

**ARKANSAS STATE
UNIVERSITY**

**CAPITAL DEVELOPMENT POLICIES
AND PROCEDURES**

November 20, 2001

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SECTION FOUR CONSTRUCTION SECTION

4-100 INTRODUCTION

- (A) Ark. Code Ann. § 22-2-102 et seq. provides authority to Arkansas State Building Services (SBS) to promulgate such reasonable rules, regulations and procedures as may be required to carry out its duties consistent with the purposes of this Act. Act 961 of 2001 delegates this authority to Arkansas State University Board of Trustees. Including but is not limited to Ark. Code Ann. § 22-9-101 et seq. (Public Works Law) and Ark. Code Ann. § 19-4-1401 et seq. (Accounting and Budgetary Procedures).
- (B) The Board has adopted the following regulations in the interest of uniform application of all laws, encouraging a maximum of competition and participation among those interested in doing business with the Arkansas State University (ASU) System, and above all, establishing a climate which produces the greatest return for the taxpayers' dollars in the contracting of capital improvements.
- (C) ASU System is comprised of 2-year campuses at Beebe (with a center at Heber Springs), Mountain Home, and Newport, as well as a 4-year campus at Jonesboro with offices in Little Rock, and an extended campus presence in Paragould. Moreover, a Technical Center is part of the system located in Marked Tree with a presence in Jonesboro. Each of these locations is referred to as “a campus” throughout this policy.

4-101 CAPITAL IMPROVEMENTS

Whenever a campus intends to construct buildings and facilities or to make repairs or additions and improvements to existing buildings and facilities, the procedures as outlined in this manual must be complied with.

4-102 AGENCY PROCUREMENT OFFICERS

When a campus is authorized by law or regulation to have an Agency Procurement Officer, as opposed to a procurement agent, that official will be acceptable for the processing of bid and contract documents and bid openings for capital improvements. The Board reserves the right to withdraw this authority where such procedures are not followed. Verification of capital improvements shall be pursuant to Arkansas laws.

Editor’s Note: The function of overseeing MOFs is no longer a shared responsibility between SBS and DFA. This function is totally an agency and DFA function. The AASIS program has removed SBS from MOF reviews.

4-200 PURCHASE REQUESTS

- (A) When a department makes a request for a capital improvement to a state owned facility, the department shall submit to its Construction Office (CO), a purchase request with sufficient plans and specifications, so as to describe what is required for formal bidding. When an ASU campus requests capital improvements on non-state owned or state owned leased facility they must receive approval from the SBS Real Estate Services Section, see also § 4-207, §5-103 (M)

- (1) The project manual (specifications) shall be based on the C.S.I.'s (Construction Specification Institute) format. All items, equipment, materials, etc., shall be specified under each of the appropriate (0-16) divisions format.
 - (2) The original specifications shall be attached to the purchase request using a standard size 8 1/2" X 11" paper. A minimum of 1" left side margin will be provided for binding.
- (B) The CO requires certain basic information on the purchase request in order to perform its contracting responsibilities with diligence. The request shall show the following information as applicable:
- (1) Campus requisition number.
 - (2) Date.
 - (3) Department and the name of the contact person, or the designated Campus Project Coordinator (CPC), or both.
 - (4) Estimated cost.
 - (5) Statement describing the work. The campus project designation must be indicated on the purchase request. Reproducible specifications must be submitted. If there are 10 or more pages in the specs, it will be sent to an outside copy service, and the campus will be billed for the cost. Tracings (i.e. reproducible drawings) must be sent, if possible. If there are three (3) or more pages of tracings then it will be sent to a blueprint company for reproduction and billed to the campus. After the bid is opened the tracings will be returned to the campus. If it is not possible to send tracings, then the campus shall produce as many sets of drawings as necessary. The campus Procurement Office will be sent a copy of bid documents.
 - (6) Possible bidders, including complete mailing addresses and phone numbers.
 - (7) Calendar date set for completion.
 - (8) Signature of authorized official.
- (C) The CO will prepare the Invitation to Bid, front-end documents (Instruction to Bidders), and bid form place legal advertising, receive and open bids. Billing for legal advertising will be the responsibility of the campus. The CO shall review the Invitation to Bid, the front-end documents, and bid form when such documents are processed by a Design Professional. Bids shall expire within the timeframe established by the CO from the opening date unless extended by the bidder and the CO.

- (D) Intent to Award: Once the CO or the Design Professional receives the campus' determination to award a contract, and the contract determination is approved by the CO, an intent to award to the Contractor will be prepared and submitted to enable him to acquire the performance and payment bond. A contract will not be issued until a performance bond is received in accordance with Ark. Code Ann. § 18-44-501 ET seq.
- (E) Notice to Proceed: Once the CO or the CCFO has approved the contract they will provide a copy of the contract and Notice to Proceed with a copy of the performance and payment bond (if applicable), certificate of insurance and a copy of the Contractor's bid form to the CPC or agent. Procurement Officers acting under § 4-102 may issue a notice to proceed after the contract has the CO's approval. Design Professionals who have contract administration shall be responsible for the issuance of the Notice to Proceed.
- (F) No capital improvement contract shall be awarded to other than the lowest responsible bidder. Any campus requesting rejection of the lowest responsible bidder shall make such a request in writing signed by the Campus Chief Executive Officer (CCEO) or Campus Chief Fiscal Officer (CCFO) to the Capital Projects Committee (Committee) for full review.

4-201 PURCHASE ORDERS

Purchase orders for capital improvement, regardless of the source of funds involved, shall be issued in accordance with § 3-300 et seq. Capital improvement purchase orders for projects, which are \$25,000 or more, shall be submitted prior to the start of work, and must specify the exact dollar amount to be paid. A performance and payment bond shall accompany the purchase order. The purchase order shall contain the applicable language, disclosure forms and documents, and approval pursuant to the Governor's Executive Order 98-04 (EO 98-04). A set of backup documents shall accompany the purchase order. Applicable backup documents shall include: Bid Tabulation, Insurance Certificates, EO 98-04 forms or approval or both, proof of advertising, performance and payment bond. The dollar amount of the capital improvement purchase orders shall include, but is not limited to, all taxes, insurance, bonds, and freight costs. All purchase orders shall be submitted in one (1) original and one (1) copy with backup. The CO will retain the copy and backup and the original will be returned to the campus upon approval of the purchase order.

4-202 SMALL ORDER

Small order contracts for capital improvements of \$5,000 or less may be made by the open market.

4-203 COMPETITIVE BID

Contracting capital improvements above \$5,000 and below \$20,000 shall be by competitive quote bid. When quote bidding capital improvements, a minimum of three (3) bonafide bidders shall be requested to bid.

4-203-1 JOB ORDER CONTRACTING (Effective June 17, 2009)

Definition:

“Job Order Contracting” means the acquisition of contracting services using a procurement method that requires contractors to submit qualifications and a coefficient of cost. Such a process will qualify as a competitive bid process for procurement.

Procedure:

“Job Order Contracting” means the acquisition of contracting services using a procurement method that requires contractors to submit qualifications and a coefficient of cost. The coefficient of cost will be multiplied by a reasonable construction cost index for the geographical area for each Arkansas State University (ASU) campus. The construction cost index should be from a third party provider who specializes in publishing construction cost indexes on a national and regional basis. A multiplier representing estimated cost inflation may be submitted by the contractor as part of the formal bid process. The best-qualified bidder with the lowest cost will be selected to perform the construction services as identified in the construction specifications. The procurement cycle is authorized for one fiscal year, however, ASU may provide reasonable extensions at the beginning of each fiscal year not to exceed a total of four (4) years if:

- a. The price remains mutually agreeable to ASU and the contractor;
- b. The quality of the work is satisfactory to ASU; and
- c. Before the end of the fourth extension, ASU shall bid the construction service to assure competitive opportunities and lowest cost circumstances.

When ASU chooses to use Job Order Contracting, it shall then proceed to advertise bids for the contemplated work utilizing the Bidding Procedure. The low bidder will be determined by multiplying the coefficient of cost and the construction cost index value for the specific type of work advertised.

ASU Job Order Contracting bid awards shall not extend beyond one fiscal year, and shall not exceed four hundred thousand dollars (\$400,000) per construction job for the first year of the contract.

4-204 EMERGENCY CONTRACTING

- (A) Capital improvement contracting may be made pursuant to Ark. Code Ann. §22-9-201 where unforeseen or unavoidable circumstances occur:
- (1) When human life, health, safety or state property is in jeopardy.
 - (2) To reconstruct facilities, construct new facilities and related site work due to fire, storm, riots, etc.
 - (3) Repairs to immediately-needed equipment or facilities where delay would result in overall higher expenditures or cause the campus to lose revenue due to not providing the service responsible for, but is not limited to, medical treatment, education, military armories.

- (B) The campus shall at a minimum invite three (3) competitive bids, unless the emergency is critical or obviously single source such as public utility.
- (C) The CO must be contacted in advance for prior written approval where time permits. Where time does not permit prior written approval, telephone, fax or electronic mail approval must be obtained at the earliest practical date from the CO. The CO shall receive and record details on all telephone approvals. The following documentation is required when submitting a purchase order or contract on capital improvements for approval:
 - (1) A letter of justification setting forth the circumstances of the emergency.
 - (2) Insurance Certificate.
 - (3) Performance and payment bond issued in accordance with Arkansas laws and regulations if the capital improvement is \$20,000 or over. The bond must be filed in the county where the work is to be performed.
 - (4) List of Subcontractors as required under Ark. Code Ann. § 22-9-204.
 - (5) Contractor must be properly licensed with the Contractors Licensing Board (refer to Ark. Code Ann. § 17-25-101 ET seq.)
 - (6) Any other applicable document required by law or regulation including but is not limited to EO 98-04.

4-205 SOLE SOURCE

- (A) Sole source on capital improvements will only be approved when there are no other available sources to perform the required work. This does not relieve the statutory requirements for license, insurance and bonds. The following documentation is required when submitting a purchase order or contract on capital improvements for approval:
 - (1) Letter of justification.
 - (2) Insurance Certificate.
 - (3) Performance and Payment Bond issued in accordance with Arkansas laws and regulations if the capital improvement is \$20,000 or over. The bond must be filed in the county where the work is to be performed.
 - (4) List of Subcontractors pursuant to Ark. Code Ann. § 22-9-204.
 - (5) Contractor must be properly licensed pursuant to Ark. Code Ann. § 17-25-101 et seq.
 - (6) Any other applicable document required by law or regulation including but is not limited to EO 98-04.

4-206 SPLIT PURCHASES

The CO shall not allow or condone splitting of purchases to avoid these listed bidding procedures. Refer to § 4-102.

4-207 CAPITAL IMPROVEMENTS FOR LEASED PREMISES (STATE AND NON-STATE PROPERTY)

- (A) All work estimated at or over \$20,000 must be formally bid in accordance with the Arkansas laws and regulations. Campuses will need to submit their leasing request letter to the SBS Real Estate Services Section (See § 5-103 (M)). Once the SBS Real Estate Services Section has approved it, a copy of the lease or an amendment to the lease authorizing the capital improvements shall be attached to the request letter and forwarded onto the SBS Construction Section. The campus shall insure that legal advertising pursuant to Arkansas laws and regulations occur.
- (B) These procedures apply when the State would be paying a lump sum for the work to a Contractor, not the lessor. Subsection (A) does not apply when the campus has contracted directly for the improvements with the lessor through a state lease agreement or amendment thereto. In these instances, the campus would use sole source procurement procedures. While this method is the least desirable, situations may occur where there are no other choices. The Design Professional selection process as set forth in the SBS Minimum Standards and Criteria shall be utilized for the contracting of subsection (A). Plans and specifications are required on those projects estimated over \$20,000 that is, of course, when the lessor cannot or will not provide this service.

4-300 BIDDING REGULATIONS

These bidding regulations are applicable to all bids produced by SBS, a Design Professional, or a campus for state projects.

4-301 PRE-REQUISITES

- (A) Before a campus shall advertise for bids for construction, all requirements shall be met pursuant to the General Accounting and Budgeting laws and other applicable laws. Procurement Officers (refer to § 4-102) shall follow these bidding regulations when processing bids.
- (B) Certification of Project Amount: Campuses must have sufficient appropriations and funds for the capital improvement project prior to the solicitation of bids. Prior to the award of the contract, the campus must certify the appropriated amount for the award of the contract.

4-302 REPRODUCIBLE PLANS AND SPECIFICATIONS

- (A) Reproducible specifications must be submitted to the CO.
- (B) Reproducible tracings must be sent, if possible. All tracings will be sent to a blueprint company for reproduction and billed to the campus. If it is not possible

to send tracings, then the necessary number of sets of plan drawings (bid documents) must be furnished. The Procurement Officer or agent will receive a copy of bid documents, plans and specifications that are published for bidding.

4-303 ADVERTISING

Campus capital improvement projects shall be advertised pursuant to Ark. Code Ann. § 22-9-201 et seq. and § 19-4-1401 et seq. Proof of advertising shall be furnished to the CO.

4-304 BIDDER'S LIST

- (A) The Procurement Office shall maintain a file of those Contractors who submit their information to be included on a suggested list of bidders for capital improvement projects. The Contractor shall be responsible for updating information. If address information is not updated and mail is returned, no other solicitation will be attempted.
- (B) Information on file in the Procurement Office IS NOT a guarantee of the receipt of a bid solicitation. Contractors should watch for Legal Notices in the Arkansas Democrat-Gazette or check the plan rooms at F. W. Dodge Company, Construction Market Data or National Association of Minority Contractors.

4-305 BID DATE AND LOCATION

The CO will approve bid opening dates and time, only after approving the plans and specifications. Procurement Officers acting under §4-102 may hold their bid openings at locales as well.

4-306 SEALED BIDS

- (A) All bids shall be submitted in a sealed envelope. Bidders shall comply with Ark. Code Ann. § 22-9-204 and the bid documents with respect to the listing of subcontractors. Every envelope should indicate the name of the bidder, project, project number, date and time of opening. Upon receipt at the CO, or an approved alternate site, each bid shall be date and time stamped and held in a safe place until the bid opening. No bid may be surrendered to any person after it has been submitted except upon written request and authorization from that bidder. (Refer to Withdrawal of Bids, § 4-323.)
- (B) All capital improvement bids shall include all costs such as sales tax, use tax, permits, and insurance. The Contractor on capital improvement projects where labor and materials are furnished is defined by the Arkansas Revenue Laws as the user and is responsible for the appropriate taxes. There are no provisions for a Contractor to avoid taxes by using the tax-exempt number of any campus.

4-307 AUTHORITY FOR OPENING BIDS

The responsibility for the supervision of opening bids is with the CO, unless the Procurement Officer is acting under §4-102. The person authorized to read the bids shall first review the bid documents to determine if the bid is responsive. Items to verify are: Bid form is complete, Contractor's license number is indicated, applicable bid bond is enclosed with the correct amount, bid amount (numerically shown), signatures, addenda acknowledgement, corrections or changes initialed, and applicable subcontractors are listed. If all documents appear to be properly submitted and executed, the official may proceed to read the bid. If any statutory formality is omitted, the bid should be declared non-responsive and remain unread. Formalities other than statutory may be waived.

4-308 BID OPENING AND RECORDING

- (A) Bids shall be opened and read by a representative of the CO, unless the Procurement Officer is acting under §4-102 (refer to § 3-107), at the designated time and place. Representatives of the campuses are recommended to be present at the bid opening. The CO representative or the designated Procurement Officer is responsible for establishing the official expiration of time. In those instances where this is not practical or possible for the CO representative to attend the bid opening, the CO, may delegate this authority to a representative of the Procurement Office. Also see § 3-107, 4-325.
- (B) Bids may be opened in any order, but if listed on a prepared tabulation, they should be opened in such order. On Design Professional projects, the Design Professional shall, prior to the award of the contract, furnish to the CO certified tabulation of bids, a cover letter certifying the licensure of the Contractor and subcontractors listed in the bid and applicable bid bonds to the CO. Tabulation of in-house bids, certification of licensure and bonds are the responsibility of the CO or the Procurement Officer. This form may be sent (faxed or mailed) to the CO the same day of bids received. The Procurement Officer shall send a copy of their bid tabulation within twenty-four (24) hours of bid opening to the CO. Refer to § 3-109 for Bid Tabulations.
- (C) After the bids are opened and reviewed, a letter will be sent to the campus or the applicable Design Professional with the results of the bid opening. The campus may:
 - (1) Accept Low Bid: The letter regarding the bid results must be completed and signed by the campus. For projects, which do not involve Design Professional contract administration or Procurement Officers pursuant to §4-102, campuses shall return the original to the CO.
 - (2) Reject Low Bid: Refer to § 4-315
 - (3) Reject all Bids and Rebid: If the campus wishes to reject all bids, it shall note such on the letter regarding the bid results and return it to the CO with a letter of justification regarding such rejection. If the campus wishes to reject all bids and rebid, it shall note such on the letter regarding the bid results and return it to the CO with a letter of justification. Any revisions to the bid documents or front-end documents must be reviewed and approved by the CO before a new bid date will be set.

- (4) Negotiate the Bill: The CO must be contacted before any negotiation can occur. Unless the project was bid under the historic site laws, all negotiations shall be made pursuant to Ark. Code Ann. § 22-9-203 and requirements under the minimum standards and criteria unless exempted by law.

4-309 BID TABULATION

Regardless of whether bids are opened by the Procurement Officer or the Design Professional, all tabulations must be sent (faxed, mailed or electronic email) to the CO within twenty-four (24) hours of the bid opening. Bid tabulations must contain the following information which includes but is not limited to: the date and time of the bid opening; the project number; the amount of the bid; the Contractor names, whether a bid bond was included along with the bond amount, and the listing of any applicable subcontractors. Certification of bid tabulations is the responsibility of the CO for in-house bids, and the responsibility by either the Procurement Officer or Design Professional for all other bids.

4-310 SCRIVENER ERRORS

Rejection of a bid due to scrivener error may be made pursuant to Ark. Code Ann. § 19-4-1405.

4-311 CONTRACTOR'S LICENSE

Pursuant to Ark. Code Ann §17-25-101 et seq., for all state capital improvement projects, including residential projects, each Contractor is required to be properly licensed with the Contractors Licensing Board and shall indicate on their bid form their current license number as issued by the applicable licensing entity. Failure to list such will be cause for rejection. The CO is responsible for licensure verification and the Procurement Officer is responsible for projects pursuant to §4-102.

4-312 BID BONDS

- (A) Acknowledgement of bid bonds shall be made aloud. The official reading the bids shall indicate the bond amount, the form of bond as either a cashier's check or a bid bond. The official shall verify the company or individual being bonded, and review the documents for the correct project designation, the Power of Attorney Supplement, and signatures. Ark. Code Ann. § 19-4-1405 and § 22-9-203 govern bid bonds for capital improvements.
- (B) Failure to execute the contract and file an acceptable full payment and performance bond, proof of liability insurance, and disclosure documents pursuant to EO 98-04, within the time specified in the bid documents after the intent to award has been issued to the bidder shall be just cause for the cancellation of the award and forfeiture of the bid bond, which shall become the property of the campus, not as a penalty but in liquidated damages sustained. Award may then be made to the next lowest responsible bidder, or the work may be rebid and constructed under contract or otherwise as the State determines. The low bidder who fails to execute the contract and submit an acceptable full

payment and performance bond and proof of liability insurance will not be permitted to bid on any subsequent advertisement of that project.

4-313 SUBCONTRACTOR'S BIDS

The listing of subcontractors on the form of proposal shall be made pursuant to Ark. Code Ann. § 22-9-204 and the bid documents. The designated official as stated in § 3-108 shall verify the licenses of the applicable subcontractors listed.

4-314 ALTERNATES

State projects under the ASU System jurisdiction shall not include the use of deductive additive alternates pursuant to Act 921 of 2001.

4-315 CONTRACT AWARD

- (A) Once the bid results are determined, and the campus has requested to enter into a contract, an intent to award a contract may be prepared if the documents provided are in order. A contract will not be issued until a performance and payment bond is received in accordance with Ark. Code Ann. § 18-44-501 et seq. and § 22-9-401 et seq.
- (B) Contracts shall be awarded pursuant to all applicable laws including but not limited to Ark. Code Ann. § 22-9-203, 22-9-210 and § 19-4-1405. Unless the project was bid under the historic site laws or otherwise exempted. No capital improvement contract shall be awarded to other than the lowest responsible bidder. Any campus requesting rejection of the lowest responsible bidder shall make such a request in writing signed by the CCEO to the Committee for review.
- (C) Copies of the contract and the Notice to Proceed with a copy of the performance bond (if applicable), certificate of insurance and a copy of the Contractor's Form of Proposal will be forwarded to the CPC upon the CO's approval.
- (D) The University reserves the right to cancel the award of any contract at any time before the execution of the contract by the parties and approval of the CO without any liability against the University. Refer also to § 4-203 and 4-205.

4-316 DAVIS-BACON ACT (Federal Funds)

- (A) The Davis-Bacon Act, pursuant to 40 U.S.C. 276(a) et seq., grants to the Secretary of Labor the power to determine wage rates paid to laborers and mechanics of Contractors and Subcontractors engaged in any construction activities supported by federal funds. The Davis-Bacon and related acts provide prevailing wage protection to workers on federal funded construction projects. These laws require the payment of locally prevailing wage rates and fringe benefits to employees of Contractors or subcontractor performing work on federally financed or assisted construction projects valued in excess of \$2,000. Under the provision of the Act, Contractor or their Subcontractors are to pay workers employed directly upon the site of the work no less than the locally prevailing wages and fringe benefits paid on projects of a similar character. The

Davis-Bacon Act directs the Secretary of Labor to determine such local prevailing wage rates.

- (B) The Construction Section of SBS maintains a subscription with the U.S. Department of Labor General Wage Determination issued under the Davis-Bacon and Related Acts and will provide them upon request as long as funds allow the subscription to be maintained. In a situation where this office cannot provide a General Wage Determination and it is necessary to have a Federal Wage Rate for the project, contact the CO for the correct procedure to follow. campuses are responsible for providing specific federal regulations, guidelines and procedures as directed by their Federal Grantor/ funding source to the Design Professional or any party that will publish work requiring the expenditures of federal funds.
- (C) The advertisement of the notice for such projects and the invitations for bids shall state that federal funds are being used and that Davis-Bacon Wage Rates will apply.

4-317 ARKANSAS PREVAILING WAGE RATES

On state-funded or other non-federally funded capital improvement projects, wage determinations shall be published pursuant to Ark. Code Ann. § 22-9-301 et seq. The advertisement of the notice for such projects and the invitations for bids shall state that state funds are being used and that the State Wage Determinations shall apply.

4-318 CONTRACTOR'S INSURANCE REQUIREMENTS

- (A) Dollar amounts of coverage limits for all insurance policies shall be set by the capital improvement's campus. The Contractor shall purchase and maintain such insurance as will protect him/her from claims set forth which may arise out of or result from the Contractor's operations under the contract, whether such operations be by himself/herself or by anyone directly or indirectly employed by any of them, or by anyone for whose acts may be liable. Before a campus enters into a contract for the construction or alteration of facilities or repairs to existing buildings, grounds or facilities, it shall ensure that the Contractor has complied by showing proof that the following insurance requirements have been met.
 - (1) Claims under Workmen's Compensation, Disability Benefit and other similar benefit act;
 - (2) Claims for damages because of bodily injury, occupational sickness or disease, or death of his/her employees;
 - (3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than his/her employees;
 - (4) Claims for damages insured by usual personal injury liability coverage, which are sustained:
 - (a) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or

- (b) by any person; and
- (5) The Contractor shall provide and maintain during the term of this contract, at the Contractors' expense, Comprehensive Automobile Liability Insurance at limits no less than the statutory requirements and it shall be shown on the certificate per person, per accident for bodily injury and per accident for property damages.
 - (6) Claims under comprehensive general liability for damages because of injury to or destruction of tangible property including loss of use resulting therefrom. Coverage for "completed operation" shall be required under this comprehensive liability section.
 - (7) **Builder's Risk Insurance:** The Contractor shall procure and maintain during the life of this Contract Builder's Risk Insurance, and any extended coverage which shall cover damage for capital improvement projects. Perils to be insured are fire, lightning, vandalism, malicious mischief, explosion, riot and civil commotion, smoke, sprinkler leakage, water damage, windstorm, hail and property theft on the insurable portion of the project on a 100 percent completed value basis against damage to the equipment, structures, or material. The University and the Contractor, as their interests may appear, shall be named as the Insured.

The Certification of Insurance shall show the agent's signature, business name, address and telephone number. The certificate (Accord document) shall stipulate thirty (30) days written notice be given the University, prior to policy coverage cancellation, including expiration.

4-319 ACKNOWLEDGEMENT OF ADDENDA

Any or all addenda will be acknowledged on the bid form and such acknowledgment shall be stated during the reading of the bids. Every effort should be exerted to eliminate an addendum. If addenda are necessary they should be issued as soon as possible, but in any event not later than three (3) working days before receiving bids.

An addendum, upon approval by the CO, which only sets a later bid date, may be issued anytime before time has been called for the opening of bids. In the event an addendum requires changes in the scope of the project, an appropriate extension of the bidding period should be granted. No addenda shall be issued without the prior approval of the CO.

4-320 CONTRACT TIME

The period of time allocated for the work shall be stated as a calendar date. The campus, with input from the Design Professional, shall decide on the amount of liquidated damages and the amount of such damages to be included in the project specifications. Refer to § 4-404.

4-321 LATE BIDS

All bids received shall be recorded by date and time on the sealed bid envelope. The recorded time and date shall be determinative regarding issues of lateness. Bids received at the office designated in the invitation to bid, but after the time has been called for receipt will not be considered, unless it is determined that the last receipt was due solely to mishandling by the University after receipt at the campus designated in the invitation.

4-322 MODIFICATIONS OF BIDS

Bidders may submit written modifications to their bid at any time prior to the exact time set for receipt of bids. Modifications may be made on the bidder's envelope. No modifications made shall show the base bid amount. The bidder must sign any bid modification.

4-323 WITHDRAWAL OF BIDS

Withdrawal of bids by fax is authorized, but only if the withdrawal is made prior to the time being called for the opening of the bid. A bid may also be withdrawn in person by a bidder, or his/her representative, provided, his/her identity is made known and he/she signs a receipt for the bid, but only if the withdrawal is made prior to the exact time set for receipt of bids.

4-324 SUSPENSION/DEBARMENT OF CONTRACTORS

- (A) All Contractors are subject to approval by the CO. The CO or the Procurement Officer shall record violations of contracts, poor workmanship and other serious breaches of responsibility. The Construction Administrator (CA) or the Procurement Officer shall thoroughly investigate all aspects of the alleged violations or unsuitability.
- (B) Authority to Debar or Suspend: Any Contractor may be suspended or debarred from consideration for award of capital improvement contracts.
 - (1) A suspension is a determination that a Contractor shall not be allowed to bid on a state capital improvement projects for up to one (1) year.
 - (2) A debarment is a determination that a Contractor shall not be allowed to bid on a state capital improvement. Any Contractor who receives two (2) or more suspensions within five (5) years may be subject to debarment.
- (C) Causes For Debarment or Suspension. The causes for debarment or suspension include, but are not limited to, the following:
 - (1) Conviction of a criminal offense in connection with obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of such contract or subcontract.

- (2) Conviction under State or Federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity;
 - (3) Conviction under State or Federal antitrust;
 - (4) Violation of contract provisions, as set forth below:
 - (a) Failure to perform in accordance with the specifications or within the time limit provided in the state capital improvement contract; or
 - (b) Failure to perform or unsatisfactory performance in accordance with the terms of one or more contracts;
 - (5) Failure to post bid or performance bonds as required by laws or regulations;
 - (6) Substitution of work or materials without the prior written approval of the campus and the CO;
 - (7) Failure to replace inferior or defective work or materials after notification by the campus or the CO to which such services or materials has been provided or delivered;
 - (8) Refusal to accept a contract awarded pursuant to the terms and conditions of the Contractor's bid;
 - (9) Falsifying invoices, or making false representations to any campus or University official, or untrue statements about any payment under a contract or to procure award of a contract, or to induce a modification in the price or the terms of a contract to the Contractor's advantage;
 - (10) Collusion or collaboration with another Contractor or Contractors in the submission of a bid or bids that results in, or could result in lessening or reducing competition for a bid;
 - (11) Falsifying information in the submission of an application for listing on the CO's bidders list;
 - (12) Failure to make appropriate and timely payments to their subcontractors;
 - (13) Any other act or omission as determined by the (CA) or head of a Procurement Office to demonstrate that the Contractor cannot act in a responsible manner, this includes, but is not limited to suspension or debarment by any other governmental entity for any cause;
- (D) Suspension: Prior to any action for suspension, the Procurement Officer or the CA shall notify the Contractor of the opportunity for a hearing at least fourteen (14) days prior to said hearing. Such notification shall state the facts upon which the determination to suspend is made. In the event a Contractor is suspended, the Procurement Officer or CA shall make a written determination setting forth

the facts and circumstances upon which the suspension was based, and shall be delivered to the bidder at the address shown in the campus' files. No bidding will be allowed during any appeals of such.

- (E) Debarment: Prior to any action for debarment, the Procurement Officer or the CA shall notify the bidder of the opportunity for a hearing at least fourteen (14) days prior to said hearing. Such notification shall state the facts upon which the action of debarment was based. In the event a bidder is debarred, the Procurement Officer or CA, shall make a written determination stating the facts upon which the determination to debar was made, and shall be delivered to the Contractor at the address shown in the campus' files. No bidding will be allowed during any appeals of such.
- (F) Notice: The notice shall include a statement of the time, place and nature of the hearing; and a short and plain statement of the matters of fact upon which the action of debarment or suspension is based.
- (G) Hearing: Opportunity shall be afforded to all parties to respond and present evidence and argument on all issues involved. Nothing in these regulations shall prohibit informal disposition by stipulation, settlement, consent order or default. A hearing officer shall conduct the hearing. Hearing shall be open to the public. The hearing officer shall be the Committee or designee, which includes but is not limited to a person contracted to perform such duties.
- (H) In the event of a hearing, the hearing officer shall administer oaths. All hearings shall be recorded by a certified court reporter; the party requesting the hearing shall be responsible for scheduling the certified court reporter and payment thereof.
- (I) Decision: The written decision concerning debarment or suspension shall state the reasons for the action taken and shall inform the suspended or debarred person or entity involved of the rights to judicial review.
- (J) Other Remedies: The procedures in this section shall not be exclusive and shall not preclude the State from taking other action at law or in equity.
- (K) Any Contractor who knowingly hires, subcontracts or utilizes a suspended or debarred Contractor may be subject to debarment proceedings.

4-325 OBLIGATION OF BIDDERS

At the time of opening of bids each bidder will be presumed to have read and to be thoroughly familiar with the plans and contract documents, including all addenda. The failure or omission of any bidder to examine any form, instrument or documents shall in no way relieve any bidder from any obligation in respect to their bid. Pursuant to Arkansas Gross Receipt Tax Regulations, bidders on capital improvement projects are not tax exempt and cannot avoid sale or use taxes for whom they are performing.

4-326 ADDITIONS TO OR DELETION FROM THE DOCUMENTS

All deletions, changes, additions, or alterations of the bid documents will be acknowledged and read aloud. If such modifications are not waived, the bid shall be declared non-responsive and rejected. Corrections or change of figures must be noted and unless initialed by authorized officials, shall be sufficient grounds for rejection.

4-327 ANNOUNCING LOW BIDDER

Until such time as the bids have been reviewed and certified, any announcement or reference to the low bidder will use the phrase, "apparent low bidder."

4-328 PROTESTS

Any actual or prospective bidder who is aggrieved in connection with the project documents, or award of a capital improvement contract has the right to protest to the CA or the Procurement Officer that prepared the bid. The protest shall be submitted in writing within five (5) working days after the bid opening and identify the project by bid number or with sufficient detail to identify the project, and shall with specificity, set forth the allegations of the acts or omissions related to the protest. Since time is of the essence in award of all capital improvement contracts, protests and their resolution shall be resolved promptly. Subcontractors or suppliers are not considered bidders under this subsection.

4-329 RESOLUTION OF PROTEST

The CA, the Procurement Officer or a designee of either office shall have authority to settle or resolve a protest of an aggrieved bidder actual or prospective, concerning the project bid documents, solicitation, or award of a contract.

4-330 UNSUCCESSFUL BID

In the event no bids are received or the bids did not meet the requirements of the project documents and it is apparent that further solicitation of bids would be futile. The contract may be awarded to any available qualified Contractor only after obtaining the approval of the CA or designee.

4-400 CONTRACT ADMINISTRATION

This section is applicable to all campus capital improvement projects regardless of whether a Design Professional has contract administration or not.

4-401 CHANGE ORDERS

- (A) A change order is an amendment to the original contract that may include but is not limited to changes in the dollar value of the contract or the time for completion. Change orders shall be submitted for approval to the CO, after agreement is reached by the campus, Design Professional, and the Contractor as to the change. A change order is not effective until approved and signed by the CO or University contracting authority. Emergency change orders may be effective by following the same rules as emergency contracts. The distribution of change orders will be the same as the original contract.

- (B) The CPC or Design Professional shall prepare a request for a change order. The letter must state the work to be accomplished and the exact dollar amount. The request must state the work to be accomplished or deleted, the dollar amount of the work, and justification for change in the contract time. Submittals shall be in one (1) original and two (2) copies with appropriate backup. For projects, which do not involve a Design Professional, three (3) copies with appropriate backup shall be submitted.
- (C) Once approved, the CO, the campus or the Design Professional may prepare the change order and have the Contractor, the CCFO and the Design Professional execute it. After the signatures have been received the CO, will approve the change order and mail a copy to the Contractor, the campus, and the Design Professional, as well as maintain a copy of the change order in the project file.
- (D) Change orders shall be approved by the CO and the CCFO, before work is done. Emergency change orders may be affected by following the procedures as set forth in § 4-504 for emergency contracts. Distribution of such will remain the same as for contracts.

4-402 INSPECTIONS

The CO has the responsibility of inspecting all projects. The CO will make periodic checks on all projects. If the campus has inspection issues, which need to be addressed regarding the Contractor or the project, the campus should immediately notify the CO.

