Commercial Building Grounding and Bonding Requirements for Telecommunications and the National Electrical Code ANSI/NFPA-70.

3.2 All materials used shall meet required specifications defined herein or as approved by of SHSU Computer Services prior to installation.

A. Enclosed Cabinets shall be APC AR3150 750mm wide cabinet for the network switches and cabling Enclosed Wall Mounted Cabinets shall be APC AR100 wall mount 13U rack.

B. Free standing racks shall be Chatsworth Black Freestanding Aluminum Rack - 55053-703, or appropriate height of same, as necessary to provide required space. Vertical cable management shall be provided in minimum quantity of one with each separately placed rack, otherwise one between each rack when placed in a single row (Chatsworth Black Vertical Wire Manager - 11729-703).

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C. Patch Panel and Horizontal Wire Management system shall be made up as an assembly using Siemon 24 Port Patch Panel, part # HD6-24U, or Siemon 48 Port Patch Panel, part # HD6-48U, Siemon 1U Horizontal Wire Management, part # WN-143-5. The system will be comprised of one wire manager above and one below each 48 ports. These shall be used for all telecommunications to the work areas. Each 48 ports used for telephone feeder cable shall have one wire manager below.

D. The telecommunications cable shall be CommScope Ultra Media 6, part# 7504 (CAT 6 Teal Plenum).

E. Any Fiber Optic Cable run between telecommunications closets within the building shall be Riser Rated, 12MM (50μm)/12SM Hybrid Tight Buffered cable by Corning. Any Fiber Optic Cable run between buildings in underground conduit shall be 48 SM Loose Tube, 048EW4-T4101D20 by Corning. There shall be a service loop of 15' routed appropriately in the telecommunications closets at each end of the fiber run. The fiber should be terminated with LC connectors and must be installed and certified by a Corning Certified Installer and said installer must provide the Corning 25 year warranty on all terminations. All power meter and OTDR readings shall be submitted to SHSU as well as a copy of any other tests given to Corning for certification.

F. The Fiber trays shall be Corning Fiber Optic enclosure with LC connector panels corresponding to size and type of fiber. Enclosure shall be sized to match the capacity of the fiber cable terminating into it. Acceptable part numbers are CCH-01U modular sliding 1U Shelf or CCH-02U modular sliding 2U shelf and CCH-CP24-D3 LC duplex adapters will ceramic sleeves.

G. The Telephone Tie Cable run between telecommunications closets within the building shall be Superior Essex Plenum rated cable of a size determined by SHSU Computer Services commensurate with the size of the cable providing service to the building.

H. The Entrance Terminals for Telephone shall be Circa 110 Entrance Terminals with 25' tail, part #1880B1-100, in quantity to fully support the cable supplying the building as provided by SHSU Computer Services.

I. The Protector Modules shall be Circa Gas Protector Unit 3B1EW as appropriate to the number of entrance terminals.

J. Faceplates and Modular Jacks shall be made up as an assembly using the following Category 6 Siemon components: Siemon Single Gang Faceplate part # MX-FP-S-03-02, Siemon Flat Module part # MX6-F02. Unused spaces shall have a blank filler module.

K. When required as part of the project, Entrance phone shall be recessed mounted and shall be Ramtel 906-RR734 with keypad with one button Auto Dial Mount or approved equal by SHSU

L. When required as part of the project, Emergency telephone shall be pole mounted Talk A phone ETP-MT Tower and ETP- 400 single emergency phone or approved equal by SHSU

M. When required as part of the project, Telephone Cross Connect box will be 3M Cross Connect Box 600 I/O, part #4220D-SSHT0/600-600-GBM-A.

PART 4 :

4.1 INSTALLATION OF SYSTEMs

General: Refer to Section 16100, "Basic Materials and Methods", Section 16110, "Electrical Raceways and Fittings", and Section 16112, "Electrical Boxes and Fittings", for installation requirements of the voice/data sleeve and raceway systems.

Grounding: Extend a #1/0 green insulated copper ground from ground bus in the voice data room(s) to the building MSB ground bus.

Receptacles: Provide receptacles at data rack for UPS systems. Consult with SHSU for final placement and type

Misuse: Do not use voice/data sleeves for temporary construction power wiring.

Pull cords: Provide a polypropylene spare pull cord in all voice/data service entrance and tie conduits.

Provide all work described above in scope of work.

4.2 COORDINATION:

General: Prior to installation of voice/data system components, coordinate with SHSU Computer Services department. Where minor modifications to provisions are required, they shall be made at no cost as a matter of job coordination.

B. Building Service: Provisions for voice/data cable entry to the building shall be coordinated with SHSU Computer Services department, prior to installation.

PART 5 - WARRANTIES

5.1 The Contractor shall warrant all labor, equipment and materials toward maintaining compliant testing over installed cabling for a period of seven (7) years. The Contractor shall correct any problems reported to him within 10 business days.

END OF SECTION

Insert spec on:

1. Pre-insulated underground piping
2. Piping Insulation
3. Ductwork Insulation
4. Air Handling units
5. VAV units
6. Controls Equipment
7. Chiller tabulation form (not full spec)