When the project is presumed to be complete, the CO shall be notified by the appropriate entity so that a final inspection may be performed. Final pay requests and release of retainage will not be approved by the CO until all close out procedures have been completed. See § 4-500 through § 4-504.

4-403 INVOICE/PAY REQUEST

- (A) All invoices or pay requests shall be submitted to the campus. All invoices or pay requests shall be processed in accordance with § 22-9-201 et seq. and §14-4-1401 et seq. If the invoice or pay request is for partial pay, then the amount of retainage pursuant to Ark. Code Ann. § 22-9-604 shall be withheld and shown on the invoice or pay request. No amount of the retainage shall be released until the conditions under the law are met. If the invoice or pay request is for full payment, no retainage will be withheld.
- (B) The following shall accompany the final pay request:
 - (1) An affidavit from the Contractor stating that no existing debts are owed and that all payments due to subcontractors or suppliers have been made regarding the capital improvement project. The Contractor shall submit a copy with the final invoice and pay request to the campus. The campus shall submit a copy with the pay request to the CO.
 - (2) Documentation that the Surety Company has approved and consented to the final payment, if a payment and performance bond was required.

Approval of the Surety Company for final payment to the Contractor shall not relieve the Surety Company of any of its obligations.

- (3) Retainage release pay request package prepared by the appropriate entity and submitted to the CO, including:
 - i. Final pay request or invoice indicating retainage release executed by the Contractor, Design Professional and campus.
 - (b) Certification executed by the Contractor, Design Professional and campus that the project has been substantially completed.
 - (c) Letter from Design Professional verifying that the Contractor has completed all punch list items, and approving the following if applicable:
 - (1) Commencement date of the Contractor's warranty period, which shall not be less than one year.
 - (2) Roof(s) warranty(s) (Installer's warranty and the manufacturer warranty if specified.)
 - (3) Termite Inspection Certificate.
 - (4) Operational and Maintenance Manuals.
 - (5) Certificate of Air Balance.
 - (6) As built markup prints and shop drawings provided by the Contractor for use by the Design Professional in the preparation of record drawings.
 - (7) As built CAD drawings on a disk compatible with the campus CAD system.

4-404 LIQUIDATED DAMAGES

Any amount of liquidated damages owed by the Contractor to the campus will be calculated by multiplying the "amount per day" of liquidated damages specified in the contract documents by the number of days, which occur between the contract completion date (as amended by applicable change orders) and the date of issue of the certificate of substantial completion date. Deductions for liquidated damages can be deducted from the final pay request. Prior to final payment approval and retainage release, the campus shall provide to the CO written documentation and justification regarding any assessment or forgiving of liquidated damages. The final payment will be reflective of such actions. The campus with input from the Design Professional, shall decide on the amount of liquidated damages and the amount of such damages to be included in the project specifications.

4-405 CAPITAL IMPROVEMENT DOCUMENTS AND PROCEDURES

After funds have been approved and distributed, the campus may proceed with obtaining a contract for architectural or engineering services and the awarding of contracts for the following but is not limited to construction, repairs, alterations, improvements, soil testing, and land survey.

4-406 STANDARD PROFESSIONAL SERVICES CONTRACTS (Architectural/Engineering, Soil Testing)

- (A) Selection of architect, engineers, land survey, soil testing etc. shall be coordinated and verified by the CO. When the campus has completed the selection process (refer to §6-219) then they shall prepare a standard professional services contract.
- (B) For compensation and reimbursable expenses, see §§ 6-200, 6-213, 6-214 and 6-215. Additional services of the Design Professional may be based on a percentage of construction cost, lump sum or hourly fee with a not to exceed amount stated on the contract.
- (C) All standard professional service contracts shall be submitted to the CO pursuant to the code provision stated in the above paragraph. Contracts or amendments expected to receive legislative review must have attached appropriate information regarding the contract or amendment justification. Must also contain disclosure forms and documents pursuant to EO 98-04. Appropriate information includes but is not limited to: campus name; project description; construction and Design Professional funds; number of standard professional services contracts; identify Design Professional and the objectives and scope; Design Professional fees; estimated construction cost; contract control number; amendment compensation with explanation; Design Professional reimbursables with breakdown; contract extension date; name of the Contractor; contract amount and change orders. Contracts shall be completed in its entirety prior to submission for review and CO approval. Particular attention will be given to areas concerning "Calculations for Compensation" and "Source of Funds". New contracts or amendments to contracts shall be submitted to the CO, before the deadline set by the Department of Finance & Administration.
- (D) Failure to meet the above schedule for review and approval can cause a delay of 30 (thirty) days or more for legislative review. All standard professional services contracts \$25,000 or more require legislative review. The standard professional services contract form takes precedent over any and all attachments regarding time, funds, and compensation. After approval by the Department of Finance and Administration one (1) copy will be returned to the CO. Distribution of other copies will be as designated by the Office of Accounting, Department of Finance and Administration. The CO shall approve requests for payment of these contracts.

4-407 PROFESSIONAL CONSULTANT CONSTRUCTION OFFICE CONTRACTS

- (A) After the Design Professional has received an approval to bid letter and approval of the release of the bid documents from the CO, the CO shall coordinate a bid opening date, time and place prior to any advertising for bids. Procurement

Officers pursuant to §4-102 shall coordinate bid dates with the CO. Bids shall be solicited for the project in accordance with Arkansas laws and regulations (Refer to § 4-200 (C)).

- (B) One (1) copy of the plans and specifications shall be provided to the CO, during the bid solicitation process. Any addenda to the plans and specifications must be reviewed and approved by the CO prior to issuance.
- (C) If the bid plans and specifications have been modified during negotiations (after the bid opening but prior to the award of contract) then one (1) set of the modified plans and specifications shall be furnished to the CO. Additionally, any modifications to the plans and specifications after the award of contract shall be submitted to the CO for review. Upon approval, the CO shall retain a set of plans and specifications.
- (D) Detailed instructions for Design Professionals can be found in §6-100 and §7-100 series pertaining to architectural and engineering sections. The CO will not approve bid opening time, place, or date without final plan review and approval. The Design Professional shall submit on-site observation reports with the Contractor's payment request using an appropriate AIA document or other approved forms. (Refer to §§6-201, 6- 206, and 6- 326.)

4-408 AWARD OF CONTRACT

- (A) After bids have been received and the lowest responsible bidder has been determined, and after receipt of the appropriate documents, a letter of intent to award a contract may be issued by the Design Professional, Procurement Officer, or the CO. Once issued, a contract is to be submitted to the CO, for approval with a complete set of contracted plans and specifications. The contract is to be submitted as follows: one (1) original and two (2) copies with a copy of the bid tab, proof of advertisement, copy of bid bond, copy of performance bond (if applicable) and certificate of insurance, disclosure forms and documents pursuant to EO 98-04. A purchase order may be used as the form of contract where applicable. A notice to proceed shall not be issued, nor any work is to commence until and unless the CO has approved the contract or purchase order.
- (B) No capital improvement contract shall be awarded to other than the lowest responsible bidder. Any campus requesting rejection of the lowest responsible bidder shall make such a request in writing to the Capital Projects Committee. Refer also to §§ 4-315, 4-505.

4-409 CONSTRUCTION OFFICE CONTRACTS

- (A) Depending upon the applicable situation, the campus or Design Professional will prepare the construction contract and after execution by the Contractor and campus, the original and two (2) copies shall be forwarded to the CCFO for review and approval. For projects under the administration of the Design Professional, a Cd-rom shall be submitted with the following information: a copy of the documents issued for bids including all addenda and negotiated changes; and a copy of all correspondence relating to the project including but not limited

to plan reviews submittals and responses from the CO. Copies of all bonds, insurance certificates, proof of advertising, disclosure forms and documents pursuant to EO 98-04, and bid tabulation shall accompany the contract. The CO will review and approve or disapprove all construction contracts, unless exempted by law or regulation.

- (B) The campus will retain the original, one copy sent to the Design Professional, and the other copy to the Contractor. The Design Professional or the CPC as appropriate shall issue a notice to proceed. Within ten (10) days after the decision to proceed, the General Contractor shall submit a complete breakdown of the project cost (schedule of values) to the Design Professional who in turn shall provide such to the CO. No payment shall be made to the Contractor until the breakdown of project costs is provided.
- (C) The campus construction project file shall contain copies of bonds, contracts, certified bid tabulation, insurance certificates, Design Professional agreements, proof of advertising prior to processing of payment requests and the applicable disclosure forms and documents pursuant to EO 98-04. Documentation reflecting justification shall also be contained in the project file if the contract was made pursuant to sole source or emergency procedures.
- (D) Refer also to §§ 4-315, 4-503. Refer to §4-401 for information regarding contract change orders.

4-410 PRE-CONSTRUCTION OFFICE CONFERENCES

Conferences shall be conducted at a location convenient to the site (campus decision) with all parties (CPC and Design Professional) involved and all necessary information available including but is not limited to all subcontractors, applications for payments, payment procedures, change order process, construction time schedule, project superintendence, safety procedures, etc., that would be of significance to each particular project. The Design Professional shall provide the minutes of these proceedings to the parties involved within five (5) calendar days of the meeting.

4-500 PROJECT CLOSE-OUT

- (A) The CPC shall be provided all necessary documents including the final payment release from the project. The Design Professional shall provide to the campus final approval and acceptance, a payment document for final payments, and release of retention, closeout contracts and contingency funds and terminate the project. Contractor shall furnish copies of all maintenance manuals and warranty items as part of his closeout data. See § 4-404 for required documentation.
- (B) Substantial Completion (projects of \$20,000 or more): The General Contractor shall notify the all parties involved of the date upon which he will be ready for substantial completion. The project architect or engineer and a representative of the CO will schedule and carry out the inspection to verify if the construction meets substantial completion status.
- (C) Final Inspection: The Contractor shall notify the Design Professional that the project is ready for a final inspection, at which time the Design Professional, with

the campus CPC will conduct a final inspection; and, if appropriate, accept the facility. All mechanical, (HVACR-Plumbing), electrical, or other building systems shall be checked and inspected completely at the time of final inspection prior to project closeout. The mechanical system should be balanced once per each major seasonal change by the Contractor under the administration of the Design Professional during the first year warranty period as per the project specifications. Written instructions concerning seasonal adjustment should be issued to the campus for use by the campus building maintenance staff. The Design Professional shall provide the campus with a letter stating that all systems have been inspected and deficiencies listed and corrected.

4-501 RECORD DRAWINGS

The Contractor shall, during the progress of the work, keep an accurate record of all changes and corrections from the layouts shown on the drawings. Record of changes may be kept by accurately marking all changes on a set of prints during the progress of the job. Exact locations of all underground utility service entrances and their connections to utility mains as well as all valves, etc., which will be concealed in the finish work shall be accurately indicated on the drawings by measured distances. Depths as well as horizontal distances shall be shown. Upon completion of the work and prior to final payments, the Contractor shall furnish to the Design Professional, one (1) set each of "record" reproducible prints legibly and accurately drawn to indicate all changes, additions, deletions, etc., from the contract drawings. The Design Professional shall verify and add to information as required and transmit these reproducible prints to the campus. The University shall also receive the "record" drawings of reproducible prints on cd-rom copies for record keeping.

4-502 DELIVERY OF GUARANTEES, BONDS, MAINTENANCE MANUALS, ETC.

Upon completion of the work and before final payment will be authorized, the Contractor shall furnish the Design Professional, for review and approval prior to transmission to the campus, the Contractor's one-year acceptance warranty, bonds, roof warranties, termite inspection, maintenance and operation manuals and operation training, air balance data, shop drawings, catalog data, as-built "record" reproducible prints, etc., as called for under the various Divisions of Specifications. Certification of the above will be made by the Design Professional and attached to the Contractor's request for final payment.

4-503 COMPLETION CERTIFICATES, AFFIDAVITS ETC.

Before final payment the Contractor shall furnish to the Design Professional three (3) executed copies of the required documents as required by § 4-703 which shall be attached to the Contractor's request for final payment.

4-504 DUTIES OF DESIGN PROFESSIONALS IN REGARD TO FILES, RECORDS, DRAWINGS AND SHOP DRAWINGS OBSERVATION AND INSPECTION REPORTS ON STATE PROJECTS

- (A) The Design Professional shall maintain up-to-date files on each project, which shall include project plans and specifications, shop drawings, record drawings, and observations and inspection reports. The Design Professional shall provide to the campus any and all applicable contracted medium form regarding the

project prior to their final payment. All drawings are the property of the Design Professional; however, the State retains the right to obtain copies of all drawings upon request and payment of direct reproduction costs. Drawings produced for State projects shall not be used or incorporated into any other projects unless permission to do so is provided in writing from the University and the Design Professional. Refer to § 6-326 for Design Professional project observation requirements.

- (B) The campus shall be provided all necessary approvals including final payment release from the project Design Professional, campus final payment release from the Design Professional, campus final approval and acceptance, payment document for final payments and release of retention, close out contracts and contingency funds and terminate the project. Contractor shall furnish copies of all maintenance manuals and warranty items as part of his closeout data. See § 4-500 for substantial completion and final inspection procedures.

4-600 PAYMENT REQUESTS

- (A) Requests for payments from capital improvement funds shall be made by the use of a payment document using the General Accounting Procedures.
- (B) Each payment document shall be supported by the Design Professional's certification of the Contractor's estimates. Estimates must be broken down by units of work normally used to calculate the work accomplished during the invoicing period.
- (C) The Design Professional shall conduct site visits to determine the responsibility and performance required by the Contract Documents. Refer to § 6-326 for Design Professional's project observation requirements. On-site observations shall concur with the Contractor's payment request and shall be submitted in written form with the monthly pay request.
- (D) Observation reports by Design Professionals are required once a month at a minimum. The use of the standard A.I.A. Document G-711 "Architect Field Report" or other approved form is acceptable. Reports are to be maintained on file by the Design Professionals and shall be provided to the CO on a monthly basis. Minimal observation reports shall include but are not limited to the following phases of construction:
 - (1) Foundation.
 - (2) Roof deck.
 - (3) Roofing and Insulation.
 - (4) Mechanical Equipment Installation.
 - (5) Electrical Equipment Installation.
 - (6) Prior to application of interior wall and ceiling finishes concealing the work.

- (E) Contractor pay requests must be approved in writing by the Design Professional. Payment requests shall be submitted by the Contractor in an original and one (1) copy to the campus.

4-601 PAYMENTS

- (A) A copy of all payment documents including labor or materials or both shall be sent to the CO for approval prior to any payment being made.
- (B) Payment documents issued in payment of Design Professional fees shall be supported by an invoice from the Design Professional prepared pursuant to the General Accounting Procedures; and shall indicate the amount due to date, less previous payments. Payments of Design Professional fees are subject to timely (monthly) submittal of observation reports by the Design Professional to the CO. Refer to §6-326. Design Professionals shall use the most current invoice form, which is available from the CO.
- (C) If completion estimates are not approved; the Contractor involved shall be notified in writing immediately. Steps necessary to effect payment will be spelled out.
- (D) Late payment penalties may be assessed pursuant to Ark. Code Ann. § 19-4-1411 and § 22-9-205.

4-602 SMALL ORDER (\$5,000 or less)

Small orders for projects \$5,000 or less will processed pursuant to local campus policies.

4-603 COMPETITIVE BID (\$5,000.01 to less than \$20, 000)

Competitive bids for projects \$20,000 or less will be processed pursuant to local campus policies.

4-604 EMERGENCY CONTRACTING

The following shall accompany the payment document for contracts, which are for \$20,000 or more:

- (1) Contractor's invoice.
- (2) Copy of the purchase order approved by the Procurement Office.
- (3) Contractor's release of claims.
- (4) Consent of surety, if a payment and performance bond was required.

4-605 SOLE SOURCE CONTRACTING

The following shall accompany the payment document for contracts, which are for \$20,000 or more:

- (1) Contractor's invoice.
- (2) Contractor's release of claims.
- (3) Consent of surety, if a performance and payment bond is required.

4-606 FORMAL BID

For contracts which are \$20,000 or more:

- (A) The following shall accompany the payment document for partial payment:
 - (1) Invoice or pay request.
- (B) The following shall accompany the payment document for final payment:
 - (1) Items stated in (A).
 - (2) Contractor's release of claims.
 - (3) Consent of surety.

4-607 PROFESSIONAL SERVICES

- (A) The following shall accompany the payment document for payment:
 - (1) The control number issued by the Department of Finance and Administration must be shown on the face of the payment document.
 - (2) Detailed invoice containing the following information, including but is not limited to: Project name and locations; invoice date and number; total fees, percentage of completion, fees earned and previously paid and the current amount due; basic service fees total; reimbursable expenses and additional services shall be submitted to the CO.
- (B) The following shall accompany the payment document for final payment: (A)(1) and (2) above, along with proof that the Design Professional has complied with § 6-325.

4-608 DELAY IN PROCESSING PAYMENT DOCUMENTS

Any penalties for the delay in processing of payments may be processed in accordance with Ark. Code Ann. § 19-4-1411, § 22-9-205.

4-700 CAPITAL IMPROVEMENT ALTERNATIVE DELIVERY METHODS

Pursuant to Ark. Code Ann. § 19-4-1415 Arkansas State University, as exempted by law, has authority to approve and administer contracts, such as, Contractor, construction manager, architect or engineer, for projects that are \$5,000,000 or more, which are

awarded through negotiations instead of the bid process. This type of alternative delivery method of contract shall be referred to as “negotiated work.”

4-701 PROJECT CRITERIA

- (A) Campuses may utilize “negotiated award” status for such projects, which include but are not limited to the following criteria: project’s programming requires “Fast Tracking”, traditional design-bid-build process is less fiscally advantageous than negotiated work, and negotiated work is more practical for project needs.
- (B) Prior to utilization of negotiated award, campuses shall make a written request to the President or designee for the use of alternative methods and give justification for an alternative delivery method pursuant to § 4-700. The President may approve the request after reviewing the documents submitted. The campus shall cooperate with the President if the President requests more information. If approved by the President, the campus shall then submit the project for review by the Arkansas Legislative Council (Legislative Council). No contract shall be awarded without the approval of the President and Legislative Council Review.

4-702 SELECTION AND CONTRACT AWARD PROCESS

- (A) All selection processes involving the Design Professional, Contractor or contract manager shall be made in accordance with §4-700.
- (B) The pre-selection committee shall consist of at least five (5) members. The President or designee shall determine the five (5) members.
 - (1) A request for proposals (RFP) shall be made in accordance with § 4-700. The campus shall prepare all RFPs. The President or designee shall approve the draft of the RFP prior to its publication. RFPs for contractor’s services shall have a statement in regards to the state or federal prevailing wage.
 - (2) The pre-selection team shall meet at a designated time and place to review the proposals. No more than five (5) applicants shall be selected. The campus shall notify the finalists within two (2) working days of the selection determination.
- (C) The final selection committee shall consist of at least three (3) members of the campus. The President or designee shall determine the members of the final selection committee. The campus shall notify the President or designee and the finalists of the time and date that the final selection interviews will be held. The campus shall notify the successful finalist within two (2) working days.
- (D) The University reserves the right to reject any and all proposals and to waive any formality in the negotiation and award process.
- (E) Once the final selection is determined, the campus may begin to enter into final negotiations with the successful finalist. Nothing shall prohibit the campus from entering into negotiations with other finalists, if final negotiations are not successful.

(F) Before the CPC may approve any contracts:

- (1) The Contractor, engineer, architect, or construction manager are licensed in accordance with §4-700.
- (2) Contract documents shall be reviewed in accordance with §4-406 and §6-706.
- (3) The Contractor or at-risk construction manager (Refer to §4-315) shall submit a performance and payment bond(s).
- (4) Insurance amounts and processes relating to such shall be in accordance with § 4-318.

4-703 CONTRACT OVERSIGHT

The CPC shall approve all payments and revisions to the contract documents:

- (1) Pay requests shall be in accordance with §4-402.
- (2) Change orders shall be in accordance with §4-400.
- (3) Inspections shall be in accordance with §4-401.
- (4) Closeout procedures shall be in accordance with §4-500 et. seq.
- (5) Liquidated damages shall be in accordance with §4-404.

SECTION SIX ARCHITECTURAL SECTION

6-100 DESIGN PROFESSIONAL SERVICES SELECTION PROCEDURES

To ensure an equitable opportunity for all practicing Design Professionals, Arkansas State University (ASU) has initiated the following procedures that shall be followed to select firms or individuals to perform professional services for capital improvement projects. All campuses except as exempted by law, are required to use the Minimum Standards and Criteria (MSC). The campus Construction Office or designee will coordinate selection of architects and related building consultants. Selection of engineers and land surveyors, including mechanical, electrical, civil, structural, geo-technical and environmental consultants, will be coordinated by the campus Construction Office (CO) or designee.

6-101 SELECTION AUTHORITY SCHEDULE

- (A) Any questions regarding the interpretation of this method should be directed to the Construction Office.
- (B) Campuses desiring to enter into professional services agreements wherein the contemplated fee, exclusive of reimbursable expenses, are \$5000 or less, may utilize a purchase order for these services in accordance with Ark. Code Ann. § 19-4-1709(b)(9). Such purchase order agreements shall not be placed on the Professional Services Contract form PSC-1. Selection of the Design Professional shall be in accordance with Ark. Code Ann. § 19-11-801. If the campus desires to have the agreement on the form PSC-1, the campus must follow the procedures outlined in § 6-102 through § 6-106.

6-102 PROCESS TO CONDUCT SELECTION

The draft advertisement should contain but not be limited to the following information:

- (1) Notice to the Design Professional as needed (i.e.: Architects, Engineers, Building Consultants, Environmental Consultants or specialized fields such as Electrical Engineers);
- (2) Name of the campus, division, department and location of the project;
- (3) A brief description of the project, including the approximate square footage for new construction or renovations and the desired services;
- (4) The desired deadline for responses to the advertisement;
- (5) A requirement for respondents to include their general and specific experiences related to the proposed project;
- (6) A requirement for respondents to list all current contracts they have with campuses and higher education institutions in Arkansas;
- (7) A requirement for respondents to submit proof of professional liability and general liability insurance coverage;

- (8) A requirement for respondents to list the size of their firm, a breakdown of their personnel and resumes of key personnel who will be directly involved in the project. The firm should also submit proof of registration by the appropriate licensing boards in Arkansas;
- (9) The names, address, and phone number of the campus person to whom the responses should be directed. Include the number of copies of the submittals required by the campus.

6-103 PUBLIC NOTIFICATIONS REQUIRED

The selecting campus shall be required to publish a notification that Design Professional services are being solicited. A notice shall be published in at least one (1) statewide newspaper for each project pursuant to the advertisement criteria under §6-102. It shall run for three (3) consecutive days. Other publications, including but not limited to, are F.W. Dodge Reports and Construction Market Data.

6-104 DESIGN PROFESSIONAL QUALIFICATIONS

The following are minimum qualifications required for Design Professionals desiring working for ASU:

- (A) All Design Professionals shall demonstrate their capability to perform the design of the project to the satisfaction of the campus.
- (B) All Design Professionals, except for geo-technical engineers, whether prime or serving as consultants to the prime, shall have in force a minimum of \$500,000 in professional liability insurance and proof of compliance shall be attached to all standard professional services contracts.
- (C) All Design Professionals, whether prime or serving as consultants to the prime, shall be licensed in their respective disciplines in Arkansas or shall be capable of being licensed and shall do so immediately, with their respective licensing boards, if awarded the project. Bid documents shall not be released to bidders without Design Professional's Arkansas registration stamp or seal and signature as evidence of compliance.

6-105 RESPONDING PROCEDURES

A minimum of ten (10) working days will be allowed for all interested design professionals to respond in writing (fax or telegram communications are not acceptable) to the campus indicating their interest in providing professional services for the particular project published. Responses shall be sent directly to the CPC as stipulated in the advertisement. EXCEPTION: Allow fifteen (15) working days for projects that are large or complex and that might require the services of an out-of-state design or consultant firm.

6-106 SELECTION METHOD

- (A) After the response period, the receiving campus, if it decides to move forward, shall take the following actions:
 - (1) The campus shall designate a Selection Screening Committee.

- (2) The Selection Screening Committee shall meet at a designated time and place, and review all responses. There shall be no more than five (5) finalists selected. A minimum of three (3) finalists may be selected for smaller, low budget projects.
- (3) All responding applicants shall be notified by mail within three (3) working days of the selection results, naming the finalists for the interview. Notice of said interview shall be mailed to the finalists notifying the respective finalists of the time and location of the interview at least ten (10) days prior to the interview. Exception: Allow fifteen (15) working days for projects that are large or complex and that may require the services of an out-of-state design or consultant firm. All applicants shall submit data concerning consultants and/or parties to be used for the project.
- (4) The final selection shall be made by the campus from the finalists interviewed by the Selection Screening Committee.
- (5) Each finalist shall be given a specific time to make their presentation and a time schedule to follow. The order of presentations shall be determined by random drawing during the pre-selection process.
- (6) Preliminary designs or suggested designs shall not be permitted during the selection process and shall be grounds for disqualification.
- (7) The campus shall notify all applicants of the result of the interviews. With the notification to the selected design professional, the campus shall initiate a contract with the Design Professional.

6-200 STANDARD FEE SCHEDULE FOR PROFESSIONAL SERVICES PROFESSIONAL SERVICES FEE SCHEDULE

The fees in these schedules are the maximum that will be allowed and are considered necessary for the performance of adequate professional services, unless exempted by law. Any increase beyond the scope of the fee schedule must be approved by the President or designee. Refer to §§6-223 and 7-203 for schedules.

6-201 DESIGN PROFESSIONAL'S BASIC SERVICES DEFINED

- (A) Basic services, when referred to in the following fee schedules, shall be defined as follows and include all the services of the architectural, civil, mechanical, electrical, and structural consultants under one (1) base fee. For review of funding and campus programs refer to §§ 6-302, 6-303 and 6-304.
 - (1) Probable construction costs. Provide a separate line item for each of the technical specification divisions.
 - (2) Schematic design.
 - (3) Design development, including an estimate of the annual operation costs of all utilities, using industry standard average energy use for the building type.

- (4) Seismic Design as required for projects to comply with Arkansas laws and the current Arkansas Fire Prevention Code in Seismic Zone 1 Counties only.
- (5) Construction bid documents.
- (6) Campus reviews as applicable, which includes but is not limited to, State Fire Marshall, and the State Health Department.
- (7) Advertisement, bidding of project, and contract negotiations as required to conform to the project funding per § 6-215.
- (8) Periodic construction observation (site visits) by the prime Design Professional and all consultants at key critical times, for that applicable portion of the work for which they are involved, during construction and construction administration, including:
 - (a) Contract, bonds, insurance requirements review, coordination of contract documents and processing to the campus;
 - (b) Shop drawing and material submittal reviews by the appropriate Design Professional or consultant;
 - (c) Periodic observation and field reports, a minimum of one (1) per month, complying with § 6-326, "Design Professional Observation Requirements", prepared by the Design Professional and his consultant and furnished to the campus;
 - (d) Processing of Contractor's monthly pay requests (see § 4-600) and observation field report submittals to the campus, submitted monthly on forms approved by the CO.
 - (e) The appropriate Design Professional or Consultant shall monitor and ensure that all campus operations/orientation/training or equipment manuals, or all, are submitted, reviewed, approved and transmitted to the campus.
 - (f) Receive for the campus from the Contractor, "record" drawings and all project closeout items pursuant to § 4-500 through § 4-504.
 - (g) Follow up inspection by all parties within thirty (30) days prior to the expiration of the one (1) year Contractor's Warranty.

6-202 ARCHITECTURAL AND BUILDING RELATED ENGINEERING (CIVIL, STRUCTURAL, MECHANICAL AND ELECTRICAL) SERVICES FEES

- (A) Fees shall be based on the Architectural/Engineering Services Fee Schedule Chart (§ 6-223). This fee chart is to be used for all building related Architectural, Civil, Structural, Mechanical, and Electrical Design Professional Services. These fees shall be considered part of "Basic Services" for a project as defined in § 6-201.

- (B) Fee Chart § 6-223 shall be used to determine the base fee, which includes all building consultants noted above, computed on the basis of the design professional providing all basic services, as defined in this SCM, times a percentage of the total construction cost. Fees are determined on the basis of lower fees for larger project costs and higher fees for smaller project costs and more complex projects.
- (C) ASU requires that these base fees shall include the "full services" (unless otherwise negotiated) of all normal consultants, i.e., civil, architectural, structural, mechanical, and electrical, per § 6-201.
- (D) All standard professional services contracts, negotiated, as a percentage of construction cost, shall pay compensation to the Design Professional on the basis of actual construction cost, including all negotiations and change orders through final acceptance and payments to the contractor. Estimated construction cost, as approved by the campus, shall be used until the bids are accepted, or if the project is canceled.

6-203 OTHER DESIGN PROFESSIONAL SERVICES

For boundary or topographical land survey services refer to § 7-201; for Geo-technical engineering services, refer to § 7-202; for civil and environmental engineering services, refer to § 7-203; for building related civil, structural, mechanical and electrical engineering services, refer to §7-204; for seismic design fee allowance refer to §7-205 and for asbestos consultant fees refer to §7-206

6-204 SEISMIC DESIGN FEE ALLOWANCES

- (A) For projects requiring seismic design and certification to comply with Arkansas laws and the current Arkansas Fire Prevention Code, fees may be increased, with the approval of the CO, as follows:
 - (1) Arkansas Seismic Zone 1 Counties: Basic services as defined under § 6-200, § 6-201.
 - (2) Arkansas Seismic Zone 2 Counties: Multiply base fee only, up to 1.04, maximum.
 - (3) Arkansas Seismic Zone 3 Counties: Multiply base fee only up to 1.05, maximum.
 - (4) Where applicable, the multipliers may be used to compute the seismic design allowance in Zones 2 and 3 only. These allowances shall be listed under the base fee shown on the standard professional services contract under "Compensation" as: Seismic Design Fee Allowance, "Zone 2" (or "3") = \$ (Amount). Do not list as a combined fee.
- (B) Compliance with all applicable seismic design building codes shall include all defined structural and normal non-structural elements. Refer to § 6-311, and § 7-500.
- (C) Additional Services for Non-Structural Elements (All Zones). Earthquake resistant design of specific, "out-of-the-ordinary" items or equipment not listed, may require "additional services" on the standard professional services contract, unless otherwise negotiated,

for these non-structural seismic design bracing details. These "additional services", may be negotiated on an hourly, lump sum, or percentage of construction cost agreement when approved by the CO.

- (D) Additional Services for Dynamic Structural Analysis: Should dynamic structural analysis be required for the seismic design of a structure to meet all applicable building codes, this analysis shall be considered an "additional service" under the standard professional services contract or its attachment, unless otherwise negotiated. This expense shall not be incurred without the approval of ASU.
- (E) A Seismic Zone Map, defined by county, has been provided at the end of the Section under "Maps".

6-205 SPECIALIZED CONSULTANTS

Fees may be negotiated on a percentage of construction cost, lump sum, or hourly fee (not to exceed) agreement with approval by the campus CFO. Specialized consultants could include the following specialized fields including but not limited to: acoustical, theatrical lighting, parking, food service, solar, computer, parks, museum, landscaping, graphic, geo-technical, testing, land surveying, land planning.

6-206 INTERIOR DESIGN SERVICES

A basic interior design service fee not to exceed ten percent (10%) maximum of the total cost of all furniture, draperies, equipment, fixtures, paintings, artifacts, etc., including planning and observation of placement and installation of same, shall be used by all campuses. Include all "Interior Design Fees" under "Compensation" in the Professional Service Contract and list as "Additional Services".

6-207 ON-CALL PROFESSIONAL SERVICES CONTRACTS

- (A) In some instances, a campus may elect to enter into an on-call standard professional services contract with an architect, engineer, or consultant. (Do not use the phrases "Indefinite Delivery or Open End" when referring to on-call contracts. The use of these phrases implies that these contracts will not end.) State contracts must have a finite term and cost. All on-call contracts and the selection of the design professional shall follow all MSC regulations, regarding plan review submissions for tracking projects to ensure funding. All reports, studies, budget cost estimates and the like produced under these contracts shall be submitted to ASU in the same manner as plan reviews. Failure to do so may result in forfeiture of fees.
- (B) These on-call contracts are to provide professional services for small projects and additions, particularly renovation and maintenance type projects. These contracts may be amended, as required, to be in force a maximum of four (4) consecutive years. At the end of the four-year period, a new selection process shall be initiated in order to allow other equally qualified firms to submit proposals and be selected based on their overall qualifications.
- (C) Fees for design professional services for each individual project should be based on a percentage of construction cost, lump sum, or an hourly (not to exceed) type contract. Fee payments should be closely audited to ensure they do not exceed the ASU

recommended maximum allowable fee (refer to Fee Chart, 6-223). Terms for on-call contracts must remain the same for the duration of the contract.

6-208 LUMP SUM OR HOURLY FEES (NOT TO EXCEED)

As an alternative to the fees as a percent of construction cost set forth in § 6-202, § 6-203, and § 6-223, the campus may negotiate a lump sum or hourly (not to exceed) fee contract. The lump sum or hourly (not to exceed) fee should be based on the estimated construction cost, which is applied the percentages set forth in § 6-223 or, a lesser percentage figure may be used if ASU determines that portions of the design work can be furnished by other qualified sources. When a lump sum or hourly (not to exceed) fee basis is contemplated, then public notification to Design Professionals should so state.

6-209 ADDITIONAL SERVICES FEES

- (A) Fees for "Additional Services" may be based on lump sum or hourly (not to exceed), unit prices. "Additional Services" fees shall be agreed upon in writing prior to the encumbrance of expense.
- (B) Multipliers for additional services shall not be used in an attachment to a professional services contract or invoice for services.

6-210 MULTIPLIERS FOR REIMBURSABLE EXPENSES

- (A) Certain contracts, such as the AIA Document, B151 "Abbreviated" "Standard Form of Agreement Between Owner and Architect", provide for the use of multipliers when computing the expenses incurred by the Architect (Design Professional), their employee, or consultants. Multipliers shall not be used when submitting invoices.
- (B) Reimbursable expenses for material items, printed materials, and reproduction of plans and specifications, testing lab fees, or campus review fees shall not be billed or invoiced with any multipliers. Invoices are accepted for actual expenses incurred only.

6-211 ACCEPTABLE/ALLOWABLE REIMBURSABLE EXPENSES

- (A) Certain expenses will be incurred during a construction project, which may need to be included in all standard professional services contracts and also included as allowances in the design professional's contract under "Reimbursable Expenses", such as:
 - (1) Reproduction of design and bid documents (blueprints, printing, electronic media, cost, etc.). NOTE: These expenses to the campus are limited to those provided the review agencies during the design review phases of the project, the minimum number of set required to bid the project subject to approval of the campus, and the minimum numbers of sets to be furnished to the successful contractor (per 6-324). This includes all bid documents, drawings, specifications, addenda, negotiated changes, and change orders. Sub-contractors and suppliers requesting additional copies shall be responsible for all printing and shipping costs. The Design Professional shall furnish documentation of all printing and delivery cost.

- (2) Land and topographical surveys.
- (3) Geo-technical soils testing services and material testing (soils compaction, asphalt, concrete, and similar testing services).
- (4) Campus review fees, (example, Health Department plan reviews.)
- (5) Out-of-state travel expenses, including airfare, lodging, meals, ground transportation, parking and tolls, for in-state design professionals when specifically requested by the CAMPUS. Reimbursement rates shall be subject to the guidelines published by DF&A for out-of-state travel by state employees.
- (6) In-state travel expenses, including airfare, lodging, meals, ground transportation, parking and tolls, for out-of-state design professionals and out-of-state specialized consultants when specifically requested by the campus. Reimbursement rates shall be subject to the guidelines published by DF&A for out-of-state travel by state employees

6-212 UNACCEPTABLE MILEAGE, TRAVEL, FAX, TELEGRAM, OR LONG DISTANCE TELEPHONE EXPENSES

- (A) Professional service contract and/or invoices for services shall not list any of the following as a "Reimbursable Expense":
 - (1) Mileage to and from a project site at any time.
 - (2) Any other connected travel expenses such as meals, lodging, and parking. (Except for out-of-state travel when specifically requested by the campus).
 - (3) Facsimile communications (fax).
 - (4) Long distance telephone expenses.
 - (5) In-house computer or CAD time or equipment expense.
 - (6) Telegrams.
- (B) This applies to all design professionals and consultants, including geo-technical consultants, whether in-state or out-of-state. These expenses are considered normal overhead costs covered in the contract agreement, and are not reimbursable expenses.

6-213 PROGRESS PAYMENTS TO THE DESIGN PROFESSIONAL (RENDERING OF COMPENSATION)

- (A) While contract requirements may vary greatly, a mutually agreed upon Method of Rendering of Compensation shall be established in the standard professional services contract, under Section V, "Rendering of Compensation," or in a separate attachment. Compensation may be paid monthly or in stages of completion, but compensation or invoices may not be paid or processed until a campus has received that portion of work.

- (B) In a normal, average construction project, compensation for services and reimbursable expenses may be paid at the end of the following stages:
- (1) Schematic Design: Up to 15% of fee (after completion of First Plan Review).
 - (2) Design Development: Up to 35% of fee (after completion of Second Plan Review, where applicable).
 - (3) Construction Documents: Up to 75% of fee (after completion of Final Plan Review).
 - (4) Bidding, Negotiations, Award, Contract Administration: Up to 80% of the fee.
 - (5) Construction Administration through the final inspection and final punch list preparation: Up to 95% of fee.
 - (6) Project Closeout: Up to 100% after processing final pay request and project closeout items (Maximum 45 days). (Refer to §4-500 through §4-503)
- (C) Contracts or invoices shall not exceed percentages set without ASU approval. Any supplemental contracts (such as AIA Owner/Architect Agreements) listed as an "Attachment" to the standard professional services contract shall agree as to language and intent for all compensation, reimbursables, multipliers, etc., noted.

6-214 PROJECTS WITH FIXED LIMITS OF CONSTRUCTION COST

- (A) Where applicable, the campus and the Design Professional may jointly agree to a fixed limit of construction cost as a condition of a standard professional services contract between the campus and the Design Professional. If such a fixed limit has been established, the Design Professional and the campus will cooperate to mutually agree on contingencies for design, bid climate and price escalation, on building program scope, construction materials, equipment, component systems, and types of construction to be included in the contract documents.
- (B) The fixed limit of construction cost shall be included with all plan review submittals to ASU. The fixed limit of cost shall be stated in bold letters on the cover sheet of all documents submitted for review. The cost shall be stated in the following manner, "FIXED LIMIT OF CONSTRUCTION COST = (enter dollar amount)." This statement shall be removed from the documents prior to publishing for bids. Budgetary concerns by all parties shall be resolved during program review and the schematic design phase, before the first plan review submittal to ASU.
- (C) Where this fixed limit of construction cost is exceeded, the Design Professional shall, without additional compensation, modify the construction documents as necessary to comply with the fixed limit, if provided under the terms of the standard professional services contract.

6-215 PROJECTS WHICH EXCEED CONSTRUCTION FUNDING AFTER BIDDING

- (A) When it becomes apparent, after bids have been opened and reviewed, that the project cannot be awarded because of budget overruns, and that bids exceed the maximum

allowed for negotiations pursuant to Arkansas laws, the Design Professional shall initiate the following steps:

- (1) Meet with the CPC to review bids, budgets, program, and Owner's needs, within seven (7) working days.
 - (2) Review project costs with bidders for areas of possible savings or cost reduction. Analyze areas of excessive cost.
 - (3) Review project with the CPC to resolve project status as quickly as possible.
 - (4) Modify bid documents as approved and directed by all parties and resubmit two (2) sets of the bid documents to the CO for review, comments, and approval for re-bidding.
 - (5) Re-bid project. Coordinate bid date with the Procurement Office. The Design Professional may be required to re-design the project for re-bid without additional compensation. Additional redesigns beyond one (1) re-bid shall be eligible for additional compensation subject to the approval of the CO.
- (B) Other than reimbursables for printing costs, no additional compensation for re-bidding will be allowed unless approved in writing by ASU.

6-216 OMISSIONS AND ERRORS IN CONSTRUCTION DOCUMENTS

- (A) Omissions, errors, or both in construction documents often arise from unrealistic project schedules, lack of communication, failure to coordinate, review or edit of construction documents accordingly, as well as many other shortcomings in the design and construction process.
- (B) The CPC should work closely with the chosen design professional to set realistic project schedules which allow time for review and coordination by all parties, particularly during the scheduled ASU plan reviews.
- (C) Failure to include necessary construction detailing, lack of coordination in the architectural, civil, structural, mechanical, electrical, and other, portions of the drawings and specifications may result in costly change orders.
- (D) If these change orders are reasonably attributed in whole or part to errors or omissions on the part of the design professional or his consultants, the Design Professional shall without additional compensation (to the degree the change orders are responsibly required because of the errors and omissions of the Design Professional), correct or revise all errors or omissions in its designs, drawings, specifications and other services, and prepare construction change orders to effect corrective work. Good judgment and fair practice should be exercised by all parties in making these types of decisions. The CO will review all decisions respectively.
- (1) An omission of an item (such as a flagpole inadvertently left out of a set of project bid documents) which would have otherwise been included in the base bid for the project should not be used to penalize the Design Professional. However, if remedial work to the landscaping or concrete paving is needed to allow for

installation of the flagpole at a later, less opportune time in the course of construction, then the Design Professional may be held responsible for these remedial costs (assuming the campus has reasonably documented this requirement during preparation of bid documents for the project).

- (2) In general, when additional costs are incurred in a construction project, which are directly attributed to negligent errors or omissions or both on the part of the Design Professional, said Design Professional may be required to bear some or all of the costs for remedial work needed to correct these negligent errors or omissions. The Design Professional should work closely with the campus and the General Contractor to ensure that all errors or omissions or both are corrected in a timely manner, before any remedial costs are incurred, to contain and reduce change order costs. Errors and omissions should be resolved between the campus and the Design Professional whenever possible, and as quickly as possible.
- (3) The Committee shall have the authority to settle or resolve disputes concerning errors or omissions in a set of bid documents prepared for any campus project utilizing professional judgment, accepted standards of care required by Design Professionals.
- (4) Any dispute involving negligent omissions, errors, or both not resolved by the CPC and the Design Professional shall be submitted to the Committee. Either party may then request a conference review with ASU and the other party to attempt to resolve the issue.
- (5) Change Orders required as a result of an error, omission, or both may not be eligible for Design Professional fee compensation. For omissions, the Design Professional may be assessed a percentage of the cost of the change order, subject to ASU approval as determined in 6-217 (D), to cover the additional cost of the work due to failure to include the work in the original bid package. For an error, the Design Professional may be assessed the full cost of the change order, not as punishment, but in fulfillment of the principal of betterment, that the owner should not be required to pay twice for the same element of construction.

6-217 DESIGN PROFESSIONAL'S LIABILITY INSURANCE

- (A) The Design Professional shall carry professional liability insurance covering negligent acts, errors and omissions. Include a copy of the current certificate of insurance as an attachment to the standard professional services contract. The minimum policy value shall be \$500,000 except that the value shall be increased to a minimum of \$1,000,000 for projects where the estimated construction cost is between \$5,000,000 and \$20,000,000. For projects exceeding \$20,000,000 in estimated construction cost, the policy value shall be a minimum of 5% of the estimated construction cost. The Design Professional may utilize a Project Specific Professional Liability Policy for projects exceeding \$5,000,000 in estimated construction cost. The Design Professional shall be required to disclose the size and nature of all pending claims against his liability insurance during the negotiation phase. The Design Professional shall maintain this insurance in force after the completion of the services under the contract for a period of one (1) year after substantial completion of the construction.

- (B) The campus' review, approval, acceptance of, nor payment for, any of the services required shall be construed to operate as a waiver by the Owner of any rights or any cause of action arising out of the Contract. The Design Professional shall remain liable to the State for reasonable project costs, which are incurred by the State as a result of negligent acts, errors, or omissions, or both on the part of the Design Professional. This liability shall extend to the Prime Design Professional's subcontractors and consultants in the performance of any of the services furnished.
- (C) The Design Professional may be held responsible for reasonable project costs resulting from its professionally negligent acts, errors, omissions, or other breaches of the applicable standards of care established by Arkansas laws or regulations. Liability may include, but not be limited to, the Design Professional's own cost for labor and other in-house costs, any resulting Contractor Change Order cost including demolition, cutting patching, repairs, or modification of work that is already in place. The Design Professional may also be held responsible for any Contractor or Owner delays or damages, and any judgment, fines, or penalties, against the CAMPUS resulting from the Design Professional's professionally negligent acts, errors, omissions, and other breaches of the applicable standards of care.
- (D) However, the Design Professional may not be held responsible for the cost of the correct equipment or system which should have been originally specified, except that the Design Professional shall be responsible for any increased cost, whether the result of inflation, reordering, restocking or otherwise of incorporating the corrected work into the Contractor's Change Order.
- (E) Upon determination that there may be Design Professional financial responsibility involved, the Design Professional shall be contacted by the campus. The Design Professional shall be advised of the design deficiency, informed that it is the campus' opinion that the Design Professional may be financially responsible, and requested to provide a technical solution to the problem, including a cost estimate. The Design Professional shall be given the opportunity to take the measures necessary to minimize the consequences of such defects within a timely manner without jeopardizing the integrity of the project.
- (F) If the Design Professional refuses to cooperate in the negotiations, the campus shall have the right to proceed with the remedial construction and/or change order negotiations without the Design Professional. Disputes shall be resolved as set forth in the Standard Professional Services Contract.
- (G) Alternatively, the Design Professional may discharge its financial responsibility through negotiations with, and direct payment to, the Contractor. This action must be participated in and approved by the Owner.

6-218 OTHER INSURANCE REQUIRED OF THE DESIGN PROFESSIONAL

- (A) Prior to the start of any work under the Professional Services Agreement, the Design Professional shall provide to the campus Certificates of Insurance forms approved by the State and shall maintain such insurance until completion of all work under the agreement. The minimum limits of liability shall be as follows:

- (1) Worker's Compensation: Standard Arkansas Workers Compensation Policy with statutory requirements and benefits.
- (2) Employers Liability: \$100,000 minimum.
- (3) Broad Form Comprehensive General Liability: \$1,000,000 minimum Combined Single limit coverage. The State and ASU shall be named as an additional insured with respect to the services being provided. The coverage shall include but not be limited to premises/operations liability, Products and completed operations coverage, independent contractors liability, owners and contractor's protective liability, personal injury liability.
- (4) Automobile Liability: Arkansas Statutory Limits

6-219 PROFESSIONAL SERVICES CONTRACT

All basic compensation items, compensation for additional services, and reimbursable expense items, shall be carefully reviewed by both the campus and design professional before signing the standard professional services contract. The signature page of this form shall be the only signature page in the agreement. Delete or strikeout the signature pages from all attachments to avoid confusion.

6-220 ATTACHMENTS TO THE PROFESSIONAL SERVICES CONTRACT (Refer to Form 6-G)

- (A) The campus and Design Professionals may wish to add attachments to the standard professional services contracts. These attachments may be used to clarify the extent of the professional services, either basic or additional, for the campus and the Design Professional. When campuses and Design Professionals wish to add attachments to the standard professional service contract, the following shall be done:
 - (1) Attachments shall be referenced Attachment "A", "B", "C", etc., and referenced on page two of the contract under "Objectives and Scope".
 - (2) Attachments shall be neatly typed additions or the campus and Design Professional may choose to use the Standard American Institute of Architects "Abbreviated Standard Form of Agreement Between the Owner and the Architect", the Engineers Joint Council on Construction Documents "Standard Form of Agreement Between Owner and Engineer", or other documents approved by ASU. (ASU neither endorses nor rejects the use of these documents.) If these documents are used, they shall be carefully edited to fully agree with the standard professional services contract, Arkansas laws and regulations including the MSC regarding allowable fees, compensation, multipliers, acceptable reimbursable expenses, etc., and the services to be provided under the contract. Hourly rates and attachments shall remain in place for the duration of the contract, subject to annual or biennial review and negotiations. The language contained within the standard professional services contract shall take precedence over all attachments.

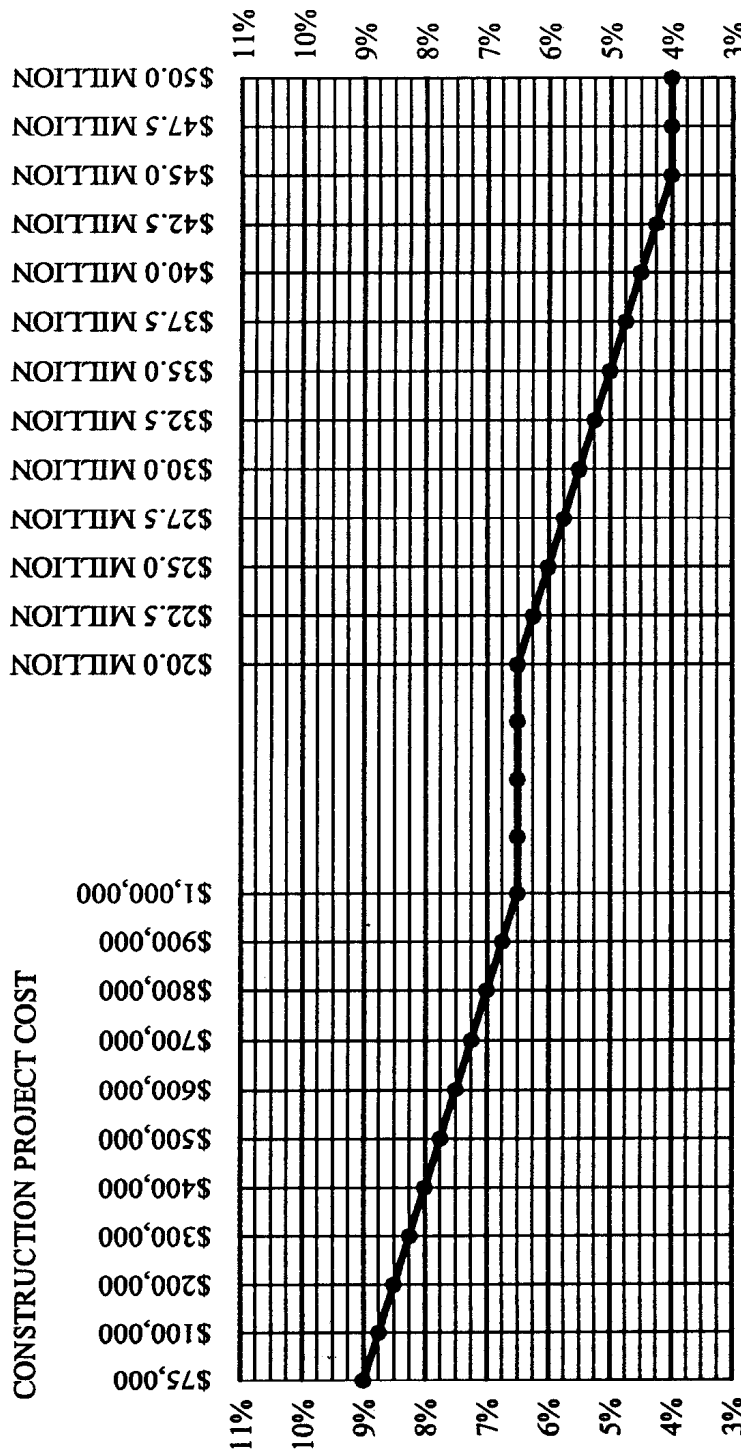
- (B) In addition, the ASU "Basic Services Defined" (refer to § 6-201) shall be attached to, or added under the AIA contract, Article 12, "Other Conditions or Services." All contracts shall adhere to the ASU "Basic Services Defined" as a condition of the contract.

6-221 AMENDMENTS TO PROFESSIONAL SERVICES CONTRACT

- (A) Any modification to an existing standard professional services contract requires the submission of an "Amendment" for approval by all parties, as per the original contract, including, but not limited to, changes in the project cost and scope of the project, fee or hourly rate adjustment, reimbursable expenses or additional services adjustments, contract extension, funding change (character code), and additional sub-consultants.
- (B) The base fee in a standard professional services contract will normally remain constant for the duration of a project. However, if the funding or scope of the project changes significantly enough to reduce or increase the base fee allowed by the ASU Standard Fee schedule (see § 6-227), then the standard professional services contract shall be amended by both parties to reflect the new base fee agreement, and submitted for approval.

6-222 ASU SUBMITTAL AND APPROVAL PROCEDURES FOR PROFESSIONAL SERVICES CONTRACTS

Submit all contracts to the CO for funding review. Campuses shall allow the CO seven (7) working days prior to the Department of Finance and Administration's deadline for submission and review of all new contracts or amendments.



ARCHITECTURAL/ENGINEERING SERVICES BASE FEE SCHEDULE CHART (MAXIMUM ALLOWABLES)

Fee Schedule Notes

1. This chart applies to architects and building engineers (structural, electrical and mechanical) as per 6-202. This base fee shall include all basic services as defined by SBS policy 6-201 unless otherwise negotiated.
2. For average projects. Including simple building additions. Use fee schedule to determine fee. Adjusted up or to the nearest 0.25% fee based on the dollar amount of the construction cost.
3. For simple projects such as warehouses, parking decks, or agricultural facilities. Deduct a minimum of 1% from the fees indicated.
4. For complex projects such as hospitals, medical or research facilities, laboratories, etc... containing large scientific, mechanical and electrical equipment. Add up to 1-1/2% to the fees indicated.
5. For projects involving renovation of existing facilities. Add up to 2% to the fees indicated.
6. For projects less than \$75,000. The fee may be negotiated on a lump sum or hourly cost (not to exceed) contract.
7. For projects exceeding \$50,000,000. The fee may be negotiated with the approval of State Building Services.
8. For projects requiring seismic design to comply with Arkansas law and the current Arkansas fire prevention codes. Fees may be increased. With the approval of the state architect as follows:
 - Projects in Arkansas Zone 1 Counties. Basic services as defined under section 6-200 and 6-201.
 - Projects in Arkansas Zone 2 Counties. Multiply base fee only. Up to 1.04 maximum.
 - Projects in Arkansas Zone 3 Counties. Multiply base fee only. Up to 1.05 maximum.

FEE SCHEDULE CHART 6-223

6-300 PROCEDURES FOR PROJECT DEVELOPMENT AND CONSTRUCTION

Outlined below are the steps that will normally be followed in the development of a building project from inception to acceptance by ASU. In individual cases there will, of course, be a variance from the procedures shown below. It is anticipated that these will be the exception rather than the rule. Refer to § 3-100 through § 3-102 for building or site acquisitions; § 6-100 for design professional selection; and § 7-301 for boundary and topographic land surveys; §7-302 for geo-technical services; §7-400 for the recommended grading standards; §7-600 for mechanical and electrical requirements for buildings; and §7-900 for issues concerning asbestos in buildings.

6-301 INITIATION OF PROJECT

The campus notifies the CO of its intent to do construction or improvement work.

6-302 FEASIBILITY STUDY REQUIREMENTS

- (A) A feasibility study may be required to determine the initial building program needs, property requirements, probable construction cost and site improvement costs. The study may include but not be limited to other non-construction costs such as financing cost, design service fees, equipment cost, furnishing cost, and contingency cost in order to determine if a project is economically feasible and if adequate source of funding is available.
- (B) The feasibility study should determine site selection needs, such as property size, zoning, utilities, acquisition costs, flood plain management, drainage costs, environmental review, pedestrian and vehicular access, parking needs, and storage needs as applicable. Building size and area requirements for all functions including the electrical, lighting, heating, cooling, and building system requirements should be addressed. Estimated construction, operation, and utility costs based on square footage and specific development costs, should be computed. Operational and staffing cost for security, maintenance, janitorial and building operators should be included on a cost per square foot basis as a part of the study. The study should include a brief discussion of the requirements and possible solutions for each area along with a line item cost estimate for each area. Consideration should be given to future expansion capabilities in all cases. The feasibility study should be used as a basis to help establish funding and to guide the CPC in selection of, and directing the work of, the appropriate Design Professional.
- (C) Design Professionals shall be selected in accordance with the MSC (refer to § 6-100 et seq.). The campus shall obtain approval from the CO prior to initiating a feasibility study with outside consultants or design professionals.

6-303 PROGRAMMING

- (A) Unless otherwise negotiated, basic programming costs for a project are not covered under basic services provided in a standard professional services contract. ASU requires that the campus provide the Design Professional with a minimum program of all project requirements, including site and building requirements, a program of required spaces, their approximate size or square footage, and all needed functions required for the building or project site, including all basic electrical, lighting, heating, cooling, and

building system requirements. This information should be provided prior to negotiating a contract with the Design Professional. Copies of this information shall be included in the first review submittal to ASU for informational purposes.

- (B) If the campus cannot provide a minimum program as described above, the campus may include under "Additional Services" to standard professional services contract, a "not to exceed" cost for programming. This should be invoiced per the number of actual hours spent in preparation of the program, up to the "not to exceed" cost stated in the contract.
- (C) When programming is provided by the campus, review and needed corrections and compilations to the overall building program for site analysis and the addition of circulation space, mechanical equipment space, ancillary and storage space, etc., as well as review and coordination of all electrical, lighting, heating, cooling, and building system requirements, shall be considered part of the Schematic and Design Development Phase furnished under basic services, unless otherwise approved by the CO.

6-304 FINANCING AND CONTINGENCY BUDGETING

It is recommended that all cost estimates for construction, all projected building costs, and all methods of finance include a contingency fund. Contingency funds should be used to offset inflation, unforeseen expenses, and/or cost overruns on construction projects. Items that could or may be covered by a contingency fund are unexpected utility work or relocation, damaged roof decking replacement, rock excavation, etc. Contingency funding normally should not exceed 10% of construction costs and design fees and should depend on the cost and complexity of the project, with a proportionately smaller amount as project budgets increase. While 5 to 10 percent may be necessary on low cost projects, this percent may be excessive on higher cost projects (1-1/2 to 2-1/2 percent may be sufficient). Overall building budgets should be reviewed with the CO or Design Professional chosen to perform the work. Contingency funds are not set up to cover the cost of errors in design and construction by the Design Professional, or for lack of coordination on their part, which requires remedial work during completion of construction. Refer to § 6-216 for Errors and Omissions as defined by ASU. Refer to attached Capital Budget Form 6-304.

6-305 PROJECT COORDINATOR

- (A) The campus shall assign a Project Coordinator.
- (B) The responsibilities of the Project Coordinator shall cover the following:
 - (1) Allow the campus to work closely with the Design Professional.
 - (2) Cooperate with the design team in all design and budget decisions, including compiling and approval of the campus' program for the project and approval of the estimated construction cost at each plan review submittal.
 - (3) Help make decisions regarding programming and operational restraints to best benefit the campus and to bring the scope of the project within the estimated construction cost as submitted by the Design Professional and approved by the campus.

- (4) Be aware of the project status at all times. Attend all meetings and keep records accordingly.
- (5) Keep the campus CO advised as to the project progress at all times.
- (6) Maintain adequate records of the project for future use, including plans, specifications and record drawings.
- (7) Serve as the campus primary contact regarding all matters concerning the Capital Improvement Project.
- (8) Pre-review all submittals from the Design Professional. The Project Coordinator shall ensure that all submittals meet the project requirements as defined for the Design Professional and as required for an ASU submittal (refer to § 6-318 through § 6-328).
- (9) Ensure that all submittals are forwarded to the campus in the order that meets the campus priority needs.
- (10) The Project Coordinator shall receive and review all comments regarding the submittal review and shall be responsible for distribution of these comments to all appropriate parties. The Project Coordinator shall ensure that the Design Professional responds to all comments in writing and notify the Design Professional in writing if he disagrees with a comment or a response. Responses shall be included with the next submittal package. It is acceptable and encouraged to include the direct responses from the Design Professional to the ASU comments. It is the CPC's responsibility to ensure that each comment is addressed.

6-306 POLICY CONCERNING EARTHQUAKE RESISTANT DESIGN FOR PUBLIC STRUCTURES

- (A) All design professionals shall comply with all Arkansas laws and regulations, including but not limited to the Arkansas Fire Prevention Code in regard to seismic design.
- (B) Compliance with applicable seismic design building codes shall include all defined "structural" and "non-structural" elements.
 - (1) "Structural elements" are defined as all structural load-carrying members of a building or structure required to transmit loads (forces) within the building or between the building and ground.
 - (2) "Non-structural elements" are defined as items such as normal interior non-bearing walls and partitions, mechanical and electrical equipment machinery bracing, suspended ceiling framing systems, light fixtures, piping, conduit, and air handling ducts, etc.
- (C) Refer to § 6-207 and § 7-205, Seismic Design Services, regarding "additional services" for dynamic structural analysis or specific, "out of the ordinary" non-structural elements of a project.

6-307 BUILDING CODES ADOPTED

ASU shall ensure that reference is made to the Arkansas Fire Prevention Code. Arkansas laws and ASU Regulations shall have precedence over the Arkansas Fire Prevention Code where they exceed the requirements of that code. All Design Professionals shall comply with all Arkansas laws and the Arkansas Fire Prevention Code in regard to seismic design. ASU shall reference these codes in its review of bid documents for these projects.

6-308 REGULATORY AGENCIES' REVIEW

- (A) In addition to reviews completed by ASU, design professionals are encouraged to work closely with fire chiefs throughout the planning stages of State funded capital improvements. Special requirements may be needed according to available equipment and fire-fighting/emergency procedures. Coordination with and review by the local fire official is a mandatory requirement.
- (B) The Design Professional shall be responsible for coordinating a project directly with these regulatory agencies, independently from ASU, allowing adequate time for plan reviews and approval before requesting a bid date. The Design Professional shall submit copies of all regulatory review campus comments, waivers, variances and instructions regarding the project, including local fire official reviews, with the final plan review submittal. Copies will be forwarded to ASU for record through the Project Coordinator.
- (C) The following is a partial list of the regulatory agencies mentioned above which have adopted design and/or construction standards and may require pre-construction plan review and approval. Design professionals should request copies of all acts, laws, and adopted standards from these individual agencies. This listing is not exclusive of any other Agency, which may under special circumstances exercise design authority.
 - (1) Department of Health:
 - a. Division of Plumbing and Natural Gas (plumbing systems, domestic water, septic design, swimming pools, etc.);
 - b. Division of Radiation Control & Emergency Management (X-ray, nuclear medicine, installation or safety evaluations);
 - c. Division of Sanitarian Services (kitchens, restaurants, etc.);
 - d. Division of Engineering (waste water systems, water systems and districts, cemeteries, swimming pools, etc.);
 - e. Division of Health Facility Services (hospitals, health units, etc.).
 - (2) State Police:
 - a. State Fire Marshall (fire code review, life safety, etc.);
 - (3) Department of Labor (elevator safety, including inclined stairway chairlifts and vertical wheelchair lifts, boiler inspection, industrial hygiene, OSHA reviews);

- (4) Department of Environmental Quality: (Resources Conservation and Recovery Act of 1976 when Federal funding exceeds \$10,000; Storm Water Pollution Prevention Plan for disturbed sites in excess of 5 acres, asbestos issues and other required environmental reviews);
- (5) Highway and Transportation Department (highway access, right-of-way design). Contact local district headquarters' engineer;
- (6) Design Professional (review of building access for the physically disabled, state flood plain management review, Arkansas Fire Prevention Code and other applicable laws and regulations);
- (7) Office of Long Term Care within the Division of Medical Services of the Department of Human Services, (long term care facilities/nursing homes);
- (8) Arkansas LP Gas Board (review/inspect rural installation of LP storage tanks and gas meters);
- (9) Arkansas Industrial Development Commission, Energy Division, (1994 Arkansas Energy Efficient Standards for New Building Construction, and ASHRAE/IES 90.1);

6-309 UNACCEPTABLE DESIGN CONFIGURATIONS

- (A) The following configurations have proven too expensive or result in excessive maintenance activity or utility cost. These configurations shall not be accepted for use in State owned building designs unless they are submitted for approval in writing to the CO, prior to the First Plan Review.
- (1) Pedestrian or vehicular circulation (other than for maintenance) on roofs of habitable spaces or support spaces. Pedestal pavers on a Plaza, etc., over occupied spaces, shall not be accepted.
 - (2) Sloped glazing (except for Greenhouses), such as ridge or sloped skylights, which increases heating and cooling capacity requirements.
 - (3) Rooftop mounted, heating or cooling units and associated piping and/or ductwork, which increase foot traffic, roof penetrations, maintenance requirements, and re-roofing costs.
 - (4) Seismic Design Upgrades for Existing Buildings in Seismic Zone 2 and Zone 3: Upgrades of existing structures involved in additions, alterations, or retrofitting in Seismic Zones 2 or 3 shall be submitted for approval prior to beginning Schematic Design. Design changes required by failure to follow this procedure shall be the responsibility of the Design Professional.
 - (5) Building located in Flood Plains: All additional design requirements associated with building in a Flood Plain shall be submitted prior to beginning Schematic Design. The additional cost of design changes required by failure to follow this procedure shall be borne of the Design Professional.

- (6) Air-conditioning systems which do not meet the requirements of ASHRAE Standard 62 or systems which, when set to meet this standard, will be operating outside of their intended design parameters and will result in a reduced life expectancy for the equipment.

6-310 PHASED PROJECTS

- (A) Where a project size or complexity requires funding in stages and takes many years to complete, the campus and Design Professional shall take the following steps to ensure project completion in a timely and prudent manner:
 - (1) Be aware that future funding is subject to termination.
 - (2) Work to the budget established in the funding for each phase or portion of the project.
 - (3) Establish a building program for the established budget for each phase only.
 - (4) Base all work in the schematic design and design development and construction bid documents, for the funded portion of the project only. Do not obligate the campus for design services beyond the project funding limits. Any authorization for Design Professional services beyond available funding must be approved in writing by ASU.
 - (5) Do not bid or obligate funding for partial construction, such as slab work only, for a project, which will be unused, and of no value until future funding is established for completion.
 - (6) Coordinate project requirements with the Project Coordinator as to master planning, funding, and program review in the First Plan Review submittal.

6-311 PROJECT SCHEDULE

- (A) The project Design Professional shall submit to the campus, a projected "Project Schedule" developed in conjunction with the CPC, which shall include the following anticipated dates:
 - (1) Date of first plan review submittal to ASU.
 - (2) Date of intermediate plan review (at least 50% complete) submittal to ASU.
 - (3) Date of final plan review submittal to ASU.
 - (4) Dates for bidding and construction start and estimated completion date.
- (B) For exemptions refer to § 4-101

6-312 DESIGN PHILOSOPHY

- (A) The goal of the campus and its consulting Design Professionals should be to create a capital investment that meets the user's functional requirements, program requirements and provides the most economical life cycle cost for the taxpayer. Buildings and structures will often be used for periods exceeding fifty (50) years and consequently, should be designed for durability, adaptability, and economy of operation and ease of maintenance. The State currently has many functioning buildings that are over fifty (50) years old.
- (B) Building system components should be selected on the basis of life cycle cost. If an increased first cost or initial cost can be documented to show a reduced life cycle cost for the State, particularly for operating and personnel cost, then the design should incorporate the more expensive first cost feature or system. Studies have shown that the initial construction cost for most buildings equals ten (10) percent or less of the total cost of owning and operating a building over the life cycle of the building. Campuses are encouraged to require the Design Professional to produce life cycle cost data for analysis before approving a design element or system.
- (C) Campuses must be alert to ensure their consulting Design Professionals exercise discipline in their designs to avoid inefficient use of facility space in terms of floor area and building volume. Exterior design features and materials should be consistent with the architectural character of the surrounding buildings and should complement the natural materials at the site. Excessive features or unusual geometry, which are not related to the function or intended use of the facility, should be avoided.
- (D) Acceptance of a particular design does not imply that other more cost-effective designs are not acceptable. Good architecture can be achieved simply by good design which implies sensitivity to scale, mass, proportion, color, materials, lighting and detail, none of which necessarily cost more.

6-313 DESIGN STANDARDS AND REQUIREMENTS FOR OWNER/CAMPUSES

- (A) The campus and the Design Professional should be aware of differences between private work and work performed for the State. Failure to comprehend these basic differences in rules and policies can result in costly disputes, protest, claims, and document re-submittals.
- (B) Since the knowledge and experience of the contractors bidding on the project is unknown, drawings and specifications requirements shall be clear as to the intent of the work. The plans and specifications must be clear, concise, and provide thorough detailing of existing and new construction.
- (C) Sections, details, and dimensions must be in sufficient quantity, clarity and detail to allow the bidder to understand what is expected, to make takeoffs of material types and quantities, and once hired, to prepare shop drawings and execute the construction. This particularly applies to stairs, special connections for framing, typical details of system interfaces, flashing for roofs, walls, and similar building features.
- (D) Details should clearly distinguish between existing and new construction. The drawings must also clearly show the beginning and the ending point of demolition requirements.

- (E) The project design is solely the responsibility of the Design Professional. Specifications requiring the contractor to provide engineering design are not acceptable unless the products specified for contractor design are closed-engineering systems. Closed engineering systems may include pre-engineered metal buildings, prefabricated trusses, post tensioned structural concrete slabs, pre-cast concrete systems and common steel structural connections. Other systems can be classified as closed-engineering systems if approved in writing by the CO. When closed-engineering system specifications are used, the Design Professional shall include the requirement for such systems designs to be stamped by a professional engineer duly licensed to practice in the State pursuant to Ark. Code Ann. §22-9-101 et seq. Closed-engineering system shop drawings shall be submitted through the Design Professional to the engineer of record for review and approval for incorporation into the overall project design.
- (F) In order to encourage competition required in the expenditure of public funds, performance specifications that define a desired result or assembly are strongly preferred. If performance specifications are not practical, and a manufactured product must be used to define a desired result of assembly, then at least three manufacturers and three products should be referenced. Do not reference both manufactured products and performance criteria because conflicts in the performance criteria and the product performance may create ambiguity and result in the misapplication of a product, a protest, or a claim. Sole source and proprietary specifications are not allowed without prior written approval by the campus CO.

6-314 SPECIFICATION STANDARDS

- (A) Specifications shall clearly define the quality, performance, and installation standards for the work and the conditions under which the work is to be executed. They shall be in sufficient detail to describe the materials, equipment and supplies, and the methods of installation and construction. Required tests and guarantees shall be indicated in the specifications.
- (B) Federal Specifications, MILSPECS, Corps of Engineers Specifications and the like often contain requirements or standards, which are not applicable to State work. Those specifications may contain requirements and options ranging from the lowest quality to the highest quality product, which must be carefully reviewed, selected and identified in the specifications. Therefore, any reference to these types of specifications should be avoided.
- (C) Specifications shall be on 8 ½" by 11" sheets and bound into a project manual with bid sets preferably printed on both sides of the sheet. Type print size shall be suitable for microfilming and shall not be smaller than 12-point type size. The table of contents pages, or index, shall be dated with the same date as the drawings and shall be sealed and signed by the appropriate Design Professionals.
- (D) The Project Manual shall include but not be limited to:
 - (1) Title of Project and Name of campus;
 - (2) Names, address, phone and fax numbers of the Design Professional and all consultants;

- (3) An index of all contents;
 - (4) Notice of Invitation to Bid;
 - (5) Instructions to Bidders;
 - (6) Bid Form;
 - (7) The General Conditions;
 - (8) Supplemental General Conditions, (if applicable);
 - (9) Contract Between Owner and Contractor;
 - (10) Workers Compensation Insurance Certificate;
 - (11) Standard Performance Bond;
 - (12) Standard Labor and Material Payment Bond;
 - (13) Change Order blank forms;
 - (14) List of Drawings
 - (15) Division 1-General Requirements, Special Conditions, etc.;
 - (16) Technical Specification (Divisions 2-16 Applicable Sections);
 - (a) Technical Specification Sections shall be numbered with appropriate five digit section numbers corresponding to the CSI numbering system. The preferred paragraph numbering system format is the alphanumeric format.
 - (b) Technical Sections shall be subdivided into the Part I-General, Part II, Products, Part III-Execution format, and;
 - (17) Appendices containing Soils Report, Asbestos Report, or other information pertinent to the project but not a part of the work. Such material should be noted as, "INFORMATION ONLY", for use by the Contractor as deemed appropriate.
- (E) The four (4) types of specifications used on State projects are performance specifications, non-proprietary specifications, proprietary specifications and sole source specifications.
- (F) Performance Specification or Non- Proprietary formats are the preferred methods of specifying materials, equipment and systems. A non-proprietary specification shall be written either as a generic performance specification (preferred) or as a specification naming a minimum of three (3) manufacturers with model or series numbers. The following describes the ASU requirements for performance specifications and non-proprietary specifications.

- (1) A generic performance specification must be written to describe the required characteristics, performance standards, capacities, quality, size or dimensions, etc. of the item or system. The specifications must be written with sufficient detail to allow manufacturers to determine if their product meets the requirements of the project. Include only the salient features that will be used to judge a product's acceptability for the project. The performance specification shall not name manufacturers or brand name products.
 - (2) A non-proprietary specification may be based on a manufacturer/model number type specification and must list at least three (3) manufacturers. Each of the listed manufacturers/model numbers must have been determined by the Design Professional to meet the specifications and be acceptable. If a named manufacturer prepackages or preassembles its item or system, the model number shall be specified. If the named manufacturer (s) custom builds the item or system, naming of model numbers is not required. When model numbers are used in a specification, be aware that each number and letter may be a unique identifier for various features of that manufacturer's product line. Avoid listing model long numbers. Limit the model number to the point necessary to describe the appropriate series of products and describe the unique product characteristics in the body of the specification or the schedules.
 - (3) The non-proprietary specification must describe the required characteristics, performance standards, and capacities that will be used to determine equal products. Do not specify extraneous characteristics that do not relate to the products' performance or suitability for the project. The specification shall not be contrived to exclude any of the manufacturers listed or to benefit any one (1) manufacturer over any of the other manufacturers. If only two (2) acceptable manufacturers can be found and documented by model number but other equal products are acceptable if found by the bidder, the Design Professional may list only those two (2) manufacturers and the phrase "or approved equal".
- (G) A specification is proprietary if it fails to meet requirements of a generic specification or a non-proprietary specification. Although a proprietary specification should be avoided because it restricts competition, circumstances such as space limitations, mandatory performance standards, compatibility with an existing system, etc., may leave no other reasonable choice. Two (2) typical situations that may require proprietary specifications are:
- (1) When only two (2) manufacturers or suppliers provide an acceptable product or system, when there are no equals and when no substitutions are allowed or
 - (2) When only one (1) manufacturer is available, but two (2) or more vendors or suppliers can purchase the material and compete to provide the product or system to contractors or bidders.
- (H) Proprietary specifications may only be used when the campus requests and receives, in writing, approval from the CPC, to use a proprietary specification. The campus must request approval as soon as the need for the specification is recognized, preferably in the preliminary design stage but definitely prior to submission of Final Plan Review Documents. The campus request shall justify why the proprietary specification is necessary.

- (I) A specification is sole source when it names only one (1) manufacturer or product to the exclusion of others, or when it is contrived so that only one (1) manufacturer, product, or supplier can satisfy the specification. A product or piece of equipment that is available only through a single franchised vendor is also considered to be a sole source item. Sole source specifications may be used only when the campus requests and receives, in writing, approval from the CPC, to use a sole source specification. The campus must request approval as soon as the need for the specification is recognized, preferably in the preliminary design stage but definitely prior to submission of Final Plan Review documents. The campus request shall justify why the sole source specification is necessary.
- (J) Prior to advertising the project for bids that contain sole source specifications, the campus is encouraged to either procure the sole source item and specify it as Owner furnished/Contractor installed or the campus may pre-select a sole source item through a competitive life cycle cost request for proposals (RFP). The RFP, and evaluation criteria, shall be approved by the CPC, prior to issuance of the RFP. The analysis shall also be reviewed and approved by the CO. The product having the lowest life cycle cost shall be selected and shall be included in the specification as an allowance cost item listing manufacture, product number, allowance price, vendor contact name, address and phone number and the manufacturer's quote number.
- (K) The use of standardized specifications or "guide specs" as a basis or resource for editing has many advantages for the Design Professional, the Reviewer and the Contractor. The Design Professional shall edit the guide specifications to include only the materials, requirements, and procedures applicable to the project. Specifications, which are submitted without editing, will be rejected as an incomplete submittal. References to the Contracting Officer shall be changed to the campus. Also requirements for tests, inspections, or visits to the manufacturer's plant, etc., which are not normally required for state projects shall be deleted.
- (L) The Design Professional may require samples, shop drawings, or similar materials to be submitted for approval prior to receipt of bids. The specifications must contain sufficient information to describe to the contractor and bidders the performance and quality standards that will be used to evaluate the submittals.
- (M) Complex or sensitive systems such as locking systems, detention equipment and security control systems for prisons often require manufacturers with a proven history of reliable, operable equipment in special situations with minimal malfunctions, as well as subcontractors who are experienced installers of that manufacturer's products. In such instances, the campus and Design Professional should develop the necessary documents to pre-qualify the manufacturers and/or subcontractors prior to bidding. The names of those pre-qualified shall be listed in the bid documents for use by all general contract bidders.
- (N) Projects for the State are not "testing grounds" for new type of materials or equipment. However, the fact that a material is newly developed does not preclude its use if documentation of recognized, independent laboratory tests clearly shows that the material will meet the applicable requirements for the project. Unless the manufacturer of a new product furnishes factual data sufficient to evaluate the product, it should not be

considered for use. If a new product is considered for use, a competitive-type specification should be written to assure that a competitive, good-quality product will be obtained. The campus may authorize use of a new material, equipment or system for a particular project on a trial basis for observation or evaluation.

- (O) Specifications must clearly indicate the requirements for the project. Words or phrases, which are vague or may be interpreted more than one way often lead to problems during bidding or construction and result in change orders or claims. The following instructions are intended to reduce common errors and conflicts evolving from interpretations of the specifications.
- (1) Under Requirements, do not say, “the work consists of.” Drawings should show the entire ‘scope of the work’. If necessary to list certain parts, say, “Generally, the work includes...”
 - (2) In reference to the accompanying drawings, use of the words “as shown,” “as indicated,” “as detailed” or “as approved by...” “as directed by...” “as permitted by...” must be verified by the Design Professional.
 - (3) The Contractor is responsible for determining the packages of work for each subcontract. It is acceptable to specify certain specialty work to be performed by a person qualified, certified or licensed (if appropriate) and experienced in this type of work. If it is necessary to reference a specific trade group, it may be referred to as that group or trade by the CSI division number or section number i.e.: “Division 16” for electrical work instead of “electrical sub-contractor” or “Section 16721-Fire Alarm” instead of “fire alarm contractor”.
 - (4) Do not use “etc.” This term is too indefinite for bidding and inspection purposes.
 - (5) Minimize the use of cross-references and in no case use paragraph numbers for this purpose. If it is necessary to refer to a particular paragraph, do so by its section number and title (e.g. Section 03300, Cast-in-Place Concrete).
 - (6) Do not include a paragraph in the various sections entitled “Work not Included”, describe only the work that is included under the respective sections.
 - (7) Specifications should clearly delineate air conditioning ducts, heating ducts and piping systems, which require insulation. The phrase “insulating all ducts except in conditioned spaces” has resulted in differences of opinion and claim situations. All duct systems should be appropriately designated as supply, exhaust, outside air intake, transfer, relief, or return and further clarified by stating insulating requirements.
 - (8) Do not confuse “any” and “all”: “Correct any defects” should read “Correct all defects.”
 - (9) Do not confuse “either” or “both”; e.g., “Paint sheet metal on either side” should read “Paint sheet metal on both sides.” “Either” implies a choice.
 - (10) Do not confuse “or” and “and”; e.g., “The equipment shall not have defects in workmanship and material.” The use of “and” in this sentence indicates both

requirements must be met. e.g. "Additives that decrease strength or durability are not permitted.

- (11) Do not use "and/or." The courts have considered this phrase to be intentionally ambiguous and, therefore claims are often rendered in favor of the Contractor.
- (12) Use statements that are definite and contain no ambiguous words and phrases "Remove" implies to take away from its current location. If "remove" is used, the Design Professional must also indicate whether to dispose of, salvage, or re-install the material "removed". "Reinstall" implies putting the existing back in the indicated place. If "reinstall" is used, the Design Professional must also indicate that the Contractor must carefully remove the item, properly store it, and then "reinstall" the item at an appropriate time. "Replace" implies removal of old material and furnish and install new material. The preferred wording would be to "remove"... and "provide"...
- (13) "Provide" is defined as "furnish and install." When material or equipment is "furnished" by the campus directly or under other contracts for installation by the Contractor, the term, "install" should be used; however, the Contractor may be required to "provide" foundations, fastenings, etc., for the installation. If the word "install" is used alone, the Bidder or Contractor has a right to assume, on the basis of the definition cited, that the campus will "furnish" the materials in question.
- (14) Do not include equipment schedules in the specifications. Equipment schedules should be provided on the plans for quick access and review. The construction record prints are often used by the building maintenance and operation personnel on a daily basis. Having the equipment schedule information readily available on the plans can save critical time and avoid confusion during an operational emergency or repair.

6-315 DRAWING STANDARDS

- (A) The following represents the minimum requirements, standards, and expectations applicable to all drawings prepared for bidding and construction on state projects. Refer to § 6-325 through § 6-327 for a description of the contents of each discipline submittal. Note that not every category will be used on every project. The Design Professional shall select the appropriate categories for each specific project.
- (B) Arrangement of Drawings: Drawings shall be arranged in the following order with the discipline identifying character shown:
 - T- Title Sheet & Index
 - TS- Topographical Surveys & Plot Plan Drawings
 - B- Boring Logs & Soils Data
 - D- Demolition Drawings
 - C- Civil Site Drawings

- L- Landscaping Drawings
- FA- Fire Service Access Drawings
- A- Architectural Drawings
- K- Kitchen Equipment Drawings
- *- Special Category Drawings (Assigned By ASU)
- S- Structural Drawings
- M- Mechanical (HVAC) Drawings
- FP- Fire Protection Drawings (Sprinkler Systems)
- P- Plumbing Drawings
- E- Electrical Drawings
- *- Special Category Drawings (Assigned by ASU)

* For special categories such as laboratory casework, acoustical plans, audio-visual plans, etc. that do not readily fit into the defined categories, contact the CO, for a drawing category assignment.

- (C) Drawing Numbers: Drawings shall be sequenced by discipline letter and number, i.e., A-1, A-2, A-3.1, A-3.2, S-1, S-2, etc. For large projects ASU recommends the Designer use a flexible numbering system such as A1.01, A1.02 for plans, A2.01, A2.02 for sections, etc. This will allow the Designer to insert additional drawings as the project develops without requiring a re-numbering of sheets.
- (D) Sizes of Drawing Sheets: Drawing sheet size, except in special cases approved by the CO, shall be 24" by 36" (preferred) or, alternatively, 30" by 42". Drawings shall be prepared so as to be suitable for microfilming and for making clear, legible half-size reproductions.
- (E) Lettering: Unnecessary letter embellishments, poor spacing, careless lettering, weak lines, and lettering which is crowded or too small result in illegible films and poor reproductions. The minimum height for hand lettering on all projects shall be 1/8". Mechanical (typed or CAD) lettering shall be 1/12" minimum and in all caps. Make minimum gap between lines equal to one-half the letter height. Lettering and line weight must be in accordance with classical drafting practices.
- (F) Detail Numbers: Each plan view, section view or detail shall be given an individual detail number to facilitate written and verbal communication.
- (G) Scales: An indication of the scale of the object drawn shall be located directly under the title of each plan, elevation, section, detail, etc. (Example: Scale 1/8"=1'0"). All floor plans shall be drawn at a minimum scale of 1/8" = 1'-0". The use of a smaller scale for

floor plans must be approved in writing by ASU prior to the first submittal. Avoid odd size scales such as $3/32" = 1'-0"$ as these scales often lead to takeoff errors. Use break lines and match lines for larger building plans. For sheets with one plan such as a floor plan, sheet, or site plan the title should be located centered under the main part of the plan or at the lower right-hand corner of the sheet. The north arrow should be located at the right side of the title.

- (H) Provide a master listing of all applicable abbreviations and symbols used in the set of drawings or provide a listing of all common abbreviations and symbols at the beginning of the drawings and provide a listing of the discipline specific abbreviations and symbols at the beginning of each discipline. For complex piping schematics, electrical riser diagrams of special system layouts, the designer is encouraged to provide an abbreviated legend of symbols on those specific sheets to minimize the need to flip sheets to find critical symbols.
- (I) Topographic and civil site drawings shall conform to the approved site plan and shall show building location by dimensions, existing and approximate new finished grades, roads & walks, temporary & permanent erosion and sediment control devices, and storm-water management facilities.
- (J) Boring logs representing soil conditions encountered in the site investigation including pertinent logs from previous explorations in the project location should be presented in the project manual for informational purposes. Logs shall show the ground elevation, the depths of borings, depths and classifications/descriptions of materials encountered, blow counts per ASTM D-1586, ground water elevation, and other pertinent information. Boring locations relative to the project shall be shown on a small-scale location plan or on the Site Plan.
- (K) Building Floor Plan drawings for all disciplines shall be oriented the same to avoid confusion and to facilitate overlaying of drawings. It is customary for a building plan to be oriented with north toward the top or left edge of the sheet. All plans shall have a North Arrow for orientation. For projects where the plan is divided and shown on multiple sheets, provide a key plan on each plan sheet and crosshatch or shade the area of the key plan shown on the sheet. Provide clearly defined match lines and reference the sheet where the match can be found. Avoid showing construction information across the match lines as this can lead to confusion and duplication of material counts.
- (L) The drawings shall describe/show the work to be provided by the Contractor. Existing features, structures, or improvements to remain shall be so noted. Existing features, structures, or improvements to be demolished and/or removed shall be clearly identified. Work, improvements, demolition or construction, which the campus will perform or have performed by separate contract, shall be identified as "Not in Contract" or "NIC" if the abbreviation has been defined. Do not use the phrase "Work by Others".
- (M) All foundation and floor plans shall be drawn to a scale not less than $1/8" = 1'-0"$ with all necessary dimensions shown. Roof plans are preferred at $1/8" = 1'-0"$ scale; however, roofs without mechanical equipment and metal/shingled pitched roofs may be drawn at a $1/16" = 1'-0"$ scale if approved in writing by ASU prior to the first submittal. Foundation, floor and roof plans shall show all permanent equipment vents, utilities or pipe penetrations, openings and such items affecting the construction. All plans shall be

provided with column numbers or grid numbers to facilitate written and verbal communication describing the location of specific information on the plan.

- (N) Design live load capacity for all floors and the roof in pounds per square foot shall be noted on structural floor plans.
- (O) Every floor plan or partial plan shall be provided with a unique room number and/or name. All schedules shall reference the specific room number to which the schedule applies. Reflected ceiling plans shall show room numbers, locations of lights, HVACR items, sprinkler heads, speakers, smoke detectors, etc.
- (P) Enlarged plans to 1/4" scale shall be furnished to clearly show the location and arrangement of built-in equipment/casework and of the furniture, fixtures, equipment, etc., which influence the location of utilities, including electrical, plumbing, heating, etc., and the assignment of space within the project.
- (Q) A minimum of one transverse and one longitudinal section through the building shall be shown along with as many additional sections as are needed for understanding the overall construction requirements. Include necessary dimensions on each. All elevations shall be drawn to scale at not less than 1/8" equals 1'-0".
- (R) Typical wall sections shall be drawn at not less than 3/4"=1'-0" scale. Typical window, door and special opening details shall be drawn at 1-1/2"=1'-0" scale or larger.
- (S) Provide stair sections for each stair configuration including dimensions, sizes, framing members, components, and any special details required.
- (T) Provide all necessary interior and exterior details, including special doors, windows, woodwork, paneling or other decorative work, toilets and washrooms, etc., with plans and elevations at a minimum scale of 1/4"=1'-0" and with construction details at a minimum of 3/4"=1'-0".
- (U) Door schedules shall include door number, label or type, size, material, frame, lintel, and remarks. Also provide elevation and detail references. Window schedules shall include make or type, size, material, and lintel remarks. Also provide elevations and details, if required for complete description. Finish schedules shall include space or room number, space name, floor finish, wall type/finish, ceiling type/finish, ceiling height, base, wainscot, remarks, and other comments, if required.
- (V) Provide an enlarged plan view of each unique mechanical, electrical or equipment room. Equipment room plans shall be drawn at 1/4"=1'-0" scale minimum. Provide a minimum of one section through each equipment room drawn at 1/4" = 1'-0" minimum to clarify the height of, equipment, ductwork, piping and etc. Provide one (1) longitudinal section and one transverse section through the building (minimum) to show mechanical and electrical work with relation to the work by other disciplines. Provide other partial sections as required to clearly explain the scope of the work and to describe the restrictions at congested areas.
- (W) Relation of Drawings and Specifications: Drawings generally indicate the scope of work, locations, relationships, and dimensions while specifications generally indicate quality, performance and installation requirements. Drawings and specifications shall

supplement each other and must not conflict. Terminology used in specifications and drawings should be the same.

- (X) Since the final plan review drawing submittals are, in the opinion of the Design Professional, complete and ready for bid, all drawings submitted for final review shall bear the Arkansas seal of the individual or individuals responsible for its design (and corporate seals where applicable). To prevent incomplete drawings from being mistaken as construction drawings, the Design Professional shall over stamp the seal with either "Preliminary" or "Not for Construction" or "For Review Only" and shall not provide a signature over the seal.
- (Y) All drawings and the specifications issued for bid or construction shall be dated with the same date which is established by the Design Professional as the date the documents are (or will be) complete. Documents printed for bidding shall bear the date described above with no revision numbers or dates. In accordance with Architectural Act and the Engineering Act, the Design Professional shall sign and date the stamp.

6-316 QUALITY CONTROL

- (A) The Design Professional shall be responsible for the professional and technical accuracy and coordination of all designs, drawings, specifications, cost estimates and other work or materials furnished under the standard professional services contract.
- (B) The Design Professional shall perform a Quality Control review of the specifications and drawings prior to making a plan review submittal to the campus. The Design Professional shall ensure that the plans and specifications being submitted for review meet the submittal requirements and that all elements of the design have been coordinated with respect to function and location. It is not the responsibility of the campus or the Contractor to ensure that the plans have been coordinated from sheet to sheet and discipline-to-discipline.
- (C) The cover sheet of all plans and specifications submitted for review to ASU through the Project Coordinator shall contain the following statement signed by the responsible Design Professional who is a principal in the firm. This statement shall be removed from the cover sheet prior to issuing the plans for bids:

" A Quality Control check including the appropriate coordination among disciplines, has been made on this project's documents and corrections related to this check have been made. The undersigned principal/owner states that these plans and specifications as submitted for review are, to the best of his or her knowledge and ability, complete and ready for review."

Signed _____ Date _____
(name and title)

(This statement shall not appear on sets of documents issued to bidders)

6-317 PLAN REVIEW AUTHORITY

- (A) ASU reviews capital improvement construction documents for compliance with the MSC during its normal review of capital improvement projects. Such review does not relieve the Design Professional from the responsibility for designing in accordance with state and federal laws and regulations. While ASU endeavors to provide a thorough review of the documents presented for review, ASU shall assume no liability for the completeness, accuracy, or constructability of the documents approved for bidding. ASU approval for bidding implies only that the documents reviewed contain the minimum amount of information required to achieve a reasonably accurate price for the actual value of the work contemplated.
- (B) The review provided by ASU does not relieve the Design Professional from the responsibility for full compliance with these codes and good design practices.
- (C) ASU reserves the right to reject a submittal for incompleteness, unacceptable design configuration or failure to meet the requirements of the Arkansas Fire Prevention Code or other applicable codes, regulations, or standards. ASU may also downgrade a combined submittal if the submittal lacks the detailing or information necessary to be considered a final review.

6-318 PLAN REVIEW SCHEDULE

- (A) For projects with an estimated construction value (equipment, materials, and labor) of \$1,000,000 or less, the Design Professional may submit, with the CPC written approval a combined first and final review. All elements described below for the first review and the final review shall be included in this combined submittal. This shall include the written system descriptions. Descriptions may be condensed to provide an over view of the project scope. Ensure that the descriptions accurately reflect the scope of work described by the drawings and specifications.
- (B) For projects with an estimated construction value in excess of \$1,000,000, the Design Professional shall provide a minimum of three (3) review submittals. These reviews shall consist of a First Plan Review, a Second Plan Review, and a Final Plan Review. The contents of each review shall be as described below. The Design Professional shall not proceed to the final submittal until ASU has approved the first and second submittal.
- (C) Design Professionals designing stand alone projects, particularly building or complex renovation projects are encouraged to contact the CO for an informal, preliminary review to ensure that the project is on track as to its intent, budget, program, ADA and code requirements, design and detailing prior to submission to ASU to avoid extensive corrections or redesign. This is particularly important to first time design professionals doing work for the State.

6-319 FIRST PLAN REVIEW SUBMITTAL REQUIREMENTS

- (A) The Design Professional shall schedule a minimum of fourteen (14) calendar days, excluding holidays for the ASU review process for a First Review only. For a combined first, and final review the Design Professional shall schedule a minimum of twenty-one (21) calendar days for the ASU review process. The Design Professional shall provide two (2) complete sets of all submittal documents, including correspondence.
- (B) The following documents shall be included in the First Review Submittal Package:

- (1) A statement of the estimated construction cost, estimated building/project square footage and the Campus Building Program Requirements. Cost estimate shall be on a square foot basis for each of the 15 technical specification divisions (2-16). Include line items for divisions 0 and 1. General construction items may be grouped together for convenience. Note which divisions are combined (i.e. Division 4,5,6,7,etc.). Provide separate line items for divisions related to civil site divisions, structural divisions, mechanical divisions, and electrical divisions. Include a copy of the funding source.
- (2) Provide a plan of the campus or complex showing the location of the project site. This should be the campus master plan if one exists. Include a vicinity map showing the location of the campus, complex or building with respect to the local community or area.
- (3) Provide a site plan or survey of the area immediately around the proposed project site. Show the location of adjacent buildings, structures, and land features such as streams, ponds, drives, and the like that may affect the building siting. Show how the building relates to the pedestrian and vehicular circulation and traffic patterns of the overall campus. Dot in areas proposed for future expansion of the building of design and adjacent buildings or features such as parking or driveways. Show location of proposed parking areas and sidewalks. Show locations of existing utility lines and routing of new services. Show the location of the 100-year flood plain boundary on the site plan. Provide a north arrow and a dimension scale.
- (4) Provide floor plans at a scale of not less than 1/8"=1'-0" (refer to 6-322.G). Provide room names and numbers for each space on every plan. Show locations of all doors, windows, and openings. Show location and dimensions of each mechanical room, electrical room and telecommunications room. Show the major pieces of equipment in each room and the proposed entry and access into each space. For equipment rooms without an access communicating directly through the exterior of the building, show the proposed route for installation and removal of the equipment. Ensure that a path is provided to allow removal of the largest component of a piece of equipment without requiring demolition of a wall, window or etc. For equipment located in attic spaces, mezzanines, crawl spaces or basements, provide a plan of these spaces showing the service access entry point, access and service platforms and the proposed route of installation and removal of equipment. Where the removal or demolition of walls, ceilings, or other building systems will be required for future access to replace equipment, note on the plans where this will occur. On the first plan sheet or cover sheet, show the gross square footage of the building and the square footage for the mechanical space, the electrical space and the telecommunication space. When the mechanical and electrical equipment are located in the same room, show the combined area for these mechanical and electrical spaces.
- (5) Provide a roof plan showing the type of roofing and the general arrangement of roof mounted equipment and penetrations. These should be shown in the relative locations (i.e. backside of roof, near peak, etc.) and approximate quantity and sizes. Include special mounting and flashing details required for the proposed roof system.

- (6) Provide elevation sketches (free hand is acceptable if neatly drawn) showing the materials, form, character and etc. of the building and how it relates to grade. Provide cross section views as necessary to describe special interior features such as skylights, clerestory glass, atriums or vaulted ceiling areas. Show the relationship of the ceiling to the structural framing systems.
- (7) Provide large-scale building sections (free hand is acceptable) showing the typical wall and roof construction and the locations of foundation drains, wind barriers, vapor barriers and the thermal insulation. Include the insulation “U” value or “R” rating for the thermal insulation in the roof and wall systems. Include the permeability of the vapor barrier in “perms” for wind and vapor barriers.
- (8) Provide code review information including occupancy classification, building area and height, number of stories, type of construction maximum number of occupants and etc. as required by the Arkansas Fire Prevention Code.
- (9) Provide a copy of the geo-technical soils investigation. Show locations of all borings or excavations used to determine the sub-surface conditions. Include the geo-technical engineering recommendations for the foundation design.
- (10) Provide a detailed description of the proposed structural foundation and framing systems. In paragraph format, provide a discussion of each major element such as compaction and backfill, concrete, reinforcing steel, structural members, and etc. Include a discussion of the seismic design consideration and special features required to meet seismic codes. Also include a discussion of the wind and snow load considerations.
- (11) Provide a detailed description of major architectural elements not described by the drawings. In paragraph format, provide a discussion of each major element such as floor finishes, wall finishes, millwork, ADA accessibility issues, fire ratings, and the like. Include a description of proposed vertical transportation systems, food service areas, special procedure areas, laboratories and similar areas as applicable.
- (12) Provide a detailed description of the proposed HVACR and Plumbing Systems. In paragraph format, provide a discussion of each major system or component including equipment, ductwork, supply and exhaust systems, fire suppression, plumbing fixtures, waste and vent systems, domestic water system, controls system and the like. Include descriptions of special systems such as compressed air, medical gases, chilled water system, condenser water system and etc. Include a discussion on the service entrance requirements, mechanical room requirements including floor space, and code requirements such as combustion air, ventilation air and similar issues. Include a discussion of seismic design considerations.
- (13) Provide a detailed description of the proposed electrical, fire alarm, security, and telecommunication systems. In paragraph format, provide a discussion of each major system or component including main switchgear, wire, cable, conduit, panel board, grounding and fixtures. Provide a description of each system including lighting, normal power, emergency power, critical circuit power, exterior

lighting, lightning protection, fire alarm, security systems, telephone, and data systems and etc. Include a discussion on the service entrance requirements, electrical room requirements including floor space and code related issues. Include a discussion of the seismic design considerations.

- (14) Provide a basic code search analysis. Include descriptions of the occupancy classification, building areas and height, number of stories, type of construction, occupancy requirements, construction requirements, etc., according to the recommended procedures in the Arkansas Fire Prevention Code, Volume 2.
 - (15) If the Design Professional deems it necessary to include drawings or sketches to clarify any structural, mechanical or electrical system or space requirements, they may be submitted in one of the following size formats, 24" x 36", 11" x17", or "8-1/2 x 11". The latter two may be bound into the project manual in the first review only.
- (C) To facilitate an expedient review process, the Design Professional should arrange the written descriptions in the same format as the CSI specification manual. Each paragraph description should be labeled with the CSI Section Number under which the system will be included in the final manual. For example, the building fire alarm system would be described under paragraph heading "16721-Fire Alarm System".
 - (D) For projects, which do not require all of the drawing, disciplines indicated in § 6-321, or all the detail indicated in each discipline, or which require additional information above what is shown, the CPC, the Design Professional, and his consultants may edit the requirements shown to match the scope of the project. Provide a copy of this edited final drawing submittal requirements with the first plan review submittal to ASU. ASU reserves the right to re-instate deleted elements based on the scope of the work as defined in the first submittal or as required to assure a complete and biddable set of construction documents at the final review submittal.

6-320 FINAL PLAN REVIEW SUBMITTAL REQUIREMENTS

- (A) The Design Professional shall schedule a minimum of 14-calendar days, excluding holidays, for the ASU review process for a final review. For projects with an estimated construction value in excess of \$5,000,000 allow a minimum of 21 calendar days, excluding holidays, for the final review. For projects with an estimated construction value in excess of \$15,000,000 allow a minimum of 30 calendar days, excluding holidays, for ASU final review.
- (B) Provide two (2) complete sets of all submittal documents and correspondence.
- (C) Only documents that are considered 100% complete shall be submitted for a final review. These submittals shall be ready to issue for bidding without requiring additional notes, details or other work. Do not submit projects that are less than 100% complete. Plans and specifications approved, as a final review should not require extensive or lengthy addenda to complete or change the scope of work and should not result in excessive change order requests due to uncoordinated documents or lack of information.
- (D) The following documents shall be included in the Final Review Submittal.

- (1) A copy of the previous ASU review comments and a written response to each comment. When possible, provide the responses directly below the reviewer's comment on the electronic document file. Response should be in bold type and noted as "Response". It is acceptable and encouraged to include the direct responses from the Design Professional and his consultants. It is the Project Coordinator's responsibility to ensure that each comment is addressed and to his campus' satisfaction.
- (2) An updated statement of the final estimated construction cost. Cost figures should be broken down by Division and Section or sub-system components such as paving, windows, millwork, painting, etc. as required to determine an accurate projection of cost. As a minimum provide a line item for each of the 16 CSI Divisions and for the General Conditions contained in Division 0.
- (3) A copy of the campus program provided to the Design Professional along with any revisions and a copy of any pertinent meeting notes reflecting a change in the scope of work since the previous submittal. Include a copy of the funding source noting any revisions since the previous submittal.
- (4) A copy of the first plan review system descriptions with all changes in the scope of work highlighted for quick identification. If a system or component has changed since the previous review, note the change and provide an explanation for the change (i.e. changing from a drilled pier foundation to a monolithic slab or changing from a centralized HVACR system design to a split system HVACR design).
- (5) Provide complete Project Manual containing all Division 0 and Division 1 through Division 16 specification as require under Section 6-321.
- (6) Provide complete drawings as shown under § 6-328. All drawings and the project manual shall be stamped by the appropriate Design Professional. Provide a preliminary or Not-for-Construction over stamp of the Design Professional's seal. Signatures shall be omitted from the seals on all review documents.

6-321 FINAL PLAN REVIEW DRAWING REQUIREMENTS

(A) Title Sheet (T-1)

- (1) Title of Project.
- (2) Location of Project.
- (3) Name of campus.
- (4) List of all design consultants, with phone numbers and addresses.
- (5) AFPC Certification Statement.
- (6) QC/QA Review Statement (To be removed from bid issue set).

- (7) Campus Project Number (if applicable).
- (8) ASU Plan Review Submittal (to be removed from bid issue set)
- (9) Vicinity Map.
- (10) Arkansas Fire Prevention Code Analysis Data.
- (11) Index of All Drawings in the Project.

(For large projects, the index of drawings and other information may be placed on Sheet T-2).

(B) Topographical Surveys & Plot Plans (TS):

- (1) Survey shall meet the Arkansas Minimum Standards for Property Surveys and Plats". A registered land surveyor licensed to practice in Arkansas shall stamp and seal these plans.
- (2) Where required by the scope of the project, provide a legal description of the subject property.
- (3) Show property lines and surrounding features affecting future development.
- (4) Show the location of all known easements, flood plan boundaries and other features that will limit or prohibit development of the site. Note the elevation of the 100-year flood plan on the plan and define the perimeter or extent of this elevation with a bold line. (Recommend you shade or crosshatch a screened pattern within the boundaries of the flood plan for clarity). Include a source data reference on the plan identifying where the flood plan information was obtained.
- (5) Show contour elevations at minimum of 5-foot intervals for undeveloped areas of the site and 1 foot or 2 foot intervals within the project limits as necessary to accurately describe the site terrain. Indicate the path and contour of all existing surface run off drainage into and out of the site.
- (6) Show the location of existing utility lines, materials, and sizes and surface features. When underground utilities are shown and could not be verified during the survey, provide a disclaimer statement on the plan noting the source of the assumed information. When information is derived from public utility records, include the location of the record archive, a contact phone number and the plate or drawing record from which the information was taken.
- (7) Show the locations of existing buildings, towers, tanks, wells, pads, old foundations, drives, lots and the like.
- (8) Show the location, size and type of existing means of access to the site. Where bridges, trestles, or other load limit or height limiting structures are located along the access routes note the posted load limit or height restriction. Where height restriction exist and are not posted (such as utility line crossings, etc., determine

the minimum clear height under the structure at the center of the road or access drive. Where gravel or paved roads are shown on the plans identify these roads by their official name or designation number (i.e. Country Road 69).

- (9) Show location of permanent monument markers on the site and the coordinate information describing the monument location.
- (10) Show location, size, and type of all trees greater than 3 inches in diameter within the project limits. Show other prominent trees or vegetation on the plan site that may affect the project development. Where heavily wooded or bushy areas exist, define the approximate profile of the perimeter of these areas and note as heavily wooded, wooded, bushy, marsh, swamp or etc.
- (11) Provide a north arrow and a plan scale in a prominent location on the plan. The preferred location is the bottom center of the plan sheet or the lower right-hand corner of the plan sheet.

(C) Boring Logs and Soils Data

- (1) Provide a small-scale plan of the site and building showing the location where samples were taken. Distinguish between borings and test pits.
- (2) Indicate the surface ground elevation, the depths of each boring or test pit, and the blow counts per ASTM D-1586 at each bore.
- (3) Note the classification/description of materials encountered. Indicate the ground water level at each boring or pit. Note the general site conditions and recent weather history if known (i.e. heavy rains in general area over the last month, etc.) Include other pertinent data.
- (4) Provide a brief description of site geology and subsurface conditions encountered.

(D) Demolition Drawings

- (1) Show the location of all existing elements that will affect the work or be used as a reference point.
- (2) Clearly define elements that are to remain after the demolition is complete. Coordinate the location of this information with the new construction plans to avoid omissions or errors.
- (3) Clearly define the beginning point and the ending point of the demolition work. Where possible, provide a flag symbol indicating these points.
- (4) Clearly state on the drawings how the demolished materials are to be disposed. If materials or equipment are to be retained by the owner, clearly identify these items and note where the removed item is to be stored. Avoid using the phrase "Owner has the first right of refusal on demolition materials." Coordinate this activity with the Owner prior to issuing the plans.

- (5) Clearly indicate all temporary and permanent closures of penetrations in building envelopes. Indicate temporary or permanent backfill requirements where demolition opens the existing site or removes structures.
 - (6) Clearly note the size, location, and type of material for piping systems, electrical systems, etc. that will be abandoned in place. Where possible in existing structures, require the contractor to label piping, etc. that is to be abandoned with the date of the contract drawings i.e.: "Abandoned May 2000." Labels should appear on both ends of the abandoned system.
- (E) Civil Site Drawings
- (1) If the project is to be constructed on a newly acquired state property, provide a legal description prepared by an Arkansas Registered Land Surveyor or refer to the description provided on the Topographic Survey sheet if one is provided in the set of plans.
 - (2) Show the location of all adjacent buildings, tanks, structures, towers, and the like in the vicinity of the proposed building project. Show the location, size, and type of all trees greater than 3-inches in diameter that may affect the construction or access to the construction area.
 - (3) Show the location of the boundary of the 100-year Flood Plain as it relates to the project site. Show the elevation contour of the 100-year flood level. Lightly shade or crosshatch the area within the flood plain boundary and clearly indicate all new work within this area. Include a reference to the source of the data.
 - (4) Show the location of all known existing utilities and new utilities including the location of all connection points. Where connection to existing utilities is governed by the local utility company, provide the name and phone number of the local company. Provide connection details, temporary flushing details, and details for expansion and thrust blocking where applicable. Note that Arkansas One-Call is to locate all underground utilities as required by the Ark. Code Ann. § 14-271-101 et.al.
 - (5) Where roadways, driveways, parking lots, sidewalks, and other paved areas are to be provided, show locations of all control joints, constructing points, and expansion joints. Provide details of joints, turndowns, and reinforcing. Provide cross-section view of paving showing the sub-base and paving materials.
 - (6) Show existing grade contours as thin dashed lines and new contours as heavy solid lines. Where extensive cut and fill are required, show cut and fill cross-sections. Where roadways, driveways, and parking lots are to be constructed, show cross-sections and profiles as necessary to clearly define their construction. Where cut and fill are required, show location of designated areas on the site for surplus or stockpile materials. Show spot elevations at all critical control points and construction points. Note the finished floor elevation of the first floor located above grade. For buildings with basements or sub-levels, also include the finished floor elevation for the lowest level.

- (7) Show the location of all drainage features on the site. For new construction, show the intended path of surface runoff drainage. Indicate the direction of flow by placing arrows in the direction of the flow. Where existing or new drainage structures occur, show the inverts in and out of boxes, drop inlets, manholes, and etc. For long runs of underground drainage piping provide plan and profile drawings indicating the depth of the piping and structures, the slope of the system and the cover depth above the system. Where the piping system material must change as the piping passes under a road or drive or where the system extends above grade to cross as low area or streambed, clearly indicate the change on the profile and the plan view.

(F) Landscaping Drawings

- (1) Show the location of all landscaping beds, retaining walls, and water features. Include schedules showing the planting types and sizes. Indicate planting season limits and watering schedules.
- (2) Show location and type of irrigation system heads. Show the head spray pattern and radius. Show the location of zone control valves, drain valves, and isolation valves. Show the layout of the piping distribution system. Show location of the connection to the public or private water supply and the approved backflow prevention device. Show location of all control panels and transformers requiring power above 24-volts. Show the location of the source power or refer to the appropriate electrical drawing for the location of main power and connections.
- (3) For systems with future extension or potential for future growth, show the location of all sleeves under driveways, sidewalks, and lots as required to extend future services without cutting and patching paving.
- (4) Provide staking details for all trees and shrubs that are not self-supporting. Provide installation details for each type of irrigation head, zone valve and, backflow prevention device.

(G) Fire Services Access

- (1) Show locations of all buildings and structures around the project site.
- (2) Show the location of all drives, roads, parking lots and sidewalks large enough to allow passage for emergency service vehicles.
- (3) Show locations and types of all fences or barricade structures around the site that may limit access or impede evacuation in an emergency. Where gates are installed that restrict access to the building or site, provide a "Knox Box" that is keyed to the local fire department or emergency response service.
- (4) Show the total square footage and number of floors on the building plan. Show the type of construction as determined by the Arkansas Fire Prevention Code.
- (5) If specific areas of the site have been designated as areas of assembly or refuge for the building occupants, show the locations on the plans.

- (6) Show the approximate location of the building entrances and exits, the approximate location of the following items if applicable.
 - (a) Fire alarm panel or fireman's service panel.
 - (b) Main power disconnect switch, or shunt power trip device.
 - (c) Area of rescue inside the building.
 - (d) Fire stair towers.
 - (e) Elevator shafts.
 - (7) Show locations of all fire hydrants within 500 feet of any point on the building and within the area covered by the plan view.
 - (8) Show the location of the fire department connections, post indicator valves, and fire pump if applicable.
- (H) Architectural Drawings
- (1) Floor plan drawings shall be shown at a scale no less than $1/8" = 1'-0"$. For large buildings, use match lines to separate the building plan as required to fit this scale. For large buildings requiring match lines, provide an overall composite plan at a scale smaller than $1/8"$ to show the relationship of all areas to one another. Show the match line locations on this plan and reference the $1/8"$ scale plan sheet number for each area. Show the room name and number for each space. Show the detail marks, elevation marks, and door and window marks referenced to the door and window schedules. Provide legends, material notes and general notes as required to describe the work.
 - (2) Provide dimensional plans separate from the general floor plans as necessary to describe and dimension the size and relationship of the space and features. Dimensions may be shown on the general floor plans and enlarged plans provided the sheets do not become so cluttered as to be illegible or difficult to read.
 - (3) Provide larger-scale drawings for toilet areas, elevator lobbies, entry lobbies, special use rooms, and similar spaces where more intricate work is to be performed by the contractor. Drawings shall be shown at a minimum scale of $1/4" = 1'-0"$.
 - (4) Provide exterior elevations of all faces of the buildings. Elevations shall be shown at a scale not less than $1/8" = 1'-0"$. Elevations should indicate the building materials to be used, the texture of materials and the color of the finished surfaces. Where accent bands or features are used, provide clarification of the size, type and color. Show exterior features such as gutters, downspouts, railings, screens, construction joints, expansion joints, masonry control joints, and etc. Show locations of all building section cut lines, detail marks, and door and window marks. Indicate the relationship between the finished floor and the

exterior grade. Show the floor-to-floor height by dimension. Dot in the footings or foundation.

- (5) Provide at least one traverse section and one longitudinal section through each major axis of the building. These sections may be shown at a scale of $1/8" = 1'-0"$. Provide additional large-scale building and wall sections as required to properly understand and construct the building. Building sections shall clearly illustrate all building materials, sizes, spacing and attachment. Show all through wall flashings, roof flashings, flashings at slabs, floor and etc. Show the relationship between the floor slab and the footings or supporting structure. Note the finished floor elevation for each floor and the elevations of perimeter footings or upper floor supports. Show the relationship of the finished floor to the exterior grade. Show the location of perimeter insulation and foundation drainage systems. Indicate special feature details such as ceiling heights, furr-downs, coffered-ceilings, skylights, etc. Provide details at each unique condition through the ceiling cavity where the relationship between the ceiling height and the structural framing changes the space available in the ceiling cavity for mechanical and electrical systems. Show the location of the vapor barrier or air barrier in each exterior wall section and roof section.
- (6) Provide large-scale details of unique construction features of the building. Where special angle cuts are required on masonry materials, framing materials or finish materials, provide details at a scale large enough to clearly define the desired detail. Coordinate the plans with these details to ensure that the contractor can determine where these special cuts occur. Where special patterns are to be formed in the finish materials, provide large-scale plans, elevations and details as necessary to describe the work. Provide large details of typical construction elements as necessary to describe the building construction.
- (7) Provide door and window details as required to describe the size, style and installation of each unique door and window. Provide details showing the head, jamb and sill or threshold condition for each door or window. Details shall be shown at a scale large enough to show the framing and attachment requirements. Provide door schedules and window schedules in a graphic format as required to define the type, size, location, hardwood, finish, operation and accessories required for each.
- (8) Provide a room finish schedule for each space in the building. Schedule should include the room number, name, location, floor material and finish, base, wall material and finish, ceiling cove, ceiling material and finish and any special trim or features. Provide notes as required to adequately describe the finish treatments desired. Provide references to the appropriate specification sections where additional information can be found.
- (9) Where built-in furniture, casework or millwork is to be included in the construction project, provide large scale plans, elevations, sections and construction details as required to describe the size, construction, and finish of these elements. Provide detail reference marks as required on the floor plans and the millwork plans as required to accurately locate the details and the space where they apply. Built-in millwork should be designed to be as simply to construct, as the function of the millwork will permit. Where customized furniture is to be a part of

the construction contract provide the detailing necessary to construct the piece. Clearly note all such pieces as "custom built" (i.e. "Custom Built Desk").

- (10) Provide reflected ceiling plans for each floor (including floors with open structure). Drawing shall indicate the types of ceiling materials, pattern of layout and changes in elevations of the ceilings. Note the height above the finished floor for each section of ceiling. Show the location of all ceiling mounted devices such as light fixtures, air devices, access doors, speakers, sprinkler heads and similar devices. These devices shall be coordinated with the various discipline drawings to ensure that the contractor can install the sub-systems correctly. A reflected ceiling plan is not a substitute for properly coordinated plans.
- (11) Provide a plan view of the roof system at a scale not less than 1/8" = 1'-0" or the same as the floor plan. Design Professional may request a waiver from this requirement for large scale projects where needed. Show the size and location of all expansion joints, roof drains, emergency roof drains, suppers, overflow scuppers and roof vents. Show the pitch or slope for each section of the roof. Indicate the materials of construction and the color of the finish materials. Show the access to all roof levels. For multi-story buildings with roof-mounted equipment requiring maintenance, provide at least 2 roof access points to provide an alternate means of escape during an emergency. Where skylights or clerestory glass is provided over atrium or high spaces, provide OSHA safety cages or approved alternate protection to prevent maintenance personnel from falling through the glazing. Where roof mounted equipment requiring maintenance or inspection access, provide footpath walkways to minimize damage to the primary roof membrane. Where absolutely necessary to have pipes, conduits, etc. across a roof, specify "zero penetration" portable suspended pipe hangers with non-rusting base supports to distribute weight without damage to the membrane. Provide details for all penetrations, joints, abutments, and changes in materials or elevations. Details shall be drawn large enough to clearly indicate the location of each layer of material, attachment and overlap necessary to provide a proper seal, lap or flashing. The use of bold lines to indicate ambiguous details without clearly showing the installation requirements shall be prohibited. Refer to § 6-400 for additional information.
- (12) Provide a Life Safety plan for each building. Show the location of all required fire exits. Show the locations of all other exits meeting the requirements of a designated fire exit. Show the locations of all rated partitions and the rating requirements. Provide details of typical rated wall construction keyed to the floor plans. Provide details for recommended penetrations and openings in rated partitions. Show the location of the fireman service command center if applicable.
- (13) Provide all information related to the Americans with Disabilities Act (ADA) accommodations and access. Show where the ADA parking accommodations will be provided and clearly design the routes of access and exit to the building. Show the location of ADA facilities including ADA toilets, drinking fountains, vertical transport, sleeping rooms, bathing facilities and the like on the plans. Reference other architectural drawings as necessary to locate the construction details and dimensioning. Provide details of all ADA required special features such as handrails, door controllers, ramps, curb cuts and the like. Provide a riser

type detail showing the ADA mounting heights of counter tops, work surfaces, thermostats, light switches, fire alarm devices, door handles, toilet fixtures and other features included in the work to provide for a central point of information regarding the heights of these elements. Do not merely refer to ADA requirements or guidelines.

- (14) Where modular furniture or movable furniture will be a part of the contract, provide plans showing the specific locations for each component-by-component name or model number. Provide legends and schedules as necessary to adequately describe the components in the plan view. Provide elevation views of modular workstations and furniture to allow verification of functionality and to describe the scope of the work. Furniture not provided as a part of the contractor shall be clearly labeled as "Not in Contract" (NIC) or as Owner furnished/Contractor installed.

(I) Kitchen Equipment Drawings

- (1) Floor plan drawings shall be shown at a scale no less than $1/8" = 1' - 0"$. Food preparation areas and food service area plans shall be drawn at a minimum scale of $1/4" = 1' - 0"$. Plans should show the relationships for all fixed and movable furniture, equipment and appliances. Provide area names to define the various function areas in the food service drawings (i.e. preparation, cooking, baking, serving, and etc.)
- (2) Provide an equipment schedule that identifies each piece of equipment's function, power and utility requirements, motor sizes and voltage requirements where applicable and a reference product manufacture and model number. Where equipment, fixtures or furniture must be custom fabricated for this specific project, note in the schedule that the item is "custom built".
- (3) Provide details and elevations as required to describe the fabrication and installation requirements for all fixtures and furniture. Where components must be custom built, provide the fabrication details necessary for the contractor to select the proper materials, methods dimensions and finishes required to construct the project.
- (4) Where connections are required by other trades, do not refer to "connection by plumbing sub-contractor or etc." (Refer to § 6-314(P)). ASU considers equipment of fixtures which are permanently attached to the building structure by anchor bolts or fasteners or which require hardwired or permanent connection to the building mechanical or electrical systems to be "capital improvements and as such shall be subject to compliance with all Arkansas laws and regulations including but not limited to Ark. Code Ann. § 22-9-101 et seq. (Public Works Codes), Ark. Code Ann. § 17-15-101 et seq. (Licensing for Engineers), Ark. Code Ann. § 17-30-101 et seq. (Licensing for Architects). Furniture or equipment, which is completely portable or movable and only requires a plug-in connection or a quick copper connection are considered as furniture and not as a capital improvement.

(J) Structural Drawings

- (1) On the first sheet of the structural drawings, provide the information pursuant to Ark. Code 12-80-101 regarding seismic design. Provide a brief description of the type of foundation and framing system used. Reference the sub-surface soil investigation and survey (company and date). In no investigation has been performed, indicate all assumptions used for the foundation design. Describe the live load allowances included in the system design. Note the allowances used for partition loads, mechanical and electrical system loads and the allowance for movable items such as furniture and etc.
- (2) Foundation drawings shall include a notation for the design bearing values for all spread footings and caissons and bearing loads for all pilings. Show details for all slab and footing interfaces including those for interior partitions. Show the locations and spacings for all construction, expansion and control joints on all concrete expanses. Show locations of perimeter insulation systems, underslab drainage and foundation drain system. Where expansive clay soils or other unsuitable soils are indicated, show the requirements for the proper backfill of a suitable material or engineered system to provide the proper bearing support. When collapsible forms are required to compensate for subsurface expansion, show the detail requirements for installation and control.
- (3) For all plans, show the minimum concrete strength required for each part of the structure as required to comply with the Arkansas Fire Prevention Code. For special areas such as mezzanines, show the maximum safe live load that the Owner may place on the mezzanine after construction. Show the steel yield point strength for all reinforcing and structural steel.
- (4) Framing plans shall show the size of each element and the dimensional location. When the framing system includes areas such as shear walls, which should not contain penetrations, these areas shall be clearly noted and shaded or hatched to allow rapid location and identification during the review process. On systems such as post tension slabs where penetrations must be exactly located, show all locations by dimension and provide a cautionary note for the contractor advising him of the restrictions or precautions necessary to follow during construction regarding the cutting of additional openings.
- (5) For pre-engineered systems such as pre-engineered metal building, tilt-up slab construction, pre-tension slabs, post-tension slabs, or modular prefabricated construction, provide sufficient information and details as required for the fabrication to meet the requirements of the project. Include all design values necessary to fabricate the structures and to allow independent verification that the furnished product meets the design intent. Include plan views and elevations of these pre-engineered systems to allow review of the concept and coordination of work designed by other trades such as mechanical, electrical and architectural finishes.
- (6) Provide schedules showing all grade beams, pilings, caissons and other elements where size, type, strength and special connections must be coordinated to ensure proper construction. Include other schedules as required to allow accurate bidding, construction, and field verification or as required to communicate the design intent.

- (7) Show all typical and special connection details. Indicate the location and type to allow quick coordination and review.
 - (8) Show section views and elevations as required to indicate the connection locations of beams, floors, joints, trusses, and etc. Where sections do not show the floor below, provide a dimension reference to the top of the beam, bearing elevation of the joist or other element that will allow accurate determination of the clear space below the bottom of the structural elements. This dimension should be in reference to the finished floor below or in elevation dimensions (i.e. 10'-0" above 2nd floor or elev. 112'-6").
- (K) Mechanical Drawings
- (1) Show the locations of all heating, ventilating, and air conditioning equipment on the plan view. Provide each piece of equipment with a unique designation mark keyed to the equipment schedule. Equipment shall be located as required to provide proper access for maintenance and repair. Equipment shall also be located as required to facilitate future removal and replacement without requiring the demolition of walls, windows, or other perimeter features of the building. Where replacement will require removal of louvers, other equipment, piping or ductwork, clearly indicate the separation points on the plans. Use bolted flanges or other replaceable type connections. Where replacement or installation will require removal of a wall, door, window or the roof, the design professional must obtain written approval from ASU prior to the submission of the final review documents (construction documents).
 - (2) Show the routing of all ductwork and piping on the plan views. Ductwork shall be shown double line all the way to the diffuser or grille. Differentiate between high velocity ductwork, double wall ductwork, single wall ductwork and internally insulated ductwork with a distinctive shading or hatching pattern. Differentiate between different duct system materials such as PVC, aluminum, galvanized and the like in a similar manner. Piping 6 inches and larger shall be shown double line on plan and section views at 1/4" = 1'-0" scale or larger. Piping 10 inches and larger shall be shown double lined on plans and section views at 1/8" = 1'-0" and larger. All other piping shall be single line and bold. Show reducers, increaser and when fittings on all ductwork and piping at each change in size. Provide arrows on the piping plans indicating the direction of flow and direction of slope of the lines.
 - (3) Where the HVACR system contains refrigeration equipment with remote condensers, condensing units or fluid coolers, show the routing of the refrigerant piping between each piece of equipment on the plan and section views. On small systems such as package coolers or split system air conditioners, the designer may use a single line to represent both the suction and liquid lines. Provide dual designation on the line (i.e. RS/RL) and provide the size of both lines in the dimension note. Where hot gas by-pass, double suction risers or similar special lines are required, show these lines separate from the combined suction and liquid lines. Provide refrigerant piping schematics for each unique system. Show all the refrigerant specialty items and isolation valves. The designer may show the pipe sizes in a schedule format for each unit adjacent to the piping schematic.

- (4) Show the airflow quantity at each air device with a balancing damper to facilitate capacity verification and final air balance. For special areas such as laboratories, isolation rooms, special procedure rooms, and hazardous storage or sterile storage rooms, show the pressure relationship for that space relative to the adjacent spaces such as positive pressure, negative pressure, or neutral pressure. This is not required for toilet rooms, janitor closets, or similar spaces, which are clearly negative to the adjacent spaces. The designer may indicate the pressure relationship for these spaces if necessary to clearly communicate specific design intent. The sum of the air flow quantities in a zone shall match the capacity of the air handling unit or terminal devices in the respective zone plus or minus an appropriate amount as required to maintain the space pressure relationship.
- (5) Show the exact location for each fire damper, smoke damper, control damper, balancing damper, control sensor device and the access door to each device on the plans and section views. In variable volume systems, show the locations for all relief doors upstream or downstream of every fast closing damper as required to prevent the collapse or rupture of the duct system.
- (6) Where ductwork penetrates a floor or a roof and where a duct rises up or down, show the cross section of the duct with the appropriate diagonal marking and shade a portion of the cross sectional view to prominently show the location of the penetration or riser on the plan view. Provide a note indicating the size and direction of the riser and to where it goes (i. e. 10/10 up to 2nd floor).
- (7) Where hydraulic or steam piping systems are provided, show the location of all expansion joints or loop and the locations of all anchors and guides required to control the expansion. In steam systems, show the locations of all traps and vents required for the proper startup and maintenance of the equipment. Show these locations on the plan views. Include the locations of access doors where required. When designed offsets in these systems create traps or air pockets, show a drain and vent location to facilitate future drain and fill of the system.
- (8) When hydraulic systems require freeze protection additives such as a glycol or brine solution, show the estimated system volume on the drawings along with the percentage by weight or by volume of the anti-freeze additive and the type of additive required. This may be noted on the system flow diagram. Ensure that all equipment capacities have been adjusted to account for the additive.
- (9) Provide an enlarged plan view of each unique mechanical room at 1/4" = 1'-0" minimum. Show the location of all HVACR equipment, piping, ductwork, controls panels and the locations of all electrical panels, plumbing equipment and other equipment within the room. All non-HVACR equipment should be shown dashed and a reference provided to the appropriate sheet where that equipment can be found. Coordinate the location of these items to ensure proper code clearance, maintenance access, and operational access.
- (10) Provide at least one cross section view of each mechanical room showing the elevation of the equipment, ductwork and piping in the room to allow the contractor sufficient information for bidding and to allow verification of proper

access for service and replacement of equipment. Large or complex rooms may require multiple section views to clarify these issues. All section views should be drawn to a minimum scale of 1/4" = 1'-0".

- (11) Provide at least two cross sectional views through the building along each of the longitudinal and systems. The minimum scale for these views shall be 1/8" = 1'-0". Provide additional enlarged scale sectional views as required at crossovers of ductwork and piping, furr downs, and offsets under major structural members to clearly describe the installation limitation at these areas. Reference all known or possible interference from other trades such as sprinkler piping, electrical conduits, plumbing drains, and etc. Where these large-scale sections do not show the floor-to-floor view, provide a dimension to the finished ceiling and bottom of the structure to allow verification of the clearance (i.e. 10'-0" ceiling and 11'-6" bottom of joist, etc.).
- (12) Provide details of typical connections, mounting details, piping specialties and unique installations. Details may be drawn "not to scale" provided the detail is not required to clarify a clearance or service access issue. In these cases, show the detail at an appropriate scale. Cross-reference the sheet number to where the specific detail applies. Also provide a detail flag on each plan sheet, which references the appropriate detail number on the detail sheet. Provide an individual detail number on each detail to facilitate this cross-referencing. Provide as many details and detail sheets as necessary to clearly communicate the installation requirements for the project.
- (13) Provide flow schematic for chilled water, heating water, condenser water, steam systems, and other heat transfer systems. Show the relationship of the equipment in the process. Show all piping connections control elements and valves necessary for the proper operation and maintenance of the systems. Size all piping, vents, drains and valves. Show capacity, flow and pressure loss for generating equipment. The diagram should be drawn to enhance rapid understanding of the system. For complex systems, provide diagrams in a ladder type arrangement to eliminate line crossings and the need for isometric views to clarify flow path. Correctly show the flow path and the relative location of all components, junctions and branches. Do not change the relative location of flow junctions to avoid line crossings. Provide arrows indicating direction of flow on each pipe segment. Show all make-up valves, relief valves, pressure reducing valves, and expansion tanks. Show the pressure rating and capacity of each on the diagram. For complex systems with numerous valves, fitting, and components provide multiple versions of the basic diagram with control capacities, or sub-system elements super-imposed on the diagram
- (14) Provide control diagrams for each unique system or unit. Diagrams shall show the locations of all sensors and control elements. Provide a designation for each component and a legend or schedule for symbols on the same sheet (i.e. mixed air sensor etc.). Show the set point and alarm points on the diagrams or in the schedules. Indicate the type of control point for each device (i.e. Analog Input AI). Include the sequence of operation on the sheet with the control diagram. Ensure that the sequence is clearly spelled out as to the actions and reactions of the components to the command or control signal. When pipe mounted or duct mounted sensors are installed, provide a spare well adjacent to the control

device to allow field verification of the device operation or the media temperature or pressure with portable, hand held instruments. Provide a schematic diagram for each network LAN showing the location of each panel and workstation connection and the equipment it serves.

- (15) Provide equipment schedules on the drawings. Do not schedule equipment in the specification's manual. Schedules shall be arranged in graphic format with the major operating conditions defined and the capacities shown. Include the electrical requirements showing the power voltage, phase, amperage, motor horsepower's and brake horsepower. For major equipment such as chillers and boilers, include the energy efficiency rating. Provide sufficient data to allow purchase, startup and balancing of the system or equipment. Include data necessary to trouble shoot equipment in the event of a startup or operational problem. Schedules shall be provided for each type of equipment or component (i.e. air handler, air devices, pumps, traps, etc.). Provide a unique designator for each piece or type of equipment. Ensure that the schedule title and designator are consistent with the plan labels. In the header for each schedule, show the specification section number where that item can be found (i.e. Air Handlers – 15850).
 - (16) Where seismic restraints are required by code, provide details of typical acceptable restraining methods for piping, ductwork, and equipment. Provide the basic design criteria for the restraining system including the seismic zone in which the project is located. Where the code allows exemptions or exceptions based on pipe size or location of piping or ductwork relative to the supporting structure, note the exceptions on the plan. Designers are encouraged to lay out system piping and equipment in a manner which eliminates where possible the need for costly restraints and minimizes the hazard to the building occupants during a seismic event.
- (L) Fire Protection Drawings:
- (1) Show location and types of sprinkler heads. Provide a different symbol for each type of head.
 - (2) Show the hazard classification for each area with a different classification.
 - (3) Show the locations and ratings of all fire and smoke partitions. Show all fire doors, smoke vents or fire shutters.
 - (4) Show the location of the fire service entrance. Show a detail of the service entrance including all valves and devices in the entry riser. Include the locations of the test drains, alarm devices, seismic connections and backflow preventers.
 - (5) Where a fire pump is required, show a minimum of 1/4" = 1'-0" scale plan view of the pump room and a minimum of one (1) cross-section view of the room showing the elevation of the piping and valves.
 - (6) When standpipe risers are required, show the location and size of the piping from the service entrance to each riser. Show the location and size of each hose or

fire department connection. Indicate the mounting height of each hose cabinet or fire department connection.

- (7) When sprinkler heads are installed in electrical rooms, computer rooms, telecommunication rooms elevator shafts or elevator machine rooms, show the temperature ratings for these special heads and indicate if these are pre-action or deluge type systems.
 - (8) Show the area of coverage by special systems such as dry-pipe systems, pre-action systems, or non-water systems. In non-water systems, show the complete layout of piping, storage tanks, and system controllers.
 - (9) Show the locations of all control valves and tamper switches in the system. Show other devices that require interconnection with the building fire alarm system or other alarm or monitoring systems.
 - (10) Show the location of all piping and the preferred routing throughout the building. Size all piping, including branch piping, on the bid documents. The designer may use the pipe size chart provided in NFPA 13 or may perform the hydraulic calculations necessary to size the piping. It is permissible to allow the successful contractor to submit an alternate layout in the shop drawing phase subject to review and approval by the engineer.
 - (11) Provide the details necessary to show the preferred or acceptable mounting requirements and piping support systems. Where systems are subject to seismic design requirements, provide the seismic restraint details necessary to comply with the requirements of the zone in which the system is installed.
- (M) Plumbing Drawings
- (1) Show the locations of all plumbing fixtures, equipment, drains, vents, outlets and valves necessary for isolation, operation or emergency service on the floor plans. Enlarged plans may be used to show exact locations.
 - (2) Clearly define which piping is located below the floor, above the ceiling or exposed in the occupied spaces. Piping subject to freezing shall be installed on the warm side of the building insulation or provide with heat trace system.
 - (3) Size piping on the plan views. Show increasers and reducers at the point where sizes change. Show sizes of piping risers, or headers concealed inside chases or where they pass through a floor.
 - (4) Crosshatch or shade all plumbing fixtures and equipment for ease of location. Provide a unique designation for each type of fixture or equipment.
 - (5) Provide waste and vent risers in accordance with the requirements of the Arkansas State Plumbing Code. Size the piping on the floor plans and these diagrams. Show the size of each vent through the roof and designate these penetrations on the risers and plan views with their size. (i.e. 4" VTR).

- (6) Show the locations of all roof drains and area drains on the plan views. Show where all drains terminate or discharge. Where emergency overflow drains or scuppers are to be used, show locations and sizes. Provide correct locations and details on the plumbing drawings and cross-reference the appropriate locations and details on the correct architectural sheets.
 - (7) Show the locations of all cleanout plugs and manholes are required by the Arkansas State Plumbing Code. On open drain inlets, outlets, and all connections to manholes and catch basins, show the elevation of the top of the feature as well as the flow line inverts of all inlets and outlets.
 - (8) Provide a schedule showing the sizes, capacities, operating characteristics, and design basis product name for all plumbing equipment (i. e., water heaters, pumps, compressors, etc.). Plumbing fixtures may be scheduled in the specifications however; the preferred location is on the drawings.
 - (9) For special piping systems such as natural gas, medical gas, laboratory gas, process piping and the like, provide the same information as generally described above. For small projects, multiple systems may be shown on the same plan view. For large or complex projects such as laboratories and hospitals, provide separate plans for clarity. For systems such as reverse osmosis, de-ionized water or ultra-pure water systems, show all components in their respective locations on a flow schematic. Ensure that complete specifications are provided for each component in the system. Do not rely on the Contractor or the Vendor to size the system and select the components.
 - (10) Provide details for fixtures and equipment connections showing all valves, accessories, mounting supports, hangers and auxiliary connections to other systems as necessary to communicate the installation requirements, operation requirements and the maintenance shutoff or removal points. Provide control interlock diagrams for equipment with automatic controls. For systems containing tanks or holding vats, show all header piping requirements, tank, cylinder or vat sizes in gallons or cubic feet and methods for securing the tanks in place. If alarms are required for notification of over temperature, over pressurization, overflow or low volume, note these set points on the details or control interlock diagrams.
 - (11) Where seismic restraints are required by code, provide details of typical acceptable restraint methods for piping and equipment. Provide the basic design criteria for the restraint system including the seismic zone in which the project is located. Where the code allows exemptions or exceptions based on pipe size or location of piping relative to the supporting structure, note the exceptions on the plan. Designers are encouraged to lay out system piping and equipment in a manner which eliminates where possible the need for costly restraints and minimizes the hazard to the building occupants during a seismic event.
- (N) Electrical Drawings:
- (1) Show the source and voltage characteristics of all power sources. Show the exact location for connections to existing power, telephone, fiber optics, security and other services to the project. Where such connection points are shown on

other drawings such as civil drawings, reference the sheet number where these connection points can be found. Coordinate these cross-references to ensure the proper connection and entry points are shown. Indicate the ownership of the existing utility to which these connections are to be made. Some State facilities own their own distribution networks and many do not. Provide a phone number and a contact name for the owning agent to coordinate connection requirements. Provide a detail of each utility entry into the building.

- (2) Lighting layout shall indicate the switching and circuiting of each fixture or group of fixtures. Circuiting shall indicate the power source panel and the circuit breaker number for that circuit. Emergency egress lighting shall be crosshatched or shaded so the fixture will stand out for rapid identification during review of the drawings. When emergency power is provided by a generator, or other backup source, the circuiting lines connecting fixtures and outlets should be designated with an "E" to identify these circuits as emergency power. Each fixture symbol shall contain an identification designator that is keyed to the fixture schedule.
- (3) Power outlets shall be circuiting in the same manner as lighting circuits. Indicate the mounting heights of outlets to ensure proper installation. Where outlets must be installed in a specific pattern or spacing, provide dimensional plans and elevations. In the absence of the specific dimensional location of outlets, the contractor will install the box on the nearest stud or blocking. Where power is provided to equipment, show the exact location of the disconnect switch. Indicate the starter location and note if the starter is to be furnished unit mounted with the equipment. Show the size of the power conductors and the conduit serving the equipment.
- (4) Show the location of all system components such as fire alarm, security, closed circuit television, sound, paging, telephone, computer and etc. When the systems to be furnished are complex or may be installed by a specialty contractor, provide separate drawings for these systems. Ensure that all components and locations are coordinated with other trades in the design phase. Where systems are simple or small in nature, they may be combined with other system drawings such as the lighting or power. When the interconnecting cabling for these systems may pose an interference with other trades, show the preferred or engineered routing of the cabling and conduit. As a minimum, provide riser diagrams or schematics for each system. Show the location of all system head end or front-end panels, control stations and sub panels. When a system must interlock or interface with another system such as the fire alarm and fire sprinkler system, show the exact location of such interfaces and the specific interlock requirements.
- (5) Perform the lightning hazard calculations as defined in NFPA-780 and include this information on the cover sheet or in the electrical general notes. If a lightning protection system is to be provided, show the locations of all air terminals, interconnecting grounding cables, down leaders and ground termination points. Where grounding is connected to other grounding systems, show the connection point and the location of the other grounded systems termination points. Show all details necessary to describe the attachment of air terminals, cabling support, penetrations of the building envelope and attachment to the grounding rods or other systems. Indicate the location of all test points necessary to measure the

system resistance and specify the maximum permissible resistance allowed by the system design.

- (6) Show the location of main electrical rooms. Provide enlarged scale drawing as necessary to show and designate all equipment. For rooms containing equipment over 6'-0" tall, provide section views of equipment in the room showing installed elevations and clearance above the equipment. Ensure that all equipment including branch panels and disconnect switches are installed with proper clearances in front of and above the unit as required by the National Electrical Code NEC Article 110. Ensure that all panel locations are coordinated with other equipment in the space. Show the locations of all panels on the small-scale plans also.
- (7) All new buildings and additions and renovations of more than 4000 SF of space shall include at least one (1) dedicated telecommunication room per floor sized in accordance with the recommendations in the appropriate EIA/TIA Standards. Show the location of all cable entry, mounting rack, backboards, operator stations, UPS equipment, and power outlets. For mission critical operations, provide emergency lighting in the room. Clearly define on the drawings who will be furnishing the interconnection cabling (i.e. cable and terminations by the contractor or by the owner). Specify plenum rated cabling in all installations not in conduit regardless of whether or not the ceiling cavity is currently a return air plenum.
- (8) Provide a wire management system in all new construction for the installation of special systems wiring which will not be installed in conduit raceways. The wire management system shall be attached to the building structure or walls in a manner so as not to overload the structure. Wire management systems shall be designed to accommodate multiple systems without electronic interference or creating a code violation. Where necessary provide multiple systems for dedicated use by a single system. Wire management system and attachments should be designed to allow a minimum of 25% future growth for each wiring system.
- (9) Provide electrical details and system details as required to completely describe the installation requirements and interconnection with other systems installed by other trades. Particular attention should be paid to the installation of exterior lighting fixtures, special interior fixtures such as chandeliers, operating room lights, and the like. Details of special grounding requirements should also be included.
- (10) Provide riser diagrams or schematics showing the relationship of major components such as panel boards, transformers and service entrances. Risers shall also be provided for special systems such as fire alarm and security systems. For large or technically complex projects, provide one-line diagrams showing the source of power, or service and the size and relationship of subcomponents such as distribution panels, breakers, fuses, switches and routers to each major sub panel or element. These diagrams shall also include the size of the wiring and conduit between elements and the ratings of the breakers, fuses, switches and routers with enough information being provided to describe the limits of the capacity of the system and components.

- (11) Provide schedules for all lighting fixtures, transformers, panel boards and specialty systems components. Schedules shall include the voltage rating for each item, the capacity of the item and any power losses or inefficiency of the fixture or equipment. Equipment producing a heat loss (greater than ½ of 1 percent of the equipment rating) shall include the manufacturers heat loss in Btu's on the schedule. Equipment producing radio frequency interference (RFI) or electromagnetic interference (EMI) greater than that allowed by FCC regulation shall be noted on the schedule and any special shielding requirements necessary to control or eliminate this interference should be noted and detailed or specified. Schedules shall be provided for each type of equipment or component (i.e. fixtures, transformers, generators, etc.) Provide a unique designator for each piece or type of equipment or fixture. Ensure that the schedule title and designator are consistent with the plan labels. In the header for each schedule, show the specification section number where that item can be found (i.e. Transformers-16460). Panel board schedules shall be presented in a graphic format and shall include a designator for what each circuit feeds to facilitate the development of the panel board directory. Do not limit the panel board schedule to a description of the quantity of certain size breakers such as circuits 1,2,3,4 = 20A or "provide 20-20A/1P breakers.
- (12) Where seismic restraints are required by code, provide details of typical acceptable restraint methods for piping and equipment. Provide the basic design criteria for the restraint system including the seismic zone in which the project is located. Were the code allow exemptions or exceptions based on pipe size or location of piping relative to the supporting structure, note the exceptions on the plan. Designers are encouraged to lay out system piping and equipment in a manner which minimize the need for costly restraints and eliminates where possible the hazard to the building occupants during a seismic event.

6-322 CAMPUS APPROVAL

Upon campus approval of the completed construction documents, the CPC shall inform the Design Professional in writing that the campus accepts and approves the drawings as submitted. There shall be no changes from the date of the letter unless submitted and approved by procedures initiated by ASU.

6-323 BID DATE REQUESTS, BID ADVERTISEMENT COORDINATION, AND, RELEASE OF PROJECT DOCUMENTS TO BIDDERS

If the Design Professional is responsible for coordinating the bid date, he must secure written approval from the campus to proceed to bid. He may then contact the CO to coordinate a bid date, time, and location. All requests for bid dates shall include a copy of the ASU approval letter. Upon coordination with the CO, the project may be advertised and bid documents released to bidders. (Refer to § 4-303)

6-324 COPIES OF CONTRACT DOCUMENTS TO BE PROVIDED TO THE GENERAL CONTRACTOR

- (A) The Owner and Design Professional shall provide the successful general contractor with the minimum necessary copies of the contract documents up to the number as outlined below.

<u>PROJECT SIZE (COST)</u>	<u>NO. OF SETS TO ISSUE</u>
\$0 - \$500,000	10 sets
\$500,001 - \$1,000,000	15 sets
\$1,000,001 - up	20 sets

- (B) The project general contractor shall be responsible for the cost and distribution of additional bid documents to his respective sub-contractors. Partial sets of the contract documents shall not be allowed. All trades shall have complete contract documents for reference.

6-325 RECORD COPIES OF BID DOCUMENTS

- (A) The Design Professional shall submit one (1) copy of the complete set of bid documents, including all addenda, to the CO for record purposes after completion of the bidding phase of the projects.
- (B) In addition, if any of the drawings or specifications were prepared by computer assisted drafting (CAD) or word processing, the Design Professional shall also provide one copy of all computer generated "read only" bid documents to the campus for record purposes.
- (C) Acceptable formats for word processing, spreadsheets database, presentation graphics and other similar documents are Microsoft Office Products or other formats converted and saved as such. Cost of the microfilm and electronic media are reimbursable from the campus.
- (D) When drawings or specifications are not produced electronically, the Design Professional shall have the documents scanned in to a photo image such as a TIFF image or an AutoCad file for record purposes. This file shall be furnished on compact disk. The files shall be capable of being opened by an industry standard file manager such as Adobe Acrobat Reader, Kodak Image reader or similar software. Verify the campus preference prior to submitting these types of files.
- (E) Campuses requiring electronic media copies should carefully consider environmental storage requirements. It is recommended that electronic information be transmitted on compact disc and backed-up with a tape drive where possible.
- (F) If a campus utilizes portions of existing reproducibles or electronic media for bidding purposes, i.e., carpet replacement, ASU requires all title blocks (of the original design professional) be removed before project is released to any bidders.
- (G) Design professionals providing electronic media, tracings, reproducible, "as-built" record drawings, etc., may request that release agreements limiting their use be signed prior to releasing to the campus. These release agreements shall be carefully reviewed by legal

representation of the campus for review before signing. Improper use of a Design Professional's work may result in claims for additional compensation.

- (H) If the Design Professional is required to deliver any services required hereunder in the form of electronic encoded media, the printed representation of such media furnished by the Design Professional shall be the official record of the Design Professional's service. The campus shall have a right to rely on such printed representation in connection with any subsequent modification of such electronic media. The campus recognizes that the printed material represents the intent and instructions of the Design Professional but does not represent the "as built" condition of the project. The campus must obtain written authorization from the Design Professional allowing the use of the documents for any purpose other than the specific intended use of those documents.

6-326 DESIGN PROFESSIONAL PROJECT OBSERVATION REQUIREMENTS

- (A) The Design Professional and his consultants shall conduct construction observation visits to the construction site as part of the basic professional services. (Refer to § 6-201) The design professional shall conduct visits to determine the progress and performance for all capital improvement contracts. On-site observations shall concur with the contractor's pay request and shall be submitted in written form with the pay request.
- (B) Construction observation of the project by the prime Design Professional and all consultants at key critical times during construction for that applicable portion of the work for which they are involved, shall be as required to observe fulfillment of the construction documents.
- (C) Both the Design Professional and all consultants shall submit a typed construction observation report or summary of any observed construction deficiencies, with follow-up correspondence to the CPC on ASU approved forms.
- (D) The CPC and the Design Professional shall carefully evaluate the need for more intense project observation than the basic services provides. This may include projects requiring the installation of underground utilities, the construction of critical concrete structures and similar projects where the normal course of construction may render critical elements of the project unavailable for inspection due to the placement of finish materials
- (E) On projects where this may result in the inability of the campus to accept the project with confidence that the work has been properly installed, the campus may desire to require more intense observation by the Design Professional than would normally be provided by the basic services agreement. The campus shall negotiate the rates for additional observation during the original contact negotiations.
- (F) For instructions regarding construction observation and administration, and project closeout requirements please refer to §4-500 through §4-504 of this manual.

6-400 MINIMUM ROOFING SYSTEM REQUIREMENTS FOR BUILDINGS

6-401 MINIMUM ROOFING SYSTEM REQUIREMENTS

- (A) These Minimum Roofing Systems Requirements is to provide design professionals and State personnel with functional, working guidelines to aid in the determination of the required roofing system and specifications. A proper understanding of the roofing industry, methods of construction, application, workmanship, and its inherent problems and pitfalls is necessary in order to design a proper roof system.
- (B) For roofing capital improvement contracting procedures, refer to §4-300. For roofing checklists or guidelines, contact the CO.

6-402 DETERMINATION OF THE PROPER ROOF SYSTEM

- (A) In designing and specifying the proper roof system for a new building, there are some broad considerations that should be considered first. These are:
 - (1) Type of building refers to a state owned or leased property (library, office buildings, campus buildings, etc.).
 - (2) Special considerations refer to what goes on in the building. For example, will there be a pool, a unique use inside the structure? The uses of the building will determine roof traffic, surfacing, need for a vapor retarder sheet and insulation ("R" value) requirements.
 - (3) External considerations include high winds, snowfall, rains and their concentrations, and outside contaminating processes.
 - (4) Life of the building determines how long it will be expected to last.
 - (5) Building and Regulatory Codes refer to Underwriters Laboratories, Factory Mutual, and the various applicable local, state and national codes.
 - (6) Structural considerations mean that the roofing system must work with the other building components. For example, are the edges of the roof deck flush or are there parapets. Dimensions of the building and shape of the roof deck will determine the need for expansion joints. Any protrusion in the roof will require flashing materials.
- (B) The Roofing System as specified should be a complete and compatible system. The system should be manufactured by a manufacturer doing business in this region of the United States. The design professional shall investigate the need for, and specify all roofing components needed for a complete roof assembly.

6-403 STEEP ROOFING

- (A) Asphalt shingles on sloped roofs shall be Class "A", fiberglass based, asphalt shingles with a twenty (20) year limited warranty (life expectancy) over felt underlayment installed as per manufacturer's specifications minimum slope: 4 in 12.
- (B) Wood shingles shall not be used on buildings unless approved in writing by the CO. Any shingles used shall carry the "B" classification as listed by the Underwriters Laboratories, Inc. Minimum slope: 4 in 12.

- (C) Metal roofing systems on sloped roofs in excess of 1 in 12 slope (minimum: 2 in 12 (+) slope preferred) are acceptable when properly detailed and specified. Submit plans and specifications to the CO for review and approval prior to releasing to bidders. Refer to § 6-319.

6-404 SINGLE PLY MEMBRANES/UNCONVENTIONAL ROOFING SYSTEMS

- (A) All single ply membranes and unconventional roofing systems shall be submitted for review to the CO, for approval on a case by case basis for use on the roof of a State building. Note: A torch applied, modified bitumen roof system applied over a base sheet in a mopping of hot asphalt over insulation is not considered a single-ply roof system by ASU. Criteria for approval shall be:
- (1) Acceptable material and method of application.
 - (2) Ability of local installers to apply the proposed roof system;
 - (3) Ability of the State to obtain competitive bids on the proposed roofing system;
 - (4) Track record of the system and the manufacturer in this area;
 - (5) Roof warranty available from the manufacturer for the particular installation.

6-405 ROOF SYSTEM COMPONENTS

- (A) Decking:
- (1) The type of structural deck and the complete roofing system to be used should be determined by the design professional. Slope for drainage shall be achieved by structural means if possible. If structural slope is not feasible, a lightweight concrete fill, sloped perlite board, or tapered insulation board shall be specified if reviewed and approved by ASU.
 - (2) The structural deck must be designed to provide an adequate "foundation" or base for the roofing system. In addition to supporting all design loads, it must also be relatively smooth, free of humps, depressions, offsets at joints, allow for expansion and contraction, and be rigid enough to support the equipment and materials needed to apply the roof system without undergoing excessive deflection or deformation, which could impair the life of the roofing system.
 - (3) Metal decks shall be fabricated from adequate gauge steel, accurately aligned, securely anchored to structure below. Provide side lap connections to prevent displacement between adjacent sheets. The design professional shall inspect deck for any possible defects prior to the installation of any insulation and roofing.
 - (4) On poured decks such as concrete, gypsum, light weight insulating concrete, etc., adequate drying time for the material shall be allotted prior to application of the roofing membrane.

- (5) Over wood decks, always specify a nailed down layer of sheathing paper and felt underlayment and a layer(s) of insulation to prevent problems with roofing such as nails backing out, expansion and contraction, etc.
- (B) Insulation:
- (1) Insulation thickness shall be specified by the design professional and be such that when combined with complete roof and ceiling construction, shall have an overall heat transmission coefficient to obtain a satisfactory "R" value meeting applicable energy use codes. Insulation should have sufficient density and rigidity to span any flutes or irregularities in the decking and support the weight of all anticipated traffic on the roof without crushing or breaking down of the edges. The design professional or consultants or both shall verify the insulation requirements for each particular building and roofing system. Provide adequate ventilation in the plenum spaces to prevent moisture and condensation from damaging the interior spaces of the building.
 - (2) All insulation shall be applied in two (2) layers with all joints broken and staggered. All insulation boards shall be installed in the same direction throughout, unless fields are separated by an expansion joint. Butt edges of insulation tightly and cut in neatly around all roof penetrations.
 - (3) Insulation shall be secured to deck using approved fasteners conforming to Factory Mutual System, Class I construction for wind uplift protection unless otherwise approved by the CO.
- (C) Securement/Fasteners: All roof assemblies for new construction shall meet or exceed specifications for Factory Mutual System, Class I, construction in regard to wind uplift protection.
- (D) Fire, wind, and code requirements: New roof construction on buildings shall meet or exceed all applicable codes. In addition, the roof assembly shall meet or exceed specifications for Underwriters Laboratories, Inc., Class "A" construction and Factory Mutual System, Class I construction, in regards to fire resistivity and wind uplift. When re-roofing existing buildings, this may not always be possible, especially when re-roofing over existing membranes. Submit plans and specifications to the CO, for approval.
- (E) Vapor Retarder Sheets:
- (1) The design professional shall investigate the need for, and specify as required, the proper vapor retarder sheet and its applications. All buildings with high humidity (such as swimming pools where moisture migration will be a problem) should be specified with vapor retarders unless otherwise approved by ASU.
 - (2) The vapor retarder sheet shall be installed over the roof deck prior to the installation of the insulation or roof membrane or both. Seal all edges, punctures, and around all penetrations through the roof to form an envelope enclosing the insulation.
 - (3) The vapor retarder application shall meet all fire retardant requirements which building use requires. Refer to proper building codes for requirements.

Determine proper attachment for wind uplift protection from manufacturer's specifications.

- (F) Venting Base Sheets are usually heavy-coated base sheets with an embossed grid designed to channel current moisture out of a built-up roof assembly and prevent blistering. Venting base sheets are primarily used on re-roofing applications or to vent moisture out of poured gypsum or lightweight concrete decks. Application is by spot mopping to existing membranes or mechanical attachment to a nailable deck. In some instances, it is more desirable and economical to use fiberglass or perlite "re-cover" boards in lieu of a separate venting base sheet. Moisture release vents should always be specified in conjunction with a venting base sheet. See § 6-406 (G).
- (G) Moisture release vents shall be installed on all built-up roof systems when required for certain type of poured decks and re-roofing over existing membranes. Vents shall be only 'factory made' vents with spun aluminum housings designed to vent moisture out, but not allow moisture back into the roofing system. 'Shop built' sheet metal vents are not acceptable for use on buildings. Moisture release vents are primarily designed to vent moisture from a roof system including insulation and to reduce the possibility of blistering. To properly vent, holes should be cut all the way down to the deck, or vapor retarder sheet where applicable, according to the manufacturer's specifications.
- (H) Membranes for Built-Up Roof Systems:
 - (1) Built-up roofing membranes for buildings shall be inorganic felts, which do not require aggregate surfacing for protection from deterioration.
 - (2) Polyester and fiberglass felts are recommended, asbestos felts are not acceptable. Rag (organic) felts are unacceptable, except for coal tar pitch applications. Coal tar pitch roof specifications are acceptable but are not recommended for use on buildings.
- (I) Roof surfacings for Built Up Roof Systems:
 - (1) A fibrated aluminum roof coating (asbestos free) (A.S.T.M., D-2824, Type III) containing a minimum of #3 of aluminum paste per gallon of coating, applied in two (2) separate coats, at the rate of 1 1/2-2 gallons per 100 sq. ft., is the preferred roof coating for state-owned buildings.
 - (2) Aggregate roof surfacing is not recommended. For repair and maintenance of existing roofs, all aggregate surfacing shall be clean, dry, rounded pea-gravel ranging in size from 1/4" to 3/8", applied as per manufacturer's specifications for the particular installation. (400 pounds per square, minimum is the typical application.) Light color aggregates, where available, are preferable to aid in heat reflectivity.
 - (3) Asphalt coatings are not recommended.
 - (4) Emulsion coatings are not recommended.
 - (5) Cap sheets over built-up roof systems are unacceptable, unless approved in writing by the CO.

(J) Roof Cants

Roof cants shall be required at all vertical projections including walls, equipment curbs, etc. Cants shall be securely set in hot steep asphalt. Precautions should be taken to avoid bitumen drippage where it can occur, such as steel decks. Provide a minimum face width of 4" to provide a transition of the roofing felts from the horizontal to the vertical face.

(K) Membrane Flashing:

- (1) All membrane roof flashing shall be compatible with the manufacturer's installed system.
- (2) Membrane roof flashing shall be provided at all vertical projections, roof perimeters, curbs, parapets, walls, roof penetrations and elsewhere as required, and should be properly designed and carefully detailed to provide a watertight installation.
- (3) All membrane flashing at vertical surfaces shall extend a minimum of 6" above the top of the cant strip (10" above the roof surface if a 4" cant is used) and 8" onto the roof surface from the bottom edge of the cant. Do not hot mop the base flashing above the top of the cant strip. Membrane flashing shall be set in hand rubbed applications of industrial roof cement. The top edge of the membrane shall be sealed and metal counterflashing provided for protection. Do not surface mop base flashing with hot asphalt.

(L) Metal Counterflashing:

- (1) Metal counterflashing shall be provided over all membrane flashing where it occurs at vertical projections, parapet walls, equipment curbs, etc.
- (2) A two-piece locking type counterflashing shall be used in all masonry wall construction. The horizontal flashing part shall be laid in the wall during construction at the proper height. The vertical face of the counterflashing shall lock in place and be removable to facilitate maintenance and re-roofing.
- (3) The counterflashing should be approximately 4" in height, have a hemmed edge and turn out at the bottom to form a drip edge. The counterflashing should never extend below the top edge of the cant.
- (4) Refer to § 6-406 (13) for the type, gauge, and quality of sheet metal to be specified and used.
- (5) Cast-in-place reglets are acceptable. Specify only non-deteriorating type metal. Surface mounted extruded aluminum anchor bars will be acceptable if no other method is feasible. Anchor bars shall be fabricated of non-deteriorating type metal, of sufficient strength and rigidity, have pre-punched, slotted holes for attachment, using heavy-duty fasteners. (Note: Plastic anchor pins are not acceptable).

(M) Sheet Metal Components:

- (1) All metal components of the roof assembly shall be fabricated of a non-deteriorating metal free of dents, waves and blemishes.
- (2) Mill finish aluminum of .032" thickness (minimum) shall be the standard material used on buildings unless otherwise approved by the CO.
- (3) Other non-deteriorating metals such as copper, stainless steel and pre-painted (factory finish only) metals are acceptable if building budgets permit and they are accepted for use by ASU.
- (4) .040" thickness aluminum is recommended for scuppers, guttering, down spouts and splash pans.

(N) Expansion Joints:

- (1) Provide expansion joints in the roofing system wherever structural expansion joints occur, wherever structural framing or roof decks change direction or materials, and where roof areas dictate the need for an expansion joint.
- (2) Provide additional expansion joints within the roofing system itself wherever the roof perimeter is interrupted by either a projection into, or out of, the major field of roofing to form an isolated segment of roofing at the same elevation and as may be required by the dimensional stability of the several components used.
- (3) Curb type expansion joints, in lieu of low profile type, are desirable for purposes of maintenance and longevity. Treated 2x's should be used of sufficient height to install cant strips and membrane flashing of sufficient height for a watertight installation.
- (4) Use metal expansion joint covers of .040" mill finish aluminum in lieu of neoprene expansion joints for all roof and roof-to-wall expansion joint conditions on state owned buildings. Hex-head fasteners shall only be used. Nails are prohibited.

(O) Roof Penetrations: All roof penetrations shall be flashed as recommended by the manufacturer furnishing materials for the particular installation and the recommendations of the national roofing contractor's associations, based on the best, current roofing practice.

(P) Roof Drainage:

- (1) All roof drains are to be located at the low points of the roof deck. Areas drained should be limited so that no drain exceeds 4" diameter. Locate drains so that all roof surfaces may be readily drained (each side of expansion joints, etc.). The roof drain itself should be set a minimum of 3/4" below the roof surface. Taper insulation in a 3'0" diameter around drains.
- (2) Coordinate roof drain placement with drainage slopes so as to stay within acceptable limits according to manufacturer's recommendations. Install roof crickets between drains where required to properly drain roof areas

- (3) Roof drains shall be interior where possible in order to allow for future expansion of the building.
- (4) Every roof shall have an appropriate overflow scupper or emergency roof drain to prevent flooding or roof failure should the roof drains become stopped up.

(Q) Roof Protection Walkboard:

- (1) Rooftop protection walkboards are only recommended on roofs where mechanical equipment, flagpoles, penthouses, laboratory experiments, etc., are located which required periodic maintenance and protection from daily foot traffic.
- (2) Walkboards and foot paths should be neatly laid out and designed in such a manner as to not impede roof drainage.
- (3) 12" X 24" X 1/2" is the recommended size of the individual pieces of roof protection walkboards. Do not use large size ceramic granule organic based walk-boards. Use only non-organic based material.
- (4) Walkboards should be installed prior to aggregate surfacing, or, if smooth surface, after the application of the coating.
- (5) In many instances, simply adding an extra layer of membrane (in torch applied system) for walk paths and roof protection is preferred.

6-406 ROOFTOP MOUNTED MECHANICAL EQUIPMENT

(Self-contained heating and/or cooling package units and associated ductwork)

- (A) Mechanical equipment shall not be located on the roof unless contained in a separate mechanical roof penthouse or submitted for approval in writing to the CO prior to the first plan review. Refer to § 6-309 regarding unacceptable design configurations.
- (B) In those instances where mechanical equipment is approved to be located on the rooftop, due to the building budget or design, the following guidelines should be followed:
 - (1) Rooftop equipment (defined here as self-contained heating and/or cooling package units and associated ductwork), which is elevated above a roof, shall be designed with adequate support and clearance. The larger a piece of equipment is, the more clearance it will require. Provide a minimum of 10" clearance above the finished roof surface and additional clearance as required sufficient to maintain and re-roof the building.
 - (2) Rooftop equipment shall be adequately supported and attached to the structural system of the building.
 - (3) Provide vibration isolation, as required.
 - (4) Legs of equipment (of substantial size and weight) supports should be surrounded by a pitch pan filled with 1" of fast setting gypsum cement and topped

off with industrial roof cement or cured neoprene. Lightweight equipment should set on wolmanized blocking.

- (5) Protect pitch pans and roof cement by installing watertight aluminum umbrellas with drawbands attached to equipment support legs.
- (6) Provide support for any piping or lightweight equipment on the roofs. Piping or equipment shall be supported by treated wood blocking set on an extra layer of loose membrane set in industrial roof cement on the roof surface. Electrical conduit shall not be surface run on the roof. Electrical conduit should be installed in the ceiling plenum.

6-407 MINIMUM ROOF SLOPES FOR POSITIVE ROOF DRAINAGE

- (A) All state facilities of new construction shall be required to have roof surfaces, which slope a minimum of 1/4" per foot for positive drainage.
- (B) Where possible, roof slopes shall be accomplished structurally, in lieu of large amounts of tapered insulation fill to reduce costs and weight on the structural system.
- (C) Avoid excessive slopes (in excess of 1/2" per foot) in built-up roof assemblies which cause slippage and bitumen run-offs. Use proper fasteners and bitumen for the slope of the roof and the type of roof assembly.
- (D) On re-roofing of existing facilities, the roof slope may be reduced to 1/8" per foot. The existing roof should be surveyed for areas which pond water. These areas should be leveled or filled as required and practical for the type of substrate. Verify that equipment curbs, counterflashing heights, etc., are of sufficient height for re-flashing after the installation of new tapered insulation and roof membrane.

6-408 ROOF ACCESS REQUIREMENTS

- (A) Roof access for inspection and periodic maintenance shall be required on all buildings.
- (B) A lockable, factory produced roof access scuttle (minimum size 2'6" X 3'0") with an insulated curb and hinged door, shall be located as directed by the owner's representative in a convenient location such as a janitor's closet, mechanical equipment room, etc.
- (C) A heavy duty metal ladder (20" wide, minimum) shall be provided at all roof access scuttles. Bolt ladder to floor, wall, and scuttle curbing. Ladders shall comply with current OSHA requirements with the centerline of rungs 7" from wall.
- (D) Access to all roof levels shall be provided. Utilize lockable type doors, windows (of sufficient size), roof access scuttles or exterior mounted rungs or ladders to provide access.
- (E) When re-roofing existing buildings, verify need for roof access and provide as needed. Coordinate locations with the owner's representative.

6-409 WORKMANSHIP/QUALITY CONTROL

- (A) Installer's Qualifications: Recognized roofing contractors, specializing in the chosen system roof application, skilled and experienced in the type roofing required and familiar with the specific requirements and methods needed for proper performance and workmanship in accordance with recognized standards of the industry and the manufacturer

- (B) Pre-Installation Conference: A pre-installation conference shall be held prior to installation of any roofing and associated work on a state building. The pre-installation conference shall be initiated by the design professional at the proper time with a minimum of three (3) day notice for the following parties to attend:
 - (1) Installer's representative (roofing sub-contractor).
 - (2) General contractor's representative (where applicable).
 - (3) Mechanical contractor's representative (where applicable).
 - (4) Electrical contractor's representative (where applicable).
 - (5) Deck installer's representative (where applicable).
 - (6) Testing services representative (where applicable).
 - (7) Insurer's representative (where applicable).
 - (8) Campus representative or project coordinator.
 - (9) Facility Management or maintenance representative.

- (C) Review the Following with All Concerned Representatives:
 - (1) Letter from manufacturer furnishing roofing system/roof warranty, stating manufacturer has reviewed job specifications and agrees to furnish warranty as specified.
 - (2) Project requirements, drawings, specifications, construction details, etc.
 - (3) Material submittals, manufacturer's requirements for bonding (where applicable).
 - (4) Deck condition, installation (where applicable).
 - (5) Storage of materials.
 - (6) Installers' set-up directions.
 - (7) Safety considerations.
 - (8) Protection of rooftop, building and grounds.
 - (9) Scheduling of work.

- (10) Roof inspection, testing.
 - (11) Weather limitations. Rejection of "phased" construction.
 - (12) Application of materials/building and regulatory codes.
 - (13) Clean-up.
 - (14) Project close-out A record shall be made by the design professional of the pre-installation conference discussions, the decisions and agreements reached, and a copy of the record shall be made available to each party attending
- (D) Roofing Materials Delivery and Storage Requirements Delivery:
- (1) No materials are to be delivered to the site prior to approval of the materials submittal, the pre-installation conference, and the owner's representative's approval.
 - (2) No materials are to be delivered to the site without the proper arrangements for placement, storage and protection from the weather.
 - (3) Campuses and their representatives are instructed not to accept delivery or be responsible for acceptance.
 - (4) Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.
- (E) Sheet Material Storage:
- (1) Storage of all sheet materials (roll goods) and insulation shall be subject to the following requirements: If within 50 miles of contractor's warehouse: All sheet materials (roll goods), insulation, etc. shall be trucked to job daily from enclosed warehouse storage.
 - (2) All other storage shall conform to the following:
 - (a) Enclosed trailer, vans, or truck storage on the project site.
 - (b) Canvas (no plastic sheeting is acceptable) tarpaulins, with material on wooden pallets, 6" minimum above the ground, secured by ropes, top and sides of all material protected from moisture and rain.
 - (c) Bitumen may be stored separate, adjacent to kettle location.
- (F) Rejection of "Phased" Construction:
- (1) The installer shall not "phase" the application of the roofing system. The roof system components shall be applied consecutively as recommended by the manufacturer (within the limits of a days work, and be weather-tight so that in the event of inclement weather, no damage will occur to the roof components or

interior contents of the building. "Phased" roof construction will be rejected by the owner's representative and shall be removed and replaced by the installer.

- (2) Final surfacing may be delayed until all or a substantial area of roofing is completed. Allow owner's representative time to inspect roof surfaces, all roof surfaces shall be clean and dry for approximately 48 hours prior to application of final surfacing.

(G) Weather Condition Limitations:

- (1) Proceed with roofing and associated work only when weather conditions will permit unrestricted use of materials and quality control of the work being installed, complying with all requirements of the specifications and recommendations of the roofing materials manufacturers, without "phased" construction.
- (2) Proceed only when the installer is willing to guarantee the work as required and without additional reservations and restrictions. Record decisions or agreements to proceed with the work under unfavorable weather conditions and contact the CO. State the reasons for proceeding and the names of the persons involved in the decisions, along with changes (if any) in other requirements or terms of the contract.

(H) Protection and Clean-Up

- (1) Rooftop Protection and Clean-up:
 - (a) Protect roof surfaces over which work is to be performed.
 - (b) Exercise care and caution that roofing materials placed on rooftop do not overload structure, or damage decking or other roofing materials.
 - (c) Take care to prevent bitumen, aggregate and debris from running into and clogging roof drains and rainwater conductors. Remove trash and debris promptly.
 - (d) Schedule work in order not to track over and damage newly installed roofing in place. If absolutely necessary to cross a newly applied roof area, coordinate exact protection procedures with owner's representative.
 - (e) The installers shall be responsible for all damage to any related items to his trade and will be responsible for the cleaning and repair or replacement of any such items.
- (2) Building protection and Clean-up:
 - (a) Properly and efficiently protect building and work of other trades from damage by roofing materials during the performance of the work.
 - (b) The installer shall protect building walls and other surfaces from disfiguration by bitumen stains, runs or spillage, etc., and the installer

shall bear the labor and material costs for repair of these surfaces from damage by the roofing installer's work.

- (c) Protection of the building and its interior contents is mandatory. The installing contractor shall submit a written plan for providing this protection to the owner's representative for approval. The installing contractor shall furnish plastic sheeting to protect computers, word processors, printers, typewriters, and any other sensitive equipment in the building.

(3) Grounds Protections and Clean-up:

- (a) Coordinate access, parking, storage of materials and equipment on the grounds with the owner's representative designated at the pre-installation conference.
- (b) Protect the grounds, lawn, landscaping, shrubbery, etc., from abuse and damage during roofing work.
- (c) Remove trash, debris, wrapping, etc., promptly and clean up daily around the job.
- (d) The installer shall be responsible for removing all equipment and surplus material from the grounds prior to final acceptance of the work. Installer shall leave his portion of the work, as specified, clean, and in complete order. Upon final completion, the ground shall be cleaned of all trash, debris, gravel, bitumen, lumber, scraps, etc., and the grounds raked to conditions prior to roof work.

(I) Installer's Guarantee:

- (1) Terms: Upon completion of all work and as a condition of its acceptance, deliver to the owner a written guarantee signed by the general contractor and the installing sub-contractor agreeing to correct all leaks and defects in the roofing system work.
- (2) Time Period: The time period for correction of the roofing system work shall be two (2) years from the date of final acceptance of the roof by the owner's representative. Sixty days before the end of the two (2) year period, review roof conditions of the site with the owner and all parties concerned and correct all defects in conformance with the original specifications
- (3) Warranty Repairs: During the correction of work period, the roofing installer shall, upon notice from the owner, make immediate temporary repairs and notify the roofing materials manufacturer, a report made, and, if covered by this guarantee or the roofing materials manufacturer's guarantee, the roof shall be permanently restored to a water-tight condition, at no cost to the owner.

(J) Manufacturer's Roof Warranty:

- (1) A Manufacturer's Warranty shall be required on all re-roofing, new construction, and associated roof work on a state building unless the cost and size are very

minor. General: Specified work shall be guaranteed by the roofing materials manufacturer for a period as specified (maximum term and maximum penal sum available) starting from date of final acceptance by the owner, of the completed roofing system. The materials manufacturer shall approve the roof warranty. Surety company bonds are not acceptable. Submit two (2) copies of the roof warranty on manufacturer's standard printed form to the campus, upon acceptance of the roof.

- (2) Specified work shall be inspected by qualified representatives of the manufacturer during its installation and at final completion, for conformance to manufacturer's warranty program. Minimum follow-up inspections shall be made in accordance with the manufacturer's requirements and corresponding observations and reports provided to the owner.

(K) Installer's Warranty Signs:

- (1) Provide two 10" X 12" minimum size painted signs made of aluminum with a dark color background and letters of a contrasting color. Use paint that is compatible with the aluminum. Make the sign to read as follows:

"DO NOT MAKE REPAIRS OR ALTERATIONS TO THIS ROOF" without the written approval from the campus' authorized representative. This roof is maintained until (insert the month and two (2) years after date of final acceptance), by (insert contractor's name, address, and telephone number).

- (2) Permanently post signs as directed by the owner's representative. Provide as least one (1) sign on each roof with a minimum of two (2) signs per building.

(L) Roof Inspections/Roof Cuts

- (1) The design professional's specifications, based on the manufacturer's recommended installation procedures, when approved by the owner, will become the basis for inspecting and accepting or rejecting actual installation procedures used on the work.

- (2) Roof Inspections: Provide safe access to the roof for proper inspection by the owner's representative. Notify the roofing materials manufacturer whenever roofing work is to be done in sufficient time to arrange all inspections necessary for bonding of the roof system. Keep the owner's representative, informed of the status of the project and schedule for completion.

- (3) Roof Tests, Roof Cuts:

- (a) Roof cuts will be made only when considered absolutely necessary to determine compliance with specifications.

- (b) When necessary, cut 4" X 42" test samples (to cut a total cross-section of all roof plies), of installed roofing as directed by the owner's representative. Immediately repair roof to conform to adjacent built-up construction without cost to the owner.

6-500 FLOOD PLAIN MANAGEMENT STANDARDS

- (A) It shall be the policy of ASU to assure that all state properties coming under its jurisdiction shall comply with the Floodplain Management Program of the Arkansas Soil and Water Conservation Commission. Campuses are encouraged to flood proof, using the best methods available, all structures within the 'A' zone on applicable flood hazard boundary maps.
- (B) The Design Professional shall submit all requests for variance from these guidelines through the Arkansas Soil and Water Conservation Commission to the Federal Insurance Administrator.

6-600 ACCESSIBILITY FOR THE PHYSICALLY DISABLED STANDARDS

- (A) Purpose: The specifications in this standard are intended to make buildings and facilities accessible to and usable by, people with physical disabilities include but are not limited to the inability to walk, difficulty walking, reliance on walking aids, blindness and visual impairment, deafness and hearing impairment, coordination, reaching and manipulation disabilities, lack of stamina, difficulty interpreting and reacting to sensory information, and extremes of physical size. Accessibility and usability allow a physically handicapped person to get to, enter, and use a building or facility.
- (B) This standard provides specifications for elements that can be used in making functional spaces accessible. For example, it specifies technical requirements for making doors, routes, seating, and other elements accessible. These accessible elements can be used to design accessible functional spaces such as classrooms, hotel rooms, lobbies, or offices.
 - (1) Application: This standard can be applied to the following:
 - (a) The design and construction of new buildings and facilities, including spaces and elements, site improvements, and public walks.
 - (b) Remodeling, alterations, and rehabilitation of existing construction.
 - (c) Permanent, temporary, and emergency conditions.

6-601 ACCESSIBILITY DEFINITIONS

Access Aisle: An accessible pedestrian space between elements, such as parking spaces, seating, and desks, that provides clearances appropriate for use of the elements.

Accessible: Describes a site, building, facility, or portion thereof that complies with this standard and that can be approached, entered, and used by physically disabled people.

Accessible Route: A continuous unobstructed path connecting all accessible elements and spaces in a building or facility that can be negotiated by a person with a severe disability using a wheelchair and that is also safe for and usable by people with other disabilities. Interior accessible routes may include corridors, floors, ramps, elevators, lifts, and clear floor space at fixtures. Exterior accessible routes may include parking access aisles, curb ramps, walks, ramps, and lifts.

Adaptability: The capability of certain building spaces and elements, such as kitchen counters, sinks, and grab bars, to be altered or added so as to accommodate the needs of persons with and without disabilities, or to accommodate the needs of persons with different types or degrees of disability.

Administrative Authority: A jurisdictional body that adopts or enforces regulations and standards for the design, construction, or operation of buildings and facilities; also used in conjunction with “authority having jurisdiction.”

Assembly Area: A room or space accommodating a number of individuals as specified by the authority having jurisdiction and used for religious, recreational, educational, political, social, or amusement purposes, or for the consumption of food and drink, including all connected rooms or spaces with a common means of egress and ingress. Such areas as conference rooms would have to be accessible in accordance with other parts of this standard, but would not have to meet all of the criteria associated with assembly areas.

Automatic Door: A door equipped with power-operated mechanism and controls that open and close the door automatically upon receipt of a momentary actuating signal. The switch that begins the automatic cycle may be a photoelectric device, floor mat, sensing device, or manual switch mounted on or near the door itself (see power-assisted door).

Children: People below the age of twelve (that is elementary school age and younger).

Circulation Path: An exterior or interior way of passage from one place to another for pedestrians, including, but not limited to, walks, hallways, courtyards, stairways, and stair landings

Clear: Unobstructed.

Common Use: Refers to those interior and exterior rooms, spaces, or elements that are made available for the use of a restricted group of people (for example, residents of an apartment building, the occupants of an office building, or the guests of such residents or occupants).

Coverage: The extent or range of accessibility that a particular administrative authority adopts and requires.

Cross Slope: The slope of a pedestrian way that is perpendicular to the direction of travel (see running slope).

Curb Ramp: A short ramp cutting through a curb or built up to it.

Detectable: Perceptible by one or more of the senses.

Detectable Warning: A standardized surface texture applied to or built into walking surfaces or other elements to warn visually impaired people of hazards in the path of travel.

Disability: A limitation or loss of use of a physical, mental, or sensory body part or function.

Dwelling Unit: A single unit of residence that provides a kitchen or food preparation area, in addition to rooms and spaces for living, bathing, sleeping, and the like. A single-family home is a

dwelling unit, and dwelling units are to be found in such housing types as townhouses and apartment buildings.

Egress Means of: A path of exit that meets all applicable code specifications of the Regulatory Building Agency having jurisdiction over the building or facility.

Element: An architectural or mechanical component of a building, facility, space, or site that can be used in making functional spaces accessible (for example, telephone, curb ramp, door, drinking fountain, seating, water closet).

Facility: All or any portion of a building, structure, or area, including the site on which such building, structure, or area is located, wherein specific services are provided or activities are performed.

Functional Spaces: The rooms and spaces in a building or facility that house the major activities for which the building or facility is intended.

Housing: A building, facility, or portion thereof, excluding inpatient health care facilities, that contains one or more dwelling units or sleeping accommodations. Housing may include, but is not limited to, one-family and two-family dwellings, multifamily dwellings, group homes, hotels, motels, dormitories, and mobile homes.

Marked Crossing: A crosswalk or other identified path intended for pedestrian use in crossing a vehicular way

Multifamily Dwelling: Any building containing more than two dwelling units.

Operable Part: A part of a piece of equipment or appliance used to insert or withdraw objects, or to activate, deactivate, or adjust the equipment or appliance (for example, coin slot, push button, handle).

Physically Disabled Person: An individual who has a physical impairment, including impaired sensory, manual, or speaking abilities, that results in a functional limitation in gaining access to and using a building or facility.

Power-Assisted Door: A door used for human passage, with a mechanism that helps to open the door, or to relieve the opening resistance of the door, upon the activation of a switch or the use of a continued force applied to the door itself. If the switch or door is released, such doors immediately begin to close or close completely within 3 to 30 seconds (see automatic door).

Principal Entrance: An entrance intended to be used by the residents or users to enter or leave a building or facility. This may include, but is not limited to, the main entrance
Public Use: Describes interior and exterior rooms or spaces that are made available to the general public. Public use may be provided at a building or facility that is privately or publicly owned.

Ramp: A walking surface in an accessible space that has a running slope greater than 1:20 and no greater than 1:12.

Running Slope: The slope of a pedestrian way that is parallel to the direction of travel (see cross slope)

Service Entrance: An entrance intended primarily for delivery of service.

Signage: Verbal, audible, symbolic, and pictorial information.

Site: A parcel of land bounded by a property line or a designated portion of a public right-of-way.

Site Improvement: Landscaping, pedestrian and vehicular pathways, outdoor lighting, recreational facilities, and the like added to a site.

Sleeping Accommodations: Rooms in which people sleep (for example, dormitory and hotel or motel guest rooms).

Space: A definable area (for example, toilet room, hall, assembly area, entrance, storage room alcove, courtyard, or lobby).

Tactile: Describes an object that can be perceived using the sense of touch.

Temporary: Applies to facilities that are not of permanent construction but are extensively used or essential for public use for a given (short) period of time. For example, temporary classrooms or classroom buildings at schools and colleges, or facilities around a major construction site to make passage accessible, usable, and safe for everybody. Structures directly associated with the actual processes of major construction, such as portable toilets, scaffolding, bridging, trailers, and the like, are not included.

Vehicular Way: A route intended for vehicular traffic, such as a street, driveway, or parking lot

Walk: An exterior pathway with a prepared surface intended for pedestrian use, including general pedestrian areas such as plazas and courts.

Walking Aid: A device used by a person who has difficulty walking (for example, a cane, crutch, walker, or brace).

6-602 AMERICANS WITH DISABILITIES ACT

The Americans with Disabilities Act Accessibility Guidelines (ADAAG) for Buildings and Facilities is the standard for all new construction and alterations as established in 28 CFR 35, Appendix A as amended. In instances such as, parking in which Arkansas law conflicts with the Americans with Disabilities Act, the more stringent requirements shall be met.

6-603 COPIES OF AMERICANS WITH DISABILITIES ACT

Copies of this rule are available in the following alternate formats: large print, Braille, electronic file on computer disk, and audiotape. Copies may be obtained from Architectural and Transportation Barriers Compliance Board at (202)-272-5434 (Voice) or (202)-272-5449 (TTY). These telephone numbers are not toll-free numbers. For toll free ADA information call 1-800-872-2253. For email access, refer to TA@access-board.gov.

6-700 CAPITAL IMPROVEMENT ALTERNATIVE DELIVERY METHODS

Pursuant to Ark. Code Ann. §19-4-1414, unless exempted, ASU has authority to oversee contracts in the amount of \$5,000,000 or more, which are not awarded in the traditional design-bid-build method, but rather awarded through negotiations.

6-701 PROJECT CRITERIA (Refer to § 4-701)

6-702 SELECTION OF DESIGN PROFESSIONALS

- (A) The procedures prescribed in § 6-100 shall apply to the selection of Design Professionals utilized for projects under this section.
- (B) Refer to § 6-102 (A) and add the following requirement: The campus shall indicate that the contemplated project equals or exceeds \$5,000,000 in estimated construction cost, excluding land costs, and that the campus intends to utilize a type of negotiated contracting for the construction phase.
- (C) Refer to § 6-201 (C). The draft advertisement shall clearly indicate that the design services required would be utilized on a project that the campus intends to award through negotiations in lieu of the traditional design-bid-build process. The notice shall also indicate that the selected professional will work with the campus' contractor in the development of the project budget, construction options and administrative procedures for managing the project under "fast track" conditions if applicable.

6-703 SELECTION METHOD FOR DESIGN PROFESSIONALS

- (A) Selection of Design Professionals shall be as prescribed in § 6-106 except that the pre-selection committee shall consist of five (5) members, respective CO shall determine the members from the campus.
- (B) Refer to § 4-702 for the selection of construction managers and contractors.

6-704 BASIC SERVICES DEFINED

- (A) Refer to 6-201 for Basic Services Defined. All services listed shall apply except as follows:
 - (1) For "fast track" projects, the schematic design and the design development phases shall be condensed as required to verify the budget estimate via contractor pricing.
 - (2) Construction documents may be developed in phases as necessary to maintain the project delivery schedule.
 - (3) For "fast track" projects, the Design Professional shall obtain all "as-built" information from the contractor and shall compile this information into an accurate set of record drawings and specifications for submittal to the campus in printed form and in electronic form.

6-705 PLAN REVIEW SCHEDULE

- (A) Refer to § 6-318 (C) for basic schedule requirements.

- (B) For projects utilizing a “fast track” methodology, the Design Professional shall assist the campus in developing a “Request for Proposals” package to be utilized in the selection process for the contractor or construction manager. The RFP shall be submitted to ASU for review and approval prior to issuing to potential contractors. The requirements of the RFP shall closely match the requirements of the first plan review submittal. Refer to § 6-318. Include appropriate specifications for the desired building materials and equipment.

6-706 PLAN REVIEW REQUIREMENTS

- (A) All plans shall be submitted to ASU for review and approval prior to delivery to the contractor or construction manager for pricing. Refer to § 6-319 and § 6-320 for basic plan review requirements.
- (B) For projects utilizing a “fast track” methodology, the scope of work in the contract for the construction services may be submitted as the first plan review provided that the scope of work contains, as a minimum, the scope as approved in the RFP and as modified and agreed to by the campus and the Contractor.
- (C) For “fast track” projects, intermediate submittals shall be made at frequencies necessary to maintain the project schedule and appropriate quality control. This process may result in multiple partial submittals. Each partial submittal shall represent one or more discrete portions of the work, which can be designed, priced and constructed independently of other portions without resulting in de-construction or rework of the portions previously constructed.
- (D) Upon completion of the final construction documents, the contractor will issue a Guaranteed Maximum Price (GMP). If the GMP is within the construction budget, then the University will enter into a contract with the contractor to construct the project. It is recommended that a ten (10) percent contingency fund be a part of the GMP price.

MAPS



MAP OF SEISMIC ZONES IN ARKANSAS, 1991 (BY COUNTY)

SECTION SEVEN ENGINEERING SECTION

7-100 ENGINEERING DESIGN PROFESSIONAL SELECTION PROCEDURES FOR ARKANSAS STATE UNIVERSITY CAMPUSES

- (A) The Construction Office (CO) will administer projects, which are predominantly engineering and environmental oriented. All engineering inquiries shall be directed to the CO. §7-100 et seq. covers the basic policies and procedures for Boundary and Topographical Land Surveys, Geo-technical Services, Civil, Structural, Seismic Design, Mechanical, Electrical, Environmental and Specialized Engineering Services.
- (B) Selection of engineers and land surveyors, including geo-technical, civil, structural, technical, electrical, environmental and specialized engineering consultants will be coordinated by the campuses. Specialized consultant services shall be made pursuant to §6-208. Except where otherwise indicated, the procedures for selection of engineers shall made pursuant to § 6-101 through 108.

7-200 ENGINEERING FEE SCHEDULES FOR PROFESSIONAL SERVICES

The ASU Board of Trustees has adopted the following schedules for Design Professional and consultant services to be used by the various campuses for capital improvement projects.

7-201 BOUNDARY OR TOPOGRAPHICAL LAND SURVEYING SERVICES FEES

Boundary or topographical land surveys are considered a specialized engineering service and fees for these types of services and shall be negotiated on an hourly not-to-exceed rate or a lump sum commensurate with the scope of the survey.

7-202 GEO-TECHNICAL ENGINEERING SERVICES FEES

Geo-technical investigations are considered a specialized engineering service and fees for geo-technical services may be negotiated on an hourly not-to-exceed fee or a lump sum agreement. If conditions are such that a lump sum (not to exceed) cannot be guaranteed, then a unit price per boring or trench may be included to cover the suspected conditions that may be encountered. The CO shall approve fees for geo-technical services.

7-203 CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES FEES

- (A) For projects involving purely civil or environmental engineering services, excluding asbestos consulting services, independent of a new building construction project and where the services of the engineer are contracted directly to the campus, the fees shall be based on the percentage of the construction cost shown below.
- (B) Method of Computing Invoice Fees at Break Points: For projects contracted on a percentage fee basis, the fee as computed for the actual contract bid price shall

not be less than the maximum fee obtained from calculating for the next lower construction cost bracket.

Example: Project estimated at a construction cost of \$500,000 or less and the professional services contract is based on 8.2% fee per the fee chart 7-203. The project actually bids and is awarded at \$510,000. Based on the fee chart, the fees for \$510,000 would be 7.5% or a total of \$38,250. The fees for the estimated project of \$500,000 at 8.2% would have been \$41,000. The Design Professional should be compensated at the \$41,000 fee rate. If the project bid is awarded above \$546,667 the fee would be based on the 7.5% rate.

<u>CONSTRUCTION COST</u>	<u>BASIC FEE</u>
Less than \$50,000	12.5%
\$50,001 to \$100,000	11.4%
\$100,001 to \$200,000	9.8%
\$200,001 to \$300,000	9.0%
\$300,001 to \$500,000	8.2%
\$500,001 to \$1,000,000	7.5%
\$1,000,001 to \$10,000,000	6.5%
Over \$10,000,000	6.0%

- (C) Progress payments shall be made to the Design Professional at the same percentage rate as described in § 6-216.
- (D) As part of this fee, civil/environmental engineers shall provide construction observation activities and administration as described in § 6-201, "Design Professional's Basic Services Defined" Other applicable portions of Section Six, regarding fees, reimbursable, design professional's responsibilities, services, etc., shall apply to civil/environmental engineers. On civil projects, the civil engineer is responsible for furnishing benchmarks for vertical and horizontal control, but the Contractor is responsible for furnishing stakeout of the construction.
- (E) Up to a 4% additional fee may be negotiated for civil/environmental projects where a more intense observation schedule is required in order to assure proper execution of the construction project. This additional fee shall be listed as an additional service under compensation on the standard professional services contract form. Campuses are encouraged to negotiate these additional services on an hourly rate not-to-exceed the 4% maximum.

7-204 BUILDING RELATED CIVIL, STRUCTURAL, MECHANICAL, AND ELECTRICAL ENGINEERING SERVICES FEES

Fees for civil, structural, mechanical, and electrical engineering projects related to a building construction or renovation project shall be included as a part of the Design Professional's basic services fee and shall be as established in § 6-223. Fees for civil engineering projects related to the construction or renovation of buildings such as water and wastewater treatment plants may be negotiated in accordance with § 7-203.

7-205 SEISMIC DESIGN FEE ALLOWANCES

- (A) For engineering projects requiring seismic design and certification pursuant to Arkansas laws, including but not limited to the Arkansas Fire Prevention Code, fees may be increased. Refer to § 6-207 for maximum allowable increases by seismic zone.
- (B) Should dynamic structural analysis be required for the seismic design of a structure to meet all applicable building codes, this analysis shall be considered an "additional service" under the professional services contract or its attachment, unless otherwise negotiated.
- (C) A Seismic Zone Map, defined by county, has been provided at the end of Section Six under "Maps".

7-206 ASBESTOS CONSULTANT FEES

Asbestos inspection, design, air monitoring and project management services are considered a specialized consulting services and fees for these types of services shall be negotiated on an hourly not-to-exceed rate, a daily or abatement shift rate or a lump sum commensurate with the scope of the project.

ARKANSAS STATE UNIVERSITY ASBESTOS CONSULTANT SERVICES FEE SCHEDULE CHART NO. 7-206

This asbestos consultant fee schedule displays the maximum fees that shall be allowed on Arkansas State University projects, which is 3% on all projects \$10 million or more. The minimum scope of the services covered by this schedule includes consultant project (bid) documents, bidding, contract and pay requests. Also, this fee shall include a bound report documenting all abatement, testing and monitoring activities. An hourly fee will be negotiated (\$55.00 per hour or less) for project management. Project management shall include monitoring of the Contractor, daily air sampling and project documentation.

Reduce the charted fee by 1% for building demolitions or unoccupied buildings. Increase the charted fee by 1% if the "AMERA" standards are applied. Expenses for document reproduction and laboratory analysis of air samples will be considered as reimbursable expenses.

The frequency of abatement project job inspection and amount or type of air monitoring shall comply with state and federal laws. Typically, project inspection and monitoring shall be performed by an industrial hygiene technician working under the supervision of an architect, engineer or other industrial hygienist as defined by the Arkansas Asbestos Abatement Regulation.

Beyond and separate from the fee established in the schedule, the consultant will be allowed a fee for initial building and/or inspection survey, reporting of asbestos containing materials and asbestos management plan. This fee shall be charged at a maximum of \$0.06 per gross square foot of building area. No reimbursable expenses are allowed.

Hourly and per square footage rates may be adjusted at the project manager's discretion considering inflation, project size and type.

For projects smaller than \$50,000 the fee shall be 6.0% plus or minus allowable adjustments. For projects larger than \$10,000,000 the fee shall be negotiated but in no circumstances, except for valid adjustments for additional services, exceed 3%.

<u>PROJECT COST</u>	<u>PROFESSIONAL FEE %</u>	<u>PROFESSIONAL FEE</u>
\$50,000 OR LESS	6%	\$3,000 OR LESS
\$10,000,000	3%	\$300,000

The percentage for any contract amount above \$50,000 but below \$10,000,000 can be calculated through interpolation. The following is an example using \$9,000,000 as the contract amount:

$$X = \frac{\$9,000,000 \text{ (value of contract)} - \$50,000 \text{ (lowest value in fee chart)}}{\$10,000,000 \text{ (highest value in chart)} - \$50,000 \text{ (lowest value in chart)}}$$

$$\frac{\$9,000,000 - \$50,000}{\$10,000,000 - \$50,000} = \frac{\$8,950,000}{\$9,950,000} = .8995$$

Y = X times the difference between highest and lowest percentages (6% minus 3%) or 3%

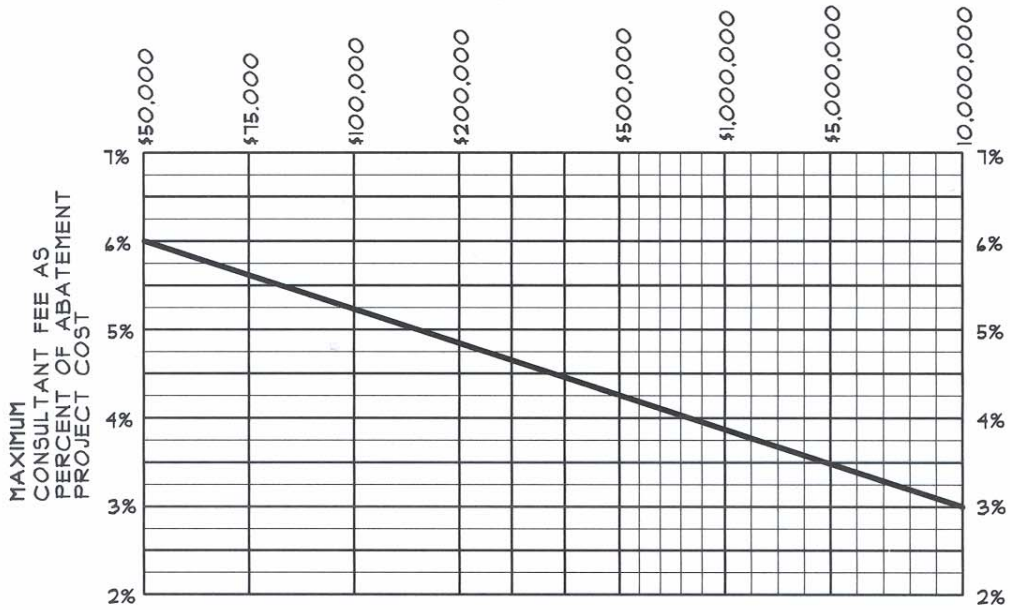
$$(.8995)(.03) = .02698 \quad (.06 - .02698) = .03302 \text{ OR } 3.302\%$$

Professional fee to be paid for a \$9,000,000 contract is 3.302% or \$297,180

Where the values represent the following:

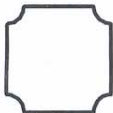
- (1) \$9,000,000 is the value of the contract to be issued
- (2) \$50,000,000 is the lowest value in the chart
- (3) \$10,000,000 is the highest value in the chart
- (4) .8995 is the distance from the lowest value of the value of the contract to be issued
- (5) .03 (3%) is the lowest percentage on the chart
- (6) .06 (6%) is the highest percentage on the chart

ASBESTOS ABATEMENT
PROJECT COST



NOTES

1. THE ASBESTOS CONSULTANT FEE SCHEDULE DISPLAYS THE MAXIMUM FEES THAT SHALL BE ALLOWED ON STATE PROJECTS. THE MINIMUM SCOPE OF THE SERVICES COVERED BY THIS SCHEDULE INCLUDES CONSULTATION, PROJECT (BID) DOCUMENTS, BIDDING, CONTRACT AND PAY REQUESTS, ALSO, THIS FEE SHALL INCLUDE A BOUND REPORT DOCUMENTING ALL ABATEMENT, TESTING AND MONITORING ACTIVITIES. AN HOURLY FEE WILL BE NEGOTIATED (\$50.- PER HOUR OR LESS) FOR PROJECT MANAGEMENT SHALL INCLUDE MONITORING OF THE CONTRACTOR, DAILY AIR SAMPLING AND PROJECT DOCUMENTATION.
2. REDUCE THE CHARTED FEE BY 1% FOR BUILDING DEMOLITIONS OR UNOCCUPIED BUILDINGS. INCREASE THE CHARTED FEE BY 1% IF THE "AHERA" STANDARDS ARE APPLIED. EXPENSES FOR DOCUMENT REPRODUCTION AND LABORATORY ANALYSIS OF AIR SAMPLES WILL BE CONSIDERED AS REIMBURSIBLE EXPENSES.
3. THE FREQUENCY OF ABATEMENT PROJECT JOB INSPECTION AND AMOUNT/TYPE OF AIR MONITORING SHALL COMPLY WITH STATE AND FEDERAL LAWS. TYPICALLY, PROJECT INSPECTION AND MONITORING SHALL BE PERFORMED BY AN INDUSTRIAL HYGIENE TECHNICIAN WORKING UNDER THR SUPERVISION OF A ARCHITECT, ENGINEER OR OTHER INDUSTRIAL HYGIENIST AS DEFINED BY THE ARKANSAS ASBESTOS ABATEMENT REGULATION.
4. BEYOND AND SEPARATE FROM THE FEE ESTABLISHED IN THE SCHEDULE, THE CONSULTANT WILL BE ALLOWED A FEE FOR INITIAL BUILDING INSPECTION/SURVEY, REPORTING OF ASBESTOS CONTAINING MATERIALS AND ASBESTOS MANAGEMENT PLAN. THIS FEE SHALL BE CHARGED AT A MAXIMUM OF 4.0% PER GROSS SQUARE FOOT OF BUILDING AREA. NO REIMBURSIBLE EXPENSES ALLOWED.
5. \$ PER HOUR AND \$ PER SQUARE FOOT RATES MAY BE ADJUSTED AT THE STRUCTURAL ADVISORY OFFICE'S DISCRETION CONSIDERING FACTORS SUCH AS PROJECT SIZE AND INFLATION.
6. FOR PROJECTS SMALLER THAN \$50,000.-, FEE SHALL BE 6.0% + OR - ALLOWABLE ADJUSTMENTS.
7. FOR PROJECTS LARGER THAN \$10,000,000.-, FEE SHALL BE NEGOTIATED.



7-300 PROCEDURES FOR PROJECT DEVELOPMENT AND CONSTRUCTION

§ 6-300 et seq. outlines the procedures that should be followed in the development of a project from its inception to University approval. The following sections augment these procedures and are generally applicable regardless of the size, scope, or type of project.

7-301 BOUNDARY AND TOPOGRAPHIC LAND SURVEYS

- (A) Campuses shall furnish the Design Professional with an up-to-date survey pursuant to the latest edition of the "Arkansas Minimum Standards for Property Surveys and Plats". Campuses may retain these services under the scope of the primary Design Professional's contract or may contract for these services directly. Projects requiring these services as a sub-contract to the primary Design Professional shall include a line item allowance under reimbursables on the standard professional services contract. If the campus wishes to contract for these services directly, the campus shall follow the procedures outlined in § 7-100 (B).
- (B) All surveys shall meet the "Arkansas Minimum Standards for Property Surveys and Plats, " latest edition, and generally include all applicable property lines, surrounding structures affecting future development, all existing utilities, north arrow, all means of access, contour elevations, heights, etc. All necessary dimensions, easements, flood plain, and other information determined necessary for the project should be included. The American Institute of Architect's Document G601 and the Engineers Joint Contract Documents Committee Document 1910-27A are suggested as reference guides.

7-302 GEO-TECHNICAL ENGINEERING SERVICES

- (A) When appropriate to a project, geo-technical services, such as soil borings, analysis, and foundation engineering evaluations and recommendations, shall be provided to ensure the proper design and construction of a project. Campuses may retain these services under the scope of the primary Design Professional's contract or may contract for these services directly. Projects requiring these services as a sub-contract to the primary Design Professional shall include a line item allowance under "Reimbursable Expenses" on the standard Professional Services Contract form. If the campus wishes to contract for these services directly, the campus shall follow the procedures outlined in § 7-100 (B).
- (B) Geo-technical services are considered necessary for the success of a project and shall be coordinated with the Design Professional, the structural engineering consultant, and the Campus Project Coordinator (CPC). Copies of the geo-technical services recommendations or report shall be submitted to the Design Professional, structural engineering consultant, and the CPC. The American Institute of Architect's Document G602, Geo-technical Services Agreement and Engineers Joint Contract Documents Committee Document 1910-27A are suggested as reference guides.

ARKANSAS STATE UNIVERSITY
 CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES FEES
 CHART NO 7-302

<u>CONSTRUCTION COSTS</u>	<u>BASIC FEE</u>
LESS THAN \$50,000	12.5%
\$50,001 TO \$100,000	11.4%
\$100,001 TO \$200,000	9.8%
\$200,001 TO \$300,000	9.0%
\$300,001 TO \$500,000	8.2%
\$500,001 TO \$1,000,000	7.5%
\$1,000,001 TO \$10,000,000	6.5%
OVER \$10,000,000	6.0%

7-303 PLAN REVIEW SUBMITTALS

All projects shall be submitted to the CPC pursuant to § 6-305. For design, specification and drawing standards refer to § 6-313 through § 6-316 and for plan submittal requirements refer to § 6-318 through § 6-321.

7-400 RECOMMENDED GRADING STANDARDS

A. STANDARDS FOR GRADING AROUND STRUCTURES

<u>CONDITIONS</u>	<u>MAXIMUM</u>		<u>MINIMUM</u>		<u>PREFERRED</u>
Side slopes with vehicular access	10%	10:1	2.0%	50:1	1-3%
Back slopes with vehicle access	15%	6.6:1	2.0%	50:1	1-5%
Side slopes without vehicular access	15%	6.6:1	2.0%	50:1	1-10%
Back slopes without vehicular access	20%	5:1	2.0%	50:1	1-10%
Grassed athletic fields	2%	50:1	0.5%	200:1	1%
Berms and mounds	20%	5:1	5.0%	20:1	10%
Mowed slopes	25%	4:1	----	----	<20%
Unmowed grass banks	Soils natural angle of repose				< 25%
Planted slopes and beds	10%	10:1	0.5%	200:1	3-5%

B. STANDARDS FOR GRADING STREETS AND WAYS

<u>CONDITIONS</u>	<u>MAXIMUM</u>		<u>MINIMUM</u>		<u>PREFERRED</u>
Crown of improved streets	3%	33:1	1%	100:1	2%
Crown of unimproved streets	3%	33:1	2%	50:1	2.5%
Side slopes on walks	4%	25:1	1%	100:1	1-2%
Tree lawns	20%	5:1	1%	100:1	2-3%
Slope of shoulders	15%	6.6:1	1%	100:1	2-3%
Longitudinal slope of streets	20%	5:1	0.5%	200:1	1-10%
Longitudinal slope of driveways	20%	5:1	0.5%	200:1	1-10%
Longitudinal slope of parking areas	2%	50:1	0.5%	200:1	1-2%
Longitudinal slope of sidewalks	5%	20:1	0.5%	200:1	1-5%
Longitudinal slope of valley section	5%	20:1	0.5%	200:1	2-3%

C. STANDARDS FOR DRAINAGE CHANNELS

<u>CONDITIONS</u>	<u>MAXIMUM</u>		<u>MINIMUM</u>		<u>PREFERRED</u>
Swale side slopes	10%	10:1	1%	100:1	2%
Longitudinal slope of swales-grass invert	8%	12:1	1%	100:1	2%
Longitudinal slope of swales-paved invert	12%	8.3:1	0.5%	200:1	5%
Ditch side slope-grass invert	8%	12:1	1%	100:1	3%
Ditch side slope-paved invert	10%	10:1	---	---	6%

7-500 EARTHQUAKE RESISTANT DESIGN GENERAL REQUIREMENTS

All Design Professionals shall comply with all Arkansas laws and regulations and the current Arkansas Fire Prevention Code in regard to seismic design. The CO shall reference these requirements during the plan review. For additional requirements refer to § 6-311.

7-600 FUNDAMENTAL MECHANICAL AND ELECTRICAL REQUIREMENTS

These requirements apply to new construction and renovation projects only. Existing conditions or systems are exempt under these requirements. Campuses are encouraged to upgrade existing systems to meet these requirements as much as practical when equipment or system components are replaced.

7-601 GENERAL REQUIREMENTS

- (A) Mechanical and electrical systems should be appropriate for the intended application regardless of the geographic location in the state. Location should be considered from a standpoint of availability of a competent service organization. Where critical replacement parts cannot be delivered within 24 hours, consideration should be given to inventorying these parts on-site. However, it is not the intent of a capital improvement project to stock the campus' supply shelves. Other sources of funds are available for that purpose.
- (B) Systems shall be capable of meeting the intended operational parameters of the application year round without requiring special seasonal reconfigurations. Controls should be clearly labeled and described so as to allow the operator to manage the system with a minimum of training. In all new system specifications, include a specific training time and course outline for the Contractor to provide to campus personnel. It is recommended that all training classes on the control systems and the system operational concepts be supplemented with videotape information or with compact disk interactive training aids. This data should be customized for the particular application to avoid confusion and promote operational awareness.
- (C) New design concepts, equipment and materials should be carefully evaluated before incorporating them into a state project. While campuses are not discouraged from incorporating new and innovative solutions to design problems, state projects should not be used as the proving grounds for new concepts or ideas. Therefore, if a campus desires to try a new design concept or material, it may approve such applications for the intent of observation to determine the suitability of such applications for other projects. The request shall include but not be limited to the following information:
 - (1) A detailed description of the application or material.
 - (2) Backup literature from the manufacturer or supplier.
 - (3) A discussion of how this application differs from other applications utilizing conventional concepts or materials. Include the unique features of each situation that have lead to selecting this concept or material.
 - (4) A discussion of the expected cost difference between the conventional systems and the proposed systems.
 - (5) A discussion of what benefits the campus expects to achieve over the conventional systems approach.
 - (6) A discussion of how the campus expects to monitor the application for verification of expected results.

7-602 MECHANICAL SYSTEMS

- (A) Air handling units, pumps, boilers and other mechanical equipment requiring frequent inspection and service should be located within the building or in

- separate buildings with interconnecting chases or pipe tunnels. Equipment shall be located in rooms with ample space to provide routine maintenance, component replacement, operation and inspection without requiring demolition of the building structures or unnecessary climbing or crawling by service technicians or mechanics. Equipment located outdoors should be installed on the ground on solid foundations with concrete service pads around the equipment.
- (B) When equipment must be installed on the roof, provide raised equipment platforms that allow roof replacement and maintenance or full perimeter curb to eliminate the need to re-roof under the equipment. Equipment shall be selected with water tightness of the roofing system in mind. Equipment that is prone to allowing leaks to penetrate the unit casing, interiors or connections during normal and wind blown rain shall be avoided. Where equipment is mounted above the roof, provide a service platform on the service access sides of the equipment. Provide stairs that are integral to the platform to avoid the need for ladders to gain access to the work platform. Conform to OSHA safety requirements with regards to platforms, ladders, confined spaces and the like. When it is absolutely necessary to have piping, conduits, ductwork, etc. across the roof, specify “zero penetration support systems with non-rusting base supports to distribute the equipment weight without damage to the roof membrane or insulation. Ensure that the installed system will resist the design wind loads without damage to the supported system or the roof.
- (C) Air handling equipment should be specified with access doors with view ports between each major section or component to allow inspection of the operating equipment without requiring the shutdown and opening of the unit. Provide internal lights with exterior mounted pilot light switches on units exceeding ten (10) feet in width or height. For package split-system equipment, provide a means to remove and clean the cooling coils and heating coils without requiring complete dismantling of the system.
- (D) Mechanical air conditioning system should be specified with the highest operating efficiency permitted by the project budget while still allowing for competitive bidding. Minimum acceptable seasonal energy efficiency ratio (SEER) shall be 10.0 and minimum energy efficiency ratio (EER) shall be 9.0. Indirect, gas-fired heating equipment shall have a minimum annual fuel utilization efficiency (AFUE) of 80%. Campuses are encouraged to require higher efficiencies.
- (E) The use of alternative energy sources for both heating and cooling are encouraged. Campuses should consider the effects of diversity and quantity aggregation on their ability to negotiate utility rates and their ability to provide uninterrupted service at an affordable cost to the State.
- (F) Mechanical systems shall meet the requirement of the Arkansas Energy Code, (ASHRAE Standard 90.1 for energy efficiency) and the ASHRAE Standard 62 for indoor air quality. Equipment shall be selected to meet these requirements without requiring the equipment to operate outside of the manufacturer’s recommended performance envelope during the extremes of summer or winter.

Operation of the equipment during these extremes should not shorten the intended life of the equipment or sub-components.

- (G) Mechanical system designs should be conducive to promoting good indoor air quality. Air equipment subject to exposure to condensed moisture should be constructed of materials that do not promote or support biological growth. These surfaces should be sloped to a drain point that will readily remove the moisture from the system. These surfaces should be easily accessible for periodic inspection and cleaning. The remainder of the system should also be readily accessible for inspection and cleaning. Filter selections in air systems should consider not only the particle size to be arrested but also the possibility of odor transmission through the system. Frequency and cost of replacement media should be considered however; the cheapest filter media is often the least desirable from an air quality standpoint and a frequency of replacement standpoint. Unless otherwise specified by the campus or dictated by the specific application, all heating, ventilating and air conditioning HVACR systems shall maintain the space temperature and humidity within the bounds of the "comfort envelope" as defined by the ASHRAE Fundamentals Handbook. This comfort envelope is generally accepted as a region where the indoor temperature and humidity will be acceptable to the majority of the occupants.

7-603 PLUMBING SYSTEMS

- (A) Plumbing systems shall be designed pursuant to all state and federal laws and regulations.
- (B) Back-flow prevention shall be applied to each project as required to protect the public water supply and the interior building distribution systems from the potential for cross contamination from a non-potable or contaminated source. Many building projects will require an approved back-flow prevention device to be installed on the incoming water service prior to the first connection tap. In addition, all connections to mechanical systems or equipment shall be provided with an approved back-flow prevention device at the connection to the equipment or at the point where the dedicated piping system for makeup water begins. Back-flow devices shall be installed in accessible locations and provided with an adequate drain connection to allow proper operation and inspection.
- (C) All fire sprinkler services and standpipe systems shall be installed with an approved back-flow prevention device.
- (D) All lawn irrigation systems, agricultural/aquatic operations and wash racks shall be provided with an approved back-flow prevention device to protect the public water supply and eliminate cross connection contamination within the facility.
- (E) All heating water equipment shall be selected for energy efficient operation. Gas fired heating equipment shall have a minimum AFUE rating of 80%.
- (F) All plumbing fixtures shall be selected and installed in a manner that is conducive to ease of cleaning of the fixture, support, and surrounding area. Cleanliness promotes good indoor air quality and a healthier indoor environment. System designs should not result in wet, damp or pooling water, which can be a source

of microbiological growth or promote the formation of mold and mildew if left uncleaned.

7-604 ELECTRICAL SYSTEM

- (A) Electrical distribution systems shall be designed to allow rapid comprehension of the basic system layout. Where multiple voltages will occur within a space or structure, careful consideration should be given to the layout, routing, labeling and color coding of conductors and components to minimize potential injuries due to confusion of the various systems.
- (B) Where three-phase power is available, utilize this power for larger motor loads.
- (C) The use of copper conductors and copper busses is recommended. Where aluminum conductors are to be considered, ASU recommends that aluminum not be used on branch circuits below the distribution panel level. ASU recommends that all terminations on aluminum conductors be made with bolt-on or weld-on lugs only. Panel-board termination bars or lugs utilized with aluminum conductors should be made of copper, cadmium or other approved materials rated for use with aluminum or copper.
- (D) Where buildings are provided with a 480/208/120 volt system, perform an economic analysis of the cost benefit of 277 volt lighting verses 120 volt lighting.
- (E) Specify lighting fixtures, lamps and ballast for energy efficiency and to minimize the amount of hazardous waste that may be generated by the campus during routine maintenance replacement.
- (F) Specify high efficiency transformers when the transformer losses are included in the utility metering. Utilize transformers that are operationally stable at the anticipated operating conditions.
- (G) Where critical operations include electronic equipment or computers, utilize transformers that minimize harmonic distortion or provide electrical isolation of susceptible equipment or circuits. Provide neutral conductors sized for 200% of the line conductor capacity.
- (H) Provide a minimum of 10% spare circuit capacity at each panel to allow future growth. Provide a minimum of 25% growth capacity on wire management system for each systems future growth.
- (I) Circuits serving critical loads or equipment should be provided with a minimum ride through capability to allow continuous operation of the equipment or component during nominal dips in power to 70% of RMS voltage and for momentary outages of 1/2 cycle or less.
- (J) All new construction shall be evaluated for lightning risk hazard in accordance with the procedures outline in NFPA 780.

7-700 ENERGY CONSERVATION

- (A) The life cycle cost of operating a building, including energy cost and labor cost, can often exceed the cost of the building construction by 8 to 10 times. Efforts to reduce energy consumption or improve employee efficiency by as little as 10% can often result in lifetime cost savings equaling the cost of new construction. It is therefore incumbent upon each building operator, manager, and designer to be aware of the issue regarding energy consumption in the building and to plan construction and operations as wisely as possible to minimize the energy consumption while meeting the operational needs of the facility and while promoting a healthy indoor environment.
- (B) Energy Conservation for only the sake of avoiding energy consumption can often lead to indoor environmental problems that can have a potential cost far greater than the value of the energy saved. All energy plans should consider not only the energy reduction but also the impact upon the building materials, systems and upon the occupant's health and productivity. Pursuant to the Arkansas Energy Code and the Arkansas Fire Prevention Code, all new construction projects and renovations shall comply these codes. Campuses should give careful consideration to the principles of the standards and codes for incorporation into the project design to allow a stable base from which the building operator can begin to manage the building's energy consumption. All occupied buildings shall be designed to maintain the indoor environment within the parameters of the "Comfort Envelope" as defined in the ASHRAE Fundamentals Handbook. This envelope defines a range of temperatures and humidity levels that are deemed to be acceptable to most occupants under normal activity levels.

7-701 LIFE CYCLE COST ANALYSIS

Campuses and the Project Designer are encouraged to evaluate all material and equipment selections on the basis of life cycle cost as opposed to a first cost only. During a competitive bid process for construction, often the product having the better life cycle cost can be incorporated into the project for little or no incremental cost over the lesser quality product. Campuses should evaluate the proposed products at a 25 or 30-year life cycle. Careful consideration should also be given to the utility escalation rates, the maintenance rate and the discount rates for the cost of money. These factors can vary significantly from those applied to private sector cost (shorter life cycle) and if improperly applied can invalidate the analysis.

7-702 AUTOMATED CONTROLS

Where possible use automatic controls for HVACR systems and for lighting applications. Space temperature and humidity should be controlled by automatic controls capable of maintaining the space setpoint within a fixed upper limit and lower limit. Where practical, provide for the automatic setback or setup of the space temperature during the unoccupied periods. Avoid turning off systems where the rise in space temperature or humidity above the ASHRAE recommended maximums might result in damage to the building materials or growth of microbiological organisms. Avoid exposing the building water systems or other components to potentially damaging freezing conditions. Where possible, use space occupancy sensors such as motion sensors to control lighting and individual room air conditioning terminal units allow setback or to turn out the lights when a space is unoccupied. Where sufficient natural lighting exists due to windows or skylights use automatic lighting controls to regulate the overall space lighting levels.

7-703 MANUAL CONTROLS

When automatic controls are not part of the building systems, the CPC should develop policies for each building or facility. These policies should be written and distributed to all employees. The policy should encourage the conservation of energy through the direct involvement of the building occupants. Occupant efforts should include activities such as turning lights off when not in use; maintaining thermostat settings as directed by the building manager; set-back or set-up thermostat settings during the un-occupied periods; do not leave windows open when the building heating or air conditioning systems are in operation; use the blinds or drapes to moderate the lighting level in the space so as to take maximum advantage of the natural lighting and so as to reduce the building air conditioning load; leave blinds or drapes closed when the space is un-occupied and over the weekends and holidays; do not use electrical space heaters in spaces that are air-conditioned. Adjust the cooling set point or encourage employees to dress in multiple layers of lightweight clothing such as jackets or sweaters, which can be removed or added to accommodate individual variations in comfort levels.

7-704 EQUIPMENT EFFICIENCY

- (A) Do not overlook water conservation as an opportunity to reduce or manage the building operating cost. When selecting water-cooled or liquid-ring seal equipment, consider the water usage rates. When designing or operating lawn irrigation systems, consult with the Cooperative Extension Service to determine the maximum water rates for all vegetation. Evaluate the soil conditions with regards to absorption rates. Where possible, provide irrigation systems that calculate the evaporation transpiration rate based on local conditions. It is more effective to have multiple watering cycles to allow ample time for the water to absorb into the soil than to have longer cycles, which result in excessive run-off. Be cautious not to over water especially where large trees are concerned. The damage caused by the loss of an old growth tree due to over watering can be many times the cost of proper watering in that area. Where possible, use plumbing fixtures with infrared sensors to activate the flow of water. This not only saves water but is also more sanitary and reduces the transmission of bacteria from hand contact with the fixture.
- (B) Campuses and designers should endeavor to specify new equipment and fixtures to be Energy Star compliant or its equivalent. Energy Star equipment has been tested and certified to be low energy consuming during normal operation. In addition many Energy Star products such as computers have built-in power reduction modes that further reduce energy consumption during non-use or standby periods. Building managers should encourage occupants to not defeat or disable these energy reduction features. Equipment, like building systems, should be selected based on the best life cycle cost for each specific application.

7-705 ENERGY STAR BUILDING PROGRAM

- (A) The Energy Star Building Program is a voluntary partnership between U.S. organizations and the U.S. Environmental Protection Agency (EPA) to promote energy efficiency in buildings. These organizations represent owner-occupied

public and privately owned buildings. The EPA provides participants in the program with unbiased technical information, customized support services, public relations assistance, and access to a broad-range of resources and tools.

- (B) The Energy Star Building Program allows building owners to benchmark their building's energy performance relative to other similar properties in the program database. The Energy Star Building Label is awarded to buildings performing in the top 25% percentile of the market. This mark of excellence in energy performance signifies that the building has out-standing energy performance; lower operating cost and superior value. Buildings qualifying for the Energy Star Building Label are eligible to receive a placard to display on the building denoting the building as an Energy Star Building and the year date the building was certified.
- (C) The Energy Star Building Labeling program is co-sponsored by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE). Information concerning the program criteria and participation can be accessed through the EPA web site at www.epa.gov/buildinglabel. Campuses are encouraged to apply for the building label.

7-800 BUILDING COMMISSIONING

Today's buildings and expectations in their performance are becoming increasingly sophisticated. Like any sophisticated machine, a building should be set-up and balanced to operate properly and may require a periodic tune-up to remain operating at peak efficiency. Campuses are encouraged to consider the concept of total building commissioning on new construction projects and major renovations. Commissioning when applied from the beginning of the design process and continuing through the warranty period can result in projects that cost less to construct, startup with fewer problems, and have proper documentation for operations and maintenance. In many cases, the cost of the commissioning process is offset by a reduction in construction cost, change orders and startup problems.

7-801 TYPES OF COMMISSIONING

- (A) Commissioning is a systematic process of ensuring that building systems perform interactively according to the design intent and the campus operational needs. This is achieved beginning in the design phase by documenting the design phase intent and continuing through construction, acceptance and the warranty period with actual verification of performance, operation and maintenance documentation verification and the training of operating personnel.
- (B) Re-commissioning is the process of reverifying the performance of building systems that have been commissioned previously to ensure the systems continue to operate according to the design intent or current operating needs. Recommissioning may be initiated periodically or in response to a building renovation or a change in building usage.
- (C) Retro-commissioning is the process of commissioning existing building systems that were not commissioned when originally constructed. It is a process to ensure building systems perform interactively according to the design intent

and/or to meet the campus current operational needs. This is achieved by documenting the design intent where possible and the current operational needs, measuring the existing performance, implementing necessary operational and system modifications followed by actual verification of performance, operation and maintenance documentation verification and the training of operating personnel.

- (D) Testing, Adjusting, and Balancing (TAB) is a form of commissioning that can apply to mechanical and electrical systems in a building. TAB is routinely specified in the construction project as a portion of the mechanical work under Division 15. Many specifications require the TAB specialist to be the supplier of the air devices or the controls vendor. The intent behind this type of specification is to require someone with a working knowledge of the air devices or the controls to be the TAB technician. In this approach, the TAB technician is a subcontractor that is not directly responsible to the campus.

7-802 COMMISSIONING AGENT

- (A) The relationship of the commissioning agent or the TAB technician to the campus is critical to the success of the project. The commissioning agent should be under direct contract to the campus and should act as the campus' representative during the design and construction phases of the project. This direct relationship allows the commissioning agent to freely express ideas concerning design changes that will enhance the project goals and in reporting the correct status of the project construction and operation of the system components. During the training and documentation phase, this direct relationship allows the commissioning agent to objectively evaluate the training and documentation to ensure that adequate time and preparation is provided to meet the campus' expectations. While many small projects may be adequately handled by the concept of a TAB technician as a subcontractor even these type of projects may be better served by the inclusion of an independent commission agent.
- (B) Commissioning agents are typically professional engineers who have developed the specialty expertise necessary to advise and evaluate construction for defects and omissions and to provide or oversee the startup and the testing and balancing of systems and components. Commissioning agents also understand the documentation necessary to properly own and operate a building and understand the technical and operational parameters of a building well enough to oversee the training of the campus' operating personnel. While professional registration is not always a requirement or necessity; it is a desirable qualification when considering the total building commissioning concept. It is desirable to find a firm or team that contains professional representation in all of the critical building trades. Commissioning agents and TAB consultants shall be considered as specialized engineering consultants and as such shall be selected and contracted in the same manner as engineering consultants. (Refer to § 7-100). The Commissioning Agent or TAB consultant should be selected at approximately the same time as the building design team. The Commissioning Agent's contract, and the Design Professional's contract should clearly define the role the agent will have as the campus' representative.

- (C) The building Design Professional's contract should clearly acknowledge the role of the Commissioning Agent. The campus is responsible for coordinating the two contracts. To make one contract subordinate to the other would make the process less effective.

7-803 SUBMITTAL REQUIREMENTS

Plans and specifications that may be developed, as a part of a commissioning project, must be submitted to the CPC for review and approval prior to issue. Input from the commissioning agent during the design phase should be carefully documented to evaluate the validity of recommended design changes. These changes should be included in the plan review submittals under the heading "Commissioning Agent's Recommendations". The activities of a Commissioning Agent may affect the progress or schedule of the building construction project particularly where defect or omissions are discovered. The construction bid documents should acknowledge the presence of an independent commissioning agent on the project and should clearly define the role of the agent and the responsibilities of the Contractor to the agent as an authorized representative of the campus.

7-900 ASBESTOS SURVEYS AND MANAGEMENT PLANS

It shall be the policy of ASU that State owned buildings be surveyed for asbestos containing materials (ACM) before demolition or construction work begins or where otherwise required by State and Federal laws and regulations. Even if no demolition or construction work is planned; ASU encourages operators of state owned buildings to obtain a survey for asbestos. The survey report should be used to make building maintenance/service personnel or interested building occupants aware of the location and condition of the ACM. A management plan for each surveyed building should be developed in accordance with federal guidelines and industry practices.

7-901 ASBESTOS PROJECTS SUBJECT TO ASU REVIEW AND APPROVAL

- (A) When a campus contemplates an asbestos abatement project wherein the abatement Contractor must re-install materials, even as a temporary measure, where ACM has been removed, this type of project shall be considered a capital improvement project and shall fall under the jurisdiction of ASU.
- (B) For this type of project, the campus may still procure the services of an asbestos consultant without ASU review or approval. However all other services normally processed pursuant to ASU jurisdiction are applicable, which include but not limited to plans and specifications (for the abatement project and the replacement materials) review and approval, all bidding procedures and inspections of replacement materials.
- (C) For projects wherein the asbestos abatement is included as a part of the general construction bid package, the plans and specifications must be submitted to ASU for review as a part of the general construction review documents and those services listed in above in (B) are applicable. The asbestos consultant should be under contract to the prime Design Professional as a sub-consultant

7-902 ASBESTOS CONSULTANTS

Unless adequately trained, experienced, and licensed personnel are employed by a campus, ASU recommends that private sector licensed asbestos consultants be utilized to survey, investigate, prepare abatement documents, and monitor abatement activities. Asbestos consultants shall be considered as design consultants and as such may be hired in accordance with the University's policy and State law governing procurement of consulting contracts. Asbestos consultants shall be licensed and bonded as per Ark. Code Ann. § 20-27-1001 et seq.

7-903 PLAN REVIEW SUBMITTALS

This review and approval process will generally be the same as described in § 6-100 et seq. for construction projects, except that all abatement and replacement projects shall be submitted for a combined First and Final Review regardless of the size of the project. A designer who is properly licensed by ADEQ shall prepare the bid documents for asbestos abatement projects. The designer's license number must appear on the cover sheet for projects submitted for ASU review. The CPC shall ensure that these projects are complete and accurate.

7-904 PROJECT SUPERVISION AND MONITORING

Abatement Contractor activities should be adequately supervised and monitored by the asbestos consultant. The frequency of inspections and type of air monitoring shall be as established by State and Federal laws and regulations. On abatement projects occurring in occupied buildings, supervision and monitoring of the abatement work should be more intense, as dictated by the particular project circumstances.

7-1000 FUNDAMENTAL CABLING SYSTEMS REQUIREMENTS

- (A) The following sections pertain to the planning, installation, maintenance and documentation of the various new cabling systems of 90 volts or less in state owned buildings.
- (B) The development, installation and management of cabling systems present many unique problems for building managers and operators. Campuses shall endeavor to ensure that each system is properly designed and installed to minimize the potential for problems to develop. Therefore, building operators and managers shall maintain up to date documentation of each cabling system to allow proper maintenance, identification of system components and coordination with other projects. When systems are abandoned, the campus shall require the obsolete cabling to be removed from the premises.
- (C) Projects subject to the jurisdiction of the Arkansas Department of Information Services (DIS) shall be coordinated with DIS at the earliest opportunity. The CPC shall notify DIS of the project. Comments or requirements of DIS should be incorporated into the project design in a timely manner. When DIS is responsible for providing telephone or data services or for arranging the activation of these services, campuses shall allow ample time in the construction project for this coordination. Campuses shall promptly inform DIS of all changes in the project scope and schedule to avoid delays.

7-1001 PLANNING REQUIREMENTS

- (A) The following types of cabling projects are not considered capital improvements and are not subject to this policy:
- (1) Cabling between components of a system which is routed exposed in the space and passes between components (i.e. cabling between the computer and peripherals on the workstation).
 - (2) Cabling routed exposed in the space between the system component and the network connection (i.e. the telephone or computer on the workstation and the network outlet in the wall, floor, or ceiling).
 - (3) Cabling routed exposed in the space between system components for television, radio, and satellite broadcast or audio/visual systems.
- (B) All other cabling projects, including the systems above when routed concealed or in conduit, are considered capital improvements subject to State and Federal laws and regulations.
- (C) All cabling projects contracted independently or that are part of a larger project, which exceed the amounts established in Ark. Code Ann. § 22-9-101, shall have the plans and specifications prepared by a registered professional engineer licensed to practice in Arkansas. Conversely, projects below the limit set forth in Ark. Code Ann. § 22-9-101 requiring the involvement of a professional engineer; the plans and specifications shall comply with all other provisions of the MSC. Nothing in this policy shall prohibit campuses from utilizing the service of a competent registered professional engineer for these smaller projects.
- (D) Plans for cabling projects shall be drawn to scale not less than $1/8" = 1'-0"$. Scaled drawings are necessary to allow for proper quantity take-off and verification. The plans shall show the location of the cable entry into the building, the location of the telecommunication room or termination board for the cable entry. The plans shall show the routing of the cabling between the termination board and the individual run out. Run outs shall be grouped or bundled to minimum the congestion above ceilings, below floor, or in other chase spaces. A single line may be used to graphically represent multiple cables in a run. Designate the quantity or types of cables in each run.
- (E) Cabling systems should be planned with flexibility and growth in mind. Systems should be segregated and labeled to avoid confusion and accidental cross connection. Face plates and jacks should be color coded to facilitate user connection of equipment to the appropriate systems. In facilities where frequent reorganization of spaces occur, the location of outlets should be reviewed to ensure an adequate number of outlets are installed in each space to accommodate minor reorganization without requiring a major re-cabling project.

7-1002 TELECOMMUNICATION ROOMS

- (A) In new construction project or major renovation project, provide at least one wiring room on each floor in each building. Rooms should be located as near to

the center of the floor as practical. In multistory buildings, stack the telecommunication rooms above one another to allow vertical wiring chases between floors.

- (B) For very large buildings or buildings where it is not practical to locate the rooms near the center of the floor, provide 2 or more rooms per floor. Wiring rooms should be located such that the length of cabling between the telecommunication room and the most remote outlet face plate is no more 100 meters (330 feet), for data networks or the maximum cable length recommended by the system manufacturer for other types of systems.
- (C) Telecommunication rooms and cabling termination rooms shall be a minimum size of 8 feet by 12 feet (not just 96 square feet). For systems containing more than 100 faceplate outlets, the minimum room size shall be 10 feet by 15 feet (not just 150 square feet). For projects containing multiple wiring systems, (i.e. data, telephone, public address, security, and CATV.) the campus shall review the cable installation requirements and should increase the minimum size of the room or provide separate wiring rooms for each system. When system terminations can be consolidated into one room, the maintenance and management of these systems is simplified.
- (D) Many cabling systems include components that require strict environmental controls. Review these requirements and provide the appropriate air-conditioning and power quality services. Many systems require redundant cooling or power, which may necessitate additional capital cost during the installation. Review these requirements and identify them during the planning stage.
- (E) Recommend a minimum of eight (8) electrical duplex outlets (two (2) on each wall) on isolated electrical circuits in each room. These outlets should have isolated ground conductors and dedicated neutral conductors. Isolated outlets should be color coded for positive identification (i.e. orange). Recommend at least four (4) general power duplex outlets (one (1) on each wall) for power tools. These outlets should not be on the same panel board or circuit as the electronic equipment in the room.

7-1003 CABLING STANDARDS

All cabling shall conform to the latest industry standards applicable to the specific system at the time of installation. Cabling not installed in a closed conduit system should be specified to be plenum rated cabling regardless if the space is a return air plenum or not. This will eliminate the need to replace the cabling system if the HVACR system is renovated to a return plenum system. In addition, plenum rated cabling generally develops less smoke and has a reduced flame spread in the event of a fire thus improving the fire safety of the building.

7-1004 WIRE MANAGEMENT

- (A) Efficient wire management can be achieved with a properly planned wire management system. Cable trays or "J" hook systems should be installed in all major corridors and hallways. For large projects with multiple cabling systems,

provide multiple cable trays, divided trays or multiple hook systems to allow segregation of each cable system. Cable management systems should be provided with a 25% growth capacity for each cable system.

- (B) Cable trays and hooks shall be attached to building structural members or wall framing systems only. Do not attach or support wire management systems from other building systems such as HVACR, piping, conduit systems or ceiling support wires. Extend wire management systems into the ceiling areas of all telecommunication rooms or cable termination rooms. Cable trays should run the length of the room along the center of the room. Where possible, extend conduit from the back box to the corridor ceiling where the wire management system runs. Provide plastic bushing at conduit termination to minimize damage to cable jacket.
- (C) Provide pull boxes and long sweep elbows in conduit systems to facilitate cable pulls. Pull boxes shall be at a maximum spacing of 300 feet in outdoor conduits without bends. If one or more 90° bends are included in a run, reduce the maximum spacing to 100 feet.
- (D) Provide spare empty conduits with each exterior run and with runs between floors or wiring rooms. Recommend a minimum of two (2) four-inch conduits be provided as spares in new construction or major renovations. Provide pull cords in each conduit to facilitate future cable installation.

7-1005 IDENTIFICATION

- (A) Each cable system shall be clearly labeled as to the type of service the system provides. Campuses are encouraged to develop a standard practice for labeling and identifying cabling both in conduit and exposed. The following is one recommended scheme of color-coding cabling and conduit to facilitate quick recognition of various systems. Other industry standard schemes are acceptable.

<u>System Type</u>	<u>Color Code</u>
Data cables	Blue
Data (fiber optics)	Orange
Fire Alarm	Red
Telephone (voice/fax/modem)	White
Security	Yellow
Sound, Paging, Music	Gray
Access control	Black
CCTV	Black
CATV	Black
Satellite	Black
Building Automation Systems (BAS)	Black

- (B) Pull box and junction box cover plates inside buildings should be color-coded the same as the system cable. The name of the system should also be labeled on the cover (i.e. "CATV").
- (C) Terminal boards, punch down panels, and cabinets should be labeled as to system type. In addition, clearly identify the point of demarcation between the building cable system and the utility connection point. Include the name of the service provider, phone number, contact person (if known) and the account number to facilitate service calls and coordination.
- (D) When empty non-metallic conduit systems or systems containing fiber optic cable or other non-traceable cables are installed below grade, provide a metallic tracer wire inside the conduit or immediately above the conduit or a detectable trench tape to facilitate future locating of the conduit.
- (E) A cable labeling system should be developed by the campus to facilitate tracking and trouble shooting after installation. As a minimum the cabling shall be labeled on both ends and at junctions to identify where the cable originates and where it ends.

7-1006 DOCUMENTATION

- (A) Building managers/operators should maintain a complete record of each cabling system. The record should include the "As-built" drawings, cable test/certification reports, system start-up records, catalog-cut sheets of cable and accessories, name of the installing firm, phone number, and copies of all warranties.
- (B) As-built drawings should show routing on scaled drawings. The route and identification number of each cable should be clearly shown as well as the location of all wiring rooms, front end equipment and demarcation points. Drawings should include riser diagrams or schematics to facilitate rapid understanding of the system and trouble-shooting.
- (C) Where continuity or performance testing is required, the record documentation should include the specifications for the test, the data points gathered during the test and the results of the test. All problems identified during the test and all deviations from the specification requirements should be clearly outlined and discussed in a summary at the front of the report. Include copies of all certificates or letters of certification in the front of the report.
- (D) Documentation should include the "approved submittal drawings", catalog cut sheets, or shop drawings for all components. Submittals should be bound tab and divided into discrete system components. Include the name of the installing firm and phone number. Copies of warranties and guarantees should also be included in the manual. The documentation should also include a listing of the manufacturers recommended spare parts by name and product number.

Arkansas State University
Capital Development Policies and Procedures
Definitions

Agency. Agency refers to any state department or institution of higher learning that receives State appropriations as part of its annual operating budget.

Arkansas State University (ASU). ASU when used in the context of this document refers to the University as a System. The System is comprised of three 2-year campuses at Beebe (with a center in Heber Springs), Mountain Home, and Newport, a 4-year campus at Jonesboro, an extension campus at Paragould, and a Technical Center with operations in Marked Tree and Jonesboro.

Board of Trustees. The Board of Trustees is the Constitutional body of five Governor appointed and Senate confirmed members who have the legal responsibility to oversee the operations of the Arkansas State University System. The President of ASU reports directly to the Board.

Building Manager. The Building Manager is a campus representative who has prime responsibility for reporting the maintenance and operations needs to Facilities Management. He/She is the eyes and ears of the building and problems are reported through this individual to Facilities Management.

Campus Chief Fiscal Officer (CCFO). There is a CCFO on each campus. One of the CCFOs is the Vice Chancellor for Fiscal Affairs at Beebe. This person represents the fiscal matters for Beebe and Heber Springs. The CCFO for Mountain Home is the Vice Chancellor for Fiscal Affairs, the CCFO for Jonesboro, Paragould, and Marked Tree is the Vice President for Finance and Administration at Jonesboro, and the CCFO for Newport is the Vice Chancellor for Administrative Affairs.

Campus Project Coordinator (CPC). The CPC is the primary campus representative responsible for the oversight of construction and renovation projects. This person is responsible to coordinate the work and to manage the professionals hired to design and construct the project.

Campuses. The Campuses represent the entire ASU System with 2-year campuses at Beebe (with a center at Heber Springs), Mountain Home, and Newport, a 4-year campus at Jonesboro with an extension campus at Paragould, and a Technical Center located at Marked Tree with operations in Jonesboro.

Capital Projects Committee (Committee). This committee shall be established to assist with system construction management issues and shall be comprised of the CFOs, the Construction Coordinator's, and the Building Managers of each campus.

Construction Administrator (CA). The CA or the Construction Office Administrator is the primary person designated with the campus construction oversight responsibility and authority. Generally it is the CFO on each campus.

Construction Office (CO). The CO is the responsible office for construction oversight. It may be the Facilities Management Department, the Physical Plant, or the CFO. Each campus will designate its CO.

CSI. This is an acronym designating the Construction Specifications Institute.

FCC. This is an acronym for the Federal Communications Commission.

HVACR. This is an acronym for heating, ventilating, air conditioning, and refrigeration.

MSC. This is an acronym designating the Manual of Standards and Criteria.

NFPA. This is an acronym for the National Fire Prevention Association.

Owner. The Owner in all cases is the Board of Trustees, however, the campus shall act as the owner in all construction decisions except those delegated to the President.

President. The President is the Chief Executive Officer of the System reporting directly to the Board of Trustees. All Campus personnel report to the President.

Procurement Officer. This is the ASU employee located on the campus who has delegated procurement authority from the State Procurement Director.

State. Arkansas

State Building Services (SBS). This is a State agency that has been delegated Legislative authority to manage all State capital projects among other responsibilities. SBS does not have oversight authority for any ASU capital projects. The ASU Board of Trustees has this delegated authority.

State Engineer. The State Engineer is an employee of SBS.

University. The University is the System designation and is synonymous with ASU. (See ASU).

Filename: CAP DEFINITIONS

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